

**Ex-Post Project Evaluation 2020:
PackageIII-1 (Philippines, Sri Lanka)**

February 2022

JAPAN INTERNATIONAL COOPERATION AGENCY

VALUE FRONTIER CO., LTD

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Republic of the Philippines

FY2020 Ex-Post Evaluation Report of Japanese Grant Aid Project
“The Project for Enhancement of Coastal Communications Systems”

External Evaluator: Koichiro Ishimori, Value Frontier Co., Ltd

0. Summary

The project was intended to enhance the capability of the Philippine Coast Guard (PCG) for responding to maritime safety and security by developing a satellite communication system between its new districts/major vessels and HQs, as well as a vessel traffic management system in the sea around the Port of Cebu, thereby contributing to assuring maritime safety and security in the coastal areas of the Philippines. The implementation of the project has been highly relevant to the Philippines’ development plan and development needs, as well as Japan’s ODA policy. Therefore, its relevance is high. Although the project cost was within the plan, the project period was significantly longer than planned. Therefore, efficiency of the project is fair. As a result of the project, the PCG’s capabilities for responding to maritime safety and security in maritime search and rescue (MARSAR), maritime law enforcement (MARLEN), and maritime environmental protection (MAREP) have been enhanced, while synergies with other JICA projects have also been observed. In addition, the project contributes to the “Free and Open Indo-Pacific (FOIP),” the diplomatic and national security policy of Japan. Therefore, effectiveness and impacts of the project are high. However, there are partial problems with the current status of operation and maintenance. Therefore, sustainability of the project effects is fair.

In light of the above, this project is evaluated to be satisfactory.

1. Project Description



Project Locations



Portable VSAT for emergency use

1.1 Background

The PCG is an external bureau of the Department of Transportation responsible for maritime

safety and security in the coastal areas of the Philippines,¹ e.g., MARSAR, MARLEN, and MAREP. However, the infrastructure and human resources at the PCG’s disposal are far from sufficient to assure maritime safety and security of the island country with over 7,000 islands and a coastline of over 3,500 km. Thus, JICA has been implementing numerous cooperation of ODA loan projects, grant aid projects, and technical cooperation projects.

1.2 Project Outline

The objective of this project was to enhance the PCG’s capability for responding to maritime safety and security by developing a satellite communication system between its new districts (Coast Guard District Northeastern Luzon [CGDNEL] and Coast Guard District Eastern Visayas [CGDEV])/major vessels and HQs, as well as a vessel traffic management system in the sea around the Port of Cebu, thereby contributing to assuring maritime safety and security in the coastal areas of the Philippines.

<Grant Aid Project>

Grant Limit / Actual Grant Amount		1,152 million yen / 1,114 million yen
Exchange of Notes Date/ Grant Agreement Date		March 2014 / April 2014
Executing Agency		Philippine Coast Guard (PCG)
Project Completion		November 2017
Target Areas		Manila (HQs), Tuguegarao (CGDNEL), Tacloban (CGDEV), Cebu
Main Contractors	Construction	Consortium of Toyota Tsusho Corporation and Toyo Construction Co., Ltd
	Equipment	Japan Radio Co., Ltd
Main Consultant		Oriental Consultants Global Co., Ltd
Preparatory Survey		June 2013 – March 2014
Related Projects		[Grant Aid Project] “Project for Enhancement of Communications System for Maritime Safety and Security” (2007-2009) [ODA Loan Projects] “Coastal Communication System Project (I)” (1989-1996) “Maritime Safety Improvement Project (I)” (1991-1996) “Maritime Safety Improvement Project (II)” (1995-2001) “Maritime Safety Capability Improvement Project for the Philippine Coast Guard (I)” (2013-2018) “Maritime Safety Capability Improvement Project for the Philippine Coast Guard (II)” (2016-Present)

¹ It was the responsibility of the Department of Transportation until the PCG was established in 2009 by *the Republic Act No. 9993*.

	[Technical Cooperation Projects] “Philippine Coast Guard Human Resource Development” (2002-2007) “Philippine Coast Guard Education and Human Resource Management System Development Project” (2008-2013) “Enhancement of Practical Capability for Maritime Law Enforcement Project” (2013-2016) “Project for Comprehensive Practical Capability Improvement for Maritime Law Enforcement” (2016-2019) “Project for Enhancement of Vessel Operation and Maintenance Planning Capability for Philippine Coast Guard” (2019-Present) “Coast Guard Administration (experts)” (2003-2006, 2006-2009, and 2009-2013) “Maritime Safety and Security Policy Program” (2015-Present)
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2. Outline of the Evaluation Study

2.1 External Evaluator

Koichiro Ishimori, Value Frontier Co., Ltd

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: November 2020 – January 2022

Duration of the Field Study: N/A

2.3 Constraints during the Evaluation Study

Due to the COVID-19 pandemic, the external evaluator could not visit the Philippines, thus all the study was conducted remotely with the help of a local assistant in the country. Consequently, a detailed analysis of the project’s impact on the diplomatic and national security policy of Japan in the section of “Other Positive and Negative Impacts” could not be made. In addition, the current status of operation and maintenance of the procured equipment could only be checked through questionnaires and online meetings.

3. Results of the Evaluation (Overall Rating: B²)

3.1 Relevance (Rating: ③³)

3.1.1 Consistency with the Development Plan of the Philippines

“Philippine Development Plan 2011–2016” (2011), the national development plan at the time of ex-ante evaluation, stated “safer and more secured environment created and sustained” in one of its priority areas, “accelerating infrastructure development.” As a means to achieve this goal, the plan mentioned “implementation of safety measures, “including “upgrading equipment and capacity building of the PCG personnel for assuring maritime safety and security.” In addition, the “PCG 15 Year Development Plan 2000-2015” (2000), the sector plan, raised “expansion of communication network that was necessary for maintaining safety and security and crackdown

² A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

³ ③: High, ②: Fair, ①: Low

on crimes at sea” as one of its priority measures and intended “development of a communication system.”

“*Philippine Development Plan 2017–2022*” (2017), the national development plan at the time of ex-post evaluation, states “strategic infrastructure development” in one of its priority areas, “accelerating infrastructure development.” As a means to achieve this, it mentions “the adoption of a security structure to eliminate threats to lives and properties of the people” and intends to “gain control over the coastal areas of the Philippines by the PCG.” In addition, the “*PCG Strategic Development Plan 2020–2028*” (2020), the sector plan, states “development of a coastal communication system, such as a satellite communication system and a vessel traffic management system” as one of its priority measures and intends to “enhance the capability for responding to maritime safety and security in an effective and rapid manner.”

Since the project was intended to develop a satellite communication system and a vessel traffic management system to enhance the PCG’s capabilities for responding to maritime safety and security, it is judged that the project was and is consistent with the development plans of the Philippines at the time of ex-ante and ex-post evaluations.

3.1.2 Consistency with the Development Needs of the Philippines

Since the Philippines is an island country consisting of over 7,000 islands, vessels were widely used for transporting people and goods between islands at the time of ex-ante evaluation. Meanwhile, the risk of accidents, crimes, navigational safety, and environmental pollution at sea was increasing because the number of vessels overloaded with people and goods and deteriorated vessels were increasing to meet the increased demand for transportation caused by socio-economic development.

At the time of ex-post evaluation, the number of passengers traveling islands by vessel increased from 53,316,054 in 2013 to 76,798,175 in 2018, and the volume of goods transported increased from 77,951,768 tons in 2013 to 105,390,180 tons in 2018.⁴ Therefore, the importance of preventing accidents, cracking down on crimes, navigational safety, and conserving the marine environment is also increasing.

Since the project was intended to decrease the aforementioned risk by developing a satellite communication system and a vessel traffic management system, it is judged that the project was and is consistent with the development needs of the Philippines at the time of ex-ante and ex-post evaluations.

3.1.3 Consistency with Japan’s ODA Policy

The “*Japan’s ODA Charter*” (2013) at the time of ex-ante evaluation stated “good governance through infrastructure development” as the precondition for realizing sound economic growth

⁴ 2018 Annual Statistical Report, Philippine Statistics Authority

and highlighted “support for infrastructure development.” The “*Japan’s Medium-Term Policy on Official Development Assistance*” (2005) stated “sustainable growth” as its priority area and highlighted “support for transport infrastructure including ports” by articulating “the essential importance of infrastructure for promoting activities by private sectors” in the section of “approaches for sustainable growth and concrete measures.” Furthermore, the “*Country Assistance Policy for the Philippines*” (2012) stated “sustainable economic growth through promotion of investments” and articulated “support for building the capability of assuring maritime safety and security.”

Since the PCG was the maritime law enforcement organization in the Philippines and the project was intended to enhance its capability for responding to maritime safety and security, it is judged that the project was consistent with Japan’s ODA policy.

In sum, this project has been highly relevant to the Philippines’ development plan and development needs, as well as Japan’s ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

Table 1 below summarizes the planned and actual major outputs of the project.

Table 1: Planned and Actual Major Outputs of the Project

Outputs	Plan	Actual
Satellite Communication System		
Portable VSAT ⁵ for emergency use	5 units	Same as planned
Inmarsat ⁶ for major vessels	19 units	Same as planned
Vessel Traffic Management System		
Cebu VTMS ⁷ Control Center	1 location	Same as planned
Radar stations	3 locations	Same as planned
Radar system	3 locations	Same as planned
CCTV ⁸ camera system	4 units	Same as planned

Source: Materials provided by JICA and PCG

3.2.2 Project Inputs

3.2.2.1 Project Cost

The planned Japanese cost was 1,152 million yen, whereas the planned Philippine cost was 52.3 million pesos. The actual Japanese cost was 1,114 million yen, whereas the actual Philippine cost was unknown because of a lack of records. Therefore, it is not possible to compare total costs. When comparing the Japanese costs, the actual cost was 97% of the

⁵ VSAT stands for Very Small Aperture Terminal. It is the system of bidirectionally transmitting voices and data at the regional level via a stationary satellite that uses Ku-band frequency.

⁶ Inmarsat is the system of bidirectionally transmitting voices and data at the global level via a stationary satellite that uses L-band frequency.

⁷ VTMS stands for Vessel Traffic Management System. It is the system to trace and monitor movement of navigating vessels on a real time basis.

⁸ CCTV stands for Closed-Circuit Television.

planned cost, and thus lower than it had been planned. Details are as follows.

Table 2: Planned and Actual Costs of the Project

	Plan	Actual
Japanese costs	1,152 million yen	1,114 million yen
	Construction work: 237 million yen	Construction work: 464 million yen ⁹
	Equipment procurement: 796 million yen Design and supervision: 119 million yen	Equipment procurement: 523 million yen ¹⁰ Design and supervision: 127 million yen ¹¹
Philippine costs	52.3 million pesos (\approx 130 million yen ¹²)	Unknown
	-Bank charge: 0.5 million pesos	-Bank charge: unknown
	-Charge for connecting utilities: 0.4 million pesos -VAT and import taxes: 51.4 million pesos	-Charge for connecting utilities: unknown -VAT and import taxes: unknown

Source: Materials provided by JICA and PCG

3.2.2.2 Project Period

The planned project period was 26 months from April 2014 (G/A agreement) to May 2016, whereas the actual period was 44 months from April 2014 (G/A agreement) to November 2017, thus becoming 169% of the planned period, which was significantly longer than it had been planned. These eighteen months of the delay were because of the following four reasons:

- 1) The negotiation over the contract for consultants took place over the long holidays, resulting in a delay of half a month.
- 2) The detailed design took five months longer to develop than estimated. Although the planned period for making and approving tender documents was estimated to be a month and a half, it took five months because it had taken time to receive the approval, resulting in a delay of three months and a half. In addition, the bidding period was extended from a month and a half to three months, resulting in a delay of a month and a half. This was because the bidding condition required formulating a consortium of a trading company and a general contractor, however, it was difficult to find general contractors who could cooperate for the project during the high demand caused by the Tokyo Olympic Games.
- 3) It took time to coordinate the land lease agreement with the government agencies (Cebu Port Authority (CPA), Department of Public Works and Highways, and Philippine Economic Zone Authority) that own the land where the Cebu VTMS Control Center (CVCC) (one location) and radar stations (three locations) will be constructed, and agreements were not

⁹ The increase of 227 million yen was because of the following three reasons. 1) The December 2014 typhoon washed away a part of the construction site of Inter-Bridge Radar Station that was one of the radar stations and necessitated revetment work at the construction site. 2) Waste sediments were found after the trial digging at the construction site of Inter-Bridge Radar Station. Since it was judged that the ground was weak for a building foundation, construction work for ground stabilization was implemented. 3) Emergency stairs, not emergency ladders that had been planned, were installed at the control center, as instructed by the Cebu Fire Department.

¹⁰ The decrease of 273 million yen was due to competition in bidding.

¹¹ The increase of 8 million yen was due to 1) and 2) mentioned in footnote 9.

¹² Calculated using the exchange rate at the time of making the preparatory survey report.

reached by the start of the construction. Consequently, obtaining a construction permit that was supposed to have been obtained by the start of the construction was delayed by 12 months.

- 4) Additional revetment work was undertaken, resulting in a delay of half a month in construction.

In sum, although the project cost was lower than planned, the project period significantly exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness and Impacts¹³ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

Table 3: Quantitative Effects

	Baseline	Target	Actual Figures			
	2013	2020	2017	2018	2019	2020
	-	3 years after completion	Completion year	1 year after completion	2 years after completion	3 years after completion
1) Number of PCG Coast Guard Districts where VSAT is introduced	10	12	12	12	12	12
2) Number of PCG vessels where Inmarsat is introduced	0	19	19	19	19	19
3) Coverage areas by VTMS in the sea around the Port of Cebu (%)	0	100	100	100	100	100
4) Coverage rate of vessels navigating in the Mactan Channel (%)	0	-	100	100	100	100

Source: Materials provided by JICA and PCG

- 1) The number of PCG Coast Guard Districts where VSAT is introduced

VSAT has been introduced into CGDNEL and CGDEV as planned.

- 2) The number of PCG vessels where Inmarsat is introduced

Inmarsat has been introduced into 19 vessels as planned.

- 3) The coverage areas by VTMS in the sea around the Port of Cebu

VTMS that has been introduced into CVCC provides 100% coverage of approximately 10 nautical miles (18.52 km) of the sea from the Port of Cebu as planned.

- 4) The coverage rate of vessels navigating in the Mactan Channel

VTMS that has been introduced into CVCC monitors all vessels coming in and out of the Mactan Channel.

¹³ Sub-rating for Effectiveness is to be put with consideration of Impacts.

3.3.2 Impacts

3.3.2.1 Intended Impacts (Quantitative impacts)

Table 4: Quantitative Impacts

	Baseline	Actual Figures			
	2013	2017	2018	2019	2020
	-	Completion year	1 year after completion	2 years after completion	3 years after completion
1) Rate of MARSAR missions dispatched to coastal areas of the Philippine Sea ¹⁴ (%)	NA	NA	100	100	100
2) Rate of MARLEN missions dispatched to the coastal areas of the Philippine Sea (%)	NA	NA	100	100	100
3) Rate of MAREP missions dispatched to the coastal areas of the Philippine Sea (%)	NA	NA	0	100	0
4) Number of collisions between vessels in the Mactan Channel (case)	1	0	3	0	0

Source: Materials provided by JICA and PCG

1) – 3) The rate of MARSAR, MARLEN, and MAREP missions dispatched to the coastal areas of the Philippine Sea (%)

There is no record available in 2017 since the project was completed in November 2017. However, the rate of dispatch in each mission after 2018 was 100%, with the exception of 0% for MAREP missions in 2018 and 2020, because there was no such incident. The 44-meter multi-role response vessels that were procured by the ODA loan project, “Maritime Safety Capability Improvement Project for the Philippine Coast Guard (I)” (2013–2018), which was implemented to supplement the shortage of the PCG vessels during the same period as this project, also contributed to these actual figures.

4) The number of collisions between vessels in the Mactan Channel (case)

Three collisions happened in 2018 because navigating vessels did not keep the Automatic Identification System (AIS) switched on and did not pay due attention, both of which were factors unrelated to the effectiveness of VTMS. Since there was no collision in other years, it is judged that the impact of the project is realized.

¹⁴ Since VSATs that were introduced into CGDNEL and CGDEV contribute to the PCG’s capabilities for responding to maritime safety and security particularly in the coastal areas of the Philippine Sea, the area was set to the Philippine Sea.

(Qualitative impacts)

1) A system of command is secured between the PCG's major vessels and HQs/Coast Guard Districts through satellite communication system

As a result of introducing Inmarsat into 19 PCG vessels by the project, they can communicate with HQs and Coast Guard Districts (CGDs) through HQs even in environments without telephone and radio connectivity. Thus, a system of command is secured between the PCG's major vessels and HQs/CGDs through a satellite communication system.

2) Safety of vessels navigating in the sea around the Port of Cebu is improved

As a result of installing three radar stations around the Port of Cebu by the project, the CVCC can catch and monitor the location information on vessels navigating in the sea around the Port of Cebu. In addition, VTMS can easily identify vessels that are anchoring without permission and have exceeded their anchoring period at the Port of Cebu and crack down on them. Thus, the safety of vessels navigating in the sea around the Port of Cebu and in the Port is improved.

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Natural Environment

The environmental category of the project was C, and the project had no impact on the natural environment.

2) Resettlement and Land Acquisition

Since all the construction sites were in the territory owned by either PCG or government agencies, no resettlement or land acquisition was required.

3) Unintended Positive/Negative Impacts

The Ministry of Foreign Affairs of Japan promulgates "FOIP" as its diplomatic and national security policy and promotes "a free and open Indo-Pacific region as international public goods through ensuring the rule-based international order, freedom of navigation, peaceful resolution of conflicts, and promotion of free trade." The Ministry raises three pillars to realize this: (1) promotion and establishment of the rule of law, freedom of navigation, free trade, etc.; (2) pursuit of economic prosperity (improving connectivity and strengthening economic partnerships, including economic partnership agreements, free trade agreements, and investment treaties); and (3) Commitment to peace and stability (capacity building on maritime law enforcement, humanitarian assistance/disaster relief cooperation, etc.).

The PCG conducts activities that contribute to ensuring freedom of navigation, peace, and stability in areas such as the South China Sea, where there are ongoing territorial disputes.

Since this fits with the tenets of FOIP, the project also contributes to Japan's diplomatic and national security policy.

The targets of operation and effect indicators 1) to 3) in quantitative effects of effectiveness have all been achieved, and the actual figures of operation and effect indicator 4) have reached 100%. Therefore, project's effectiveness is high. Regarding indicators 1) to 3) concerning the rate of dispatched missions in the quantitative effects of impacts, impacts were realized through synergies with the ODA loan project implemented during the same period as this project. Regarding indicator 4) on the number of collisions between vessels in the Mactan Channel, zero cases were maintained with the exception of 2018. As for qualitative indicators, a system of command is secured between the PCG's major vessels and HQs/CGDs through a satellite communication system, and the safety of vessels navigating in the sea around the Port of Cebu is also improved. Furthermore, the project also contributes to Japan's diplomatic and national security policy.

In sum, this project has achieved its objectives. Therefore, effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional Aspect of Operation and Maintenance

The PCG's activities are stipulated by the *Republic Act No. 9993* (2009). The CVCC also carries out activities based on this Act. For instance, the PCG staff conduct pre-departure inspection (PDI) for all commercial vessels leaving the Port of Cebu to check if they are not overloaded with people and goods and are well maintained. They also provide guidance for vessels arriving at the port for a safe navigation route to the berth where they anchor.

3.4.2 Organizational Aspect of Operation and Maintenance

3.4.2.1 Satellite communication system

The satellite communication system is operated and maintained by the Coast Guard Weapons Communications, Electronics, and Information System Services (CGWCEISS). A total of 422 personnel work at CGWCEISS at the time of ex-post evaluation, which is 2.5 times of the number of personnel at the time of ex-ante evaluation. The number of communication engineers, who are full-time personnel with the national certification for Electronic and Communication Engineers, has also increased to 10, which is 2.5 times the number of engineers at the time of ex-ante evaluation. VSATs that were introduced into CGDNEL and CGDEV by the project are operated and maintained by the CGWCEISS personnel deployed to them.

3.4.2.2 Vessel traffic management system

VTMS that was introduced into the CVCC is operated and maintained around the clock by eight PCG personnel deployed to the Coast Guard District Central Visayas (CGDCV) in four shifts. Additionally, seven CPA personnel perform administrative work for vessels coming in and out of the port for eight hours during the daytime. The VTMS is maintained by five CGWCEISS personnel deployed to the CGDCV. Any problems that arise with the VTMS will be fixed by its maker, Japan Radio Co., Ltd.

3.4.3 Technical Aspect of Operation and Maintenance

3.4.3.1 Satellite communication system

As for the portable VSATs for emergency use, the training for maintenance was provided for 15 communication engineers at CGWCEISS from October 27, 2016, to October 28, 2016, during the project period. As for the Inmarsat, the training for operation was provided for communication personnel and 204 crew members of 19 ships with Inmarsat from April 15, 2016, to June 6, 2016, while the training for maintenance was provided for eight communication engineers at CGWCEISS on April 14, 2016.

After the completion of the project, the communication engineers at CGWCEISS conduct training for operation and maintenance of the portable VSATs for emergency use and the Inmarsat, using manuals such as the “*Simple Instruction Manual for VSAT Communication System*” and “*INMARSAT Quick Reference Guide*,” as necessary. Therefore, the skills are embedded in the PCG.

3.4.3.2 Vessel traffic management system

As for the VTMS, the training for operation was provided for 30 operators at CVCC from October 9, 2017, to November 10, 2017, during the project period, while the training for maintenance was provided for nine communication engineers at CGWCEISS from October 9, 2017, to November 16, 2017.

After the completion of the project, CGWCEISS conducts training for operation and maintenance of the VTMS by using manuals such as “VTMS Training Manual,” as necessary. Therefore, the skills are embedded in the PCG.

3.4.4 Financial Aspect of Operation and Maintenance

3.4.4.1 Satellite communication system

It was estimated that the communication charge for the Inmarsat would cost 2 million pesos annually (approximately 5 million yen), and the maintenance charge for the portable VSATs for emergency use and the Inmarsat would cost 1.5 million pesos annually (approximately 3.75 million yen), so the annual total cost was estimated to be 3.5 million pesos (approximately 8.75 million yen). This cost is to be borne by the PCG. It is only about 1.8% of the annual average

budget for the past three years for operation and maintenance at the section of Coast Guard 11 (CG11), which oversees the administration of the satellite communication system. According to CG11, it has been able to secure the budget without any problem.

Table 5: Budget for Operation and Maintenance at PCG (CG11)

(Unit: 1,000 pesos)

	2018	2019	2020
Budget for O&M	123,269	223,850	235,000

Source: PCG

3.4.4.2 Vessel traffic management system

It was estimated that the service contract with the maker for operation and maintenance of the VTMS would cost 3.5 million pesos annually (approximately 8.75 million yen), while the repair and spare parts would cost 4.7 million pesos annually (approximately 11.75 million yen). The PCG and the CPA were supposed to share these costs based on their agreement. The CPA had planned to collect VTMS fees from vessels to contribute as its share, however, this has not been realized at the time of ex-post evaluation. Consequently, the PCG (CG11) covers all costs on account of the importance of navigational safety in the sea around the Port of Cebu. The total amount of 8.2 million pesos (approximately 20.50 million yen) is only about 4.2% of the annual average budget for the past three years for operation and maintenance at the CG11 section. According to CG11, it has been able to secure the budget without any problem.

3.4.5 Status of Operation and Maintenance

The table below summarizes the current status of operation and maintenance of the portable VSATs for emergency use, the Inmarsat, and the VTMS. As for the portable VSATs for emergency use, the PCG has not renewed a service contract with a provider. Consequently, it is in a situation where VSATs cannot be used on an occasion of an emergency requiring their use, which results in a problem with emergency communications. Similarly, it has not renewed a service contract of the VTMS with a provider. Consequently, it is in a situation where the built-in radio communication device is out of order, which results in a problem with communications with navigating vessels. These problems negatively influence the project's effectiveness, the PCG's capabilities for responding to maritime safety and security.

Table 7: Current Status of Operation and Maintenance

Equipment	Operation Status	Maintenance Status
Portable VSATs for emergency use	Since August 2019, PCG has not renewed a service contract with a provider because it has not partially performed the contract. Therefore, PCG cannot use VSATs now.	No problem
Inmarsat	No problem	
VTMS	No problem	Since December 2020, PCG has not renewed a service contract with a provider. Therefore, the built-in radio communication device is out of order now.

Source: PCG

The *Republic Act No. 9993* (2009) is the law effective in providing the basis for the PCG's activities, and there is no problem with the institutional aspects of operation and maintenance. The satellite communication system and the vessel traffic management system are well operated and maintained. In addition, skills for operation and maintenance are also embedded in the PCG through training using manuals. Therefore, there is no problem with the organizational and technical aspects of operation and maintenance. Likewise, there is no problem with the financial aspects because PCG secures the budget for operation and maintenance. However, since August 2019, the PCG has not renewed a service contract with a provider. Consequently, it is in a situation where VSATs cannot be used on an occasion of an emergency requiring their use, resulting in a problem with emergency communications. Similarly, it has not renewed a service contract of the VTMS with a provider. Consequently, it is in a situation where the built-in radio communication device is out of order, which results in a problem with communications with navigating vessels.

In sum, some minor problems have been observed in terms of the current status. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project was intended to enhance the PCG's capabilities for responding to maritime safety and security by developing a satellite communication system between its new districts/major vessels and HQs, as well as a vessel traffic management system in the sea around the Port of Cebu, thereby contributing to assuring maritime safety and security in the coastal areas of the Philippines. The implementation of the project has been highly relevant to the Philippines' development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high. Although the project cost was within the plan, the project period was significantly longer than planned.

Therefore, efficiency of the project is fair. As a result of the project, the PCG's capabilities for responding to MARSAR, MARLEN, and MAREP have been enhanced, while synergies with other JICA projects have also been observed. In addition, the project contributes to the "FOIP," the diplomatic and national security policy of Japan. Therefore, effectiveness and impacts of the project are high. However, there are partial problems with the current status of operation and maintenance. Therefore, sustainability of the project effects is fair.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Since August 2019, the PCG has not renewed a service contract with a provider. Consequently, it is in a situation where VSATs cannot be used on an occasion of emergency requiring their use, which results in a problem with emergency communications. Therefore, it is expected that the PCG should renew it at the earliest possible time.

Similarly, since December 2020, it has not renewed a service contract of the VTMS with a provider. Consequently, it is in a situation where the built-in radio communication device is out of order, which results in a problem with communications with navigating vessels. Therefore, it is expected that the PCG should renew the contract and fix it at the earliest possible time.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Making a plan to secure construction sites and following up on its progress

The PCG was supposed to have made land lease agreements with the landowners of the construction sites by the start of the construction, but it could not do so. Consequently, the start of the construction was delayed by 12 months. Securing construction sites is, in principle, the responsibility of the recipient government. However, this can have a significant effect on the entire project. Therefore, in a case where the landowner of a construction site is different from the executing agency, it is important for JICA to demand that the executing agency make a plan to secure the construction site from the stage of the preparatory study and then proactively follow up on the progress of the plan with the executing agency.

Republic of the Philippines

FY2020 Ex-Post Evaluation of Technical Cooperation for Development Planning

“The Project on Rehabilitation and Recovery from Typhoon Yolanda”

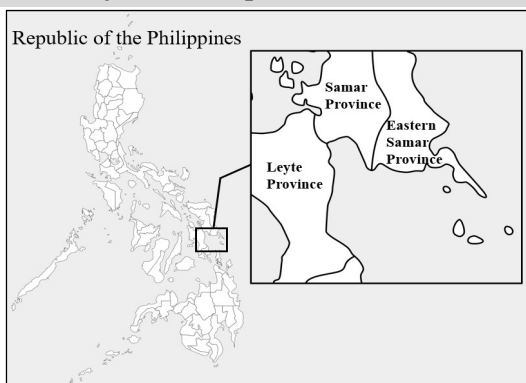
External Evaluator: Akiko Shimizu, Value Frontier Co., Ltd.

0. Summary

This project was implemented in the target areas in the provinces of Leyte, Samar, and Eastern Samar affected by Typhoon Yolanda, with the purpose of advancing recovery and reconstruction by (i) promoting the development of disaster recovery and reconstruction plans, (ii) formulating recovery and reconstruction projects, and (iii) implementing Quick Impact Projects (QIPs), thereby contributing to the reconstruction in the target areas. The objective of the project was highly consistent with the policies of the government of the Philippines and the needs of the affected areas, as well as with Japan’s policies of Official Development Assistance (ODA). Therefore, the relevance of the project is high. With regard to effectiveness, the administrative capacity of the officials in local government units (LGUs) was strengthened through the assistance in revising the Comprehensive Land Use Plans (CLUPs), which serve as the basis for reconstruction planning and urban development, and in developing evacuation plans, and through the activities of QIPs. In addition, through the implementation of QIPs, the rebuilding of disaster-resilient facilities and means of livelihood were confirmed. Regarding its impacts, the continuous use of skills and knowledge gained from the CLUP revision work and the use of disaster evacuation plans were confirmed in three LGUs (Tacloban City, Palo, and Tanauan Municipalities), where the project prioritized assistance. Moreover, it was confirmed that public services were continuously provided in the facilities rebuilt under QIPs, and some livelihood activities continued, both of which contributed to the reconstruction of the target areas. Therefore, effectiveness and impacts of the project are high. Efficiency of the project is high, as it is considered that both the project cost and project period are commensurate with the produced outputs. In terms of operation and maintenance to sustain the project effects, although there is a financial issue in the Tanauan LGU for the CLUP revision, no major problems were observed in the policy background, institutional/organizational and technical aspects, and status of operation and maintenance. Therefore, sustainability of the project effects is high.

In light of the above, the project is evaluated to be highly satisfactory.

1. Project Description



Project Locations



Elementary school reconstructed under the QIP

1.1 Background

Typhoon Yolanda, which hit the Philippines on November 8, 2013, caused extensive damage to 36 provinces. In response to this situation, JICA dispatched an expert team for international emergency relief to the Philippines on November 26, 2013 to assess the need for recovery and reconstruction assistance and to gather information to identify specific matters requiring urgent responses. Consequently, it was confirmed that the three provinces of Leyte, Samar, and Eastern Samar along the coast of the Leyte Gulf, where the typhoon reached land with its full force, were the most severely affected areas by storm surges with catastrophic devastation, including damage to bridges and roads, malfunction of airports and medical facilities, and beached large ships. Under these circumstances, the project was formulated to provide assistance oriented toward Build-Back-Better (BBB), not only for the recovery and reconstruction of infrastructure in the target areas, but also for the reconstruction of disaster-resilient communities and societies.

One characteristic of the project was that it required rapid and flexible responses in terms of emergency disaster assistance. For this reason, the “Fast-Track System” to speed up and simplify the procedures for implementing the emergency project was applied, and the detailed needs of the sites were identified during the project implementation. Concrete project activities were planned according to the ever-changing situation on the ground. Another noteworthy feature of the project was the integration of the experiences and lessons learned from the Great East Japan Earthquake and the use of Japanese techniques in project activities.

1.2 Project Outline

Because the project is categorized as Technical Cooperation for Development Planning, a project design matrix (PDM) was not prepared at the time of project planning. As such, the external evaluator organized the project in the form of a PDM (see Attachment 1) based on

an ex-ante project evaluation report developed in December 2015 and interviews with project stakeholders at the time of ex-post evaluation.

Overall Goal	Target areas are reconstructed. ¹	
Project Purpose	Recovery and reconstruction ² in the target areas advance.	
Outputs	Output 1	Development of disaster recovery and reconstruction plans is promoted.
	Output 2	Recovery and reconstruction projects are formulated.
	Output 3	QIPs are implemented.
Total cost (Japanese Side)	1,881 million yen	
Period of Cooperation	February 2014 – January 2017 (Extended period ³ : April 2016 – January 2017)	
Target Area	18 LGUs in the provinces of Leyte, Samar, and Eastern Samar along the coast of the Leyte Gulf. [Leyte Province] Tacloban, Palo, Tanauan, Tolosa, Dulag, Mayorga, MacArthur, Javier, and Abuyog [Samar Province] Basey and Marabut [Eastern Samar Province] Lawaan, Balangiga, Giporlos, Quinapondan, Salcedo, Mercedes, and Guiuan	
Implementing Agency	Department of Finance (DOF)	
Other Relevant Agencies/ Organizations	National Economic Development Authority (NEDA), Department of Public Works and Highways (DPWH), Department of the Interior and Local Government (DILG), and 18 LGUs of the project target areas	
Consultants in Japan	Oriental Consultants Global Co., Ltd., CTI Engineering International Co., Ltd., Pacific Consultants Co., Ltd., Yachiyo Engineering Co., Ltd., and Pasco Corporation	
Related Projects	[Technical Cooperation] < Technical Cooperation Project > -Disaster Risk Reduction and Management Capacity Enhancement Project (2012–2015) -Disaster Risk Reduction and Management Capacity Enhancement Project Phase 2 (2019–2024) <JICA Partnership Program > -Development of mariculture and processed products using Oku-Matsushima techniques in typhoon Yolanda affected areas (2016–2019) -Disaster prevention community development project for reconstruction and sustainability of villages after Typhoon Yolanda (2017–2020) <Private Sector Partnership Program > -Verification Survey with the Private Sector for Disseminating Japanese Technologies for Typhoon-Resistant Fish Farming Cage with the Submersible Function in the Typhoon Stricken Areas (2015–2019) <Follow-up Cooperation >	

¹ As the project is the Technical Cooperation for Development Planning, the project purpose set in the “Project Objective” in the ex-ante evaluation report is regarded as overall goal in the ex-post evaluation.

² In accordance with the Philippine policy, the period of recovery and reconstruction is divided into four phases: “emergency response and early recovery” (about six months after the disaster), “short term” (up to three years after the disaster), “medium term” (from three to six years after the disaster), and “long term” (from six to eight years after the disaster). At the time of project completion, it was during the transition from the “short term” to “medium term” phase.

³ In the Record of Discussions (R/D) signed in March 2014, the cooperation period was set from February 2014 to July 2015 (18 months), but the R/D was amended in December 2014 to change the cooperation period to that from February 2014 to March 2016 (26 months).

	-Consultancy Services for following up Quick Impact Project on Rehabilitation and Recovery from Typhoon Yolanda (2019) [ODA Loan] Post-Disaster Standby Loan (2014) [Grant Aid] The Project for Improvement of the Meteorological Radar System (2009) The Project for Improvement of Equipment for Disaster Risk Management (2013) The Programme for Rehabilitation and Recovery from Typhoon Yolanda (2014)
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2. Outline of the Evaluation Study

2.1 External Evaluator

Akiko Shimizu, Value Frontier Co., Ltd.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: November 2020 – February 2022

Duration of the Field Study: Field study was cancelled due to the spread of the coronavirus disease 2019 (COVID-19).

2.3 Constraints during the Evaluation Study

Since the external evaluator could not travel to the Philippines due to the spread of COVID-19, a local consultant collected the relevant information under the remote instruction and supervision by the external evaluator. Furthermore, due to the local travel restrictions caused by the spread of COVID-19, it was difficult for the local consultant to travel, even in the country; thus, a survey to confirm the continuous status of QIPs was conducted by local assistants living in the target areas. Some information collection (QIP-6, QIP-11, QIP-12, and QIP-14) was conducted by telephone interviews instead of field visits due to restrictions.

3. Results of the Evaluation (Overall Rating: A⁴)

3.1 Relevance (Rating: ③⁵)

3.1.1 Consistency with the Development Plan of the Philippines

During project planning, the *Philippine Development Plan 2011–2016* (PDP) identified “disaster risk reduction” as a key cross-sectoral issue and promoted the involvement of local governments and communities in disaster risk reduction. Moreover, the *National Disaster Risk Reduction and Management Plan 2011–2028* (NDRRMP) aimed to restore and improve

⁴ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁵ ③: High, ②: Fair, ①: Low

facilities, livelihoods, living conditions, and organizational capacities of affected communities, and to reduce disaster risks in accordance with the BBB principle. Furthermore, in response to the disaster caused by Typhoon Yolanda, the government of the Philippines formulated the *Recovery Assistance for Yolanda* and promulgated the basic policy of building disaster-resilient communities by rehabilitating and reconstructing infrastructure and public services, including recovering livelihoods, based on the BBB.

At the project completion, the *PDP 2017–2022*, formulated in 2017, indicated the need for long-term investments in disaster risk management. It also indicated that hazard maps were effective in identifying disaster risks and mitigation measures to minimize the negative impacts of disasters. In addition, *NDRRMP 2011–2028* remained valid during project completion.

3.1.2 Consistency with the Development Needs of the Philippines

During project planning, Typhoon Yolanda severely damaged major industries, such as coconut palm cultivation and fishing in Eastern Visayas (Region VIII), especially in the provinces of Leyte, Samar, and Eastern Samar along the Leyte Gulf. Of the 52 million coconut trees in Region VIII, 34 million were destroyed and the fishing industry lost 10,000 small boats. As many residents in the three provinces lost their means of livelihood, early recovery of livelihoods and economic activities was an urgent issue. Under these circumstances, in response to the request for emergency assistance, the fast-track system was applied, and the project was launched approximately three months after the disaster occurred in November 2013.

At project completion, there was also a high demand for the construction of more resilient facilities and the restoration of livelihoods in areas outside the target areas of this project. Therefore, LGUs and other related organizations that received technical assistance under the project were expected to expand their activities to other areas using their acquired knowledge and experience. In addition, from the perspectives of BBB and disaster risk reduction, the disaster recovery and reconstruction plans of LGUs, including CLUPs and evacuation plans, required periodic revisions to reflect the latest data, which means that the need to formulate disaster recovery and reconstruction plans remained high at project completion.

3.1.3 Consistency with Japan's ODA Policy

The basic policy of the *ODA Charter* (2003) listed “addressing global issues” as a priority and identified disaster response as an issue that required strengthening. The *ODA Medium-Term Policy* (2005) also identified “global issues” as a key issue to address and indicated that natural disaster countermeasures should be addressed. Moreover, in the

Country Assistance Policy for the Republic of Philippines (2012) during project planning, the priority area of “overcoming vulnerabilities and stabilizing bases for human life and production activity,” stated that assistance would be provided for infrastructure development, including soft infrastructure development, to cope with disasters and environmental issues, safety net development in areas such as health and medical care, improvement of agricultural production and productivity, and processing and distribution of agricultural products. Furthermore, the *Japan-Philippines Joint Statement (2011)* indicated the promotion of bilateral cooperation in the field of disaster prevention and management.

In light of the above, the implementation of the project was highly consistent with the policies and development needs of the Philippines at the time of planning and completion of the project, as well as with Japan’s ODA policies at project planning. Therefore, its relevance is high.

3.2 Effectiveness and Impacts⁶ (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Project Output

The three outputs of the project are – (i) Development of disaster recovery and reconstruction plans is promoted, (ii) Recovery and reconstruction projects are formulated, and (iii) QIPs are implemented – were all achieved, as shown in Table 1.

Under Output 1 (Development of disaster recovery and reconstruction plans is promoted), accurate hazard maps were provided to 18 LGUs. During project implementation, the large-scale typhoon Ruby hit the project areas in December 2014, and the hazard maps were effectively used as they were provided before the typhoon. In addition, the evacuation routes and transportation handling of evacuees were re-examined based on the lessons learned from that event. Furthermore, assistance was provided to three LGUs of Tacloban, Palo, and Tanauan in revising their CLUPs and developing evacuation plans based on the provided hazard maps. Of special note, the project dispatched a government official from Higashi-Matsushima City in Miyagi Prefecture, who was in charge of recovery and reconstruction after the Great East Japan Earthquake, emphasizing the importance of involving various stakeholders, including local residents, in consensus building when revising the CLUPs and developing evacuation plans. This was based on the experience of the Great East Japan Earthquake, which showed that moving forward step by step with the understanding of residents, even though it took time, was ultimately a shortcut to better reconstruction. In the LGUs of Tacloban, Palo, and Tanauan, various stakeholders – such as

⁶ Sub-rating for Effectiveness is to be put with consideration of Impacts.

representatives of the disaster risk reduction committees, barangays⁷, the medical and educational sectors, the fishery industry, the Leyte Samar Historical Society, people with disabilities, elderly people, and women’s groups – participated in the process of CLUP revision and evacuation planning, thus ensuring consensus building based on diverse perspectives. For example, in the coastal area development planning, after a series of consultations involving residents in advance, a plan was formulated to reflect the opinions of the residents, taking into account for the impact on the fishing industry and the resettlement of local residents. In addition, in response to a request from the government of the Philippines, the project provided assistance in formulating a basic design for road heightening and tide embankment construction as an additional output to flexibly respond to local needs soon after the devastating disaster. The tide embankment was designed not only to be a disaster prevention facility, but also to be used for tourism and to improve livelihoods based on discussions with local residents, considering the historical value of the MacArthur Landing Memorial National Park as a cultural heritage and the conservation of the mangrove ecosystem.⁸

Regarding Output 2 (Recovery and reconstruction projects are formulated), under the concept of BBB, various sectoral sub-projects of the Sector Grant⁹ and a total of 22 QIPs were formulated based on local needs. Regarding Output 3 (QIPs are implemented), 15 QIPs were implemented in the first year of the project. In the second year, five of the 15 QIPs were extended, and seven additional QIPs were implemented. A list of the 22 QIPs is presented in Table 2.

Table 1. Achievement status of outputs

Outputs	Activities	Achievements
Output 1: Development of disaster recovery and reconstruction plans is promoted <Achieved>	Provision of Hazmat maps.	<ul style="list-style-type: none"> Based on a scientific analysis, accurate hazard maps were provided to 18 LGUs.
	Conducting revision work of CLUPs that reflect disaster recovery and reconstruction plans and	<ul style="list-style-type: none"> Assistance related to the revision of CLUPs was provided mainly to three LGUs: Tacloban, Palo, and Tanauan. The revision work of the CLUPs was conducted in accordance with the guidelines of the Department of Human Settlements and Urban Development¹⁰ (DHSUD) using the hazard maps provided by the project. In the Palo and Tanauan LGUs, the participatory process of CLUP revision and the formulation of reconstruction plans and municipality

⁷ The smallest administrative unit under cities and municipalities.

⁸ It includes the development of side roads and bicycle paths associated with the construction of the tide embankment, and the development of recreational areas including sports facilities, viewing platforms, and a park (MacArthur Landing Memorial National Park) in areas protected from storm surges by the tide embankment. It also includes the development of a safe walkway that considers the livelihood of fishermen the preservation of mangroves, allowing people to be in touch with nature.

⁹ A type of ODA Grants in which multiple sub-projects are implemented in a flexible manner under a single ODA Grants program to respond quickly and flexibly to ever-changing and diverse needs in the assistance for conflict and disaster recovery and reconstruction.

¹⁰ At that time, it was the Housing and Land Use and Regulatory Board (HLURB), but with the reorganization in 2019, the HLURB was changed to the DHSUD.

	hazard maps.	<p>development plans (Dream Plans), including the construction of a tide embarkment, were promoted by adopting the “Area Management” method, which brings together local stakeholders for discussion.</p> <ul style="list-style-type: none"> • As an additional output, the findings and recommendations obtained from the CLUP revision process were compiled into a handbook for LGU practitioners entitled “Building Safer Cities” and submitted to the DHSUD. The handbook was also distributed to relevant ministries and other local governments through the DHSUD. • As an additional output, as part of the structural measures to protect against storm surge, assistance was provided to develop the basic design for a partial section (13 km) of road heightening and tide embarkment construction in the LGUs of Tacloban, Palo, and Tanauan. 																						
	Development of evacuation plans based on hazard maps and structural measures.	<ul style="list-style-type: none"> • Assistance in developing evacuation plans as part of the non-structural measures was provided mainly to the LGUs of Tacloban, Palo, and Tanauan. • In the Tacloban LGU, a timeline action plan¹¹ was developed using the hazard map and participatory workshops. • In the Palo LGU, when Typhoon Ruby hit during the project implementation, evacuees rushed to the evacuation centers and could not enter the buildings. In response, assistance was later provided to update the data including the capacity of the evacuation centers and to develop an evacuation plan using the hazard map and with residents’ participation. • In the Tanauan LGU, assistance was provided in confirming evacuation procedures using hazard maps and drafting a timeline action plan with residents’ participation. • In the LGUs of Tacloban, Palo, and Tanauan, assistance was provided for the implementation of evacuation drills based on the developed evacuation plans. • As an additional output, the hazard maps of the LGUs of Tacloban, Palo, and Tanauan were updated in the second year of the project. 																						
Output 2: Recovery and reconstruction projects are formulated <Achieved>	Formulation of grant aid projects aimed at building safer cities, rebuilding people’s daily lives, recovering regional economies, and promoting local industries.	<p>Of the sub-projects in the Sector Grant “Programme for Rehabilitation and Recovery from Typhoon Yolanda,” those that were formulated based in the project on the concept of the BBB are listed in the table below.</p> <table border="1"> <thead> <tr> <th>Items</th> <th colspan="2">Contents</th> <th>Completion month/year</th> </tr> </thead> <tbody> <tr> <td>Recovery of disaster-resistant elementary schools</td> <td>Facility Construction</td> <td>Seven elementary schools</td> <td>May 2017</td> </tr> <tr> <td rowspan="3">Recovery of disaster-resilient community healthcare</td> <td>Facility Construction</td> <td>Outpatient building for the Eastern Visayas Regional Medical Center</td> <td>August 2017</td> </tr> <tr> <td>Facility Construction</td> <td>Four health units</td> <td>May 2017</td> </tr> <tr> <td>Equipment Procurement</td> <td>Medical equipment</td> <td>May 2017</td> </tr> <tr> <td>Recovery of electricity</td> <td>Equipment Procurement</td> <td>Power distribution equipment (high-lift work vehicles, pole trucks, etc.)</td> <td>January 2016</td> </tr> </tbody> </table>	Items	Contents		Completion month/year	Recovery of disaster-resistant elementary schools	Facility Construction	Seven elementary schools	May 2017	Recovery of disaster-resilient community healthcare	Facility Construction	Outpatient building for the Eastern Visayas Regional Medical Center	August 2017	Facility Construction	Four health units	May 2017	Equipment Procurement	Medical equipment	May 2017	Recovery of electricity	Equipment Procurement	Power distribution equipment (high-lift work vehicles, pole trucks, etc.)	January 2016
Items	Contents		Completion month/year																					
Recovery of disaster-resistant elementary schools	Facility Construction	Seven elementary schools	May 2017																					
Recovery of disaster-resilient community healthcare	Facility Construction	Outpatient building for the Eastern Visayas Regional Medical Center	August 2017																					
	Facility Construction	Four health units	May 2017																					
	Equipment Procurement	Medical equipment	May 2017																					
Recovery of electricity	Equipment Procurement	Power distribution equipment (high-lift work vehicles, pole trucks, etc.)	January 2016																					

¹¹ The purpose is to show action plans to implement before and after a disaster occurs, and to make concrete arrangements in advance on “who, when, how, and what to do,” so that related parties can take prompt and appropriate actions in close coordination in the event of a disaster.

		Recovery of construction machinery	Equipment Procurement	Dump trucks, etc.	October 2015
		Recovery of National Maritime Polytechnic	Equipment Procurement	Fast rescue boats, etc.	June 2016
		Recovery of Guiuan Marine Fisheries Development Center	Equipment Procurement	Sterilization equipment for aquaculture water treatment, etc.	September 2015
		Recovery of Tacloban Airport	Equipment Procurement	Airport equipment (fire trucks, X-ray inspection equipment, etc.)	February 2016
		Recovery of disaster-resistant municipal halls	Facility Construction	Two municipal halls	May 2018
	Formulation of QIPs	A total of 22 QIPs were formulated; 15 QIPs (QIP-1 to 15) in the first year and 7 QIPs (QIP-16 to 22) in the second year of the project.			
Output 3: QIPs are implemented <Achieved>	Implementation of QIPs	In the first year of the project, 15 QIPs (QIP-1 to 15) were implemented almost as planned. In the second year, 5 QIPs (QIP-1, QIP-3, QIP-8, QIP-14, QIP-15) were extended and 7 additional QIPs (QIP-16 to QIP-22) were implemented.			

Source: Materials provided by JICA.

Table 2. List of QIPs

QIP	LGU	Project name
1	Basey	Project of Regenerating Livelihood through Introduction of Disaster Resilient Submersible Fish Cage (Milk Fish Culture)
2	Palo	Project of Recovery of Rural Public Health Service Support System through Reconstruction of Provincial Health Office
3	Tolosa	Project of Regenerating Local Livelihoods through Processing of Agriculture and Fishery Products by Small-Scale Community Groups
4	Balangiga	Project of Training on Disaster Resilient Construction Technologies through Reconstruction of the Balangiga National Agriculture School
5	Dulag	Project of Training on Disaster Resilient Construction Technologies through Reconstruction of the Dulag National High School
6	Salcedo	Project of Reconstruction of Day Care Center for Community Rehabilitation in Salcedo (Vitalization of Peoples' Dialogue)
7	Guiuan	Project of Reconstruction of Day Care Center for Community Rehabilitation in Guiuan (Vitalization of Peoples' Dialogue)
8	Guiuan	Project of Regenerating Livelihood through Introduction of Disaster Resilient Submerged Fish Cage (Lapu-Lapu Culture)
9	Guiuan	Project of Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market in Guiuan
10	Dulag	Project of Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of the Dulag Slaughter House

11	Mercedes	Project of Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market in Mercedes
12	Mayorga	Project of Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of Public Market in Mayorga
13	Basey, Tolosa, Tanauan ¹²	Project of Promotion of Local Products to Improve Livelihoods for the Survivors of Typhoon Yolanda
14	Mercedes	Project of Regenerating Livelihood through Production of Coco Charcoal Briquette
15	Tanauan	Project of Integrated Culture of Oyster and Milk Fish Improvement for Sustainable Aquaculture and Livelihood
16	Tanauan	Project of Training on Disaster Resilient Construction Technologies through Reconstruction of the Camire Elementary School
17	Balangiga	Project of Training on Disaster Resilient Construction Technologies through Reconstruction of the Balangiga National Agriculture School (Phase 2)
18	Abuyog	Project of Recovery of Rural Health Service Support System through Reconstruction of the Abuyog Rural Health Unit (RHU)
19	Dulag	Project of Recovery of Rural Health Service Support System through Reconstruction of the Dulag RHU
20	Tanauan	Project of Construction of Processing Plant for Integrated Aquaculture and Processing Development in Tanauan
21	Basey	Project of Construction of Processing Plant for Integrated Aquaculture and Processing Development in Basey
22	Dulag	Project of Improving Municipal Capacity for Disaster Resilient Construction Management through Reconstruction of the Dulag Slaughter House (Improvement of Access Road)

Source: Materials provided by JICA.

3.2.1.2 Achievement of Project Purpose

Under the concept of BBB, the project was formulated and implemented based on the three principles of recovery and reconstruction of the Philippine government's strategy (1. building safer cities; 2. rebuilding people's daily lives, and 3. recovery of the regional economy and promotion of industry). Accordingly, in the ex-post evaluation, these three principles were organized as pillars in setting indicators of the project purpose and overall goal (see Table 3 and Attachment 1).

At the project completion, it was confirmed that the administrative capacity of LGU officials to build safer communities improved through the CLUP revision process, evacuation plan development, and QIP implementation (Indicator 1-1). In addition, the capacity of disaster-resilient construction techniques of the Technical Education and Skills Development Authority (TESDA) under the Department of Labor and Employment improved through the Japanese technical transfer (Indicator 1-1). Moreover, through the implementation of QIPs, public facilities directly related to people's livelihoods, such as health, education, and social services, were rebuilt, which led to the rebuilding of people's daily lives (Indicator 2-1). The facilities constructed through the implementation of the QIPs are listed in Table 4. Furthermore, through the activities of QIPs (rebuilding of facilities, provision of equipment, and capacity building training), the economic activities of local

¹² Target areas of QIP-1, -3, and -15

industries such as agriculture and fishery resumed (Indicator 3-1), and people's livelihoods were regenerated (Indicator 3-2).

In light of the above, through the implementation of the project, the recovery and reconstruction of the target areas advanced based on the three principles of the recovery and reconstruction strategy. Therefore, it was concluded that the project achieved its purpose.

Table 3. Achievement of project purpose

Project Purpose: Recovery and reconstruction in the target areas advance		
Three principles	Indicators and achievements	Actual
1. Building safer cities (At the project completion)	1-1: Capacity of government officials for building disaster-resilient communities is improved through the process of disaster recovery and reconstruction planning and the implementation of QIPs. <Achieved>	(1) Capacity building through CLUP revision work and development of evacuation plans Since the amount of work to revise CLUPs required in the DHSUD's CLUP guidelines was considerable, it was difficult for LGUs to revise CLUPs on their own. The project supported mainly the LGUs of Tacloban, Palo, and Tanauan in revising the CLUPs and formulating evacuation plans through workshops attended by various stakeholders. Through these activities, the LGUs learned leadership skills and the importance of strengthening coordination with stakeholders and involving them in consensus building. Therefore, the project contributed to the improvement of the administrative capacity of the LGUs' officials for building disaster-resilient communities. (2) Improving disaster-resistant construction techniques ¹³ through Japanese technical transfer In the implementation of QIP-4, QIP-5, QIP-16, and QIP-17, skilled Japanese builders were invited to provide training in the transfer of earthquake-resistant construction technology to TESDA instructors and graduates (carpenters). As more than 80% of the participants of the training were continuously employed by construction companies, the project contributed to the acquisition of the participants' skills. In addition, the content of the training was compiled into training materials such as manuals and videos, and submitted to TESDA. In 2016, the project was awarded by TESDA for its contribution to TESDA projects.
2. Rebuilding people's daily lives (At the project completion)	2-1: Disaster-resilient facilities are rebuilt through the implementation of QIPs. <Achieved>	Through the implementation of QIPs, disaster-resilient facilities were rebuilt based on the BBB concept (see Table 4).
3. Recovery of the regional economy and promotion of industries (At the project completion)	3-1: Activities of local industries (agriculture, fishery, etc.) resumed through the implementation of QIPs. <Achieved>	(1) In QIP-1, QIP-8, and QIP-15, disaster-resistant aquaculture equipment was provided and aquaculture technical training was conducted, which helped the resumption of aquaculture activities. In QIP-1, QIP-3, and QIP-15, training on the production and sales of processed foods was provided to women's groups, and livelihood activities were started. (2) In QIP-14, the production and sales of coconut charcoal was

¹³ Re-bar, formworks, concrete, welding, truss fabrication, roof installation, and so on.

		introduced. In addition, intercropping of coconut (horticultural crop cultivation) was introduced.
	3-2: People's livelihoods are regenerated through the implementation of QIPs. <Achieved>	(1) In QIP-1, QIP-3, QIP-8, and QIP-15, the means of fishermen's livelihoods were regenerated or newly created through aquaculture activities and sales of processed foods. (2) In QIP-14, the means of farmers' livelihoods were established through the sale of coconut charcoal and horticultural crops. (3) In QIP-13, livelihood activities were strengthened through the assistance in promoting the sales of processed agricultural and fishery products produced in QIP-1, QIP-3, and QIP-15.

Source: Materials provided by JICA.

Table 4. Facilities constructed through the implementation of QIPs

Facilities	QIP	LGU	No. of Facilities
Provincial Health Office	QIP-2	Palo	1
Multi-purpose Livelihood Building	QIP-3	Tolosa	1
National Agricultural School	QIP-4 ¹⁴ , 17 ¹⁵	Balangiga	1
National High School	QIP-5	Dulag	1
Day Care Center	QIP-6	Salsedo	5
Day Care Center	QIP-7	Guiuan	2
Artificial Feed Preparation Facility for Lapu-Lapu Aquaculture	QIP-8	Guiuan	1
Public Market	QIP-9	Guiuan	1
Public Market	QIP-11	Mercedes	1
Public Market	QIP-12	Mayorga	1
Slaughter House	QIP-10	Dulag	1
Elementary School	QIP-16	Tanauan	1
RHU	QIP-18	Abuyog	1
RHU	QIP-19	Dulag	1
Processing Plant	QIP-20	Tanauan	1
Processing Plant	QIP-21	Basey	4

Source: Materials provided by JICA.

3.2.2 Impacts

3.2.2.1 Achievement of Overall Goal

Regarding the achievement of the overall goal, as Table 5 shows, Indicators 1-1, 1-2, and 2-1 were achieved, and Indicators 3-1 and 3-2 were partially achieved. Details of the continuation status of QIPs are shown in Attachment 2.

Table 5. Achievement of overall goal

Overall goal: Target areas are reconstructed.		
Three principles	Indicators and achievements	Actual
1. Building safer cities (Medium and	1-1: CLUPs are utilized. <Achieved>	<ul style="list-style-type: none"> In the Tacloban LGU, the CLUP was referenced during the formulation of various city development plans.¹⁶ In the Palo LGU, as part of the municipal planning process, the CLUP

¹⁴ Food-processing classroom building.

¹⁵ Buildings for Food Technology and Construction workshops.

¹⁶ Includes the construction of bypass roads and other road networks (2015-2019), the Comprehensive Development Plan, the Peace and Order and Public Safety Plan, and the Tourism Development Plan.

long term)		<p>was referenced during the formulation and implementation of the comprehensive development plan and the development plan (Dream Plan) facilitated by the Area Management Committee that was set up with the support of the project.</p> <ul style="list-style-type: none"> In the Tanauan LGU, the skills and experiences gained from the project were utilized to revise the CLUPs, which was in progress at the time of ex-post evaluation. 																																							
	1-2: Evacuation plans are utilized. <Achieved>	<ul style="list-style-type: none"> In the LGUs of Tacloban, Palo, and Tanauan, the evacuation plans developed under the project were utilized during disasters such as Typhoon Urduja in 2017, Typhoon Usman in 2018, and Typhoon Ursula in 2019, which struck after the project completion. The evacuation plan was also used during a flood that occurred during the ex-post evaluation (February 2021). The implementation of evacuation drills was temporarily suspended due to the spread of COVID-19, but before that, they were conducted regularly (about once a quarter). They will resume once COVID-19 is under control. The LGUs are also providing technical assistance to barangays to facilitate the development of evacuation plans. For example, the Tacloban LGU conducts quarterly simulation exercises on the evacuation preparedness in selected barangays, followed by assessment and evaluation, to assist barangays in revising their evacuation plans. 																																							
2. Rebuilding people's daily lives (Medium and long term)	2-1: The provision of public services (health care, education, social services) is resumed and continues in the rebuilt facilities. <Achieved>	<p>Public facilities rebuilt under the QIPs related to facility reconstruction are continuously utilized and public services (health, education, and social services) are continuously provided.</p> <table border="1"> <thead> <tr> <th>QIP</th> <th>Activities</th> <th>Utilization status of facilities</th> </tr> </thead> <tbody> <tr> <td>QIP-2</td> <td>Rebuilding the provincial health office</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-4, 17</td> <td>Rebuilding the national agricultural school</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-5</td> <td>Rebuilding the national high school</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-6</td> <td>Rebuilding day care centers</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-7</td> <td>Rebuilding day care centers</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-9</td> <td>Rebuilding the public market</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-10, 22</td> <td>Rebuilding the slaughter house</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-11</td> <td>Rebuilding the public market</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-12</td> <td>Rebuilding the public market</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-16</td> <td>Rebuilding the elementary school</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-18</td> <td>Rebuilding the RHU</td> <td>Continuously utilized.</td> </tr> <tr> <td>QIP-19</td> <td>Rebuilding the RHU</td> <td>Continuously utilized.</td> </tr> </tbody> </table>	QIP	Activities	Utilization status of facilities	QIP-2	Rebuilding the provincial health office	Continuously utilized.	QIP-4, 17	Rebuilding the national agricultural school	Continuously utilized.	QIP-5	Rebuilding the national high school	Continuously utilized.	QIP-6	Rebuilding day care centers	Continuously utilized.	QIP-7	Rebuilding day care centers	Continuously utilized.	QIP-9	Rebuilding the public market	Continuously utilized.	QIP-10, 22	Rebuilding the slaughter house	Continuously utilized.	QIP-11	Rebuilding the public market	Continuously utilized.	QIP-12	Rebuilding the public market	Continuously utilized.	QIP-16	Rebuilding the elementary school	Continuously utilized.	QIP-18	Rebuilding the RHU	Continuously utilized.	QIP-19	Rebuilding the RHU	Continuously utilized.
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3. Recovery of regional economy and promotion of industries (Medium and long term)	3-1: Businesses or livelihood activities resumed by QIPs continue. <Partially achieved>	<p>The table below shows the utilization status of the techniques obtained and facilities and equipment provided under the QIPs for livelihood restoration. The production and sales of processed milkfish (QIP-1 and 21), lapu-lapu aquaculture (QIP-8), and the production and sales of coconut charcoal (QIP-14) were suspended and are not expected to resume.</p> <table border="1"> <thead> <tr> <th>QIP</th> <th>Activities</th> <th>Status of utilization of techniques and equipment</th> </tr> </thead> <tbody> <tr> <td>QIP-1, 21</td> <td>- Milkfish aquaculture - Production and sales of processed milkfish foods</td> <td>[Aquaculture] Partially continued. [Processing] Milkfish processing activities were suspended due to the breakdown of equipment. [Processing facilities] Limited use for making peanut butter and selling rice by women association members.</td> </tr> <tr> <td>QIP-3</td> <td>Production and sales of agricultural and fishery processed foods</td> <td>[Processing] Temporarily suspended due to COVID-19 (to resume once COVID-19 is under control). [Facility] To be used again once COVID-19 is under control.</td> </tr> <tr> <td>QIP-8</td> <td>Lapu-lapu aquaculture</td> <td>[Aquaculture] Suspended as equipment was destroyed by the typhoon.</td> </tr> </tbody> </table>	QIP	Activities	Status of utilization of techniques and equipment	QIP-1, 21	- Milkfish aquaculture - Production and sales of processed milkfish foods	[Aquaculture] Partially continued. [Processing] Milkfish processing activities were suspended due to the breakdown of equipment. [Processing facilities] Limited use for making peanut butter and selling rice by women association members.	QIP-3	Production and sales of agricultural and fishery processed foods	[Processing] Temporarily suspended due to COVID-19 (to resume once COVID-19 is under control). [Facility] To be used again once COVID-19 is under control.	QIP-8	Lapu-lapu aquaculture	[Aquaculture] Suspended as equipment was destroyed by the typhoon.																											
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		QIP-14	- Production and sales of coconut charcoal. - Intercropping (horticultural crops). [Coconut charcoal] Suspended as fallen trees were used up. [Intercropping] Activities continue.
		QIP-15, 20	- Oyster and milkfish integrated aquaculture. - Production and sales of processed oyster and milkfish foods [Aquaculture] Oyster aquaculture has been temporarily suspended due to contamination of seawater caused by ongoing embankment construction by the Philippine government (to resume upon completion of construction). Milkfish aquaculture has been continuing. [Processing] Temporarily suspended due to the spread of COVID-19 (to resume once COVID-19 is under control). [Processing facilities] To be used again after completion of embankment construction and end of COVID-19.
	3-2: Employment is generated by QIPs <Partially achieved>	At the time of ex-post evaluation, employment has been maintained in some continuing aquaculture activities in QIP-1. The livelihood activities in QIP-1 related to the production and sales of processed milkfish were suspended due to the breakdown of equipment. In QIP-3, the production and sales of processed foods were temporarily suspended due to COVID-19 (external factor). In QIP-8, the activities of lapu-lapu aquaculture did not continue because the equipment provided by the project was destroyed by a typhoon. In QIP-14, livelihood activities related to the production and sales of coconut charcoal did not continue because the materials, coconut trees felled by the typhoon, are no longer available, but activities related to the cultivation and sales of horticultural crops introduced as intercrops have continued to generate income. In QIP-15, livelihood activities related to milkfish aquaculture have continued, but oyster aquaculture was temporarily suspended due to embankment construction (external factor). Activities related to the production and sales of processed foods in QIP-15 were temporarily suspended due to COVID-19 (external factor).	

Source: Interviews with relevant organizations and stakeholders of QIPs.

[Utilization status of knowledge and skills obtained through the revision work of the CLUP and development of the evacuation plan]

After project completion, the revised CLUP (2017–2025) in the Tacloban LGU was approved by the City Council and the DHSUD in 2018. According to the Tacloban LGU, the hazard mapping knowledge gained through the project was utilized for its update. In addition, the ability to coordinate with stakeholders gained in the process of developing evacuation plans and timeline action plans were utilized in disaster risk reduction measures. In the Palo LGU, the revised CLUP (2016–2025) was approved by the Municipal Council in 2018. According to the Palo LGU, they have continued to use the area management approach introduced by the project to involve various stakeholders in municipal development planning and disaster risk reduction measures. The Tanauan LGU is planning to revise CLUP 2010–2019, which was approved in 2013, in 2022. According to the Tanauan LGU, it utilized the coordination skills among stakeholders gained through the area management approach and

knowledge of hazard mapping gained by the project in municipal disaster risk reduction measures.

In the project, it was emphasized the importance of a reconstruction plan with the participation of various stakeholders in consensus building based on the experience of the Great East Japan Earthquake. At the time of ex-post evaluation, the three LGUs firmly inherited this point, and it was confirmed that the community was working together on disaster risk reduction measures.

[Utilization status of architectural techniques obtained through the implementation of QIPs]

According to TESDA, welding machines and other equipment used in the QIP-related activities of rebuilding facilities are used daily in practical training. In addition, materials such as the manual “The Technology of Welding, Truss, and Roof” and videos of the training, which were developed under the project, were incorporated into TESDA’s curriculum; thus, those materials were utilized by TESDA schools nationwide at the time of ex-post evaluation.

[Utilization status of facilities constructed, and techniques and equipment obtained through the implementation of QIPs]

In all public facilities rebuilt under the QIPs, it was observed that public services such as education, healthcare, and social services were continuously provided. Among the QIPs that supported the resumption of local industries and the restoration of livelihoods, the activities of the production and sales of processed milkfish products in the Basey LGU (QIP-1 and 21) and lapu-lapu aquaculture in the Guiuan LGU (QIP-8) were suspended and are not expected to resume because of the breakdown of processing equipment and aquaculture equipment, respectively. Therefore, the use of facilities constructed for both activities (processing plants (QIP-21) and artificial feed preparation facility (QIP-8)) is limited. The activities related to the production and sales of coconut charcoal (QIP-14) ended as the purpose of these activities was to generate temporary emergency income by utilizing the coconut trees destroyed by Typhoon Yolanda. The activities in the production and sales of processed agricultural and fishery products (QIP-3) and processed milkfish products (QIP-15 and QIP-20) were temporarily suspended due to COVID-19 but are expected to resume once COVID-19 is over. In addition, the activities of oyster aquaculture (QIP-15) were temporarily suspended due to embankment construction, but are expected to resume after construction ends. As for other activities (milkfish aquaculture (QIP-1 and QIP-15) and intercropping (QIP-14)), equipment provided and techniques obtained under QIPs were continuously used for livelihood activities.

Therefore, it is concluded that the project has achieved its overall goal.

Column: Strengths of Japanese Assistance in Disaster Reconstruction

— Sharing Experiences and Exchanging Opinions through Training Programs in Japan —

In the project, a total of 38 Philippine representatives, including central government officials, LGU officials, and QIP participants, were invited to Higashi-Matsushima City and Ishinomaki City in Miyagi Prefecture through four times of training programs in Japan to visit the areas affected by the Great East Japan Earthquake, share reconstruction measures, and exchange opinions with affected local residents. According to a person involved in the project, since many of the participants of the training programs were disaster victims of Typhoon Yolanda, the mutual sharing of the progress of the reconstruction and the exchange of opinions between the stakeholders affected by the disaster served as an encouragement to both the Japanese government officials and local residents who were working on reconstruction after the Great East Japan Earthquake and the Philippine participants. In addition, it helped create relationships and intercommunications that overcame the language barrier between Japan and the Philippines. For example, in Higashi-Matsushima City, where the reconstruction was underway about four years after the Great East Japan Earthquake, reconstruction projects piled up and the collective resettlement of residents was proceeding through more than 400 meetings a year with the local population. The importance of the consensus-building process involving the local population as well as the challenges in such process were shared. This was a valuable lesson for the Philippine government officials who were also working on similar reconstruction projects.

In this way, the project helped to promote better reconstruction not only through the assistance by professional international development consultants, but also through the sharing of experiences and regional exchanges that could be conveyed only by those who actually experienced such a disaster. The project acted as a bridge for cultural exchanges between local cities in the Philippines and Japan, and it was a unique form of assistance that could only be provided by a country that experienced a similar natural disaster.

3.2.2.2 Other Positive and Negative Impacts

(1) Impact on natural environment and society

The project was classified into “Category B” based on the *JICA Guidelines for Environmental and Social Considerations* (2010). As for the formulation of sub-projects of the Sector Grant, all projects were identified to be waived by the Environmental Impact Assessment (EIA) and obtained a “Certificate of Non-Coverage” in 2014.

As for the construction of facilities supported under the QIPs, the agencies responsible for each facility, such as the LGUs and TESDA, took a role in construction approval and

other procedures, including environmental assessment, and the project took a role in monitoring the coordination with relevant agencies for construction approval and other procedures undertaken by the responsible agencies. According to the Department of Public Works and Highways, TESDA, and the LGUs of Tacloban, Palo, and Tanauan, construction work supported by QIPs included the reconstruction of existing facilities and/or relatively small buildings with no significant environmental impacts; thus, no negative impacts on the natural environment were observed.

Furthermore, the activities in QIP-8 sought to restore the livelihoods of aquaculture farmers through environment-friendly aquaculture operations (restrictions on the capture of natural species and a gradual shift to artificial assorted feed). Environment-friendly activities such as training on aquaculture systems with less burden on the natural environment were conducted.

No resettlement or land acquisition occurred during the implementation of QIPs.

(2) Development effects of utilizing Japanese experience and techniques

As shown in Table 6, Japanese experiences and technologies were utilized in the implementation of QIPs, which improved the project effects.

Table 6. Implementation of QIPs using Japanese experience and techniques

1. Introduction of submersible fish cages with “Gawabari (grid mooring)” techniques in cooperation with a private company.
In the project, based on the information that some Japanese fish farming cages were not damaged by Typhoon Yolanda in other areas, the project requested cooperation from a private Japanese company (NITTO SEIMO CO., LTD.), which holds the manufacturing patent for the cages. In QIP-1 (milkfish aquaculture), submersible fish cages (40 in total) were installed in four barangays. Typhoon-resistant Japanese technology was thus utilized.
2. Introduction of Japanese-style prefabrication based on the experience of Higashi-Matsushima City, which suffered tremendous damage in the Great East Japan Earthquake.
In Higashi-Matsushima City, which suffered from serious damage from the Great East Japan Earthquake, prefabricated building units for community gathering places were donated with support from Germany. These building units were effectively utilized as meeting places where local people discussed issues on recovery and reconstruction. To utilize this experience for early recovery in the areas hit by Typhoon Yolanda, Japanese prefabrication technology, which is easy to procure and construct and can ensure a certain level of rigidity, was introduced in QIP-6 and QIP-7 (rebuilding day care centers), as it was still difficult to procure building materials due to supply shortages. Since it was possible that existing Japanese prefabricated buildings would not be able to withstand Yolanda-class typhoons, the existing prefabricated buildings were modified and the final design was completed after many discussions. At the time of ex-post evaluation, it was confirmed that the facilities in QIP-6 and QIP-7 were operated and maintained without any major problems.
3. Transfer of construction techniques to local workers using techniques of skilled Japanese builders.
In QIP-4, QIP-5, QIP-16, and QIP-17 related to rebuilding facilities, skilled Japanese builders were invited to transfer techniques of Japanese-style earthquake-resistant construction, including roofing and welding, to TESDA instructors and graduates (carpenters), as mentioned above. In addition, videos of the training by the skilled Japanese builders were provided to TESDA as teaching materials for training carpenters. These materials are used since the project completion.

<p>4. Production of charcoal with the “Fuse-yaki” method, a charcoal-making technique used in Japan.</p> <p>Since the traditional Japanese method of simple charcoal production called “Fuse-yaki” requires little initial investment in equipment, QIP-14 (production and sales of coconut charcoal) utilized this method to support activities to restore livelihoods without requiring large-scale capital investment or advanced technical transfer. For the charcoal production, coconut trees that fell during Typhoon Yolanda were used as raw materials, but since the fallen coconut trees were processed, and raw materials were no longer available, the activities were suspended before the ex-post evaluation. However, the production and sales of coconut charcoal provided valuable income at the early stage of the recovery to the coconut farmers who lost their livelihoods due to Typhoon Yolanda.</p>
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Source: Materials provided by JICA, interviews with QIPs stakeholders.

(3) Seamless assistance for improving aquaculture technology through various JICA schemes

As shown in Table 7, the project provided multilayered assistance through collaboration with other JICA schemes (Private Sector Partnership Program, JICA Partnership Program, and Japan Overseas Cooperation Volunteers).

Table 7. Various JICA schemes implemented in coordination with the project

<p>[Private Sector Partnership Program]</p> <p>As the operation rate of the submersible fish cages installed under QIP-1 had been declining, NITTO SEIMO CO., LTD. implemented the “Verification Survey with the Private Sector for Disseminating Japanese Technologies for Typhoon-Resistant Fish Farming Cage with the Submersible Function in the Typhoon Stricken Areas (2015–2019)” under JICA's scheme of Private Sector Partnership Program. Additionally, technical follow-ups and support for aquaculture management and the development of sales channels for cultured fish were provided. As of February 2017, only one out of the 20 cages installed in Tinaogan Barangay under QIP-1 was in operation, but at the time of ex-post evaluation, six cages were confirmed to be in operation. The operation rate, although only 30% overall, improved through coordination with private sector partnerships, contributing to the sustainability of the project effects.</p> <p>According to an interview with a person involved in the project, seeking an exit strategy after the project completion from the beginning of the project was a major factor that led to the collaboration with the Private Sector Partnership Program.</p>
<p>[JICA Partnership Program]</p> <p>In collaboration with the JICA Partnership Program “Development of Mariculture and Processed Products using Oku-Matsushima Techniques in Typhoon Yolanda-Affected Areas” (Incorporated Non-profit Organization (NPO) “Ishinomaki NPO Center”), the project conducted training programs in Japan on aquaculture and processed product development. Additionally, QIP stakeholders who participated in the training learned aquaculture technology in Japan. This project served as a bridge between Japanese NPO and Philippine stakeholders by collaborating with the JICA Partnership Program.</p>
<p>[Japan Overseas Cooperation Volunteers]</p> <p>By dispatching a Japan Overseas Cooperation Volunteer to the QIP-1 target areas, assistance was provided to the members of a women's association in designing labels for processed products and improving other marketing techniques. At the time of ex-post evaluation, the Basey LGU expressed its request for a continuous dispatch of Japan Overseas Cooperation Volunteers.</p>

Source: Materials provided by JICA, interviews with QIPs stakeholders.

(4) Synergies between grant aid projects and QIPs

As Table 8 shows, it was confirmed that the construction of facilities and procurement of equipment in the grant aid project formulated in the project and the implementation of

QIPs generated synergies for the re-establishment of the medical coordination system, as well as synergies for aquaculture activities and sales of processed products.

Table 8. Synergies between the grant aid project and QIPs

<p>1. Synergies in the re-establishment of the medical coordination system</p> <p>The RHU in Abuyog, a primary medical institution rebuilt under QIP-18, has been making referrals to the provincial health office, a secondary medical institution rebuilt under QIP-2. In addition, the Eastern Visayas Regional Medical Center, a tertiary medical institution where a plan to expand the center was formulated in the project and its ward was constructed under the grant aid project, is a referral destination for the RHU and the provincial health office rebuilt under QIP-18 and QIP-2. Therefore, in terms of synergies between the QIPs and the grant aid project, it can be said that the project contributed to the re-establishment of the regional medical coordination system. At the time of ex-post evaluation, the RHU in Abuyog reported a daily average of four to six referrals to the provincial health office and the Eastern Visayas Regional Medical Center.</p>
<p>2. Synergies for aquaculture activities and sales of processed food products</p> <p>In the activities of milkfish aquaculture in Basey (QIP-1), integrated aquaculture of oyster and milkfish in the Tanauan LGU (QIP-15), and lapu-lapu aquaculture in the Guiuan LGU (QIP-8), the options of juvenile fish suppliers increased through the assistance in rehabilitating equipment in the Guiuan Marine Fisheries Development Center under the grant aid project. In addition, regarding the lapu-lapu aquaculture in Guiuan (QIP-8), some lapu-lapu were sold in the rebuilt public market (QIP-9), which led to the re-establishment of the supply chain. Furthermore, the sales promotion project (QIP-13) strengthened the value chain from raw material production to processing and sales.</p>

Source: Interviews with QIPs stakeholders.

(5) Initiatives from the perspective of diverse groups (women, people with disabilities, the elderly, etc.)

As Table 9 shows, through the assistance of women's associations in QIP-1, QIP -3, and QIP-15, some cases related to women's empowerment and raising women's awareness were confirmed, such as gaining income sources, increasing self-confidence, improving communication skills, and building relationships. These cases suggest that the project not only improved economic livelihoods but also led to spiritual enrichment and human well-being.

In addition, according to the LGUs of Tacloban, Palo, and Tanauan, diverse perspectives were incorporated into evacuation plans by involving various groups of residents, including people with disabilities, pregnant women, and the elderly. For example, some measures from the perspective of women, such as the provision of private spaces for changing clothes and breastfeeding at evacuation centers, were reflected in the evacuation plans. Furthermore, public facilities rebuilt under QIPs were equipped with ramps and handrails for the elderly and people with disabilities, and the provincial health office was equipped with toilets for people with disabilities.

Table 9. Impact on women's empowerment

QIP-1	<p>According to the group discussion with members of a women's association in Tinaogan Barangay during the ex-post evaluation survey, many women members were unemployed before Typhoon Yolanda, but were able to generate income through the activities related to the processing and sale of milkfish in QIP-1. At the time of ex-post evaluation, the association suspended activities related to the processing and sale of milkfish and changed its activities to the production of peanut butter and the sale of rice, and its 27 members continue to meet and work together regularly at least once a month.</p> <p>A member of the women's association said that she was previously dependent on her husband's income, but now gained confidence by supporting her family financially. She also said that she used to stay at home most of the time, but the association's activities became a place for her to exchange information related to her life, such as health and children's education, and helped her to develop social skills.</p>
QIP-3	<p>According to interviews with two women who participated in training under QIP-3, they received not only technical training on processed food, but also training on women's empowerment, such as the importance of savings and decision-making processes aimed at improving the association's activities. This resulted in income generation from the sale of processed food and improving household finances. One of them also said that she gained confidence by sharing her experiences in the association with her neighbors.</p>
QIP-15	<p>QIP-15 provided the women's cooperatives with the necessary equipment for processing milkfish, and conducted training on milkfish processing using pressure cookers, hygienic production methods, and simple bookkeeping.</p> <p>According to interviews with members of the women's association, the activities of the association have been sustained. The women have not only increased their income but also improved their self-confidence and developed good relationships with others through the activities.</p>

Source: Interviews with QIPs stakeholders.

In light of the above, the project achieved the project purpose of “Making progress in the recovery and reconstruction of the target areas” through the revision work of the CLUPs, development of evacuation plans, and implementation of QIPs. Regarding the overall goal, it can be concluded that the project contributed to the reconstruction of the target areas by improving the capacity of government officials in reconstruction measures, providing continuous public services in the rebuilt facilities, and continuing some livelihood activities. Therefore, effectiveness and impacts of the project are high.

3.3 Efficiency (Rating: ③)

As mentioned in 1.1, the project applied the fast-track system to start its operations as soon as possible, and activities in the field began in February 2014, three months after Typhoon Yolanda. In addition, to hasten the recovery and reconstruction from the disaster, the project was launched before a specific plan was defined, and the activities were planned and implemented flexibly during the project implementation, taking into account local needs and the progress of recovery as well as requests from the implementing agencies. To assess efficiency, an analysis should be conducted to determine whether the inputs were commensurate with the produced outputs. However, it should be noted that because of this characteristic of the project, it is difficult to make a rigorous ex-ante and ex-post comparison,

as the outputs of the project were not specified in the project planning.

Therefore, in the ex-post evaluation, the project period of 26 months defined at the time of the R/D amendment was considered as the planned period, and the evaluation verified whether the produced outputs added after the R/D amendment were commensurate with the period extended after the R/D amendment. On the other hand, because the project cost at the time of the R/D amendment could not be confirmed, the amount at the beginning of the project was considered the planned amount, and the evaluation verified whether the increased project cost was commensurate with the produced outputs added at and after the R/D amendment.

3.3.1 Inputs

3.3.1.1 Elements of Inputs

The actual inputs for the project are listed in Table 10. The work volume (Man/Month (MM)) of the short-term experts increased from 153 MM to 297 MM following the R/D amendment. Subsequently, another 25 MM were added after the R/D amendment, bringing the total actual work volume of short-term experts to 322 MM, as shown in Table 11.

Table 10. Project inputs

Elements of Inputs		Plan	Actual (At the time of project completion)
Inputs from Japanese side	Expert Dispatch	Short-term experts 153 MM	Short-term experts 322 MM
	Training in Japan	N/A	38 persons
	Project cost from Japanese side	Total 970 million yen	Total 1,881 million yen
Inputs from Philippines side		1. Counterpart assignment 2. Office space	1. Counterpart assignment 2. Office space

Source: Materials provided by JICA.

Table 11. Work volume of short-term experts

	Plan	At the time of the R/D amendment	Actual	Increase/decrease after the R/D amendment
Output 1	60 MM	150 MM	165 MM	15 MM
Output 2	58 MM	66 MM	66 MM	0 MM
Output 3	35 MM	81 MM	91 MM	10 MM
Total	153 MM	297 MM	322 MM	25 MM

Source: Materials provided by JICA.

3.3.1.2 Project Cost

The actual project cost was 1,881 million yen compared to the planned cost of 970 million yen, significantly exceeding the plan (194% of the plan). The outputs produced during and after the R/D amendment are listed in Table 12.

Table 12. Additional outputs

Outputs added when the R/D was amended	Outputs added after the R/D amendment
<p>[Output 1] Assistance in formulating the basic design of structural measures (road heightening and tide embankment construction). Reflection of the structural measures in CLUPs and evacuation plans.</p> <p>[Output 2] Formulation of sub-projects of the Sector Grant to rebuild three elementary schools.</p> <p>[Output 3] Addition of QIP-16 (Rebuilding of an elementary school). [Output 3] Strengthening the QIPs (QIP-1, QIP-3, QIP-8, QIP-14, QIP-15) related to livelihood recovery (extension of period).</p>	<p>[Output 1] Development of the handbook “Building Safer Cities” for the revision of CLUPs. Updates of hazard maps for the LGUs of Tacloban, Palo, and Tanauan. Introduction of Area Management. Assistance in formulating Dream Plan (municipal development plans) for the Palo and Tanauan LGUs.</p> <p>[Output 3] Addition of QIP-17 to 22.</p>

Source: Materials provided by JICA, interviews with relevant organizations.

By the aforementioned additionally produced outputs, the following improvement in outcomes was confirmed.

1. [Output 1] Assistance in formulating the basic design for structural measures (road heightening and tide embankment construction) in the LGUs of Tacloban, Palo, and Tanauan led to the building of disaster-resilient cities.
2. [Output 1] Updated hazard maps of the LGUs of Tacloban, Palo, and Tanauan and the introduction of Area Management in the Palo and Tanauan LGUs led to high-quality revisions of CLUPs.
3. [Output 1] Development of the handbook “Building Safer Cities,” which contained the findings from the CLUP revision activities, led to the dissemination of the project activities to other regions.
4. [Output 3] The extension of five QIPs (QIP-1, QIP-3, QIP-8, QIP-14, and QIP-15) contributed to the entrenchment of activities related to livelihood recovery.
5. [Output 3] Seven additional QIPs were implemented (QIP-16 to 22), leading to the rapid rebuilding of public facilities and regeneration of livelihoods, and ultimately, rebuilding people’s daily lives.

As described above, although the actual project cost exceeded the planned amount, as Table 12 shows, many additional outputs were produced. As described above, this led to the improvement of various outcomes, such as the formulation of disaster-resilient development plans, revision of high-quality CLUPs, and rebuilding people’s daily lives, which greatly promoted the recovery and reconstruction of the target areas. Therefore, it is considered that the project cost was commensurate with additional outputs and improved outcomes.

3.3.1.3 Project Period

The actual project period¹⁷ was 36 months (February 2014 to January 2017), compared to the planned period of 26 months (February 2014 to March 2016)¹⁸ (at the time of the R/D amendment), meaning that the project period was extended by 10 months since the R/D amendment (138% of the plan). The 10-month extension brought about additional outputs (Table 12) and improved outcomes (e.g., preparation of disaster-resilient development plans and rebuilding of people's daily lives), which contributed to the progress of recovery and reconstruction in the target areas. Therefore, it is considered that the project period was commensurate with the produced outputs and the achievements of the project purpose.

In light of the above, both the project cost and project period are commensurate with the produced outputs and improved outcomes. Therefore, efficiency of the project is high.

3.4 Sustainability (Rating: ③)

3.4.1 Policy and Political Commitment for the Sustainability of Project Effects

The *PDP 2017–2022* formulated in 2017 mentioned the assistance of the DHSUD to LGUs to formulate CLUPs, which requires all LGUs to perform mainstream disaster risk reduction and climate change adaptation in their CLUPs. In addition, in the *NDRRMP 2020–2030*, which was revised from the *NDRRMP 2011–2028*, one indicator is the percentage of LGUs with approved evacuation plans in terms of disaster risk reduction.

Therefore, it can be said that policies are in place to support the sustainability of the project effects.

3.4.2 Institutional/Organizational Aspect for the Sustainability of Project Effects

(1) Institutional Aspect

With regard to CLUPs, various guidelines for CLUP formulation remain valid. In addition, the *Supplemental Guidelines on Mainstreaming Sustainable Land Management in CLUP* were developed by the DHSUD in 2019. The supplementary guidelines indicate that the process of developing (or revising) CLUPs should involve civil society, the private sector, academia, and so on by identifying stakeholders and holding workshops. In addition, the DHSUD finalized the simplified *Climate and Disaster Risk Assessment (CDRA) Module*, and approval of the module was awaiting the issuance of a Memorandum Circular at the time of ex-post evaluation. The module, which aims to provide reference material for LGUs in

¹⁷ Since the definition of project start and completion is not mentioned in the R/D, in the ex-post evaluation, the project start is defined as “the month when the expert team entered the field” and the project completion is defined as “the month when the field activities are completed.”

¹⁸ At the time of the R/D amendment (December 2014), the project period was changed from 18 months to 26 months.

formulating their climate change and disaster risk management plans, incorporates the contents of the handbook for the CLUP revision work “Building Safer Cities” compiled under the project.

Regarding evacuation plans, the Office of the Civil Defense¹⁹ (OCD) of the Department of National Defense has been developing various disaster risk reduction programs with a strategic and systematic approach. The programs were implemented in accordance with the *Office of Civil Defense Strategic Plan 2020–2022*.

(2) Organizational Aspect

In the Tacloban LGU, the City Planning and Development Office is responsible for revising the CLUP and evacuation plan, and disaster management. The Municipal Planning and Development Office plays these roles in the Palo and Tanauan LGUs. According to the Tacloban LGU, the City Disaster Risk Reduction and Management Office (83 staff), Engineer’s Office (80 staff), and other related offices are adequately staffed and organized to revise CLUPs and evacuation plans. According to the Palo LGU, there are 16 departments related to the revision of CLUPs and evacuation plans, including the Municipal Planning and Development Office (four staff) and the Municipal Disaster Risk Reduction and Management Office (two staff), which are fully staffed for the ongoing revision of the evacuation plan. In the Tanauan LGU, the process is underway to revise the CLUP by 2022. According to the Tanauan LGU, there is a plan to recruit temporary staff for the revision of the CLUP, and a budget has been secured for it.

Therefore, there was no concern regarding the institutional and organizational aspects of the sustainability of the project effects.

3.4.3 Technical Aspect for the Sustainability of Project Effects

Regarding the capacity for disaster risk reduction measures, the regional offices of the OCD conduct regular training for the administrative officers of LGUs in their respective areas to strengthen their capacity. Earthquake drills are conducted quarterly. In addition, according to the OCD, based on the sharing of Japan’s disaster experience and the experience of Typhoon Yolanda, they learned the importance of self- and mutual help in communities, rather than relying only on public assistance. Accordingly, the OCD provides various training courses (e.g., community-based disaster risk reduction courses) to communities to strengthen their capacity for disaster risk reduction using e-learning, online training, and social media.

¹⁹ In accordance with the *Disaster Risk Reduction and Management Act* enacted in 2010, it is positioned as the central organization for activities related to disaster risk reduction and management as the secretariat of the National Disaster Risk Reduction and Management Council.

In addition, LGUs provide training on disaster risk reduction measures to barangays and other stakeholders who respond to disasters (including volunteers, health care providers, educational personnel, the private sector, and NGOs) to strengthen the capacity of communities to reduce disaster risk.

Therefore, there was no concern regarding the technical aspect of the sustainability of project effects.

3.4.4 Financial Aspect for the Sustainability of Project Effects

The budgets of the LGUs of Tacloban, Palo, and Tanauan to revise the CLUPs and evacuation plans and to conduct evacuation drills are shown in Table 13.

Table 13. Budget to revise CLUPs and evacuation plans and to conduct evacuation drills
(Unit: Philippine peso)

LGU	Budget for the revision of CLUPs and evacuation plans			Budget for conducting evacuation drills		
	2018	2019	2020	2018	2019	2020
Tacloban	350,000	350,000	350,000	500,000	500,000	500,000
Palo	500,000	500,000	500,000	80,000	80,000	80,000
Tanauan	0	0	250,000	0	0	0

Source: Tacloban LGU, Palo LGU, Tanauan LGU.

According to the Tacloban and Palo LGUs, the budget to revise CLUPs and evacuation plans and to conduct evacuation drills, is sufficiently secured. As for the Tanauan LGU, the budget (250,000 pesos) to revise its CLUP and evacuation plan allocated for FY2020 was reallocated to activities related to COVID-19. As such, a budget of 80,000 pesos was newly allocated for FY2021 for the CLUP revision work. However, according to the Tanauan LGU, the budget for CLUP revision is not sufficient. As for evacuation drills, although no budget is allocated to the Tanauan LGU, schools and barangays that request lectures and evacuation drills bear the associated costs.

Therefore, although no specific concerns were observed in the Tacloban and Palo LGUs, financial concerns remain in the Tanauan LGU.

3.4.5 Status of Operation and Maintenance

In the public facilities rebuilt under the QIPs (the provincial health office (QIP-2), national agricultural school (QIP-4, 17), national high school (QIP-5), day care centers (QIP-6 and QIP-7), public markets (QIP-9, QIP-11, and QIP-12), slaughterhouse (QIP-10, 22), elementary school (QIP-16), and RHUs (QIP-18, QIP-19)), regular inspections and repairs were conducted under the initiative of LGUs and barangays, and operation and maintenance were properly managed.

Therefore, no particular concerns were observed in the operation and maintenance

status.

In light of the above, although a financial concern was identified in the Tanauan LGU, no major problems were observed in the policy background and the institutional/organizational, technical, and financial aspects. Therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented in the target areas in the provinces of Leyte, Samar, and Eastern Samar affected by Typhoon Yolanda, with the purpose of advancing recovery and reconstruction by (i) promoting the development of disaster recovery and reconstruction plans, (ii) formulating recovery and reconstruction projects, and (iii) implementing the QIPs, thereby contributing to the reconstruction in the target areas. The objective of the project was highly consistent with the policies of the government of the Philippines and the needs of the affected areas, as well as with Japan's ODA policies. Therefore, the relevance of the project is high. With regard to effectiveness, the administrative capacity of LGU officials was strengthened through the assistance in revising CLUPs, which serve as the basis for reconstruction planning and urban development, and in developing evacuation plans, and through the activities of QIPs. In addition, through the implementation of QIPs, the rebuilding of disaster-resilient facilities and means of livelihood were confirmed. Regarding its impacts, the continuous use of skills and knowledge gained from the CLUP revision work and the use of disaster evacuation plans were confirmed in three LGUs (Tacloban City, Palo, and Tanauan Municipalities), where the project prioritized assistance. Moreover, it was confirmed that public services were continuously provided in the facilities rebuilt under QIPs, and some livelihood activities continued, both of which contributed to the reconstruction of the target areas. Therefore, effectiveness and impacts of the project are high. Efficiency of the project is high, as it is considered that both the project cost and project period are commensurate with the produced outputs. In terms of operation and maintenance to sustain the project effects, although there is a financial issue in the Tanauan LGU for the CLUP revision, no major problems were observed in the policy background, institutional/organizational and technical aspects, and status of operation and maintenance. Therefore, sustainability of the project effects is high.

In light of the above, the project is evaluated to be highly satisfactory.

4.2 Role and Contribution

Input of persons with experience in disaster reconstruction in Japan

From the start of the project planning stage, it was planned to utilize the experiences and lessons learned from the Great East Japan Earthquake in project activities. Therefore, JICA requested cooperation from Higashi-Matsushima City in Miyagi Prefecture during project planning, and invited the official of the city government and the board member of the Commerce and Industry Association to join as members of the project advisory committee, as both were engaged in the reconstruction of the city from the Great East Japan Earthquake. In addition, the advisory committee members were dispatched to the project sites to share their own experiences with the Philippines' stakeholders, and they delivered their messages to the stakeholders with convincing and powerful words regarding the reconstruction measures to be taken. Consequently, the lessons learned from the Great East Japan Earthquake, such as the importance of involving various stakeholders in reconstruction planning, which was emphasized in the project, were practiced in the target areas even at the time of ex-post evaluation. Therefore, the presence of not only expert international development consultants but also parties with experience in Japanese disaster reconstruction from the beginning of the project planning stage contributed greatly to raising awareness among LGUs' government officials and promoting inclusive reconstruction planning.

4.3 Recommendations

4.3.1 Recommendations to the Implementing Agency

(1) Basey LGU: Support for promoting the utilization of submersible fish cages provided in QIP-1 and the operation and maintenance of the processing plants constructed under QIP-21

To promote the operation of the unutilized submersible fish cages, it is recommended that the Municipal Agriculture Office (MAO) of the Basey LGU, the supervisory authority of QIP-1, provide technical assistance to fish farming associations. As for processing plants, where fish farming associations are responsible for the operation and maintenance of the facilities, their utilization is limited. For example, milkfish processing activity in Tinaogan Barangay has been suspended, and the processing plant is used only as a place to sell rice and other products. Therefore, it is recommended that the Basey LGU consider promoting the effective use of the processing plants and supporting stable and sustainable operation by securing a budget for FY2022 for the operation and maintenance of the facilities, including repair costs.

(2) Guiuan LGU: Support for resumption of lapu-lapu aquaculture and the operation and maintenance of the artificial feed preparation facility constructed under QIP-8

It is recommended that the Office of Municipal Agricultural Services (OMAS), the supervisory authority of QIP-1, provide technical and financial assistance to the fish farming association to resume lapu-lapu aquaculture in coordination with the Bureau of Fisheries and Aquatic Resources (BFAR) under the Department of Agriculture (DA). In addition, as the artificial feed preparation facility, whose operation and maintenance is conducted by the fish farming association, is currently used only for ice production, it is recommended that the Guiuan LGU promote the effective use of the facility and consider providing support for the operation and maintenance of the facility, including repair costs, by securing a budget for FY2022.

4.32.2 Recommendations to JICA

None

4.4 Lessons Learned

(1) Multi-faceted assistance for disaster recovery and reconstruction using various approaches

In this project, in addition to providing highly accurate hazard maps based on scientific data, assistance was provided for land use policy planning and disaster risk reduction measures under an inclusive approach involving diverse stakeholders. Hence, the project adopted an approach that combined scientific and people-oriented perspectives (e.g., protection of productive assets and cultural and environmental resources). Furthermore, in addition to providing assistance for structural measures (e.g., assistance for facility and embankment construction projects), assistance for non-structural measures (e.g., assistance for evacuation planning and restoration of people's livelihoods) was also provided, thus adopting both hard and soft approaches. In this way, various approaches were applied to provide multi-faceted emergency disaster assistance that strengthens the capacity of local governments and communities to reduce disaster risk. For similar projects in the future, the use of scientific and people-oriented approaches, as well as a mixed hard and soft approach, from the time of project planning and throughout the project implementation, will lead to better reconstruction assistance under the BBB concept.

(2) Multilayered assistance for disaster recovery and reconstruction through training in Japan and other various JICA schemes

The project was formulated and implemented in coordination with JICA's other schemes (Grant Aid Project, Private Sector Partnership Program, JICA Partnership Program, and

Japan Overseas Cooperation Volunteers) in addition to training programs in Japan for a total of four times, receiving cooperation from local Japanese governments, the private sector, and civil societies. In this way, by collaborating with various JICA schemes, the effects of the project and their sustainability were improved, and synergies were generated. For similar projects in the future, it would be effective to provide multilayered support utilizing various JICA schemes from the time of project planning through to project implementation.


END

PDM

Project Summary		Indicators
Overall Goal	Target areas are reconstructed.	<p>1. Building safer cities (Medium and long term)</p> <p>1-1. CLUPs are utilized.</p> <p>1-2. Evacuation plans are utilized.</p> <p>2. Rebuilding people's daily lives (Medium and long term)</p> <p>2-1. The provision of public services (health care, education, social services) is resumed and continues in the rebuilt facilities.</p> <p>3. Recovery of the regional economy and promotion of industries (Medium and long term)</p> <p>3-1. Businesses or livelihood activities resumed by QIPs continue.</p> <p>3-2. Employment is generated by QIPs.</p>
Project Purpose	Recovery and reconstruction in the target areas advance.	<p>1. Building safer cities (At project completion)</p> <p>1-1. Capacity of government officials for building disaster-resilient communities is improved through the process of disaster recovery and reconstruction planning and the implementation of QIPs.</p> <p>2. Rebuilding people's daily lives (At project completion)</p> <p>2-1. Disaster-resilient facilities are rebuilt through the implementation of QIPs.</p> <p>3. Recovery of regional economy and promotion of industries (At the project completion)</p> <p>3-1. Activities of local industries (agriculture, fishery, etc.) are resumed through the implementation of QIPs.</p> <p>3-2. People's livelihoods are regenerated through the implementation of QIPs.</p>
Outputs	Output 1	<p>Development of disaster recovery and reconstruction plans is promoted.</p> <p>1-1. Hazard maps are provided to 18 LGUs.</p> <p>1-2. Revision work of CLUPs is conducted reflecting disaster recovery and reconstruction plans and hazard maps in target areas.</p> <p>1-3. Evacuation plans are developed based on hazard maps and structural measures.</p>
	Output 2	<p>Recovery and reconstruction projects are formulated.</p> <p>2-1. Grant aid project is formulated to build safer cities, rebuild people's daily lives, recover the regional economy, and promote industries.</p> <p>2-2. QIPs are formulated.</p>
	Output 3	<p>QIPs are implemented.</p> <p>3-1. QIPs are implemented as planned.</p>

Source: Created by the evaluator.



Continuation status of QIPs

Province/ Municipality	QIP	Continuation Status
Samar/ Basey	QIP-1, 21	<p>In QIP-1, a total of 40 submersible fish cages were installed in four barangays¹ in the Basey LGU, and equipment for milkfish processing (e.g., pressure cookers) and assistance for developing processed products were provided to women's associations equipment (e.g., pressure cookers, etc.) were provided for milkfish processing. In addition, assistance was provided to women's associations for developing products and promoting sales in QIP-13. Furthermore, under QIP-21, a total of four processing plants were constructed in each barangay for regular processing activities for members of women's associations who learned the skills to process milkfish through QIP-1.</p> <p>According to an interview with a secretary of the fish farming association in Tinaogan Barangay, although all of the 20 submersible fish cages installed are in good condition, only 6 of them are in operation due to the lack of funds necessary to operate submersible fish cages, such as costs of labor, maintenance, and purchase of fingerlings and feed. The association is planning to rent out the unutilized submersible fish cages to individuals and private companies.</p> <p>The group discussion was also conducted with members of women's association in Tinaogan Barangay. According to them, the market demand for processed milkfish products was high, so they had regular customers and were receiving orders on a regular basis. They also exhibited and sold their products in malls, and a Japan Overseas Cooperation Volunteer (JOCV) helped them to improve label design and other marketing techniques. However, since the equipment for processing milkfish broke down in 2017 (spare parts were not available locally), 27 members of the women's association have not been processing milkfish since then, but instead have been making peanut butter and trading rice at the processing plant.</p> <p style="text-align: right;">Constructed processing plant (QIP-21)</p> 
Leyte/ Palo	QIP-2	<p>After rebuilding of the provincial health office, healthcare services and programs such as the "Women's Health and Safe Motherhood Program," "Family Planning Program," "Responsible Child Care," and "Maternal Nutrition Program," among others, resumed. In particular, the early resumption of general medical services (such as the treatment of pneumonia in children) and vaccinations (such as for rabies) helped to prevent serious illnesses during the aftermath of Typhoon Yolanda.</p> <p>As for the operation and maintenance of the facility, there were water leaks from the ceiling and cracks in the walls, but those were repaired in 2019 in the follow-up project by JICA. Since then, services continued to be provided without any problems. It is reported that minor damage in the facility is repaired immediately to prevent further damage.</p>

¹ Tinaogan Barangay: 20 submersible fish cages, Amandayehan Barangay: 10 submersible fish cages, Cambayan and San Antonio Barangays: 5 submersible fish cages each.

		 
		<p>Provincial health office (exterior view) Provincial health office (interior view)</p>
Leyte/ Tolosa	QIP-3	<p>In QIP-3, a multi-purpose livelihood building was constructed and food processing equipment was provided, as well as food processing training was conducted. According to a member of the women association who participated in the food processing training, she learned how to improve the quality of processed foods and how to preserve them in good condition, and she could earn an average of 500 pesos per month by selling the processed products using the techniques learned from the sales promotion activities conducted in QIP-13.</p> <p>Approximately 30 women who were not working before the project could earn income through these activities, but at the time of ex-post evaluation, the activities were suspended due to COVID-19. The women continued to process meat for their family's consumption at the time of ex-post evaluation, and stated that the processing skills they learned in the training were useful. They said that once the COVID-19 situation settles down, they want to resume food processing activities under the guidance of the LGU.</p> <p>Another woman who participated in the training on milkfish processing (de-boning of milkfish) was processing about five days a month and was paid 180 pesos a day from the association. Due to the COVID-19 pandemic, however, she has been inactive at the time of ex-post evaluation. She said that she processes milkfish when she receives personal orders from her neighbors. It was reported that before the project, most of the members of the association were housewives and did not earn an income, but after the implementation of the project, many of the women were able to earn a net income of 500-700 pesos per month.</p>
		 
		<p>Constructed multi-purpose livelihood building Provided food processing equipment</p>
Leyte/ Dulag	QIP-5	<p>The rebuilt national high school continues to provide educational services. The reconstruction of the school building led to the early resumption of classes. According to the school principal, the school has been used as an evacuation center and saved many lives in the Dulag LGU, where there have been frequent typhoons since Typhoon Yolanda.</p> <p>As for the operation and maintenance of the facility, when minor damage such as rain leaks occurred during typhoons, repair work such as repainting of ceilings and repair of concrete gutters was carried out and no major problems were reported.</p>



				
Leyte/ Dulag	QIP-10, 22	<p>The old facility was washed away by Typhoon Yolanda, but after the reconstruction of the facility, it is able to meet the municipal demand for meat slaughtering. In addition, the access road from the facility to a national road was rehabilitated under QIP-22, making it safe and easy to convey livestock to the slaughterhouse and deliver the meat after processing.</p> <p>According to a facility manager, the early reconstruction of the facility enabled many people who were jobless after Typhoon Yolanda to earn income. They were also able to resume their activities quickly and deliver safe meat to consumers. Currently, they are processing an average of 30 cattle per day.</p> <p>As for the operation and maintenance of the facility, minor repairs such as roof leaks, broken floor tiles, and broken faucets occur, but the Dulag LGU responds quickly and there are no particular problems.</p>		
Leyte/ Dulag	QIP-19			
		Slaughterhouse (QIP-10)	Rehabilitated access road (QIP-22)	
		<p>Due to damage caused by Typhoon Yolanda, people who needed medical services had to go to distant hospitals that were functioning. However, with the early reconstruction of the RHU, the primary medical services (consultation, treatment, referral to secondary and tertiary medical care, etc.) were able to resume.</p> <p>As for the operation and maintenance of the facilities, although there were minor problems such as rain leaks after the typhoons, the Dulag LGU repaired them promptly, allowing the RHU to continue providing services with no problems.</p>		
				

		Rural health unit (exterior view) Rural health unit (interior view)
Leyte/ Mayorga	QIP-12	<p>In the rebuilt public market, the sale of goods and other businesses resumed. The early resumption of economic activities has led to the recovery of employment and income loss.</p> <p>As for the status of operation and maintenance of the facility, water leaks occurred. The cost of those repairs was incorporated into the FY2022 budget of the Mayorga LGU.</p>
Leyte/ Abuyog	QIP-18	<p>At the rebuilt RHU, healthcare services such as medical consultations, simple surgeries, deliveries, and medical tests resumed. Even during the COVID-19 pandemic, the services continued while taking COVID-19 measures, such as installing plastic shields at the counters and conducting medical consultations under a tent outside the building when there are a large number of consultations.</p> <p>As for the status of the facility's operation and maintenance, the air conditioner and lighting are inspected quarterly by technicians of the Abuyog LGU, but a large crack in the wall of the delivery room caused by an earthquake two years ago has not yet been repaired. Since it was not included in the FY2021 budget, it will be repaired in the FY2022 budget.</p>
Leyte/ Tanauan	QIP-15, 20	<p>In QIP-15, assistance was provided for installing oyster and milkfish aquaculture equipment² and for developing processed oyster and milkfish products for women's associations. In addition, in QIP-13, assistance was provided to promote the sales of processed products. Furthermore, a processing plant was constructed in QIP-20.</p> <p>According to an interview with a woman who participated in the training of trainers on fish processing and marketing, the activities related to milkfish culture and sales are continuing and the fish farming association earns about 6,000 pesos per month from these activities. She herself earns 500 pesos a month by selling adult milkfish, even during the COVID-19 pandemic. Processing activities, on the other hand, were suspended due to the COVID pandemic. Before the COVID-19 pandemic, there were many orders for processed milkfish products, some of which were from Manila, but people have become more sensitive to hygiene and prefer raw milkfish rather than processed products. She hopes to improve her aquaculture and processing skills when COVID-19 ceases.</p> <p>According to an interview with a woman who participated in the oyster aquaculture training, she could earn an average of 300 pesos per day during the oyster aquaculture season through project activities. However, oyster aquaculture activities are currently suspended because the Philippine government's ongoing embankment construction near the aquaculture area that started in 2019 contaminated the farm and reduced the oyster population. She hopes to restart oyster aquaculture activities once the embankment construction is completed and the contamination of the aquaculture area is alleviated.</p> <div style="display: flex; justify-content: space-around;">   </div> <p>Constructed processing plant Provided equipment for processing</p>
Leyte/ Tanauan	QIP-16	<p>Educational services are continuously provided in the rebuilt elementary school. It was reported that the clean and open space is a suitable learning environment for children. The facility is also used as an evacuation center in case of disaster.</p> <p>As for the operation and maintenance of the facility, when rain leaks occurred in the roof, they were repaired immediately and no major problems were reported.</p>

² Aquaculture net pens and oyster shelves.

		 
		<p>Entrance of the elementary school Ramp for people with disabilities</p>
Eastern Samar/ Balangiga	QIP-4, 17	<p>The rebuilt national agricultural school continuously provides vocational and technical training courses such as carpentry, tourism, baking and patisserie, cooking, welding, driving, electrical engineering, and food processing, as well as competency assessment services (services to issue certificates necessary for employment). According to a facility official, despite the aftermath of Typhoon Yolanda, the services resumed early and training and competency assessment services were provided to those who had lost their jobs, helping to secure employment and restore livelihoods, through the project's rebuilding of the facility and installation of the necessary equipment. In addition, the provision of equipment allowed for the development of 18 programs after the project implementation, whereas there were only 5 programs registered at TESDA before Typhoon Yolanda.</p> <p>As for the operation and maintenance of the facility, there have been no problems. Since April 2020, when the COVID-19 pandemic started, the school has been providing vocational training with a capacity limit of 30-50% of trainees per room.</p>  
		<p>National agricultural school Provided cooking equipment</p>
Eastern Samar/ Salcedo	QIP-6	<p>At five day care centers rebuilt in five barangays (Sitio Guba, Sitio Layag, Sitio Malobago, San Roque, and Sta. Cruz), day care services for young children have been continuously provided at the time of ex-post evaluation. At the day care center in Sitio Layag Barangay, service was temporarily closed two years ago due to low enrollment of children between the ages of three and five, but has since resumed. The four day care centers besides the one in Sitio Layag Barangay near the sea, are used as evacuation centers during typhoons and other disasters. In addition, the day care center in San Roque Barangay is also used as a meeting venue for various community meetings by governmental and non-governmental organizations. During the COVID-19 pandemic, the day care center in Sitio Guba Barangay was also used as a quarantine center for people who tested positive.</p> <p>As for the operation and maintenance of the facility, cracks in the windowpanes and walls sometimes occur, but the barangay government takes care of the repairs.</p>
Eastern Samar/ Guiuan	QIP-7	<p>The rebuilt day care center is used as a place for children's day care sessions held from Monday to Friday, as well as for parents' meetings. The facility before the reconstruction was blown away by Typhoon Yolanda due to its simple construction. However, the rebuilt facility provides a suitable learning environment (resilient building, spacious and clean space, good ventilation, etc.) for children and contributes to early childhood education. Before the COVID-19 pandemic, 30 children between the ages of three and four were attending the sessions, but the day care service is</p>

		<p>currently suspended due to the COVID-19 pandemic. The facility is also used as a training center for TESDA on an irregular basis. At the time of the qualitative survey conducted in this ex-post evaluation, a 28-day skills training course for TESDA was being conducted with 11 trainees participating.</p> <p>As for the operation and maintenance of the facility, the day care workers, together with the barangay officials, were reported to be cleaning and maintaining the facility on a regular basis (at least once a week). The barangay government is responsible for the repair and cleaning of the facility, the municipal government pays the electricity bill, and the parents pay the water bill.</p> <div style="display: flex; justify-content: space-around;">   </div> <p style="display: flex; justify-content: space-around;"> Entrance of the day care center Scene of TESDA training </p>
Eastern Samar/ Guiuan	QIP-8	<p>In QIP-8, submerged fish cages and related equipment were provided and technical training on the submerged fish cages was conducted. According to a man who participated in the technical training, before Typhoon Yolanda, there were orders for lapu-lapu from Chinese merchants, and they were sold at 4,000 pesos per kilogram, especially during the Chinese New Year. However, as Chinese merchants started buying from Australia, the unit price decreased annually, and in 2018-2019, he could only sell for 1,000 pesos per kilogram. In addition, he could not earn enough income to pay workers, as he required four to five employees, nor could he afford to buy feed for the aquaculture, so the lapu-lapu culture using submerged fish cages lasted only about a year after the project was completed. Typhoon Ursula in 2019 destroyed the compressors used to sink the submerged fish cages. It has been difficult to secure funds to purchase new fish cages and aquaculture activities completely stopped since then.</p> <p>According to a woman who participated in the training on environmentally friendly aquaculture techniques, she learned how to save energy and to use solar energy. Lapu-lapu culture did not last because of the high cost of aquaculture feed and the decreasing number of customers each year. To earn some income, this woman uses a freezer provided by the project to sell ice and earns about 500 pesos per month. The freezer is also used to store the caught fish and fish feeds. The artificial feed preparation facility built under QIP-8 is used to store generators, batteries, and machines for preparing fish feed and as a place to produce ice.</p> <div style="display: flex; justify-content: space-around;">   </div> <p style="display: flex; justify-content: space-around;"> Artificial feed preparation facility Submerged fish cage destroyed by Typhoon Ursula </p>
Eastern Samar/ Guiuan	QIP-9	<p>According to a facility manager, the rebuilt public market is continuously used as a marketplace for farmers and entrepreneurs to sell their products. A roof of an old building before its reconstruction was blown off by Typhoon Yolanda, walls were badly damaged, and the water supply system did not function, so very little trading occurred, as it was directly exposed to the sun and rain, resulting in a sharp drop in revenue. Before</p>

		<p>the reconstruction, the number of vendors was about 50 to 60 per day, but after the reconstruction, the number increased to about 200. The number of buyers and customers at the market increased from less than 400 per day before the reconstruction to more than 1,000 after the reconstruction. In addition, the revenue collected by the Guiuan LGU from the public market increased from 400,000 pesos per month before reconstruction to over 1 million pesos per month after reconstruction.</p> <p>As for the operation and maintenance of the facility, inspections are conducted daily, and when the paint on the pillars is peeling or the water pipes are clogged, the Guiuan LGU repairs them promptly. According to the facility manager, he is satisfied that the facility is durable enough to withstand all the typhoons that have passed through since Typhoon Yolanda.</p>
		<div style="display: flex; justify-content: space-around;">   </div> <p>Public market (exterior view) Public market (interior view)</p>
Eastern Samar/ Mercedes	QIP-11	<p>In the rebuilt public market, several stores opened to sell food and other products. Electricity and water supply were reactivated soon after Typhoon Yolanda, allowing people to reopen their businesses at an early stage. This helped to secure a source of income for residents who opened stores in the market, while many people lost their means of livelihood after Typhoon Yolanda.</p> <p>As for the operation and maintenance of the facility, LGU officials always keep it clean. Even during the COVID-19 pandemic, vendors continued to run their business in accordance with the municipal guidelines, making sure to wear masks, maintain social distance, and wash their hands.</p>
Eastern Samar/ Mercedes	QIP-14	<p>To secure a means of livelihood for coconut farmers affected by Typhoon Yolanda, technical assistance was provided to make coconut charcoal from fallen coconut trees by introducing the Japanese “Fuse -yaki” technique. According to a man who participated in the training, he could produce 36 bags of coconut charcoal in three weeks to a month (100 pesos per bag). Coconut charcoal production has not occurred since 2015, as most of the fallen coconut trees were burned to make charcoal.</p> <p>A woman who participated in the training has also not been involved in coconut charcoal production since 2015 as the fallen trees are no longer there. She earned 200 pesos a month, which she could spend to buy coffee, sugar, and other small items from a store. In addition, QIP-14 promoted intercropping of coconut, as the charcoal-burned area provides good soil for growing horticultural crops. The woman was continuing to cultivate and sell horticultural crops at the time of ex-post evaluation.</p>

Source: Interviews with QIP stakeholders.

Democratic Socialist Republic of Sri Lanka

FY2020 Ex-Post Evaluation of Japanese ODA Loan Project

“Greater Colombo Urban Transport Development Project,
Greater Colombo Urban Transport Development Project Phase 2 (I),
Greater Colombo Urban Transport Development Project Phase 2 (II)”

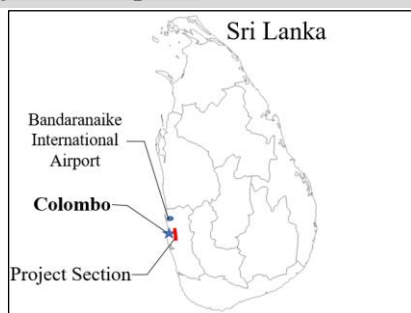
External Evaluator: Akiko Shimizu, Value Frontier Co., Ltd.

0. Summary

This project was carried out with the objective to improve regional connectivity by constructing an expressway that connects major national roads and the Southern Expressway in the suburbs of Colombo City. The project objective was fully consistent with Sri Lanka’s development policies, development needs, and Japan’s Official Development Assistance (ODA) policies. Therefore, relevance of the project is high. Regarding the project implementation, the project cost was within the plan, but the project period exceeded the plan, thus efficiency of the project is fair. In terms of effectiveness, the indicators achieved close to the target values, when the evaluation took into account of the effects after the completion of the expressway section, which was originally planned to be constructed under the project but was ultimately completed with the assistance of China (China-assisted section). The findings also show that traveling convenience improved when the sections constructed under the project were linked to the Southern Expressway. Regarding impacts, it has been quantitatively shown that the project has contributed to easing traffic congestion in Colombo City by improving connectivity between regions. In some confirmed cases, the project has contributed to vitalizing local industries and to promoting economic development. Therefore, effectiveness and impacts are high. In terms of the operation and maintenance of facilities constructed under the project, no particular problems have been observed in the institutional and technical aspects, despite having minor organizational and financial problems. There are also some problems in the status of operation and maintenance. Therefore, sustainability of the project is fair.

In light of the above, the project is evaluated to be satisfactory.

1. Project Description



Project location



View near the Kottawa interchange

1.1 Background

At the project appraisal, there were radial arterial roads extending from Colombo City, but no roads connecting the regions had been developed. For this reason, when traveling between regions, it was necessary to drive through Colombo City via radial arterial roads. This layout caused a large volume of traffic to flow into Colombo City, exacerbating traffic congestion in the city. Under these circumstances, the project was expected to enable efficient travel between the regions without the need to pass through Colombo City, by constructing the Outer Circular Highway (OCH) and connecting it to the Colombo–Katunayake Expressway (E03) to northern Sri Lanka as well as to the Southern Expressway (E01)¹ to southern Sri Lanka. The project consisted of constructing one section of Kottawa–Kaduwela (11 km) in the Greater Colombo Urban Transport Development Project (Phase 1) and a section of Kaduwela–Kadawatha (9 km) in the Greater Colombo Urban Transport Development Project Phase 2 (I) and (II) (Phase 2). Thus, both phases combined: the Kottawa–Kadawatha (20 km) (the project section) became the target.

At the project appraisal, the remaining section of Kadawatha–Kerawalapitiya (9 km) out of the total 29 km of the OCH was expected to be constructed during Phase 3 of the project. During the project implementation, however, it was confirmed that this section would be constructed with Chinese assistance. For this reason, the OCH could not be completed within the project; it was not linked to the Colombo–Katunayake Expressway (E03) leading to Bandaranaike International Airport until the China-assisted section was completed.



Source: Prepared by the evaluator based on Google Map
Figure 1. Project section (Phase 1 and Phase 2)

1.2 Project Outline

The objective of the project is to improve regional connectivity by constructing an expressway in the suburbs of Colombo City to link to major national roads and the Southern Expressway, thereby contributing to mitigating traffic congestion in Colombo City, strengthening the economic foundation of Sri Lanka, and reducing the economic disparity among regions.

¹ The highway was constructed through a co-financing project of JICA and the Asian Development Bank (ADB). The Kottawa–Pinnaduwa (Galle) section began operations in November 2011.

Phase		Phase 1	Phase 2(I)	Phase 2(II)
Loan Approved Amount / Disbursed Amount		21,917 million yen / 21,913 million yen	5,718 million yen / 5,713 million yen	31,688 million yen / 29,980 million yen
Exchange of Notes Date / Loan Agreement Signing Date		March 2007 / March 2007	June 2008 / July 2008	March 2011 / March 2011
Terms and Conditions	Interest Rate	Main Contract: 1.5 %	Main Contract: 0.2 %	
		Consultant: 1.5 %	Consultant: 0.01 %	
	Repayment Period	30 years	40 years	
	Grace Period	10 years		
Conditions for Procurement	Main Contract: General untied	Main Contract: Tied (Special Terms for Economic Partnership (STEP))		
	Consultant: General untied	Consultant: Tied	-	
Borrower / Executing Agency		Government of the Democratic Socialist Republic of Sri Lanka / Ministry of Highway		
Project Completion		July 2015		
Target Area		The suburbs of Colombo City		
Main Contractors		China Harbour Engineering Co. Ltd. (China)	Taisei Corporation (Japan)	
Main Consultants		Joint Venture (2008 Contract): Oriental Consultants Co., Ltd. (Japan) / Resources Development Consultants Ltd. (Sri Lanka) / Engineering Consultants Ltd. (Sri Lanka) / Consulting Engineers & Architects Associated Ltd. (Sri Lanka) Joint Venture (2009 Contract): Oriental Consultants Co., Ltd. (Japan) / Greentech Consultants (PVT) Ltd. (Sri Lanka)		
Related Studies		Feasibility Study (2000), Detail Study (2006)		
Related Projects		<JICA Technical Assistance related to ODA Loan> - Expressway Administration Project (2009–2012) <Japanese ODA Loan> - Southern Highway Construction Project (I) (2001), (II) (2008) <Japanese Grant> - Project for the Development of Intelligent Transport System for Expressways (2013) <Others> - Asian Development Bank: Southern Transport Development Project (2001–2013) - Export-Import Bank of China: Outer Circular Highway Project Phase III (2016–2019)		

2. Outline of the Evaluation Study

2.1 External Evaluator

Akiko Shimizu, Value Frontier Co., Ltd.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule:

Duration of the Study: November 2020–February 2022

Duration of the Field Study: July 20, 2021–August 18, 2021 (including a two-week

quarantine period on entering the country)

2.3 Constraints during the Evaluation Study

(1) According to the materials provided by JICA, two objectives of the project were set as “to mitigate traffic congestion in the Colombo metropolitan area” and “to improve connectivity between regions.” However, “to mitigate traffic congestion in the Colombo metropolitan area” is not a direct effect of the construction of the project section alone, but can be achieved through a variety of other factors. Therefore, in the ex-post evaluation, “to mitigate traffic congestion in Colombo City” is considered as a project impact.

(2) The original plan was to carry out the field study twice. However, due to the spread of the COVID-19, only one field study was carried out. Therefore, the second field study was conducted remotely, with local consultants collecting information.

3. Results of the Evaluation (Overall Rating: B²)

3.1 Relevance (Rating: ③³)

3.1.1 Consistency with the Development Plan of Sri Lanka

At the project appraisal, the *Mahinda Chintana: Vision for a New Sri Lanka, A Ten-Year Horizon Development Framework 2006–2016* (2005) had clarified the need to improve the road network; constructing expressways was one of its strategies. In addition, the *National Road Master Plan 2007–2017* (2007) outlined a plan to develop a road network that included expressways, to connect the country’s growing regions.

At the ex-post evaluation, the *Updated National Physical Planning Policy and Plan–2050* (2019) was arguing that the demand for major road infrastructure could be met up to 2030 through existing expressways, including expressways under construction. In addition, *The Vistas of Prosperity and Splendour 2020–2025* (2019), as part of a new approach known as the National Spatial System, was calling for infrastructure development to reduce the disparities between urban and rural areas; one such development was a road network. The *National Road Master Plan 2018–2027* (2018) also emphasized the need to improve road networks, including expressways. The proposed revision to the master plan was finalized at the end of November 2021 and scheduled for official approval.

3.1.2 Consistency with the Development Needs of Sri Lanka

At the project appraisal, the average annual vehicle-registration growth rate in the Western Province, where the Colombo metropolitan area is located, was 13.6 % (2002–2005), while the average annual growth rate for the total road network during the same period was only 1.0 %. This showed that road-network development had not kept pace with the increased volume of

² A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

³ ③: High, ②: Fair, ①: Low

traffic. Thus, the demand for road-network development was high.

At the ex-post evaluation, the number of vehicles in Sri Lanka was continuing to increase, as shown in Table 1. In line with the increased number of vehicles, the Ministry of Highways and the Road Development Authority (RDA), under the Ministry’s jurisdiction, were developing the inter-regional road network (including expressways), as shown in Table 2.

Table 1. Number of vehicles in Sri Lanka (unit: thousands)

2007	2008	2009	2010	2011	2012	2013
3,125	3,391	3,595	3,954	4,480	4,877	5,204
2014	2015	2016	2017	2018	2019	2020
5,633	6,302	6,795	7,247	7,727	8,095	N/A

Sources: Central Bank of Sri Lanka, Ministry of Transport

Table 2. Status of expressway development

	Section	Project Period
Central Expressway (E04) ⁴	Kadawatha–Mirigama	2020–2024
	Mirigama–Kurunegala	2017–2021
	Pothuhera–Galagedara	2021–2024
	Kurunegala–Dambulla	In planning
Ruwanpura Expressway (E06) ⁵	Kahathuduwa–Ingiriya	2021–2023
	Ingiriya–Ruwanpura	In planning
Elevated Expressway	Athurugiriya–New Kelani Bridge	2017–2025

Source: the RDA

3.1.3 Consistency with Japan’s ODA Policy

In the *ODA Charter* (2003), sustainable growth is listed as one of the priority issues with the emphasis placed on developing the socio-economic infrastructure, a key factor in economic activities. The *Medium-Term Policy* (2005) likewise identifies sustainable growth as a priority issue, indicating that assistance will be provided for the development of socio-economic infrastructure, including roads and other transport infrastructure. According to the *Country Assistance Policy for Sri Lanka* (2007), at the project appraisal, the basic policy was the development of social infrastructure, including the road sector. The assistance plan included institutional reform and assistance to develop an economic foundation, in line with the medium-to-long-term vision.

In light of the above, the implementation of the project is highly consistent with the development policies and development needs of Sri Lanka at the project appraisal and ex-post evaluation, as well as Japan’s ODA policies at the project appraisal. Therefore, its relevance is high.

⁴ An expressway connecting the northernmost IC (Kadawatha) of the project section with Kandy City.

⁵ An expressway connecting the Southern Expressway (E01) with Ratnapura District in Sabaragamuwa Province.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

The planned and actual outputs of the project are shown in Table 3.

Table 3. Planned and actual outputs

Item	Plan	Actual
1. Construction of the project section	Total: 20 km (2 lanes in each direction, 4 lanes in total) <Phase 1> Kottawa–Kaduwela: Approx. 12 km <Phase 2> Kaduwela–Kadawatha: Approx. 8 km	Total: 20 km (2 lanes in each direction, 4 lanes in total) <Phase 1> Kottawa–Kaduwela: Approx. 11 km ⁶ <Phase 2> Kaduwela–Kadawatha: Approx. 9 km
2. Interchange (IC) construction	Total: 3 locations <Phase 1> Kottawa IC, Kaduwela IC, <Phase 2> Kadawatha IC	Total: 5 locations <Phase 1> Kottawa IC, Athurugiriya IC, Kothalawala IC <Phase 2> Kaduwela IC ⁷ , Kadawatha IC
3. Bridge construction	Total: 29 bridges <Phase 1> 13 bridges <Phase 2> 16 bridges	Total: 27 bridges <Phase 1> 11 bridges ⁸ <Phase 2> 21 bridges ⁹
4. Tollgate construction and equipment installation	<Phase 2> Tollgate offices (2 locations), toll booths (21 locations), installation of toll-system equipment	<Phase 2> As planned
5. Township development	<Phase 1> - Construction of roads and other facilities near the ICs (road widening, water-supply and power-distribution networks) (Kottawa, Kaduwela, and Kadawatha districts)	<Phase 1> - Construction of roads and other facilities near the ICs (road widening, water-supply and power-distribution networks) (Kottawa and Kaduwela districts) - Construction of the Kottawa–Makumbura Multimodal Transport Centre (MMC) <Phase 2> - Equipment procurement for the MMC (equipment for information-display systems, operation and maintenance), along with consulting services for operation and maintenance
6. Consulting services for road construction	<Scope of work> Construction supervision, monitoring environmental and social considerations, expressway-facility design, structural design changes, etc.	<Scope of work> As planned

Source: Materials provided by JICA, questionnaires to the RDA and Ministry of Transport

The main changes in the outputs are (1) and (2), as mentioned below. The output changes were made in accordance with appropriate procedures and can be considered reasonable, since

⁶ The viaduct section, which was originally expected to be approximately 0.1 km long, was increased to 3.3 km to address soft ground and to mitigate flood damage. In addition, Kaduwela IC was originally planned to be constructed in Phase 1; when the Phase 1 re-bidding took place, the 1 km construction that included Kaduwela IC was moved to Phase 2.

⁷ As mentioned above, during the Phase 1 re-bidding process, the construction of the Kaduwela IC was moved from Phase 1 to Phase 2.

⁸ The type and number of bridges changed, due to construction of additional ICs.

⁹ The type and number of bridges changed, as measures were implemented to address soft ground and other issues.

they improved traffic convenience.

(1) IC

In the section of Phase 1, Athrugiriya IC was additionally constructed to connect the project section with the national road,¹⁰ anticipating development in the Athrugiriya area and increasing traffic. Likewise, Kothalawala IC was additionally constructed to connect the project section with the national road¹¹ to Colombo City, in anticipation of the development of Kothalawala and Malabe areas and traffic convenience.



Additionally constructed Athrugiriya IC



Additionally constructed Kothalawala IC

(2) Township development

The construction of the MMC was funded by both the Government of Sri Lanka and the phase 1 of this project. The MMC is a facility that functions as a transit hub for short and long distance buses as well as express buses and railways. The MMC allows passengers to transit efficiently between various modes of transportation, reducing travel time and improving connectivity between regions. In addition, consulting services for the procurement of equipment and operation and maintenance of the MMC were financed in Phase 2 in order to strengthen the operation and maintenance of the MMC. Opened in 2019, the MMC is currently undergoing further expansion while operating the facility, which is due to be completed by 2025.



Exterior view of the MMC



Equipment procured for the information-display system

¹⁰ Malabe–Godagama Road (B240)

¹¹ Malabe–Kaduwela Road (B263)

3.2.2 Project Inputs

For details, see the last page of the report, *Comparison of the Original and Actual Scope of the Project*.

3.2.2.1 Project Cost

Although the planned cost of Phases 1 and 2 was 81,456 million yen (including 59,323 million yen from the ODA loan), the actual cost came to 63,376 million yen (including 57,606 million yen from the ODA loan). The project cost was therefore within the plan budget (78 % of the plan).

Exchange-rate fluctuations were considered as the main reason why the project cost fell so far below the estimated budget. The average exchange rate during the construction period of the project section (2007–2015) was 0.83 yen to the Sri Lankan Rupee,¹² compared to exchange rates of 1.12 yen to the rupee (October 2006) and 0.77 yen to the rupee (November 2010) at the project appraisal of Phases 1 and 2, respectively.

Table 4. Planned and actual project costs (unit: million yen)

		Plan			Actual		
		Total project cost	ODA loan	Government of Sri Lanka	Total project cost	ODA loan	Government of Sri Lanka
Phase 1	OCH	29,182	21,074	8,108	N/A	N/A	3,869
	Township development	843	843	0	N/A	N/A	681
	Subtotal	30,025	21,917	8,108	26,463	21,913	4,550
Phase 2	OCH	51,431	37,406	14,025	N/A	N/A	1,130
	Township development	0	0	0	N/A	N/A	90
	Subtotal	51,431	37,406	14,025	36,913	35,693	1,220
Total		81,456	59,323	22,133	63,376	57,606	5,770

Source: Materials provided by JICA and the RDA

[Note 1] The exchange rates for each phase were as follows:

<Phase 1> The exchange rate for the planned amount was 1.12 yen to the Sri Lankan Rupee (October 2006). The exchange rate for the actual amount (in yen) is unknown, as it was not stated in the Project Completion Report (PCR).

<Phase 2>The exchange rate for the planned amount was 0.77 yen to the Sri Lankan Rupee (November 2010). The actual amount paid (in rupees) by the Government of Sri Lanka was converted into yen at an exchange rate of 0.78 yen to the Sri Lankan Rupee (the average IMF exchange rates from 2008 to 2018).

[Note 2] The total ODA loan amount of both phases refers to the total amount disbursed in ODA loans in the material provided by JICA. The actual amount spent by the Government of Sri Lanka in Phase 1 was referred to as the amount referenced in the PCR (3,869 million yen) and the amount obtained by converting the MMC construction costs of 873 million rupees into yen (681 million yen). The actual amount spent by the Government of Sri Lanka in Phase 2 was the amount (in rupees) mentioned in the PCR converted into yen (total: 1,220 million yen).

[Note 3] According to the PCR, the total ODA loan in Phase 1 came to 21,793 million yen, 120 million yen less than the total ODA loan amount (21,913 million yen) disbursed in the material provided by JICA.

3.2.2.2 Project Period

The project completed its final activities in July 2018, following a change in the Phase 2 plan to

¹² Source: IMF exchange rates

fund the installation of equipment in the MMC. However, since the project completion was defined as “when the final facility of the project section is put into service” at the project appraisal, the planned project period was considered as the period from the signing of the L/A to the final facility of the project section being put into service.

The actual project period for Phases 1 and 2 was 101 months (March 2007 to July 2015), compared to 97 months in the plan (March 2007¹³ to March 2015). The project period thus exceeded the plan (104 % of the plan) due to a four-month delay. Table 5 presents the project period for each phase and the reasons for the delay.

Table 5. Project period (planned/actual) and the reasons for delay in each phase

Phase 1 (Kottawa–Kaduwela)		Phase 2 (Kaduwela–Kadawatha)	
Plan	Actual	Plan	Actual
March 2007–April 2012 (62 months)	March 2007–April 2015 (98 months)	July 2008–March 2015 (81 months)	July 2008–July 2015 (85 months)
<Reasons for the 36-month delay ¹⁴ > 1. Bidding Bids were rejected and re-bid due to exceeding the expected price (17 months). 2. Civil construction works <ul style="list-style-type: none"> • Additional construction of Athurugiriya IC and Kothalawala IC (13 months) • Construction delays, following the response to unexpected rock on the Marabe–Godagama road (9 months) 		<The reason for the 4-month delay> Additional work required due to soft ground and route changes	

Source: Materials provided by JICA

3.2.3 Results of Calculations of Internal Rates of Return (Reference only)

With regard to the economic internal rate of return (EIRR), calculated at the project appraisal, the rate was 17.4 % in Phase 1, 13.0 % in Phase 2 (I), and 9.13 % in Phase 2 (II). The last EIRR (9.13 %) calculated in Phase 2 (II) was the combined EIRR of Phases 1 and 2. Therefore, in the ex-post evaluation, the EIRR was recalculated based on the calculation method of Phase 2 (II).

During the ex-post evaluation, the actual EIRR was recalculated using actual project-section traffic-volume data; the recalculation result was 6.03 %. The EIRR was less than the value of 9.13 % at the project appraisal mainly because the China-assisted section was not completed until December 2019.¹⁵ As a consequence, the traffic volume did not increase as much as expected between 2015 and 2019, when the construction of the project section was completed. It should be noted that, at the project appraisal, no decision had been made about expressway tolling, so no expressway-toll revenue was included in the EIRR calculations. The actual value of the EIRR,

¹³ The start of the project was defined as the month when the L/A of Phase 1 was signed.

¹⁴ With regard to the delay, the total period of breakdown lasted 39 months due to the overlapping periods as several civil construction works were carried out simultaneously.

¹⁵ The project of China-assisted section was launched in 2016.

including expressway-toll revenues, is expected to be higher.

As the financial internal rate of return was not calculated at the project appraisal, it was not recalculated in the ex-post evaluation.

Table 6. EIRR costs and benefits

Costs	Project cost (Phase 1: excluding land costs and taxes; Phase 2: excluding taxes), cost of operation and maintenance
Benefits	Vehicle operation cost savings, travel time saving, reduction in traffic accidents
Project Life	15 years (25 years from the L/A signing)

Source: Materials provided by JICA

[Note 1] Although the project life was set at 15 years at the project appraisal, the EIRR was calculated using 25 years from the L/A signing. At the ex-post evaluation, the EIRR was therefore recalculated using 25 years from the year of the L/A signing to make the comparison targets consistent.

[Note 2] Regarding the annual project-cost data, there was no consistency between the total amount of annual data and the total Phase 1 project costs; the annual data for Phase 2 were not available. For this reason, the annual data were obtained by dividing the actual total project cost by the same ratio as the annual project cost, calculated at the project appraisal.

[Note 3] Since the tax amount for the Phase 1 project cost was unknown, a recalculation was carried out, based on the amount including tax. For the Phase 2 project cost, the recalculation excluded the tax on expenses for which the tax could be confirmed, but included the tax on other expenses, for which the tax amount was unknown.

[Note 4] The benefits from 2015 to 2020 were recalculated, based on the actual annual average daily traffic, using the ratio between the expected annual average daily traffic in the target year and the expected benefits. To eliminate the impact of COVID-19 as much as possible when analyzing traffic volume data for 2020, the 2020 benefits were recalculated using the average traffic volume data between January and March, when the impact was not significant. In calculating benefits after 2021, it was assumed that the expected benefits at the project appraisal would be achieved, due to the completion of the China-assisted section. The expected value of the post-2021 benefits at the project appraisal was therefore adopted in the recalculation.

In light of the above, although the project cost was within the plan, the project period exceeded the plan. Therefore, efficient of the project is fair.

3.3 Effectiveness and Impacts¹⁶ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

At the project appraisal, the project aimed to connect OCH to the Colombo–Katunayake Expressway (E03) by constructing the remaining section of the OCH, Kadawatha–Kerawalapitiya, in Phase 3 of the project. In this context, at the time of the project appraisal, the target values of indicators between Kottawa and Kadawatha section was calculated with the assumption of the completion of Kadawatha–Kerawalapitiya section. Subsequently, confirmation was received during the project-implementation period that the Kadawatha–Kerawalapitiya section would be constructed with Chinese assistance, but the target values remained unchanged from the original values at the time of project appraisal, and thus the target values were kept including the effect of the completion of the China-assisted section. For this reason, the status of achievement after the completion (December 2019) of the China-assisted section was taken into account in the ex-post evaluation, when evaluating the effectiveness of the project.

¹⁶ Sub-rating for Effectiveness is to be put with consideration of Impacts.

(1) Operational indicator

The annual average daily traffic (AADT), set as an operational indicator, was 24,240 vehicles/day in 2017 (target year), two years after the project was completed, against a target value of 42,186 vehicles/day, resulting in an achievement rate of 57 %. The main reason the results fell short of the target value in 2017 was, as previously mentioned, because the estimated target value assumed that the China-assisted section was completed. Until the China-assisted section was actually completed, the OCH was not connected to the Colombo–Katunayake Expressway (E03); for this reason, the utility value of the project section did not increase as much as expected. After December 2019, when the China-assisted section was completed, the traffic volume in the project section increased steadily, reaching 79 % achievement rate in 2020 and 84 % in 2021, despite the COVID-19-related movement restrictions.¹⁷ As Table 8 shows, the AADT reached 40,060 vehicles/day (achievement rate: 95 %) in March 2020, when the impact of COVID-19 was minimal. Furthermore, the average traffic volume from January to April 2021 increased to 45,145 vehicles/day (achievement rate: 107 %), as the number of COVID-19 cases decreased. Without the spread of COVID-19, an external factor, it is highly likely that the AADT would have achieved its target value in 2021, two years after the completion of the China-assisted section.

Table 7. AADT (unit: vehicles/day)

Baseline value	Target value	Actual value						
		2015	2016	2017	2018	2019	2020	2021
2007	2017	Project completion year	1 year after project completion	2 years after project completion	3 years after project completion	4 years after project completion	5 years after project completion	6 years after project completion
–	42,186	5,620	18,803	24,240	28,153	29,976	33,145*	35,323**
Achievement rate		–	–	57 %	67 %	71 %	79 %	84 %

Source: JICA data for baseline and target values; RDA data for actual values.

* The average value in January–March 2020, when COVID-19 was making little impact, was 35,588 vehicles/day.

** The average value of January–August 2021 data only.

Table 8. Monthly traffic volume in the project section (unit: vehicles/day)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
2020	32,547	34,157	40,060	N/A	17,114	34,653	35,844	41,099	42,408	27,069	21,527	38,110	33,145
2021	41,851	43,214	49,123	46,390	12,605	20,557	33,520	–	–	–	–	–	35,323

Source: the RDA

[Note] These data were (up to July 2021) collected during the second field study.

(2) Effect indicators

The benefits set for the EIRR were adopted as the three effect indicators “Travel time saving,”

¹⁷ Various restrictions were put in place, based on the number of COVID-19 cases. For example, during the October 2020 lockdown, nonessential travel was restricted. During other periods, curfews and travel restrictions between provinces were often imposed.

“Vehicle operation cost saving,” and “Reduction in traffic accidents.” Since the benefits of the EIRR were calculated based on the AADT estimated during the project appraisal, the target values of these indicators included the effects of the completed China-assisted section, same as the operation indicator mentioned above. The target value of “Travel time saving” was 3,694 million rupees/year, while the actual value in the target year (2017) came to 2,123 1,912 million rupees/year (achievement rate: 57 %); the achievement rate increased to 84 % by 2020. Similarly, the target value of “Vehicle operation cost saving” was 3,327 million rupees/year, while the actual value in the target year (2017) was 1,912 million rupees/year (achievement rate: 57 %); the achievement rate increased to 84% by 2020. As for the “Reduction in traffic accidents,” the target value was 173 million rupees/year, while the actual value in the target year (2017) was 100 million rupees/year (achievement rate: 57 %), and the achievement rate in 2020 reached 84 %. Although none of the three effectiveness indicators achieved their target values in 2017, by 2020, after the China-assisted section was completed, they reached achievement levels close to the target values.

Table 9. Effect indicators (unit: million rupees/year)

	Baseline value	Target value	Actual value					
	2007	2017	2015	2016	2017	2018	2019	2020
		2 years after project completion	Project completion year	1 year after project completion	2 years after project completion	3 years after project completion	4 years after project completion	5 years after project completion
Travel time saving	–	3,694	492	1,647	2,123	2,466	2,626	3,116
Achievement rate			–	–	57 %	66 %	71 %	84 %
Vehicle operation cost saving	–	3,327	443	1,483	1,912	2,220	2,364	2,807
Achievement rate			–	–	57 %	66 %	71 %	84 %
Reduction in traffic accidents	–	173	23	77	99	115	123	146
Achievement rate			–	–	57 %	66 %	71 %	84 %

Source: JICA data for baseline and target values; Actual value was calculated by the evaluator based on the AADT data provided by RDA.

3.3.1.2 Qualitative Effects

(1) Improved connectivity between regions by project section

To confirm the project objective of improving connectivity between regions, interviews were conducted with five project-section users. The interviewees were asked to rate the improvement in inter-regional connectivity by the project using a five-point scale (very much improved, improved, neither improved nor not improved, not improved, and not improved at all). Three selected “very much improved” and two selected “improved.” As shown in Table 10, the interviews confirmed that user satisfaction was generally high, since connecting the project section with the Southern Expressway (E01) improved convenience.

Table 10. Five case studies obtained through an interview survey

Case 1
<p>According to a business owner living in Athurugiriya, who uses the project section every weekday to commute to work, he has been able to reduce his commuting time to his workplace by about 90 minutes each way by using the project section and the Southern Expressway (E01). He also reports enjoying various benefits, such as reduced stress while driving, fuel-cost savings, and release from congestion during the evening peak hours. In addition, it used to take him more than five hours to drive out to his family and relatives in Galle in the Southern Province of Sri Lanka. Following the connection of the project section and the Southern Expressway (E01), that trip now takes less than 90 minutes and he is able to see his family frequently on day trips, strengthening their relationship. He also said that his company has been able to hire four new employees who live in the North Western and Southern Province and other areas after the completion of the project section. Without the opening of project section and the Southern Expressway (E01), the company would have had to provide accommodation for employees forced to live away from their families. Improved regional connectivity has provided a better foundation for those people, enabling them to balance their work and family lives.</p>
Case 2
<p>According to an engineer living in Colombo City, he uses the project section approximately 12 days a month for work. Using the project section and the China-assisted section has allowed him to reduce his driving time by 60 minutes each way, arriving at work in about 45 minutes. In addition to saving time and reducing fuel consumption, avoiding the traffic congestion in the city has helped him drive with a relaxed mind, making him more productive at work. He also mentioned that before the connection of the project section and the Southern Expressway (E01), inter-provincial travel was discouraged because it took long time to get to the Southern Province. As it now takes less than two hours to travel from Colombo to the Southern Province, there are more opportunities to visit the Southern Province, not just for business, but also for leisure.</p>
Case 3
<p>According to a university lecturer who lives in a town about 20 km south of the center of Colombo, he uses the project section approximately 16 days a month for his work commute. He has been able to reduce his commuting time by about 20 minutes each way, giving him more free time in the morning. Now, with the link between the project section and Southern Expressway (E01), it has become much easier for him to travel to tourist places in the Southern Province, which used to be poor accessibility.</p>
Case 4
<p>According to a businessman living in the suburbs of Colombo, he uses the project section approximately 18 days a month to travel to the North Western Province, Southern Province, Uva Province, and other provinces for work and personal purposes. He can save 30 minutes of driving time by using the project section to travel to Belummahara in the suburbs of Colombo. From a business perspective, the improved connectivity to other regions, including the Southern Province, helps him acquire and manage customers, improving his work efficiency and business opportunities. He also said that he recently went to Beliatta in the Southern Province to buy a car; he left his house around 7:00 p.m. and came back at midnight. Without the project section and the Southern Highway (E01), he would have had to spend a whole day there.</p>
Case 5
<p>According to a civil engineer living in the suburbs of Colombo, he saves 60 minutes of commuting time each way by using the project section to drive to his workplace near the Kadawatha IC. In the past, he used to commute via congested city roads and get caught in traffic, taking a long time to reach his destination. He also said that connecting the project section with the Southern Highway (E01) has facilitated inter-regional travel, saving time and providing a stress-free ride on the expressway. In particular, he can now travel easily to the Southern Province, including Galle district, destinations he used to hesitate to travel because of the significant traveling time.</p>

Source: Interview survey conducted during the ex-post evaluation

(2) Improving connectivity between regions through the construction of the MMC

The MMC, which opened in 2019, was Sri Lanka's first transport transit center. The MMC

serves as a transit hub for short-distance buses running within the city, long-distance buses travelling between regions via expressways, and railways running to other regions. In addition, the MMC, which is located near the Kottawa IC, has a large parking lot, allowing people to park their private vehicles at the MMC and transfer to the transportation network for smooth travel to the city center or other regions. It can therefore be said that the MMC has improved the convenience of inter-regional travel.

3.3.2 Impacts

3.3.2.1 Intended Impacts

(1) Mitigating traffic congestion in Colombo City (quantitative effects)

The project was expected to contribute to relieving traffic congestion in Colombo City by allowing vehicles coming from the regions via radial arterial roads to travel to other regions—using the project section without passing through the city. During the ex-post evaluation, a measurement survey was conducted on two radial arterial roads, the A1 (connecting the northeast to the city) and the A4 (connecting the east to the city) to confirm the percentage of traffic volume moving from the northeast and east to other regions via the project section without flowing into the city. The survey found that 50.2 % of the total traffic flow from the northeast via the A1 in the direction of the city moved for a total of 12 hours (6 h/day) from region to region using the project section. Similarly, 47.2 % of the vehicles running from the east toward the city via the A4 used the project section for inter-regional travel. Considering the situation that the above-mentioned vehicles would have flowed into Colombo City without the construction of the project section, it can be said that the project has contributed to relieving traffic congestion in Colombo City.

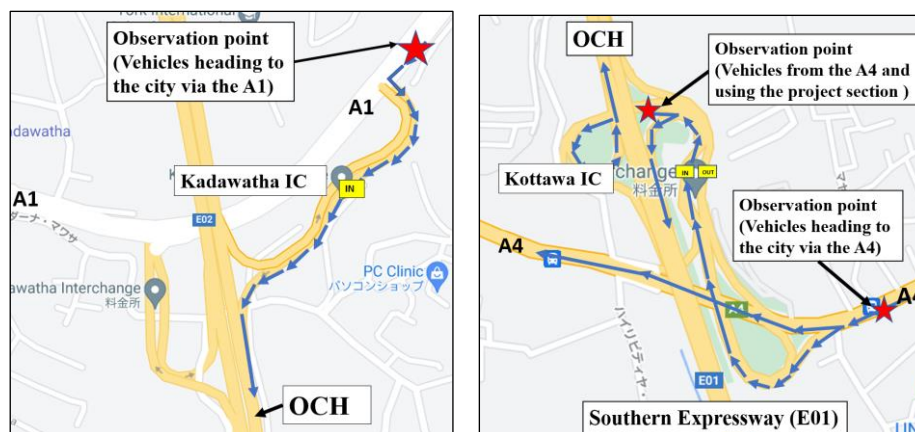
Table 11. Results of the measurement survey

			Vehicles	Subtotal (Vehicles)	Total (Vehicles)	Percentage of vehicles using the project section
① Vehicles from the northeast heading to the city via the A1	Sat	Morning	4,560	8,053	17,051	50.2 %
		Evening	3,493			
	Mon	Morning	5,621	8,998		
		Evening	3,377			
② Vehicles from the northeast, travelling via the A1 and using the project section	Sat	Morning	1,852	3,713	8,557	
		Evening	1,861			
	Mon	Morning	2,817	4,844		
		Evening	2,027			
③ Vehicles from the east heading to the city via the A4	Sat	Morning	3,315	6,219	12,438	
		Evening	2,904			
	Mon	Morning	3,718	6,729		
		Evening	3,011			
④ Vehicles from the east, travelling via the A4 and using the project section	Sat	Morning	1,552	2,555	5,870	
		Evening	1,003			
	Mon	Morning	2,098	3,315		
		Evening	1,217			

Source: Measurement survey and data provided by the RDA

Measurement locations: ①A1 before Kadawatha IC, ②data provided by the RDA, ③A4 before Kottawa IC, ④Kottawa IC

Measurement time: Saturday, October 2, 2021, 7:00–10:00 and 16:00–19:00 (6 hours in total), and Monday, October 4, 2021, 7:00–10:00 and 16:00–19:00 (6 hours in total)



Source: Created by the evaluator based on Google Map

Figure 2. Locations observed in the measurement survey

(2) Promoting regional economic development and vitalizing economic activities through improved regional connectivity (qualitative effects)

To confirm the project impact, interviews were conducted with six businessmen who run business near the ICs of the project section. From the interviews with three businessmen running businesses in the area since before the construction of the project section, it was found that the project-section construction had contributed to vitalizing the local economy by increasing customers and sales. In addition, interviews with two of the three entrepreneurs who launched businesses after the construction of the project section showed that the project-section construction promoted economic development such as the opening of their stores in the area.

Table 12. Results of interviews with six businessmen

Entrepreneurs who ran businesses before the construction of the project section (3 persons)	
1.	The owner of a printing store near the Athurugiriya IC said that he was gaining new customers, including some who use the Athurugiriya IC and distant customers who found his store through Internet search engines. Due to the link between the project section and the Southern Expressway (E01), he could now accept online orders from distant areas and deliver goods in the shortest time possible, using the project section and the Southern Expressway (E01). He reported that sales had increased by 10 % since the construction of the project section.
2.	The owner of a solar-panel installation business near the Kadawatha IC only had customers in the suburbs of Colombo and did not expect to attract them from other areas before the construction of the project section. Since the project section was connected to the Southern Expressway (E01), however, customers from the Southern Province (Galle and Matara districts) had increased, allowing him to expand his customer network. In the past, installation work in the Southern Province could not be completed in a day due to travel time and the need for occasional staff accommodation. As a result, there was little incentive to take orders and some inquiries from the Southern Province had to be declined. After-sales service (maintenance, etc.) for customers in distant areas was also difficult. However, after the project section was connected to the Southern

Expressway (E01), the maintenance work could be completed in a day (5–6 hours). This led to an expansion of business, increasing sales by 30 %.
3. The owner of a restaurant near the Kaduwela IC saw an increase in customers, especially during the evening rush hour, and sales increased by around 25 % since the project section was constructed. He also reported that when the project section was connected to the Southern Expressway (E01), making inter-regional travel more convenient, he was able to accept catering orders from outside Colombo, thus expanding his business and increasing employment.
Entrepreneurs who launched businesses after the construction of the project section (3 persons)
1. The owner of a restaurant near the Kadawatha IC said that its opening had little to do with the project-section opening. According to him, expressway users prioritized fast travel and arrived at their destinations quickly, rather than stopping to have meals.
2. The owner of a mobile phone store near the Athurugiriya IC reported that he decided to open his store near the IC because he expected the project-section opening to increase the number of customers from the suburbs of Colombo and other provinces. He found that he could actually attract customers who used the project section. In addition, he benefited from the opening of the project section and the Southern Expressway (E01) to deliver ordered products to customers.
3. The owner of a shoe store near the Kottawa IC opened his shop in the expectation that the project-section opening would attract many customers from other provinces into the Kottawa IC and Colombo City. In fact, new restaurants and supermarkets have recently opened in the area, he said.

Source: Interview survey conducted during the ex-post evaluation.

Moreover, although the above interviews did not confirm this point, it can be considered that the MMC construction has contributed to mitigating traffic congestion in Colombo City by encouraging MMC users to travel between regions, using public transportation instead of private vehicles.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the natural environment

The project was classified as “Category A,” based on the *JBIC environmental guidelines for ODA loans* (1999), as it was a large-scale construction project. The *Environmental Impact Assessment Report* was approved by the Central Environmental Authority in May 2001.¹⁸ In both Phases 1 and 2, environmental monitoring was carried out in accordance with the *Environment Management Action Plan* and monitoring reports were submitted to the Central Environmental Authority. According to the monitoring reports, the environmental monitoring committee held regular meetings with the participation of all concerned parties; site inspections of the construction work were also conducted regularly and monitoring was carried out appropriately. In addition, planned measures were implemented to manage exhaust fumes, dust, noise, and drainage, while preventing soil erosion and disposing of soil and sand during the construction process. In case neighboring residents complained about the traffic restrictions, dust, noise, or vibrations caused by the construction, the situation was investigated and measures were taken when necessary. These measures included temporary access roads, the provision of alternative housing, and the installation of dust barriers.

¹⁸ The period extension was approved in November 2007. In addition, a supplementary environmental impact-assessment report was prepared for the route change near the Kaduwela IC and approved in May 2005.

As for the MMC, solar panels were installed, among other measures aimed at promoting renewable energy. According to the Ministry of Transport (MOT), greenhouse-gas emissions have now been reduced.¹⁹ Moreover, the MMC, which serves as a transit hub connecting rail and bus transportation networks, has promoted the mitigation of traffic congestion in Colombo City, thus contributing to the reduction of greenhouse-gas emissions.²⁰

(2) Resettlement and land acquisition

The *Resettlement Implementation Plan* was formulated in 2006 for Phase 1 and in 2007 for Phase 2. According to the *Study on Land Acquisition and Resettlement for the Outer Circular Highway Project*, conducted by JICA in 2010, land acquisition in Phase 1 was properly carried out, based on the *Resettlement Implementation Plan*. In addition, 109 households were resettled, 12 stores were relocated, and compensation payments²¹ were completed in 2009. Interviews with 24 affected residents of Phase 1, conducted during the study, showed that most resettled people were able to rebuild their houses using the compensation they received. In some cases, however, house reconstructions were not completed because the households significantly outspent their compensation. When it came to the relocation of stores, there were some satisfactory cases, including owners who were able to buy a plot of land twice the size of their original plot with the compensation funding and to build a sewing workshop next to the house.²² While the Phase 2 land acquisition and resettlement were in progress at the time of the study, interviews were conducted with 21 affected residents who were due to be resettled in Phase 2. The study concluded that explanations and consultations with residents were appropriately and adequately conducted. At the ex-post evaluation, interviews were conducted with four individuals who agreed to be interviewed, based on a list provided by the RDA of 10 out of 242 households²³ resettled in Phase 2.²⁴ Three of the four interviewees said that there was no difference between the prior explanation and the actual situation with regard to the resettlement procedures, contents of compensation, and relocation site, stating that they had received proper amounts of compensation. One felt it was a pity that the relocated house was in a residential area and did not have a large garden overlooking the river, as the previous house before the relocation had. The second said that she

¹⁹ Emission reduction of 182 t-CO₂ from 2020 to June 2021. (Source: the MOT)

²⁰ Emission reduction of 497 t-CO₂ from 2019 to June 2021. (Source: the MOT)

²¹ Compensations were made under the *Land Acquisition Act*, the *Sri Lanka National Involuntary Resettlement Policy*, and the *Ex-Gratia Package for the People Affected by Highway Projects*.

²² Some businesses reported that they had lost business opportunities in good locations and needed time to reacquire customers and recover income. However, in accordance with the *Ex-Gratia Package for the People Affected by Highway Projects*, there was a system in which the amount of earnings for a certain period of time in the past would be paid upon application as a business loss allowance.

²³ As for the information on the 10 households provided by the RDA, since the RDA only kept a list of affected households for all sections of the OCH, the RDA selected a number of households from the top of the list, who were considered to be the target households for Phase 2. Among the selected households, the RDA confirmed that 10 households were actually Phase 2 targets and provided contact information for the 10 households.

²⁴ One legal issue arose when the landowner received compensation but refused to vacate; however, the trial resulted in the successful resettlement.

did not feel the same sense of openness like before because she had moved to a residential area, and the third said that she was very happy living in the new house because she had a better relationship with her neighbors in the new residential area than she had in her previous village. One person who expressed dissatisfaction said that he was not satisfied with the amount of compensation he was paid because only part of the land he owned was acquired and he was not entitled to resettlement. None of the four said that their jobs or income had changed as a result of resettlement.

Table 13. Land acquisition and resettlement in the project section

	Phase 1		Phase 2	
	Plan *	Actual	Plan **	Actual
Land acquisition (ha)	94.2	N/A	81.5	N/A
Lots	926	1,201***	1,091	1,136***
No. of affected households ****	919	1,204	1,063	N/A
Resettlement	Houses	107	109	242
	Commercial buildings	12	12	81
	Others	16	N/A	N/A

Source: Materials provided by JICA and RDA

* Planned data as of May 2006.

** Planned data at the project appraisal of Phase 2 (II).

*** As there was no significant increase in the number of resettlements, it can be assumed that the number of households affected by the land acquisition increased.

**** Households affected by both resettlement and land acquisition.

For the construction of roads near the ICs (Township Development), a land acquisition of 12.7 hectares and the resettlement of 49 households were anticipated. Due to the cancellation of the Kadawatha component and a change to the road layout, however, only one hectare of land was acquired and four households were resettled. Compensations were paid to the four households.

(3) Accidents occurring during the construction of the project section

In March 2014, an accident occurred in which three workers were killed and two others were injured by a girder which toppled, trapping them underneath. In response, JICA conducted an investigation on safety management for the construction work analyzing the root causes of the accident. As a result of the investigation, poor maintenance of construction equipment and inadequate safety measures at the construction site were identified as causes. However, there were subsequent accidents that caused injuries. To prevent further incidents, the number of safety-management personnel was increased and the workers were re-educated on safety-management measures.

(4) Mitigating the negative impacts through the viaduct construction

Based on a recommendation from the Department of Irrigation, the project built a 1 km-long viaduct in the flood-prone area near the Kadawatha IC, where the Kelani River flows. According to the RDA, although statistical causality has not been verified, it is considered that the viaduct contributes to measures for risk reduction of flood damage because its structure was designed not to block the water flow.



Viaduct built near the Kelani River

(5) Improved connectivity between regions by connecting the OCH to the Colombo–Katunayake Expressway (E03), linking to Bandaranaike International Airport as a result of the completion of the China-assisted section

According to the interviews conducted with five users of the project section, mentioned above in the effectiveness section, the connection of the OCH to the Colombo–Katunayake Expressway (E03) has reduced the travel time to Bandaranaike International Airport, which used to take more than an hour, but now takes only 45 minutes. Those who said that the driving time to the airport has been reduced also said that it was worth paying the express toll to save time, especially in the evening when the roads are congested. In addition, some respondents mentioned that it became convenient to travel to Negombo, a tourist city near the airport, and Chilaw, a tourist city in the North Western Province.

(6) Promoting logistics by constructing the OCH

The total cargo handled at the Port of Colombo showed a stable upward trend, from 81,879 thousand MT in 2016 to 101,926 thousand MT in 2019. In 2020, the growth rate was negative, owing to the impact of COVID-19. Similarly, the total cargo handled at Bandaranaike International Airport showed a stable upward trend—from 253,941 MT in 2016 to 268,496 MT in 2018. In 2019, the growth rate was negative; according to a report from the Central Bank of Sri Lanka, the rate was affected by the Sri Lanka Easter bombings, which occurred in 2019. In 2020, the rate decreased further, due to the impact of COVID-19.

Despite the impacts of the Sri Lanka Easter bombings and COVID-19, the OCH is still a part of an important distribution route;²⁵ the project is believed to contribute to improving the logistics.

²⁵ Regarding the distribution routes between the Port of Colombo and the south, there are two routes: one from the Port of Colombo to the Southern Expressway (E01) via the radial arterial road and the project section, and the other from the Port of Colombo to the Southern Expressway (E01) via another radial arterial road (without going through the project section). In addition, the distribution route connecting Bandaranaike International Airport to the south is currently the Colombo–Katunayake Expressway (E03) — OCH — Southern Expressway (E01); however, until the completion of the China-assisted section in December 2019, the Colombo–Katunayake Expressway (E03) and the OCH were not connected. Therefore, some traffic routes could pass by Colombo City and use the Southern Expressway (E01) without crossing the project section. For this reason, the role of the project section may have been limited.

Table 14. Change in the total cargo handled at the Port of Colombo

	2014	2015	2016	2017	2018	2019	2020
Total cargo handled (1000 MT)	70,794	73,718	81,879	89,035	100,152	101,926	97,681
Year-on-year growth rate	11.5 %	4.1 %	11.1 %	8.7 %	12.5 %	1.8 %	-4.2 %

Source: Central Bank of Sri Lanka

Table 15. Change in the total cargo handled at Bandaranaike International Airport

	2014	2015	2016	2017	2018	2019	2020
Total cargo handled (MT)	192,371	215,031	253,941	265,786	268,496	246,406	136,043
Year-on-year growth rate	4.1 %	11.8 %	18.1 %	4.7 %	0.8 %	-8.2 %	-44.8 %

Source: Central Bank of Sri Lanka

In light of the above, it can be concluded when the achievement after the completion of the China-assisted section is taken into account that the four quantitative indicators set in the effectiveness could have been achieved at a level close to the target values if the COVID-19 pandemic, an external factor, had not occurred. Moreover, the interviews with project-section users confirmed that connecting the Southern Expressway (E01) to the project section improved connectivity between the regions. In terms of impacts, the results of the measurement survey showed that constructing the project section contributed to mitigating traffic congestion in Colombo City. In addition, the interviews with entrepreneurs running businesses near ICs confirmed that the project-section opening contributed to vitalizing local industries and promoting economic development. Therefore, the effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional/Organizational Aspects of Operation and Maintenance

(1) Institutional aspect

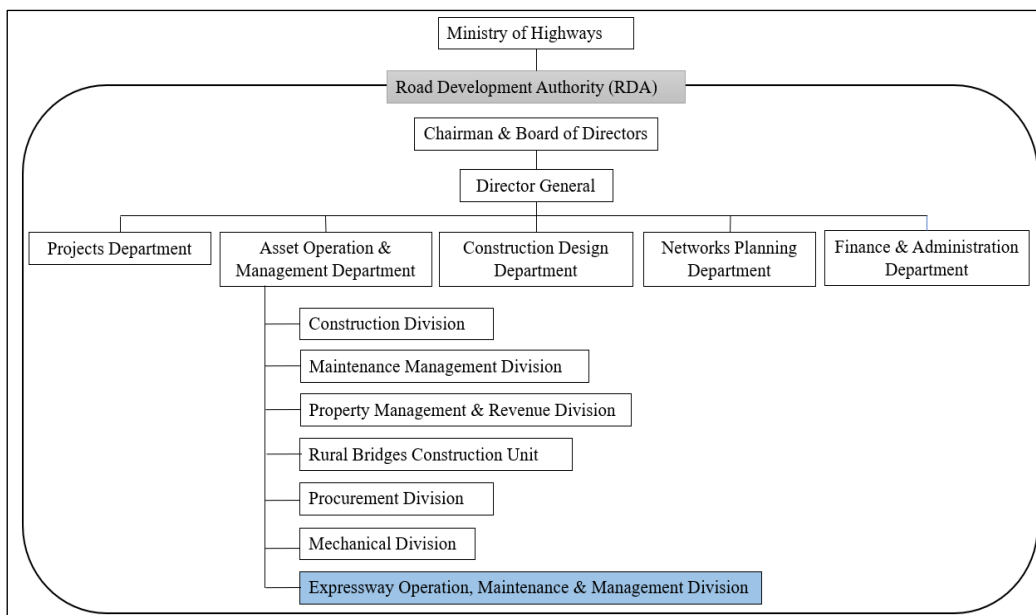
The Ministry of Highways is responsible for formulating highway policies and projects, as well as supervising organizations under the Ministry, including the RDA. The RDA, established under the *RDA Act No. 73* of 1981, is responsible for the development, operation, and maintenance of the expressway network²⁶ under the *National Thoroughfares Act, No. 40* (2008).

The MOT is responsible for operation and maintenance of the MMC. Since the MMC is the first facility of its kind in the country, involving various organizations, including the Sri Lanka Railways Department and National Transport Commission, existing institutions and legislation cannot fully address the issue of MMC operation and maintenance. For this reason, the MOT was developing an institutional mechanism and legal framework to operate and maintain the MMC at the time of the ex-post evaluation. Now that its conception paper has been finalized, the new system is expected to be officially established, with Parliamentary approval, by the end of FY 2021 or 2022.

²⁶ The legal and institutional procedures for the establishment of the Expressway Authority, planned at the project appraisal, has not proceeded, due to the change of government and the reorganization of ministries. At the ex-post evaluation, no concrete plan (with a timeline of its establishment and the expected role) had been established.

(2) Organizational aspect

The operation and maintenance of OCH is performed by the Expressway Operation Maintenance and Management Division (EOMM), under the Asset Operation and Management Department. In addition to operating and maintaining expressways, the EOMM is responsible for collecting tolls, conducting patrols to ensure the safety of road users, addressing malfunctions, and responding to accidents 24 hours a day and 7 days a week. According to the RDA, the number of personnel assigned to the EOMM is fewer than required, as shown in Table 16. Although there is a plan to increase the number of personnel, the Ministry of Highways must first obtain approval from the Ministry of Finance, a process that will take some time.



Source: Created by the evaluator, based on materials provided by the RDA

Figure 3. RDA organizational chart

Table 16. Allocation of EOMM personnel (as of April 2021)

Section	No. of Personnel	No. of personnel required	Shortfall
User Fee Collection	1,062	1,587	525
Traffic Control	155	268	113
Maintenance	157*	175*	18*
Mechanical	343	408	65
Electrical & Electronic	29	80	51
IT/Computer	12	47	35
Administration	47	115	68
Accounts	33	63	30
Procurement	12	22	10
Construction & Procurement	8	10	2
Total	1,858	2,775	917

Source: the RDA

* Excluding laborers.

In terms of the operation and maintenance of the MMC, the Township Development Project under the MOT played a role at the ex-post evaluation as the expansion project was ongoing. Once the institutional mechanisms and legal framework for operating and maintaining the MMC are in place, the task will be transferred to a new department to be established within the MOT.

There are thus no problems associated with the institutional and organizational aspects of operation and maintenance. However, concerns remain regarding the lack of EOMM personnel.

3.4.2 Technical Aspects of Operation and Maintenance

Regarding the technical capability for the daily operation and maintenance of OCH, one-off training is conducted as needed, but no regular training is provided. The EOMM has conducted daily inspections and repairs without encountering any problems, using manuals such as the *Toll Collection Manual*, the *Inspection and Maintenance Manual*, and the *Traffic Management Manual*, which were formulated under the JICA Technical Assistance related to ODA Loan. The EOMM is considered to have sufficient technical capabilities to carry out daily operation and maintenance.

For the large-scale maintenance of the OCH, an overlay²⁷ of the road surface is generally performed every 10 years.²⁸ The first overlay of the project section is likely to be carried out four or five years after the ex-post evaluation. Similar large-scale maintenance, including overlays, has been carried out without any problems in other sections operated by the RDA, so no particular technical concerns have been observed.

With regard to the technical capacity of operation and maintenance for the MMC, the Township Development Project under the MOT has been working to build staff capacity by conducting operation and maintenance training; no particular problems have been observed.

There are thus no particular concerns about the technical capacity for operation and maintenance.

3.4.3 Financial Aspects of Operation and Maintenance

According to the RDA, the cost of daily inspections and repairs of the OCH is fully covered by revenue from tolls and other sources, raising no particular financial concerns. In addition, the RDA, with support from the Asian Development Bank (ADB), has been developing a system of communication, monitoring, and manuals. Once the system is developed, it is expected to centralize monitoring information, improve efficiency, and reduce the cost of operation and maintenance. The RDA is considering expanding the system for the entire expressway network, including the OCH.

²⁷ Repairing cracks and worn, thin road surfaces.

²⁸ It depends on the condition of the road and the EIRR of the section.

At the same time, no specific budget item for large-scale periodic maintenance, including road-surface overlays and major future repairs, has been established. Although it is reported that these costs can be covered on a case-by-case basis as needed, it would be desirable to establish the budget item and systematically secure the budget for large-scale periodic maintenance and major repairs expected in the future.

Table 17. Operation and maintenance costs of the OCH (unit: million rupees)

	2017	2018	2019	2020
Maintenance cost, including equipment-purchase costs	91.8	168.6	161.1	182.5
Operation costs, including staffing costs	165.9	237.8	279.3	266.9
Total	257.7	406.4	440.4	449.4

Source: the RDA

* Data for 2017 covers April to December.

Table 18. OCH revenue (unit: million rupees)

	2017	2018	2019	2020
Toll fee	1,715	2,010	2,256	2,072
Towing charge	2	2	2	2
Charge for accident response	1	5	4	3
Total	1728	2017	2262	2077

Source: the RDA

The MMC receives tenant-fee income from banks, restaurants, and other organizations, as well as from electricity sales of installed solar panels. It aims to become financially independent by 2025.

Table 19. MMC revenue (unit: million rupees)

Revenue up to December 2020	20
Revenue from January to April 2021	6
Outstanding receivables	5

Source: the MOT

Although no particular financial problems were observed at the ex-post evaluation, more stable operation and maintenance can be ensured by accumulating a budget for large-scale periodic maintenance and major repairs expected in the future.

3.4.4 Status of Operation and Maintenance

(1) Undulation and bumps on the road surface

Undulations and bumps were observed on the road surface of viaducts near the Kaduwela and Kothalawala ICs, causing discomfort while driving. Although these problems occurred during the defect liability period, the root causes were not identified. Subsequently, the EOMM

investigated the causes, discovering that the issue was caused by the asphalt material and surface thickness; part of the road surface was repaired on a trial basis. The EOMM will monitor the condition of the road surface after the repair. If this trial repair method is successful, it will be applied to other locations. According to the interviews conducted with five project-section users discussed in the section on effectiveness, four out of five users also pointed out that the road surface, especially on the viaduct, had deteriorated, with undulations and bumps appearing.

(2) Deterioration of the expansion joints

Some of the expansion joints in the project section have deteriorated (settling, lifting, cracking) in several locations. The RDA recognizes the situation as a serious issue because it causes accidents of vehicle damage. The EOMM has repaired the expansion joints as an urgent measure whenever they become damaged, but this is a temporary fix that does not solve the fundamental problems. The specifications of the expansion joints used in the project differed from those used in the Southern Expressway and other sections operated by the RDA. In other sections, where the gap between the expansion joints could be reduced compared to the project section, specifications that were structurally simpler and more durable were selected. The problems that occurred in the project section have not occurred in other sections. At the same time, it was reported that the specifications in the project section were selected to ensure smooth driving and less vibration, even though the road structure had a larger expansion gap. It should be noted that the reason for the deterioration of expansion joints occurring faster than expected may be due to a combination of factors, including not only the type of specifications but also the quality of the product itself and the installation work.



Expansion joint in the project section



Expansion joint in other sections

(3) Others

According to the interviews with the project-section users, some of them commented that they expected improved expressway lighting because the visibility became very poor, especially at night on rainy days. The lighting was not good enough for an expressway with a speed limit of 100 km/h. Others said that steps needed to be taken to prevent animals from entering the expressway. According to the RDA, although there is no concrete plan or budget allocation yet,

increasing lighting as well as fences to prevent animals from entering the expressway is under consideration.

In light of the above, no particular concerns have been observed in relation to the institutional and technical aspects of operation and maintenance. However, there are minor issues in relation to organizational and financial aspects and partial problems involving the status of operation and maintenance. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project was carried out with the objective to improve regional connectivity by constructing an expressway that connects major national roads and the Southern Expressway in the suburbs of Colombo City. The project objective was fully consistent with Sri Lanka's development policies, development needs, and Japan's ODA policies. Therefore, relevance of the project is high. Regarding the project implementation, the project cost was within the plan, but the project period exceeded the plan, thus efficiency of the project is fair. In terms of effectiveness, the indicators achieved close to the target values, when the evaluation took into account of the effects after the completion of the China-assisted section, which was originally planned to be constructed under the project but was ultimately completed with Chinese assistance. The findings also show that traveling convenience improved when the sections constructed under the project were linked to the Southern Expressway. Regarding impacts, it has been quantitatively shown that the project has contributed to easing traffic congestion in Colombo City by improving connectivity between regions. In some confirmed cases, the project has contributed to vitalizing local industries and to promoting economic development. Therefore, effectiveness and impacts are high. In terms of the operation and maintenance of facilities constructed under the project, no particular problems have been observed, in the institutional and technical aspects, despite having minor organizational and financial problems. There are also some problems in the status of operation and maintenance. Therefore, sustainability of the project is fair.

In light of the above, the project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Consideration to identify a method of repairing or replacing expansion joints

The EOMM has temporarily repaired the expansion joints, but this has not led to a fundamental solution. With the cooperation of the Research and Development Section of the Construction Design Department, the EOMM needs to find a lasting way to repair expansion joints. If no fundamental method can be found, it is recommended that the EOMM estimates the

cost of replacing the expansion joints entirely.

(2) Establishing a budget item for large-scale periodic maintenance and major repairs

It has been reported that the cost of large-scale periodic maintenance and major future repairs will be covered on an ad-hoc basis, and no financial problems have arisen at this time. However, to carry out stable operation and maintenance, it is desirable to establish a budget system that will gradually and systematically accumulate funds. Therefore, it is recommended that the EOMM establishes a budget item and accumulate long-term funding for large-scale periodic maintenance and major repairs.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

The importance to consider the unification with existing specifications as one of the possible options when choosing equipment specifications

There have been problems with the expansion joints installed in the project and the executing agency is finding it difficult to identify a solution. Although the expansion-joint specifications were appropriately selected to ensure driving comfort based on the road structure, they differed from those used in other sections of expressway, which were simple in structure and easy to manage. This made it difficult to identify a long-lasting method of repair. From the operation and maintenance perspective, operating facilities with unified specifications enable more efficient operation and maintenance, making it easier to take countermeasures when problems occur. For similar future projects, if the executing agency operates existing facilities, “unification with existing specifications” can be one of the important factors to consider when choosing equipment specifications.

End

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
① Project outputs		
1. Construction of the project section	Total: 20 km	Total: 20 km
2. IC construction	3 locations	5 locations
3. Bridge construction	29 bridges	27 bridges
4. Construction of tollgates and the installation of equipment	Tollgate offices (2 locations), toll booths (21 locations), installation of toll-system equipment	As planned
5. Township development	- Construction of roads and other facilities near the ICs (Kottawa, Kaduwela, Kadawatha districts)	- Construction of roads and other facilities near the ICs (Kottawa and Kaduwela districts) - Construction of the MMC - Procurement of equipment for the MMC, and consulting services for operation and maintenance
6. Consulting services for road construction	<Scope of work> Construction supervision, monitoring environmental and social considerations design of expressway facilities, structural design changes, etc. <Volume of work> International consultants: 385 MM Local consultants: 3,537 MM	<Scope of work> As planned <Volume of work> International consultants: 462 MM Local consultants: 5,853 MM
② Project Period	March 2007–March 2015 (97 months)	March 2007–July 2015 (101 months)
③ Project Cost		
Amount Paid in Foreign Currency	18,824 million yen	Unknown
Amount Paid in Local Currency	62,632 million yen (70,968 million rupees)	Unknown
Total	81,456 million yen	63,376 million yen
ODA Loan Portion	59,323 million yen	57,606 million yen
Exchange Rate	Phase 1: 1 rupee = 1.12 yen (As of October 2006) Phase 2: 1 rupee = 0.77 yen (As of November 2010)	Phase 1: 1 rupee = 0.83 yen (Average for 2007–2015) Phase 2: 1 rupee = 0.78 yen (Average for 2008–2018)
④ Final disbursement	Phase 1: June 2015 Phase 2 (I): October 2012 Phase 2 (II): July 2018	