

Country Name	The Project for Strengthening Capacity for Maintenance of Roads and Bridges
Kingdom of Cambodia	

I. Project Outline

Background	<p>In Cambodia, major means of transportation were road, railway, and water transportation, and particularly road transportation played a significant role. However, many roads were old, constructed in 1920s-1930s, and the civil war since 1970 devastated major roads and bridges. Heavy traffic by overloaded vehicles, periodic river floods, and others also brought about severe damages to roads and bridges. In response, donors, including JICA, provided supports such as restoration and rehabilitation of roads and bridges and the planning. Consequently, the capacity on road maintenance of the Ministry of Public Works and Transport (MPWT), the agency responsible for maintenance of roads and bridges, was enhanced. On the other hand, a systematic institution to appropriately request a budget on road maintenance was not established, and as for bridge maintenance, even fundamental works such as periodical inspection were not undertaken. Under such situation, a technical cooperation, “The Study on the Improvement of the Existing Bridges along the National Roads in Cambodia” (2012-2013) was implemented by JICA. The results of the study indicated necessity to rehabilitate around 200 bridges among the bridges under MPWT and the Ministry of Rural Development and to strengthen the MPWT’s capacity on bridge maintenance.</p>														
Objectives of the Project	<p>Through proposing and implementation of a bridge maintenance strategic plan with the annual action plan, development of road/bridge maintenance manuals and repair manuals, inspection of bridges and roads based on the manuals, provision of training programs to foster maintenance experts, and holding seminars on road/bridge inspection and repair for other related agencies, the project aimed at enhancing capacity of Road Infrastructure Department (RID) to supervise implementing bodies maintaining roads and bridges, thereby contributing to <u>managing appropriate maintenance of roads and bridges by MPWT.</u></p> <ol style="list-style-type: none"> Overall Goal: Appropriate maintenance of roads and bridges is managed by MPWT. Project Purpose: Capacity of RID to supervise implementing bodies maintaining roads and bridges are enhanced. 														
Activities of the Project	<ol style="list-style-type: none"> Project site: the whole area of Cambodia Main activities: 1) Proposing and implementation of a bridge maintenance strategic plan with the annual action plan, 2) Development of road/bridge maintenance manuals and repair manuals, 3) Inspection of bridges and roads based on the manuals, 4) Provision of training programs to foster maintenance experts, 5) Holding seminars on road/bridge inspection and repair for other related agencies, etc. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Cambodian Side</td> </tr> <tr> <td>1) Experts: 21 persons</td> <td>1) Staff allocated: 35 persons</td> </tr> <tr> <td>2) Trainees received in Japan: 21 persons</td> <td>2) Land and facility: an office space in Road Infrastructure Department</td> </tr> <tr> <td>3) Trainees received from the third country: 9 persons (the Philippines)</td> <td>3) Local expense: utility cost, travel cost, implementation cost for pilot repair work, etc.</td> </tr> <tr> <td>4) Equipment: Dynamic Response Intelligent Monitoring System, PCs, inspection camera, etc.</td> <td></td> </tr> <tr> <td>5) Local expense: cost for project activities</td> <td></td> </tr> </table> 			Japanese Side	Cambodian Side	1) Experts: 21 persons	1) Staff allocated: 35 persons	2) Trainees received in Japan: 21 persons	2) Land and facility: an office space in Road Infrastructure Department	3) Trainees received from the third country: 9 persons (the Philippines)	3) Local expense: utility cost, travel cost, implementation cost for pilot repair work, etc.	4) Equipment: Dynamic Response Intelligent Monitoring System, PCs, inspection camera, etc.		5) Local expense: cost for project activities	
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Project Period	(ex-ante) March 2015 – March 2018 (actual) April 2015 – March 2018	Project Cost	(ex-ante) 300 million yen, (actual) 407 million yen												
Implementing Agency	Road Infrastructure Department of Ministry of Public Works and Transport														
Cooperation Agency in Japan	CTI Engineering International Co., LTD. Hanshin Expressway Company Limited														

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

- Verification of the continuous status of project effects: the ex-post evaluation verified the continuation status of indicator 1, 2 of the Project Purpose by assessing the achievement status of the Overall Goal. The continuation status of rest of the indicators of the Project Purpose were verified by checking the Financial and Technical aspects of Sustainability.

1 Relevance
<p><Consistency with the Development Policy of Cambodia at the time of Ex-ante Evaluation></p> <p>The project was consistent with the Cambodian development policies such as “Rectangular Strategy Phase 3” (2014-2018) promoting development of transport infrastructure, including maintenance of roads and bridges, as a means for economic growth and poverty reduction though “infrastructure development” set as one of the strategies.</p> <p><Consistency with the Development Needs of Cambodia at the time of Ex-ante Evaluation></p> <p>The project was consistent with the Cambodian development needs for strengthening the MPWT’s capacity on bridge maintenance.</p> <p><Consistency with Japan’s ODA Policy at the time of Ex-ante Evaluation></p> <p>The project was consistent with the Japan’s ODA policy for Cambodia. “The Country Assistance Policy for Kingdom of Cambodia” (2012) set “strengthening of economic foundation”, including “development of economic infrastructure”, as one of the priority areas.</p> <p><Evaluation Result></p> <p>In light of the above, the relevance of the project is high.</p>

2 Effectiveness/Impact

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

The Project Purpose was achieved by the time of project completion. Inspection results done by the three target Department of Public Works and Transport (DPWTs) was approved by RID based on the manuals by the end of the project (Indicator 1). Repair results done by the two target DPWTs was approved by RID based on the manuals by the end of the project (Indicator 2). RID developed a short-term program budgeting for road and bridge maintenance at a national level (Indicator 3). The road and bridge maintenance cycle was shared with to concerned offices and units (Indicator 4). Maintenance budget of road and bridge was prepared by RID according to the road and bridge maintenance cycle (Indicator 5).

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

The current status of the indicators for the Project Purpose was verified by assessing the achievement status of the Overall Goal.

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

The Overall Goal has been achieved at the time of ex-post evaluation based on the data collected for four indicators.

The road and bridge database have been updated at the end of every year since the project completion (Indicator 1). Road and bridge annual maintenance plans have been updated at the end of every year based on the updated database (Indicator 2). The road and bridge maintenance have been carried out under supervision of RID based on the maintenance plans and the maintenance and repair manuals since project completion (Indicator 3). The road maintenance and repair manuals and the bridge maintenance and repair manuals could not be reviewed. However, considering that it was due to the pandemic of Covid-19 and RID plans to review in 2022, this indicator can be treated as “not verifiable” (Indicator 4).

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

Neither positive nor negative impacts were observed at the time of ex-post evaluation.

<Evaluation Result>

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

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results	Source
(Project Purpose) Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced.	Indicator 1: Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the project.	<p><u>Status of the Achievement: Achieved (Continued)</u> (Project Completion)</p> <ul style="list-style-type: none"> All 1-digit roads and selected roads (not limited to the target DPWTs) were inspected based on the manual. All bridges under DPWTs (not limited to the target DPWTs) were inspected based on the manual. The above results were approved by RID. <p>(Ex-post evaluation) Refer to the Indicator 1-3 of the Overall Goal. The road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals.</p>	<u>Project Completion Report (EN)</u>
	Indicator 2: Repair results done by the two target DPWTs are approved by RID based on the manuals by the end of the project.	<p><u>Status of the Achievement: Achieved (Continued)</u> (Project Completion)</p> <ul style="list-style-type: none"> The repair results done during the project were approved by RID. <p>(Ex-post Evaluation) Refer to the Indicator 1-3 of the Overall Goal. The road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals.</p>	<u>Project Completion Report (EN)</u>
	Indicator 3: The above two target DPWTs prepare a draft budget for road and bridge maintenance for FY 2018 respectively within pre-agreed schedule.	<p><u>Status of the Achievement: Achieved (Partially continued)</u> (Project Completion)</p> <ul style="list-style-type: none"> RID developed a short-term program budgeting for road and bridge maintenance at a national level. <p>(Ex-post Evaluation) Refer to the Financial Aspects of the Sustainability. RID has prepared the budget for road and bridge maintenance since the project completion, although the proposed budget was not approved fully.</p>	<u>Project Completion Report (EN)</u>
	Indicator 4: Road and bridge maintenance cycle is explained and shared to concerned offices and units at the project wrap-up seminar.	<p><u>Status of the Achievement: Achieved (Continued)</u> (Project Completion)</p> <ul style="list-style-type: none"> The road and bridge maintenance cycle was shared with the following agencies. <ul style="list-style-type: none"> Within MPWT: Department of Equipment and Roads Rehabilitation, Department of Sub-National Public Infrastructure and Engineering, Public Works Research Center, Department of Roads Repair and Maintenance DPWT: All DPWTs (25) Ministry of Economic and Finance The Institute of Technology of Cambodia <p>(Ex-post Evaluation) Refer to the Technical Aspects of the Sustainability. RID has conducted a seminar to show the bridge inspection result.</p>	<u>Project Completion Report (EN)</u>

	Indicator 5: Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle.	<p><u>Status of the Achievement: Achieved (Partially continued)</u> (Project Completion)</p> <p><Road></p> <ul style="list-style-type: none"> RID improved the road maintenance budget by having road condition survey results. <p><Bridge></p> <ul style="list-style-type: none"> RID prepared the bridge maintenance budget. <p>(Ex-post Evaluation)</p> <p>Refer to the Financial Aspects of the Sustainability. RID has prepared the budget for road and bridge maintenance since the project completion, although the proposed budget was not approved fully.</p>	<u>Project Completion Report (EN)</u>																
(Overall Goal) Appropriate maintenance of roads and bridges is managed by MPWT.	Indicator 1: The road and bridge database is updated once / a year.	<p><u>Status of the Achievement: Achieved</u> (Ex-post Evaluation)</p> <p><Road></p> <ul style="list-style-type: none"> The road and bridge database have been updated since the project completion under the regular responsibility of RID and all DPWTs. The database is updated at the end of every year. <p><Bridge></p> <ul style="list-style-type: none"> Every year RID inspects approximately 450 bridges as the regular responsibility. The bridge database is updated at the end of each year. It is important to note that the target of the bridge inspection in the completion report was set at 500 bridge per year. In this regard, RID achieved around 90% of the target. 	<u>Interviews with RID and DPWTs and observation</u>																
	Indicator 2: Road and bridge maintenance plans are updated once / a year based on the result of the road and bridge database updated.	<p><u>Status of the Achievement: Achieved</u> (Ex-post Evaluation)</p> <ul style="list-style-type: none"> Road and bridge annual maintenance plans are set as the regular responsibility of RID, are updated at the end of every year based on the updated database, and are closely linked to the annual budget request by MPWT to the Ministry of Economy and Finance. Every year, the technical working group of the two ministries confirms the request of MPWT before suggesting it to the higher level naming the Inter-Ministerial Committee on Maintenance of Roads, Bridges, Railways, and River Ports. The approved maintenance plans are subjected to the budget availability of the Royal Government of Cambodia allocated under budget chapter of 61 (total annual maintenance budget). 	<u>Interview with RID, and reviews of related official documents</u>																
	Indicator 3: Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.	<p><u>Status of the Achievement: Achieved</u> (Ex-post Evaluation)</p> <ul style="list-style-type: none"> RID plays important role as the consultant to supervise the road and bridge maintenance and construction. The maintenance work is classified as routine maintenance, periodic maintenance and reconstruction based on the level of the damage. Updated result of road maintenance is shown in the table below. <p>[Updated Results of Road Maintenance]</p> <table border="1"> <thead> <tr> <th>Description</th> <th>2019</th> <th>2020</th> <th>2021</th> </tr> </thead> <tbody> <tr> <td>Target (km)</td> <td>5,000</td> <td>5,000</td> <td>5,000</td> </tr> <tr> <td>Actual (km)</td> <td>3,335</td> <td>5,086</td> <td>2,500 (6 months)</td> </tr> <tr> <td>Achievement ratio (%)</td> <td>67%</td> <td>102%</td> <td>50%</td> </tr> </tbody> </table> <p>Note 1: Target was set at the 3rd Joint Review Meeting in February 2018 and was not updated every year based on the actual result.</p> <p>Note 2: The reasons of low achievement ratio in 2019 were the occurrence of a natural disaster interrupting the maintenance work and the transition period to arrange or mobilize its resources to carry out the maintenance work properly.</p> <ul style="list-style-type: none"> Regarding the bridge, 15-20 sever damaged were reconstructed from 2018 to 2020, similarly 15-20 damaged bridges were repaired per year including emergency cases (set target 8 bridges per year). 	Description	2019	2020	2021	Target (km)	5,000	5,000	5,000	Actual (km)	3,335	5,086	2,500 (6 months)	Achievement ratio (%)	67%	102%	50%	<u>Interview and observation</u>
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Indicator 4: The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed.	<p><u>Status of the Achievement: Not verifiable</u> (Ex-post Evaluation)</p> <ul style="list-style-type: none"> RID plans to review these manuals every three years. Since the project completion, 2021 is the year for the review. However, it is postponed to 2022 due to the current situation of Covid-19. Nevertheless, according to RID and DPWTs technical evaluation, the existing manuals are still useful within current situation in Cambodia and are used in their daily work. 	<u>Interviews of RID and selected DPWTs and observation</u>																	

3 Efficiency

Although the project period was as planned (ratio against the plan: 97%), because of combined factor, the project cost exceeded the plan(ratio against the plan: 136%). Outputs were produced as planned. Therefore, the project efficiency is fair.

4 Sustainability

<Policy Aspect>

The road and bridge maintenance has been still priority for Royal Government of Cambodia, since related policies and strategies of MPWT and MEF, such as MPWT Budget Strategic Plan, Circular on Guidelines on Preparation of the Annual Financial Law and Circular No. 242 MEF on the Establishment and Roles of Inter-Ministerial Committee on Repair and Maintenance of Roads, Bridges, Railways, and River Ports, aim to address the development issue of road and bridge maintenance.

<Institutional/Organizational Aspect>

There have been no changes in the way negatively impact the outputs of the project to promote/disseminate road and bridge maintenance targeted by the project. RID has sufficient number of staff to promote/disseminate road and bridge maintenance targeted by the project.

<Technical Aspect>

With the road maintenance work conducted every year and the available road and bridge maintenance manuals, RID and DPWT staffs are practicing their skills on their daily work. Thus, their technical skills are sustained. All the manuals are also utilized as references and guidelines are regularly utilized. RID did not conduct the maintenance expert training program, instead conducted On the Job Training (OJT) for road and bridge inspection, and delivered a seminar to show the result of bridge inspection of the previous year.

<Financial Aspect>

The budget for functioning the key responsibility of RID, including the implementation of the annual maintenance plan, after the project completion are secured every year to some extent, although the budget for the implementation of the annual maintenance plan was approved lower than proposed RID tries to manage not less than 90% of the target repairs and maintenance using the approved budget.

[Budget for road and bridge maintenance] (Million US dollars)

2017 (Actual)	2018 (Actual)	2019 (Actual)	2020 (Actual)	2021 (Plan)	2022 (Plan)
148.75	160	164.63	123.60	125	130

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the technical and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose and the Overall Goal to manage appropriate maintenance of roads and bridges by MPWT, through the enhancement of capacity of RID. Regarding sustainability, although there had been slight problems in conducting the maintenance expert training program and securing the budget for the implementation of the annual maintenance the technical skills are sustained and RID tries to manage not less than 90% of the target repairs and maintenance using the approved budget. As for efficiency, the project cost exceeded the plan.

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

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

[Maintenance Expert Training Program]

MPWT/RID should conduct maintenance expert training program, connect the expert training program with existing programs of other related institutions and develop the maintenance of road and bridge syllabus for the Institute of the Public Work and Transport to scale out the awareness and capacity development for the young generation engineers employed by MPWT/RID as the officials in public work and transport.

[Updates of Road and Bridge Maintenance Manuals (outputs of the project)]

MPWT/RID should continuously update the manuals by the following procedures:

- Technical workshop to review existing manuals
- Working group to update the manual
- Dissemination workshop on the drafts
- Approval of the competent authority of MPWT
- Notification of the updated guideline to all DPWTs
- Follow-up training and capacity development from RID to DPWT

[Promotion of the awareness of the project outputs among member of the Inter-Ministerial Committee for Repairs and Maintenance of Roads, Bridges, Railways, and River Ports]

MPWT/RID should conduct regular presentations or workshop to promote the awareness of the project outputs among Inter-Ministerial Committee for Repairs and Maintenance of Roads, Bridges, Railways, and River Ports and discuss the three-year maintenance plan and annual plan within the committee.

Lessons Learned for JICA:

None



Inspection Ruessei Srok Bridge along NR21B (previously known as NR110, where pilot project was conducted,



The repairing work is in good condition