

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 (the Philippines)

Project: Cebu-Mactan Bridge (4th Bridge) and Coastal Road Construction Project

Loan Agreement: June 16, 2020

2. Background and Necessity of the Project

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

Metro Cebu is the central area of the Visayas, which are located in the middle region of the Republic of Philippines, and consists of 13 local governments on two islands: Cebu Island and Mactan Island. It has a population of about 2.85 million (as of 2015) and is the second largest metropolitan area after Metro Manila in the Philippines. As a hub of trade in the country's middle region, Metro Cebu has rapidly developed, attracting many domestic and foreign companies. The population of Metro Cebu, whose annual average rate of growth between 2010 and 2015 was about 2.2%, is expected to reach about 3.80 million in 2030 (Roadmap study for sustainable urban development in Metro Cebu (2013-2015); hereinafter referred to as the "Roadmap Study"). In addition, the metropolitan area is the biggest tourist resort in the Philippines, where the number of tourists from within the country and abroad is about 5.58 million (in 2018).

Although the Government of the Philippines has developed road traffic networks in Metro Cebu, severe traffic congestion has developed because the transportation capacity of the area is not sufficient to address its rapid urbanization and increasing traffic demand caused by population increase. The economic loss due to traffic congestion in Metro Cebu in 2014 is estimated at about JPY 820 million per day (Roadmap Study). Severe traffic congestion is caused in particular because there are only two bridges between Cebu Island, which has many houses, companies, high and large complexes, etc., and Mactan Island, which has an international airport, industrial park, etc., and thereby the capacity of the existing bridges and coastal road networks on both bridges is insufficient to handle the increasing volume of traffic between the two islands. Currently, the Third Mactan Bridge (hereinafter referred to as the "Third Bridge") is under construction in south of the existing two bridges by the Public Private Partnership to connect Cebu City, Cebu Island with Cordova City, Mactan Island. Although it is projected that the existing two bridges and the Third Bridge alone will not be sufficient to meet the growing demand for river-crossing traffic (Master Plan Study and Institutional Development on Urban Transport System in Metro Cebu (2017-2019); hereinafter referred to as the "M/P Study").

In the Philippine Development Plan (2017-2022), the Government of the Philippines ranks the enhancement of infrastructure in urban and rural areas as one of the top priorities in order to maintain its economic growth curve and improve the quality of life, and focuses on the development of Metro Cebu, which is the second largest metropolitan area after Metro Manila. In the Mega Cebu Vision 2050, which was formulated with the cooperation of Yokohama City in 2013, Metro Cebu ranks the improvement of mobility by developing its traffic networks as one of the key strategies and promotes the enhancement of connectivity between Mactan Island and Cebu Island as a measure to enhance its gateway function. The Roadmap Study and M/P study based on the Vision, also ranks the development of a new bridge connecting Mandaue City, Cebu Island with Lapu-Lapu City, Mactan Island and of coastal roads connecting with the bridge as a priority project. The Cebu-Mactan Bridge (4th Bridge) and Coastal Road Construction Project (hereinafter referred to as the “Project”) corresponds to this.

(2) Japan and JICA’s Cooperation Policy and Operations in the Transportation Sector of Metro Cebu

Japan’s Country Assistance Policy for the Republic of the Philippines (April 2018) sets “infrastructure development for sustainable economic growth” as a priority area and specifically plans to provide support for the development of quality infrastructure, including traffic networks focusing on metropolitan areas and provincial cities. The JICA Country Analysis Paper for the Philippines (November 2014) also concludes as follows: It is urgently necessary to “enhance transportation and traffic infrastructure in order to strengthen international competitiveness and promote economic growth.” The Project is consistent with these policies and analyses. In addition, the Project contributes to the enhancement of traffic networks in Metro Cebu through developing quality infrastructure, such as a bridge and an elevated road, and probably also contributes to SDGs Goal 9 (Build resilient infrastructure) and Goal 11 (Make cities and human settlements inclusive, safe, resilient, and sustainable).

Japan has continuously provided support for the development of traffic networks in Metro Cebu through the Metro Cebu Development Project (I), (II) and (III) (L/A Signing: 1988, 1989 and 1991), the Second Mactan Bridge Construction Project (L/A Signing: 1993), the Second Mandaue-Mactan Bridge (II) and Metro Cebu Road Project (L/A Signing: 1997), and others as Japanese ODA loan projects for the transportation sector in the metropolitan area. Japan has also provided technical cooperation through project on the Improvement of Quality Management for Highway and Bridge Construction and Maintenance Phase 3 (2016-2019).

(3) Other Donors’ Activities

The World Bank has provided support for the development of a rapid bus transit system connecting Cebu City with its surrounding areas and for the improvement of intersections

through the Cebu Bus Rapid Transit (BRT) Project (USD 228.50 million), which is ranked as a priority project in the Roadmap Study, since 2014. A synergistic effect of this and the Project is expected from the perspective of enhancement of traffic networks.

3. Project Description

(1) Project Objective(s)

The objective of the Project is to respond to increasing traffic demand in Metro Cebu by constructing a long-span road bridge between Cebu and Mactan Island and connecting coastal road, thereby contributing to socio-economic development through mitigating the traffic congestion.

(2) Project Site/Target Area

Cebu Metro, Province of Cebu (population: about 2.85 million)

(3) Project Component(s)

- 1) Construction of the new Cebu-Mactan Bridge (about 3.3 km, two lanes in each direction)
- 2) Construction of coastal roads (elevated) (about 4.9 km in total length, two or three lanes in each direction)
- 3) Consulting services (bidding assistance, construction supervision and others)

(4) Estimated Project Cost (Loan Amount): 169,789 million Yen (Loan Amount: 119,225 million Yen)

(5) Schedule

March 2020 - April 2029 (110 months in total). The Project will be completed upon the commencement of facility operations (January 2028).

(6) Project Implementation Structure

- 1) Borrower: Government of the Republic of the Philippines
- 2) Executing Agency: Department of Public Works and Highways (DPWH)
- 3) Operation and Maintenance Organization: DPWH Regional Office VII has assumed the operation and maintenance of the existing First Mactan Bridge and Second Mactan Bridge, which connect Cebu Island with Mactan Island. The same office conducts operation and maintenance in the Project as well.

(6) Cooperation and Sharing of Roles with Other Donors

- 1) Japan's assistance activities: Among bridges existing in the Project's target area, the Second Mactan Bridge has been developed through the Second Mactan Bridge Construction Project (L/A Signing: 1993), a Japanese ODA project. In addition, the detailed design of the Project is planned to be performed through technical assistance related to ODA loan.
- 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: A
- ② Reason for Categorization: The Project falls into a project which is likely to have significant adverse impacts due to its characteristics under the JICA Guidelines for Environmental and Social Considerations (published in April 2010).
- ③ Environmental Permit: As for the environmental impact assessment (EIA) report on the Project, we obtained an Environmental Compliance Certificate (ECC) from the Department of Environment and Natural Resources (DENR) in September 2019.
- ④ Anti-Pollution Measures: During construction, mitigation measures against impacts on air quality and water quality, such as water sprinkling, periodic maintenance of equipment and installation of a sump pit or settling basin, will be implemented. The impacts of noise and vibration will be mitigated by, for example, prohibiting nighttime construction and installing soundproof walls in some sections of coastal roads. As for soil pollution, we will conduct soil sampling in the part of the target area which was used as a dumping site, while working on the detailed design. If any pollution is detected, cleanup operations will be performed before starting construction work. As for waste, we will prepare a waste management plan (WMP) based on the detailed design and dispose of waste in an appropriate disposal site according to the plan.
- ⑤ Natural Environment: The Project's target area does not correspond to a vulnerable area, such as a national park or its surrounding area. Although a region including the Project's target area is an important stopping point for migratory birds and is designated as an Important Bird Area and a Key Biodiversity Area, the results of a field survey and interviews with specialists on birds suggest that no endangered species have been observed in and around the target area which is being developed. Accordingly, the target area is not an important natural habitat. In order to minimize the impact on ecosystems, including incoming birds and mangrove forests, we plan to take mitigation measures, such as installing and using a temporary pier during construction work, and conducting enlightenment activities for construction workers. Although some trees, including mangroves and endangered species, will be cut down, the impact will be minimized by taking measures such as fencing in construction sites. If tree felling is unavoidable, transplantation or compensation planting will be provided.
- ⑥ Social Environment: The Project requires the site acquisition of about 55 ha and the involuntary resettlement of 69 households (243 people). In the Project, procedures for the site acquisition and resettlement will be proceeded in accordance with the domestic laws of the Philippines and a resettlement plan prepared according to JICA Guidelines. In this regard, no opinions opposing the implementation of the Project have been raised by residents in discussions relating to the Project.

⑦ Other/Monitoring: During construction, the DPWH and contractors will monitor air quality, noise, vibration, water quality, soil, birds and others. The DPWH will also monitor the progress of procedures for site acquisition, resettlement and livelihood recovery support in the Project.

1) Cross-Cutting Issues:

Because it is presumed that workers other than local residents (migrant workers) will flow in from outside the area, there is a possibility that infectious diseases (including HIV/AIDS) will occur in the project site during the construction period. In order to prevent this, AIDS provisions will be included in bidding documents, and contractors will take AIDS infection control measures for their construction workers.

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

<Reason for Categorization> Although gender mainstreaming needs were examined and confirmed in the Project, this did not result in the implementation of specific activities that contribute to gender equality and women's empowerment.

(9) Other Important Issues

- ① A long-span steel box girder bridge will be applied owing to the height limit (45 m) from the Mactan-Cebu International Airport, which is adjacent to the Project's target area, and the width restriction (185 m) imposed for vessels passing through the Mactan Strait. In addition, we plan to leverage Japanese technology, such as the large block erection method, SBHS (Steel for Bridge High Performance Structure) and composite floor slabs.
- ② The Third Bridge under construction will mainly satisfy the traffic demand between the central part of Cebu Island and the west of Mactan Island, and the new Cebu-Mactan Bridge to be developed in the Project will mainly satisfy the traffic demand between the central part of Cebu Island and the east of Mactan Island. The bridges are therefore expected to effectively divide traffic demand.

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect Indicators)

Indicator	Target Section	Baseline (Estimates in 2019 (Note 1))	Target (in 2029 (Note 2))
Average daily traffic (PCU per day)	First Mactan Bridge, Second Mactan Bridge and New Cebu-Mactan Bridge (total value)	123,520	230,049
	New Cebu-Mactan Bridge	—	84,250
	Coastal roads	—	47,966
Time required (minutes) (peak hours)	Between Mactan-Cebu International Airport and Cebu International Port (about 15 km)	106	92 (Note 3)

(Note 1) Estimates based on actual values in the M/P Study

(Note 2) Two years after the project completion (The Project is scheduled for completion in January 2028, and actual values as of the end of 2029, two years after the project completion, are the target values to be evaluated.)

(Note 3) Without implementing the Project, the estimated time required (in 2029) would be 112 minutes.

(2) Qualitative Effects: Enhancement of connectivity of urban traffic in Metro Cebu, alleviation of traffic congestion in urban areas and stimulation of social and economic activities

(3) Internal Rate of Return

According to the following preconditions, the Project's Economic Internal Rate of Return will be 11.0%. In this regard, no Financial Internal Rate of Return (FIRR) is calculated because all road sections to be developed in the Project are supposed to be toll-free.

[EIRR]

Cost: Project costs and operation/maintenance costs (both excluding tax)

Benefit: Vehicle Operating Costs (VOC), Travel Time Costs (TTC) and others

Project life: 50 years

5. Preconditions/External Conditions

None in particular.

6. Lessons Learned from Past Projects

From the ex-post evaluation of the Second Mandaue-Mactan Bridge (II) and Metro Cebu Road Project (evaluated in 2013), we learned the lesson that from the planning stage, consideration needs to be fully given to balance of traffic capacity at the bridge section and of connecting/crossing roads (e.g. planning of a grade separation at the intersection where a

connecting road and a crossing road intersect), and to road networks concerned.

We also have taken full account of the traffic capacity of such connecting/crossing roads in the Project. For example, because a connecting road is supposed to intersect existing ones, their grade separation was partially adopted in the preparatory survey. That traffic capacity will be examined in the detailed design as well.

7. Evaluation Results

The Project is consistent with the development policies of the Philippines, and with the cooperation policies and analyses of Japan and JICA. It contributes to the enhancement of traffic networks in Metro Cebu through developing quality infrastructure, such as a bridge and an elevated road, and probably also contributes to SDGs Goal 9 (Build resilient infrastructure) and Goal 11 (Make cities inclusive, safe, resilient, and sustainable). Thus, the necessity to support implementation of 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) (The Project is scheduled for completion in January 2028, and actual values as of the end of 2029, two years after project completion, are the target values to be evaluated.)

End