

Ex-Ante Evaluation (for Japanese ODA Loan)

Southeast Asia Division 5,
Southeast Asia and Pacific Department, JICA

1. Name of the Project

Country: The Republic of the Philippines

Project: Metro Manila Priority Bridges Seismic Improvement Project (II)

Loan Agreement: March 30, 2020

2. Background and Necessity of the Project

(1) Current State and Issues of the Transportation Sector and Priority of the Project in the Philippines

The Republic of the Philippines (hereinafter referred to as “the country”) has one of the highest occurrences of natural disasters in Southeast Asia, and large-scale earthquakes are particularly frequent due to the country’s location on the Pacific Ring of Fire. Also in recent years, great damage has occurred as a result of the earthquake in Bohol Island (Magnitude 7.2, 2013, about 350,000 victims and 1,200 casualties), the earthquake in the Province of Zambales, Luzon (Magnitude 6.1, 2019, about 3,000 victims and 270 casualties) and other earthquakes. Also in Metro Manila, the center of politics and economics in the country, the Marikina Fault lies north to south, and it has been pointed out that there is a future possibility of an earthquake on a scale of Magnitude 7.

Several large-scale bridges on arterial roads in major urban areas do not meet the seismic performance requirements for the assumed large-scale earthquake and are thus highly likely to be destroyed, which is pointed out in “The project for study on improvement of the bridges through large scale earthquakes disaster mitigating measures” (hereinafter referred to as the “previous study”), technical cooperation for development planning that was implemented in 2012. More than 50 years have passed since the construction of most of the bridges located on arterial roads in Metro Manila where about 40% of the country’s GDP is concentrated. So disaster mitigation measures, including improvement of earthquake resistance has become an urgent issue to be addressed.

The government of the country stresses the necessity of developing infrastructure that is resilient against disasters to maintain and recover livelihood and economic activities while promoting infrastructure development, and recommends construction and repair based on proper standards for this purpose, in the “Philippine Development Plan (2017-2022).” The Metro Manila Priority Bridges Seismic Improvement Project (hereinafter referred to as “the Project”) aims to improve earthquake resistance of the two bridges with the highest priority of earthquake proofing among bridges located on arterial roads in Metro Manila, which was determined in the previous study. The Project is consistent with the policy of development of infrastructure resilient against disaster, which was worked

out by the government of the country.

(2) Japan and JICA's Cooperation Policy and Operations in the Transportation Sector

"Country Assistance Policy for the Republic of the Philippines" (April 2018) sets "infrastructure development for sustainable economic growth" as a priority area, holding cooperation for the development of quality infrastructure, including traffic networks focusing on large cities and provincial cities. Moreover, it sets "ensuring human security for inclusive growth" as a priority area, aiming to overcome vulnerability to natural disaster. "JICA Country Analysis Paper for the Republic of the Philippines" (November 2014) analyzes the strengthening of transportation infrastructure development as an important issue. Above all, quality assurance of highways and bridges is listed as an issue. The Project is consistent with the policy and analysis.

In the bridge field of the transportation sector, Japan has provided assistance for "Rehabilitation and Maintenance of Bridges along Arterial Roads Project (I)-(IV)" (1990-1999), "Second Magsaysay Bridge and Butuan City Bypass Road Construction Project" (2000), "Arterial Road Bypass Project (I)-(III)," etc. as Japanese ODA loan projects. Also as technical cooperation projects, Japan has implemented the "Project on Improvement of Quality Management for Highway and Bridge Construction and Maintenance (Phase 1-3)" (2007-2019), the "Project for Capacity Development on Transportation Planning and Database Management" (2011-2014), etc.

(3) Other Donors' Activities

The revision work of the bridge design standards in the Philippines, which was assisted by the World Bank, has been completed, and the revised standards have been approved by the Philippine Government. Besides, as part of these design standards, the bridge seismic design standards whose formulation was assisted by JICA in the previous study, have been adopted.

3. Project Description

(1) Project Objective

The objective of the Project is to strengthen the resilience of the transport network in Metro Manila by replacing and strengthening major bridges referring to the improved bridge seismic design specifications, thereby contributing to a more secure and sustainable economic and social development of Metro Manila and to realizing the speedy recovery in case of large-scale earthquakes in the National Capital Region.

(2) Project Site/Target Area

Metro Manila

(3) Project Component(s)

A) Civil works: Bridge replacement and reinforcement of Guadalupe Bridge and Lambingan Bridge

B) Consulting services: (a) Detailed design and bidding assistance, (b) Construction

supervision

(4) Estimated Project Cost (Loan Amount)

16,739 million Yen (Loan Amount of this period: 4,409 million Yen)

(5) Schedule

August 2015 - July 2023 (96 months in total). Project completion is defined as when the operation of all lanes on the two bridges is resumed (scheduled for August 2022).

(6) Project Implementation Structure

1) Borrower: Government of the Republic of the Philippines

2) Guarantor: none

3) Executing Agency: Department of Public Works and Highways (DPWH)

4) Operation and Maintenance Organization: National Capital Regional Office, one of the regional offices of DPWH, is in charge of the bridge maintenance after the project completion.

(7) Cooperation and Sharing of Roles with Other Donors

1) Japan's assistance activities: None in particular.

2) Other Donors' assistance activities: None in particular.

(8) Environmental and Social Consideration/Cross-Cutting Issues/Category of Gender

1) Environmental and Social Consideration

① Category: B

② Reason for Categorization: The Project does not fall under the large-scale projects in the highway, railway and bridge sectors listed in the JICA Guidelines for Environmental and Social Considerations (published in April 2010), and is not considered a project that has an adverse impact on the environment. It also does not have the property of being likely to have the impact listed in the Guidelines, and the target area does not fall under the areas that are likely to be subject to the impact.

③ Environmental Permit: Based on the Initial Environmental Examination (IEE) checklist for the Project, the Department of Environment and Natural Resources (DENR) issued Certificate of Non-Coverage (CNC) for Lambingan Bridge in August 2015 and for Guadalupe Bridge in September 2015. With this change in the construction plan, The Environmental Compliance Certificate (ECC) was received in September 2019 after the IEE checklist was revised.

④ Anti-Pollution Measures: To prevent river water from being contaminated during the construction period, panels will be installed to close the flow of wastewater from the construction site to the river. As for measures against air pollution, antipollution mufflers will be installed in the exhaust ports of heavy machinery, heavy machinery equipped with device preventing exhaust gas pollution will be used, and other measures will be taken. Also as noise and vibration countermeasures, noise-control-type machinery will be used for the destruction of existing structures, and in pile installation, measures will be taken by adopting the gyro press method, cast-in-place

RC pile foundation work, or other construction method.

⑤ Natural Environment: Since the Project is not located in or around sensitive areas such as national parks, its adverse impact on biodiversity is assumed to be minimal.

⑥ Social Environment: Implementation of the Project requires the involuntary resettlement of 17 households (71 residents), the process of which will proceed in accordance with the Resettlement Action Plan based on JICA Guidelines and the laws of the Philippines. At a consultation meeting on relocation, a detailed explanation was provided by the local government in response to inquiries made about eligibility for compensation and compensation contents. At present, no particular objection has been made by affected residents to the Project. Besides, land acquisition is not required.

⑦ Other/Monitoring: Executing Agency (DPWH) will implement monitoring of air quality, water quality, noise and vibration during the construction period. DPWH will also monitor the status of land acquisition, resettlement and livelihood recovery.

2) Cross-Cutting Issues: None in particular.

3) Category of Gender: [N/A] ■GI (Gender Mainstreaming Needs Assessment and Analysis Project)

<Activities/Reason for Categorization> In the Project, it is difficult to examine concrete measures for gender equality and women's empowerment.

(9) Other Important Issues

1) The two bridges in the project are located on arterial roads in Metro Manila, and from a perspective of minimizing the traffic control period on the roads associated with the main construction works, rapid construction and other Japanese technologies are expected to be utilized.

2) In applying the seismic design standards prepared in the previous study and securing technology and quality, Executing Agency shall organize a diffusion system and capacity development through consulting services.

4. Target Outcomes

(1) Quantitative Effects

1) Outcomes (Operation and Effect Indicators)

Indicator	Baseline (Actual value in 2019)	Target (2024) [Expected value 2 years after project completion]
Seismic design standards of each bridge	None (Note 1)	1,000 year Earthquake (Note 2)

(Note 1) No relevant information of those infrastructures constructed in the 1960s to 1970s was available in the previous study and the preparatory survey of the Project.

(Note 2) Design standards that can withstand an earthquake on a scale that occurs once in 1,000 years.

(2) Qualitative Effects

- 1) Strengthening of disaster resilience of the traffic network in Metro Manila
- 2) Enhancement of capacity for maintaining urban functions during times of disaster in a large city

(3) Internal Rate of Return

According to the following preconditions, the Project's Economic Internal Rate of Return (EIRR) will be 19.0%. (The Financial Internal Rate of Return (FIRR) is not calculated because the bridges were established on roads not subject to fees.)

[EIRR]

Cost: Project cost (construction fee and maintenance fee) *Any of them exclude tax.

Benefit: Reduction of vehicle operating cost and vehicle traffic time cost compared to cases where the bridge became inaccessible, and the reduction of restoration expenses during times of disaster

Project life: 54 years

5. Preconditions/External Factors

- (1) Preconditions: None in particular
- (2) External conditions: None in particular

6. Lessons Learned from Past Projects

In the ex-post evaluation of the Philippine "Rehabilitation and Maintenance of Bridges along Arterial Roads Project (I)" (evaluated in 2005), the lesson was learned that it is possible to minimize the impact of natural disasters through cooperation with consultants and contractors to confirm the relevance of the construction period to minimize the impact of natural disasters on the construction period taking rainy and dry seasons into consideration.

The Project is focused on bridge building for the Pasig River, whose water level frequently rises during the rainy season. Based on the findings above, construction planning by taking rainy and dry seasons and natural disaster risks into consideration at the planning stage is under consideration. An explanation will be given to interested enterprises before bidding, a hearing of opinions on more concrete construction plans etc. will be held at an early stage, and responses will be considered.

7. Evaluation Results

The Project is consistent with the country's development issues and policies, and with the cooperation policies and analyses of the Government of Japan and JICA. The Project contributes to the development of infrastructure resilient against disaster in Metro Manila, thereby contributing to SDGs Goal 9 (Build resilient infrastructure) and Goal 11 (Make cities and human settlements inclusive, safe, resilient and sustainable). Thus, the necessity for JICA to support the Project is substantial.

8. Plan for Future Evaluation

(1) Indicators to be Used

As indicated in sections 4. (1) to (3).

(2) Timing

Two years after project completion (ex-post evaluation)

End