

Country Name	The Project for Provision of Road Construction and Maintenance Equipment in Kayin State
Republic of the Union of Myanmar	

I. Project Outline

Background	In Kayin State of Myanmar, there were a series of armed struggles by ethnic armed groups against the government forces until both sides reached a ceasefire agreement in January 2012. Therefore, the long years of conflict impeded development. Repatriation and resettlement of refugees and internally displaced people were the most pressing issues that faced Kayin State at that time. Under such circumstances, roads were vital to enabling access to various infrastructure for repatriation and resettlement but were not in good condition. While the construction and maintenance of trunk roads (approximately 53,000 km at the time of ex-ante evaluation) was basically conducted as a directly managed activity by Public Works (PW) of the Ministry of Construction (MOC), the poor state of equipment meant that it could not conduct efficient road construction and maintenance.			
Objectives of the Project	To promote the construction and maintenance of major roads in Kayin State of Myanmar by procuring road construction and maintenance equipment and providing related technical assistance, thereby contributing to the mitigation of poverty in provincial outlying areas.			
Contents of the Project	1. Project Site: Yangon City, Yangon Region and Kayin State 2. Japanese side: (1) Provision of grant necessary for procurement of road construction equipment (1 set of earthwork equipment, 1 set of surface treatment equipment, 1 set of craning equipment, 1 set of vehicles for inspection and maintenance), and spare parts for the equipment (2) Technical assistance (soft component of Grant Aid) to utilize the performance of the Project equipment in executing road construction and maintenance works, and place the Project equipment under efficient operation and maintenance together with existing equipment and spare parts. 3. Myanmar side: Road and bridge construction of the project site, storage area for construction and maintenance equipment, etc.			
Project Period	E/N Date	March 22, 2013	Completion Date	December 26, 2014 (completion of soft component activities)
	G/A Date	March 22, 2013		
Project Cost	E/N Grant Limit / G/A Grant Limit : 759 million yen, Actual Grant Amount: 558 million yen			
Executing Agency	Public Works (PW), Ministry of Construction Since the organizational reform of MOC on April 2015, the Department of Public Works was replaced by Department of Highways (DOH).			
Contracted Agencies	Main Consultant: Yachiyo Engineering Co., Ltd. Main Contractors: Sumitomo Corporation, Mitsubishi Corporation, Tovota Tsusho			

II. Result of the Evaluation

< Constraints on Evaluation >

• Due to the lack of security of targeted area at the time of ex-post evaluation, no site observation was carried out and the data was collected mainly through questionnaire survey and interviews with those concerned.

< Special Perspectives Considered in the Ex-Post Evaluation >

[Use of supplementary information]

• In addition to the three indicators set at ex-ante evaluation, this evaluation uses “Actual status of construction and improvement of road in comparison of the initial plan” and “Capacity of participants of soft component (indicators specified in soft component)” as Supplementary information 1 and 2. In evaluation judgment, less weights are given to the supplementary information than the original three indicators.

1 Relevance

<Consistency with the Development Policy of Myanmar at the Time of Ex-Ante and Ex-Post Evaluation>

At the time of ex-ante evaluation, this project was consistent with development policy of Myanmar, such as “The 30-year Road Development Plan for 2001 to 2030” in which the Government of Myanmar prioritizes the development of road construction. At the time of ex-post evaluation, the current national and regional development policies, such as “2016-2030 Master Plan” based on “National Transport Master Plan, 2014” formulated by the Ministry of Transport and Communications, with assistance from JICA, prioritizes the improvement of road construction under the administration of both union government and local government.

<Consistency with the Development Needs of Myanmar at the Time of Ex-Ante and Ex-Post Evaluation >

This project was consistent with Myanmar’s development needs of road construction at the time of ex-ante evaluation as described in “Background” above. At the time of ex-post evaluation, there are still continuing needs for equipment for road construction and maintenance not only for target roads but also for other roads in Kayin State. Some of those provided equipment, vehicles are also being used for emergency disaster responses such as providing foods, moving and relocating disaster affected people at the currently flooded areas in Kayin State.

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

The Japanese government set its policy of assistant on the better living of people including ethnic minorities and the poor as well as the assistance on the infrastructure development.¹

<Evaluation Result>

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

2 Effectiveness/Impact

<Effectiveness>

The project objective of promoting the construction and maintenance of major roads in Kayin State by procuring road construction and maintenance equipment and providing related technical assistance was achieved.

For quantitative effects, the average travelling speed on the target roads at the target year (2017) achieved the 60 km per hour as planned and the road condition has been well maintained (Indicator 1). DOH completed the rehabilitation work for 101.77 km out of the planned total length of road improvement of 146 km, achieving the target of 100 km at the target year (Indicator 2). Construction of remaining part for 44.23 km (approximately 30% of what was planned) has been suspended nearby Phapun area due to security reasons. The maximum weight of vehicle on bridges achieved the target of 60 ton (Indicator 3). It was also confirmed by the study that many of the equipment procured under the project have been utilized to make regular and occasional maintenance and repair of the completed roads as well as for other road rehabilitation projects in Kayin State. The equipment provided is in good condition and is properly stored in the compound of Road Construction Special Unit 22.

As for qualitative effects, the operation of the equipment and stock condition of spare parts are controlled by the database management system for equipment ledger implemented as soft component. The system is well constructed to readily store the various data, such as the initialized state of each equipment, its record of daily operation and maintenance, and inventory of spare parts, etc. Furthermore, the system is accessible by the ordinary computer. The soft copies of Monthly Database Reports which include Maintenance and Operation Record and Parts Inventory Control are prepared by mechanical staff of Kayin State and are sent via email to Mechanical Equipment Company (South), Yangon. If the Assistant Director of Mechanical Equipment Company (South), Yangon Office detects the abnormal condition, he instructs to the mechanical staff for necessary action. Taking full advantages of those accumulated data such as daily operation and maintenance, the system can automatically pick up the timing of maintenance and let it display on the computer screen. This is how the mechanical staff can timely identify when to carry out the maintenance and when to procure the spare parts, etc.

Therefore, the mechanical staffs of Yangon and Kayin State have been able to grasp the operation conditions of equipment and promptly respond to equipment failures, if any. Under this database management system for equipment ledger described above, the management capability of employees of DOH, Kayin State has improved to take care not only of the project equipment but also of other departmental equipment. Learned from this experience, DOH Mechanical Section has decided to officially introduce the file maker database management system for equipment ledger which converts the paper-based database system to the computer-based one to ensure more efficient, convenient and faster control of equipment.

<Impact>

In terms of benefit to the people living along the target roads (which includes towns of Phapun and Kamamaung), the project contributed to advancing of the mobility of local population. The population along the target road areas increased by about 12.3% from 50,635 (2014-2015) to 56,846 (at the time of ex-post evaluation in 2018). During the same period, 6 schools and 8 units of health service centers and one hospital have been newly established. Furthermore, two passenger express bus lines have newly been implemented and the number of small buses has increased. The local people from Waboetaw and Kamamaung area more frequently go to Thaton in Mon State for buying and selling goods. Those improved passenger bus lines have resulted in the emergence of several small businesses such as small restaurants, and home-based shops on the road side, giving income generation opportunities especially for the households, including women and children, living on the road side villages and communities.

<Evaluation Result>

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

Quantitative Effects

Indicators	Baseline 2012 Baseline year	Target 2017 3 Years after Completion	Actual 2015 1 Year after Completion	Actual 2016 2 Years after Completion	Actual 2017 3 Years after Completion	Actual 2018 4 Years after Completion
Indicator 1: Average travelling speed on the target road Unit: km/h	20	Approx.60	40	60	60	60
Indicator 2: Total length of road improvement on the target road Unit: km	0	Approx.100	31.5	71.53	101.77	101.77
Indicator 3: Maximum weight of vehicle on bridges Unit: ton	5	60	60	60	60	60

Source: Preparatory Survey Report, Questionnaire survey and interviews with Mechanical Section of DOH (Kayin State)

3 Efficiency

While the project cost was within the plan, the project period exceeded the plan (ratio against plan: 74%, 122%). This is due to that the Grant Agreement (G/A) was signed three months prior, though the actual implementation was conducted according to the original plan. The outputs were produced as planned.

Therefore, efficiency of the project is fair.

¹ Source: ODA Databook in 2013

4 Sustainability

<Institutional Aspect>

The Mechanical Section based in Nay Pyi Taw under the DOH of MOC has an overall responsibility for operation and maintenance (O&M) of equipment procured under the project. One Superintending Engineer assigned to Yangon City is in charge of southern part of Myanmar, including Kayin State. He supervises the Mechanical Equipment Compound which is in charge of maintenance of equipment and appropriate stores of expandable parts, the Base Workshop and the Mechanical Training Centre for the development of human resources for construction. The routine maintenance is carried out by the DOH of Kayin State Office, which periodically reports the maintenance status to the Mechanical Equipment Compound. The number of staffs of Mechanical Section, the Mechanical Equipment Compound and the Base Workshop combined decreased by 32% from 1,203 at the time of ex-ante evaluation to 816 at the time of ex-post evaluation. However, the DOH can properly manage O&M of current equipment, since the number of equipment was reduced by 36% for the same period due to past their estimated service life. Furthermore, in case that the DOH needs the operators and drivers in ground, it can appoint additional staffs by local government budget. The staff number of DOH of Kayin State Office has slightly increased from 35 to 36 for the same period.

As for the construction and maintenance of roads and bridges, the Road Construction Special Unit No.22 and Phapun District under the DOH and the Bridge Construction Special Unit No. 14 under the Department of Bridges (DOB) are responsible. It was confirmed by the study that the staff numbers of those organizations combined have decreased from 232 to 92 which have been sufficient to carry out the construction and maintenance of roads and bridges partly due to that the DOH has been outsourcing several projects. This means that it is not required for DOH to keep plenty of equipment under their compound.

<Technical Aspect>

It was confirmed by the study that the majority of staffs of Mechanical Section, Mechanical Equipment Compound and Base Workshop have sufficient knowledge and skills for O&M of equipment. Operators in DOH of Kayin State Office had attended initial training for the latest equipment after hand-over. In Mechanical Equipment Compound of Yangon and DOH of Kayin State, operational status of equipment as well as the inventory of spare parts is well managed under the database management system for equipment ledger. It was also confirmed by the study that staffs of the DOH and the DOB have sufficient knowledge and skills to carry out the necessary activities. Four training courses on the Basic Training of Database System were conducted in DOH attended by the total of 124 participants, such as mechanical staff officers and junior engineers, which contributed to the internal transfer of the O&M related techniques. Manuals and inventory books for spare parts have been shared during training courses as well as to the field engineers.

<Financial Aspect>

The budget fluctuation is partly due to the fact that budget allocation depends on the priority issues for MOC in each year. Under such circumstances, however, it was confirmed through the study that the sufficient budget will be secured for proper O&M of equipment as the DOH and DOB have attached the high importance to the project .

(Currency Unit: Million Kyats)

Items	2015	2016	2017
(1) Total Budget of DOH (Highways)	2,833.25	3,114.59	644.01
(2) Total Budget of DOB (Bridge)	3,654.44	2,185.85	1,946.60
(O&M Budget for the procured equipment for DOH and DOB combined)	20.82	33.14	136.83
(Percentage of O&M budget against total budgets of DOH and DOB combined)	0.3%	0.6%	5.3%

Source: DOH and DOB

<Current Status of Operation and Maintenance>

The maintenance of procured equipment has been conducted properly on the equipment compound of Road Construction Special Unit No.22, near Thanlwin River. If some equipment failure is detected on the job sites, the mechanic group is sent by mobile workshop vehicle for urgent repairs. The necessary spare parts and consumables are procured and managed appropriately.

<Evaluation Result>

Therefore, the sustainability of the project effect is high.

5 Summary of the Evaluation

The project achieved its objectives, “to promote the construction and maintenance of major roads in Kayin State of Myanmar by procuring road construction and maintenance equipment and providing related technical assistance” as it was observed that the average travelling speed, the length of road improvement on target roads and the maximum weight of vehicle on bridges achieved the targets respectively. The rehabilitation work needs to be continued for some remaining parts that has been suspended due to security reasons, however, the project contributed to the improvement of O&M of the equipment and inventory of spare parts through the development of the database management system for equipment ledger. Positive impacts were also observed in which the educational and health service facilities were newly established and the number of passenger express bus lines were increased, which advanced the mobility of local population. As for sustainability, there is no problem in institutional, technical and financial aspects. Regarding efficiency, project period 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 project introduced the database management system for equipment ledger as a soft component assistance which have made it possible for DoH to manage the operation and maintenance of the provided equipment more efficiently. Compared with the previous paper-based system, this system is well constructed to readily store the variety of data, such as the initialized state of each equipment, the record of daily operation and maintenance, and inventory of spare parts, etc. Furthermore, the system is accessible by the ordinary computer. The system indeed is easier to handle and thus, it can save much time.

By taking full advantages of consecutively accumulated data, the system can automatically pick up the timing for the equipment maintenance and let it display on the computer screen. This is how the mechanical staff can identify the appropriate time of equipment

maintenance as well as the procurement of spare parts, etc. Furthermore, many staff can manage the system once they are given the training. DOH has decided to introduce this system to other DOH Offices for equipment operation and maintenance.