

Country Name	Project for Improvement of the Road Management Capability
Lao People's Democratic Republic	

I. Project Outline

Background	<p>Due to the geographical characteristics of Laos as a landlocked country, the transportation network with neighboring countries, especially logistics by road transportation, is very important. The road network development was steadily progressing with the focus of the government of Laos.</p> <p>On the other hand, the World Bank (WB) and other development partners supported the Ministry of Public Works and Transport (MPWT) to establish a system for efficient maintenance and management of the existing roads as well as the Road Management System (RMS) (for national roads) and the Provincial Road Maintenance Management System (PRoMMS) in 2009. They had supported the development of budget plans for efficient road maintenance and management. The government of Laos had also been promoting the use of this system; however, road and bridge maintenance and management work was not sufficiently thorough, and approximately 30% of paved national roads were classified as poor according to the MPWT standards. The main reasons for that issue may have been that efficient planning and budget allocation remain difficult due to the lack of proper operation of the RMS/PRoMMS, and the low level of technical skills for maintenance.</p>														
Objectives of the Project	<p>Through (i) strengthening maintenance planning ability for road and bridge maintenance, (ii) preparing technical manuals for road/bridge maintenance, (iii) strengthening DOR (Department of Roads)/DPWT(Department of Public Works and Transport) officers' capability for physical road/bridge maintenance work in the pilot provinces, and (iv) strengthening DOT (Department of Transport)/DPWT officers' capacity for over-loading control in the pilot province(s), the project aims at maintaining the roads and bridges in the pilot provinces properly, thereby contributing to the proper maintenance of roads and bridges in Laos.</p> <ol style="list-style-type: none"> Overall Goal: Roads and bridges in Laos are properly maintained. Project Purpose: Roads and bridges in the pilot provinces are properly maintained. 														
Activities of the project	<ol style="list-style-type: none"> Project site: Entire country (Pilot province: Savannakhet and Vientiane Provinces) Main activities: (i) strengthening maintenance planning ability for road and bridge maintenance, (ii) preparing technical manuals for road/bridge maintenance, (iii) strengthening DOR/DPWT officers' capability for physical road/bridge maintenance work in the pilot provinces, and (iv) strengthening DOT/DPWT officers' capacity for over-loading control in the pilot province(s) is enhanced. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Lao Side</td> </tr> <tr> <td>1) Experts: 17 persons</td> <td>1) Staff allocated: 10 persons</td> </tr> <tr> <td>2) Trainees received: 20 persons</td> <td>2) Land and facilities: Office spaces in Vientiane Capital and Savannakhet</td> </tr> <tr> <td>3) Training in the third country: 7 persons (Thailand)</td> <td>3) Local operational expenses: cost for the pilot projects</td> </tr> <tr> <td>4) Equipment*: Pilot project related equipment (Alpha cutters, vibrate plate compactors, hand breakers, etc.) and office related equipment (PCs, etc.)</td> <td></td> </tr> <tr> <td>5) Local operational expenses: cost for local staff, car related costs, cost for equipment, utility costs, local contract, etc.</td> <td></td> </tr> </table> <p>*Other vehicles and equipment necessary for operation and maintenance activities under pilot projects were procured by the JICA Laos Office.</p> 			Japanese Side	Lao Side	1) Experts: 17 persons	1) Staff allocated: 10 persons	2) Trainees received: 20 persons	2) Land and facilities: Office spaces in Vientiane Capital and Savannakhet	3) Training in the third country: 7 persons (Thailand)	3) Local operational expenses: cost for the pilot projects	4) Equipment*: Pilot project related equipment (Alpha cutters, vibrate plate compactors, hand breakers, etc.) and office related equipment (PCs, etc.)		5) Local operational expenses: cost for local staff, car related costs, cost for equipment, utility costs, local contract, etc.	
Japanese Side	Lao Side														
1) Experts: 17 persons	1) Staff allocated: 10 persons														
2) Trainees received: 20 persons	2) Land and facilities: Office spaces in Vientiane Capital and Savannakhet														
3) Training in the third country: 7 persons (Thailand)	3) Local operational expenses: cost for the pilot projects														
4) Equipment*: Pilot project related equipment (Alpha cutters, vibrate plate compactors, hand breakers, etc.) and office related equipment (PCs, etc.)															
5) Local operational expenses: cost for local staff, car related costs, cost for equipment, utility costs, local contract, etc.															
Project Period	(ex-ante) September 2011-August 2016 (actual) September 2011- May 2018(Extended period: August 2016-May 2018)	Project Cost	(ex-ante) 595 million yen, (actual) 872 million yen												
Implementing Agency	Public works and Transport Institute (PTI) (Reorganized to Public Works and Transport Research Institute: PTRI in May 2016) Department of Road (DOR) Department of Public Works and Transport (DPWT) of Vientiane Province and Savannakhet Province														
Cooperation Agency in Japan	International Development Center of Japan Inc. Oriental Consultants Global Co., Ltd.														

II. Result of the Evaluation

<Special Perspectives Considered in the Ex-Post Evaluation>

- Continuation status of the Project Effects are verified under the Overall Goal, as the indicators are almost the same except whether they are for Laos as a whole, or the pilot provinces.

1 Relevance/Coherence

[Relevance]

<Consistency with the Development Policy of Laos at the Time of Ex-Ante Evaluation >

The project was consistent with the development policy of Laos at the time of ex-ante evaluation. In the "Sixth Five-Year Socio-Economic Plan" (NSED) (2006-2010), infrastructure development for socioeconomic development was identified as an issue, and the development of transportation infrastructure is also an important part of the plan. In July 2001, MPWT issued the "Communication, Transport, Post and

Construction Development Plan from 2001 to 2005, 2010 and 2020," which aimed to raise the standard level of national highways nationwide, it was expected that proper road maintenance and management would become even more important. Furthermore, the "five-year road and bridge development plan" (2011-2015) was formulated, with the development goal of building, rehabilitating, and maintaining infrastructure to make the road network function more efficiently and to promote economic growth.

<Consistency with the Development Needs of Laos at the Time of Ex-Ante Evaluation >

The project was consistent with the development needs of Laos at the time of ex-ante evaluation. The road and bridge maintenance and management work was not sufficiently thorough, and approximately 30% of paved national roads were classified as poor.

<Appropriateness of Project Design/Approach>

No problem attributed to the project design/approach was confirmed.

<Evaluation Result>

In light of the above, the relevance of the project is ③¹.

[Coherence]

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

The project was consistent with the Japan's ODA policy to Laos at the time of ex-post evaluation. "The Country Assistance Program to Lao PDR" (2006) included the priority area of "Socio-economic infrastructure development and effective utilization of existing infrastructure".

<Collaboration/Coordination with other JICA's interventions>

The collaboration/coordination between the project and grant aid projects "The Project for Improvement of the National Road Route 9 (Phase 1 & 2)" (1999-2004) and "The Project for Improvement of National Road No.9 as East-West Economic Corridor of the Mekong region" (2012-2015) of JICA was planned at the time of ex-ante evaluation. The project strengthened the asphalt pavement repair techniques as pilot projects for the sections which were not the target of the said projects. Thus, the synergetic effects of improving the surface of the National Road Rout 9 have been observed.

Additionally, being aware of the needs for maintenance of existing infrastructure is becoming higher and higher, after the completion of the project, a new JICA technical cooperation project namely "The Project for Capacity Development on Bridge Maintenance and Management" (JICA-BMM) started in 2020, the Overall Goal of the project is for the maintenance of the bridge, which is also one of the most crucial part of the roads forming transportation network throughout the country. This project includes development of Bridge Management System (BMS) which was also developed by the project.

<Cooperation with other institutions/ Coordination with international framework>

Any the cooperation/coordination with other development partners was not clearly planned at the time of ex-ante evaluation. However, the project was some coherent with WB's projects namely "Lao Road Sector Project" (LRSP) Phase 1 and Phase 2, which were budgeting for the improvement of the national road in the provincial level, including the maintenance planning for the national roads. The data collection system developed under the project called Vehicle Intelligent Monitoring System (VIMS) and manuals have been used by World Bank.

<Evaluation Result>

In light of the above, the coherence of the project is ③.

[Evaluation Result of Relevance/Coherence]

In the light above, the relevance/coherence of the project is ③.

2 Effectiveness/Impact

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

At the time of project completion, the Project Purpose was partially achieved. RMS/PRoMMS in the pilot provinces had been updated throughout the project period (Indicator 1), a maintenance budget plan in the pilot provinces was prepared following analysis by RMS/PRoMMS (Indicator 2). Decrease in annual damaged distance of pilot provincial road and increase in annual maintenance distance of pilot provincial road were not verified (Indicator 3), as only data on the National Road No.9 was available. The target of number of overloaded trucks surveyed at pilot national road(s) was not achieved, as a weight scale at Donghen was not installed yet at the time of project completion (Indicator 4).

<Continuation Status of Project Effects at the Time of Ex-Post Evaluation>

By the time of the ex-post evaluation, the project effects have partially continued, as the products under the project have been utilized. VIMS, which collects data on the road conditions and transports to RMS for the data analysis and prioritization, was developed under the project, and six sets were procured by the WB's LRSP Phase 1. WB has continued procured sets of VIMS and utilized them to update RMS.

The Road, Bridge, Slope Maintenance Manuals and Standard Specifications drafted under the project were not finalized at the time of ex-post evaluation. However, they have been used under several projects including WB's LRSP2, as well as JICA's JICA-BMM project. Although being utilized, the manuals developed under the project were too general and need further development, according to DOR. Therefore, they were considered to be revised under the JICA-BMM project. All the manuals are expecting to be finalized and approved by the end of 2022.

Donghen Weigh Station, which installed a new weigh scale under the project, has been operating since August 2018. However, four years past and many problems occur due to the broken of its main components such as sensor for the truck's axle checking, six out of eight CCTV cameras, and both 2 monitoring screens. These problems were reported to the DPWT of Savannakhet Province; however, it has been still remaining unsolved due to lack of technical skills and shortage of budget. In term of human resources, that station was in-charged by DOT and Private Operators from the beginning of the operation. However, it was handed over to DOR for a year. According to the deputy director general of DOR, the number of operating officers allocated by DOR has been insufficient.

Though the weigh stations nationwide (39 stations) were expected to be upgraded by using the concept and specification of Donghen weigh station, they have not been upgraded by the time of ex-post evaluation.

<Status of Achievement of the Overall Goal at the Time of Ex-Post Evaluation>

At the time of ex-post evaluation, the Overall Goal has been partially achieved. RMS/PRoMMS has been properly improved and updated

¹ ④ : very high, ③ : high, ② : moderately low, ①: low* To be the same afterwards.

(Indicator 1). As mentioned above, VIMS developed under the project has been utilized for the data collection and transferred to RMS. Maintenance budget plan is prepared for national road under RMS, but as for the local roads, the maintenance budget plans were only prepared for the six pilot provinces under LRSP2 (Indicator 2). Decrease in the annual damaged distance road and increase in the annual maintenance distance of road were not verified, as the no survey was made due to budget constraint (Indicator 3). Decrease in the number of overloaded trucks surveyed was not verified either, as the survey was not made due to budget constraint (Indicator 4). Besides, as mentioned above, no weight stations other than Donghen has been upgraded and therefore, the survey has not been possible.

<Other Impacts at the Time of Ex-Post Evaluation>

No negative impacts on natural environment have been observed.

Impacts on the social vulnerable people etc.: Some positive impacts have been observed. Improved road infrastructure improved (1) access of socially vulnerable people to social services, (2) link of the people from both urban and rural communities to connect to each other, (3) economic and social opportunity including better access to markets, employment, education, health care service, etc., (4) equal access to the roads regardless of gender, age, etc.

<Evaluation Result>

In light of the above, the effectiveness/impact of the project is ②.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results	Source
(Project Purpose) Roads and bridges in the pilot provinces are properly maintained.	Indicator 1 RMS/PRoMMS in the pilot provinces are properly improved and updated by PTI (changed to PTRI) and DPWT.	Status of the Achievement (Status of the Continuation): Achieved as planned (continued) (Project Completion) RMS/PRoMMS database had been updated throughout the project period (2012-2016) by PTRI/DPWT. The Terminal Evaluation Team confirmed that database in road and bridge information in all provinces were properly updated and maintained. Furthermore, the Terminal Evaluation Team confirmed that the data obviously contained data in pilot provinces. Therefore, RMS/PRoMMS in the pilot provinces are properly improved and updated. (Ex-Post Evaluation) See the Overall Goal below.	JICA documents, questionnaires and interviews with DOR, DPWT Savannakhet
	Indicator 2 Maintenance budget plan in the pilot provinces is prepared, following analysis by RMS/PRoMMS by DOR.	Status of the Achievement (Status of the Continuation): Achieved as planned (partially continued) (Project Completion) The Terminal Evaluation Team also confirmed that DOR prepares maintenance budget plan annually in the pilot provinces, following analysis by RMS/PRoMMS. In concrete, RMS analysis report has been regularly updated by PTRI and submitted to DOR. DOR has injected most of RMF to National Road and rehabilitation works, following the RMS analysis. (Ex-Post Evaluation) See the Overall Goal below.	JICA documents, questionnaires and interviews with DOR, DPWT Savannakhet
	Indicator 3 Annual damaged distance of pilot provincial road is decreased and annual maintenance distance of pilot provincial road is increased.	Status of the Achievement (Status of the Continuation): not verified (not verified) (Project Completion) The indicator can be measured mainly as annual damaged distance in IRI and in road condition (scored as 1 to 6) based on the results of the road condition survey and annual maintenance distance of pilot provincial road (National Road No.9), consequently, the results indicate that annual damaged distance of national road in both IRI and road condition in National Road No.9 seems to be decreased as compared with the data in 2002. Furthermore, the project already rehabilitated a total of 199.4km in National Road No.9. Accordingly, it is expected that distance of preventive maintenance (routine maintenance and periodic maintenance) will be increased in National Road No.9. Note: Road number 9 crosses Savannakhet	JICA documents, questionnaires and interviews with DOR, DPWT Savannakhet

		Province from east to west; it is a national road, but it is also managed by the province. Therefore, whether it is a national road or a provincial road, the meaning is the same. (Ex-Post Evaluation) See the Overall Goal below.	
	Indicator 4 Number of overloaded trucks surveyed at pilot national road(s) is decreased.	Status of the Achievement (Status of the Continuation): not achieved (not achieved) (Project Completion) There is no number of overloaded trucks surveyed at national road(s) at the time of Terminal Evaluation since a weight scale at Donghen was not installed yet. (Ex-Post Evaluation) See the Overall Goal below.	JICA documents, questionnaires and interviews with DOR, DPWT Savannakhet
(Overall Goal) Roads and bridges in Laos are properly maintained.	Indicator 1 RMS/PRoMMS are properly improved and updated by PTI and DPWT. *The task has been transferred to DOR.	(Ex-Post Evaluation) Achieved as planned RMS/PRoMMS nationally, has been properly improved and updated such as the function for data entry and benefit matrix for system analysis.	Questionnaire and interviews with DOR
	Indicator 2 Maintenance budget plan is prepared, following analysis by RMS/PRoMMS by DOR.	(Ex-Post Evaluation) partially achieved Following analysis by RMS/ProMMS, the budget was prepared under the LRSP2. According to DOR, RMS is used for entire road network and PRoMMS is used for local road network in provincial level. Under LRSP2 the RMS system is used for national road network analysis and budget for maintenance plan was prepared. However, PRoMMS is used in six provinces under LRSP2 project where the budget was planned, but did not cover for the rest 11 provinces due to the budget limitation for data survey and collection.	Questionnaires and interviews with DOR, DPWT Savannakhet
	Indicator 3 Annual damaged distance of road is decreased and annual maintenance distance of road is increased.	(Ex-Post Evaluation) not verified There is no data information available because no survey/data collection was conducted at the time of ex-post evaluation due to budget constraint issues.	Questionnaires and interviews with DOR, DPWT Savannakhet
	Indicator 4 Number of overloaded trucks surveyed at national road(s) is decreased.	(Ex-Post Evaluation) not verified There is no data information available because no weight stations other than Donghen has been upgraded and no survey/data collection was conducted at the time of ex-post evaluation due to budget constraint issues.	Questionnaires and interviews with DOR, DPWT Savannakhet

3 Efficiency

Both the project cost and the project period exceeded the plan ((the ratio against the plan: 147% and 133 %, respectively. The activities for over-loading control were added for improving road management and maintenance capability. Hence, the project period was extended until May 2018. Outputs were partially produced, as the weight scale was not installed at the time of project completion, as mentioned above.

In the light above, the efficiency of the project is ②.

4 Sustainability

<Policy Aspect>

There have been established policy support for the continuation of the project effects. “Lao Road Sector Program Phase II” (2017-2023) focused on road maintenance work, overloading control, and others in six provinces.

<Institutional/Organizational Aspect>

During the project implementation, the organization responsible for RMS/ProMMS was changed from PTRI to DOR. To manage RMS database including GIS road master data, DOR set the Road Asset Management Team in October 2017, which has functioned since then. The organization responsible for Donghen weight station was also changed from Department of Transport to DOR, after the project completion.

There have been eight staff members in DOR who have been responsible for RMS/ProMMS. Three of them, including one technical staff, deputy director general, and director general take responsibility for the activities related to the dissemination of the system/model/activities, i.e. Road, Bridge, Slope Maintenance Manuals introduced by the project. Although the number of personnel involved has been limited, there has been coordination and assignment of responsibility with provincial and local officials when necessary. Similarly, manuals were also disseminated by DPWT in all provincial and district level.

Despite the shortage of an establishment of an additional organizational system, the project's effects are carried on by the existing organizations.

<Technical Aspect>

According to DOR, the skill of staff has been sufficient to disseminating the RMS/PRoMMS, VIMS as well as manuals developed under

the project.

Some training courses were conducted under the support of World Bank. Several training programs were also conducted under the JICA-BMM which included the disseminating the manuals for bridge inspection and diagnosis, which some contents were introduced by project and developed by JICA-BMM. Furthermore, DOR and JICA-BMM are also considering creating some videos to give instruction on the manuals developed by the project. Thus, there would be no problem on the technical aspect.

<Financial Aspect>

DOR has been continuously secured the budget for the dissemination of the system/model/activities introduced by project through on-going projects supported by development partners, such as JICA-BMM, and WB's LRSP, and some budget allocated by the Asian Development Bank (ADB). Also, the government's Road Management Fund (RMF), particularly in term of road maintenance and slope protection was allocated.

Nonetheless, the budget has not been enough as maintenance budget plan have not been materialized. However, as the road infrastructure is one of the most crucial sectors for the government to assure the government's commitment to enhancing the country's connection with its neighboring countries. Therefore, the government will continue to seek assistance/funding from its development partners.

<Environmental and Social Aspect>

No specific risks have been observed.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the institutional and financial aspects of the implementing agency. Therefore, the sustainability of the project effects is ③.

5 Summary of the Evaluation

The project partially achieved the Project Purpose, as RMS/PRoMMS had been updated, maintenance budget plan was prepared in the pilot provinces following analysis by RMS/PRoMMS. However, annual damage distance/annual maintenance distance was not verified, and overload survey was not conducted. The Overall Goal has been partially achieved. RMS/PRoMMS has been properly improved and updated, the maintenance budget plan was prepared for the national road, but partially for the local roads. Data on the annual damage distance/annual maintenance distance of road was not collected, and the number of overloaded trucks were not surveyed either. As for the Sustainability, slight problems have been observed in terms of the institutional and financial aspects. Both project cost and project period exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

As for the weigh stations,

- 1) All data/information generated by each weigh station should be transferred to the overloading control center so that DOR can keep update its information promptly and in a timely manner. Therefore, if all weigh stations are managed by the control center, and if the system properly works, the data can transfer to the main server automatically.
- 2) Savannakhet DPWT and DOR should take action immediately to fix the weigh station monitoring system.
- 3) DOR and DPWT are required to ensure the capacity/skills building, and securing the budget for the operation and maintenance issues.

Lessons Learned for JICA:

The main components of the weigh station operation system were broken without proper maintenances, as the counterpart/implementing agency has limited capacity to utilize and maintenance the facilities introduced by the project. Since the project introduced new systems into the operating system, the actions carried out by the implementing agency should be thoroughly scrutinized. For instance, institutional system, capacity building, financial capability for maintenance issues, which are essential for the implementing agency to carry out responsibilities effectively.



Donghen Weigh Station



A section of National Road No. 9 which is maintained annually after the support by the project