Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Philippine Office: June, 2020

Country Name	**Improvement of Quality Management for Highway and Bridge Construction and Maintenance (Phase I and II)**
Republic of Philippines	

I. Project Outline

Background	According to the inventory survey conducted by the Department of Public Works and Highway (DPWH) in December 2009, the proportion of the paved national roads in the total length was approximately 70% but about 30% of the paved national roads needed repair and rehabilitation due to cracks of pavements. While DPWH aimed at the proportion of the paved national road of 95%, further enhancement of road and bridge maintenance system was an urgent issue for DPWH. In particular, it was essential to strengthen technical capacity of the regional office staff and to establish a maintenance cycle composed of a series of activities including inspection planning, inspection, inspection evaluation and repair works.
Objectives of the Project	Through trainings on quality management of road/bridge construction and maintenance, road slope maintenance management and bridge maintenance management, development and revisions of the technical manuals and guidelines as well as improvement of management cycle of road and bridge maintenance, the project aimed at enhancing capability of engineers of DPWH and the pilot Regional Offices on quality management and maintenance management of roads/bridges, thereby contributing to enhancement of those capability of the engineers in other regions. <Phase I & II> 1. Overall Goal: Capability of DPWH and Regional Offices engineers on quality management of road/bridge construction and maintenance and maintenance management of road/bridge is improved. 2. Project Purpose: Capability of engineers of DPWH, Regional Offices and district engineering offices on quality management of road/bridge construction and maintenances and maintenance management of road/bridge is improved in the pilot regions.
Activities of the Project	1. Project site: <Phase I & II> Manila (DPWH head office), Cordillera Administration Region (Region CAR), Central Visayas Region (Region VII), and Davao Region (Region XI) 2. Main activities: <Phase I> i) Development and delivery of training programs on quality management of road/bridge construction and maintenance), ii) Formulation of technical manuals on road/bridge construction and maintenance <Phase II> i) Establishment of road/bridge maintenance management cycle, ii) Promotion of utilization of Road Slope Management System (RSMS) and improvement of Routine Maintenance Management Manual (RMMM) as well as trainings in CAR and Region VII, iii) Development of engineering inspection manual on Bridge Management System (BMS) and improvement of RMMM as well as trainings in Region VII and Region XI 3. Inputs (to carry out above activities) Japanese Side <Phase I> 1) Experts from Japan: 15 persons 2) Training in Japan: 6 persons 3) Training in the third country (Vietnam and Indonesia): 9 persons 4) Equipment: Clinometers and Laser-Type Distance Meters, etc. 5) Operation cost: Travel cost, cost for vehicles, administration cost for the regional offices, etc. <Phase II> 1) Experts from Japan: 11 persons 2) Training in Japan: 22 persons 3) Equipment: Office equipment, inspection tools and equipment, etc. 4) Operation cost: cost for project implementation Philippine Side <Phase I> 1) Staff allocated: 21 persons 2) Land and facilities: Office spaces in DPWH and the three model Regional Offices 3) Operation cost: cost for the pilot projects, cost for the project staff <Phase II> 1) Staff allocated: 56 persons 2) Land and facilities: Office spaces in the three model Regional Offices 3) Operation cost: cost for project implementation
Project Period	<Phase I> February, 2007 – February, 2010 <Phase II> October, 2011 – September, 2014
Project Cost	<Phase I> (ex-ante) 350 million yen (actual) 498 million yen <Phase II> (ex-ante) 350 million yen (actual) 439 million yen
Implementing Agency	<Phase I and Phase II> Department of Public Works and Highway (DPWH)
Cooperation Agency in Japan	<Phase I> Ministry of Land, Infrastructure, Transport and Tourism <Phase II> Nippon Engineering Consultants Co., Ltd., Katahira Engineering International, Hanshin Expressway

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

[Evaluation of the Project Purpose and the Overall Goal and the envisaged logic for achieving and sustaining the project effects]

The following issues should be considered in order to evaluate the achievement level of the Project Purpose and the Overall Goal of the two projects.

- Phase I: The indicator 1 of the Project Purpose is overlapped with the indicator of the Output 1. The indicator 3 of the Project Purpose is not relevant

due to no activity to establish training system.

- Phase II: The indicators of the Project Purpose used by the terminal evaluation were different from the ones in the revised project design matrix (ver.3) but there was no explanation about reasons why the terminal evaluation team used different indicators. Therefore, while the information and data at the time of terminal evaluation are used for the ex-post evaluation, the verifiable indicators for the Project Purpose and the Overall Goals for the Phase II are based on the PDM ver.3

Therefore, in the ex-post evaluation, the two projects are interpreted as one intervention, and the Project Purpose and Overall Goal were restructured to verify achievement levels and continuation of the effects.

1 Relevance

<Consistency with the Development Policy of the Philippines at the Time of Ex-Ante Evaluation and Project Completion>

The project was consistent with the development policies of the Philippines prioritizing maintenance and rehabilitation roads and bridges in the "Medium-term Development Plan" (2004-2010 and 2011-2016) and "Medium-term Program" (2005-2010 and 2011-2016) of DPWH and those policy priorities had not changed throughout the project periods.

<Consistency with the Development Needs of the Philippines at the Time of Ex-Ante Evaluation and Project Completion >

The project was consistent with the development needs of the Philippines for proper maintenance and repair of roads and bridges in order to improve the service level and to reduce repair cost as well as to extend the lifetime of the road infrastructure for sustainable development of the country. The development needs had not changed throughout the project periods.

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

The project was consistent with the Japan's ODA Policy to prioritizing support for "enhancement of economic structure for sustainable growth and overcoming of constraints on growth" in the "Country Assistance Program" (2000).

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The restructured Project Purpose for the Phase I and Phase II was achieved. The technical methods and quality control required by the technical manuals and guidelines have been utilized (Indicator 1). In terms of the number of defects repaired (Indicator 2), there were 6 cases of road repair and 12 cases of bridge repair under the Phase I. Also, 2 pilot projects for road maintenance and 8 pilot projects for bridge maintenance were conducted under the Phase II. In terms of proposing and taking the necessary countermeasures (Indicator 3), damages on bridges were properly diagnosed and the most proper measures were taken to fix the damages under the Phase I. Under the Phase II, the conditions of the target roads and bridges were improved through implementation of the pilot projects.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been continued. In the pilot regions of CAR, RO VII, and RO XI, the inspections/repair of roads and bridges by using the technical manuals/guidelines developed/revised by the projects, including the regular inspection and repair, have been continuously conducted but the frequency of regular inspections and repairs have decreased due to the improvement of road and bridge conditions. The trainings of road and bridge maintenance by using the technical manuals/guidelines developed/revised by the project have been conducted by DPWH but the number of trainings has decreased because some of the engineers have been already trained. For the period from February 2016 to January 2019, some trainings, such as the technical guidelines and manuals developed by the project, were conducted under the Phase III (2016-2019) in non-pilot regions as part of the sustainability program in cascading information and skills to other regions.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved by the time of ex-post evaluation. For the period from 2015 to 2018, DPWH conducted the trainings of road maintenance and bridge maintenance for each Regional Office (Indicator 1). From 2016, the trainings were conducted for non-pilot regions as a part of the project activities of the Phase III. Also, for the same period, all the 10 Regional Offices conducted inspections of roads and bridges at least once by using the technical manuals/guidelines developed/revised by the project and necessary repair works (Indicator 2). In addition, the Department Order (DO no. 94 s. 2014) has been issued instructing all DPWH Regional, District Engineering Offices and Project Management Offices to use the technical guidelines/manuals developed during the Phase II for road and bridge maintenance work and the District Engineering Offices have conducted regular inspection on roads and bridges in accordance with the Department Order No.41 Series of 2016. Conditions of roads and bridges have improved over time because of the regular inspection and maintenance conducted by DPWH (Indicator 3). Only in Region XI that the percentage of roads with bad condition have increased from 2011 to 2018 but such increase can be attributed to calamity and conversion of local/provincial roads to national roads.

<Other Impacts at the time of Ex-post Evaluation>

Some positive impacts by the project have been observed at the time of ex-post evaluation. The participation of women in the trainings conducted by DPWH increased from 25% in 2015 to 35% in 2019. No negative impact on natural and social environment by the project has been observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Capability of engineers of DPWH, Regional Offices and district engineering offices on quality management of	Indicator 1 The technical methods and quality control required by the technical manuals/guidelines developed/revised by the project are properly utilized and practiced in the pilot projects and in other	Status of the Achievement: achieved (continued) (Project Completion) <Phase I> - The inspection apparatus/equipment introduced by the training, such as the portable digital clinometer and laser type distance meter, were utilized for the routine inspection for roads

road/bridge construction and maintenances and maintenance management of road/bridge is improved in the pilot regions.	activities.	- Data on bridge quality were collected and analyzed in accordance with the manual. - Damages on bridges were properly diagnosed in accordance with the manual. <Phase II> - The technical manuals/guidelines developed/revised by the project were utilized for pilot projects. (Ex-post Evaluation) [No. of inspections/repair of roads by using the technical manuals/guidelines developed/revised by the project]

	Type of activity	2015	2016	2017	2018
Pilot Regions (CAR, RO VII and RO XI)	Inspection	1	0	1	4
	Repair	1	0	1	3

[No. of inspections/repair of bridges by using the technical manuals/guidelines developed/revised by the project]

	Type of activity	2015	2016	2017	2018
Pilot Regions (CAR, RO VII and RO XI)	Inspection	1	1	1	7
	Repair	1	1	1	2

[No. of regular inspection/repair of bridges in accordance with the technical manuals/guidelines developed/revised by the project]

Region	Type of activity	2015	2016	2017	2018	2019 (plan)
CAR	Inspection	56	44	27	19	13
	Repair	22	48	67	45	18
RO VII	Inspection	167	88	70	58	58
	Repair	54	36	94	96	74
RO XI	Inspection	73	47	14	12	12
	Repair	50	37	60	37	28

	Indicator 2 The number of defects repaired.	Status of the Achievement: achieved (continued) (Project Completion) <Phase I> - 6 cases of the road repair. - 12 cases of the bridge repair. <Phase II> - 2 pilot projects for road maintenance were conducted. (1 in CAR and 1 in RO VII) - 8 pilot projects for bridge maintenance were conducted (4 in RO VII and 4 in RO XI) (Ex-post Evaluation) Refer to the Indicator 1
	Indicator 3 The engineers of DPWH, Regional Offices and the district engineering offices are able to define the issues in the maintenance management and propose the necessary countermeasures then take necessary actions for the future sustainable improvement.	Status of the Achievement: achieved (continued) (Project Completion) <Phase I> - Damages on bridges were properly diagnosed and the most proper measures were taken to fix the damages. <Phase II> - The conditions of the target roads and bridges were improved through implementation of the pilot projects for road slope stability and bridge repair. (Ex-post Evaluation) Refer to the Indicator 1.
(Overall Goal) Capability of DPWH and Regional Offices engineers on quality management of road/bridge construction and maintenance and maintenance management	Indicator 1 The number of trainings on the technical manuals/guidelines developed/revised by the project delivered by DPWH.	Status of Achievement: achieved (Ex-post Evaluation) [No. of trainings of road maintenance in all regions]

2015	2016	2017	2018	2019 (plan)
15	9	4	15	4

[No. of trainings of bridge maintenance in all regions]

2015	2016	2017	2018	2019 (plan)

of road and bridge is improved.		18	13	28	19	1

Indicator 2
The number of inspections and repair works on roads and bridges conducted by the Regional Offices by using the technical manuals/guidelines developed/revised by the project.

Status of Achievement: achived.
(Ex-post Evaluation)
[No. of inspection and repair of roads by Regional Offices]

Type of activity	2015	2016	2017	2018
Inspection	7	3	10	10
Repair	7	2	0	9

[No. of inspection and repair of bridges by Regional Offices]

Type of activity	2015	2016	2017	2018
Inspection	0	1	8	16
Repair	7	4	13	15

Indicator 3
The percentage of roads and bridges with bad conditions decreases.

Status of Achievement: achieved
(Ex-post Evaluation)
[% of roads with bad conditions]

	2011	2015	2016	2017	2018
Philippines	13.11	7.57	6.36	5.64	4.67
CAR	17.60	17.44	17.60	17.64	14.60
RO VII	0.99	1.10	0.99	0.66	0.22
RO XI	8.80	8.87	8.80	9.36	9.70

[% of bridges with bad conditions]

	2011	2015	2016	2017	2018
Philippines	10.34	6.60	5.24	1.87	1.18
CAR	0.45	0.33	0.30	0.12	0.06
RO VII	0.60	0.40	0.24	0.13	0.16
RO XI	0.77	0.12	0.10	0.06	0.04

Source：Terminal Evaluation Reports (Phase I and Phase II), Information provided by DPWH

3 Efficiency

Although the total project period was as planned (ratio against the plan: 100%), the total project cost exceeded the plan (ratio against the plan: 133%). The outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

The “Philippine Development Plan” (2017-2022) includes the improvement of International Roughness Index (IRI) from 2015 baseline value of 4.62 to 3.0 by the end of 2022. This can be achieved by improving the condition of roads through regular maintenance of roads and bridges. In addition, various Department Orders (DO) have been released in relation to road and bridge maintenance and inspection such as DO 94 series of 2014, DO 41 and 164 series of 2016, DO 23 and 24 series of 2019, among others. Therefore, the trainings and the inspection and repair works based on the technical manuals/guidelines developed/revised by the project have been endorsed by those policies.

<Institutional Aspect>

There has been no change in the organizational setting since the project completion. DPWH has been responsible for budgeting and budget allocation for the trainings of road and bridge maintenance as well as the inspection and repair works of roads and bridges by the Regional Office and District Engineering Offices. The number of maintenance staff of each region has been fixed based on the DPWH budget: CAR with regular employees of 13 and job order (non-permanent) of 21, RO VII with 13 and 56 and RO XI with 13 and 50. There are additional staff working for inspection and repair in the District Engineering Offices that help out the Regional Offices. The total number of trainers for the trainings and OJTs on the improved road and bridge maintenance by using the technical manuals/guidelines developed/revised by the project in the three pilot ROs decreased from 256 in 2015 to 36 in 2019. However, in addition to the Working Group members of the project, the personnel of other ROs have been engaged in the technical trainings and every year the number of trainers increases depending on the training they held because according to DPWH all trained staff can be trainers/resource persons in the future.

<Technical Aspect>

The training mechanism based on the technical manuals/guidelines developed/revised by the project has been sustained due to the DO No.94 Series of 2014 mandating DPWH personnel to conduct inspection and repair works based on those manuals and guidelines. In addition, the regular trainings following those manuals and guidelines have been conducted by the DPWH Bureau of Maintenance for the period from 2017 to 2019. The skills and knowledge of the engineers of the pilot Regional Offices and the District Engineering Offices have sustained at a sufficient level for necessary maintenance of roads and bridges because the conditions of roads and bridges have been improved over the years. Also, the level of skills and knowledge of the engineers of DPWH and the three pilot Regional Offices have been sufficient as resource persons for the technical trainings by DPWH.

As mentioned above, DO No. 94 series of 2014 prescribes the DPWH personnel in charge of implementation such as the Regional Offices, District Engineering Offices and Project Management Offices to adopt the technical manuals and guidelines developed by the project.

<Financial Aspect>

DPWH has continuously allocated the necessary budget for the road and bridge maintenance as well as the technical trainings based on the technical manual/guidelines developed/revised by the project.

<Evaluation Result>

In light of the above, there has been no problem in any aspects. Therefore, the sustainability of the effectiveness through the project is

high
5 Summary of the Evaluation
The project achieved the Project Purpose and the Overall Goal through the implementation of the improved road and bridge maintenance by the technical trainings based on the technical manuals/guidelines developed/revised by the project. As for efficiency, the project cost exceeded the plan. Considering all of the above points, this project is evaluated to be highly satisfactory.

III. Recommendations & Lessons Learned

Lessons Learned for JICA: The DPWH has been able to institutionalize the outputs made by the Project through the issuance of various Department Orders. They have continuously utilized the manuals and handbooks developed by the Project not just for purpose of training but also to actually enhance its operations in terms of inspections and repair works of road and bridges. This is actually a good way to ensure the sustainability and effectiveness of Projects. For future and existing technical projects of JICA, it should be discussed with counterpart agencies on how the outputs would be institutionalized so that the outputs will not just get shelved and forgotten after its completion.

Technical Working Group Meeting

Counterpart Working Group Meeting

Bridge Inspection

Road Inspection