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Sri Lanka

FY2021 Ex-post Evaluation Report of
Japanese ODA Loan Project
“Project for Improvement of Basic Social Services Targeting Emerging Regions” and
Technical Cooperation Project

“Project for Enhancement of Non-communicable Diseases Management”

External Evaluator: Tomoko Tamura, Kaihatsu Management Consulting, Inc.

0. Summary

This ex-post evaluation evaluates two projects: an ODA Loan Project “Project for Improvement of Basic Social Services Targeting Emerging Regions” (hereinafter referred to as the “ODA Loan Project”), and a technical cooperation project “Project for Enhancement of Non-communicable Diseases Management” (hereinafter referred to as the “Technical Cooperation Project”). The latter was implemented to supplement the ODA Loan Project in an integrated manner.

These two projects were implemented with the objectives of strengthening measures against non-communicable diseases (hereinafter referred to as “NCDs”¹) and improving health care services. These objectives and project contents are consistent with the development policies and development needs of Sri Lanka from the time of planning² to the time of ex-post evaluation of these projects. These projects are also consistent with the development aid policy of Japan at the time of planning. These projects were implemented promptly based on the results of the “Project on Health Promotion and Preventive Care Measures of Chronic-NCDs” (hereinafter referred to as the “Preceding Technical Corporation Project”), which had been implemented prior to these projects. This allowed JICA to continuously support the strengthening of NCD prevention and management. The Technical Corporation Project was implemented in coordination with a World Bank-supported project and a survey conducted by the World Health Organization (WHO), to ensure that there was no overlap between them, and the expected results of collaboration were achieved. Therefore, relevance and coherence of these projects are high.

The ODA Loan Project developed facilities and equipment in four secondary health care facilities (hereinafter referred to as “BHs”³), the State Pharmaceutical Manufacturing Corporation (hereinafter referred to as “SPMC”), and provided 86 ambulances. This is largely in line with the plans. Although the project cost slightly exceeded the plan, it was within a reasonable range considering the increased output in the provision of equipment at the four BHs. Therefore, it is

¹ Non-Communicable Diseases (NCDs) is a general term for cardiovascular diseases, cancer, diabetes, chronic respiratory diseases, and others. They are also sometimes referred to as lifestyle-related diseases. In this report, NCD is used without “s” when it is used as an adjective – for example, “NCD prevention and management.”

² The situation prior to project implementation is often described as “at the time of appraisal” for ODA loan projects and “at the time of planning” for technical cooperation projects. “At the time of planning” is used in this report to describe the situation prior to these two projects.

³ Abbreviation of “base hospitals.”

considered that the project cost was within the plan. However, the efficiency of the project is moderately low, since the project period significantly exceeded the plan.

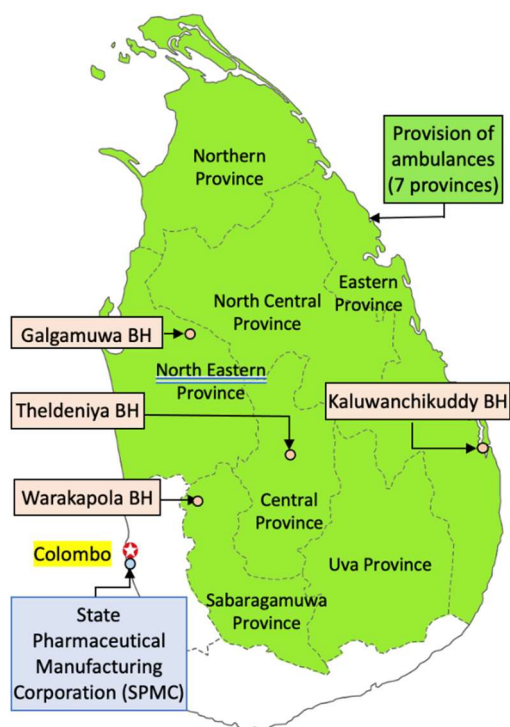
The ODA Loan Project has produced the expected effects, including enhancement of clinical laboratory functions and operation of diabetes clinics at the four BHs, increased manufacturing capacity of SPMC, and improvement in the fulfillment rate of supply of ambulances. The outputs of the Technical Corporation Project have also contributed to these effects. The synergistic effects of these projects have been recognized. Consultant specialists and laboratory technicians have been assigned to, and surgical operations and imaging tests were available at the four BHs in the target year. The number of surgical operations, inpatients, outpatients, participants in clinics and deliveries have also increased, indicating that hospital functions have expanded by utilizing the facilities and equipment of the ODA Loan Project. The expected impacts of these projects, such as the four BHs accepting NCD patients identified at NCD health checkups, more convenient examination and treatment for local residents, continuous provision of medicine to patients in public hospitals, and a reduced burden on health financing through promotion of domestic production of medicines, were also realized. Furthermore, these projects have contributed to the formation of the World Bank-supported Primary Healthcare System Strengthening Project (hereinafter referred to as “PSSP”),⁴ and to the response to COVID-19. Therefore, the effectiveness and impacts of these projects are very high.

Regarding the sustainability of the project, there are no problems with policy/systems, institutional/organizational, technical, environmental, and social aspects, and risk responses. However, it is possible that operation and maintenance (hereinafter referred to as “O&M”) of health services at the four BHs will be disrupted in the future because the economy of the country is seriously deteriorating. The Ministry of Health is going to scale down activities for NCD prevention and control. There is no prospect of resolving these problems at the time of the ex-post evaluation. Therefore, sustainability of the project effects is moderately low.

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

⁴ The Primary Health Care System Strengthening Project (PSSP) has been implemented in Sri Lanka since 2018 with the following aims: (a) develop policies and standards necessary for the implementation of primary health care, (b) strengthen the capacity and services of primary health care facilities for comprehensive and quality care, (c) improve primary health care services with a focus on NCDs, (d) strengthen the health care system and responsiveness to the needs of the population, and (e) identify and actively follow up on NCDs.

1. Project Description



Project Location Map



Operating theatre constructed at Galgamuwa BH



Pharmaceutical manufacturing equipment installed at SPMC

Sources: The project location map and the photo of Galgamuwa BH were prepared and taken by the external evaluator, and the photo of SPMC was provided by SPMC.

1.1 Background

The Sri Lankan government provides free healthcare services to its citizens with a policy that emphasizes social welfare. Health indicators, such as maternal mortality rate and average life expectancy, have continued to be at a good level, comparable to those of developed countries. However, since the 1980s the number of NCDs has increased due to the aging of the population and changes in diet and lifestyle. In 2012 and 2013, when these two projects were planned, the five top leading causes of death in hospitals were all due to NCDs.⁵ When a family breadwinner dies or becomes unable to work due to NCDs, their family faces serious economic problems. NCDs also increase the burden on health care finances, because they require long-term treatment. Thus, the increase in NCDs was a serious socioeconomic problem, and the system for NCD prevention and control in the country was insufficient.

JICA has provided cooperation to the health care sector in Sri Lanka for many years. JICA conducted the Preceding Technical Cooperation Project over five years from 2008 to establish a

⁵ According to the Annual Health Bulletins of 2012 and 2013, the five major leading causes of death in hospitals were ischemic heart disease, neoplasms, pulmonary heart disease, cerebrovascular disease, and diseases of the respiratory system excluding upper respiratory tract, all attributable to NCDs.

model for implementing NCD health checkups and providing health guidance. The Ministry of Health of Sri Lanka has established “Healthy Lifestyle Centers” (hereafter referred to as “HLCs”⁶) throughout the country to disseminate the model. During the implementation of the Technical Cooperation Project, it was recognized that, even when NCD patients were identified at HLCs, many secondary healthcare facilities, the centers for regional health care, did not have the capacity to receive, examine, and treat these patients, because they didn’t have necessary facilities and equipment, and that follow-up of the identified patients was insufficient. In addition, there was an urgent need to strengthen the capacity of pharmaceutical manufacturing, because the demand for medical drugs was increasing as the number of NCD patients increased. These projects were formed to address these issues.

1.2 Project Outline

<ODA Loan Project>

Project for Improvement of Basic Social Services Targeting Emerging Regions

To improve the health and medical system and strengthen the production capacity of essential drugs by improving facilities and equipment in secondary-level hospitals and the SPMC, thereby contributing to the enhancement of NCD management.

Loan Approved Amount/ Disbursed Amount	3,935 million yen/ 3,874 million yen								
Exchange of Notes Date/ Loan Agreement Signing Date	March 2012/ March 2012								
Terms and Conditions	<table> <tr> <td>Interest Rate</td> <td>Equipment and civil engineering: 0.2% Consulting services: 0.01%</td> </tr> <tr> <td>Repayment Period</td> <td>40 years (Grace Period: 10 years)</td> </tr> <tr> <td>Conditions for Procurement</td> <td>Japan tied aid (Special Terms for Economic Partnership (STEP))</td> </tr> <tr> <td>• Civil construction & procurement of equipment • Consultant</td> <td>Japan tied (Bilateral tied for Japan or Sri Lanka for the four BHs) Japan tied</td> </tr> </table>	Interest Rate	Equipment and civil engineering: 0.2% Consulting services: 0.01%	Repayment Period	40 years (Grace Period: 10 years)	Conditions for Procurement	Japan tied aid (Special Terms for Economic Partnership (STEP))	• Civil construction & procurement of equipment • Consultant	Japan tied (Bilateral tied for Japan or Sri Lanka for the four BHs) Japan tied
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Borrower / Executing Agency	Democratic Socialist Republic of Sri Lanka / Ministry of Finance, Government of Sri Lanka								
Project Completion	November 2018								

⁶ Healthy Lifestyle Centers provide health checkups and health guidance to identify high-risk individuals and patients with NCDs. As of 2022, 1,002 centers have been established nationwide (Page 118, Performance progress report 2021, Ministry of Health).

Target Area	<ul style="list-style-type: none"> • Four BHs: Galgamuwa BH - Kurunegala District, North Western Province Theldeniya BH – Kandy District, Central Province Kaluwanchikuddy BH - Batticaloa District, Eastern Province Warakapola BH – Kegalle District, Sabaragamuwa Province • SPMC: Colombo • Ambulances: Northern, Eastern, Central, Uva, Sabaragamuwa, North Central and North Western Provinces
Main Contractor(s) (Over 1 billion yen)	Kanematsu Corporation (Japan)
Main Consultant(s) (Over 100 million yen)	System Science Consultants Co., Ltd. (Japan)
Related Studies (Feasibility Studies, etc.)	Preparatory Survey, 2012
Related Projects	<p>[Technical Cooperation]</p> <p>Project on Health Promotion and Preventive Care Measures of Chronic-NCDs (2008-2013, the Preceding Technical Cooperation Project)</p> <p>Project for Enhancement of Non-communicable Diseases Management (2014-2018) (the Technical Cooperation Project)</p>

<Technical Cooperation Project>

Project for Enhancement of Non-communicable Diseases Management

Overall Goal	Enhancement of the national NCD program
Project Purpose	Strengthening of NCD management at the four BHs and primary care institutions in their catchment areas as clusters. ⁷
Outputs	1 Improved monitoring of NCD patients in the catchment areas of the four BHs.
	2 Improved availability of laboratory services for NCD clients of primary care institutions in the catchment areas of the four BHs.
	3 Enhanced pharmaceutical supply management at the four BHs.
Project cost on the Japanese side	330 million yen
Project period	February 2014 - January 2018
Project area	Colombo (Ministry of Health), four BHs and surrounding areas
Implementing agency	• Directorate of Medical Services, Department of Health (Planning

⁷ This refers to a cluster of related medical facilities. In the Technical Cooperation Project, activities were conducted by defining a cluster as six to nine primary health care facilities in a region where the target BH is located. The concept of clusters was continued at the time of the ex-post evaluation.

	Division, NCD unit) <ul style="list-style-type: none"> • Offices of the Regional Department of Health Services in the project provinces • The four BHs
Other Cooperating institutions in Sri Lanka	None
Cooperating Organizations in Japan	Global Link Management Inc.
Related Projects	[Technical cooperation project] Project on Health Promotion and Preventive Care Measures of Chronic-NCDs (2008-2013) (the Preceding Technical Cooperation Project) [ODA loan project] Project for Improvement of Basic Social Services Targeting Emerging Regions (2012 - 2018) [World Bank] Second Health Sector Development Project (SHSDP): 2013-2018; Primary Health Care System Strengthening Project (PSSP): 2018-2023 [WHO] “Non-Communicable Disease Risk Factor Survey, Sri Lanka” 2015

[Integrated Evaluation]

The two projects were evaluated together in this ex-post evaluation. For the criterion of relevance, consistency, and sustainability, both projects were evaluated and analyzed together, and sub-ratings were provided. This was because these two projects had common objectives of strengthening NCD management and improving health services, were implemented at the same time, and have the same O&M agencies. For the criteria of efficiency, a sub-rating was provided based on an analysis of the differences between planned and actual outputs, the project period, and project cost of the ODA Loan Project. Output, project period, and project cost of the Technical Cooperation Project was studied but not evaluated, since it was implemented in association with the ODA Loan Project. The effectiveness of the project was evaluated mainly by studying the effectiveness of the ODA Loan Project. For the Technical Cooperation Project, status of achievement of outputs and the project purpose at the time of completion, and the status of continuation of those achievements were studied. The contribution of the Technical Cooperation Project to the improvement of health services aimed at by the ODA Loan Project was verified and considered in the judgment of evaluation.

For impact, the synergistic effects of these two projects and their contribution to strengthening NCD management, which was the objective of the ODA Loan project, were verified, and the status of achievement of the Overall Goal of the Technical Cooperation Project was also confirmed.

An overall evaluation and overall rating were provided for these two projects as a whole, based on evaluation results of the six criteria.

2. Outline of the Evaluation Study

2.1 External Evaluator

Tomoko Tamura, Kaihatsu Management Consulting, Inc.

2.2 Duration of Evaluation Study

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

Duration of the Study: September 2021 - October 2022

Duration of the Field Study: December 6, 2021 - December 18, 2021, and March 28, 2022 - April 9, 2022

3. Results of the Evaluation (Overall Rating: B⁸)

3.1 Relevance/Coherence (Rating: ③⁹)

3.1.1. Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Sri Lanka

The medium- and long-term national development policies of the Sri Lankan government, as well as health sector policies and master plans, emphasized the need for NCD prevention and management at the time of planning and ex-post evaluation. They aimed to prevent NCDs through lifestyle improvement, improving health services, enhancing hospital facilities and human resource allocation, and ensuring availability of pharmaceuticals. The objectives and contents of these projects are consistent with these development policies of the country.

3.1.1.2 Consistency with the Development Needs of Sri Lanka

- Needs for enhancement of NCD prevention and management

As described in “1.1 Background of the Project”, the need to strengthen NCD prevention and control was high at the time of planning these projects because the increase in the number of deaths due to NCDs and the economic and social problems caused by NCDs were serious issues for the country. NCDs remain a serious problem, and the need for NCD prevention and control continues to be high at the time of the ex-post evaluation, because NCDs are still the 7 of the top 10 leading causes of death in hospitals in the country, which is the same as at the time of planning.¹⁰

⁸ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁹ ④: Very High, ③: High, ②: Moderately Low, ①: Low

¹⁰ WHO statistics (2018). During the discussions of the ex-post-evaluation, officers in charge of NCDs in the Ministry of Health and the provincial health department mentioned that the number of high-risk persons and patients of NCDs had increased in recent years. Data supporting this increase was not available. Statistics to monitor the prevalence and increase of NCDs are not available in the country, other than causes of death in hospitals. The Ministry of Health had recognized this issue as a challenge.

- Need to improve facilities and equipment of BHs

At the time of project planning, four BHs were not able to accept seriously ill patients, perform surgical operations, or provide specialized tests and treatment due to a lack of consultant specialists and laboratory technicians, and delays in the improvement of facilities and medical equipment. As a result, local residents had to visit distant tertiary care facilities for examination and treatment, resulting in a heavy financial burden and loss of time. To solve these problems, there was a need to improve BHs. At the time of the ex-post evaluation, BHs are still the core of healthcare facilities in the regions, and their roles and importance have continued.

- Need to improve facilities and equipment of the SPMC

At the time of planning, there was a need for SPMC to expand its manufacturing capacity because the demand for pharmaceuticals, including NCD drugs, was expected to increase, due to the growing number of NCD patients. Ensuring adequate stocks of pharmaceuticals in public hospitals was essential for the continued treatment of NCDs. At the time of the ex-post evaluation, SPMC was supplying approximately 69% of the demand for pharmaceuticals in public hospitals (2021), indicating the continued role and importance that SPMC plays in pharmaceutical manufacturing in the country.

- Need for provision of ambulances

At the time of planning, the need for ambulances was high because there was a shortage of ambulances at primary and secondary medical facilities, which sometimes prevented the rapid transfer of urgent and critical patients to higher-level hospitals. At the time of the post-evaluation, the need to transport patients for heart muscle infraction, traffic accidents, and COVID-19 to higher level and specialized hospitals remained high, and the role and importance of the ambulances provided by the ODA Loan Project continued to be significant.

- Consideration of socially vulnerable groups and fairness

The four BHs were selected because they were most in need of improvement, according to the status and usage of the facilities and equipment they owned. The institutes receiving the ambulances were selected according to the number of existing ambulances, shortages, and requirements in each province. The selection was made with consideration of needs and equity of the country. The project plan and approach were appropriate, and no problems were found with them.

3.1.2 Coherence (Rating: ③)

3.1.2.1 Consistency with Japan's ODA Policy

When these projects were planned, the Country Assistance Plan (April 2004) and the Country Assistance Policy of the Japanese Government for Sri Lanka (June 2012) stated that Japan would provide assistance to the healthcare sector, particularly to expand social welfare

services in light of the aging population, and to improve facilities and strengthen capacity, mainly in the healthcare sector. The objectives of these projects were consistent with Japan's aid policy.

3.1.2.2 Internal Coherence

As described in “1.1 Background of the Project”, these projects were promptly formulated and initiated to overcome issues identified in the Preceding Technical Cooperation Project. Therefore, the expected results of collaboration between the Preceding Technical Cooperation Project and these projects were achieved, and continued support for strengthening prevention and control of NCDs was realized.

3.1.2.3 External Coherence

As planned, the Technical Corporation Project was implemented in coordination and collaboration with the activities and surveys conducted by the World Bank and the WHO, to avoid duplication. As a result, the project implemented the activities effectively without any duplication; and the expected collaborative effect was created.

Therefore, relevance and coherence of these projects are high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

It was concluded that the outputs of the project were slightly more than planned, according to the evaluation of the outputs of the three components of the ODA Loan Project as a whole. The details of the outputs of each component are as follows.

(1) Improvement and expansion of functions of the four BHs

Facilities and medical equipment at the four BHs were improved as planned. A new hospital building equipped with an operating theater, Intensive Care Unit (ICU), neonatal unit, clinical laboratories, hospital wards, outpatient consultation rooms, emergency treatment room, delivery room, central sterilization unit, blood bank, etc., and a mortuary, sewage treatment facility, and medical oxygen supply plant were constructed at each BH as planned. For medical equipment, items needed to provide medical services in these facilities were selected, procured, and installed. It was planned that all medical equipment would be procured by the ODA Loan Project. However, the total amount of required equipment exceeded the planned budget for the Project. At the time of the appraisal, there were no plans to procure equipment from the provincial budget, and this equipment procurement can be considered to have exceeded the

original plan.¹¹ Therefore, the Ministries of Health of the provincial governments, which operate the four BHs, partially covered the cost. As a result, it was judged that the output of equipment provision was slightly more than planned.



New hospital building at Galgamuwa BH



New hospital building at Theldeniya BH



New hospital building at Kaluwanchikuddy BH



New hospital building at Warakapola BH



X-ray machine at Theldeniya BH



Patients receiving intensive care at Warakapola BH

Photos: Taken by the External Evaluator

(2) Enhancement of pharmaceutical manufacturing capacity of the SPMC

The construction and renovation of the facilities, and procurement and installation of pharmaceutical manufacturing equipment of the SPMC, were carried out as planned.

The output for the facilities was more than planned, as shown in Table 1, because the floor space was increased. This was increased so that the facilities would be the appropriate size for

¹¹ For example, the mobile X-ray machine, clinical laboratory chemistry analyzer, and beds for the High Dependency Unit (HDU) at Galgamuwa BH, and ward beds, examination tables, and delivery tables at Warakapola BH were procured from the provincial government budget. The provincial government covered 25% of the procurement equipment cost for Kaluwanchikuddy BH.

manufacturing 3.2 billion tablets per year, according to the target of the project. Therefore, the change was appropriate.

Table 1: Construction and Renovation of Facilities of the SPMC - Plan and Actual

Items		Plan	Actual	Difference
Construction of Warehouse	Building	Two-storied building	Three-storied building	More than planned
	Floor space	540m ³	949m ³	
Renovation of existing facilities	Floor space	1,153m ²	1,704m ²	More than planned

Source: Documents provided by JICA.

The following equipment for enhancing the manufacturing capacity was selected, procured and installed: Mixing granulator, tablet compression machines, punches and dies, film and sugar-coating machine, automatic filling, capping and labeling machines, high performance liquid chromatograph system, dissolution apparatus, forklift, double cone blender, container blender, fluid bed dryer, capsule filling machine, multi-milling machine with pneumatic conveyor, and weighing scale. Items and the number of units of the equipment were changed partly during the detailed design to optimize the manufacturing plan and expand the manufacturing capacity based on the results of the detailed study about the existing equipment and needs. Therefore, these changes were appropriate. From the above, it can be said that the output of procurement and installation of the equipment was almost in line with the plan.



Sugar-coating machine



Double cone blender



Fluid bed dryer



New warehouse

Photos: Provided by SPMC

(3) Provision of Ambulances

It was decided to equip the ambulances with automated external defibrillators (AEDs) with monitors, oxygen inhalers, and oxygen therapy kits to meet the increasing emergency medical needs of cardiac patients. As a result, the unit cost of the ambulances increased, and the number provided was reduced from 124 to 86. The provision of the additional equipment and change in the number of units were reasonable and based on need, although the number of units was reduced as mentioned above. The institutions that would receive the ambulances were re-selected in an appropriate and fair manner. There have been no problems caused by the reduction in numbers, since more ambulances were procured by the Ministry of Health and other supporting agencies later.



An ambulance provided by the ODA Loan Project

(4) Consulting Services

Consultancy services were provided as planned. The team of Japanese consultants mainly supervised the procurement of equipment and construction of the SPMC. With the BHs, the provincial government found local consultants for the design and supervision of construction, and the Japanese consultancy team monitored progress and prepared reports.

3.2.2 Project Inputs

(For details, see “Comparison of the Original and Actual Scope of the Project” on the last page of the report.)

3.2.2.1 Project Cost

The planned total project cost of the ODA Loan Project was 4,760 million yen (3,935 million yen from Japan and 825 million yen from Sri Lanka). It was actually 4,799 million yen (3,874 million yen from Japan and 925 million yen from Sri Lanka), which was 101% of the plan.

Since the increase in project cost is within a reasonable range considering the increase in output, it is judged that the project cost was within the plan.

3.2.2.2 Project Period

The project period for the ODA Loan Project was planned as 51 months (from March 2012 to May 2016¹²). It was actually 81 months (from March 2012 to November 2018), which

¹² Although the ex-ante project evaluation report and other documents provided by JICA indicated that the project would start in April 2012, the Loan Agreement was scheduled for March 2012. Therefore, the planned month for the start of the project was defined as March 2012.

significantly exceeded the plan (159% of the plan). The main reasons for the delay of the project were that the establishment of a procurement evaluation committee in the Ministry of Health for the SPMC component and evaluation of bid proposals took more time than planned. Civil works in the four BHs also took a longer time than planned due to rock removal (two BHs) and suspension of work due to prolonged rains (three BHs).

3.2.3 Results of Calculations for Internal Rates of Return (reference only)

Re-recalculation of the financial and economic internal rates of return for the ODA Loan Project was not conducted at the time of the ex-post evaluation, because they were not calculated at the time of the project appraisal.

3.2.4 Inputs for the Technical Cooperation Project (reference information)

The planned cost for the Technical Cooperation Project was 332 million yen and the actual cost was 351 million yen. The project period, both planned and actual, was 48 months. Inputs from Japan were provision of eight JICA experts, training in Japan for six participants, and provision of equipment necessary for technical transfer. Inputs from Sri Lanka were assignment of counterpart staff and provision of a project office.

As mentioned above, although the project cost was within the plan, the project period significantly exceeded the plan. Therefore, efficiency of the project is moderately low.

3.3 Effectiveness and Impacts¹³ (Rating: ④)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)¹⁴

(1) Improvement and expansion of functions of the four BHs

It was expected that the facilities and equipment improved by the ODA Loan Project would enable the four BHs to perform (a) total cholesterol tests, (b) X-ray tests, and (c) abdominal ultrasound scan tests. As shown in Table 2, these tests were available at all four BHs one year after the provision of the facilities and equipment, and have been continuously performed up to the time of the ex-post-evaluation; (d) a diabetes outpatient clinic was regularly held at the three BHs in the target year two years after the completion; and the annual number of participants exceeded the target (Figure 1). In this manner, indicators of (a), (b) and (c) have been achieved, and indicator (d) has been generally achieved.

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

¹⁴ For the ODA Loan Project, the target year for the indicators was set as two years after project completion. For BHs the target year is 2019, since the facilities and equipment were available to use in 2017. For SPMC it is 2020, since the facilities and equipment were available to use in 2018. For ambulances the target year is the year they were supplied, since the operational indicator was set to evaluate the status just after supply.

Table 2: Operation and Effect Indicators for Improvement and Expansion of Functions of the Four BHs

Indicators	Baseline	Target	Actual					
			2017	2018	2019	2020	2021	2022
	2011	2 years after completion	Completion year	1 year after completion	2 years after completion	3 years after completion	4 years after completion	5 years after completion
(a) Number of hospitals that can conduct total cholesterol tests	0	4	3	4	4	4	4	4
(b) Number of hospitals that can carry out X-rays	1	4	2	4	4	4	4	4
(c) Number of hospitals that can conduct abdominal ultrasound scans	1	4	1	4	4	4	4	4
(d) Number of hospitals with diabetes outpatient clinics which are regularly operating ¹⁵	No data	4	4	4	3	3	3	4

Sources: Baseline and target values are from the ex-ante evaluation report. Actual figures were provided by the four BHs.

Notes: 2022 is data from January to March 2022.

Theldeniya BH closed its diabetes clinic in 2019 due to a shortage of doctors, and diabetic patients were treated in the medical clinic. The diabetes clinic reopened in January 2022 when the number of doctors increased.

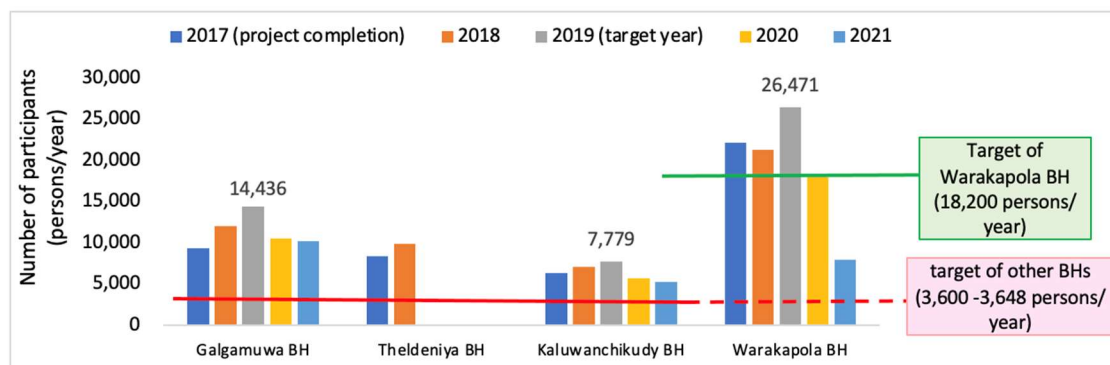


Figure 1: Annual Number of Participants at the Diabetes Clinics at the four BHs

Source: The target values are from page 67 of the Preparatory Survey Report. Actual figures were provided by the four BHs.

Note: The decrease in the number of participants in 2020 and 2021 was due to the COVID-19 pandemic. No outpatient clinics were held, or fewer participants attended during the period as curfews and travel restrictions were imposed in these years.

¹⁵ At the time of planning the ODA Loan Project, the indicator was “the number of hospitals where NCD clinics are regularly held.” However, at the time of the ex-post evaluation there were no clinics that were called this. Therefore, the status of diabetes clinics, one of the major NCDs in the country, was used as an indicator to represent the objective of the project of strengthening NCD management.

As shown in the figure below, the number of surgical operations, inpatients, specialized clinic participants, and deliveries also increased from the completion year to the target year, indicating the facilities and equipment of the ODA Loan Project were utilized, and hospital functions expanded. Note that the decrease in the number of specialized participants and inpatients in 2020 and 2021 is due to COVID-19 (See note on Figure 1). When we visited these hospitals in March 2022 COVID-19 had been contained, and these hospitals were functioning normally.

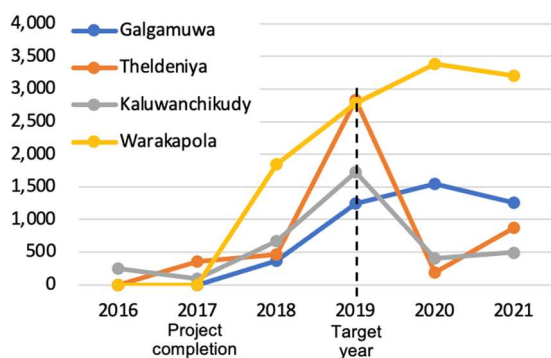


Figure 2: Number of Surgical Operations at the Four BHs

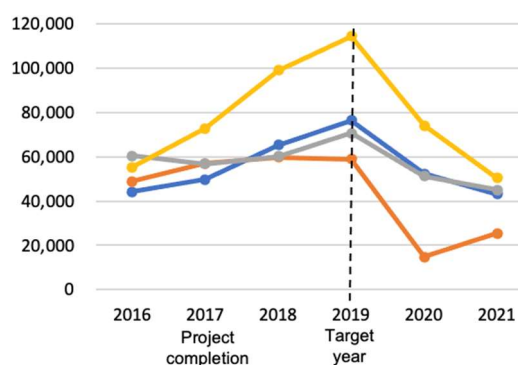


Figure 3: Number of Participants in the Specialized Clinics of the Four BHs

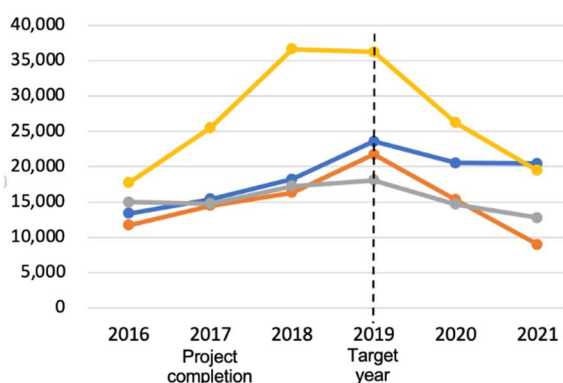


Figure 4: Number of Inpatients at the Four BHs

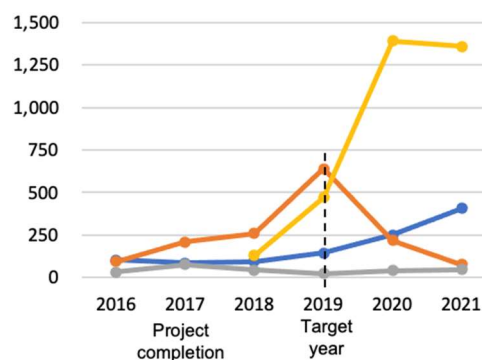


Figure 5: Number of Deliveries at the Four BHs

Source: Documents provided by the four BHs.

Note: The number of operations and deliveries did not decrease at Warakapola BH because the earlier building was used as a dedicated COVID-19 ward, and operations and deliveries were conducted in the new hospital building constructed under the ODA Loan Project.

The number of deliveries was low in Kaluwanchikuddy BH due to the absence of an obstetrician and gynecologist. However, by the end of 2021, an obstetrician and gynecologist were appointed, and the number of deliveries increased.

(2) Enhancement of the pharmaceutical manufacturing capacity of SPMC

As Table 3 shows, operation and effect indicators for the enhancement of the pharmaceutical manufacturing capacity of the SPMC were: (a) Pharmaceutical manufacturing capacity of the

SPMC of 3.2 billion tablets per year, and (b) a fulfillment rate of the SPMC to the demand of the Medical Supplies Division (MSD) of the Ministry of Health of 70%.¹⁶

(a) Pharmaceutical Manufacturing Capacity of the SPMC

The production volume of the SPMC was approximately 3 billion tablets in the target year (2020). Therefore, the target of 3.2 billion tablets was largely achieved. The volume of production in 2021 was also stable, at approximately 3 billion tablets. In 2022, the production line for Thyroxin agents, which has been in preparation for some time, will start operation; annual production volume will then increase to 3.5 billion tablets.

(b) Fulfillment rate of the SPMC to the demand of the MSD

In the target year, the fulfillment rate of the SPMC to the demand from the MSD was as low as 49.9%, which did not reach the target of 70%. However, the delivery volume to MSD by SPMC in the same year was higher than the previous year and the following year, and there is no problem with the volume. The reason for the low demand-fulfillment ratio in the year was that MSD's demand forecast for that year was excessive.¹⁷ In other words, if MSD's demand forecast had not been excessive, the actual fulfillment rate would have been higher than 49.9%. The fulfillment rate in 2021 was 68.7%, which almost reached the target of 70.0%. This indicator is judged to have been largely achieved, taking into account the level of achievement in 2021.¹⁸

¹⁶ Fulfillment ratio: SPMC's annual deliveries to MSD / MSD's annual demand for pharmaceuticals x 100. The SPMC had limited manufacturing capacity, and there were no local private companies producing pharmaceuticals at the time of planning. This indicator was set as the target of the ODA Loan Project because MSD needed to import pharmaceuticals which were not delivered from the SPMC. At the time of the ex-post evaluation, local private companies were also manufacturing pharmaceuticals. The procurement of pharmaceuticals by MSD, on a volume basis, consisted of SPMC (58.7%), other local private manufacturing companies (25.0%), and imports (16.3%) (2021; data provided by SPMC).

¹⁷ The projected demand values for MSD in 2020, the target year, are extremely high: 144% over the previous year and 157% over the following year.

¹⁸ For information: in addition to supplying MSD, the SPMC supplies pharmacies in the market.

**Table 2: Operation and Effect Indicators for
Enhancement of Pharmaceutical Manufacturing Capacity of the SPMC**

Indicators		Baseline	Target	Actual			
				2018	2019	2020	2021
		2011	2 years after completion	Completion year	1 year after completion	2 years after completion	3 years after completion
(a) Capacity of pharmaceutical manufacturing	Manufacturing volume (million tablets)	1,800	3,200	1,889	2,403	3,015	3,044
	Achievement rate of the indicator (%)	-	-	59	75	94	95
(b) Fulfillment rate to demand from MSD	Demand of MSD (million tablets)	2,873	-	3,354	4,038	5,815	3,711
	Delivery volume of SPMC to MSD (million tablets)	1,253	-	1,889	2,220	2,903	2,550
	Fulfillment rate (%)	43.6	70.0	56.3	54.9	49.9	68.7

Sources: Baseline and target values are from the ex-ante evaluation report; actuals were provided by the SPMC.

Note: "Demand from MSD" means volume of annual demand of the MSD in the relevant year.

As described above, the two indicators regarding the SPMC were generally achieved.

(3) Provision of ambulances

It was expected that as a result of the provision of ambulances by the ODA Loan Project, the fulfillment rate of ambulances required in the seven provinces, where the ambulances would be provided, would be 84%. Eighty-six ambulances were provided to these seven provinces by the project, bringing the fulfillment rate to 77%. Therefore, it is judged that the target was largely achieved.

**Table 3: Fulfillment Rate of Ambulances
in the Seven Provinces which received the Ambulances**

Indicators	Baseline	Target	Actual	
	2011	At the time of provision	2014	January 2022
Number of ambulances owned	365	489	451	624
Number of ambulances required	582	582	582	-
Fulfillment rate (%)	62	84	77	-

Sources: Baseline and target values were from page 25 of the ex-ante evaluation report; actual values were from the documents provided by JICA; actual values of January 2022 were provided by Provincial Ministries of Health.

Note: It was calculated with assumptions that there was no change in the number of ambulances owned by the seven provinces (excluding ambulances provided by the ODA Loan Project) and the number of ambulances needed between the time of planning and the time of provision.

3.3.1.2 Qualitative Effects (Other Effects)

(1) Improvement and expansion of functions at the four BHs

The improvement of facilities and equipment by the ODA Loan Project, and appointment of consultant specialists and laboratory technicians, enabled the establishment of specialized clinics, performance of surgical operations, imaging tests, endoscopic examinations, clinical tests, dialysis, care of premature infants, and acceptance of seriously ill patients in ICU and HDU. In this way, as expected, the project has improved and expanded the functions of the four BHs, and enabled them to provide specialized medical services.

(2) Enhancement of the pharmaceutical manufacturing capacity of the SPMC

Annual manufacturing volume of the SPMC was 1.9 billion tablets in 2018, and was increased to 3 billion tablets in 2020 – increased by a factor of about 1.6. However, the number of staff increased only by a factor of about 1.2, from 99 to 123, indicating that manufacturing is being conducted efficiently. The facilities and equipment provided by the ODA Loan Project has contributed to the above-mentioned improvement in efficiency, and quality control, as follows.

Table 4: Contribution to Manufacturing Efficiency and Quality Improvement
by the Facilities and Equipment Provided by the ODA Loan Project

Facilities and equipment provided by the ODA Loan Project	Contribution to manufacturing efficiency and quality control
Manufacturing equipment	Increased precision in manufacturing operations with the programmable local controller (PLC) function. ¹⁹
Tablet compression machine	Thorough and efficient quality control by automatic weighing function.
Mixing granulator	Improved work efficiency by increased operation speed.
Automatic filling, capping, and labeling line	Doubled the speed of filling operations with an automatic label pasting function (previously, labels were pasted manually). Quality assurance through the function of blowing air to remove foreign matter from inside the bottles (previously bottles were washed, which created the risk of moisture residue).
New warehouse	Ensuring the quality of raw materials through proper control of humidity and temperature using air-conditioning facilities. The old warehouse was located outside the factory premises, but the new one is on the premises, facilitating easy transport of raw materials.

Source: Conversation with the Deputy Managing Director, Manufacturing, SPMC, and observation of the factory made by the external evaluator.

¹⁹ A PLC is a kind of computerized system, an electronic control device developed for industrial use. Pharmaceutical manufacturing involves processes such as mixing raw materials, granular formation, and coating. PLCs can be used to manage these processes, including automatic and manual operation, abnormal value alarms, and data collection and management of the processing results.

SPMC is also actively engaged in the manufacture and marketing of new drug items. The number of items manufactured by the SPMC has increased significantly from 36 at the time of planning (2011) to 62 at the time of ex-post-evaluation (2021). Six new items are planned to be manufactured and marketed in 2022. The facilities and equipment provided by the ODA Loan Project are being used for manufacturing of the new items.

(3) Provision of ambulances

At the time of the ex-post evaluation, all 86 ambulances provided to the seven provinces by the ODA Loan Project were in operation, apart from seven that were undergoing repairs. They were being used to transport emergency patients and blood, and playing an important role in saving life.

(4) Status of achievement of the Outputs and achievement and continuation of the Project Purpose of the Technical Cooperation Project

The status of production of the Outputs and achievement of the Project Purpose of the Technical Cooperation Project at the time of its completion were as follows.

Table 5: Status of Achievement of the Outputs of the Technical Cooperation Project at its completion

Outputs of the Technical Cooperation Project	Status of achievement
1. Improved monitoring of NCD patients in the catchment areas of the four BHs.	Largely achieved
2. Improved availability of laboratory services for NCD clients of primary care institutions in the catchment areas of the four BHs	Largely achieved
3. Enhanced pharmaceutical supply management at the four BHs.	Partly achieved

Source: Analysis made by the external evaluator based on the Terminal Evaluation Report of the Technical Corporation Project and other sources.

- Output 1: Regarding the monitoring of NCD patients, the project conducted collection of morbidity information for the patients attending medical and diabetes outpatient clinics on a larger scale than planned. Tracking high-risk individuals, identified in primary health care facilities, on action taken for their medical tests and treatment, was conducted as planned in two of the four clusters of the project. The methodology introduced for HLC supervision was also conducted in the expected manner.
- Output 2: The project introduced a “laboratory service network system” for NCD patients to have their total cholesterol and glucose profile tests at primary healthcare facilities without visiting a higher-level hospital or private laboratory. Under this system, samples, not the patients, are sent from the primary medical facility to laboratories at higher-level institutions such as BHs. This system operated almost as planned in three of the four clusters of the

project.

- Output 3: The Medical Supplies Management Information System (MSMIS), introduced in the four BHs to improve the efficiency of pharmaceutical inventory management, was only in operation for new stocks at the time of completion of the project.

The Project Purpose of the Technical Cooperation Project is “Strengthening of NCD management at the four target BHs and primary care institutions in their catchment areas as clusters.” The three indicators had been achieved at completion, as shown in Table 7. As noted above, some of the Outputs were partially achieved, but based on the overall status of achievement of the Project Purpose and the Outputs, the Project Purpose was judged to have been generally achieved.

Table 7: Status of Achievement of the Project Purpose of the Technical Cooperation Project at its completion

Indicators of the Project Purpose	At the time of planning	Target	Status of achievement
1. Percentage of patients referred from primary care facilities who visited the medical or diabetes clinics at the referring hospital	No data	80% or more	93% (Achieved)
2. Availability of data on patients attending medical and diabetes clinics of the public hospitals in the project area	None	Available	Available (Achieved)
3. Availability of tool packages for cluster-based NCD management in the four target districts	None	Available	Available (Achieved)

Source: Analysis made by the external evaluator based on the Terminal Evaluation Report of the Technical Corporation Project and other documents provided by JICA.

The following items from (a) to (d) were studied to find out the status of continuation of the Outputs of the Technical Corporation Project at the time of the ex-post evaluation. It was found that except for (a), all others were continued and operated in a developed way.

- (a) Tracking of the high-risk individuals, who were identified in primary health care facilities, on their actions taken for medical tests and treatment

The Ministry of Health has incorporated the referral and referral record forms proposed by the Technical Cooperation Project in the Personal Medical Record Books. Tracking of high-risk individuals identified in primary health care facilities on action taken for their medical tests and treatment can be done using these forms. However, the four BHs and lower-level hospitals visited during the ex-post-evaluation did not track patients through these record forms because recording and reporting by the forms required time and effort.

(b) Laboratory service network system

The laboratory service network system continues in the cluster of the four BHs. The system has been introduced in other areas by the PSSP, and is being used more widely.

(c) Utilization of the tool package for NCD management introduced in the Technical Cooperation Project

The following tools introduced by the Technical Cooperation Project, or similar tools created with reference to the tools, have been introduced and are being used throughout the country.

- HLC supervision and monitoring checklist
- Referral and tracking register
- Laboratory sample register and transaction record

(d) MSMIS

MSMIS was introduced at the four BHs. Using this staff can order pharmaceuticals and consumables, deliver them to the pharmacies and wards within the hospital, place additional orders, and manage inventory lists and order status online. Previously, they used to do all this manually. This has greatly improved the efficiency and accuracy of inventory management. According to the staff in charge, the function for checking the inventory of other hospitals online and requesting transfers in the event of a shortage is particularly useful, and has contributed to a significant increase in speed and reduction of workload in obtaining items that are needed.

3.3.2 Impacts

3.3.2.1 Intended Impacts

(1) Contribution to strengthening NCD prevention and control

Both projects had contributing to strengthening NCD prevention and control as their impact and Overall Goal. The ex-post evaluation found that the collaborative effects of these two projects made the following contributions to NCD prevention and control.

- The laboratory service network system supported by the Technical Cooperation Project continues to operate, and the ODA Loan Project has strengthened the clinical laboratory functions of the four BHs, allowing them to accept samples from lower-level hospitals and perform testing. As a result, local residents can now obtain test results for total cholesterol levels at primary health care facilities and HLCs without visiting higher-level hospitals, which is more convenient for patients and contributes to early detection of NCDs.²⁰

²⁰ Implementation of total cholesterol testing in primary health care facilities and HLCs has been promoted as a result of the Ministry of Health introducing a system to conduct total cholesterol and glucose testing using simple test kits in HLCs nationwide, strengthened laboratory functions in some primary health care facilities through the PSSP, and continued operation of the laboratory service network system.

- The health checkup and referral system at HLCs supported by the Technical Cooperation Project has continued, and the functions of the four BHs have been expanded through the ODA Loan Project, so that high-risk persons and NCD patients identified through health checkups can receive specialized examinations and consultations at the BHs.
- The expansion of manufacturing capacity of the SPMC through the ODA Loan Project and the efficiency of drug inventory management by MSMIS, which was introduced by Technical Corporation Project, have helped to ensure the continued provision of drugs to NCD patients in the four BHs and to promote continuous treatment.

The achievement of the indicators of the Overall Goal of the Technical Cooperation Project was also studied. Indicator 1, “Number and percentage of districts using tools developed by the project” was achieved in full with an actual result of 26 compared to a target of 26. The tools developed in the Technical Cooperation Project, such as the register for recording referrals and back-referrals in HLCs, and checklists for supervision and monitoring of HLCs, have been introduced and used in all districts, either as is or with updated formats. Indicator 2, “Availability of national data on outpatients of medical and diabetes clinics in public hospitals” has not been achieved. The Ministry of Health planned to conduct a survey in 2020 to collect the data nationwide; it was cancelled due to COVID-19, and has not been conducted since.

(2) Contribution to domestic production of pharmaceuticals

The expansion of production capacity of the SPMC by the ODA Loan Project has also promoted the domestic production of pharmaceuticals. The share of domestically produced medicines delivered to the MSD has increased significantly - from 44% at the time of planning, to 86% after completion of the project. The SPMC supplies 55% of the domestically produced medicines of the MSD, and plays an important role in domestic production. As domestically produced medicines are cheaper than imported ones, domestic production has also helped reduce the burden on health financing.

SPMC also contributes to the supply of medicines in the country by providing high quality medicines at reasonable prices, adjusting market prices of major medicines, avoiding products going out-of-stock by manufacturing and supplying products according to demand. SPMC manufactures all major medicines for the treatment of NCDs, except anti-cancer drugs, and plays a crucial role in the treatment of NCDs in the country. The expansion of manufacturing capacity through the ODA Loan Project has facilitated this contribution and role.

(3) Contribution to national goals for NCD prevention and control

The national goal for NCD prevention and control is to reduce mortality caused by NCDs among younger people (under 60 years old) by 2% annually. The project's contribution to the

achievement of this goal was studied in the ex-post evaluation. However, it was not possible to analyze the current status and progress of this goal, and the contribution of these projects to it, since mortality statistics by age and diseases have not been compiled in recent years.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

These projects were considered to fall under Category C of the “JICA Guidelines for Environmental and Social Considerations” (established in April 2010), as they were considered to have minimal or no undesirable impacts on the environment and society. There was no environmental impact and there were no complaints from the surrounding community during the construction and renovation of the facilities of the BHs and the SPMC. Medical waste generated at the four BHs is properly disposed of at the incineration facility installed by the ODA Loan Project, or at an incineration facility at a nearby hospital.

(2) Resettlement and Land Acquisition

Resettlement and land acquisition were not anticipated for these projects at the time of planning and did not occur.

(3) Gender

Medical services for pregnant and nursing mothers and infants were improved through the construction of obstetrics and gynecology wards, delivery rooms, premature baby rooms, and operating theaters, as well as the provision of related equipment. For example, the establishment of an obstetrics and gynecology wards and delivery rooms, and the assignment of obstetricians and gynecologists have made it possible to deliver babies at BHs without having to travel to distant tertiary care facilities. In addition, while previously it was not possible to care for premature infants at the BHs, this project has made it possible to do so, thereby reducing the burden on families who frequently visit premature infants in hospital, especially mothers immediately after delivery.

(4) Socially vulnerable groups and human rights

The fact that the projects enabled local residents to receive specialized examinations and treatment, to be hospitalized and receive surgical operations at the BHs without visiting distant tertiary care facilities, has benefited the poor, disabled, elderly, and other vulnerable peoples of society (see column below).

< Interviews with users of Warakapola BH >

Today, I am going to have an endoscopy. I had to go to the Kegalla Teaching Hospital to undergo such specialized tests and surgeries in the past. It took about an hour and a half by bus. The waiting time was sometimes so long that I had to take the day off work to go to the hospital. Now that this hospital has been newly constructed, I can have the tests and see my doctor here. It is very helpful. It is good that the consultation rooms and waiting rooms have become larger, cleaner, and brighter.

(Source: Interviews with patients conducted at the hospital during the ex-post-evaluation)

(5) Contribution to the formation of the PSSP of the World Bank

In Sri Lanka, the PSSP assisted by the World Bank (see footnote 4) was implemented in several different areas of the country at the time of the ex-post evaluation. It was confirmed that the laboratory service network system implemented by the PSSP, with a focus on the divisional hospitals, is an expansion of the activities of the Technical Corporation Project, and was formed utilizing the Outputs of the Preceding Technical Corporation Project and this project. The director in charge of the Projects at the Ministry of Health was also in charge of the World Bank project at the time, and the JICA experts of the Technical Corporation Project occasionally exchanged information with the consultants of the World Bank. The JICA Sri Lanka office also ensured coordination among donors all the time, avoided duplication of activities, and encouraged the Ministry of Health to utilize the results and experiences of JICA projects in other projects. These factors seem to have led to the collaboration between these projects.

(6) Contribution to Response to COVID-19

The ODA Loan Project also made a significant contribution to testing and treatment of COVID-19 patients. The representatives of the Provincial Department of Health and the four BHs stated, “The four BHs were able to make a significant contribution to the COVID-19 response because of the facilities and equipment provided by the ODA Loan Project.” The Medical Superintendent of Theldeniya BH, which was a designated COVID-19 hospital for about two years, stated that the following equipment and facilities provided by the project were particularly useful in the response to COVID-19.

- ICU (treatment of critically-ill COVID-19 patients)
- Movable X-ray machine (lung function test)
- Clinical laboratory equipment (PCR tests)
- Medical gas supply facility (oxygen supply)
- Incinerator (disposal of personal protective equipment)

(Statements in brackets indicate how this equipment and facilities were used in response to the COVID-19.)

As mentioned above, ambulances provided by the project were also utilized to transport COVID-19 patients.



ICU constructed by the ODA Loan Project was converted into a COVID-19 ICU (Theldeniya BH)



PCR tests using testing equipment provided by the Project (Theldeniya BH)

Photos: Taken by external evaluator in December 2021.

All three components implemented through the ODA Loan Project are showing the expected impact, and the contribution of the Technical Corporation Project is also recognized in the realization of the effect. The expected impacts of the Projects were also produced, such as acceptance of high-risk persons and patients identified through NCD health checkups in the BHs, improved convenience for local residents for examination and treatment, domestic production of pharmaceuticals, continuous provision of major pharmaceuticals for NCD treatment, and contributing to a reduction in the burden of health financing through promotion of domestic production of pharmaceuticals. Furthermore, the Projects have contributed to the formation of the World Bank's project for NCD prevention and control, and to the COVID-19 response. Therefore, it can be said that the impact of these projects has been greater than planned.

As described above, these projects achieved their objectives more than planned. Therefore, effectiveness and impacts of these projects are very high.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and System

Sri Lanka is committed to NCD prevention and control as a national policy, and all policies and systems at the time of the ex-post evaluation that support the sustainability of the effects of the Projects are expected to continue. The Ministry of Health intends to continue NCD health checkups and health guidance, and recognizes the need to track actions taken by NCD patients who are identified in the checkups. According to the Ministry, they are planning to establish a system to share patient data within clusters, using dedicated software to track actions taken by

them for medical treatment after they were referred, because manual tracking using personal health record books requires a lot of time and effort.

The Sri Lankan government is focusing on the domestic production of pharmaceuticals to ensure the continuous provision of medicines, reduce the burden on health finances, and prevent outflow of foreign currency. It is expected that policies to promote domestic production and other incentives, such as tax exemption on import of pharmaceutical raw materials and manufacturing facilities and reduction of corporate tax for pharmaceutical companies, will be continued.

As described above, policies and systems to support the sustainability of the effects of the Projects are in place.

3.4.2 Institutional/Organizational Aspects

Roles and responsibilities assigned to the four BHs and the SPMC in O&M of the facilities and equipment provided by the ODA Loan Project are clear, and they have established systems for O&M. Every BH has a maintenance contract with the agencies of the manufacturers for equipment requiring specialized maintenance, such as imaging equipment and precision instruments. Maintenance and simple repairs of the buildings and interiors of the BHs are performed by maintenance staff. For the hospital building, structural repairs and updates that require budgetary provision are inspected by staff of the provincial engineering department, and repaired or replaced by the department or a contractor. They have concluded maintenance contract agreements with specialized firms for sewage treatment facilities, central air conditioning systems, elevators, generators, etc.

Since the completion of the ODA Loan Project, consultant specialists, doctors, nurses, and other personnel necessary for the expansion of hospital functions have been gradually assigned to the four BHs. However, further staffing is needed. In particular, there is an urgent need to assign a histopathologist to Theldeniya BH, and to increase the number of doctors and nurses at Kaluwanchikuddy BH. The applications requesting the staff assignments have already been submitted.

As described above, the institution and systems necessary for O&M are generally in place.

3.4.3 Technical Aspect

Training programs for O&M of the medical equipment and facilities are conducted as needed at the four BHs and the SPMC. No facilities are unused or underutilized due to technical issues. Provincial and district health officials were conducting various training programs on techniques for NCD prevention and control, and have also developed training materials and handbooks, by utilizing things they have learned from the Technical Cooperation Project and training programs in Japan. No technical problems were found regarding the sustainability of the Projects.

3.4.4 Financial Aspect

(1) Provincial Ministry of Health and the four BHs

The actual expenditure of the Provincial Departments of Health, which are responsible for the four BHs, increased year by year for both capital and recurrent expenditure until 2021. Funds were also allocated as needed for maintenance and repairs, and purchasing of reagents and spare parts for the equipment of the project in the four BHs. The national economy seriously deteriorated in 2022,²¹ but the budget for the Provincial Ministries of Health has not been significantly reduced. This is due to the priority given to the health sector, and financial support provided by the World Bank and the Asian Development Bank.²² As of April 2022, there were no major financial problems in the O&M of facilities and equipment provided by the ODA Loan Project in the four BHs. However, there are concerns that due to rapid inflation the cost of maintenance and purchasing of spare parts will no longer be covered by the budget, and that measures taken by the government to restrict imports will make it difficult to obtain imported parts needed to repair facilities and equipment. The Ministry of Finance has instructed ministries and departments to stop construction of new facilities and renovations, and therefore renewal of facilities and equipment at the four BHs may also be stopped or delayed. In addition, certain medicines and surgical equipment are becoming in short supply, especially at tertiary care facilities at the time of the ex-post evaluation, because import of these items has begun to be delayed due to the shortage of foreign currency reserves in the country. There is a possibility that the four BHs, too, may not be able to secure sufficient stocks of pharmaceuticals in the future, because there are no prospects for improvement in foreign currency reserves.

(2) SPMC

The financial situation of the SPMC in recent years has been favorable. Sales are increasing, and the company has secured budget for the O&M of its facilities and equipment. SPMC is self-financed, and has not been affected much by the budget reductions of the government.

Although the cost of imported raw materials increased in 2022 due to exchange rate fluctuations, the Government has approved price increases for several pharmaceutical products manufactured by SPMC in line with this. Therefore, the impact of higher material costs is limited. Based on these factors, SPMC's financial situation is expected to remain favorable in the future.

²¹ For example, a ban on imports of various items and restrictions on issuing letters of credit have been imposed due to a shortage of foreign currency reserves in the country. Imports of fuel for power generation and transportation have been delayed, hampering civilian life and economic activities (April 2022).

²² The external evaluator studied the budget of the Provincial Ministry of Health of the Central Province, and found that it was Rs. 1.2 billion and Rs. 1.1 billion in 2021 and 2022 respectively (source: Ministry of Health of the Central Province). As an example of the budget for the four BHs, she studied the recurrent budget of the Kaluwanchikuddy BH and found that it was Rs. 230 million and Rs. 288 million in 2021 and 2022 respectively (Source: Kaluwanchikuddy BH).

On the other hand, SPMC is moving forward with a plan to construct a new plant near Colombo to meet a further need for domestic production of pharmaceuticals. The construction cost was planned to be covered by SPMC's own funds, but because the cost of imported construction materials and manufacturing equipment has increased due to exchange rate fluctuations, it will be difficult to build the new plant within the planned budget. Therefore, SPMC has applied to the Ministry of Health and Ministry of Finance to obtain official financial assistance from foreign countries.

(3) Prevention and Control of NCDs

The budget for the NCD Unit of the Ministry of Health in 2022 is Rs. 70 million, a significant decrease from Rs. 150 million in 2021.²³ As a result, the unit has to scale back its activities in 2022. For example, the annual training program for new NCD staff of the provincial health departments has been cancelled, and the establishment of NCD prevention and management promotion committees in each province, which had been planned for the same year, by stakeholders from various fields, has become impossible. A nationwide survey that was scheduled to be conducted to establish an online data management system for causes of death has been postponed due to a budget shortfall that prevented the printing of the survey forms.²⁴

The economic crisis has also affected NCD prevention and management at the provincial level: HLCs continue to be held, but the number of participants is much lower than in the past, and on some days there are no participants. This may be due to reduced bus service caused by lack of fuel for vehicles, which makes travel difficult, or due to the hardship caused by inflation, which has reduced interest and awareness of NCD prevention and management. There have also been problems with delays in budget allocation, inability to print personal health record books, and the distribution of total cholesterol and blood glucose testing kits to HLCs.²⁵

Thus, although there are no problems with SPMC regarding financial sustainability, the country's severely deteriorating economy may hinder the O&M of medical services in the four BHs in the future. Several problems are happening to NCD prevention and control activities by the NCD Unit of the Ministry of Health. As of July 2022, the time of the ex-post evaluation, there is no prospect of resolving these problems.

3.4.5 Environmental and Social Aspects

The sewage treatment plants and incinerators for waste materials in the four BHs, which were installed by the ODA Loan Project, are working in good condition in general. Waste, including infectious waste affected by COVID-19, is also being properly disposed of. The

²³ National Budget 2022, website of the Ministry of Finance, Sri Lanka.

²⁴ Explanation given by the Director, NCD Unit, Ministry of Health (July 6th, 2022).

²⁵ Description of the staff in-charge of NCD in the North Western Province, Batticaloa district, Nursing officer in charge of HLCs in Theldeniya BH, and Kaluwanchikuddy BH as of July 2022.

SPMC has renewed its environmental license, and is properly disposing of its waste and wastewater. There is no complaint from the surrounding community regarding environmental and social considerations for either the four BHs or the SPMC.

3.4.6 Preventative Measures to Risk

At the time of the ex-post evaluation, March 2022, Sri Lanka was experiencing many hours of planned power cuts due to fuel shortages. However, the four BHs had negotiated with the Ceylon Electricity Board to continue receiving electricity and were equipped with a large generator and enough fuel to generate power for several days. The SPMC is in an industrial area, and has also not been affected by the planned power cuts. The raw materials for pharmaceutical products are properly procured, considering the influence of logistical slowdowns caused by COVID-19, and the necessary amount of stock is always maintained.

3.4.7 Status of Operation and Maintenance

The facilities and equipment in the four BHs provided by the ODA Loan Project are well utilized and properly maintained. The following unique efforts to improve medical services and patient care, which contribute to sustaining the effects of the Projects, have also been implemented.

<Effort Contributing to the Sustainability of the Project Effects>

The staff of Kaluwanchikuddy BH are committed to Kaizen and 5S activities and have received several awards. The photo on the right shows color-coded clinic books, which were introduced at the suggestion of staff members. These encourage patients to visit the specialized clinic at their assigned time. This innovation has enabled patients and staff to clearly see the visiting time allocated to each patient, reducing congestion, and shortening waiting time.



Theldeniya BH conducts in-service training at the hospital for doctors, nurses, and others to improve staff knowledge and patient care. The photo on the right shows a specialist from the Faculty of Medicine of the University of Peradeniya giving a lecture on pain management in April 2022. The next training session will focus on emergency medicine.



On the other hand, the following issues related to O&M were identified for some of the facilities and equipment of the four BHs.

Table 1: Issues Related to O&M of Facilities and Equipment of the Four BHs

Name of the BH	Issues	Countermeasures
Galgamuwa	There are problems with the pumps for feeding chlorine and other equipment at the sewage treatment facility.	Repairs have been requested.
	Medical and surgical clinics are over-crowded.	A waiting time survey will be conducted, and necessary measures for reducing the congestion be introduced.
Theldeniya	There are leakages onto the ceiling of the clinical laboratory due to a defect in sewerage pipes.	Scheduled to be repaired with the cooperation of the civil contractor of the building.
	A set of equipment for histopathology testing is not utilized due to the absence of a histopathologist.	The hospital has continued to apply to the Ministry of Health for placement of a histopathologist since the completion of the project.
	Blood gas electrolyte analyzer has a defect. The specifications are too high, and the cartridges are expensive.	The hospital plans to repair the defects in this equipment and transfer it to a higher-level hospital. ²⁶
Kaluwanchikuddy	The treatment capacity of the existing soakage pits and septic tanks has reached its limit, and sewage sometimes backflows during the rainy season.	The hospital has asked the provincial government to allocate a budget for constructing a sewage treatment facility, but has no prospect for the allocation.
	The HDU have not been opened due to a shortage of doctors and nurses.	Staff allocation has been applied for. The number of staff is increasing, but is not yet filled.
Warakapola	The following inconveniences have occurred due to the design of the hospital building: <ul style="list-style-type: none"> • No toilets for patients or staff in the operating theater complex. • The room for the central sterile services department is too small, and sterilized bandages are folded in the open air. • The ceiling of some parts of the medical ward is heated by direct 	Improvement through renovation and expansion of facilities is desirable, but no concrete plan has been formulated, budgeted, or implemented.

²⁶ The hospital owns two units of the equipment with appropriate specifications, so the transfer will not cause any problems.

Name of the BH	Issues	Countermeasures
	sunlight, making the ward very hot. • The ICU was designed for four beds, but only three beds can be placed when medicine and supplies storage cabinets and work desks are in place.	
	The hospital building is located on a hill. Visitors coming on foot need to climb up a long steep hill or use stairs, which is difficult for elderly and sick patients.	There was an earlier discussion about introducing a shared-ride taxi service from the bus stop to the hospital. This has not been realized due to shortages of budget and manpower.

All facilities and equipment of the SPMC are being utilized and are well maintained. The ambulances provided have been maintained through periodic inspections, maintenance, and replacement of spare parts. The eight units under repair are expected to be operational upon completion of repairs.

Thus, regarding the status of O&M, no problems have been observed for the SPMC and the ambulances. However, there are several issues for the four BHs, some of which are unlikely to be improved soon.

From the above, several problems have been observed in terms of financial aspects, and status of O&M; and there are less prospects of improvement and resolution. Therefore, sustainability of the effects of these projects is moderately low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This ex-post evaluation evaluates two projects: an ODA Loan Project “Project for Improvement of Basic Social Services Targeting Emerging Regions”, and a technical cooperation project “Project for Enhancement of Non-communicable Diseases Management.” The latter was implemented to supplement the ODA Loan Project in an integrated manner.

These two projects were implemented with the objectives of strengthening measures against NCDs and improving health care services. These objectives and project contents are consistent with the development policies and development needs of Sri Lanka from the time of planning to the time of ex-post evaluation of these projects. These projects are also consistent with the development aid policy of Japan at the time of planning. These projects were implemented promptly based on the results of the Preceding Technical Corporation Project, which had been

implemented prior to these projects. This allowed JICA to continuously support the strengthening of NCD prevention and management. The Technical Corporation Project was implemented in coordination with a World Bank-supported project and a survey conducted by the WHO, to ensure that there was no overlap between them, and the expected results of collaboration were achieved. Therefore, relevance and coherence of these projects are high.

The ODA Loan Project developed facilities and equipment in four secondary health care facilities (BHs), the SPMC, and provided 86 ambulances. This is largely in line with the plans. Although the project cost slightly exceeded the plan, it was within a reasonable range considering the increased output in the provision of equipment at the four BHs. Therefore, it is considered that the project cost was within the plan. However, the efficiency of the project is moderately low, since the project period significantly exceeded the plan.

The ODA Loan Project has produced the expected effects, including enhancement of clinical laboratory functions and operation of diabetes clinics at the four BHs, increased manufacturing capacity of SPMC, and improvement in the fulfillment rate of supply of ambulances. The outputs of the Technical Corporation Project have also contributed to these effects. The synergistic effects of these projects have been recognized. Consultant specialists and laboratory technicians have been assigned to, and surgical operations and imaging tests were available at, the four BHs in the target year. The number of surgical operations, inpatients, outpatients, participants in clinics and deliveries have also increased, indicating that hospital functions have expanded by utilizing the facilities and equipment of the ODA Loan Project. The expected impacts of these projects, such as the four BHs accepting NCD patients identified at NCD health checkups, more convenient examination and treatment for local residents, continuous provision of medicine to patients in public hospitals, and a reduced burden on health financing through promotion of domestic production of medicines, were also realized. Furthermore, these projects have contributed to the formation of the World Bank-supported Primary Healthcare System Strengthening Project (PSSP), and to the response to COVID-19. Therefore, the effectiveness and impacts of these projects are very high.

Regarding the sustainability of the project, there are no problems with policy/systems, institutional/organizational, technical, environmental, and social aspects, and risk responses. However, it is possible that O&M of health services at the four BHs will be disrupted in the future because the economy of the country is seriously deteriorating. The Ministry of Health is going to scale down activities for NCD prevention and control. There is no prospect of resolving these problems at the time of the ex-post evaluation. Therefore, sustainability of the project effects is moderately low.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agencies

(1) Recommendations to the Ministry of Health

(a) Assignment of a histopathologist to Theldeniya BH

Although Theldeniya BH has been equipped with relevant equipment by the ODA Loan Project with the intention of conducting histopathological testing, it has not been able to conduct the tests using this equipment because a histopathologist has not yet been assigned. It is advisable to assign a histopathologist to the hospital as soon as possible.

(b) Assigning more doctors and nurses at Kaluwanchikuddy BH

Kaluwanchikuddy BH has not been able to operate the HDU due to understaffing, as the number of doctors and nurses assigned to the hospital is well below its cadre. An increase in the number of doctors and nurses is advisable.

(c) Sharing of knowledge on hospital facility design

The hospital facility in Warakapola BH has experienced some inconvenience caused by the facility design, such as the lack of toilets in the operating theater complex and an inability to accommodate the planned number of beds in the ICU. According to the project director at the time and a senior official of the Ministry of Health of the provincial government, the design drawing was prepared by a qualified architect, and was confirmed and approved by the parties concerned after collecting opinions from the users of the facility. The reason that these problems were not pointed out at that time is probably that the staff involved in the confirmation and approval process did not have sufficient expertise in hospital design, and may not have been able to identify practical issues in the design drawings. To prevent these problems from occurring in the future, it is important for the Ministry of Health to provide knowledge about the design of medical facilities at the time of staff training and to share lessons learned, including those from the above examples. It could also establish standards for the design of health care facilities or refer to the standards of the WHO.

(d) Support for construction of new plants of the SPMC

SPMC plans to further expand its pharmaceutical manufacturing capacity with the construction of new plants. Domestic production of pharmaceuticals is a priority issue for the country, contributing to a stable supply of medicines, reducing the burden on health finances, and reducing foreign currency outflows. However, due to recent drastic fluctuations in foreign exchange rates, it is likely that SPMC will not be able to cover the construction costs with its own funds. It is advisable that the Ministry of Health supports the SPMC as appropriate, including identifying the need for additional funds, to ensure that this plan is realized.

(e) Streamlining the establishment and operation of procurement evaluation committees within the Ministry of Health

In this ODA Loan Project, the procurement of consultants and contractors for the improvement of the SPMC was significantly delayed, resulting in a delay of about two and a half years in the start and completion of the construction of facilities and procurement of equipment. The main reason for the delay in procurement was that it took more time than planned to approve the establishment of the Procurement Evaluation Committee, appoint its members, and review proposals. The delay in procurement was also because the evaluation committee members changed several times due to personnel changes within the Ministry, and it was difficult to coordinate the dates of the committee meetings due to the many other duties and overseas business trips of the committee members. In future, the Ministry of Health is recommended to improve the efficiency of the establishment and operation of the procurement evaluation committees by, for example, minimizing the turnover of committee members and introducing a system that facilitates the committee to meet regularly to improve the efficiency of the projects and ensure that their effects are realized without delay.

(2) Recommendations to the Provincial Ministries of Health

Each Provincial Ministry of Health is expected to provide necessary support to the four BHs for studying and implementing the proposed solutions shown in Table 9, so that the major problems regarding the O&M of the facilities and equipment of the Project in the hospitals will be resolved promptly.

Table 9 : Problems in O&M of the Facilities and Equipment of the BHs and their Possible Solutions

Name of the Provincial Government and BH	Problems	Possible solutions
North Western Provincial Ministry of Health (Galgamuwa BH)	Defects in pumps for feeding chlorine and other equipment at the sewage treatment facilities.	Repair defects.
Central Provincial Ministry of Health (Theldeniya BH)	Water leaking from the ceiling of clinical laboratory.	Repair water leakages.
	Failure and infrequent use of blood gas electrolyte analyzers.	Defects and repairs and transfer to higher level hospitals.
Eastern Provincial Ministry of Health (Kaluwanchikuddy BH)	Backflow of sewage from sewage treatment facilities.	Construction of a new sewage plant with treatment function.
Sabaragamuwa Provincial Ministry of Health (Warakapola BH)	No toilets for patients or staff in the operating theater complex.	Construction of toilets for patients and staff.
	Conducting the processing of bandages after sterilization in the open air.	Operation of the processing indoors.

Name of the Provincial Government and BH	Problems	Possible solutions
	A part of the ceiling of the medical ward is heated by direct sunlight, making the ward very hot.	Installation of an air conditioner.
	Walking to the hospital entrance requires walking up a long steep slope or using stairs.	Introduced a shared-ride cab to transport visitors from the nearest bus stop to the hospital, and renovate the facility to allow visitors to use the elevator in the old building to get to the front door.

4.2.2 Recommendation to JICA

(1) Monitoring of the problems at the four BHs

JICA is recommended to monitor progress on improvement of the problems stated in the “Recommendations to the Executing Agencies” regarding the allocation of personnel and problems with the O&M of the facilities and equipment in the four BHs, monitor the influence of the deteriorating financial situation of the Sri Lankan government on the effects in O&M of the facilities and equipment provided by the project, and provide the Ministry of Health and provincial governments with advice as appropriate.

4.3 Lessons Learned

(1) Hospital design with consideration of accessibility

The hospital building of Warakapola BH constructed under the ODA Loan Project is located on a hill, and visitors have to climb up a long slope or use stairs when visiting on foot. This is very difficult for the elderly, the disabled, and those in poor physical condition. In projects for improving hospital facilities, it is important for the executing agency to keep in mind that the facility should be designed with accessibility, and for JICA to request the same of the executing agency.

(2) Identify scenarios for contribution to the ODA Loan Project at the time of formation of an associated technical cooperation project

A technical cooperation project associated with an ODA loan project is implemented with the aim of promoting the effects and ensuring sustainability of the ODA loan project. However, for this Technical Cooperation Project, specific plans or purposes were not defined about the ways the Technical Cooperation Project would contribute to the effectiveness of the ODA Loan Project at the time of its formation or during its implementation. Fortunately, the Technical Cooperation Project was effectively implemented, and synergistic effects were observed during

the ex-post evaluation, since the hospitals the project worked with were the same as those of the ODA Loan Project. Yet, the Technical Corporation Project could have made a greater contribution to the effectiveness of the ODA Loan Project if a scenario of the ways the former would contribute to the latter had been set up during its formation or implementation and reflected in its Project Design Matrix.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

Active support by JICA for project management and revision of the plan

The former project director of the ODA Loan Project appreciated that JICA staff actively supported the operation of the Project and communicated well during the monthly progress review meetings, and approvals for revisions, etc. The General Manager of the SPMC and the Deputy General Manager in charge of production appreciated that JICA staff and consultants understood the needs of the SPMC well and cooperated with them, that the review of the procurement items for manufacturing equipment in the detailed design went smoothly, and that the Japanese company installed the manufacturing equipment, which requires a high level of technical skill to install, in a perfect manner.

5.2 Additionality

Seamless support for strengthening NCD Prevention and Control through the Preceding Technical Cooperation Project, the ODA Loan Project, and the Technical Cooperation Project

The prompt formation of the ODA Loan Project to overcome the challenges identified in the preceding Technical Corporation Project and the start of the Technical Corporation Project enabled JICA's continued support for strengthening NCD prevention and control. This continuous support ensured the continued involvement and commitment of the officials of the Ministry of Health to the JICA projects and led to the effective implementation of the Projects.

Effective support brought about by a long-standing working relationship of JICA with the SPMC

The SPMC was established in 1987 under the Japanese grant aid project "Project for Construction of the Essential Medicines Manufacturing Center." Since its establishment, SPMC staff have continued to learn about Japanese pharmaceutical manufacturing technology and quality control through training in Japan. The officials of the SPMC appreciate that its long-standing cooperative relationship with Japan has facilitated maintaining trust, understanding, and good communication during the planning and the selection of the equipment for the ODA Loan Project.

Some of the manufacturing equipment procured through the grant aid project in 1987 has been well maintained and is still used with great care. In the ODA Loan Project, the factory building constructed in the grant aid project was renovated, and the procured equipment was installed. The project has expanded the manufacturing capacity of the SPMC as expected, contributing to the domestic production of pharmaceuticals. This project deserves to be referred to as a good example of an ODA Loan Project that added value to the results of a previous grant aid project and produced the expected results, based on a longstanding cooperative relationship.

(end)

Comparison of the Original and Actual Scope of the Project

Items	Plan	Actual
1. Project Outputs	<p>Improvement and expansion of functions of the four BHs:</p> <ul style="list-style-type: none"> • Construction and refurbishment of facilities • Provision of equipment <p>Enhancement of pharmaceutical production capacity of the SPMC:</p> <ul style="list-style-type: none"> • Construction and refurbishment of facilities • Provision of equipment <p>Provision of ambulances: 124 units in total in 7 provinces</p>	<p>Improvement and expansion of functions of the four BHs:</p> <ul style="list-style-type: none"> • As planned • Slightly more than planned <p>Enhancement of pharmaceutical production capacity of the SPMC:</p> <ul style="list-style-type: none"> • Slightly more than planned • As planned <p>Provision of ambulances: 86 units in total in 7 provinces</p>
2. Project Period	March 2012 - May 2016 (51 months)	March 2012 - November 2018 (81 months)
3. Project Cost		
Amount Paid in Foreign Currency	1,958 million yen	3,853 million yen
Amount Paid in Local Currency	2,802 million yen (4,003 million rupees)	925 million yen (1,119 million rupees)
Total	4,760 million yen	4,799 million yen
ODA Loan Portion	3,935 million yen	3,874 million yen
Exchange Rate	1 rupee = 0.70 yen (As of November 2011)	1 rupee = 0.63 yen to 0.89 yen (Annual average IMF rates from 2012 to 2019)
4. Final Disbursement	July 2019	

(end)

Sri Lanka

FY2021 Ex-post Evaluation Report of
Japanese ODA Loan Project

“Project for the Construction of Major Bridges on National Road Network”

External Evaluator: Tomoko Tamura, Kaihatsu Management Consulting, Inc.

0. Summary

This project was implemented to ensure smooth road transportation by replacing old bridges on major national roads across the country, thereby contributing to promote the nation’s economic growth and social development.

The project is consistent with Japan’s aid policy, Sri Lanka’s development policy and development needs, and has produced the expected outcomes in collaboration with the projects of JICA and others. However, the project required significant changes to its content, such as the bridge types and the kind and number of Japanese technologies to be applied to the construction during its implementation, because the plan of the project at the time of the appraisal was based on limited information. Tied (Special Terms for Economic Partnership (STEP))¹ were applied to the main contractors of the project with an expectation of application of the Japanese technologies. However, the first round of bidding on civil construction for Package-3 of the project was unsuccessful because Japanese companies did not show much interest. The bid was postponed due to deteriorating security conditions in Sri Lanka.² It was finally cancelled as no Japanese companies were interested, and there was little time remaining in the project period. Due to this, although it was planned that the project would construct 37 bridges, it was ended when a total of 18 bridges had been constructed in Packages 1 and 2. The relevance and coherence of the project are moderately low, because, as mentioned above, there were issues with the project plan and approach adopted at the time of the appraisal.

As explained, the output of the project changed from 37 bridges to 18 bridges, but the efficiency, effectiveness, impact and sustainability of the project were analyzed and evaluated for the 18 bridges that were constructed. This change was agreed between JICA and the executing agency and decided through proper procedures.

Both the project cost and project period for the 18 bridges were within the plan and the efficiency is very high.

The project was expected to increase the amount of traffic on the bridges constructed by the project. The estimated annual average daily traffic for the target year of the 18 bridges was 9,255

¹ STEP is applicable to ODA loan projects in which developing countries request the application of these terms and conditions as those that make use of Japan's superior technologies and know-how, and in which the technologies and know-how possessed by Japanese companies are necessary and substantially utilized. STEP projects are subject to procurement conditions of Japan tied for prime contracts and rules on the ratio of materials and equipment procured from Japan. Interest rates are lower than those of general ODA loan projects.

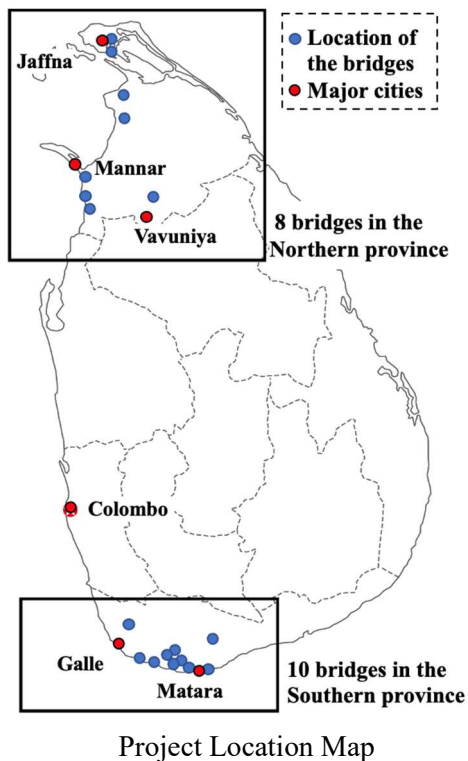
² Public security in Sri Lanka deteriorated after a series of bombings in Colombo, Negombo and Batticaloa on April 21, 2019.

vehicles/day, which was 77% of the target. In the years before and after the target year, and also at the time of the ex-post evaluation, the annual average daily traffic was over 70% of the target. Therefore, it can be said that this indicator was largely achieved. The project has helped solve traffic and transport problems in the project area, and has also contributed to an improvement in the lives of citizens and economic activities. In this manner, the expected effects have been achieved through the implementation of the project, and the effectiveness and impacts of the project are high.

There are some minor problems in the institutional/organizational and financial aspects, and current status of the operation and maintenance (hereinafter referred to as “O&M”). It is likely that they will be improved or solved. Therefore, sustainability of the project effects is high.

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

1. Project Description



Polwathumodara Bridge, Matara District, Southern Province



Navatkuli Bridge, Jaffna District, Northern Province

Map was illustrated by the external evaluator; photos were provided by the project consultant.

1.1 Background

Roads play an important role in the economic and social activities of the country in Sri Lanka as 90% of domestic passenger and cargo transportation are conducted by road. The Sri Lankan government has been improving the road network to meet the increasing traffic demand. Many bridges also needed to be replaced due to deterioration, damage, or because they were of insufficient width; however, this was delayed because the unit cost for improvement of bridges is

higher than that for the roads. These bridges had been an obstacle to the smooth flow of road traffic.

1.2 Project Outline

To ensure smooth road transportation by replacing old bridges on major national roads across the country, thereby contributing to promoting the nation's economic growth and social development.

Loan Approved Amount/ Disbursed Amount	12,381 million yen/7,795 million yen
Exchange of Notes Date/Loan Agreement Signing Date	March 2013/March 2013
Terms and Conditions	<p>Interest Rates Procurement of equipment and civil works: 0.20%, Consulting services: 0.01%.</p> <p>Repayment Period 40 years (including grace period of 10 years)</p> <p>Procurement conditions Tied (Special Terms for Economic Partnership (STEP))</p> <p>Procurement terms and conditions for civil works and consulting services are tied and general untied aid for the prime contractors contract and subcontracts respectively. The rule of country of origin is that the percentage of materials and equipment procured from Japan must be at least 30% of the total price of contracts financed by the STEP loan (including services).</p>
Borrower/Executing Agency	The Democratic Socialist Republic of Sri Lanka/ Ministry of Highways
Project Completion	August 2018
Project Area	All of Sri Lanka
Main Contractors (Over 1 billion yen)	Hazama Ando Corporation (Japan), Wakachiku Construction Co., Ltd. (Japan)
Main Consultant (Over 100 million yen)	Oriental Consultants Global Co., Ltd. (Japan)
Related Study	Data Collection Survey, 2013
Related Project	[Technical cooperation project] The Project for Capacity Development on Bridges Management in the Democratic Socialist Republic of Sri Lanka (2015 - 2018)

2. Outline of the Evaluation Study

2.1 External Evaluator

Tomoko Tamura, Kaihatsu Management Consulting, Inc.

2.2 Duration of Evaluation Study

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

Duration of the Study: September 2021 - October 2022

Duration of the Field Study: January 17, 2022 - February 2, 2022, and April 25, 2022 - April 29, 2022

2.3 Other

[Evaluation and analysis of the efficiency, effectiveness, impact, and sustainability of this ex-post evaluation]

As explained in “0. Summary,” the outputs of the project have been changed from 37 bridges to 18 bridges. The efficiency, effectiveness, impact and sustainability of the project were evaluated and analyzed for the 18 bridges constructed by the project, because the change of the output had been agreed between JICA and the executing agency and decided through proper procedures.

3. Results of the Evaluation (Overall Rating: B³)

3.1 Relevance/Coherence (Rating: ②⁴)

3.1.1 Relevance (Rating: ②)

3.1.1.1 Consistency with the Development Plan of Sri Lanka

At the time of both the appraisal and the ex-post evaluation of the project, the medium- and long-term national development policy of the Sri Lankan government emphasized the development of economic infrastructure, including roads. The road sector policy also focuses on programs for road construction, rehabilitation, and replacement of bridges, etc. These are consistent with the objective of the project, which is to facilitate road traffic by improving bridges.

3.1.1.2 Consistency with the Development Needs of Sri Lanka

As described in “1.1 Background,” at the time of the project appraisal the improvement of bridges had been delayed, hindering the smooth flow of traffic. At that time, some of the bridges to be improved by the project were not wide enough to allow vehicles to pass each other, causing traffic congestion; vehicle traffic on other bridges was restricted because they were

³ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁴ ④: Very High, ③: High, ②: Moderately Low, ①: Low

old; some were flooded during the rainy seasons. In this manner, there was a great need to replace the bridges.

As mentioned above, five of the bridges constructed by the project were flooded every year during the rainy season, blocking traffic at the time of the appraisal. Local residents had to walk across the river. The elderly and children had difficulty walking across the river, which caused significant inconvenience to their mobility. The bridges in this project were selected considering the significant inconvenience suffered by residents and socially vulnerable groups in their daily life. In designing the bridges, efforts were also made to minimize the amount of resettlement of residents due to construction.

Thus, the objectives of the project were consistent with the development needs of the country at the time of the appraisal, and the need for improved bridges continued at the time of the ex-post evaluation. Consideration was given to the residents in the selection and design of the bridges of the project.

3.1.1.3 Appropriateness of the Project Plan and Approach

The project was formulated based on the results of the data collection survey, and was started. However, the project plan at the time of the appraisal did not adequately reflect the situation and conditions of the sites where bridges were to be constructed; and therefore, significant changes to the project details were needed - for example, bridge types, and the kind and number of bridges that should apply Japanese technology (see “3.2.1 Project Outputs” in this report for details of the changes).

As the project was expected to utilize Japanese technologies, the STEP was applied to the project, and the procurement conditions became Japan tied for the prime contractors of the civil work. This resulted in favorable lending terms for Sri Lanka, and enabled the project to adopt bridge types that minimized resettlement, with a Japanese company undertaking the construction.⁵ However, in Package-3 of the project, there was little interest from Japanese companies in bidding for the package, and the bid was unsuccessful; the bidding process was postponed due to the deteriorating security situation in Sri Lanka. Subsequently, JICA and the executing agency agreed not to implement Package-3 because there were no Japanese companies showing interest in bidding, and there was little time left for the duration of the project. As a result, the project ended when 18 of the planned 37 bridges were constructed, leaving around half of the total project cost - including planned project costs from Japan and from Sri Lanka - unused.

⁵ By adopting curved bridges, which require a higher level of erection technology, the extent of road improvements in front of and behind the bridges were reduced as much as possible to minimize resettlement.

3.1.2 Coherence (Rating: ②)

3.1.2.1 Consistency with Japan's ODA Policy

The Country Assistance Plan of the Ministry of Foreign Affairs of Japan “Country Assistance Policy for Sri Lanka” (June 2012) at the time of the appraisal stated that the basic policy was to promote economic growth with consideration for less developed areas, and to support strengthening the network for road transportation and other methods of transport. There is consistency between Japan's aid policy at the time of the appraisal and the objectives of this project.

3.1.2.2 Internal Coherence

In parallel with this project, a technical cooperation project of JICA called “The Project for Capacity Development on Bridges Management in the Democratic Socialist Republic of Sri Lanka” (hereinafter referred to as the “Technical Cooperation Project”) was implemented in Sri Lanka, with the aim of strengthening the bridge maintenance management cycle.⁶ The outputs of this Technical Cooperation Project were expected to contribute to the maintenance and management of the bridges constructed by the project. At the time of the ex-post evaluation, the Bridge Management System and the Bridge Management and Assessment Unit (BM&AU) established in the Road Development Authority (RDA), which were introduced by the Technical Cooperation Project, and the bridge inspection vehicles provided to the RDA by the Technical Cooperation Project, were contributing to the O&M of the bridges constructed under the project. RDA engineers trained in the Technical Cooperation Project are playing a central role in the maintenance and management of the project's bridges. Thus, as planned, the Technical Cooperation Project is collaborating with the project, and concrete results of the collaboration are being realized.

3.1.2.3 External Coherence

The national highways in the Northern Province were improved with funding from the Asian Development Bank (ADB) and China after the end of the civil conflict in 2009 as restoration and recovery measures. Nevertheless, replacement of bridges had not progressed much, and this has been an obstacle to the smooth flow of traffic. This project replaced some of the bridges on the national highways in the Northern Province, and, as expected, the traffic obstacles were eliminated. The project is complementary to the ADB- and China-supported projects, and the expected outcomes were realized.

⁶ A cycle consists of bridge inspection, diagnosis, repair and maintenance, and reporting and feedback.

The project is consistent with Japan's aid policy, and expected outcomes were realized through collaboration with complementary projects of JICA and others, as mentioned above. The project is also consistent with development policy and development needs of Sri Lanka. However, it was judged that the relevance and coherence of the project are moderately low because there were issues with the project plan and approach at the time of the project appraisal.

3.2 Efficiency (Rating: ④)

3.2.1 Project Outputs

(1) Change in number of bridges

A total of 18 bridges were constructed by the project, ten in the Southern Province in Package-1, and eight in the Northern Province in Package-2 (Table 1, Figure 1).

Table 1: Detailed Information of the Bridges Constructed by the Project

Number	Bridge Name	Bridge Type	Number of lanes	Bridge width (m)	Bridge length (m)	
Southern Province (Package-1)	1	Polwathumodara 1	PC	4	21.3	165
	2	Polwathumodara 2	Box culvert	4	21.3	7
	3	Goviyapana	PC	4	21.2	60
	4	Kathaluwa	PC	4	21.2	70
	5	Polwatta	PC	2	10.4	120
	6	Wellamadama	PC	4	21.2	19
	7	Kole Danda	PC	2	11.4	57
	8	Kihimbi Ela	PC	2	10.4	57
	9	Denipitya	PC	2	11.4	57
	10	Denagama	Steel box girder	2	10.4	90
Northern Province (Package-2)	11	Kaithadi	PC	2	14.0	76
	12	Navatkuli	PC	2	14.0	76
	13	Cheddikulam	PC	2	13.0	38
	14	Mandai Kallar	PC	2	10.4	95
	15	Pali Aru	PC	2	10.4	76
	16	Aru Kuli	PC	2	10.4	57
	17	Arippu	PC	2	10.4	76
	18	Marichchukkaddi	PC	2	10.4	95

Source: Documents provided by JICA and RDA, and confirmed during the field survey.

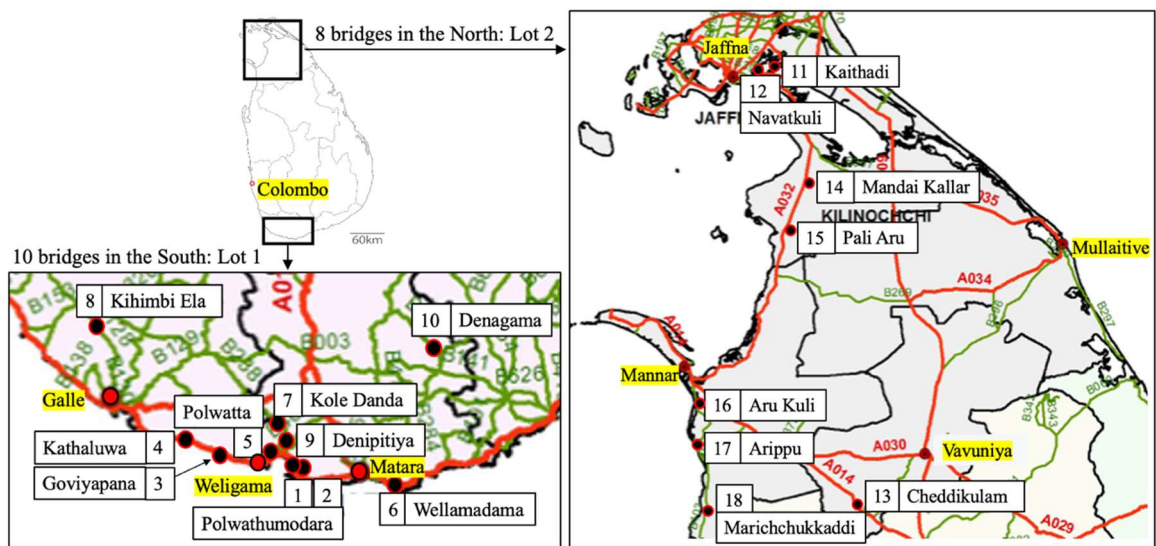


Figure 1: Location Map of the Bridges Constructed by the Project

Source: Prepared by the external evaluator

In this project, Package-1 was implemented first, followed by Package-2. Since the contract price for these packages exceeded the planned price,⁷ it was assumed to be difficult to construct the 37 bridges at the planned cost of the project. Therefore, the executing agency and JICA estimated the remaining project cost, and announced Package-3 for the 3 bridges in the Western Province.⁸ In this manner, the project aimed to construct a total of 21 bridges in Packages 1, 2 and 3. As mentioned above, the bid for the Package-3 was cancelled, and the outputs of the project were eventually 18 bridges. Table 2 shows the planned and actual number of bridges in each package.

⁷ In particular, the contract price for Package-1 was significantly higher than the estimated cost (76% more than the plan). According to the analysis of the Bidding and Financial Evaluation Committee of the bidding, the reason for the significant excess of bid and contract prices over the estimated cost was that the estimated cost did not consider domestic taxes, and the unit prices for boring and concrete work were too low compared to market prices (source: Documents provided by JICA).

⁸ The bid for Package-3 was announced with a plan for three bridges. At the re-tender, a fourth bridge was added to the package, because Japanese companies said that it was not sufficiently profitable for them to participate in a bid for replacement of small bridges in scattered sites.

Table 2: Planned and Actual Number of Bridges in the Packages

Package	Plan at time of the project appraisal		Plan at the time of the detailed design		Actual	
	Location	No. of bridges	Location	No. of bridges	Location	No. of bridges
1	Southwestern area	23	Southern Province	11	Southern Province	10
2	Central area	6	Northern Province	8	Northern Province	8
3	Northern area	8	Other	18	Western Province	0
Total		37		37		18

Sources: Documents provided by JICA for plans at the time of the project appraisal and the detailed design; documents provided by RDA and conformation during the field survey for the actuals.

(2) Change of the bridges and bridge types

The proposed bridges were reviewed in the detailed design. As a result, 8 of the 37 bridges planned at the time of the appraisal were removed from the project, and other bridges were selected instead.⁹ According to the project completion report of the project, the reasons for excluding the 8 bridges from the project were that they had no structural problems and did not require improvement (5 bridges), improvement work had been implemented (2 bridges), and improvement work was planned (1 bridge).

Bridge types were also reviewed in the detailed design (Table 3). The “two or three steel plate girders” and “extra-dose” bridge types were not adopted. For the 19 bridges that were planned for these types, pre-stressed concrete (PC), steel box girder and box culvert were adopted. It was planned that two or three steel plate girder bridges would be applied to all the steel bridges. This was not adopted because this bridge type would increase the girder height, would need to raise the height of the existing road accordingly, and would increase the scope of road improvements and thereby require large-scale land acquisition and resettlement. The extra-dose bridge was not adopted because it was found that this technology was not necessary according to the length of span adjusted to suit the conditions at the bridge location and considering the economy.

The above-mentioned changes to the bridge types in the detailed design were made to ensure that the bridge structure and construction methods were economical and optimal, meeting the conditions of the construction site and design criteria for the bridges.

⁹ According to the project appraisal report, the 37 bridges selected in the Data Collection Survey were “candidate bridges.” It was agreed in the minutes of discussions between JICA and the executing agency that the bridges for the project would be finalized in the detailed design. Changes to the bridges were implemented based on this agreement.

Table 1: Planned and Actual Bridge Types

Bridge types	Number of bridges		
	Plan at the time of:		Actuals
	Appraisal	Detailed design	
PC ¹⁰	18	31	16
Two or three steel plate girders	18	0	0
Extra-dozed ¹¹	1	0	0
Steel box girders	0	3	1
Box culvert	0	3	1
Total	37	37	18

Sources: Documents provided by JICA, and confirmation during the field survey.

(3) Changes in the application of Japanese technologies

Table 4 shows the planned and actual application of Japanese technologies. At the time of the appraisal, 5 kinds of Japanese technologies were planned to be applied to 24 bridges. However, it was decided that only the atmospheric corrosion resistant steel and the waterproofing membrane would be adopted, as a result that the bridges to be constructed and bridge types were reconsidered during the detailed design by analyzing the environment of the location of the bridges and cost effectiveness. Finally, the waterproofing membrane was only adopted for one bridge (Denagama bridge) as a result of further study of the environment at the bridge construction sites and reduction in the number of bridges.

¹⁰ PC bridge: prestressed concrete bridge.

¹¹ The extra-dozed bridge is an outer cable-structured bridge that supports the main girder with main towers and diagonals.

Table 2: Planned and Actual Number of Bridges for Application of Japanese Technology

Japanese technology	Number of bridges			Reason not applied
	Appraisal	Detailed design	Actual	
Atmospheric corrosion resistant steel ¹²	19	1	0	It was not appropriate to apply the technology due to the environment of the construction site. ¹³
Waterproofing membrane ¹⁴	4	3	1	The technology was not applicable to 1 bridge of 4 planned at the appraisal stage due to a change in bridge type. The other two were not constructed due to a reduction in the number of bridges.
Extra-dozed bridge	1	0	0	It was decided not to apply due to environmental and economic considerations at the bridge construction site.
Steel pipe sheet pile ¹⁵	1	0	0	The environment at the bridge construction site was not appropriate for the application of the technology, and there was no economic advantage.
Epoxy-coated reinforcement steel bar ¹⁶	4	0	0	It was found difficult to perform the covering operation at the plant in Sri Lanka planned at the appraisal stage.

Sources: Documents provided by JICA and the executing agency, interviews with the consultants of the project.

The Data Collection Survey conducted prior to the appraisal was intended to select the bridges for the project and gather basic information about them. As mentioned in 3.1.1.3 of this report, the Survey did not include a geological survey of the bridge sites or an examination of the road connections before and after the bridges, and therefore, may not have included sufficient information to accurately determine the applicability of the Japanese technologies.¹⁷

¹² Atmospheric corrosion resistant steel: Steel sheet containing copper, nickel, etc. to form a protective coating on the steel surface.

¹³ A certain distance between the steel plate and the water surface is required for formation of protective rust coating on the surface, but this condition was not met at the bridge construction site - water levels rise and fall significantly.

¹⁴ Waterproofing membrane: A material for deck slab with waterproof effect that prevents graveling of the concrete slab and rusting of internal reinforcing bars due to rainwater penetration.

¹⁵ Steel Pipe Sheet Pile: This method is suitable for constructing piers in rivers, where steel pipes are connected to form sheet piles and merged to prevent the inflow of river water. Rapid construction is possible because there is no need to construct temporary cofferdams and landfilling.

¹⁶ Epoxy-coated reinforcement steel bar: Steel bars that are covered with epoxy resin to prevent rust.

¹⁷ JICA's Data Collection Survey is conducted to collect and analyze basic information on the prerequisites for formation of projects. In case of a survey for bridge construction, generally, bridges that may be eligible for construction are selected, a schematic study of the size, span length, and bridge type of each bridge is conducted, and a general drawing of the bridges is prepared. The survey for this project was conducted in the same manner, and there were no shortcomings in the data collection survey. As noted in the lessons learned in this report, it would have been desirable

Although not planned at the time of the appraisal, a construction technique using work platforms was proposed by the contractor, and introduced for the first time in Sri Lanka, for the construction of the 10 bridges in the Southern Province. This is a technique where temporary work platforms are placed along the bridges, instead of reclaiming the river and building scaffolding. The threat of flooding was minimalized, and there was less impact on the environment as the river was not blocked during the rainy seasons. There was no need to remove the platform during construction, as is the case with reclamation. This technique had the effect of protecting the environment and improving construction efficiency.

(4) Appropriateness of applied construction methods and quality and effectiveness of construction

Overall, the construction methods applied in the project were appropriate, and the quality of the work was high. However, 10 bridges in the Southern Province had unexpected cracks on the pavement above the expansion joints¹⁸ and repairs were carried out (see 3.4.7 of this report for details of the repairs). The type of expansion joints was reviewed by the parties involved in the project during the detailed design, and the type which was considered appropriate was selected after considering the climate of Sri Lanka, economics, necessary maintenance work, and availability of materials. Therefore, it appears that there were no problems in the process of selection of the type. Considering the above-mentioned problem, a different type of expansion joint was installed on the bridges in the Northern Province, and this did not have any problems.

During detailed design, it was found that there was soft ground at five bridge locations, and ground settlement was anticipated. Therefore, several construction methods were compared and the best countermeasure was selected based on cost-effectiveness, with a plan to increase the thickness of the pavement if settlement occurred in the future. Since settlement occurred after the construction of these bridges, they were re-paved and the thickness of the pavement was increased.

(5) Safety measures

In accordance with the construction contract, the contractor submitted a plan for safety measures during construction, safety personnel were appointed, and safety measures were implemented at the construction sites. Programs such as safety and quality seminars, fire drills, first aid, AIDS prevention measures, school programs, and safety meetings were also

to conduct an additional study regarding the environment of the bridge sites, cost-effectiveness, etc., and finalize the bridges to be constructed, locations for the construction and types of the bridges, in addition to the data collection survey, to accurately determine the applicability of the Japanese technologies.

¹⁸ Expansion joints are installed to absorb external forces such as expansion and contraction due to temperature change and have the role of minimizing structural damage.

implemented. Safety measures were implemented without fail, and there were no accidents during construction. The school program promoted residents' understanding of construction safety and their cooperation with the construction (for details, see 5.2 in this report).

(6) Consulting services

Consulting services were implemented as planned.

3.2.2 Project Inputs

(For details, see “Comparison of the Original and Actual Scope of the Project” on the last page of the report.)

3.2.2.1 Project Cost

As noted in “2. Outline of the Evaluation Study” of this report, this evaluation compared and analyzed the planned and actual project costs for the 18 bridges, which are the outputs of the project. The planned project cost for the 37 bridges was JPY16,132 million (JPY12,381 million from Japan and JPY3,751 million from Sri Lanka). The planned project cost for the 18 bridges was JPY9,291 million (JPY7,130 million from Japan and JPY2,161 million from Sri Lanka) according to the calculation made by the external evaluator by using the project appraisal document. The actual project cost for the 18 bridges was JPY8,325 million (JPY7,795 million from Japan and JPY530 million from Sri Lanka) (90% vs. plan). From this, it is judged that the project cost was within the plan.

Table 5: Planned and Actual Project Cost

(Unit: million JPY)

Items		Plan at the project appraisal		Actual
		Total cost for 37 bridges	Cost for 18 bridges*2	
Cost for civil construction works	Southern	23 bridges: 5,726	10 bridges: 3,069	10 bridges: 4,588
	Northern	8 bridges: 2,143	8 bridges: 2,143	8 bridges: 2,277
	Central	6 bridges: 1,180	0	0
Other costs*1		37 bridges: 7,083	18 bridges: 4,079	18 bridges: 1,460
Total		16,132	9,291	8,325

Notes:

*1: Other costs include the price escalation, contingency, consultant fees, land acquisition costs, administrative expenses, value-added tax, import duties, interest during construction, and commitment charges.

*2: The planned project cost for 18 bridges was calculated according to the documents provided by JICA, with an assumption that the cost of civil works and other expenses would increase or decrease in proportion to the total bridge surface area.

Sources: The source of planned cost at the project appraisal is the documents provided by JICA. The actual project cost from Japan is based on documents provided by JICA. For the actual cost from Sri Lanka, the project cost described in the documents provided by JICA was recalculated by using the IMF exchange rates.

Although the cost for civil construction works exceeded the plan, costs for the price escalation, contingencies, land acquisition, administrative expenses, value added tax, and import duties were lower than planned. This has contributed to the project costs being lower than planned. Factors that may have contributed to the contingencies not being spent were that a highly feasible plan was developed in the detailed design, there were no unexpected changes in the construction environment, such as climate and soil, and efficient construction management was implemented. The decrease in value added tax and import duties may be because of the reduction in imported materials due to the change from steel bridges to PC bridges, as shown in Table 3.

3.2.2.2 Project Period

In the same way as the analysis for the project cost, the planned and actual project period for the 18 bridges, which were the Output of the project, were comparatively analyzed. The planned period for the 18 bridges was calculated as 68 months (March 2013 (L/A signing) to October 2018) based on the project appraisal documents. The actual project period was 66 months (March 2013 (L/A signing) - August 2018). Therefore, the actual was within the plan (97% vs. plan).

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

For this project, the economic internal rate of return (EIRR) was calculated to be 26.13% at the time of the appraisal. At the time of the ex-post evaluation, the EIRR for the 18 bridges constructed by the project was recalculated using the actual traffic volume and project cost, with the project cost and O&M cost as expenses, and savings in travel time and expenses as benefits (Table 6), and found to be 31.98%. In order to compare the EIRR at the time of the ex-post evaluation, an attempt was made to calculate the EIRR for the 18 bridges at the time of the appraisal. However, this was not possible due to insufficient information. Therefore, an analysis of the difference between the EIRRs at the time of the appraisal and post-evaluation was not conducted.

The financial internal rate of return (FIRR) was not calculated at the time of the appraisal; therefore, it was not recalculated in the ex-post evaluation.

Table 6: Costs and Benefits of the EIRR

Cost	Project cost (excluding taxes and contingencies), cost for O&M
Benefit	Savings in travel time and expenses
Project life	30 years

Source: Documents provided by JICA

As described above, both the project cost and project period for the 18 bridges, which are the outputs of the project, are within the plan; and the efficiency of the project is very high.

3.3 Effectiveness and Impacts¹⁹ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

Operation and effect indicators of the project were set as (1) annual average daily traffic, and (2) Savings in travel time compared to detour routes in the event of bridge damage. Table 7 shows the results of the study for these indicators.

Table 3: Performance and Target Achievement of the Operation and Effects Indicators

Indicators	Baseline	Target	Actuals (Values in italic are estimates)			
	2012	2020	2019	2020	2021	2022
		2 years after project completion	1 year after project completion	2 years after project completion	3 years after project completion	4 years after project completion
(1) Annual average daily traffic (vehicles/day) - Average of 18 bridges (% of target achieved)	5,108	12,051	9,104 (76%)	9,255 (77%)	9,407 (78%)	11,267 (93%)
(2) Travel time savings compared to detour routes in case of bridge damage - average per bridge	-	2.4 hours	-	-	-	36 min.

Sources: Baseline and target values are from the ex-ante project evaluation report and documents provided by JICA; actual values are from documents provided by the RDA.

Note: With respect to actuals, the value for 2019 is the actual value of the annual average daily traffic²⁰; those for 2020 and 2021 are annual average daily traffic estimated by RDA²¹; and that for 2022 is actual daily traffic measured by RDA.²²

¹⁹ Sub-rating for Effectiveness is to be put with consideration of Impacts.

²⁰ The 2019 value is the annual average daily traffic calculated by the RDA by carrying out periodic traffic surveys around the country, which were calibrated by STRADA, a software package developed for traffic demand forecast, and analyzing the results together with information on traffic flows and trends. This can be considered a reasonably accurate value.

²¹ The 2020 and 2021 values were also calculated by the RDA using the STRADA. However, in these years, the RDA was unable to carry out traffic surveys due to Covid-19, and actual traffic volume for these years was not entered into the STRADA. Therefore, the values of these years were forecast based on the previous year's values. These values were considered as estimates in this ex-post evaluation.

²² The 2022 value was measured by RDA by setting up sensors to measure traffic volume on each bridge of the project in late February 2022 and early March 2022. These were measured on specific days, and are daily traffic, not annual average daily traffic.

(1) Annual average daily traffic

The project was expected to increase the annual average daily traffic per project bridge from 5,108 vehicles/day - at the time of the appraisal - to 12,051 vehicles/day two years after project completion. The annual average daily traffic for the 18 bridges constructed by the project was studied and compared to the target values of the 18 bridges at the time of the appraisal (Table 7 and Figure 2).²³

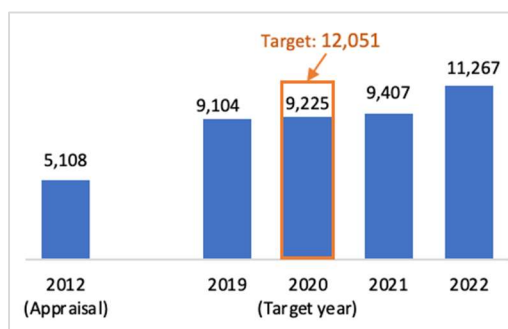


Figure 2: Annual Average Daily Traffic for Average of the 18 Bridges (vehicles/day)

Note: Notes and sources are same as in Table 7

Although actual values were not available for the target year (2020), estimated values obtained were 9,255 vehicles/day, with a target achievement of 77%. With regard to the values before and after the target year, the actual value for 2019, the estimated value for 2021 and the actual value at the time of the post-evaluation were 9,104 vehicles/day, 9,407 vehicles/day and 11,267 vehicles/day respectively. This indicator is judged to have been largely achieved since the values for each of these years reached more than 70% of the target.²⁴

The annual average daily traffic for the ten bridges in the Southern Province and the eight bridges in the Northern Province were also analyzed. It was found that the traffic volumes for the ten bridges in the Southern Province after completion of the project were lower than their target - 19,808 unit/day in average (Figure 3). Traffic volumes for the six bridges located along the A2 National Highway did not increase as much as expected, presumably due to the increased choice of the Southern Expressway instead of the National Highway for travel from the Colombo area to the south and between southern cities. The traffic volumes of the eight bridges of the Northern Province after the completion of the project were well above their target - 2,353 vehicles/day in average (Figure4). The traffic volume had increased beyond expectations, probably because serious traffic problems that existed at the time of the appraisal were solved, such as road closures due to flooding during the rainy season - 5 bridges, and slippery bridge surfaces that reduced vehicle speed - 2 bridges. It may also have increased because people became more active and economic activities increased following rehabilitation and reconstruction of the area after the end of the civil conflict in 2009.

²³ The target values of the annual average daily traffic for the 18 bridges were mentioned in the project completion report of the Project. They were supposed to be set in accordance with the method for setting the target used at the time of the project appraisal. Therefore, these figures are considered as “targets at the time of the appraisal” in this evaluation.

²⁴ The values for each year should have been compared to the target of each year. However, target values for each year were not able to be calculated, because the method used to set the target value used at the time of appraisal was not available. Therefore, the figures of these years were compared to the target in 2020.

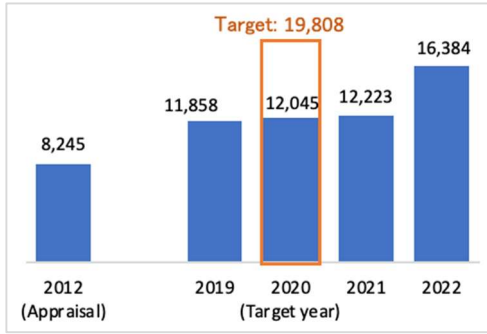


Figure 3: Annual Average Daily Traffic - Average of the 10 Bridges in the Southern Province (vehicles/day)

Note: Notes and sources of these figures are same as in Table 7

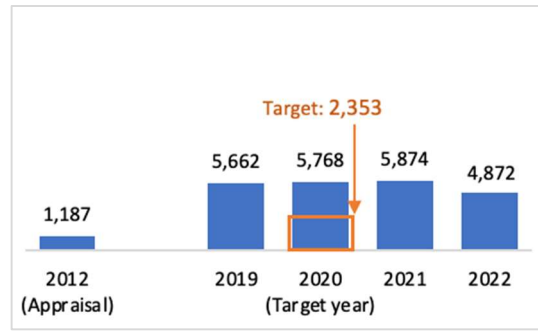


Figure 4: Annual Average Daily Traffic - Average of the 8 Bridges in the Northern Province (vehicles/day)

(2) Travel time savings comparing the normal route and detours to be used when bridges are damaged

This indicator compares the travel time required for the normal route through the bridges and the detour route that must be used when the bridges are closed to traffic. The savings in travel time by using the normal route is considered to be an effect of the project. At the time of the appraisal, the target for average travel time savings for the 37 bridges proposed for the project was 2.4 hours.









In the ex-post evaluation, the external evaluator attempted to calculate the travel time savings using the same method used for the appraisal. However, information on starting and ending points of the normal and detour routes for each bridge that were used for the appraisal were not available. Therefore, time required for the normal and detour routes were calculated by setting the starting and ending points of the two routes for the 18 bridges in the most reasonable manner. In this way, the time saving for the 18 bridges on average was found to be 36 minutes.²⁵ These results were considered as reference; comparative analysis and verification of target achievement were not conducted, since it is not sure whether the calculation was made in the same manner as that used for the appraisal.





²⁵ For each bridge, the starting and ending points were identified, taking through traffic and local traffic into account, and the distance traveled through the bridges (existing route) and the distance traveled when detouring without passing through the bridges (detour route) were obtained using Google Map. Then, the time required to travel these routes at a reasonable driving speed were calculated by “distance divided by speed”. The travel time savings was calculated by subtracting the travel time for the existing route from that of the detour route obtained in this way. The travel time displayed on Google Maps was also used as a reference. The identification of the existing and detour routes and the calculation of the travel times were conducted with advice from faculty members of the Department of Civil Engineering: Transportation Engineering Division, Faculty of Engineering, University of Moratuwa, Sri Lanka.

3.3.1.2 Qualitative Effects

It was expected that the construction of the bridges by the project would ensure smooth road transportation and facilitate logistics. The external evaluator held interviews with residents around the bridges and RDA staff about changes before and after project implementation. It was found that the project solved problems related to traffic and transportation that existed before the project, such as road closures due to flooding and damage to the bridges, and traffic jams. Examples of the problems at the time of the appraisal and the effects of the project are shown in Table 8 (Note: refer Figure 1 for the bridge numbers in the table). The project has produced the qualitative effects expected at the time of the appraisal.

Table 4: Effects on Promotion of Logistics by Ensuring Smooth Road Transportation

Qualitative effects		Problems at the time of the appraisal	Effects of the project
No more traffic closures due to flooding		 <p>The bridge was flooded every year during the rainy season, and no vehicle could travel over it.</p>	 <p>The bridge is no longer flooded. Obstacles for traffic and transportation were solved.</p>
Relevant bridges	No. 14, 15, 16, 17 and 18		
Photo	Marichchukkaddi bridge		
No more traffic jam		 <p>Traffic jam before and after the bridge because the bridge was narrower than the road.</p>	 <p>The bridge was widened and there is no longer traffic congestion before and after the bridge.</p>
Relevant bridges	No. 1, 2, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17 and 18		
Photo	Denipitiya bridge		
Resolving problem of over loading		 <p>The bridge was so old that heavy vehicles were not allowed to cross it.</p>	 <p>All types of vehicles are now allowed to travel across the bridge.</p>
Relevant bridges	No. 10		
Photo	Denagama bridge		
Resolving risk of damage and collapse		 <p>The bridge was severely damaged and in danger of collapsing.</p>	 <p>The bridge is no longer in danger of breaking or collapsing.</p>
Relevant bridges	No. 3, 4, 5, 10, 14, 15, 16, 17 and 18		
Photo	Kathaluwa bridge		

Qualitative effects		Problems at the time of the appraisal	Effects of the project
Resolving risk of traffic accidents		 <p>There was a risk of vehicles colliding due to poor visibility.</p>	 <p>The bridge has better visibility and is wider.</p>
Relevant bridges	No. 14		
Photo	Mandai Kallar bridge		
Resolving problem of slippery bridge surface		 <p>Bridge surface was slippery, and vehicles needed to slow down.</p>	 <p>No longer need to worry about skidding or having to slow down.</p>
Relevant bridges	No. 11 and 12		
Photo	Navatkuli bridge		

Note: Photos at the time of the appraisal are taken from the Data Collection Survey report; photos at the time of the post evaluation were taken by the external evaluator.

3.3.2 Impacts

3.3.2.1 Intended Impacts

- (1) Contribution for improving people's lives and economic activities, transportation, and supply of goods

It was expected that the project would contribute to improving people's lives and economic activities, transportation, and supply of goods. The external evaluator conducted interviews with residents and RDA staff during the ex-post evaluation and found the following examples of improvements that were expected as a result of the project.

- (a) Inconvenience caused by traffic jams on the way to work, schools, or hospitals were resolved (interview with a bus driver of the route of Denipitiya bridge)

Previously, the bridge was so narrow that vehicles could not pass each other and had to wait for oncoming traffic to cross the bridge. This created traffic jams in front of and behind the bridge. On market days, the traffic was especially congested, and buses sometimes had to stop for 10 to 20 minutes before and after the bridge. The bus route includes hospitals and high



schools, which are essential to the daily life and education of the citizens. When buses stop due to traffic jams, passengers were feeling hot, sweaty, and tired. If the service is delayed, they cannot get to work, hospitals, or schools on time. The bridge construction has solved these problems.

- (b) Blockages to traffic and transportation, obstacles to agriculture and fisheries, and the need to use detour routes were solved (interviews with residents near the Aru Kuli bridge)

In the past, the bridge was flooded every year during the rainy season. Then, vehicles were not able to travel on the bridge, and we couldn't go to Vankalai, where schools and a hospital are located. If the residents had to go to the other side of the bridge, they would take a bus or motorcycle to just before the bridge, walk across the river to the other side, and wait for a bus to come from the other side. It took a lot of time and effort. It was extremely inconvenient for children, the elderly, and the sick, because it was more difficult for them to walk across the river. At night, they could not cross the river because there are snakes and vermin in the river. The supply of goods to the village also stopped, which was very troublesome. After the bridge was built, all these problems and hardships were solved.

- (c) Contribution to the recovery and reconstruction of the Northern Province (interviews with RDA officials in the Northern Province)

The roads and bridges in the Northern Province were in poor condition because they were not developed during the civil conflict. After the end of the conflict in 2009, national roads were improved, but the bridges were not replaced. Therefore, bridge sections were an obstacle to traffic in some places. This project improved these bridges, facilitated the traveling of construction vehicles and transportation of materials for rehabilitation and reconstruction, and helped to improve economic activities in the region and lives of citizens.

- (d) Contribution to tourism promotion and increased income opportunities for local residents in the South (interview with a resident near Polwatta bridge)

Previously, four-wheeled vehicles could not cross the bridge because it was badly damaged. After the new bridge was built, four-wheeled vehicles can now cross, and access to this village from the surfing area of Weligama has greatly improved. This has led many residents of this village to set up guest houses for foreign tourists. Some tourists stay for long periods of time during the tourist season. Running a guest house has become an important source of income for residents.

(2) Promotion of local economy

In order to verify whether the local economy has been promoted in the project sites, satellite night-time light intensity data was analyzed for three selected locations in the target areas, where several bridges constructed by the project are located and which are key transportation hubs.²⁶ Figure 5 shows that the annual average night-time light intensity is generally increasing

²⁶ The external evaluator decided to utilize satellite data in the verification of economic promotion of the project sites in this evaluation, since there are no macroeconomic indicators based on municipalities in Sri Lanka. This is because the intensity of night-time light observed by satellites has been shown to have a statistically significant correlation with macroeconomic indicators such as GDP growth rate. The following areas were selected for the analysis: (a) near the Polwathumodara, Kore Danda, Denipitiya, and Polwatta bridges in Weligama city, Matara District, Southern Province; (b) near the Navatkuli and Kaitadi bridges in Chavakachcheri Division, Jaffna District, Northern Province; (c) in the

in all three locations. It can be said that the local economy in these three locations is more active after the project than before the project, since the average annual average night-time light intensity in the three years after the completion of the bridges is greater than that before completion of the bridges. However, when the rate of increase in night-time light intensity was examined, the rate for the three years after the completion of the project was lower than that for three years before the completion of the project in all three locations. This result suggests that the bridge construction may not be the primary factor promoting the local economy.

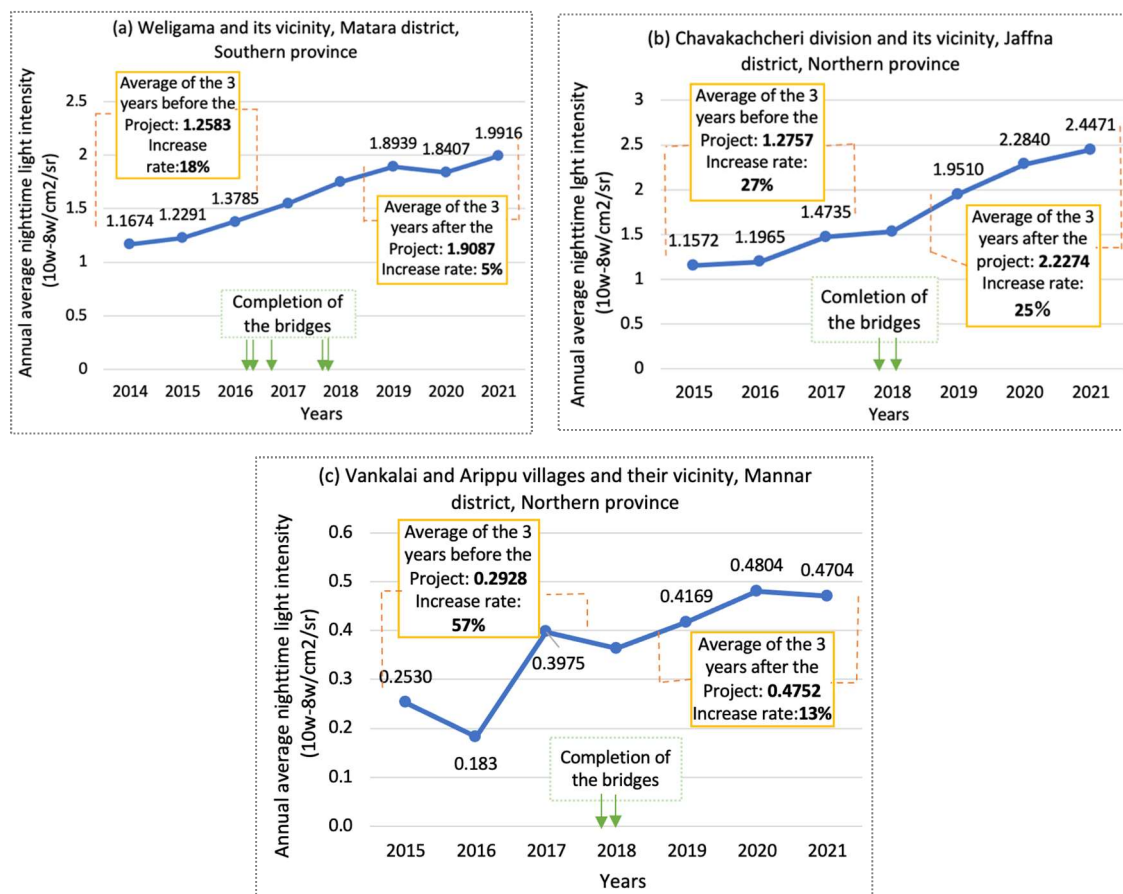


Figure 5: Annual Average Night-time Light Intensity in the Study Area

Source: Analysis conducted by the Arthur C Clarke Institution for Modern Technologies, Sri Lanka. Satellite imagery NPP-VIIRS (resolution of 15 arcseconds (about 500 m)) produced by the Earth Observation Group of the National Center for Environmental Information, USA, from 2015 to 2021 was used for the analysis.

3.3.2.2 Positive and Negative Impacts

(1) Impacts on the Natural Environment

There were no problems related to the natural environment. Control and monitoring of noise, vibration, and dust were conducted as scheduled during construction. During the

vicinity of Aru Kuli and Arippu bridges, Vankalai and Arippu villages in Mannar District, Northern Province. A buffer zone of 5 km before and after each bridge and 1 km on each side was demarcated for the analysis for each area.

construction in the Southern Province, cracks in the walls of houses and other structures due to vibration were expected during construction, because the ground at the bridge construction sites included sandy soil and there were many temporary houses in the neighborhood. Therefore, the contractor asked residents to submit any complaints, and conducted crack surveys before and after the construction, measured the vibrations, and repaired all cracks caused by the construction.²⁷

(2) Resettlement and Land Acquisition

The construction works in the Southern Province involved small-scale resettlement and land acquisition. The project was categorized “B,” and a resettlement action plan was not prepared, but JICA and the executing agency had confirmed and agreed on the outline of the resettlement plan and necessary considerations in the minutes of discussions during the appraisal. The JICA Sri Lanka Office explained about the JICA Guidelines for Environmental and Social Considerations to the RDA officials from time to time, to ensure that the resettlement was implemented according to the guidelines. They conducted monitoring of the implementation process by using reports and progress review meetings.

Both compensation payments and relocation have been completed for the 19 resettlement cases. Compensation was paid before relocation to 12 of the cases according to the reacquisition price, as they wished to receive compensation and relocated voluntarily.²⁸ In seven cases alternative sites were provided, electricity and water were installed, and compensation for the cost of construction of houses was paid. A new store was rebuilt at the relocated site for one resident who would lose his store and whose livelihood may be affected.

The replacement cost has been paid for 85 of the 109 private land acquisitions, while 24 have not yet been paid because ownership had not been determined at the time of the post-evaluation. Payments for these cases will be made in accordance with court decisions regarding ownership and instructions from the Divisional Secretary.

In this project, it was planned to finalize the bridges to be constructed and the types of the bridges in the detailed design, to confirm the detail of land acquisition and resettlement according to the design, and then to start the process of land acquisition and resettlement. As planned, the process started after the completion of the detailed design, but civil works started in parallel, since it was expected to take several years to complete the process. However, the land acquisition procedures for the approach sections were not completed even

²⁷ Except for one case in which residents did not agree on the implementation of repairs. All were minor cracks and were not covered by construction insurance, so repairs were made at the contractor's expense.

²⁸ Regarding resettlement, in addition to compensation at market value, the costs of the resettlement were also paid or facilitated. Regarding land acquisition, in addition to the market value of the land, compensation was paid for the cost of replacement, or the value of any items belonging to the land and lost as a result of the acquisition. Therefore, the payment can be deemed to have been made at the reacquisition price.

at the midpoint of construction for some of the bridge construction sites, although the RDA and JICA Sri Lanka office encouraged relevant agencies, such as the Divisional Secretariat and the valuation department, so that the land acquisition, resettlement, and compensation payments were implemented promptly. This delay affected the progress of the civil work.

There were no disputes related to resettlement or compensation payments, both during project implementation and at the time of the ex-post evaluation. There was no resettlement or land acquisition for the construction of bridges in the Northern Province.

(3) Gender

There were no specific impacts of the project regarding gender.

(4) Socially Vulnerable Groups

As discussed in 3.1.1.2 and 3.3.1.1 of this report, in the Northern Province the project solved the problems of flooding of the bridges and road closures during the rainy season. This reduced significant inconvenience suffered by residents, especially the elderly and children, and mobility restrictions in meeting basic needs, such as access to schools, hospitals, and markets. The project has produced a positive impact on the protection of vulnerable groups in this manner.

(5) Social System and Norms, People's Well-being and Human Rights

There were no specific examples of impact by the project regarding social systems and norms, people's well-being or human rights.

(6) Other positive and negative impacts

There were no specific positive and negative impacts.

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

3.4 Sustainability (Rating: ③)

3.4.1 Policy and Systems

At the time of the ex-post evaluation, there is no change in the policy emphasis on the development and improvement of the road network both in the RDA National Road Master Plan (2018 - 2027) and the updated version being prepared. The country's road sector policies and institutions are supportive of the sustainability of the effect of the project, and there are no policy or institutional issues.

3.4.2 Institutional/Organizational Aspect

The Maintenance and Management Division at RDA Headquarters oversees the maintenance of bridges and roads. Provincial, district and divisional offices of the RDA are responsible for maintenance works. The responsibility for O&M is clearly defined among the RDA Headquarters, its Southern and Northern Provincial Offices, and the district and divisional offices. At each office, under the guidance of technical staff, work supervisors and workers undertake regular and periodic maintenance work on bridges, and the necessary number of personnel are assigned for the work.

The BM&AU, which was introduced by the Technical Cooperation Project, is located within the Engineering Division at the head office, and engineers are assigned to each province. At the time of the ex-post evaluation, the Southern Province had a chief engineer in BM&AU who was responsible for periodic inspections and soundness diagnosis of bridges in the province. He is providing advice on bridge maintenance and management. The Northern Province had a BM&AU engineer, but the post was vacant at the time of the ex-post evaluation, since the engineer was attending a highway design training program at the head office. Instead of the engineer, the BM&AU staff at Headquarters are conducting periodic inspections and soundness diagnosis of the bridges in the province. The engineer is scheduled to return to this position upon completion of his training in mid-2022.

The RDA Northern Provincial office does not own a box crane, which is necessary for maintenance of bridge lighting. It is difficult to rent it, because other government agencies in the province do not own one. Timely maintenance of the lighting is necessary for safety reasons, although the function of the bridge itself is not affected. The office has applied to the head office for placement of a box crane.

There are some institutional and organizational issues; however, they are expected to be resolved or are not likely to have a significant impact on the effect of the project.

3.4.3 Technical Aspect

The staff in charge of the O&M of the project's bridges have acquired the skills generally required in O&M of bridges and no other special skills are required for the O&M of the said bridges, and, therefore, no technical problems have arisen. The bridge management system and the bridge inspection vehicle introduced in the Technical Cooperation Project are being used to maintain the bridges of the project. Engineers from BM&AU in the headquarters and Southern Province are playing an important role in inspections and diagnostics, drawing on their extensive knowledge of bridge maintenance and management.

After the Technical Cooperation Project was completed in 2017, technical training in bridge diagnosis and management techniques was conducted by BM&AU in non-project provinces.

Technical training was not conducted in 2020 and 2021 due to Covid-19. Training will resume in 2022, depending on the status of the Covid-19.

There are no particular problems in terms of technical aspects in O&M of the project bridges.

3.4.4 Financial Aspect

Until 2021, the Southern and Northern Provincial Offices of RDA have been allocated the necessary budget for routine and periodic maintenance of roads and bridges without delay, and no problems have occurred. However, due to the severe deterioration of the country's financial situation, the maintenance budget of the RDA for 2022 was significantly reduced compared to previous years (Table 9), and the amount of budget to be allocated to the Southern and Northern Provinces was also reduced. On the other hand, the O&M of the bridges of the project do not require a large budget, and the personnel assigned to work on the bridges will remain in place. Therefore, it is expected that the O&M of the bridges will be able to be conducted within the allocated budget amount.

Table 9: Budget for Maintenance of Roads and Bridges of the RDA

(Unit: millions of rupees)

Expenditure			Estimate	Projections	
2019	2020	2021	2022	2023	2024
4,961	4,749	8,502	3,000	5,000	6,000

Sources: Page 227, Budget Estimate 2022 Volume II, Sri Lanka for the data from 2020 to 2024; and page 199, Budget Estimate 2021, Sri Lanka for the data of 2019.

As mentioned above, the budget reductions due to financial difficulties of the country are a concern. However, their impact on the effect of the project would be limited, since no significant influence on the O&M of the bridges of the project is expected.

3.4.5 Social and Environmental Aspect

No negative environmental impacts were identified as a result of the bridge construction of the project. No environmental or social issues were raised by residents. In the case of the Polwathumodara and Denagama bridges, reforestation was conducted in response to changes in the natural environment near the riverbank and approach roads due to the bridge construction. At the time of the ex-post evaluation, it was confirmed that the natural environment at these locations had been restored. As described above, there are no issues regarding the sustainability of the project in terms of environmental and social considerations.

3.4.6 Preventative Measures to Risk

No soil erosion or increased flood risk due to construction has been observed, and no traffic congestion, noise, or vibration has occurred due to increased traffic volume after the bridge construction. Navatkuli bridge was repaired after a traffic accident damaged a part of the handrail. There are no sustainability issues with respect to the project in terms of preventive measures to risk.

3.4.7 Status of Operation and Maintenance

(a) Regular maintenance and periodic maintenance work

Regular and periodic maintenance are being performed on the bridges of the project. Regular maintenance is performed with the workers and tools, once every month or two months. This includes cleaning bridge surfaces, removing grass and sand from drainage catchpits, and mowing approach roads and slopes. Routine maintenance, which involves the purchase of materials and use of equipment, is performed every six months to a year, or as needed. This includes brushing and repainting handrails, repainting markings on bridge surface, repairing settlements and cracks on the bridge surface, and replacing lighting bulbs. Denagama Bridge, a steel bridge, has nuts and bolts tightened approximately once every six months.

During the first field survey of the ex-post evaluation, minor cracks on the paint of the handrails, minor corrosion on the underside of the beams, partial damage to the lid of the sidewalk section, and lack of lighting due to problems in bulbs or power distribution, were found on some of the bridges. At the time of the second field survey, it was found that these defects had already been addressed or were being worked on, and those that were less urgent were scheduled to be addressed in the next periodic maintenance.



Re-painting of handrails
(Denagama bridge)



Cleaning of bridge surface
(Aru Kuli bridge)

(b) Cracks on the pavement above the expansion joints

As noted in 3.2.1 (6) of this report, 10 bridges in the Southern Province had cracks on the pavement above the expansion joints. Repairs were made during the defect liability period, but the cracks have continued to appear even after the repairs. Expansion joints for the bridges in the Southern Province have metal plates installed inside to improve



Before the repair work After the repair work
Cracks on the pavement above the expansion joints (Kathaluwa bridge)

durability, but repeated vehicle loads may have caused the welds that hold these metal plates in place to fatigue and move, causing the cracks.²⁹

RDA Matara and Galle District Offices have been performing repair work by applying asphalt sealing and pavement to cracks as needed. However, the pressure of passing vehicles causes the repaired areas to come off again, and they need more frequent repair work. In the field survey, it was observed that in the Goviyapana bridge there was a relatively larger collapse of pavement due to large cracks, creating hollows inside the expansion joints. It is difficult to repair this collapse of the pavement. It was observed that rainwater was leaking from the expansion joints of Denagama bridge (a steel bridge). These could cause deterioration of the deck slabs and steel plates.

The RDA Southern Provincial Office is aware of the above problems and is considering removing the metal sheets from the expansion joints and replacing them with other types of joints as a drastic measure. They plan to replace the expansion joints with the RDA standard-type expansion joints with aluminum sheets. This can be carried out by their own workforce and requires relatively inexpensive materials on a trial basis at one location. They will replace the expansion joints of other bridges later once they confirm the effect of the replacement.

(c) Settlement of approach area

Likewise, as stated in 3.2.1 (6) of this report, the approach roads of the five bridges in the Southern province have settled and they were repaired by increasing the thickness by repavement during the defect liability period. Since then, RDA has continued to monitor settlement and has added additional thickness in the pavement as needed.

²⁹ The metal plate installed inside the expansion joints was designed so that one side was fixed, and the other side moved due to expansion and contraction. The design allowed for minor cracks on the pavement above the moving side, but unexpected cracks occurred on the pavement of the fixed side, too, causing the pavement to collapse. This type of expansion joint was designed in consideration of the natural conditions of Sri Lanka and economy, and has been used in an ODA loan project in the Eastern Province of Sri Lanka. The expansion joints in the Eastern Province are in a good condition and have no problems.

As mentioned above, there are some minor problems in the institutional/organizational, financial, and current status of the O&M. However, they will probably be improved or resolved. Therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion (same as the summary)

This project was implemented to ensure smooth road transportation by replacing old bridges on major national roads across the country, thereby contributing to promote the nation's economic growth and social development.

The project is consistent with Japan's aid policy, Sri Lanka's development policy and development needs, and has produced the expected outcomes in collaboration with the projects of JICA and others. However, the project required significant changes to its content, such as the bridge types and the kind and number of Japanese technologies to be applied to the construction during its implementation, because the plan of the project at the time of the appraisal was based on limited information. Tied (Special Terms for Economic Partnership (STEP)) were applied to the main contractors of the project with an expectation of application of the Japanese technologies. However, the first round of bidding on civil construction for Package-3 of the project was unsuccessful because Japanese companies did not show much interest. The bid was postponed due to deteriorating security conditions in Sri Lanka. It was finally cancelled as no Japanese companies were interested, and there was little time remaining in the project period. Due to this, although it was planned that the project would construct 37 bridges, it was ended when a total of 18 bridges had been constructed in Packages 1 and 2. The relevance and coherence of the project are moderately low, because, as mentioned above, there were issues with the project plan and approach adopted at the time of the appraisal.

As explained, the output of the project changed from 37 bridges to 18 bridges, but the efficiency, effectiveness, impact and sustainability of the project were analyzed and evaluated for the 18 bridges that were constructed. This change was agreed between JICA and the executing agency and decided through proper procedures.

Both the project cost and project period for the 18 bridges were within the plan and the efficiency is very high.

The project was expected to increase the amount of traffic on the bridges constructed by the project. The estimated annual average daily traffic for the target year of the 18 bridges was 9,255 vehicles/day, which was 77% of the target. In the years before and after the target year, and also at the time of the ex-post evaluation, the annual average daily traffic was over 70% of the target. Therefore, it can be said that this indicator was largely achieved. The project has helped solve traffic and transport problems in the project area, and has also contributed to an improvement in the lives of citizens and economic activities. In this manner, the expected effects have been

achieved through the implementation of the project, and the effectiveness and impacts of the project are high.

There are some minor problems in the institutional/organizational and financial aspects, and current status of the O&M. It is likely that they will be improved or solved. Therefore, sustainability of the project effects is high.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Repair work and replacement of the expansion joints of the 10 bridges in the Southern province

The RDA Southern Province Office has been repairing cracks on the pavement above the expansion joints of the 10 project bridges in the province. It is necessary to continue to identify cracks through regular inspections and repair them as early as possible. The office is considering removing the metal plates of the expansion joints and replacing them with other types of expansion joints as a drastic measure, since frequent repair work has become necessary, and the cracks are getting wider in some places. They are going to replace them with the RDA's standard type of expansion joints, but they would like to consider replacing it with an expansion seal joint or expansion strip joint if it is found that the durability of the standard type joint is not sufficient. This may require procurement of imported materials and a civil contractor. It is advisable for the Maintenance and Management Division and the Engineering Services Division of the RDA head office to provide budgetary measures and technical advice to the Southern Province Office to assist the implementation of the said replacement, when necessary.

4.2.2 Recommendations to JICA

As mentioned above, RDA continues to repair the cracks on the pavement above the expansion joints of the bridges in the Southern Province, and is considering replacing them with other types of expansion joints. Since the improvement of the expansion joints is important for sustainability of the project effect, JICA is advisable to monitor the progress of the RDA's maintenance and replacement work by receiving regular reports and visiting the sites and providing necessary advice as appropriate.

4.3 Lessons Learned

(1) Careful determination of STEP through highly accurate planning on application of Japanese technologies

The project started with a plan to apply five kinds of Japanese technology to 24 of the 37 proposed bridges based on the Data Collection Survey. However, it was later decided to apply 2

kinds of Japanese technology to 3 of the 37 bridges. This was the consequence of the review of the proposed bridges, examination of environment of the bridge location and cost-effectiveness of the 37 bridges, which were selected after the said review, and re-consideration of the needs to apply the Japanese technologies in the detailed design. In this way, significant changes were required during project implementation for the bridge types and the number and kinds of Japanese technology to be applied for the construction. It was possibly because the information available at the time of the appraisal was not enough to formulate a plan on application of the Japanese technologies.

The plan on applying Japanese technologies at the time of appraisal is important for examining and determining applicability of the STEP. For bridge construction projects in which Japanese technology is to be applied, it is important to collect information at a level that enables JICA and the executing agency to make a proper judgment on whether Japanese technologies are required for the project, and if the technologies have comparative advantages in terms of economy and efficiency, by conducting a study on environment of the bridges construction sites, cost-effectiveness, etc., and finalize the bridges to be constructed, locations of the construction and types of the bridges before the appraisal, so that they can develop a highly accurate plan on application of Japanese technologies and examine and determine the procurement condition.

The project was formed with the plan of constructing 37 bridges scattered across the country. Conducting the above-mentioned study on such projects would be difficult to implement, as it requires a lot of resources and time. For projects where STEP is expected to be applied, it is a reasonable option to formulate the project scope so that a study on matters to be finalized to determine the necessity of applying Japanese technology can be conducted before the appraisal.

(2) Early start of resettlement and land acquisition process

At the time of the appraisal, the project was expected to involve small-scale resettlement and land acquisition. The plan at the time of the appraisal was to finalize the details of resettlement and land acquisition at the time of detailed design after commencement of the project, and to start the process of resettlement and land acquisition after completion of detailed design. As planned, the process was started after the completion of the detailed design, but civil works were started in parallel since the process was expected to take several years to complete. At some of the construction sites of the bridges, the land acquisition process was not completed until midway through the construction work, which affected the progress of the work.

Resettlement and land acquisition is a process that takes a certain amount of time. For projects where land acquisition and resettlement are expected, even at a small-scale, it is advisable to determine the outline of the project and likely cases and impacts of resettlement and land acquisition before the appraisal, to establish a plan to start the resettlement and acquisition procedures before the start of the project, and complete these procedures when construction starts,

in order to give due consideration to the residents and to ensure efficient implementation of the project.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

None in particular.

5.2 Additionality

Wakachiku Construction, which was in charge of the construction of the bridge in the Southern Province, actively worked to increase Japan's presence and exchange with local residents by hiring local personnel, providing assistance during a natural disaster, and implementing school programs, etc. When major flooding occurred in May 2017 in Matara District, where the bridges of this project are located, the company inspected the damage, rebuilt a science classroom and computer classroom, and donated computers and furniture at Dudley Senanayake Central High School in the district. It was deeply appreciated by the students, parents and teachers of the school, as well as the local community. A program titled "Road Traffic Safety" was held at the Denagama School near the Denagama Bridge. At the same event, students learned the purpose of the construction work and points to keep in mind to travel safety near a bridge under construction. These were also conveyed to their parents and relatives (source: materials provided by JICA Sri Lanka office, interviews with Wakachiku Construction Sri Lanka office and principal of the Denagama school).



Dudley Senanayake Central High School
damaged by flooding in May 2017

Photos: Provided by Wakachiku Construction Co., Ltd.



Computer rooms rebuilt at the school
(August 2017)

(end)

Comparison of the Original and Actual Scope of the Project

Items	Plan	Actual
1. Project Outputs	Construction of 37 bridges	Construction of 18 bridges
2. Project Period	<p>March 2013 – December 2018 (70 months)</p> <p>For this evaluation, for the purpose of comparison and analysis, the planned project period was set from the signing of the L/A to the completion of Package-2 (October 2018), according to the plan for the project period made at the time of the appraisal.</p>	<p>March 2013 – August 2018 (66 months)</p> <p>The project period was defined to be from the signing of the L/A to the completion of Package-2.</p>
3. Project Cost		
Amount Paid in Foreign Currency	4,461 million yen	3,085 million yen
Amount Paid in Local Currency	11,670 million yen (19,714 million rupees)	5,240 million yen (6,955 million rupees)
Total	16,131 million yen	8,325 million yen
ODA Loan Portion	12,381 million yen	7,795 million yen
Exchange Rate	1 rupee = 0.592 yen (as of November 2012)	1 rupee = 0.575 yen to 0.891 yen
	<p>In this evaluation, for the purpose of comparison and analysis, the project cost for the 18 bridges was calculated to be as follows, based on the planned project cost for the 37 bridges made at the time of appraisal.</p> <p>7,130 million yen on the Japanese side and 2,161 million yen on the Sri Lankan side, 9,291 million yen in total.</p>	<p>Foreign and domestic currency amounts on the Japanese side were converted into yen using data provided by JICA, and rupee amounts on the Sri Lankan side were converted into yen using the IFS annual average rates for each year from 2013 to 2020, as indicated in the project completion reports.</p>
4. Final Disbursement	October 2020 (early completion)	

(end)

FY2021 Simplified Ex-Post Evaluation Report of Japanese Grant Aid Project

External Evaluator: Koichiro Ishimori, Value Frontier Co., Ltd. (February 2022)

Duration of the Study: September 2021 – September 2022

Duration of the Field Study: 7 December 2021 – 18 December 2021

Country Name

Sri Lanka

<The Project for the Maritime Safety Capability Improvement>



Location of the Project site (Prepared by External Evaluator)

Patrol vessel (501)

I. Project Outline

Background	Sri Lanka was an island nation in the Indian Ocean with 1,340 km of coastline, 21,000 km ² of territorial waters, and 517,000 km ² of exclusive economic zones (EEZs), whose maritime-related industries such as shipping, fishing, and tourism accounted for approximately 50% of the GDP. It was also located on an important maritime transportation route (a sea lane) from the perspective of Japanese trade and strategy. However, the country lacked sufficient patrol vessels for conducting adequate patrol operations, especially in the western sea area where the largest port, the Port of Colombo, is located, and the southern sea area near the sea lane.			
Objectives of the Project	The project aims to strengthen maritime safety capabilities such as Maritime Search and Rescue (MARSAR), Maritime Law Enforcement (MARLEN), and Maritime Environmental Protection (MAREP) in Sri Lanka's western and southern waters by deploying patrol vessels in the Sri Lanka Coast Guard (SLCG) ports, which is responsible for the waters in these areas, thereby contributing to maritime safety in both areas.			
Contents of the Project	<ol style="list-style-type: none"> 1. Project Site: Port of Colombo and Port of Galle 2. Japanese side: 1) Procurement of two patrol vessels and 2) consulting services (detailed design, procurement, and construction supervision) 3. Sri Lankan side: 1) Navigation to the ports of deployment, and 2) development of facilities at the ports of deployment 			
Implementation Schedule	E/N Date	June 30, 2016	Disbursement Date	-
	G/A Date	June 30, 2016	Completion Date	July 10, 2018 (Date of delivery)
Project Cost	E/N Grant Limit / G/A Grant Limit: 1,830 million yen, Actual Grant Amount: 1,826 million yen			
Executing Agency	Sri Lanka Coast Guard: SLCG			
Contracted Agencies	Main Contractor: Sumidagawa Shipyard Co., Ltd. Main Consultant: Shipbuilding Research Centre of Japan			

II. Result of the Evaluation

Summary

The project aims to strengthen maritime safety capabilities such as Maritime Search and Rescue (MARSAR), Maritime Law Enforcement (MARLEN), and Maritime Environmental Protection (MAREP) in the western and southern waters of Sri Lanka by deploying patrol vessels in the SLCG ports, which is responsible for the waters in these areas, thereby contributing to maritime safety in both areas. The project was appropriate in light of Sri Lanka's development plans and needs, as well as the project plan and approach. It was consistent with the development cooperation policy of the Government of Japan and JICA, and although no synergy exists in its relationship with other JICA projects, concrete outcomes have been arising from the planned collaborations. In addition, coordination with international frameworks is also recognized. Therefore, the relevance and coherence are high. The project outputs have been achieved as planned. While the project cost on the Japanese side was almost as planned, the total project cost increased slightly due to customs duty, etc., on the Sri Lankan side, thereby resulting in an increase of 104% compared to the plan. The project period also exceeded the plan by three months and was 113% of the plan, but there were no significant delays. Therefore, efficiency is high. Operational indicators, (1) the area of patrol operations, (2) the oil collection capability, and (3) the ratio of the annual days of patrol operations have all achieved the target values. The SLCG could not only dispatch patrol vessels for the MARSAR, MARLEN, and MAREP incidents that occurred in the western and southern waters but also took appropriate measures in the event of the X-Press Pearl catastrophe that occurred at the Port of Colombo in May 2021 by using the oil spill response techniques transferred by individual experts. Furthermore, the project has been contributing to

Japan's energy security policy and foreign and security policy, as originally planned. Thus, the effectiveness and impacts of the project are high. There are no problems with the operation and maintenance policies and systems, institution and organization, technology, finance, environmental and social considerations, and risk management. However, a problem has been detected in the starboard engine of one of the two vessels (CG502). SLCG is currently taking concrete measures to resolve it, and the prospects for improvement and resolution are high, so the sustainability of the project is high. In light of the above, the project is evaluated to be highly satisfactory.

Overall Rating¹	A (Highly satisfactory)	Relevance & Coherence	㊦ ²	Effectiveness & Impacts	㊦	Efficiency	㊦	Sustainability	㊦
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<Special Perspectives Considered in the Ex-Post Evaluation/Constraints of the Ex-post Evaluation>

None in particular.

1 Relevance/Coherence

<Relevance>

- Consistency with the Development Policy of Sri Lanka at the Time of Ex-Ante Evaluation

Mahinda Chintana: Vision for the Future (2010–2016), a revision of *the Mahinda Chintana: Vision for a New Sri Lanka (2006–2016)*, a national development plan, which highlighted the development of transportation infrastructure and the provision of a safe transportation system in the "Development of Road Network and Transportation System," one of the seven priorities based on Sri Lanka's location on a strategically important sea lane. In addition, *the SLCG Action Plan (2012–2016)*, a sector plan, called for strengthening Maritime Search and Rescue (MARSAR),³ Maritime Law Enforcement (MARLEN),⁴ and Maritime Environmental Protection (MAREP).⁵

- Consistency with the Development Needs of Sri Lanka at the Time of Ex-Ante Evaluation

SLCG owned only 20 vessels, all of which were smaller than 23 meters. In particular, only two vessels were deployed in the western part of the country, where the Port of Colombo, Sri Lanka's largest port, was located, and only four vessels were deployed in the southern part, which was closer to the sea lane. All the vessels were less than 15 meters in length, and their patrol area was limited to the coastal area (generally territorial waters and connecting waters within 24 nautical miles). Therefore, there was a need to improve maritime safety capabilities in offshore areas (EEZs generally beyond 24 nautical miles offshore) and on the high seas.

- Appropriateness of Project Design/Approach

The ex-post evaluation results of similar projects in the past denoted the importance of securing human resources and the budget for the operation and maintenance of the vessels. In this regard, the project involved prior discussions with the Ministry of Defense, SLCG's supervising authority, and obtained written assurances in advance. As mentioned in the sustainability section, the project plan was appropriate considering that SLCG managed to secure human resources and the budget for operation and maintenance. The two patrol vessels to be procured under the project were planned to be deployed at the ports of Dikowita and Galle but are currently deployed at the ports of Colombo and Galle. The reason for deploying one vessel at the Port of Colombo is because it has better facilities for operation and maintenance and is more efficient than the Port of Dickowita. Both ports are located close to each other, only about 6 km apart in a north-south direction, and both serve the western coastal area. Since the change of deployment port had no adverse effect, making the change was appropriate. Furthermore, since the two vessels were water-jet propelled, concerns arose regarding the difficulty in maneuvering these vessels during the monsoon season when waves from the southwest will likely increase. Therefore, initially, the ports of deployment were planned to be changed during this season. However, since SLCG finds it no problem in actual operation, they are deployed in the ports of Colombo and Galle throughout the year. These changes were an appropriate approach.

<Coherence>

- Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation

The Government of Japan newly decided on *the National Security Strategy (2013)* as a replacement for *the Basic Policy for National Defense (1957)* and stated that the government would support the improvement of maritime security capabilities of sea lane littoral states and other countries to maintain and develop an "open and stable ocean." This strategy has also been positioned as a guideline for ODA, and one of the three priority issues, "Sharing Universal Values and Realizing a Peaceful and Secure Society," in *Development Cooperation Charter (2015)* stated that considering that threats to stability and security impeded economic and social development, the charter would provide the necessary support by improving the capabilities of law enforcement agencies, including maritime safety capabilities. *The Country Assistance Policy for Sri Lanka (2012)* also emphasized the importance of securing the safety of maritime transportation routes in light of Sri Lanka's geopolitical importance.

- Internal Coherence

At the time of the ex-ante evaluation, JICA was attempting to strengthen SLCG's capabilities in MARSAR, MARLEN, and MAREP by conducting country-specific training for *Maritime Cooperation (2012–2016)* and Search and Rescue, Disaster Prevention and Environment Protection Course for Maritime Safety Officials at the Operational Level (2016). It also provided Advisor Services for Maritime Disaster Measures and Marine Environment Protection (2014–2016). At the time of the ex-post evaluation, it is still attempting to do it by continuously conducting country-specific training for Search and Rescue, Disaster Prevention and Environment Protection Course for Maritime Safety Officials at the Operational Level (2017-2018) and providing Advisory Services for Improving Oil Spill Management Capabilities of Sri Lanka Coast Guard up to Tier I in Open Seas (2018–2021). Thus, coherence with the JICA project was confirmed both at the time of the ex-ante and ex-post evaluation.

¹ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

² ㊦ : Very high, ㊥: High, ㊤: Moderately low, ㊣: Low

³ Maritime Search and Rescue (MARSAR) is searching for vessels in the case of maritime accidents and rescuing their passengers and crew.

⁴ Maritime Law Enforcement (MARLEN) is regulating illegal activities such as smuggling, poaching, and piracy at sea.

⁵ Maritime Environmental Protection (MAREP) is responding to marine pollution caused by oil, waste, and other substances at sea.

• External Coherence

The Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia(2006), to which 20 countries including Japan and Sri Lanka were parties at the time of the ex-ante evaluation, was designed to secure the safety of maritime transportation routes mainly in Southeast and South Asia. In addition, the U.S. Coast Guard (USCG) conducted Oil Spill Prevention Training and introduced past incidents and shared lessons learned. At the time of the ex-post evaluation, the Agreement has 21 parties with the addition of Germany in 2021. It continues to ensure the safety of maritime transportation routes in the same regions. Furthermore, the Indian Coast Guard (ICG) has conceded one used patrol vessel (67 meters long) to SLCG in 2018. Thus, coherence with the efforts of other agencies was confirmed both at the time of the ex-ante and ex-post evaluation.

<Evaluation Result>

In light of the above, the relevance and coherence of the project are high⁶.

2 Effectiveness/Impact⁷

<Effectiveness>

(1) Quantitative effects

	Baseline values (2014))	Target values 3 years after completion (2021*)	Actual values Completion year (2018)	Actual values 1 year after completion (2019)	Actual values 2 years after completion (2020)	Actual values 3 years after completion (2021)
Operational Indicators						
(1) Area of patrol operations of CG501 and CG502 (nautical miles) (round trip from mooring base)	Approx. 300 (within 24 nautical miles from the coast)	Approx. 750 (50 nautical miles from the coast)	Approx. 750 (50 nautical miles from the coast)	Approx. 750 (50 nautical miles from the coast)	Approx. 750 (50 nautical miles from the coast)	Approx. 750 (50 nautical miles from the coast)
(2) Oil collection capability of CG501 and CG502 (m ³ /hour/ship)	0	Approx. 15	Approx. 15	Approx. 15	Approx. 15	Approx. 15
(3) Ratio of annual days of patrol operations ¹ of CG501 and CG502 (%)	Approx. 30	80 or more	80 or more	80 or more	80 or more	80 or more

Source: SLCG

*In the ex-ante evaluation, 3 years after completion of the project was set to be 2020 but was corrected to 2021 as it was completed in 2021.

¹ It was a theoretical ratio based on sea tides and the cruise capacity of the new vessels, and the vessels were expected to patrol for at least 80% of 365 days (292 days).

Operational indicators (1)–(3): All operational indicators achieved the target values.

(2) Qualitative effects

None in particular.

<Impacts>

(1) Quantitative effects

	Baseline values (2016)	Actual values Completion year (2018)	Actual values 1 year after completion (2019)	Actual values 2 years after completion (2020)	Actual values 3 years after completion (2021)
1) Rate of MARSAR missions dispatched to the western and southern waters (%)	NA	0	3.8	13.6	16.7
2) Rate of MARLEN missions dispatched to the western and southern waters (%)	NA	100	100	100	100
3) Rate of MAREP missions dispatched to the western and southern waters (%)	NA	100	0	100	100

Source: SLCG

*Since no quantitative effect indicator was set for impacts in the ex-ante evaluation, the external evaluator set the indicators above based on the project's characteristics.

1) Distress signals for MARSAR incidents are sent to the Maritime Rescue Coordination Centre of the Sri Lankan Navy, and this center is the first to respond to such incidents. However, if no naval vessel exists in the waters near the scene of the incident, the Navy requests assistance from SLCG. The rate of MARSAR missions dispatched by SLCG is therefore low. However, this low rate is due to institutional reasons, and the MARSAR missions dispatched by SLCG after 2019 would not have been possible without the procurement of patrol vessels under the project. Therefore, the impact is being realized.

2) 3) MARLEN and MAREP incidents are communicated to the SLCG headquarters. Since the project made it possible to deploy two patrol vessels to the ports of Colombo and Galle, the headquarters could also dispatch missions to all MARLEN and MAREP incidents that occurred in the western and southern waters. Thus, the project's impact is being realized.

⁶ Relevance: ③, Coherence:③

⁷ When providing the sub-rating, Effectiveness and Impacts are to be considered together.

<The result of both hardware and knowledge building support>

On May 20, 2021, a large container ship (X-Press Pearl) registered in Singapore caught fire in the waters 5 km off the coast of the Port of Colombo, spilling a large amount of oil, microplastics, etc. JICA has been dispatching Japan Coast Guard staff to SLCG for Advisor Services for Maritime Disaster Measures and Marine Environment Protection and Advisory Services for Improving Oil Spill Management Capabilities of Sri Lanka Coast Guard up to Tier I in Open Seas since 2015. They have conducted not only classroom lectures on oil spill response but also practical training using the patrol vessel procured under the project. As a result, CG501, which had been deployed to the port of Colombo at the time of the incident, could respond appropriately to the oil spill by spraying 400 liters of chemical dispersant on the oil. CG502, which had been deployed to the Port of Galle, was also dispatched to the accident site to assist the ICG's patrol vessel that came from India to support the firefighting operation based on the memorandum of understanding with SLCG. This was the result of many years of support by JICA in terms of both hardware and knowledge building.



X-Press Pearl on fire

Source: SLCG



Spraying chemical dispersant

Source: SLCG

(2) Qualitative effects

1) Contribution to Japan's energy security policy and foreign and security policy

Japan depends on oil and gas from the Middle East, and these come through the sea areas 6 to 10 nautical miles (11–18 km) from the southern coast of Sri Lanka. In 2018, three incidents of piracy occurred off the coast of Somalia in the Middle East, at a location on the sea lane. These incidents threatened tankers' navigational safety regarding the transportation of oil and gas to Japan. Therefore, the Japanese government dispatches maritime self-defense force ships to the waters off Somalia, and the southern part of Sri Lanka is also a refueling area for the ships. In this regard, securing the safety of the southern waters of Sri Lanka is a crucial issue for the Japanese government's energy security policy. Furthermore, in "the Free and Open Indo-Pacific", promulgated in August 2016 based on "the Open and Stable Oceans" that foreign and security policy referred to in the National Security Strategy of December 2013, securing the safety of the sea lane is sought in the public interest in the "pursuit of peace and prosperity in the Indo-Pacific region as a whole" which goes beyond the national interest of Japan's energy security alone. Therefore, the project contributes to securing the safety of the southern coast of Sri Lanka and even the sea lane for Japan. Ultimately, it contributes to the energy security policy and the foreign and security policy of the Japanese government.

*Since no qualitative effect indicator was set for impacts in the ex-ante evaluation, the external evaluator set the aforementioned indicator based on the project's characteristics.

2) Other positive and negative impacts

(i) Impact on the natural environment

According to *the Guidelines for Environmental and Social Considerations (2010)* of the Japan International Cooperation Agency, the project belonged to category C. The patrol vessels were constructed in Japan, and no impact was observed on the natural environment during their construction. No impact has been observed so far after starting the service.

(ii) Resettlement and land acquisition

None.

(iii) Gender

There is no female crew member aboard the patrol vessels deployed in the project, so there is no gender impact.

(iv) Socially vulnerable groups and human rights

No piracy incident has been observed in the western and southern waters of Sri Lanka in recent years. When the external evaluator interviewed two fishing vessel owners fishing in the EEZ in the southern part of Sri Lanka, they expressed a feeling of assurance despite injury or illness while operating in the EEZ because they knew SLCG would rush to their aid. Currently, it is only CG501 and CG502, as well as the vessel donated from ICG, that can sail as far as to the EEZ in the southern part of Sri Lanka. With these vessels, SLCG is now able to respond to injured or sick people in the EEZ.

(v) Social systems, norms, and people's well-being

None.

(vi) Other positive and negative impacts

None.

<Evaluation Result>

The operational indicators (1) through (3) have all achieved their target values. SLCG could dispatch patrol vessels to MARSAR, MARLEN, and MAREP incidents that occurred in the western and southern waters, and take appropriate measures in the event of the X-Press Pearl disaster by applying oil spill response techniques transferred by individual experts. Furthermore, the project contributes to the Japanese government's energy security policy and foreign and security policy, as initially planned, and is realizing impacts. Therefore, the effectiveness and impacts of the project are high.

3 Efficiency

(1) Outputs

Procurement of two patrol vessels with planned specifications. The specifications are as follows: length 30 m, width 5.8 m, depth 3.0 m, draft 1.2 m, maximum speed 33 knots, range 750 nautical miles, 12 crew members, space for 10 rescues, and an oil collection system.

(2) Inputs

1) Project cost

Japan side: While the planned project cost was 1,830 million yen,⁸ the actual cost was 1,826 million yen,⁹ which was within the plan.

Sri Lanka side: While the planned project cost was 5.84 million Sri Lankan rupees (5 million yen), the actual cost was 108.84 million Sri Lankan rupees (78 million yen¹⁰), which was much higher than planned. Although bank charges (4.23 million Sri Lankan Rupees) and costs for navigation to the ports of deployment (1.61 million Sri Lankan Rupees) were as planned, the customs duty for the import of two patrol vessels (98 million Sri Lankan Rupees) and the unplanned construction of simple accommodation for crew and the storage of equipment and materials at the port of Colombo (5 million Sri Lankan Rupees) substantially increased these costs.

Therefore, the total project cost was 1,904 million yen, which was 104% of the planned project cost of 1,835 million yen and slightly higher than planned.

2) Project period

While the planned project period was 23 months from June 2016 (signed month of G/A) to April 2018,¹¹ the actual period extended to 26 months from June 2016 (signed month of G/A) to July 2018 (final delivery),¹² which was 113% of the planned project period and slightly longer than planned. The detailed design was delayed by one month due to Christmas and New Year vacations, and an additional two months were required for construction, resulting in a three-month delay.

[Evaluation Result]

Although both the project cost and the project period were slightly higher/longer than planned, the efficiency of the project is high.

4 Sustainability

• Policy/Systems

Although SLCG is under the Sri Lankan Ministry of Defense, Articles 6 and 10 of *the Coast Guard Act (2009)* puts it as a non-military organization. SLCG prepares a plan for a single year. Since the FY2022 plan continues to include responses to MARSAR, MARLEN, and MAREP incidents and prioritizes the maintenance of existing vessels including CG501 and CG502, there is no problem with the policy and systems.

• Institutional/Organizational Aspect

SLCG has 27 crew members for the CG501 operation (1 captain, 1 officer, 2 senior crew members, 4 engineers, 4 electricians, and 15 general crew members) and 28 crew members for the CG502 operation (1 captain, 1 officer, 2 senior crew members, 4 engineers, 4 electricians, and 16 general crew members), each with 15 crew members on duty around the clock 365 days a year. At the time of the ex-ante evaluation, 12 crew members (1 captain, 1 officer, 1 senior crew member, 2 engineers, 2 electricians, and 5 general crew members) were planned to be on duty at all times, but the number of crew members has increased since. Engineers and electricians on board are responsible for the daily inspection of both CG501 and CG502. Meanwhile, SLCG engineers and electricians and those of the Sri Lankan Navy at the facilities of the Sri Lankan Navy base in Colombo, Galle, and Trincomalee carry out routine maintenance and major repairs. Therefore, no problem exists in terms of the institutional and organizational aspects.

• Technical Aspect

Maintenance of CG501 and CG502 includes daily inspections, routine maintenance, and major repairs. During daily inspections, CG501 and CG502 engineers and electricians check all engines and electrical systems before departure and after return to the ports, and no problem has been observed so far. Further, eight SLCG engineers and electricians stationed at the Colombo and Galle bases, where CG501 and CG502 are deployed, carry out routine maintenance work for each item specified in the manuals for engines and electrical systems based on the operating hours, and no problem has been observed so far. At the time of ex-post evaluation, neither CG501 nor CG502 had reached the specified operating hours, so no major repair has yet been carried out. Engineers and electricians of the Sri Lankan Navy stationed at the Trincomalee base will carry out future major repairs. Since the personnel carries out major repairs on warships every day, no technical problem exists in major repairs of the vessels.

⁸ The equipment cost was 1,768 million yen and the design supervision cost was 61 million yen, for a total of 1,829 million yen, although the E/N limit was 1,830 million yen.

⁹ The equipment cost was 1,766 million yen and the design supervision cost was 60 million yen.

¹⁰ Converted to yen at the average IFS rate during the project period.

¹¹ Completion was not defined at the time of ex-ante evaluation.

¹² The related documents provided by JICA at the time of project completion had set August 2018, when the commissioning ceremony was held, as the completion month. However, since the final delivery of the patrol vessel was in July and the defect inspection period also started in July, the external evaluator considered July as the completion month.

- Financial Aspect

The operation and maintenance costs for CG501 and CG502 for the last three years are shown in the table on the right. At the time of ex-ante evaluation, the details of the operation plans for CG501 and CG502 were assumed to be developed by SLCG in the future. Hence, no appropriate planned values exist, and relative comparisons cannot be made. However, effects and impacts have been observed as mentioned above. Both the evaluators and the Japanese Coast Guard staff for Search and Rescue, Disaster Prevention and Environment Protection Course for Maritime Safety Officials at the Operational Level have determined that CG501 and CG502 are in excellent condition. Thus, the cost of operation and maintenance should not be a problem. Concerning major repairs that take place every six years, the first major repairs will take place in 2023. SLCG is planning to create a budget for it.

Annual operation and maintenance cost (Unit: Million Sri Lankan Rupees)			
	2019	2020	2021
Operation cost	31.3	42.6	34.6
Maintenance cost	2.0	3.2	4.1

Source: SLCG

- Social and Environmental Aspect

None.

- Preventative Measures to Risks

None.

- Current Status of Operation and Maintenance

Due to the malfunction of the control panel on CG502's starboard engine in December 2019, a replacement control panel was procured from the Sri Lankan Navy in January 2020 and was continuously used at the time of ex-post evaluation. However, since it needs to be returned to the Sri Lankan Navy in 2022, SLCG is currently requesting the Sri Lankan Navy to repair the malfunctioned control panel.

<Evaluation Result>

In sum, although there is a minor problem in the operation and maintenance status of the project, there are good prospects for resolution of this problem. Therefore, the sustainability of the project effects is high.

III. Recommendations & Lessons Learned

- Recommendations to Executing Agency

SLCG is expected to repair the control panel on CG502 starboard engine as soon as possible.

- Recommendations to JICA

JICA is expected to follow up on SLCG's efforts mentioned above.

- Lessons Learned

The project cost on the Sri Lankan side was planned to be 5 million yen, but the actual cost was 78 million yen. This increase was due to unforeseen customs duty and facility development costs. Facility development costs associated with changes in plans during the project period could not be anticipated beforehand. However, customs duty is the exclusive authority of the customs authority, and thus the possibility of imposition of customs duties can be anticipated. Therefore, assuming that customs duty may be imposed in the future, it must be included in the project cost on the counterpart cost at the time of ex-ante evaluation.

IV. Non-Score Criteria

- Performance

JICA successfully established good communication and a cooperative relationship with SLCG during the planning and implementation of the project.

- Additionality

-



Patrol vessel (502)



Starboard engine (bottom right) and its control panel (back)

Republic of the Philippines

FY2021 Ex-Post Evaluation Report of
Japanese Grant Aid Project

“The Programme for Rehabilitation and Recovery from Typhoon Yolanda” and
“The Project for Reconstruction of Municipal Halls in Lawaan and Marabut Municipalities”

External Evaluator: Keiko Asato, Value Frontier Co., Ltd

0. Summary

This is an integrated evaluation study of “The Programme for Rehabilitation and Recovery from Typhoon Yolanda” (hereinafter referred to as “Programme for Rehabilitation and Recovery from Yolanda”) and “The Project for Reconstruction of Municipal Halls in Lawaan and Marabut Municipalities” (hereinafter referred to as “Project for Reconstruction of Municipal Halls”).

The objective of the Programme for Rehabilitation and Recovery from Yolanda was to restore the public services and economic activities, strengthen public facilities, restore the weather forecasting and warning system by constructing various facilities, and procure equipment for social, economic, and disaster prevention infrastructure in the areas Typhoon Yolanda affected, thereby contributing to the early recovery and reconstruction of the damaged areas. The objective of the Project for Reconstruction of Municipal Halls was to strengthen the municipal halls’ shelter function and improve administrative services by rebuilding the municipal halls in Lawaan municipality, Eastern Samar, and Marabut municipality, Samar, which Typhoon Yolanda destroyed, helping those communities overcome vulnerabilities and stabilize people’s livelihood and production infrastructure.

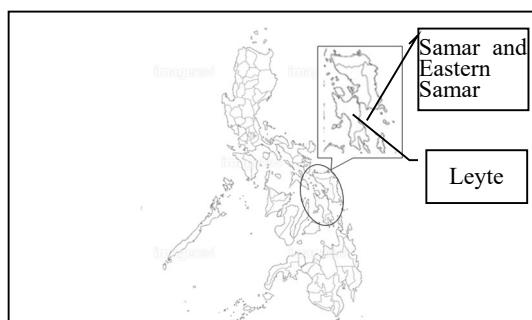
Regarding relevance, this Project was consistent with the development policy and development needs of the Philippines at the time of planning and post-evaluation. At the time of planning, the appropriate programme and project were formulated in light of the specific situation in the Philippines at that time. The combination of sub-projects in various sectors, such as education, fisheries, health, and electricity, in the Sector Grants¹ was also useful. Regarding coherence, the Project aligned with Japan’s ODA Policy and international frameworks. Regarding internal coherence, a certain degree of coordination and outputs with other JICA projects was observed, and regarding external coherence, some adjustments were made to avoid duplication of cooperation with other donors, and a certain extent of outputs was confirmed. Therefore, the relevance and coherence are high. Although the entire project period exceeded the plan, the project cost was within the plan, so the efficiency is high. Regarding effectiveness, the indicators set for each sub-project at the time of planning were not appropriate to judge effectiveness, so the

¹ Sector Grants is a grant aid scheme, under which multiple grant aid projects are composed and implemented. https://www.jica.go.jp/activities/schemes/grant_aid/type.html (accessed July 22, 2022). In this report, the entire grant project consisted of “Programme for Rehabilitation and Recovery from Yolanda” and “Project for Reconstruction of Municipal halls,” referred to as the “Project”. The multiple grant aid projects that compose it are referred to as “sub-project(s).”

evaluators set alternative indicators at the time of the ex-post evaluation and assessed the effectiveness based on the degree of its achievement. The utilization of facilities and equipment is appropriate, and it can be considered that the project objective has been achieved. Although some of the sub-projects showed limited qualitative effects, the outcomes were confirmed in each of them. In terms of impacts, quantitative and qualitative effects related to “Building safer cities,” “Recovery of People’s Daily Life,” and “Recovery of Regional Economy and Promotion of Industries,” which were this Project’s main framework of the basic policy of the rehabilitation and reconstruction, were observed as well as synergistic effects with other projects. The effects to be assessed positively were observed; therefore, effectiveness and impacts are high. In the programme and project, there are no problems in terms of policy and systems, institutional/organizational, technical, environmental, or social aspects or operation and maintenance. In terms of financial aspects, although there were some sub-projects without specific budget information, no sub-projects are likely to face difficulties in continuing their operations due to budget shortfalls. Therefore, the sustainability is high.

In light of the above, this Project is evaluated as highly satisfactory.

1. Project Description



Project Location(s)
(Source: External evaluator)



Santo Niño Elementary School (Tanauan)
(Source: External evaluator)

1.1 Background

On November 8, 2013, Typhoon Yolanda, described as “unprecedented in its scale,” mainly crossed the Visayas region of the Philippines.

The typhoon caused extensive damage to houses; public facilities, such as municipal halls, schools, and medical facilities; economic infrastructure, such as roads including bridges, airports, and ports; and public services, such as water supply and electricity in Region Eight, which includes the eastern coast of northern Leyte and the southern coast of Samar Island, requiring prompt restoration and reconstruction assistance.

In response to this situation, the Technical Cooperation for Development Planning “Urgent development study on the project on Rehabilitation and Recovery from Typhoon Yolanda in the Philippines” (2014-2017) was implemented. This Project consisted of “Recovery and Reconstruction Planning,” “Quick Impact Projects” (hereinafter referred to as “QIPs”), and

“Preparatory Survey for this Project” and was implemented, setting (1) Building safer cities, (2) Recovery of People’s Daily Life, and (3) Recovery of Regional Economy and Promotion of Industries” as basic rehabilitation and reconstruction policies.²

In line with this policy, this Project was also implemented with the aim of supporting highly prioritized sub-projects for early recovery and reconstruction, such as social, economic, and disaster prevention infrastructures, thereby contributing to the formation of a disaster-resilient society.

1.2 Project Outline

Programme for Rehabilitation and Recovery from Yolanda: The objective of this programme is to restore public services and economic activities,³ strengthen public facilities, and restore the weather forecasting and warning system by constructing various facilities and procuring equipment for the social, economic, and disaster prevention infrastructures in the areas Typhoon Yolanda affected, thereby contributing to the early recovery and reconstruction of the damaged areas.

Project for Reconstruction of Municipal halls: The objective of this project is to strengthen the municipal halls’ shelter function and improve administrative services by rebuilding the municipal halls in Lawaan municipality, Eastern Samar, and Marabut municipality, Samar, which Typhoon Yolanda destroyed, thereby helping the communities overcome vulnerabilities and stabilizing their livelihoods and the production infrastructure.

<Grant Aid Project>

Grant Limit / Actual Grant Amount	Programme for Rehabilitation and Recovery from Yolanda 4,600 million yen / 4,214 million yen Project for Reconstruction of Municipal Halls 507 million yen / 502 million yen
Exchange of Notes Date ⁴ / Grant Agreement Date ⁵	Programme for Rehabilitation and Recovery from Yolanda Exchange of EN: March 2014 / Exchange of GA: May 2014 Amendment of EN: December 2017 / Amendment of GA: June 2016 (first), December 2017 (second) ⁶ Project for Reconstruction of Municipal Halls

² *The urgent development study on the project on Rehabilitation and Recovery from Typhoon Yolanda in the Philippines, Final Report (I), Main Report, June 2015, (pp.46)*

³ Although “economic activity” was not included in the outcomes in the ex-ante evaluation, considering the contents of the outputs, economic activity will be added to the outcomes in this evaluation.

⁴ Exchange of Note, hereinafter referred to as “EN”

⁵ Grant Agreement, hereinafter referred to as “GA”

⁶ Initially, the "Yolanda Rehabilitation and Reconstruction Plan" was initiated as a single program (Sector Grants), but as described in 3.2.2.1, due to the administrative costs for the wide coverage of the target sites and the rising cost of materials and labor due to high reconstruction demand, the bidding process was unsuccessful. Consequently, the sub-project of municipal halls, which comprised the Sector Grants, was cut out and reformulated as the "Project for Reconstruction of Municipal Halls", and for which, a separate EN and GA were signed and implemented in December 2015. The GA for the "Project for Reconstruction of Municipal Halls" covered only the project cost, while the consultancy services were covered by the GA for the "Programme for Rehabilitation and Recovery from Yolanda". The GA for the "Programme for Rehabilitation and Recovery from Yolanda Yolanda" was amended in December 2017, in order to manage the “Project for Reconstruction of Municipal Halls” which was completed in May 2018.

	Exchange of EN: October 2015 / Exchange of GA: December 2015 Amendment of EN: December 2017 / Amendment of GA: December 2017
Executing Agency(ies)	For consultant service: Department of Finance (DOF) For construction and procurement: Department of Public Works and Highways(DPWH), Department of Transportation and Communication / Civil Aviation Authority of the Philippines(DOTC/CAAP), Department of Energy/National Electrification Administration(DOE/NEA), Department of Labor and Employment/National Maritime Polytechnic(DOLE/NMP), Department of Health(DOH), Department of Agriculture/Bureau of Fisheries and Aquatic Resources(DA/BFAR), Department of Science and Technology/ Philippine Atmospheric, Geophysical and Astronomical Services Administration(DOST/PAGASA)
Project Completion	Programme for Rehabilitation and Recovery from Yolanda: September 2017 Project for Reconstruction of Municipal Halls: May 2018
Target Area	Eastern Visayas region: (Tacloban is city, others are all municipality) Leyte province: Tacloban, Palo, Tanauan, Tolosa, Dulag, MacArthur, Samar province: Marabut, Paranas Eastern Samar province: Lawaan, Giporlos, Borongan, Guiuan
Main Contractor(s)	Oriental Consultants Global Co., Ltd., CTI Engineering International Co., Ltd., MOHRI ARCHITECT & ASSOCIATES, INC., Joint Venture of Japan Weather Association., International Meteorological Consultant Inc., PACET corp., K.I.TO Architects & Engineers Inc.
Main Consultant(s)	TSUCHIYA CORPORATION., SHIMIZU CORPORATION, SUMITOMO MITSUI CONSTRUCTION CO., LTD., NISHIZAWA LIMITED, inc.
Procurement Agency	Ogawa Seiki Co., Ltd., ITOCHU Corporation., Sumitomo Corporation Power & Mobility Co., Ltd., SIRIUS Co., Ltd., Mitsui E&S Holdings Co., Ltd., TEC International Co., Ltd.
Basic Design/ Preparatory Survey	In programme and project : January–April 2014(Among the “Programme for Rehabilitation and Recovery from Yolanda,” study for the “Project for rehabilitation of meteorological Radar System in Guiuan” was done from January to May 2014)
Related Projects	Technical Cooperation : <ul style="list-style-type: none"> • The Grass-root Technical Cooperation Project “Development of mariculture and processed products using Oku-Matsushima technique in typhoon Yolanda affected areas”(2016-2019) • Public-Private Partnership “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) • Technical Cooperation for Development Planning " The urgent development study on the project on Rehabilitation and Recovery from Typhoon Yolanda in the Philippines” (2014-2017) • Technical Cooperation Project “Philippines National Maritime Polytechnic Training Centre Project” (1985-1991) Grant aid project : <ul style="list-style-type: none"> • The Project for Improvement of the Meteorological Radar System (2009) Other donor’s projects : <ul style="list-style-type: none"> • UNDP “Recovery and resilience in Selected Typhoon Yolanda Affected Communities in the Visayas”(2014-2017) • ADB “Support for Post Typhoon Yolanda: Disaster Needs Assessment and Response”(2013-2017)

2. Outline of the Evaluation Study

2.1 External Evaluator

Keiko Asato, Value Frontier Co., Ltd.⁷

2.2 Duration of Evaluation Study

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

Duration of the Study: August 2021 – January 2023

Duration of the Field Study: None⁸

2.3 Constraints during the Evaluation Study

Due to travel restrictions imposed by the novel coronavirus infection (hereinafter referred to as “Covid-19”) and in consideration of the security condition in rural areas after the presidential election, Japanese consultants did not conduct field surveys, but they collected information through the local consultant. This limited the information collection at some sites, such as elementary schools and regional health units (hereinafter referred to as “RHUs”) because information was not provided from all sites.

3. Results of the Evaluation (Overall Rating: A⁹)

3.1 Relevance/Coherence (Rating: ③¹⁰)

3.1.1. Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of the Republic of the Philippines

At the time of planning, the Philippine Development Plan (hereinafter referred to as “PDP”) (2011-2016) identified the investment in adequate infrastructure for flood risk reduction as one of its major policies, and it raised the necessity to alleviate and manage the disaster risk by not only structural investment but also non-structural efforts (such as ensuring the resilience against natural disasters by strengthening people’s adaptive capacity). In addition, the National Disaster Risk Reduction Management Plan (hereinafter referred to as “NDRRMP”) (2011-2028) set the goal of a “safe, adaptive and disaster resilient Philippine society” and set “recovery and reconstruction from disaster” as a high priority initiative, based on the principle of “better restoration” (Build Back Better¹¹ (hereinafter referred to as “BBB”)).

⁷ The Foundation for Advanced Studies on International Development participated in this ex-post evaluation as reinforcement.

⁸ The local consultant conducted a field survey (from April 17 to May 1, 2022).

⁹ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

¹⁰ ④: Very High, ③: High, ②: Moderately Low, ①: Low

¹¹ An attempt to view disasters from a global perspective, consider the environment, and encourage social resilience includes measures to mitigate disasters and revitalize sustainable communities (Sendai Framework for Disaster Risk Reduction, p.23)

In the “Updated PDP” (2017-2022)¹² at the time of the ex-post evaluation, the importance of strategies related to disaster risk reduction continues to be emphasized and the NDRRMP (2011-2028) remains valid, with the aim of creating a “safe, adaptive and disaster resilient Philippine society.” As key initiatives to achieve this goal, (1) disaster prevention and mitigation, (2) preparedness for disaster, (3) disaster response, and (4) recovery and rehabilitation from disasters are mentioned.¹³

3.1.1.2 Consistency with the Development Needs of the Republic of the Philippines

At the time of planning, Typhoon Yolanda, which hit the Philippines, caused unprecedented damage throughout the country, leaving 6,000 people dead, more than 1 million houses destroyed, and more than 4 million evacuees. Particularly on the eastern coast of northern Leyte island and the southern coast of Samar island, social infrastructure, such as municipal halls, elementary schools, RHUs, and the Eastern Visayas Medical Centre (hereinafter referred to as “EVMC”¹⁴), and economic infrastructure, such as roads, airports, and electricity, was severely damaged. The government of the Philippines estimated the total damage as US\$12.9 billion overall and the reconstruction cost as US\$8.2 billion. However, the Philippines’ revenue in FY2013 was US\$4.61 billion. The burden of the reconstruction cost was extremely high, and it was difficult for the country to recover and restore on its own.

Even at the time of the ex-post evaluation, typhoons heading toward the Philippines are becoming more ferocious every year,¹⁵ and it is still important to mitigate disaster risks by strengthening social and economic infrastructure and developing robust facilities that can withstand typhoons. The general public, including socially vulnerable people, frequently used the social infrastructure this Project rehabilitated so it was necessary to design it so that these people could also use it in a fair manner.

3.1.1.3 Appropriateness of the Project Plan and Approach

In late November 2013, shortly after Typhoon Yolanda hit the Philippines, JICA dispatched a survey team¹⁶ consisting of experts from various fields and departments at JICA Headquarters to

¹² The PDP is assessed and updated on its mid-term implementation to reflect the recent developments in the past years. Hence updated PDP (2017-2022) focused on the recovery and resilience from the COVID-19 pandemic.

¹³ NDRRMP p.27

¹⁴ At the time of the disaster, this centre was called the “Eastern Visayas Regional Medical Center,” but at the time of the post-event evaluation, the name was changed as described above. The name, at the time of ex-post evaluation, is uniformly used in this report.

¹⁵ Prior to Typhoon Yolanda, tropical cyclones were classified into four warning levels: 185 km/h and above, 100-185 km/h, 60-100 km/h, and 30-60 km/h. After Typhoon Yolanda, PAGASA revised the classification system and raised the wind speed ranges to 220 km/h and above, 118-220 km/h, 89-117 km/h, 62-88 km/h, and 61 km/h and below, and warnings are now issued at five levels (World Meteorological Organization website, https://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocms/s3fs-public/modified_tcws_for_wmo.pdf?TJ91amk3aBWGjDIRIk7fmmANc3keuU1q) (accessed September 12, 2022). After Typhoon Yolanda, super typhoons (typhoons with speeds of 220 km/h or more) have also made landfall, including Lawin (2016), Rolly (2020), and Odette (2021).

¹⁶ Experts in transportation, water, infectious diseases, etc. from outside the JICA as well as professionals in JICA, from the Social Infrastructure, Human Development, and Electricity and Energy Departments.

assess the needs of the affected situation in a wide range of areas. The JICA Philippine Office also briefed the survey team on sectoral information obtained through their previous projects and cooperated with them to facilitate the understanding of the situation and to formulate the Project. JICA also explained the land use proposal based on the no-resident zones and restricted-use zones to the president and the Secretaries involved in reconstruction and obtained their understanding.

The following month, the Philippine government announced “Recovery Assistance for Yolanda” (hereinafter referred to as “RAY”) and requested assistance from other countries. While the donors competed with each other for the quantity of assistance amount, JICA set BBB as the recovery philosophy, emphasizing the need to use the disaster as an opportunity to create a more resilient society rather than returning to pre-disaster conditions and the importance of the recovery process in itself through rehabilitation and reconstruction. The Secretaries of the major Philippine departments and agencies endorsed this philosophy, which became the basic principle of cooperation between JICA and the Philippine government. Based on this background, after discussions among the Philippine government, experts, JICA headquarters, and the JICA Philippine office, in this Project, early

rehabilitation and reconstruction (facility construction and equipment procurement) in highly prioritized projects for social and economic infrastructure, such as medical facilities, schools, and municipal halls, and disaster prevention infrastructures will be conducted, applying the Sector Grants scheme so this Project would help realize BBB¹⁷. JICA had been aware of the need for rapid reconstruction assistance since after the Sumatra Earthquake in 2004,¹⁸ and

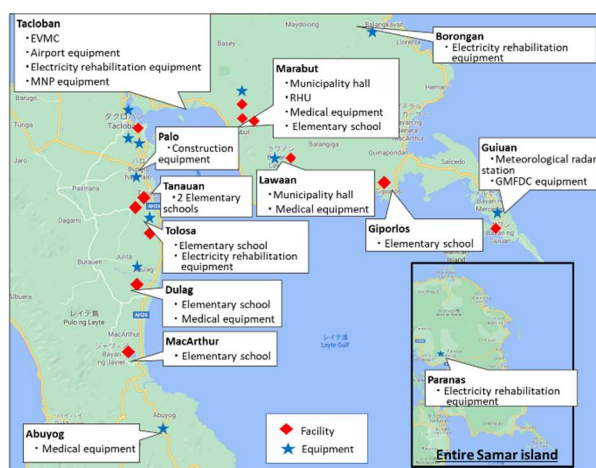


Figure 1 Sub-projects and their sites

through the discussions with the Ministry of Foreign Affairs, the outline of the Sector Grants was almost finalized. This Project was the first to which this scheme was applied. This made it possible to formulate and implement multiple sub-projects simultaneously under the overall picture and allowed for prompt action to shorten the time required to select consultants. With this new scheme, the Project included five facility sub-projects (elementary schools (8 sites), RHUs (4 sites),

¹⁷ BBB was identified as Priority 4 in the 2015 Sendai Framework for Disaster Risk Reduction, with the specific goals of reducing the number of deaths, victims, and economic losses due to disasters as well as reducing damage to critical infrastructure and disruption of basic services. In 2014, when this Project was planned, these goals had not been set. Therefore, this Project aimed to achieve BBB by (1) Building Safer Cities, (2) Recovery of People’s Daily Life and (3) Recovery of Regional Economy and Promotion of Industries (see 1.1 Project Background, p.2).

¹⁸ One of the challenges in reconstruction assistance was that it took time to begin providing emergency assistance. This scheme was introduced to speed up the process and make it possible to implement project as seamlessly as possible after the emergency assistance.

municipal halls (2 sites), EVMC (1 site), weather radar stations (2 sites),¹⁹ six equipment sub-projects (equipment for RHU (4 sites)), construction equipment (1 site), electricity rehabilitation equipment (4 sites), airport equipment (1 site), NMP equipment (1 site), and Fisheries Centre laboratory equipment (1 site) were selected²⁰.

Moreover, although not recognized at the time of Project formation, the combination of these sub-projects was aligned with the NDRRMP's key initiatives of (1) disaster prevention and mitigation, (2) disaster preparedness, (3) disaster response, and (4) disaster recovery and reconstruction, and it can be said that this was an appropriate approach in light of the Philippines' sector policies (see Figure 2).

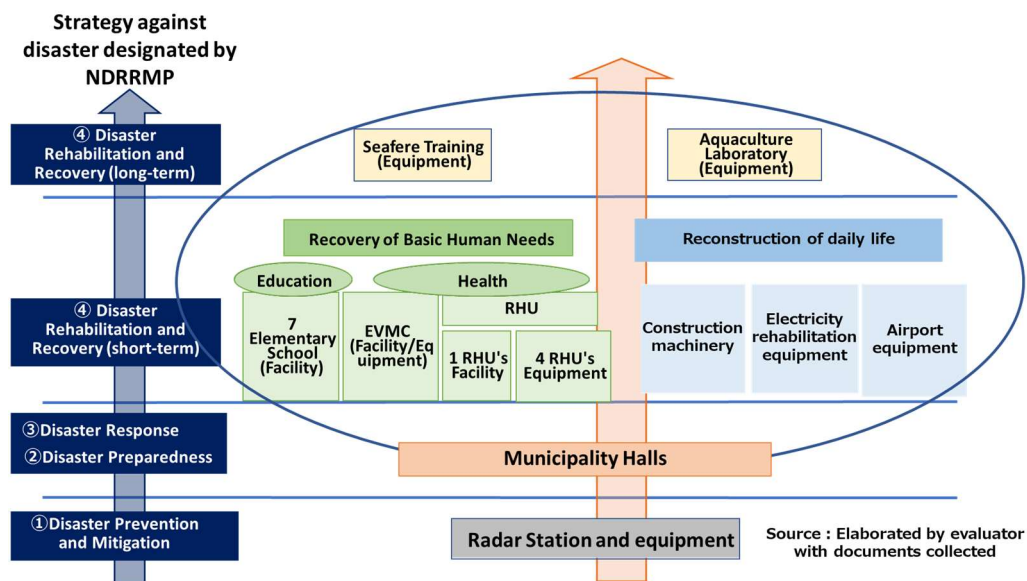


Figure 2: Relationship between the NDRRMP and sub-projects in Sector Grants

In formulating the Sector Grants, it is important to balance structural and non-structural elements to prevent the reoccurrence of disasters. In this concept, JICA proposed a reconstruction project composed by construction of tidal embarkment, establishment of a non-residential zone, and relocation of important public facilities from the corresponding zones. The president and heads of disaster-prevention-related departments expressed their understanding of this proposal. The term “BBB” was also printed on the cover of the RAY material distributed at the donor meeting.

¹⁹ The meteorological observatory project was included because it was damaged immediately after its completion in 2013 under the “Project for Improvement of the meteorological Radar System” (2009).

²⁰ The selection criteria for these sub-projects were (1) implementation of the BBB policy, (2) realization of Japan's experience in rehabilitation and reconstruction, (3) large impact, (4) no overlap with other rehabilitation and reconstruction projects, (5) possible examination of the projects within a limited time frame, (6) timeliness of input, (7) reconstruction of severely damaged public facilities (restoration of functions of educational, medical, and municipal hall) and (8) securing Japan's presence (from documents provided by JICA).

On the other hand, the opinion of the Philippine government, as an administrative structure, was not monolithic. Advocating BBB as a reconstruction policy, the dominant opinion in the Philippine government was unassuming to large-scale public investment. In addition, a strong request for livelihood improvement projects which could be implemented quickly was expressed.²¹ Whereas the cover page of the RAY included “BBB,” the main text included “fast and efficient project implementation” as part of the project policy.²²



Material distributed in the donor meeting

Similarly, in JICA, there was another opinion that even though the proposed project mentioned above was ideal from the perspective of BBB, the core government of the Philippines (such as DOF and NEDA) and the Department of the Interior Local Government (hereinafter referred to as “DILG”) did not welcome that proposal. Because the construction of tidal embankment required significant expenses and relocation from non-residential zones took time, they wanted to prioritize the livelihood improvement projects. JICA took the stance that the bilateral cooperation should be the one with the same viewpoint of the partner country’s government. Even though the effectiveness in mitigating damage might decrease, the facilities should be reconstructed in the same location, with consideration of building structure, standards, and materials as well as setting the conditionality to select the target facility with the location criteria,²³ JICA decided to reconstruct the facilities in the same location and cooperate so the project could be implemented quickly and contribute to industry promotion from the mid-long-term perspective. The construction of a tidal embankment was proposed and given technical assistance under the “Recovery and reconstruction planning” as a project the Philippine government would undertake in the future.²⁴

In addition, this Project, originally planned as one project, was to be divided into two projects (see footnote 6). That change was made with a sound agreement with the counterpart country, sending a person in charge of the Project of JICA headquarters to the project site and explaining the reasons to the implementing agency, relevant organizations, and local government. The reason for splitting the project and its process and procedures for the change were considered appropriate in light of the Project objectives.

Based on the above process, the Project plan and its approach are assessed as generally appropriate.

²¹ From JICA internal documents

²² “RAY”, p.18

²³ Target facilities were selected on the condition that they be located more than 40 m inland from the coastline.

²⁴ In fact, DPWH constructed a tidal embankment and elevated roads from Tacloban to Palo and Tanauan with its own budget (from documents provided by JICA)

3.1.2 Coherence (Rating: ②)

3.1.2.1 Consistency with Japan's ODA Policy

The Country Assistance Policy of the Republic of the Philippines (April 2012) stipulates “To overcome the vulnerabilities and stabilize the livelihoods and production infrastructure” as priorities and emphasizes the importance of appropriate risk reduction and disaster minimization under the “Disaster and Risk Reduction Management Program.” This Project contributes to the response to natural disasters, such as typhoons, and risk reduction. This Project is consistent with Japan's ODA Policy at the time of planning.

3.1.2.2 Internal Coherence

The collaboration between this and other JICA projects was confirmed as follows.

<Fishery Sector>

QIPs (implemented as part of the Technical Cooperation for Development Planning of “urgent development study on the project on Rehabilitation and Recovery from Typhoon Yolanda in the Philippines” (2014-2017))

At the time of the planning of sub-project Guiuan Marine Fishery Development Centre (hereinafter referred to as “GMFDC”), the QIPs had not yet been formulated,²⁵ so no specific outcomes of the collaboration of this Project and QIPs was envisioned, but some outcomes for the fisheries in Region VIII, through the cooperation with GMFDC, were intended. GMFDC was still not in full operation, so direct collaboration was difficult to conduct during the QIPs implementation. However, during the post-evaluation, milkfish fry was provided to LGUs and fishermen via the local satellite BFAR station, and the fishermen appreciated the GMFDC fry because they were larger than those purchased at the market. As such, the collaboration and its result were confirmed. On the other hand, because the grouper and oyster farming were not continued,²⁶ no fry were provided, the processing projects (QIPs 20 and 21) were not continued after the completion of the QIPs, and no collaboration was confirmed.

The private sector partnership project “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” (2015.5-2019.1)

²⁵ Fishery-related QIPs included aquaculture and its processing projects in Tanauan, Basay, and Guiuan. Concrete project are as follows:

at Tanauan, QIPs 15: Integrated culture of oyster and milkfish improvement for sustainable aquaculture and livelihood, QIPs 20: Construction of processing plant for integrated aquaculture and processing development;
at Basay, QIPs 1: Regenerating livelihood through introduction of disaster-resilient submersible fish cage (milk fish), QIPs 21: Construction of processing plant for integrated aquaculture and processing development-4 sites
at Guiuan, QIPs8: Regenerating livelihood through introduction of disaster-resilient submersible fish cage (Lapu-Lapu culture)

²⁶ Grouper were not farmed because Typhoon Ursula rendered the sunken fish tanks introduced in the QIP unusable in 2019, and oyster farming was not continuously established because the oyster was a new variety introduced in the QIP and it was difficult for its aquaculture to take root after the QIPs were completed.

The Project was implemented in Guiuan and Basay municipalities and Tacloban City. At the time of planning, some collaboration was envisioned such that GMFDC would provide fishermen fry, and the fishermen would raise this fry to adulthood and sell them.²⁷ Some of the floating and sinking fish tanks installed in Basay are still in continuous use, and milkfish are still being cultured there. On the other hand, in Guiuan, the GMFDC provided fry and the sales amount increased during the implementation of the QIPs. However, at the time of the post-evaluation, the floating and sinking fish tanks were not being used due to the high maintenance costs, and the outcome of the collaboration was not confirmed.

Grassroots Technical Cooperation “Aquaculture and processed product development in typhoon Yolanda affected fishing village utilizing inside Matsushima’s technology” (2016-2019)

One of the participants in this training program, an extension worker in BFAR Region VIII, learned oyster farming methods from Japan and obtained fry and feed from GMFDC to guide the fishermen in Region VIII. With this, some collaboration was done, and a certain outcome was confirmed.²⁸

<Health Sector >

QIPs (Implemented as part of the Technical Cooperation for Development Plan “The urgent development study on the project on Rehabilitation and Recovery from Typhoon Yolanda in the Philippines” (2014-2017))

At the time of planning, the collaboration of this Project with the RHUs was foreseen, and the outcome of the collaboration was confirmed during the ex-post evaluation. EVMC shares the results of the analysis of death cases with the RHUs and provincial health department and receives and treats patients referred by the RHUs, so the collaboration’s outcomes were confirmed.²⁹

From the above, the collaboration among the projects in the region was envisioned at the time of planning. At the time of the ex-post evaluation, the concrete outcome in the health sector was confirmed, but in the fisheries sector, it was limited.

3.1.2.3 External Coherence

BBB was adopted as Priority 4 at the 3rd UN World Conference on Disaster Risk Reduction, “Sendai Framework for Disaster Risk Reduction (2015-2030),” which states that “disaster recovery, rehabilitation and reconstruction are critical opportunities for better recovery”.³⁰ This

²⁷ Republic of the Philippines, completion report of “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”

²⁸ Interview with extension worker at BFAR VIII

²⁹ Interview with EVMC and JICA staff

³⁰ In this conference, it was stated that “disasters have demonstrated that the recovery, rehabilitation and reconstruction

Project aimed to contribute to the implementation of BBB and was aligned with this framework. From the perspective of coherence with other donors, the donor meeting at which RAY was announced (December 2013) became a scene where each donor competed for their own presence, and it was difficult to collaborate with other donors aiming for positive synergies.³¹ On the other hand, the donors' cooperation was segregated and coordination took place at the time of planning to avoid duplication among donors.

However, after the start of the Project, a Philippines stakeholder who could not wait until the Project was implemented asked other donors for support on the same project, which was in charge of JICA. In that case, some adjustments were necessary to exclude such projects from cooperation to avoid duplication.³²

< Fishery Sector >

There was an extensive need for restoration of fishing vessels lost due to the disaster, but because USAID and the EU handled those projects, JICA decided to cooperate in the aquaculture sector, thus avoiding duplication with other donors. On the other hand, cooperation in the field of aquaculture has helped foster the aquaculture industry as a countermeasure against the decline in marine resources instead of returning to the traditional fishing industry after the recovery from the disaster, which was expected to create a better society than before the disaster.

< Education >

Because reconstructing the elementary school under this Project took time, UNICEF and local NGOs collaborated to provide prefabricated school buildings so the children would not have to spend time in damaged classrooms.

< Health Sector >

Before the disaster, mainly the WHO and DOH had coordinated donors and a conducive atmosphere for collaboration had been prepared. Donors shared the results of the needs assessments study with each other, and with those results, other surveys were conducted effectively.

From the above, coherence with international arrangements was observed. In terms of collaboration with other donors, in the fisheries sector, collaboration for positive effects was difficult at the time of project planning, so coordination was conducted to avoid duplication. After

phase, which needs to be prepared ahead of the disaster, is a critical opportunity to build back better, including through integrating disaster risk reduction into development measures, making nations and communities resilient to disasters.

(<https://www.mofa.go.jp/mofaj/files/000081166.pdf>) (Accessed on August 9, 2022)

³¹ Interview with JICA staff and consultant contracted to this Project.

³² Interview with JICA staff.

the start of the Project, coordination to avoid duplication was the main task, but regarding the social infrastructure (education and health), coordination was conducted to produce positive effects, and concrete outcomes were observed.

Regarding relevance, the Project was consistent with the Philippines' development policy and needs at the time of planning and post-evaluation, and it was consistent with Japan's ODA Policy at the time of planning. In addition, although various opinions were expressed regarding the BBB approach in the project plan, JICA made appropriate decisions as an organization. In terms of internal coherence, the collaboration among the projects in the region was expected at the time of planning, but at the time of the post-evaluation, concrete results were seen in the health sector but limited in the fishery sector. In terms of external coherence, while the health and education sectors showed collaboration and outcomes at the time of planning and at post-evaluation, the fishery sector focused on coordination to avoid duplication at the time of planning and at post-evaluation. Therefore, its relevance and coherence are high.

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

This Project's status of achievement is as follows.

Table 1 The Project's status of achievement

Sub-project name	Contents	Type of sub-project	At the time of planning	Achievement	Reason for difference
Programme for Rehabilitation and Recovery from Yolanda					
Recovery of Basic Human Needs					
Reconstruction of disaster-resilient elementary school	Elementary School	Facilities	8 schools	7 schools	One school reduced because other donor supported it. JICA excluded it from its targets.
Reconstruction of disaster-resilient regional medical facilities	EVMC	Facility Equipment	1 facility 1 set	1 facility 1 set	Number of facilities to receive cooperation was the same. In this facility, additional work and equipment were provided.
	RHU	Facilities	4 facilities	1 facility	Due to bidding failure, only one facility was executed. Among the remaining 3, 2 were implemented by QIPs and one was responded to by the Philippines side.
	RHU	Equipment	4 sets	4 sets	Once, plan was suspended due to budget shortage, but with the surplus budget, originally planned medical equipment was provided
Recovery of Economic Activity (Short-term economic activity)					
Equipment for the Electricity Rehabilitation	-Boom truck with bucket and winch -Boom truck with digger and crane	Equipment	7 units for each	7 units for each	As planned
Construction Equipment	Construction equipment	Equipment	17 units	17 units	As planned

Equipment for the Airport Rehabilitation	Airport operation related equipment	Equipment	1 set	1 set	As planned
Recovery of Livelihood Activity (medium-long term industry development)					
NMP Equipment	NMP-activity-related equipment	Equipment	1 set	1 set	As planned
GMFDC Equipment	Fishery centre laboratory equipment set	Equipment	1 set	1 set	As planned
Rehabilitation of disaster prevention system					
Rehabilitation of Guiuan Meteorological Radar System	Rehabilitation of meteorological radar system	Facility	1 location	1 location	As planned
Reconstruction of Municipal halls in Lawaan and Marabut Municipalities					
Reconstruction of municipal halls	Reconstruction of disaster-resilient municipal halls	Facility	2 locations	2 locations	Approximately as planned (partially modified)

(Source: Elaborated by evaluator based on the ex-ante evaluation and result of the study)

Each sub-project's status of achievement is as follows.

- 1) Recovery of Basic Human Needs
 - (1) Reconstruction of disaster-resilient elementary school

The following facilities were reconstructed as planned.

Table 2 Reconstructed elementary school (facility)

School name/ sub-project site	Number of rooms	stories	Area(m ²)	School name/ sub-project site	Number of rooms	stories	Area (m ²)
Santo Niño/ Tanauan	8	2	722.03	Osmeña/ Marabut	6	1	552.23
San Roque/ Tanauan*	8	2	722.03	Tolosa/ Tolosa	6	1	552.23
MacArthur/ MacArthur	6	1	552.23	Dulag/ Dulag	6	1	552.23
Giporlos/ Giporlos	8	1	721.23				

(Source: Documents provided by JICA)

* The two elementary schools in Tanauan were set up in a piloti structure which set the spatial area on the ground floor.

At the time of planning, eight schools were planned to be reconstructed, but one was excluded from the cooperation because it was to be built by USAID and Plan International, an NGO. In reconstructing the elementary school, an opinion was expressed that it should be relocated and reconstructed to prevent another disaster. However, because the schools needed to be located in areas where children could go to school and because early restoration was required, schools not located in non-residential areas, 40 m interior from the coastal line, were selected as targets for restoration³³ and would be quickly reconstructed without the need to relocate. The elementary schools (two schools in Tanauan) that were still at risk of storm surge damage were to be two-story piloti-type structures to avoid storm surge effects. Because they were also expected to be used as evacuation centres, Japanese structural design standards were combined with Philippine building standards, and the quantity of concrete and reinforcing rebar was increased by 20-30%

³³ *The urgent development study on the project on Rehabilitation and Recovery from Typhoon Yolanda in the Philippines, Final Report (I), Volume 2: General Grant aid Project, 2015, p.3-6*

from DPWH standards to increase structural strength and durability.³⁴ With these innovations, the elementary schools were reconstructed to serve as a model for future projects by the Philippine government. The elementary school that USAID/Plan International was expected to support was also reconstructed as planned, and all eight elementary schools were rehabilitated as planned.

(2) Reconstruction of disaster-resilient regional medical facilities (facility, equipment)

< Eastern Visayas Medical Centre >

The following facility reconstruction and equipment procurement was implemented as planned at Tacloban.

Table 3 Reconstructed EVMC

Name of the facility	Area (m ²)
Outpatient Department (hereinafter referred to as “OPD”)	5,453.87
Utility building 1	86.00
Utility building 2	36.00
Connecting corridor	42.75
Total	5,618.62



Facade of reconstructed EVMC

(Source: Documents provided by JICA)

After the construction sub-project began, identification of soft ground and ground improvement work was carried out. Some additional construction works were also completed, including exterior construction work the Philippine side was to handle: installation of fire alarm receivers, emergency broadcasting equipment, and high-voltage power supply to the OPD as well as construction of a connecting corridor between the main building and the OPD. The additional construction costs were funded with surplus funds from the overall Project.

After the disaster, DOH planned to relocate EVMC to higher ground the said department owned. Although the flat area of the higher ground was limited and the facility’s layout had to be devised, the EVMC was reconstructed in accordance with DOH’s plan, with the highest priority given to rapid restoration.

Table 4 Recovered EVMC Equipment at OPD

Department	Procured equipment
Ophthalmology	Green laser, Yag laser, A-scan ultrasound, B-scan ultrasound, slit lamp biomicroscope, applanation tonometer, refraction system, automatic perimeter
Dental	Dental treatment unit, light cure, ultrasonic scaler, cutting bur set, clean air compressor, refrigerated air dryer, after cooler, treatment vacuum motor, orthopantomography, dental imaging system
Internal medicine	Safety cabinet
TB inspection	Safety cabinet
Obstetrics and	Ultrasound machine for obstetrics and gynecology
Paediatric	Ultrasound machine for paediatrics

(Source: Documents provided by JICA)

³⁴ Ibid., p.3-23

The provision of medical equipment to EVMC was not originally planned but was implemented at the DOH's request to enhance the hospital's functions.

<Regional Health Unit (Facility) >

Table 5 Rehabilitated RHU

	Stories	Area (m ²)	Remarks
Marabut RHU	2	679.66	Piloti structure is set on the ground floor

(Source: Documents provided by JICA)

Four RHUs (Marabut, Lawaan, Dulag, and Abuyog) were planned to be rehabilitated, but only one was rebuilt (for reasons, see 3.2.2.1 Project Cost). Of the three excluded facilities, two (Dulag and Abuyog) were rehabilitated by QIPs and one (Lawaan) by the Philippine side.

<Regional Health Unit (Equipment)>

The surplus funds from the entire Project budget allowed for the provision of the following medical equipment not only to the Marabut RHU, which this Project reconstructed, but all four RHUs that were originally planned for reconstruction.

Table 6 Medical equipment Provided to RHU

Department	Equipment	Sub-project site
Laboratory	Centrifuge, hematocrit centrifuge, chemistry analyser, water bath, refrigerator for chemical goods, blood analyser	Marabut Lawaan Dulag Abuyog
TB laboratory	Safety cabinet	
Labor room	Fetal Doppler detector, labor bed	
Delivery room	Delivery table, operating-light stand, autoclave, refrigerator for vaccine	
Recovery room	Recovery bed, nebulizer	
Dental room of out patient	Dental treatment unit, desktop high-pressure autoclave, dental forceps set, light cure, ultrasonic scaler	
Backup facility	Solar power system	
Transportation	Ambulance	

(Source: Documents provided by JICA)

2) Recovery of Economic Activity (short-term economic activity)

(1) Recovery of equipment for electricity rehabilitation (equipment)

The following equipment was provided to the four electrification cooperatives (hereinafter referred to as "EC") as planned.

Table 7 Electricity equipment procured to EC (unit: unit)

Name of EC	Boom truck with bucket and winch	Boom truck with digger and crane	total
LEYECO II/Tacloban	2	2	4
DORELCO/Tolosa	2	2	4
SAMELCO I/Paranas	1	1	2
ESAMELCO/Borongon	2	2	2
Total	7	7	14

(Source; Documents provided by JICA)



Boom truck with bucket and winch

(2) Recovery of construction equipment (equipment) (location: Palo)
 Dump truck (7 units), payloader (2 units), excavator (wheel) (3 units), excavator (crawler) (2 units), motor grader (1 unit), and concrete crusher (2 units) were provided to the DPWH region VIII as planned.



Excavator (crawler)

(3) Recovery of equipment for airport rehabilitation (equipment) (location: Tacloban)

Airport rescue firefighting vehicle (2 units), security equipment, held baggage X-ray inspection system (2 units), cabin baggage X-ray inspection system (1 unit), and walkthrough metal detector (3 units) were provided as planned.



Airport rescue firefighting vehicle

3) Recovery of Livelihood Activity (medium-long-term industry recovery)

(1) Rehabilitation of equipment for NMP (equipment) (location: Tacloban)

Fast rescue boat with Davit, totally enclosed lifeboat with Davit, various safety equipment, engine simulator by full mission,³⁵ and a Global Maritime Distress and Safety System (GMDSS) device were provided. The boat size changed, but that did not affect its use.



Engine simulator by full mission

(2) Rehabilitation of equipment for GMFDC (Equipment) (Location: Guiuan)

Equipment to raise fry, laboratory equipment to check the quality and appropriateness of feed for fry (water quality analyser and marine study equipment), seeds and seedling production equipment and other supporting equipment were provided as planned.



Laboratory equipment

4) Rehabilitation of Disaster Prevention System

The rehabilitation of the facility and provision of equipment were conducted as planned.

Table 8 Rehabilitation of disaster prevention system

Site	Facility	Equipment
Guiuan	Restoration of meteorological radar system, meteorological radar tower building	Meteorological radar data system, meteorological data demonstration system, meteorological data satellite communication system
Virac	Reinforcement in advance of the same damaged part of the Guiuan radar station	

(Source: Documents provided by JICA)



Meteorological radar station

³⁵ INMARSAT Fleet was excluded (was not applicable to the vessel to be used).

5) Reconstruction of Local Government Office

Table 9 Reconstruction of Municipal Halls

Name of LGU	Stories	Area (m ²)	Name of LGU	Stories	Area (m ²)
Marabut	2	832.25	Lawaan	1	840.00
				Total	1,672.25

(Source: Documents provided by JICA)

Some had the opinion that the municipal hall should be relocated and reconstructed to prevent another disaster, but because the municipal hall needed to be located in a place that was easily accessible to residents and because it needed early restoration, these two facilities were chosen³⁶ among the government buildings whose



Marabut municipality hall

main structures had been severely damaged and that were not located in a non-residential area, 40 m interior from the coastal line. The government building (at Marabut) that was vulnerable to storm surge and flooding was reconstructed using the piloti method, and the one that was not at risk of storm surge flooding (at Lawaan) was constructed, elevated to prepare for a flood.³⁷ Because the government building is also expected to be used as an evacuation centre, Japanese structural design standards were combined with Philippine building standards to enhance the building's structural strength and durability. In addition, concrete strength, reinforcing steel, roofing, and wall, floor, and ceiling materials that can withstand wind speeds of 250 km/h were used in accordance with the new Philippine building standards to prevent future typhoon damage.

3.2.2 Project Inputs

3.2.2.1 Project Cost

Table 10 Project Cost (unit: one million yen)

Name of the programme/project	Japanese side		Philippine side	
	Plan	Actual	Plan	Actual
Programme for Rehabilitation and Recovery from Yolanda	4,600	4,214 (91.6%)	707	N.A.
Project for Reconstruction of Municipal Halls	507	502 (99.2%)	71	N.A.
Total	5,107	4,716 (92.3%)	778	N.A.

(Source: Documents provided by JICA)

This Project began as a single project (the Programme for Rehabilitation and Recovery from Yolanda) at the time of planning. However, because the package bidding for the reconstruction of the elementary school, the construction of RHUs and the reconstruction of municipal halls exceeded the estimated price by a large margin, the municipality hall reconstruction project was made a separate project (“Project for Reconstruction of Municipal Halls”), and the number of

³⁶ *The urgent development study on the project on Rehabilitation and Recovery from Typhoon Yolanda in the Philippines, Final Report (I), Volume 2: General Grant aid Project, 2015, p.3-17*

³⁷ *Ibid.*, p. 3-88

RHUs to be reconstructed was reduced from four to one to keep the Project cost within the plan. The reasons for the unsuccessful bidding for the Programme for Rehabilitation and Recovery from Yolanda were the soaring cost of materials and equipment as well as labor due to the higher demand for reconstruction; increased management costs due to the dispersed target sites across 12 cities and municipalities; the small number of companies available to bid for the grant aid project at the regional sites; and the trend in yen depreciation (yen depreciation of 20% from the time of planning to the time of bidding³⁸).³⁹ The Project for Reconstruction of Municipal Halls, which was cut out as a separate project, was approved by the Cabinet in June 2015 (with a ceiling of 507 million yen) and was implemented.

The Philippine side's shared budget was 778 million yen at the time of the plan. Although the actual amount expended to this Project was not obtained from the DOF, which is the department responsible for budget management, the Project's implementation was not affected due to the lack of budgetary support from the Philippine side⁴⁰.

As a result, the project cost fell within the plan.

3.2.2.2 Project Period

Table 11 Project Period

Name of the programme/project	Plan	Actual	
		Exchange of GA	From detailed design study to completion of construction
Programme for Rehabilitation and Recovery from Yolanda	May 2014 - April 2017 (36months)	May 2014	May 2014 - September 2017 (41months) (114% of plan)
Project for Reconstruction of Municipal Halls	July 2015 - October 2016 (16months)	December 2015	December 2015 - May 2018 (30months) (188% of plan)
Total period	May 2014 - April 2017 (36months)		May 2014 - May 2018 (49months) (136% of plan)

(Source: documents provided by JICA)

The main reasons for the extension of the project period were the unsuccessful bidding for the Programme for Rehabilitation and Recovery from Yolanda (see 3.2.2.1 Project Cost for details) and the additional work implemented at the EVMC (see 3.2.1 Outputs). In addition, the exterior construction required the relocation of several street vendors, which took time to address and delayed the construction.

The project period for the Project for Reconstruction of Municipal Halls was also extended due to unsuccessful bids. The project cost was not within the estimated ceiling amount due to the increase in administrative costs caused by the two project sites, unforeseen circumstances in the typhoon-prone area, and foreign-exchange-risk expenses. In addition to poor bidding, delays in procurement of casting equipment and workers due to high construction demand also affected the

³⁸ It has depreciated from Jpy2.39/Php to Jpy 2.87/Php.

³⁹ From documents provided by JICA.

⁴⁰ Interview with consultant contracted to this Project.

project’s duration. Cabinet approval was granted in June 2015 and the EN was signed in October 2015, but bidding in April 2016 was unsuccessful, and only in September 2016 was the bidding awarded; therefore, construction finally began in November of the same year.

Because of the above, the project period exceeded the plan.

As above, the project period for the programme and project exceeded the plan (136% of the plan), but the project cost was within it (92.3% of the plan). Therefore, efficiency of the Project is high.

3.3 Effectiveness and Impacts⁴¹ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

In the Programme for Rehabilitation and Recovery from Yolanda, the operational indicators set at the time of the ex-ante evaluation were for outputs and not for project outcome. To assess the project’s effectiveness in this ex-post evaluation, the evaluator set alternative indicators based on the narrative outcome as a project objective (i.e., “to restore the public services and economic activities, strengthen public facilities, and restore the weather forecasting and warning system”), and the project’s effectiveness was evaluated. Because no target value was set, the consultant contracted for this Project checked some indicators that needed judgment regarding the degree of achievement, and those whose achievement levels were appropriate were judged “achieved.” However, the Project for Reconstruction of Municipal Halls was assessed based on the achievement level of the indicators set in the ex-ante evaluation and the supplementary indicators added by the evaluator.

1) Recovery of Basic Human Needs

(1) Reconstruction of Disaster-Resilient Elementary School

Table 12 Operation Status of Elementary Schools During Typhoon Attack⁴²

Super typhoons and their year Schools	Number of days to resume classes after super typhoon hits the area (unit: days)					Schools used as evacuation centres (○ : used X : not used)				
	2013 Yolanda	2014 Rubby	2016 Lawin	2020 Rolly	2021 Odette	2013 Yolanda	2014 Rubby	2016 Lawin	2020 Rolly	2021 Odette
Dulag	90	30	30	0	0	×	○	○	○	○
Giporlos	190	30	30	0	0	×	○	○	○	○
Osmeña	120	45	45	0	0	×	○	○	○	○
San Roque	90	40	40	0	0	×	○	○	○	○
Santo Niño	110	22	22	0	0	×	○	○	○	○

(Source: Answers from the questionnaire)

⁴¹ When providing the sub-rating, Effectiveness and Impacts are to be considered together.

⁴² Sub-projects were conducted at seven sites, but the judgment was done based on information about the condition of five sites from where questionnaires were collected.

Since 2017, when the reconstruction of elementary schools was completed, no school has been unable to resume classes due to damage to school buildings, even during super typhoons.⁴³ Each school is also used as an evacuation centre. Based on the above, it can be judged that public services in the education sector have recovered and educational facilities are more resilient than before.

(2) Reconstruction of disaster-resilient regional medical facilities (facility, equipment)

< Eastern Visayas Medical Centre >

Table 13 Operation Status of Facility and Equipment at EVMC at OPD

Indicator	Department	2018	2019	2020	2021
Utilization status of equipment (/year)	Ophthalmology equipment	Every day	Every day	Every day	Every day
	Dental equipment	Every day	Every day	Every day	Every day
	Internal medicine equipment	Every day	Every day	Every day	Every day
	TB inspection equipment	Every day	Every day	Every day	Every day
	Obstetrics equipment	Every day	Every day	Every day	Every day
	Pediatric equipment	Every day	Every day	Every day	Every day
The number of days EVMC could not provide medical service due to damage from the typhoon (/year)		0	0	0	0
If the EVMC was used as an evacuation centre (/year)		×	×	×	×

(Source: Answers from questionnaire and interview with EVMC related stakeholders and patients)

The EVMC remained open and was able to provide services all days, which were not hindered by damage caused by the typhoon. The equipment provided is also being used daily. EVMC has not been used as an evacuation centre because it is located far from residential areas and is therefore inconvenient for the residents.

Based on the above, it is judged that public services in terms of the medical sector have been restored and medical facilities are more resilient than before.

< Regional Health Unit >

Table 14 Operation status of RHU (at Marbut RHU and Dulag RHU)⁴⁴

	2018	2019	2020	2021
Marbut RHU				
The number of days Marabut RHU could not provide medical service due to the damage from the typhoon(/year)	0	0	0	0
Dulag RHU				
Frequency of utilization of testing equipment(/year)	Every day	Every day	Every day	Every day
Number of deliveries using the equipment provided (/month)	8 times	8 times	8 times	8 times
Times the ambulance is used (/month)	5-8 times	5-8 times	15-20 times	15-20 times
Number of days medical service cannot be offered due to outage (/year)	0	0	0	0

(Source: Answers from the questionnaire, interview with RHU staff and residents)

⁴³ A typhoon with speeds of 220 km/h or more is called a “super typhoon.” (Refer to footnote 15)

⁴⁴ Medical equipment was provided to four RHUs, but the questionnaire was collected only from Dulag RHU. The information about Marabut RHU was collected when the local consultant visited the site, and also from the report provided by NEDA.

The Marabut RHU was able to provide medical services every day, which were not hindered due to damage from the typhoon. Information about the status of equipment utilization could not be collected. Dulag RHU was constructed according to the QIPs scheme, and medical services were provided every day despite the typhoon. The status of utilization of the equipment provided by the Project is adequate according to the consultant contracted for this Project, as mentioned above. The medical equipment is fully utilized in a condition in which medical services are always available through reconstruction of RHUs.

Based on the above, it is judged that in general, public services in terms of the medical sector have been restored and medical facilities are more resilient than before.

2) Recovery of Economic Activity (Short-Term Economic Activity)

(1) Rehabilitation of electricity-recovery equipment

Table 15 Operation Status of Electricity Recovery Equipment

EC	Type of equipment*	Number of days of the equipment on operation (/year)					Hours utilized for the maintenance work(/time)				
		2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
LEYECO II	(1)	314	314	314	314	314	8	8	8	8	8
	(2)	314	314	314	314	314	8	8	8	8	8
DORELCO	(1)	240	240	240	When necessary		8	8	8	When necessary	
	(2)	240	240	240	240	240	8	8	8	8	8
SAMELCO	(1)	240	240	240	240	240	8	8	8	8	8
	(2)	240	240	240	240	240	8	8	8	8	8
ESAMELCO	(1)	24	40	60	115	35	8	8	8	8	8
	(2)	24	45	65	120	35	8	8	8	8	8

(Source: Answers from the questionnaire)

* (1): Boom Truck with Bucket and Winch; (2): Boom Truck with Digger and Crane

LEYECO II, DORELCO, and SAMELCO are using the equipment provided for maintenance and inspections for 8 hours almost every day. DORELCO did not have a working plan for daily inspections during 2020-2021 due to the COVID-19 infection situation. However, it had a working plan to respond to the needs and is working accordingly based on this plan. ESAMELCO only uses the equipment JICA provided on special occasions and otherwise uses its existing equipment. Therefore, the number of utilization days is limited.⁴⁵

The basic utilization time is 8 hours/day for normal inspection work, but in case of emergencies such as disaster response, LEYECO works an average of 10-11 hours (maximum 16 hours); DORELCO also works longer hours than usual.⁴⁶

Except for ESAMELCO, the equipment provided is used every day, and public services related to electricity supply are considered to have been restored.

⁴⁵ Interview with ESAMELCO.

⁴⁶ Interview with LEYECO II and DORELCO.

(2) Recovery of construction equipment

Table 16 Operation Status of Construction Equipment

(Accumulated working days/year)

	Number of units	2016	2017	2018	2019	2020	2021
Dump Truck	7	169	684	664	452	536	567
Pay Loader	2	154	155	147	98	147	87
Excavator (Wheel)	3	144	341	383	159	355	274
Excavator (Crawler)	2	216	297	182	252	80	85
Motor Grader	1	20	71	42	47	52	75
Concrete Crusher	2	NA	NA	NA	NA	NA	NA

(Source: Answers from questionnaire)

Although differences exist in the operation rate according to the type of machinery, with the exception of 2016, all equipment was utilized monthly 20% to 60% of the time⁴⁷ for routine road maintenance and disaster recovery work. According to the consultant contracted for this Project, these operation rates are adequate.

The equipment is usually located at the DPWH Region VIII office. However, it is used at various locations within the Region VIII area in accordance with the working plan. In the event of a typhoon, construction equipment is moved to the area that is predicted to be affected based on the typhoon information, before it hits the area, and necessary restoration activities are carried out promptly after the typhoon passes through. At the time of the field survey of this ex-post evaluation study by the local consultant (late April 2022), Typhoon Agaton was hitting Leyte Island, and the equipment was moved in advance to the assumed disaster area, Abuyog, and restoration work was conducted.⁴⁸

Based on the above, it is concluded that public services in road maintenance and management have been restored.

(3) Rehabilitation of airport equipment

Table 17 Operation status of airport equipment

	2016	2017	2018	2019	2020	2021
Airport Rescue Firefighting Vehicle (days/year)	305	365	365	365	365	365
Held Baggage X-ray Inspection System (days/year)	305	365	365	365	365	365
Cabin Baggage X-ray Inspection System (days/year)	305	365	365	365	365	365
Walkthrough Metal Detector (days/year)	305	365	365	365	365	365
Frequency of Training of Rescue Firefighting Vehicle (times/year)	2	2	2	2	2	2

(Source: Answers from questionnaire)

As shown in Table 17, the provided equipment is used daily,⁴⁹ and the trainings of Rescue Firefighting Vehicles are conducted semi-annually. No major fires requiring the dispatch of a Rescue

⁴⁷ The number of operating days was divided by the number of vehicles in 12 months to calculate the number of operating days per month per vehicle. We assumed 20 operating days per month to calculate the utilization rate. 2016 was excluded from the calculation because the vehicles were not available for 12 months due to vehicle registration procedures, etc.

⁴⁸ Interview with DPWH Region VIII.

⁴⁹ According to interviews with airport officials, the rescue firefighting vehicles are in operation daily to be ready in case of crashes during airplane takeoffs and landings.

Firefighting Vehicle have occurred.⁵⁰ Based on the above, public services related to air transportation and logistics are considered restored.

3) Recovery of Livelihood Activity (Mid-Long-Term Industry Development)

(1) Rehabilitation of NMP equipment

Table 18 Type and number of the seafarer training courses utilizing the NMP rehabilitation equipment

	2017	2018	2019	2020	2021
Number of training courses provided at NMP	15	15	15	15	15
Ratio of the training courses that have utilized the training equipment for the entire courses (%)	38	38	36	36	33
The number of trainees who were qualified certificate requested by STCW* convention (persons)	2,275	2,154	2,435	1,965	2,611
The number of trainees who have participated in training courses that utilized the training equipment procured (persons)	2,490	2,426	2,947	2,016	2,693
Total number of trainees (persons)***	6,552	6,384	8,186	5,600	8,160
Number of Philippines seafarers registered (persons)**	213,806	196,278	183,208	NA	NA
Ratio of NMP trainees among all the registered Philippines seafarers (%) ***	3.1%	3.3%	4.5%	NA	NA

(Source : Answers from questionnaire)

*STCW (Standards of Training, Certification and Watchkeeping for Seafarers convention): Convention of criteria regarding the seafarer training, qualified certificate and on duty⁵¹

**Maritime Industry Authority "Statistical Report 2016-2019"

***Calculated by evaluator based on the data collected

The NMP conducts training courses that are accredited by the Maritime Industry Authority (hereinafter referred to as "MARINA") as being in accordance with the STCW Convention. Among the more than 100 seafarer training schools in the Philippines⁵², the number of seafarers trained by the NMP accounts for 3-4% of all registered Philippines seafarers, and the NMP plays a major role in seafarer education in the Philippines by accepting trainees for courses that are only available at the NMP.

Based on the above, it is concluded that economic activity related to seafarers' activities on ocean-going vessels has recovered.

(2) Rehabilitation of GMFDC equipment

Table 19 Species of the fry and marine product raised by the equipment provided

Year	Number of species	Species of the fry and marine product for aquaculture
2013	10	Milkfish, Blue swimming crab, sea cucumber, ass's ear abalone, giant clam, oyster, grouper, snapper, abalone, scallop
2022	13	Milkfish, blue swimming crab, sea cucumber, ass's ear abalone, giant clam, oyster, grouper, snapper, abalone, mangrove crab, freshwater prawn, tilapia, seaweed

(Source: Answers from questionnaire)

⁵⁰ Interview with Tacloban airport officials.

⁵¹ <https://www.mlit.go.jp/sogoseisaku/kotsu/bunya/kaiji/stcw.html> (accessed on August 9, 2022)

⁵² From MARINA's "Statistical Report 2016-2019"

All the eggs, hatchlings, fry, and marine products for aquaculture raised at GMFDC were washed away by Typhoon Yolanda. However, parent fish were collected again, eggs were hatched, and juveniles and fry have been raised. New varieties of fry have been bred in addition to those raised before the disaster. Although specific figures on the number of types of feeds produced by using the equipment provided were not available, at least the feeds that were previously inspected are still being inspected.⁵³

Based on the above, it is concluded that the economy in the aquaculture sector of the fishery industry has recovered

4) Rehabilitation of Disaster Prevention System

Table 20 Operation status of meteorological radar station

	Site	2016	2017	2018	2019	2020	2021
Number of hours to observe weather condition(hours/day)	Guiuan	24	24	24	24	24	24
	Virac	24	24	24	24	24	24
Frequency to report to PAGASA headquarter when the typhoon outbreak(times/day)	Guiuan	24	2	24	24	24	24
	Virac	24	24	24	24	24	24
Number of days that radar station cannot report the weather information during the storm(days)	Guiuan	0	0	0	0	0	0
	Virac	0	0	0	0	0	N.A.

(Source: Answer from questionnaire)

Because radar with Doppler function has been installed through this Project, the rainfall and typhoon movements can be monitored at all times, which allows PAGASA headquarters to transmit typhoon information and typhoon warnings quickly. Prior to this Project, the information and warning were transmitted every 6 hours, so observation capability has been improved.

Based on the above, it is judged that the restoration of the weather forecasting system has been accomplished.

5) Reconstruction of Municipal Halls

The expected timing by which to judge the achievement of the target value was 2019 at the time of ex-ante evaluation (3 years after the project completion), but the project completion was delayed in 2018. Therefore it was judged based on the condition in 2021.

⁵³ Interview with GMFDC official.

Table 21 Operation status of Municipal Halls

Indicator	Baseline value (2015)	Target value (2019)	Actual value			
			2018 Year of completion	2019 1 year after completion	2020 2 years after completion	2021 3 years after completion
Number of days that the municipality could not provide public service because of the natural disaster* (days/year)	N.A.	0	N.A.	*M:0 *L:0	M:0 L:0	M:0 L:0
Ratio of municipality hall area where municipality can continue to provide public service during the recovery from natural disaster (%) **	0	1,672 m ²	0	M:100% ***L:100%	M:100% L:100%	M:100% L:100%
The number of evacuees that municipality hall can receive during a storm (persons)	0	450	0	M:100 L:60-100	M:100 L:60-100	M:100 L:60-100
(Additional alternative indicator) Number of times used as an evacuation centre(times)			M:0 L:0	M:1 L:1	M:0 L:0	M:1 L:1

(Source: Answers from questionnaire)

* M: Marabut town; L: Lawaan town

**The target value in the preliminary evaluation form was set in terms of area (square metres), but the question was changed to a ratio (%) to confirm the answer because it was considered difficult to obtain a response in square metres. The total area rehabilitated by the project was 1,752.2 m², and it was judged to have been achieved if it exceeded 95% (= 1,672/1,752.2).

*** In Lawaan, approximately 40% of the city hall is used for evacuation-related responses.

In Marabut municipality, before Typhoon Yolanda, it took 3-4 weeks to normalize operations after the typhoon hit, but there has been no interruption in operations since the completion of the Project for Reconstruction of Municipal Halls. The same is true for Lawaan municipality.⁵⁴ The indicator related to the municipality hall space used to continue operations after the typhoon hit has also met the target value. As for the not meeting the target number of evacuees, according to the Municipality Disaster Risk Reduction Management Plan (MDRRMP) of both LGUs, at the time of the disaster, evacuation centres set up in the barangay (e.g., schools, churches, and day care centres) are to be used first, and then the municipality hall is to be used when the centres at barangay are full. That is the reason for not meeting the target number of evacuees.⁵⁵

Although the target number of evacuees was not achieved, as mentioned above, the reason is appropriate, and other indicators have been achieved. Based on the above, it is judged that the goals of this Project have been achieved.

3.3.1.2 Qualitative Effects (Other Effects)

The following qualitative effects on the operation of each facility and equipment were identified.⁵⁶

⁵⁴ Answers from questionnaire and interview with both LGUs.

⁵⁵ Interview with LGU.

⁵⁶ Qualitative effects were not set as indicators at the time of planning, confirmed effects are described.

1) Recovery of Basic Human Needs

(1) Services provided at elementary schools, EVMC and RHUs during and after disasters

During the typhoon, no damage to the elementary schools, EVMC, and RHUs occurred that prevented them from providing their original services, and they have continued to provide classes and medical services as usual since the disaster. The EVMC and RHUs are also utilizing the equipment provided, so the quality of medical services provided has improved.⁵⁷

(2) Functions as a Disaster Prevention Centre

The elementary schools restored under the Project are being used as evacuation centres, providing residents with safe and robust places to shelter during a disaster. When used as evacuation centres, food, water, and hygiene items prepared in advance by each municipality are distributed to the evacuees.⁵⁸

2) Recovery of Economic Activity (Shor-Term Economic Activity)

(1) Recovery of Electricity Recovery Equipment

Before the provision of the boom truck with bucket and winch, they used ladders to inspect and repair utility poles. After the provision of the equipment, they can work safely.⁵⁹

3) Recovery of Livelihood Activity (Mid- to Long-Term Industry Development)

(1) Recovery of NMP Equipment

The seafarer program has improved with the installation of engine simulators and GMDSS simulators, which allow the training to be similar to actual working practice. While there are about 100 private and public seafarer training schools in the Philippines, the NMP is the only seafarer training school in the Philippines that uses practical equipment, and trainees appreciated that the training using the same model of equipment as in practice is useful and practical, making it easier for them to acquire skills.⁶⁰

(2) Recovery of GMFDC equipment

The quality of feed for fry raising has been improved by the equipment provided, which enables inspection of the quality of feed. Because of the improved quality of feed and the use of seedling production equipment to check the raising conditions, fry raised in the GMFDC have a higher survival rate and are larger in size. The hatching rate of fertilized eggs is also high.⁶¹

⁵⁷ Interview with EVMC and patients.

⁵⁸ Interview with LGUs and residents.

⁵⁹ Interview with ECs.

⁶⁰ Answers from questionnaire and interviews with NMP and its graduates.

⁶¹ Interview with GMFDC.

4) Rehabilitation of Disaster Prevention System

Since the previous meteorological data remain the equipment damaged by Typhoon Yolanda, the Project provided equipment with the same performance as the damaged equipment. In addition, radar observation using the Doppler function began, and the radome protecting the radar was strengthened to its strongest at the time of restoration.⁶² Consequently, the accurate weather information during normal times and typhoon information and warnings when it comes could be disseminated in a timely manner.

5) Reconstruction of Local Government Office

The achievement level of qualitative effects set at the time of planning is as follows:

Table 22 Status of achievement of qualitative effects of restoration of administrative office buildings

Effects set at the time of planning	Situation at the time of ex post evaluation
1. Ensure the continuity of administrative services in municipality hall during and immediately after a disaster	In both Marabut and Lawaan, normal administrative services are continuously provided because minimal damage occurs to the Municipal Halls even in the event of a disaster.
2. Improve the safety of local residents by serving as an emergency evacuation facility during a disaster, and accelerate regional recovery and reconstruction activities by serving as a post-disaster command centre	Both Marabut and Lawaan take action prior and after the outbreak of a disaster, according to the MDRRMP. Before the disaster, the municipality procured water, food, sanitary supplies, and other items for distribution (in Lawaan, cash is also provided). Thus, the evacuation centre in the barangay and the municipality hall's use for that purpose was proper. They also pre-position equipment for road maintenance after the disaster for smooth restoration. In addition, Municipal Halls are equipped with entrance ramps, nursing rooms, and children's play areas so that women, children, and disabled people are taken care of well. After a disaster, a rapid damage assessment and needs analysis are conducted. Information on damage (number of evacuees, number of collapsed houses, and damage to infrastructure, e.g., roads, telephone lines, and electricity supply), impact on industry (agriculture, fishing, etc.), and number of victims are collected from the barangays, followed by needs analysis and prioritization of recovery works. Restoration response is also conducted in coordination with the DepEd, DOH, military, police, DPWH and others. Municipal Halls serve as the bases for these activities.
3. Improve the durability and maintenance capacity of Municipal Halls	Durability of Municipal Halls is confirmed by quantitative effects ([5] Restoration of Municipal Halls), and maintenance capacity is confirmed by sustainability.
4. Improve administrative service functions	Status of administrative service functions is confirmed in 1 and 2
5. Contribute to the stability of the local residents' lives and promote the local industry	Confirmed by qualitative effects of impact (Recovery of People's Daily Life and Regional Economy and Promotion of Industries)
6. Lead to the stability and development of the entire region	Confirmed by qualitative effects of impact (Building Safer Cities, Recovery of People's Daily Life, and Recovery of Regional Economy and Promotion of Industries)

(Source: Elaborated by evaluator from the results of interviews)

3.3.2 Impacts

3.3.2.1 Intended Impacts

The impact of both the programme and project is “to contribute to the early recovery and reconstruction of the damaged areas” (Programme for Rehabilitation and Recovery from Yolanda) and “to contribute to overcome vulnerabilities and stabilize the livelihood and production

⁶² A radome is made-to-order. Considering the case of Typhoon Yolanda, the materials and structure were reinforced to reconstruct the new radome.

infrastructure” (Project for Reconstruction of Municipal Halls). To assess the Project has contributed to the region from the perspective of BBB, the quantitative and qualitative effects of each sub-project and project were confirmed to align with the basic policy of the rehabilitation and reconstruction: (1) Building Safer Cities, (2) Recovery of People’s Daily Life, and (3) Recovery of Regional Economy and Promotion of Industries. The relationship between the three perspectives and each sub-project and project is shown in Figure 3.

1) Recovery of Basic Human Needs

(1) Recovery of disaster resilient elementary school

The number of students using the classrooms at the reconstructed elementary schools is shown below (figures are for the pre-COVID 19 school year, as face-to-face classes had not resumed at the time when the study was conducted). In this



Use of piloti (San Roque)

sub-project, classrooms were reconstructed based on the assumption of 40 students per classroom in accordance with the Department of Education's standards, but the actual number of students using the classrooms was lower than that. The reason for the lower rate at Dulag Elementary School is that one of the classrooms is used for the reading room. The number of students who were prevented from losing the learning opportunity at the elementary school, excluding Dulag elementary school, is 1,000-1,100, which is 74% of the original plan.

Table 23 Number of students who use the classroom of reconstructed elementary school

(Unit: persons)

	San Roque/ Tanauan	Santo Niño/ Tanauan	Tolosa/ Tolosa	Dulag/ Dulag	MacArthur/ MacArthur	Giporlos/ Giporlos	Total number of users
Planned number of users	320	320	240	240	240	320	1,680
Actual number of users							
2017-18	355	NA	182	114	164	327	1,142
2018-19	302	NA	202	136	157	350	1,147
2019-20	264	225	175	136	168	331	1,299
Average ratio of utilization	96%	70%	78%	54%	68%	105%	

(Source: Provided by NEDA)

The schools are also used as evacuation centres. Although no information on the number of evacuated residents was available, it is believed that the number of residents who had suffered from disaster in the past due to not evacuating was reduced owing to the establishment of robust evacuation centres in the barangays. Many residents are happy⁶³ there is now an elementary school in their barangay that can be used as a robust shelter. With a safe place to evacuate nearby, residents’ behavior has changed to evacuate earlier, spontaneously, and calmer than they did

⁶³ Interview with residents.

before.⁶⁴ At the time of ex-post evaluation, hallway of school is utilized as a function hall during meetings and other school activities since it was designed and constructed wider than usual school so that it can be used as an evacuation center. At the elementary school with a piloti structure, the area is effectively used for teachers' study sessions during normal times and as a vaccination centre during the COVID-19 disaster.

⁶⁴ Interview with residents and LGU officials.

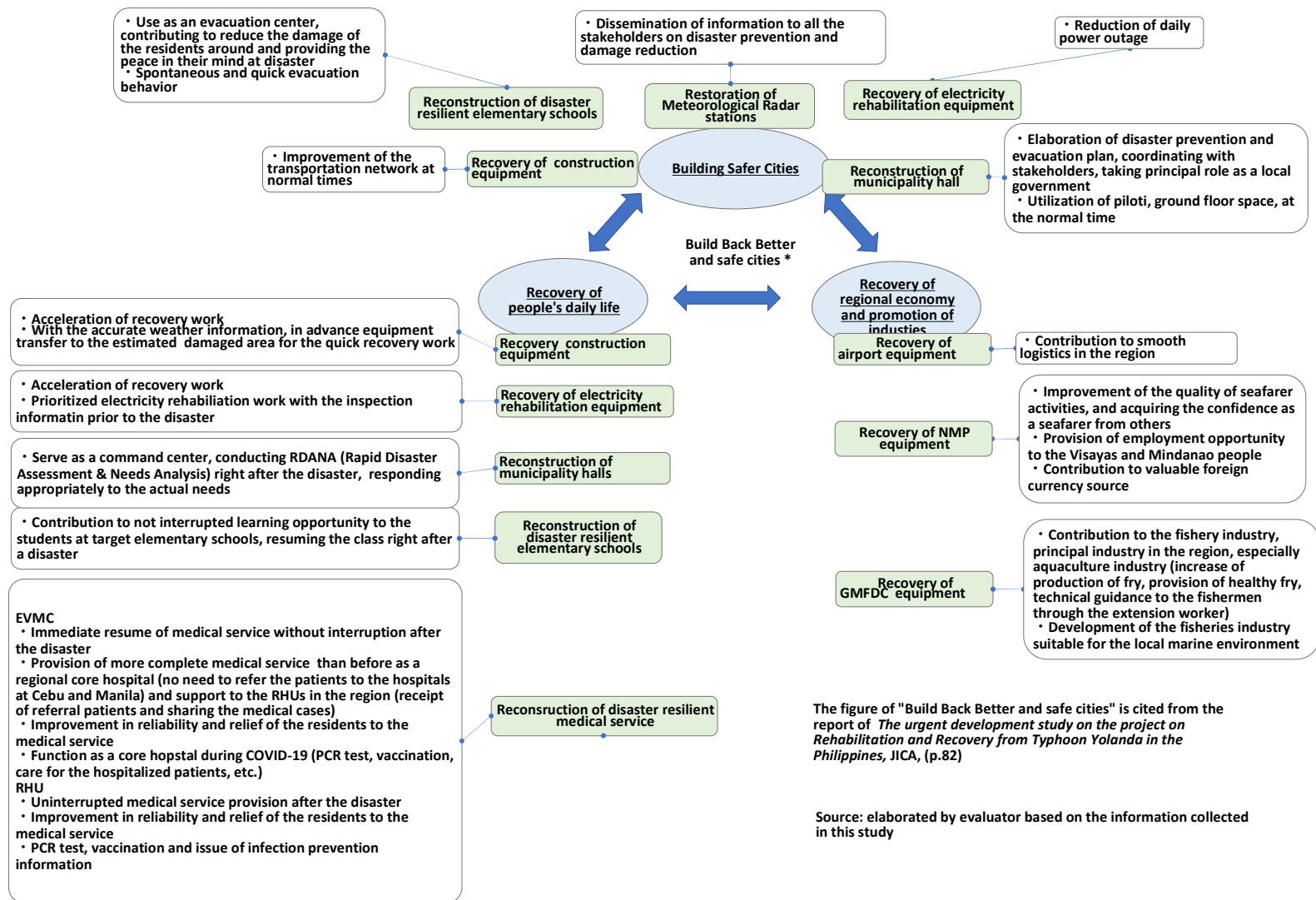


Figure 3 Contribution of each sub-project to realize the concept of BBB

(2) Reconstruction of Disaster Resilient Medical Service

<Eastern Visayas Medical Centre>

Table 24 Number of outpatients at EVMC OPD (persons/year)

Department	2019	2020	2021
Ophthalmology	10,159	3,341	3,796
Dental	9,445	1,712	1,713
Internal medicine	19,767	6,392	4,892
TB inspection	4,489	2,187	2,612
Obstetrics and gynecology	12,694	2,711	1,164
Paediatric	19,261	3,734	2,965

(Source: Answers from questionnaire)

Concern was expressed that the relocation of EVMC from a convenient location in the city to higher ground might affect the number of outpatients upon completion of its construction, but it is now being used by more patients than before the relocation had occurred (the decrease in patients in 2020-2021 is attributed to COVID-19).⁶⁵ With more equipment and more departments available, patients who were previously referred to hospitals in Cebu or Manila can now be observed at EVMC. In addition, during the COVID-19 disaster, medical practice had continued, with partitions in place to avoid crowd and to provide treatment. EVMC is considered to be fulfilling its function as a regional hub hospital.

<Regional Health Unit (at Dulag)>

The number of medical personnel has increased with better equipment, and the facilities restored by the Project and QIPs have become more spacious; it was said that people can receive medical services with peace of mind. A variety of medical services is available at RHU, which has increased the sense of relief and satisfaction of the residents nearby.⁶⁶ In addition, during the COVID-19 outbreak, the Project contributed to the local people by providing PCR tests and vaccinations, as well as disseminating information on infection prevention.

2) Recovery of Economic Activity (Short-Term Economic Activity)

(1) Recovery of electricity recovery equipment

The provision of equipment has increased the speed of operations, allowing quick inspections at normal time and restoration after a disaster.⁶⁷ The quick reaction to power outages and their shortened duration have also been highly evaluated by residents.⁶⁸

Based on information regarding typhoons issued by the Disaster Risk Reduction Committee (hereinafter referred to as “DRRC”), each EC secures fuel, identifies areas likely to be affected, prioritizes restoration activities, and plans the deployment of engineers during restoration before a typhoon hits, and promptly conducted restoration activities after a typhoon passed.

⁶⁵ Interview with doctor at EVMC.

⁶⁶ Interview with patients.

⁶⁷ Answers to questionnaire to EC and interview with them.

⁶⁸ Interview with residents at Tacloban and Tolosa.

The provided electricity recovery equipment is used across the entire Region VIII, beyond the responsible area of each EC, and is lent out to other regions where an EC does not have enough recovery equipment,⁶⁹ through the coordination of NEA. The effects of the equipment provision spread to other regions, too.

(2) Recovery of Construction Equipment

Operations have improved with the equipment provided, which has enabled work to occur faster than it did before.⁷⁰ DPWH’s Regional Office VIII identifies areas that are likely to be affected based on information regarding typhoons, transfers equipment to these areas in advance, and quickly conducts restoration activities after the typhoon passes.⁷¹

3) Recovery of Livelihood Activity (Mid-Long Term Industry Development)

(1) Recovery of NMP equipment

Table 25 Impact caused by recovery of NMP equipment

	2017	2018	2019	2020	2021
Ratio of the trainees who are from the Visayas and Mindanao regions (%)	74	98	97	91	96
Ratio of graduates who have obtained employment on ocean-going vessels(%)	71	91	87	99	98
Overseas remittance amount by seafarer (million dollars)	5,870	6,139	6,539	N.A.	N.A.
Ratio of remittance by seafarers among entire overseas remittance amount (%)	21	22	22	N.A.	N.A.

(Source : Answers from questionnaire, MARINA “Statistical Report 2016-2019”)

Most of the trainees are working on ocean-going vessels, and the NMP plays a role as a mid-career training institute for seafarers. The experience of training using equipment similar to that used in actual work has had a positive effect in practice, such as the trainees gaining the trust of co-workers and being given opportunities to engage in various types of work. Positive effects was observed in practical work.⁷² Most of the trainees are from the Visayas and Mindanao regions, which means NMP contributes to the creation of jobs in the region. Remittances from seafarers account for approximately 20% of the Philippines’ overseas remittances.⁷³ Because overseas remittances are an important source of foreign currency for the Philippines, the strengthening of the training school and the enhancement of seafarers’ skills are contributing greatly to the economic development of the country.

⁶⁹ It is called “Task Force Kapatid”. It has been lent to Bohol Island (Visayas) when Odette came (2021) and to Tuguegarao (northern Luzon) when Lawin hit (2018).

⁷⁰ Interview with DPWH Region VIII officials.

⁷¹ During the field survey (late April 2022), Typhoon Agaton hit region VIII, so the equipment had already been moved from Palo to Abuyog and others.

⁷² Interview with trainees.

⁷³ MARINA “Statistical Report 2016-2019”, p. 58

(2) Recovery of GMFDC Equipment

Table 26 Provision of fry at GMFDC

(unit: piece)

	2016-17	2018	2019	2020	2021
Milkfish		407,000	758,000	950,000	1,286,000
Sea cucumber	Fry was raised for stock enhancement, so it was not provided to others	24,290	49,819	36,605	29,986
Abalone		21,470	28,000	40,000	35,200
Scallop		57,968	59,884	143,500	94,900
Seaweed		825	154	207	415

(Source : Answers from questionnaire)

In the Philippines, the development of aquaculture is a fishery sector policy enacted due to declining marine resources and other issues. The GMFDC has been collecting parent fish that were spilled away due to the disaster and raising fry with the equipment provided. Now, the number of fries has been increasing annually. These fries are not for sale to the public, but they are provided to satellite stations of BFAR in Region VIII. Among them, some are provided free of charge to fishermen and fishermen's associations who apply for its provision through the LGUs' Fisheries Division. However, it is difficult to receive a particular fixed amount of fries on a regular basis from GMFDC through the satellite stations because the application process is complicated and time consuming. Consequently, fries are generally purchased from private companies for a fee.

The technical guidance for fishermen in Leyte and Samar is responsible for BFAR, Region VIII, and in Eastern Samar, it is responsible for GMFDC. There is a technical exchange between BFAR Region VIII and GMFDC, and research results from GMFDC are shared with BFAR Region VIII. Considering this mechanism, the effects of this Project could easily spread to regions other than Eastern Samar through BFAR Region VIII.

Although the supply of seaweed has not been increasing at the time of ex-post evaluation, BFAR focuses on increasing seaweed production because it can be grown at a low cost, its sales price is high, it is environmentally friendly, and men and women can easily handle it.⁷⁴

GMFDC's role is to develop well-grown and healthy fry rather than to produce commercial fry. From this point of view, cooperation with GMFDC contributes to the development of the fishery industry suitable for the local marine environment and the revitalization of the local economy.

4) Reconstructing the Disaster Prevention System

At the time of the ex-post evaluation, LGUs, NMP, DPWH, EC, CAAP, and residents assessed the contents and timing of weather information and warnings from PAGASA as appropriate. This information is transmitted based on data transferred from radar stations. The assessors stated that the contents are more accurate and detailed (e.g., rainfall and wind speed) than before, and

⁷⁴ Interview with a BFAR Region VIII staff member, who said that BFAR Region VIII has been teaching the women's cooperative how to farm and it intends to increase production in the future.

residents are taking appropriate evacuation actions in response to TV and radio weather information and short-message warnings. In addition, LGUs issue mandatory evacuation orders to the residents in coastal areas when a Level 4 warning is transmitted, and they take proper action accordingly, receiving detailed local weather information from the PAGASA regional office and the Guiuan Meteorological Station.⁷⁵

Risk reduction in advance is important so that the disaster's damage might be minimized. In this regard, it is significant that weather information, typhoon information, and typhoon warnings are now issued accurately and timely.

5) Reconstructing the Municipal Halls

Utilizing hazard maps, both municipalities prepare MDRRMPs, including evacuation plans. Based on this, the Municipality Disaster Risk Reduction Management Committee (hereinafter referred to as "MDRRC") discusses disaster countermeasures, issues evacuation orders, and prepares other issues.⁷⁶

When the MDRRMP is implemented, not only do municipalities provide supplies and shelters but also various parties, such as barangay captains (mobilization of local residents and outreach), volunteer groups (relief efforts), DPWH and municipality engineering department (road maintenance after the disaster), and the Department of Social Welfare and Development/Town Social Welfare and Development Department (relief efforts), are responsible for their own role. In this manner, the efficient responsive system is in place.

The piloti area is used for teachers' study sessions as well as for various events and gatherings residents attend during normal times. It was also used as a vaccination venue during the COVID-19 disaster.

6) Synergies with Other Projects

The preparatory study for this Project was conducted as a part of an urgent development study on the Project of rehabilitation and recovery from Typhoon Yolanda, together with (1) Recovery and Reconstruction Planning and (2) QIPs. The following synergistic effects were observed between this Project and (1) and (2).

(1) Synergistic effects with the QIPs project (health and fishery sectors)

<Health sector >

⁷⁵ Weather information is obtained from the regions, but the central PAGASA issues warnings with uniform standards throughout the country (hearing with consultants).

⁷⁶ The MDRRMP is attempting to be prepared based on the Barangay Disaster Risk Reduction Management Plan (BDRRMP). In the Marabut town, 20 out of 24 barangays have already prepared BDRRMPs. In Lawaan town, 3 out of 16 barangays have already prepared BDRRMPs on a trial basis.

Collaboration between Eastern Visayas Medical Centre and Regional Health Unit

EVMC receives many referral patients from hospitals and RHUs throughout Region VIII, including the Dulag RHU (QIP19) and Abuyog RHU (QIP18), which were restored under the QIPs. One Dulag RHU user said, “I always gave birth at RHU. However, when I had a premature delivery, the RHU could not handle the case. I was transported to EVMC, and I was able to deliver the baby safely.” The Lawaan RHU also routinely sends patients to EVMC, and they greatly appreciated EVMC’s full medical services, adequate medical staff allocation, and patient-friendly atmosphere.

Coordination between Facilities and Equipment at Regional Health Unit

In the Dulag RHU, QIPs restored the facilities and the Project provided the medical equipment. Some participants expressed their satisfaction with being able to receive qualified medical services with peace of mind that facility restoration and medical equipment were in place.⁷⁷

<Fishery sector >

At the time of the QIPs implementation, collaboration between the QIPs and this Project was difficult because GMFDC was still trying to raise fingerlings. However, at the time of the post-evaluation, eggs and fingerlings that hatched at GMFDC were sent to satellite stations in Region VIII, where they were raised into fries and provided to fishermen in the region via the LGUs. The fries are provided to fishermen in Basay and Tanauan who continue to farm milkfish, and the fishermen regard the GMFDC’s fries as large.⁷⁸ In contrast, the grouper farming in Guiuan and oyster farming in Tanauan have not continued. The GMFDC’s research results using equipment this Project provided are shared with BFAR, and they are utilized to give fishermen in Tacloban, Tanauan, and Basay technical assistance through BFAR. Specifically, technical assistance regarding how to feed the fish and how to raise them have been provided.⁷⁹

In the case of the food processing projects (QIPs 20 and 21), it was difficult to secure fish and establish sales channels for processed products after the QIPs ended. Furthermore, no processing activities are implemented in either municipality at the time of the ex-post evaluation. The processing facility (QIP21) in Basay was used for processing of other foods (e.g. peanut butter), but there was no linkage with GMFDC due to the different types of food they handle.

(2) Synergistic Effects with Recovery and Reconstruction Planning

In the technical assistance of recovery and reconstruction planning, hazard maps were prepared and provided to 18 LGUs that Typhoon Yolanda affected. Among them, 5 LGUs⁸⁰ were supported in formulating recovery and reconstruction plans, including revising comprehensive land use plans. The results were shared with all 18 LGUs in a seminar. The Marabut and Lawaan

⁷⁷ Interview with patients.

⁷⁸ Interview with GMFDC.

⁷⁹ Interview with GMFDC.

⁸⁰ One city of Tacloban and four municipalities, Palo, Tanauan, Basay and Guiuan.

municipalities attended this seminar, and based on what they learned, they now conduct disaster-prevention-related activities (MDRRMP, evacuation planning, disseminating information on evacuation routes to residents, etc.) using hazard maps.

Regarding this Project, hazard maps had not been completed at the time of planning. It was difficult to relocate facilities for restoration and reconstruction while early restoration was required. The elementary school and municipal halls located 40 m interior from the coastline were selected and reconstructed in the same venue as before the disaster to avoid another disaster. Moreover, the second-best measures were taken to mitigate the damage by reinforcing construction standards and materials and by applying the piloti-type structure.

As described above, the two municipalities now can play the role of command centres during recovery and reconstruction, strengthening the proactive measures using hazard maps and the MDRRMP, rapid post-disaster reconstruction activities in accordance with the MDRRMP, and robust municipal halls that serve as the bases for such activities.

(3) Collaboration with UNICEF and other organizations in constructing the elementary school.

UNICEF and local NGOs provided prefabricated school buildings until the elementary school's reconstruction was completed, avoiding placing students in classrooms exposed to the rain.

(4) Collaboration in the Health Sector

Because donor coordination was already underway in the health sector before the disaster, the DOH and WHO played a central role in discussions among donors to compartmentalize their cooperation. Additionally, one donor's result of the needs survey was shared among other donors, which was utilized for their project planning, and enabled effective implementation of their projects.⁸¹

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Natural Environment

The Yolanda Rehabilitation and Reconstruction Project was classified as Category FI based on the JICA Guidelines for the Confirmation of Environmental and Social Consideration (April 2010) because the sub-projects could not be identified before JICA's assessment of the Project and some of them might have environmental impacts. The EVMC has installed ancillary facilities of appropriate size to treat wastewater and waste, and the impact on the natural environment is regularly monitored. No wastewater or waste hazardous to the natural environment has been identified.⁸² Other facilities were assessed as "no impact on the environment, or if there is any, it is minor and no measures are required," based on the investigation at the time of planning.⁸³ No specific

⁸¹ Interview with JICA officials.

⁸² Answers from questionnaire and interview.

⁸³ *The urgent development study on the project on Rehabilitation and Recovery from Typhoon Yolanda in the Philippines, Final Report (I), Volume 2: General Grant aid Project*, (2015) p.2-32-34

environmental impacts were identified during the interviews at the time of ex-post evaluation.

The Project for Reconstruction of Municipal Halls was classified as Category C based on the JICA Guidelines for the Confirmation of Environmental and Social Consideration (April, 2010) because the construction work was to be carried out on the same venue to restore the existing facilities and it was believed to have little undesirable impact on the environment and society. No opinions on environmental impacts were heard at the time of the ex-post evaluation.

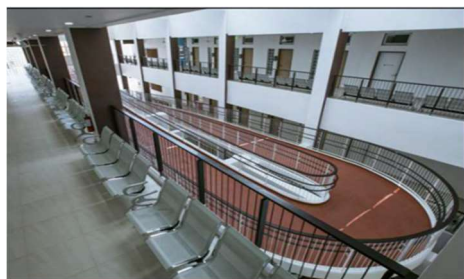
2) Resettlement and Land Acquisition

In the Programme for Rehabilitation and Recovery from Yolanda, which was classified FI under the Environmental Category, street vendors were relocated occurred during the reconstruction of EVMC. Although, this relocation did not violate the Environmental Impact Assessment of the Philippines and did not legally require compensation,⁸⁴ the land for relocation within the site was secured in accordance with the JICA Guidelines for Environmental and Social Considerations and adequately compensated for the street vendors' loss of livelihood. This took time and affected the construction period.⁸⁵ Facilities other than EVMC in this Project were rebuilt and restored in the same location as before the disaster; therefore, no resettlement or land acquisition was required.

3) Gender Equality, Marginalized People, Social Systems and Norms, Human Well-Being and Human Rights

About 30% of suppliers of fries GMFDC raised are women,⁸⁶ and women's cooperatives were also involved in the seaweed aquaculture activity that the BFAR promoted. It can be considered that strengthening the aquaculture sector brings benefit women, too.

In the restoration and reconstruction of facilities under this Project, socially vulnerable groups and human rights were well considered for their design and construction. Ramps were installed at each facility's entrances (elementary school, EVMC, RHU, and Municipal Halls), and in all but the RHU, toilets were wheelchair accessible and the EVMC secured a nursing room and space for children. In addition, when used as evacuation centres, elementary schools must provide



Ramp set at the center of building at EVMC
(Source : External evaluator)

exclusive spaces for women, children, and people with disabilities, and providing spaces for people with disabilities is mandatory in the rules for municipal halls. Recognizing the evacuation centres as safe places is a prerequisite for promoting evacuation behavior. Establishing such facilities should help reduce the number of disaster victims. In particular,

⁸⁴ Interview with JICA officials and DOH officials.

⁸⁵ The relocation was completed when the Philippine side prepared a plot of land on the grounds of EVMC's main building and inpatient wing.

⁸⁶ Interview with GMFDC.

designing and constructing the EVMC went beyond considering the vulnerable and made us aware of “coexistence with the vulnerable” by installing a ramp in the centre of the building to facilitate them moving throughout the building (left photo). EVMC’s design was introduced as an excellent model by ex-DOH headquarter facility designer when she gave the lecture regarding the medical facility design.⁸⁷ On the other hand, as for the ramp at the elementary school building, some teachers complained that the access to the ramp is inconvenient due to the long distance from the main entrance of the school. The reason is that the schools were designed to be used as an evacuation center, and the corridor was set in the center of the building. Because of this, the entrances were located at both ends of the building rather than at the front, and a ramp was placed next to the entrance. Another issue of safety regarding the restroom was also raised, which was caused by not having them integrated with the school building. But it was heard that this design was in accordance with the opinion of the Philippine side saying that the restrooms should be separated from the classrooms because they were not well maintained and often emitted foul odours⁸⁸.

The process of preparing the MDRRMP and BDRRMP has deepened communication and trust among LGUs and barangays,⁸⁹ and various stakeholders are involved in preparing and implementing the MDRRMP. This process has contributed to the development of a resilient city in the technical aspects.

As shown in Figure 3, each sub-project contributed to the realization of (1) Building safer cities, (2) the Recovery of People’s Daily Life and (3) the Recovery of Regional Economy and Promotion of Industries. From this, the Project has helped materialize the concept of “BBB and to Safety.”

It is not possible to judge the achievement level of each sub-project of Sector Grants in comparison with the target because no target value for quantitative indicators was set for each sub-project. However, the facilities and equipment are generally being utilized appropriately per each sub-project. Moreover, regarding for the qualitative effects, each sub-project helps build safer cities, recover people’s daily lives, and recover the regional economy. Synergistic effects were also observed not only among the sub-projects in this Sector Grants but also with QIPs and grassroots technical cooperation projects.

Considering the above, this Project has mostly achieved its objectives. Therefore, effectiveness and impacts of the Project are high.

⁸⁷ Interview with ex-DOH architect of design section.

⁸⁸ Interview with consultant.

⁸⁹ Interview with LGU official at Lawaan.

3.4 Sustainability (Rating: ③)

3.4.1 Policy and System

At the time of the ex-post evaluation, the PDP (2017–2022) and NDRRMP (2021–2030) were still in effect, and building a disaster resilient and robust society remains a high-priority project. In addition, the DILG has developed a guide for each LGU to formulate a Comprehensive Development Plan (hereinafter referred to as “CDP”) based on the MDRRMP and is promoting DRR implementation in LGUs.

Based on the above, there are no problems in continuing the project’s effects because policies and tools to ensure the project’s continuation have been prepared at the time of the ex-post evaluation.

3.4.2 Institutional/Organizational Aspect

The executing agency and the operation and maintenance agency for each sub-project are as follows.

Table 27 Executing agency and operation and maintenance agency for each sub-project

Sub-project	Executing agency	Operation and maintenance agency	Sub-project	Executing agency	Operation and maintenance agency
Recovery of Basic Human Needs					
Elementary School/Facility	LGU	Elementary school/LGU/DepEd*	RHU/Equipment	DOH	RHU
EVMC/Facility, Equipment	DOH	EVMC	RHU/Facility	LGU	RHU
Recovery of Economic Activity					
Equipment for electricity rehabilitation	NEA	EC	Equipment for airport recovery	DOTCR	CAAP
Construction equipment	DPWH	DPWH Region VIII			
Recovery of Livelihood Activity					
Equipment of NMP	DOLE	NMP	Equipment of GMFDC	DA	GMFDC
Rehabilitation of Disaster Prevention System					
Rehabilitation of Meteorological radar system	PAGASA	Each meteorological radar station			
Reconstruction of Municipal Halls					
Municipal Halls	DPWH	Each LGU			

(Source: Answers from questionnaires and interviews)

*The elementary schools perform daily inspections, but depending on the nature of the repairs, they consult with the LGU, and if that is beyond LGU’s capacity, they consult with DepEd Region VIII to take the necessary action.

Table 28 Operation and maintenance management system for each sub-project

Sub-project	Operation and maintenance system
Recovery of Basic Human Needs	
Elementary school/ Facility	4 staff at Dulag and San Roque elementary schools and 3 staff at Giporlos, Osmeña, and Santo Niño are assigned to take care of daily operation and maintenance. In no elementary school are operation and maintenance problems due to a staff shortage.
EVMC/Facility, Equipment	There are 2 physicians in ophthalmology, 4 in dentistry, 1 in internal medicine, 2 in tuberculosis, 2 in obstetrics and gynecology, for which no problems beyond their capacity for the operation and maintenance exist; 1 in pediatrics; 3 laboratory technicians; and 7 in charge to operate the facilities and equipment and to take care of operation and maintenance. The number of staff is insufficient, and they work overtime to cope with the shortage.
RHU/Facility, Equipment	At Marabut: Facility; at Dulag: Equipment In any RHUs, no specific information on the number of staff assigned was available, and no problems beyond their capacity for the operation and maintenance exist. There are no operation and maintenance problems due to a staff shortage.
Recovery of Economic Activity	
Equipment for the electricity rehabilitation	LEYECO: 46 staff are in charge of operation and maintenance in the Technical Services Department. There are 2 staff in charge of machinery and 5 staff working as heavy equipment operators. There are no operation and maintenance problems due to a staff shortage.
Equipment for airport rehabilitation	28 staff are assigned at Crash Fire and Rescue Unit (CFRU) of the Civil Aviation Authority of the Philippines operating the firefighting equipment, while there are 16 staff of the Office of Transportation Security (OTS) handling baggage X-rays and walkthrough metal detectors. There are no problems due to a staff shortage.
Construction equipment	45 staff are assigned (8 technical staff, 11 mechanical staff, 12 operators, 2 welders, 3 vehicle equipment inspectors, 3 procurement related staff, 1 nurse, 3 facility-related staff, and 2 managers). There are no operation and maintenance problems due to a staff shortage.
Recovery of Livelihood Activity	
Equipment of NMP	4 staff are assigned for equipment maintenance (2 preventive inspections staff, 1 machinery staff, and 1 marine machinery staff), and 8 faculty members are assigned to operate the equipment and run the course. When these 8 faculty members are insufficient to run the course, outside instructors are called in to help, so there are no major problems.
Equipment of GMFDC	9 regular and 23 contract staff, in total 32 staff are assigned. No staff were in charge of scallops before this Project. There was a vacancy of the regular staff in charge of seaweed (only with contract staff), and there was an overall reduction in the number of contract staff imposed on the staff to work by multitasking for their operations.
Rehabilitation of Disaster Prevention System	
Rehabilitation of Meteorological radar system	Guiuan: 5 staff assigned. There is shortage of staff, and 11 staff are requested. Virac: 6 staff assigned. 8 staff are requested. The shortage of staff is addressed through overtime work, e
Reconstruction of Municipal Halls	
Municipal halls	Marabut: 7 staff at the Engineering Department (4 regular and 3 contracted staff) (there are approximately 80 staff in the municipality). There are no operation and maintenance problems due to shortage of staff. Lawaan: 7 staff in the Engineering Department (there are approximately 60 staff in the municipality). There are no operation and maintenance problems due to shortage of staff. In some cases, carpentry needs more staff, such as to repair sanitary facilities (e.g., toilets) and doors. In this case, some staff are hired from the outside.

(Source: Answers from questionnaires)

As mentioned above, a shortage of personnel was noted at EVMC, the meteorological radar station, and Lawaan municipality, but no issues arose stemming from a staffing issue, and they have handled this situation with multitasking and overtime work. In other cases, no particular problems have arisen in operation and maintenance with the current staffing. Based on the above, generally, operations under the current structure might be possible to continue.

3.4.3 Technical Aspects

Table 29 Status of technical support for each sub-project

Sub-project	Technical support status
Recovery of Basic Human Needs	
Elementary school/ Facility	None of the schools are in trouble due to technical reasons because the inspection work is simple and the schools take action by using manuals. If special repairs are needed, the schools consult the LGU or the DepEd Region VIII office.
EVMC/Facility, Equipment	No technical problem arises from checking manual and using senior staff's technical guidance.
RHU/Facility, Equipment	No technical problem arises from checking manual and using senior staff's technical guidance.
Recovery of Economic Activity	
Equipment for the electricity rehabilitation	There are no problems with machine operation techniques. Other than receiving training at the time of delivering the equipment, the equipment is operated under manuals and senior staff's guidance.
Equipment for airport rehabilitation	There are no problems with machine operation techniques. Other than receiving training at the time of equipment delivery, the equipment is operated under manuals and senior staff's guidance (operation manuals are in place).
Construction equipment	Training is given once a year. Training topics cover preventive inspections, equipment inspection, and maintenance and operation skills of various construction equipment. Other than these trainings, equipment is operated under manuals and the senior staff's guidance (operation manuals are in place).
Recovery of Livelihood Activity	
Equipment of NMP	The operation of training machines is the faculty members' responsibility and its maintenance is responsible for facility staff. Faculty members who do not have sufficient expertise or knowledge of the training machines receive special training. For proper maintenance, basic cleaning, inspection, and maintenance are the main tasks because they are special training machines. A specialized contractor handles any breakdowns. Facility staff take action, referring to manuals as necessary.
Equipment of GMFDC	There is no problem in handling of equipment because they used the same equipment before the disaster.
Rehabilitation of Disaster Prevention System	
Rehabilitation of Meteorological radar system	The staff who have mastered the meteorological field are assigned, so there are no technical problems related to basic machine operation. In cases when the staff in change is rotated, they refer to the manual and receive guidance from senior staff and receive theme-specific training. The staff received the training on machine maintenance in 2015 and 2016 from Japan Radio Co., Ltd. (hereinafter referred to as "JRC") and others.
Reconstruction of Municipal Halls	
Municipal halls	Marabut: Municipal staff can handle their own repairs except for some special cases in which they hire an outside contractor for repair of special equipment, such as air conditioners. The operation and maintenance staff receives training from DILG twice a year on the building's structure. Lawaan: They hire outside contractors for repairs that they cannot handle on their own, such as generator and electrical system malfunctions. The operation and maintenance staff receives training from DILG twice a year on the building's structure.

(Source: Answers from questionnaire and interview)

Except for the NMP and the meteorological station, none of the technical requirements are complex, and operation and maintenance are adapted accordingly by putting manuals in place. The staff or faculty members at NMP and the meteorological station have training opportunities to acquire the necessary skills, and no technical problems are observed. Based on the above, we do not see any problems with using facilities and equipment from a technical aspect.

3.4.4 Financial Aspects

Table 30 Budget secured for each sub-project

(Unit: thousand pesos)

Sub-project		Items	2019	2020	2021	Observations
Disaster-resilient schools			N.A.	N.A.	N.A.	There is no problem due to shortage of budget, according to the schools.
Disaster-resilient medical service	RHU/Dulag	Personnel	N.A.	N.A.	N.A.	There is no problem due to shortage of budget, according to RHU/Dulag.
		OM*	357	345	1,558	
		Total	357	345	1,558	
	EVMC	Personnel	623,409	653,695	873,412	Personnel amount covers OPD and the administrative main building. There is no problem due to shortage of budget, according to EVMC.
		OM	1,966	2,404	7,737	
		Revenue	454,068	417,718	486,643	
Equipment for electricity recover	LEYECO	Personnel	50	50	50	Personnel expense for ESAMELCO was not available due to management by a separate department. None of the ECs have problems due to shortage of budget, according to them. NEA rates each EC with criteria of the balance of revenue and expenditures, power supply availability, system losses, and frequency of power outages. The 4 target ECs are rated the highest (AAA) and have no problems with revenue and expenditures.
		OM	100	100	100	
		Others	500	500	500	
		Total	200	200	200	
	DORELCO	Personnel	362	383	383	
		OM	521	820	788	
		Total	883	1,203	1,171	
	SAMELCO	Personnel	473	506	573	
		OM	137	145	165	
		Total	611	651	739	
	ESAMELCO	Personnel	NA	NA	NA	
		OM	160	160	160	
Total		160	160	160		
DPWH Regions VIII		Personnel	67	100	112	There is no problem due to shortage of budget, according to DPWH Region VIII.
		OM	2,369	2,277	1,473	
		Investment for facility	32,447	28,350	20,057	
		Total	34,883	30,727	21,642	
NMP		Personnel	1,842	1,303	2,147	There is no problem due to shortage of budget, according to NMP.
		OM	495	491	814	
		Total	2,337	1,794	2,961	
CAAP		Personnel	8,414	8,333	8,181	OM expenses are managed for the entire airport, so it is difficult to calculate the exclusive budget for the target sub-project. The amount for OM shown on the left is the one to have been spent when repairs occur, but there is no problem due to insufficient budget.
		OM	NA	10	170	
		Total	8,414	8,343	8,351	
GMFDC			N.A.	N.A.	N.A.	There is no problem due to insufficient budget, according to them.
Rehabilitation of disaster prevention system	Guiuan	Personnel	2,206	2,461	2,578	There is no problem due to shortage of budget, according to them.
		OM	5,714	5,714	5,714	
		Total	7,920	8,174	8,291	
	Virac	Personnel	2,706	2,853	3,554	
		OM	5,713	5,713	5,713	
		Total	8,419	8,566	9,267	
Reconstruction of Municipal Halls	Marabut	Revenue	86,314	104,681	104,193	Both municipalities had increased expenditures in 2019 due to earthquake response, but other than that, they have not incurred any significant deficits and are not
		Total				
		Personnel	40,583	47,725	49,434	
		OM	27,272	50,352	35,181	
		Others	16,702	22,797	22,555	

		Expense Total	84,557	120,874	107,170	hampered by insufficient budget.
		Balance	1,755	△16,194	△2,977	
	Lawaan	Revenue Total	79,297	95,045	111,818	
		Personnel	33,678	33,649	39,362	
		OM	10,495	6,908	17,636	
		Others	24,894	75,566	33,048	
		Expense Total	69,067	116,123	90,046	
		Balance	10,229	△21,079	21,772	

(Source: Answers from questionnaire and interviews)

*Operation and maintenance is represented as “OM” in this table.

Although some sub-projects were not available to provide financial information, in general, no operational problems have arisen due to budget shortfalls. The municipal halls experienced a deficit in some year, but that situation improved the following year because of the specific circumstances of dealing with the earthquake. Based on the above, there are no financial problems to use facilities and equipment in any of the sub-projects.

3.4.5 Environmental and Social Aspects

The situation on this issue is as described in “3.3.2.2 Other Positive and Negative Impacts,” and from institutional/organizational, technical, and financial aspects in the sustainability, no major problems regarding environmental and social considerations are observed.

3.4.6 Preventative Measures to Risks

GMFDC is built in a no-building zone. Some of the equipment cannot be moved due to its nature; therefore, when typhoons hit, the equipment is covered with waterproof material and some measures are taken to stop flying debris and to prevent water and wind damage. In addition, the equipment now carries disaster insurance.

3.4.7 Status of Operation and Maintenance

Table 31 Operation and maintenance status of each sub-project

Sub-project	Status of operation and maintenance
Recovery of Basic Human Needs	
Elementary school/Facility	In all schools, responsible staff at elementary schools inspect roofs, windows, floors, and doors daily; ceilings on a weekly basis; and electrical, water, and toilets on a semi-annual or yearly basis. In the case that some issues are deemed necessary to repair, LGUs respond to them. For repairs that they cannot handle, the LGUs apply to the DepEd regional office and they take the action to them. With this system, no major problems have arisen.
EVMC/ Facility, Equipment	For equipment, inspection is done daily and preventive maintenance is performed weekly. Otherwise, necessary inspections and repairs are performed depending on the case. With this, no major problems have arisen.
RHU/ Facility, Equipment	Visual inspections are conducted daily, and cleaning is performed weekly. Safety tests, functional tests, and accuracy checks are conducted, and no major problems have arisen.
Recovery of Economic Activity	

Equipment for the electricity rehabilitation	At all ECs, regular inspection and replacement of the parts (checking the brakes, lights, brake engines, hydraulic oil and replacing the brake oil, hydraulic oil and tires, etc.) are performed. Parts are sometimes difficult to obtain. When suppliers do not have these parts, ECs purchase them through the Internet, coordinate with the manufacturer in Leyte, or use alternative parts. With this, there are no major problems, but some expertise in machinery and maintenance is not sufficient, and capacity building is still needed. In addition, vehicles provided to EC have not been officially registered to the Land Transportation Office (hereinafter referred to as "LTO") due to incomplete documentation; therefore, immediate registration procedures are needed.
Equipment for airport rehabilitation	Regular inspections and part replacement (such as oil, lights, tires, brakes, water spray/firefighting foam, and chassis) are performed. The CAAP have difficulties in obtaining the parts, and if it cannot find them from authorized suppliers, it searches for alternatives. Manuals are in place. Note that CAAP has not been able to locate documents to prove ownership of the equipment provided. The documents of project completion (of constructing facilities and delivering equipment) have been submitted to DOF, and DOF submitted a letter of concurrence. Document identification should be confirmed between CAAP and DOTR.
Construction equipment	In addition to daily visual inspections prior to work, the equipment's operation and maintenance is conducted in accordance with the New Equipment Preventive Inspection Policy, which DPWH issued in 2016 (in which the inspection items are set for every 1,000 km or 50 hours, 5,000 km or 250 hours, 10,000 km or 500 hours, and 20,000 km or 1,000 hours and requested to do it). Parts are procured based on an annual procurement plan. Comprehensive and preventive inspections are conducted using manuals.
Recovery of Livelihood Activity	
Equipment of NMP	In addition to daily equipment cleaning, monthly inspections are performed according to an inspection checklist specified for each equipment. In some cases, parts are not included in the budget and have to be purchased. In that case, the justification to purchase it is explained and approval is obtained. Parts that the supplier does not handle are purchased from alternative suppliers. Various manuals are also used.
Equipment of GMFDC	The periodic inspections are done, and some parts that are difficult to obtain in respective regions are obtained from a distributor in Leyte. The budget for parts is always included in the annual procurement plan. Various manuals are also used.
Rehabilitation of Disaster Prevention System	
Rehabilitation of Guiuan Meteorological radar system	Clean, inspect, and replace parts on a daily, weekly, monthly, semi-annual, or yearly basis for various voltage equipment, transmitters, batteries, DC AC electrical systems, radome, antennas, generators, etc. Staff at the meteorological radar station perform daily inspections and repairs, but when special problems occur, JRC is consulted to respond to the issue. Various manuals are also utilized.
Reconstruction of Municipal Halls	
Municipal halls	Daily cleaning and inspections to the building are done, and the sanitary facilities, generator, and electrical systems are also regularly inspected. Some parts are ordered from Manila, which is time consuming, but they are purchased in large quantities to be ready for the next part replacement. A manual is put in place and used for any problems or repairs.

(Source: Answers from questionnaire and interviews)

In all cases, no major problems have arisen because of regular daily inspections and early detection of problems. Furthermore, requests for action are sent to higher-level organizations or specialized contractors for problems that the operation and maintenance agency cannot handle. In contrast, the equipment for electricity rehabilitation has been used illegally without having been registered to LTO, and the airport equipment has been used without verifying the whereabouts of the documents proving ownership of the equipment at the sector in which the equipment is currently used. Although no direct inconvenience has been observed in their daily use of the equipment, the Philippine-related government needs to take immediate action on the equipment for electricity rehabilitation and the airport. Other than these issues, there are generally no problems with the operation and maintenance of the facility and equipment.

No major problems can be observed in the policy or systems, institutional/organizational, technical, environment and social aspect, and operation and maintenance. Although some financial issues have arisen regarding the unavailability of specific budget information for some sub-projects, no cases are likely to affect the project's continuation due to the problem of budget allocation. Issues related to electricity rehabilitation equipment and airport equipment need to be addressed as soon as possible. Regarding these issues, the Philippine government needs to take urgent action that is aligned with the recommendations in Section 4.2.

Slight issues have been observed in the financial aspect; however, there are good prospects for improvement/resolution. Therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This is an integrated evaluation study of the “Programme for Rehabilitation and Recovery from Yolanda” and “Project for Reconstruction of Municipal Halls.” The objective of the Programme for Rehabilitation and Recovery from Yolanda was to restore the public services and economic activities, strengthen public facilities, restore the weather forecasting and warning system by constructing various facilities, and procure equipment for social, economic, and disaster prevention infrastructure in the areas Typhoon Yolanda affected, thereby contributing to the early recovery and reconstruction of the damaged areas. The objective of the Project for Reconstruction of Municipal Halls was to strengthen the municipal halls' shelter function and improve administrative services by rebuilding the municipal halls in Lawaan municipality, Eastern Samar, and Marabut municipality, Samar, which Typhoon Yolanda destroyed, helping those communities overcome vulnerabilities and stabilize people's livelihood and production infrastructure.

Regarding relevance, this Project was consistent with the development policy and development needs of the Philippines at the time of planning and post-evaluation. At the time of planning, the appropriate programme and project were formulated in light of the specific situation in the Philippines at that time. The combination of sub-projects in various sectors, such as education, fisheries, health, and electricity, in the Sector Grants was also useful. Regarding coherence, the Project aligned with Japan's ODA Policy and international frameworks. Regarding internal coherence, a certain degree of coordination and outputs with other JICA projects was observed, and regarding external coherence, some adjustments were made to avoid duplication of cooperation with other donors, and a certain extent of outputs was confirmed. Therefore, the relevance and coherence is high. Although the entire project period exceeded the plan, the project cost was within the plan, so the efficiency is high. Regarding effectiveness, the indicators set for each sub-project at the time of planning were not appropriate to judge effectiveness, so the evaluators set alternative indicators at the time of the ex-post evaluation and assessed the effectiveness based on the degree of its achievement. The utilization of facilities and equipment

is appropriate, and it can be considered that the project objective has been achieved. Although some of the sub-projects showed limited qualitative effects, the outcomes were confirmed in each of them. In terms of impacts, quantitative and qualitative effects related to “Building safer cities,” “Recovery of People’s Daily Life,” and “Recovery of Regional Economy and Promotion of Industries,” which were this Project’s main framework of the basic policy of the rehabilitation and reconstruction, were observed as well as synergistic effects with other projects. The effects to be assessed positively were observed; therefore, effectiveness and impacts are high. In the programme and project, there are no problems in terms of policy and systems, institutional/organizational, technical, environmental, or social aspects or operation and maintenance. In terms of financial aspects, although there were some sub-projects without specific budget information, no sub-projects are likely to face difficulties in continuing their operations due to budget shortfalls. Therefore, the sustainability of the Project is high.

In light of the above, this Project is evaluated as highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Recommendations to DOF and DOTR:

Locate the whereabouts of the documents showing the equipment ownership provided to CAAP, and share it with CAAP.

Recommendation to NEA and EC (LEYECO II and DORELCO):

It is illegal to operate on public roads without a vehicle registration number plate. The necessary documents for vehicle registration should be prepared and applied for registration with the LTO as soon as possible.

4.2.2 Recommendations to JICA

JICA will monitor implementation of the above recommendations to the executing agencies. In particular, immediate action is needed on the vehicle registration number plate, and JICA recommends that the status be checked and monitored to ensure the procedures are not delayed.

4.3 Lessons Learned

The Importance of Project Formation According to the Situation of Each Country

One of the focal points of this Project was to find the compromise point between the pursuit of technical effect and respect for the intention of the recipient country in materializing BBB’s philosophy for the reconstruction assistance project to recover from the disaster.

If the technological effects were pursued, it would have been necessary to build a tidal embankment, establish no-dwelling zones, and reconstruct facilities to avoid these zones, and an easy and quick reconstruction might fix the vulnerability. A proposal was presented whereby even

if it took time, rehabilitation and reconstruction should be carried out in a way that prevents another disaster, and the top Philippine government officials approved the idea (the president and Secretaries of various departments). However, the Philippine government, as a bureaucracy, had a cautious opinion on large-scale public investment and requested improvement of livelihoods as soon as possible. Regarding the construction of a tidal embankment, several variations in height and materials were proposed as economical alternatives, but the Philippine government's request remained that of the rapid assistance for improvement of livelihoods rather than for the construction of seawalls.

The economic situation in the Philippines at the time also influenced the Philippine government's opinion. The Philippines had been in a long period of economic stagnation, but in 2013, the country was on the verge of an upgrade in its investment rating to float its economy. Therefore, the government wanted to refrain from large-scale public investment at the time, even though it was as a response to the disaster.⁹⁰

JICA respected the partner government's decision to choose the sub-projects from the perspective of overall state management. For the grant aid project, JICA decided to implement projects to mitigate disaster to the maximum extent possible and cooperated in medium-to-long-term industrial promotion to contribute to BBB. However, from the viewpoint of disaster prevention, the technical advice for a feasibility study on a tidal embankment and elevated roads should be undertaken by the Philippine government in the future as part of Recovery and Reconstruction Planning. At the time of the post-evaluation, based on this advice, the tidal embankment and elevated roads were constructed as DPWH projects from Tacloban through Palo to Tanauan.

When assisting with the reconstruction from disaster, to examine the kind of cooperation that is appropriate, it is necessary to consider various factors, such as technical approaches; the type and frequency of disasters; the political, economic, and social situation of the partner country; the administrative capacity of the partner country; and the relationship between Japan and the country. Each country is in a different situation. Considering such circumstances, it is important that the parties involved in the project formulation and implementation make the best use of their respective expertise to find the best possible solution.

The Importance of Combing Sub-Projects in the Sector Grants

In this Project, under a ceiling of 4.6 billion-yen, sub-projects were combined and implemented along the lines of (1) disaster prevention and mitigation, (2) disaster preparedness, (3) disaster response, and (4) recovery/reconstruction from disaster.

⁹⁰ From the interview with the JICA official. The Philippines had its sovereign debt investment rating upgraded by S&P from BBB- to BBB on May 8, 2014. <https://news.abs-cbn.com/business/05/08/14/ph-gets-further-credit-rating-upgrade-sp> (Accessed on August 26, 2022)

Under this scheme, multiple grant aid projects can be implemented under a single EN), which might allow the achievement of higher-level goals more efficiently and effectively, if the common goals are set across multiple grant aid projects and combinations of specific sub-projects are appropriate. However, in reality, project formulation is not as simple as combining sub-projects based on theoretical logic. The sub-projects are selected in a pragmatic way, with a sideways glance of the other donors' cooperation, based on a variety of considerations and tactics. However, the scheme that allows the planning of multiple sub-projects at the same time has made it possible to at least draw a comprehensive picture and select sub-projects in line with that direction. In this Project as well, each sub-project not only produced individual outcomes and impacts, but also created synergy among the sub-projects, contributing to the formation of a safe and secure society.⁹¹ In addition, although it took more time than expected in this Project due to the failure of the bidding, this scheme allowed the implementation of the Project in a shorter period than occurred before, from the preparatory survey to the implementation of the project.

The selection of multiple sub-projects within a certain budget ceiling requires clear selection criteria and consideration of priorities from various perspectives, but this process is not easy. However, the introduction of this scheme has made it possible to implement the grant aid projects quickly, efficiently, and effectively to meet diverse needs. To maximize the effectiveness of this scheme, it is important to set the common overall goals to be achieved through the implementation of multiple sub-projects and the combination of specific sub-projects.

5. Non-Score Criteria

5.1. Performance

5.1.1 Objective Perspective

None.

5.1.2 Subjective Perspectives (Retrospective)

This section integrates the interviews with the Project's stakeholders (executing agencies, consultants contracted to this Project, Japanese local government and NPO officials, and JICA officials at that time) to discern which efforts were made during the start-up and implementation of the Project for the rapid recovery from the Typhoon Yolanda disaster in the Philippines.

5.1.2.1 Starting Up the Project

On November 8, 2013, Typhoon Yolanda, which was described as "unprecedented in its scale," crossed the Visayas region of the Philippines. The damage caused by the typhoon was enormous,

⁹¹ Accurate warnings brought by the restoration of weather radar contributed to the effective use of equipment for construction and electricity restoration, the active use of primary schools as evacuation centre, and the use of municipal halls in responding to disaster recovery; the restoration of municipal halls had a synergistic effect in the use of primary school evacuation centre and the effective use of various equipment in the restoration of roads and electricity after the disaster.

and while aid agencies of various countries, international organizations, and domestic and international NGOs expressed intentions to cooperate, JICA was faced with the need to present a unique Japanese initiative in cooperation policy that other aid agencies could not imitate.

5.1.2.2 Overcoming the Starting Situation and Formulating the Project

Unlike other industrialized countries, Japan has experience in recovery and reconstruction from many disasters, which is a unique experience that no other country can imitate. Based on this experience, the BBB as a basic philosophy for recovery and reconstruction made an appeal. This idea was strongly supported by the Philippine government and other donor countries at a donor meeting held in December 2013, where many donor agencies were competing over the amount of aid, and Japan's presence was greatly enhanced.

Although there were various opinions regarding the specific sub-projects to realize the BBB, JICA decided to carry out the sub-projects in line with the intentions of the Philippine government, while considering the balance between disaster prevention and the economic aspect. In this process, the role of the JICA Philippines Office cannot be overlooked. It presented to headquarters a clear policy, as only the office at a disaster-affected area could have, of "being there for the people in times of need." The JICA Philippine office took a stance that it could not let the affected area, as one of the poorest regions in the country and could become even poorer because of the disaster. As an office in the affected area, the staff demonstrated their unique information-gathering capabilities, communicated the plight and needs of those in the field to the related stakeholders, and influenced JICA's decision on cooperation policy.

5.1.2.3 Dealing with Difficulties after Beginning the Project and Finding Ways to Achieve Outcomes

One of the features of the Project was the use of a newly established scheme called "Sector Grants." In this scheme, multiple grant aid projects can be implemented under a single EN, and the freedom in selecting sub-projects, the shortened period from preparatory study to Project launch, and prompt and seamless cooperation are the advantages of this scheme. However, the flexibility in sub-project selection, one of the advantages of the scheme, is a double-edged sword because it makes it difficult to prioritize the sub-projects. For the DOF to make objective judgments on the merits of sub-projects over multiple sectors, it was necessary to submit a variety of evidence, based on which the sub-projects were selected. In this process, the cooperation with NMP and GMFDC, with less emergency, were thrown questions about its necessity. However, for the affected areas that did not have many growth industries, seafarer education and the fisheries industry are among the few industries with economic benefits, which might play a central role in regional industrial development over the medium to long term. The need for cooperation on this kind of project was emphasized and approved.

The sub-projects selected through this complicated process covered a wide range of sectors and implementation areas (see Fig. 1 on p. 6 and Fig. 2 on p. 7). This coverage permitted the outcomes of cooperation to appear in many areas, but it also increased the administrative costs of the Projects and resulted in unsuccessful bids. Only 10 months after the EN was signed, the first bidding was done, which was shorter than before the scheme's introduction. However, due to the unsuccessful bidding, it took 1 year and 9 months before all the sub-projects were awarded and begun. In addition, the implementation and management of the multi-sectoral projects required coordination with multiple government departments and agencies, placing a heavy burden on the Philippine office and the consultants.

Under these difficult circumstances, the thorough information sharing and the unification of wills between the project field and office in the Philippines and JICA headquarters were pointed out as the most significant features of the project implementation process. In the reconstruction from disaster, the situation on the ground frequently changes, and a flexible response is required. In this Project, on-site information was shared in a timely manner between the Philippine government and Japanese stakeholders, as well as among Japanese stakeholders such as the JICA Philippine office, consultants, and JICA headquarters, to ensure communication in the implementation of the Project. This common understanding of what was happening on site made it possible to respond quickly to frequent changes at the site.

The Project was also implemented in parallel with the Recovery and Reconstruction Planning and QIPs components. Although each component had different activities and schedules, setting BBB as a top common priority made it possible to proceed with the activities, holding a centripetal force that led to achieving the goal. In this process, the project manager of each component properly grasped personnel allocation and activity progress, and the general manager of the overall three components appropriately kept track of advancement of each component. Moreover, the persons in charge of the responsible department in headquarters visited the site frequently to coordinate across components and promote information sharing and communication. Thus, a trustworthy relationship was fostered among the parties involved, which helped the smooth implementation of the Project.

Finally, but not least important, the cooperation of Higashi-Matsushima City of Miyagi Prefecture should not be forgotten in this Project. At a time when the recovery from the Great East Japan Earthquake was still in its infancy, the city officials shared their experience of recovery and reconstruction with the people in the Philippines from the perspective of being both a victim of the disaster as well as an implementer of recovery from disaster. The Philippine officials, who at first viewed the Japanese initiatives, such as construction of a tidal embankment, resettlement, and public disaster housing, as “an effort in a country with a budget,” keeping some distance, began to feel a sense of trust in the sincere attitude of the Higashi-Matsushima City officials, who shared their stories of failure, difficulties, and the importance of consensus building in

resettlement. Consequently, a comradely relationship based on sharing the same difficulties was fostered.

5.1.2.4. Factors Contributing to Project Effectiveness

Although the Project involved many difficulties from its formulation through its implementation, the Project was successfully executed due to a variety of interrelated factors. Among them, the following factors are considered to have contributed to the success of the Project.

1) Establishment of Common Goals

The establishment of BBB as the overall common principle enabled the three components to have centripetal force and to work on the project in essentially the same way with only minor differences. The Philippines office's will to be close to the affected areas and the activities to embody also moved all concerned in the same direction.

2) Utilization of the Sector Grants

The introduction of this new scheme made it possible to implement multiple grant aid projects under a single EN and produced a wide range of project effects in response to the devastating disaster. Although there were some difficulties such as prioritization in the selection of sub-projects and poor bidding due to increased administrative costs, 11 sub-projects at 12 sites could be implemented in a short period, meeting a wide range of needs in the disaster-affected areas.

3) What made "One Team"

The establishment of a common set of superordinate principles (BBB), the promotion of timely information sharing and communication, appropriate project management, and the assignment of the right personnel to the right positions, among other factors, helped ensure unity of intention among the Japanese stakeholders and enabled them to work as "One Team," each fulfilling his or her responsibilities. This one-team mentality on the Japanese side was also shared by the Philippines side, enabling timely information collection and honest communication based on the reliable relationship that had been cultivated over years.

4) Cooperation from the Perspective of the Partner Country

In this Project, there were various opinions on the BBB's specific sub-project proposal, but in the end, the Project was implemented from the perspective of the partner country. Based on various proposals, including projects with high attention to disaster-prevention effects, projects requested by the Philippines government with certain disaster-prevention effects, and projects from the viewpoint of the affected people, the cooperation was finally implemented in alignment with the perspective of the Philippines government's national management. The process and the

project contents were appropriate in that technically effective and pragmatic projects were chosen that considered the intention to steer the national management of the partner country from a broad perspective, while staying close to the people's sentiments of the partner country.

The construction of seawalls and raised roads, proposed, endorsed, but not implemented in this Project, were later implemented by the Philippines government within its budget. An elevated road was constructed along the coast from Tacloban to Tanauan via Palo. This is a proof that the Philippine side understood the philosophy and usefulness of the BBB proposed by JICA.

5) Cooperation that is Close to the Affected People

In this Project, not only did JICA and the consultants focus on the usefulness of the technical aspects of the project, but also Japanese local government officials shared their experiences of working on the reconstruction from disaster to give the feeling of being the same affected people. This process fostered empathy between with the Philippines people, in the same situation, and gave them courage to face the difficulties.

The facilitating factors for the project differed depending on each country and the target project. True cooperation can only be achieved by judging the situation in the partner country from various perspectives and doing the best by bringing together the wisdom of all concerned.

5.2. Additionality

None.

(end)