Yangon City Development Committee

Summary Report

Republic of the Union of Myanmar

Pilot Survey for Disseminating Small and Medium Enterprises Technologies for Improvement of Traffic Environment in Yangon City by Implementing Traffic Signals

May, 2015

Japan International Cooperation Agency

WAKO INDUSTRIES CO., LTD.

1. BACKGROUND

Rapid economic growth has been expected in Myanmar with its efforts for economic and political reform and democratization since 2012. While the Yangon City, the center of commercial activities in Myanmar, is developing with growing population, it is suffering from serious traffic congestion and increasing traffic accidents caused by explosive increase of automobiles. Insufficient implementation of traffic signals at intersections of major roads in the Yangon City is accelerating traffic congestion.

While JICA has conducted "The Strategic Urban Development Plan of the Greater Yangon" including improvement of urban traffic by developing road traffic plan for mid and long-term development of the City, it is an urgent issue for the Yangon City to improve road traffic condition. Installation of traffic signals is one of the solutions to respond this issue with relatively low cost and expects quick impact, in consideration of rapid increase of road traffic volumes in the Yangon City.

2. OUTLINE OF THE PILOT SURVEY FOR DISSEMINATING SME'S TECHNOLOGIES

(1) Purpose

To conduct pilot implementation of traffic signals at intersections in the Yangon City so as to mitigate traffic congestions in the City and to reduce traffic accidents and road traffic pollution, as well as to verify the quality and effectiveness for traffic control of the Japanese traffic signals.

(2) Activities

(a) Preliminary Survey and Planning of pilot implementation (From March to April, 2014)

・To review current situation of road traffic in Yangon City.

・To review existing laws, regulations and policies related to road traffic management of Yangon City.

・To identify one bottleneck intersection to mitigate traffic congestion in the Survey and develop implementation plan. (*The Survey Team determined where and how many traffic signals were to be installed after discussions with Yangon City Development Committee (hereinafter referred to as "YCDC").)

(b) Design a Traffic Signal Control Plan (From the middle of March to May, 2014)

・To examine conditions for current intersections and design installment plan.

・To conduct a traffic survey at the targeted area as baseline survey.

・To design traffic signal control plan.

(c) Pilot Implementation (From April to October, 2014)

・To procure equipment and devices necessary for pilot implementation in Japan and transport them to Yangon.

・To submit the construction schedule of pilot implementation.

・To carry out pilot implementation (the maintenance of the traffic signals and related equipment could be done, if necessary).

・To conduct a traffic survey for evaluating the effectiveness after the traffic signals and traffic control system are installed.

(d) Supporting Capacity Development for Operation and Maintenance (November, 2014)

・To develop capacity for operation and maintenance and related activities regarding Japanese traffic signal products for YCDC staffs who are in charge of signals implementation in Engineering Department of YCDC.

(e) To conduct workshops to share the outcome of pilot implementation with YCDC and the Union Government.

(3) Information of Product/ Technology to be Provided

The traffic signal system at 10 intersections consists of the following equipment;

Table-1

Major Equipment	Number
Traffic Signals Controller	10
Traffic Signals for Vehicles	35
Traffic Signals for Pedestrians	6
Vehicle Detector (1 head / 2 heads)	12/18
Traffic Management System	1
Electric Power Supply System	10
Others (Post, Cables, Routers, etc.)	

(4) Counterpart Organization

Yangon City Development Committee

(5) Target Area and Beneficiaries

Target Area : The Yangon City

Beneficiaries : Citizens of the Yangon City and road users in the city

(6) Duration

From February 2014 to May 2015

(7) Schedule

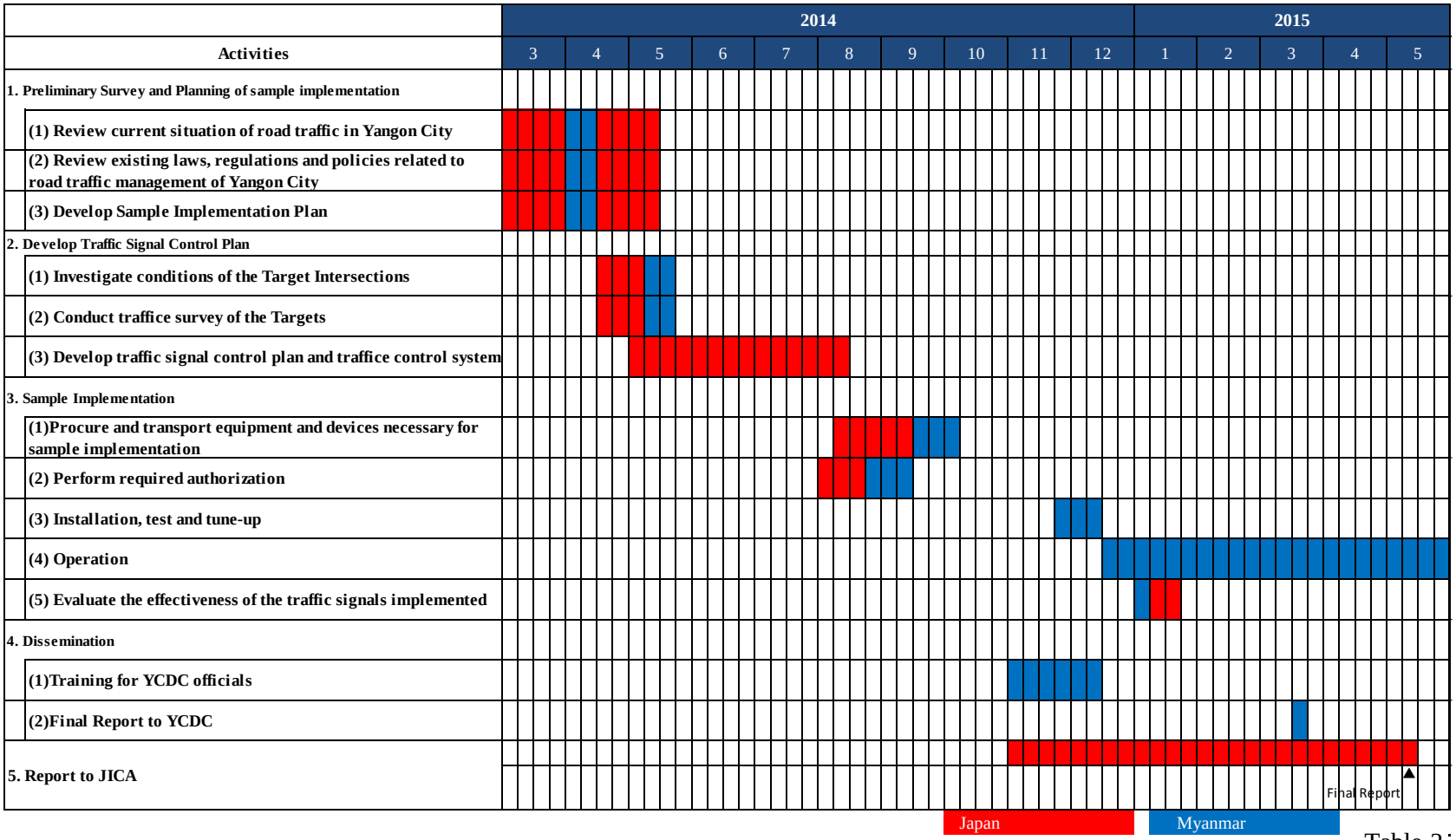


Table-2

(8) Manning Schedule

「普及・実証事業」 工数実績

Assignment	Name	Company Name	Place	2014 3	4	5	6	7	8	9	10	11	12	2015 1	2	3	4	5	Myanmar/Japan Myanmar	Japan
Project Manager	Satoru OGAWA	Wako	Myanmar	6	6	8			6				12			6	6		50	
Traffic Control System Planning	Tomoki YONEDA	Nippon Signal	Myanmar										12						12	
Construction Operation	Masaaki YOSHIOKA	Nisshin Electronics Construction	Myanmar	2	6	8						27	8						51	
Traffic Signal Control Planning	Ichiro Hayashi	Nisshin Electronics Service	Myanmar	2	6	8							12						28	
Chief Advisor / Project Planning	Eiichiro ASHIDA	Daiwa Institute of Research	Myanmar	6	6	8										6			26	
			Japan	1	7	6	1	1	6	7	9	9	11	11	11	6	5	1	-	92
Project Planning / Project Administration	Reiko MINAMI	Daiwa Institute of Research	Japan	1	1	1	1	1	2	1	1	1	1	1	1	1			-	14
Sample Implementation	U Thi La	Wako (Myanmar) Co., Ltd.	Myanmar	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	-	
Sample Implementation	U Tim Maung Maung	Wako (Myanmar) Co., Ltd.	Myanmar	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	-	
Coordination with YCDC / Local Coodination	U Aung Pe Maung	Wako (Myanmar) Co., Ltd.	Myanmar	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	-	97
																TOTAL			117	106

Table-3

(9) Implementation System

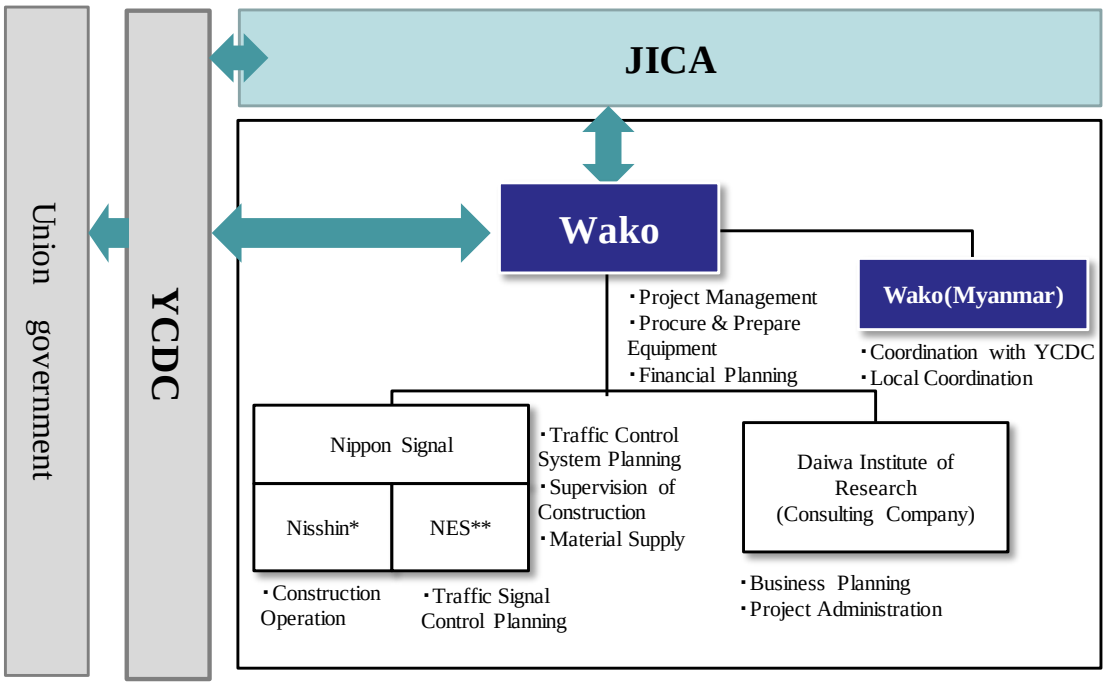


Figure-1

3. ACHIEVEMENT OF THE SURVEY

(1) Outputs and Outcomes of the Survey

The following are the most relevant outputs and outcomes of the survey:

(a) WAKO INDUSTRIES CO.,LTD.（hereinafter referred to as "Wako"）installed traffic lights system in 10 intersections including Chaw Dwin Gone（hereinafter referred to as "CDG"）intersection which the Survey Team recognized as "bottleneck" intersection, and set up the Traffic Management System.

(b) This system performs data handling of the traffic information of the 10 intersections and controls the cycle time of the signals of 10 intersections according to traffic volume.

(c) As a result of the installment of new traffic control system, the length of the traffic jam of CDG intersection shortened, and large improvement in reducing traffic congestion came to be seen after setting up the equipment.

(d) Wako prepared operation and maintenance manual and handed over to YCDC. WAKO also conducted maintenance trainings for the team of Engineer Department (Road & Bridges) of YCDC to manage the traffic signals controllers and traffic management system smoothly.
Result of traffic surveys are as follows;

【Survey Date】
Pre-project survey: 9th and 10th May, 2014
Post-project survey: 2nd and 3rd January, 2015

The below figure shows the shape of the targeted intersection, CDG

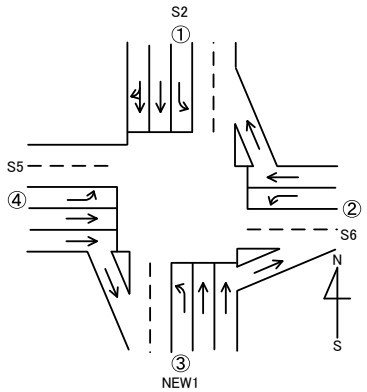


Figure-2

【The results of Traffic Queue Survey】
(Precondition: both In Weekday and In Holiday, the traffic volume of post-installation was almost the same amount as that of pre-installation.)
Below figure 3 and figure 4 show the result of queue lengths of CDG intersection.
A red line shows the pre-installation and a blue line indicates post-installation.

As you can see, the length of the traffic jam was improved in most time of the day.

Traffic Survey Before/After (Weekday)

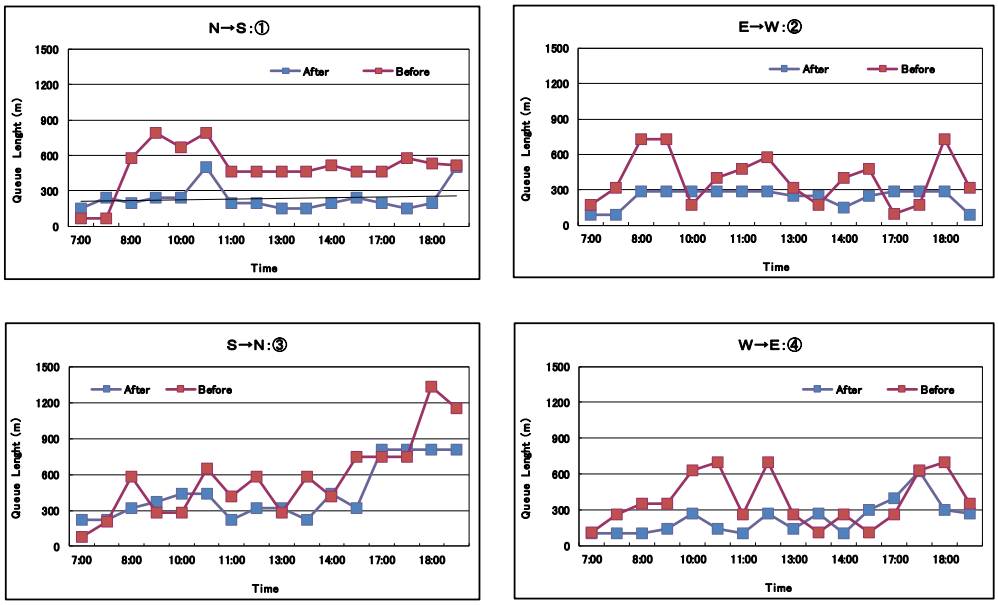


Figure-3

Traffic Survey Before/After (Holiday)

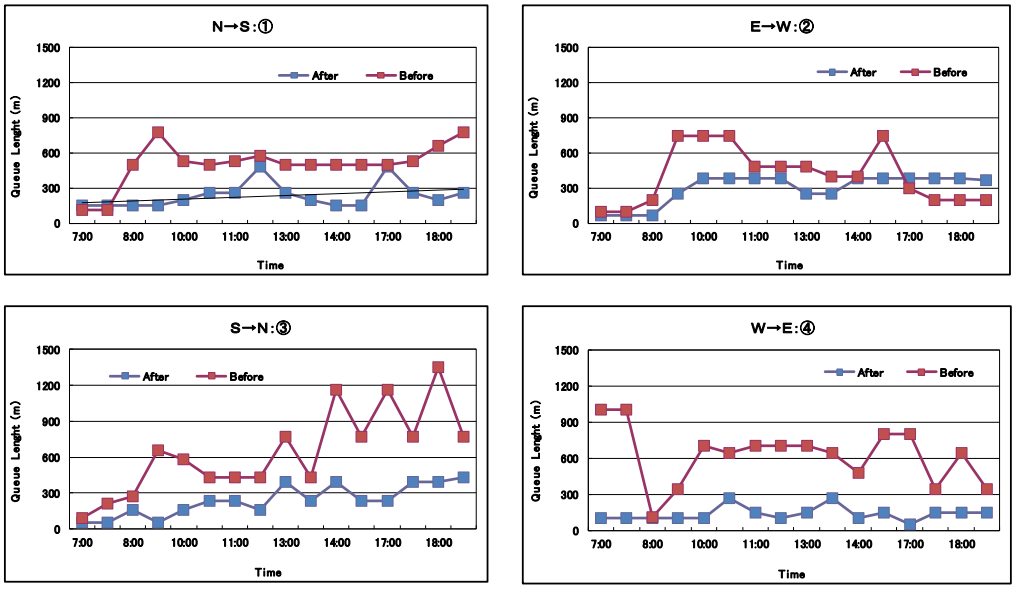


Figure-4

Below tables show the result of traffic queue survey.

【Weekday】
Table-4

Direction	N→S	E→W	S→N	W→E
Result	Reduced 550m	Reduced 440m	Reduced 520m	Reduced 400m

- Traffic queues are reduced in all directions.

【Holiday】
Table-5

Direction	N→S	E→W	S→N	W→E
Result	Reduced 630m	Reduced 500m	Reduced 920m	Reduced 900m

- Traffic queues are reduced in all directions.

☆ Reductions of traffic queues are much greater in holiday, and maximum reduction is 900m.

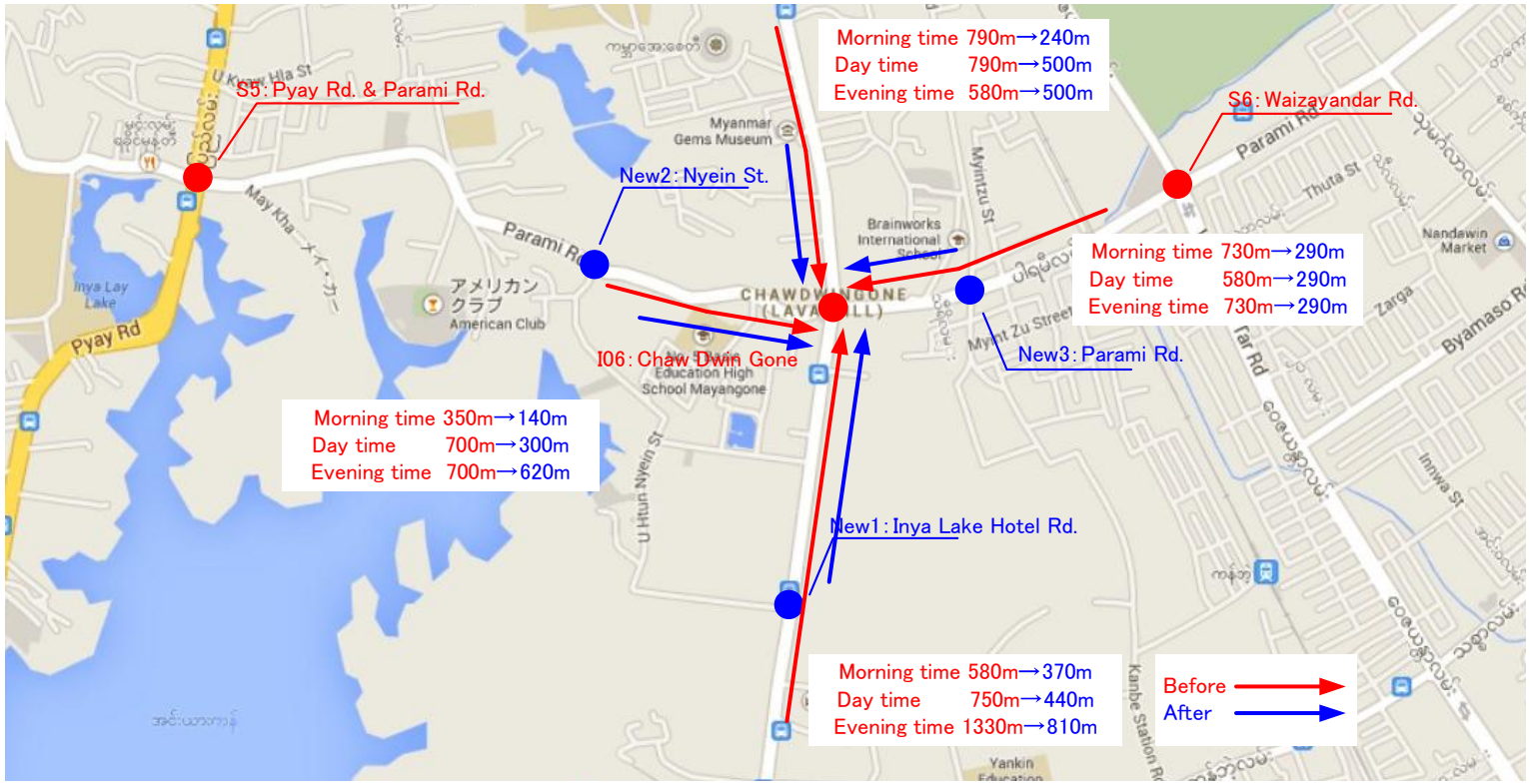
S1 Nawaday

Figure-5

Traffic Survey Before/After (Weekday)

S2 Gan Daw Mar St.

Direction	N→S	E→W	S→N	W→E
Result	Reduced 550m	Reduced 440m	Reduced 520m	Reduced 400m



S3 Kanbe Rd.

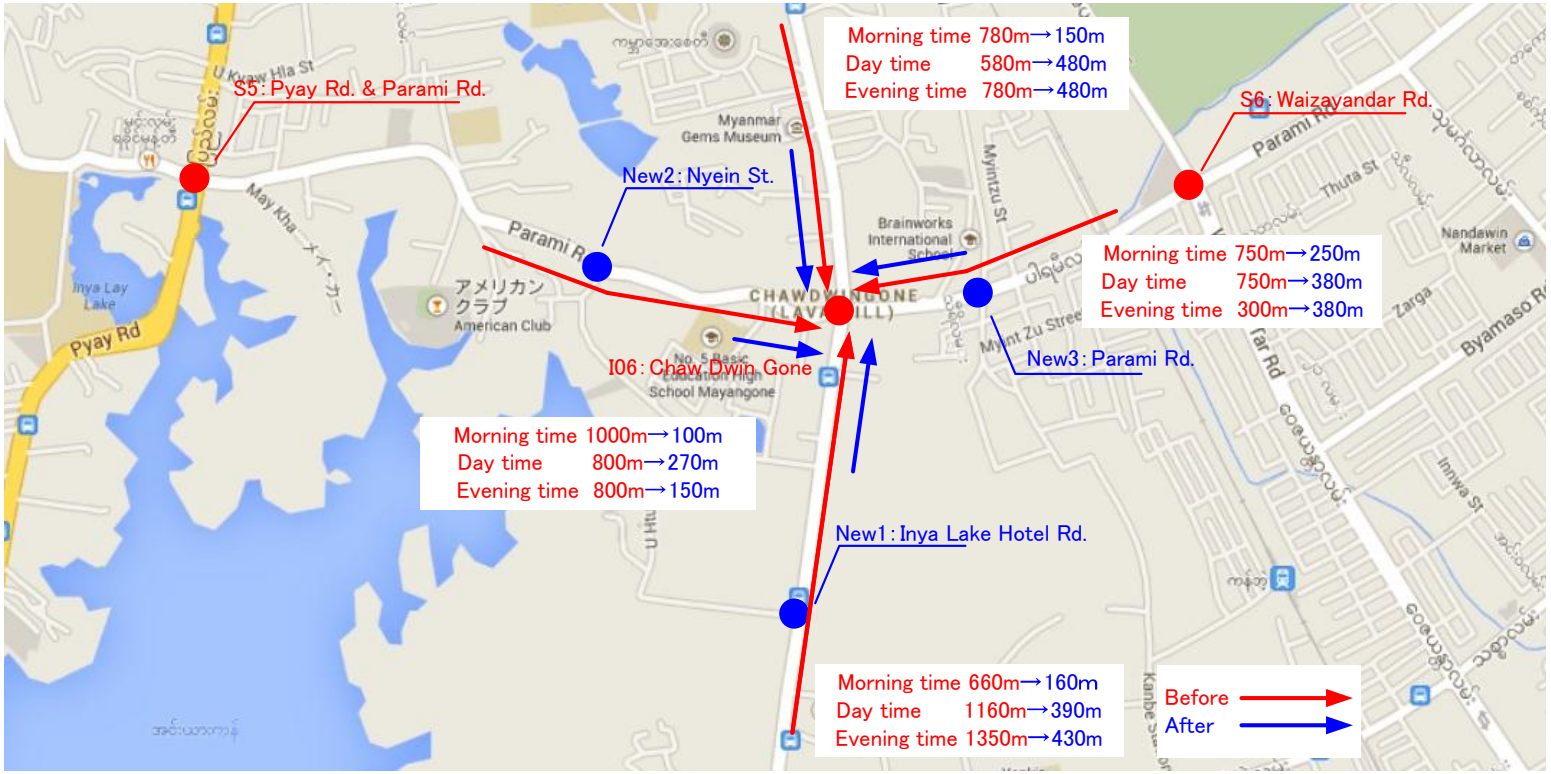
S1 Nawaday

Figure-6

Traffic Survey Before/After (Holiday)

S2 GanDamar St.

Direction	N→S	E→W	S→N	W→E
Result	Reduced 630m	Reduced 500m	Reduced 920m	Reduced 900m



S3 Kanbe Rd.

As a result, the traffic survey showed the great improvement of queue lengths of CDG intersection after setting up the equipment. The length of the traffic jam came to have a short up to 90 % (e.g. before 1000m, after 100m in Holiday), that was 40-70% reduction, even at the peak time, reduction in the queue length of vehicles at CDG intersection (e.g. before 1350m, after 430m in the evening time in Holiday).

This new traffic Management System was launched on December 12th, 2014. The traffic congestion in 10 intersections in Yangon City has been relived and the traffic flow can be more efficient by the traffic signals and the traffic control system installed by Wako.

Wako has received a lot of positive comments from the Yangon citizens since the beginning of operation, such as "Surprised, how did they delete the traffic jam?" and "Before, I avoided passing CGD, now I prefer passing there".

(2) Self-reliant and Continual Activities to be Conducted by Counterpart Organization

To make sure the continuous operation of the equipment, it should be checked regularly and be maintained appropriately. Engineers with the technique have been assigned to be responsible for maintenance and utilization of the equipment and traffic management system. For the training of the skilled engineers, YCDC is considering having a lecture or workshop to engineers by WAKO INDUSTRIES CO., LTD.

4. FUTURE PROSPECTS

(1) Impact and Effect on the Concerned Development Issues through Business Development of the Product/ Technology in Republic of the Union of Myanmar

As a result of the survey activities, the outputs and outcomes mentioned in the previous section, the traffic congestion was partly resolved and the length of the traffic jam near CDG intersection was shortened. YCDC officials also recognized the changes and the awareness on the need of both the traffic equipment and the traffic management system was raised.

The traffic management system installed by the Pilot Survey has the capacity with connecting 255 intersections to optimize the traffic flow and minimize the traffic jam all over in Yangon City. Once connected to other bottleneck intersections, the traffic jam in Yangon city would be diffused more effectively by improvement of the function the synergistic effect brings.

(2) Lessons Learned and Recommendation through the Pilot Survey

The survey was concluded successfully with the support of YCDC. There are some issues to be considered for the future which are:

(a) To accumulate practical knowledge and skills for the construction team of Engineer Department (Road & Bridges) of YCDC

Although the basic training was successfully conducted, but it was not enough time to cover all necessary and trainings to develop the professional skills of the traffic management and how to maintain the equipment.

(b) Safety measures of installation construction

Safety measures of installation construction of the equipment are needed.
The construction team of Engineer Department (Road & Bridges) should work in clothes appropriate for the construction.

In addition, the risk of the electric shock and the risk of the injury are high, too. Therefore, the construction team needs the training to acquire knowledge about the electrical engineering.

(c) Stability of the voltage is necessary

To operate the traffic management properly is need the stability of the voltage. However, the commercial power voltage fluctuates and is unstable. So it is desirable for stable electricity to be supplied.

(END)

THE PILOT SURVEY FOR DISSEMINATING SME'S TECHNOLOGIES

Improvement of Traffic Environment in Yangon City by Implementing Traffic Signals (Myanmar)

Outline of the Survey

- Proposed by : Wako Industries Co., Ltd., Japan (Wako) (http://http://www.wako-seisakusyo.co.jp/index.html)
- Counterpart Organization: Yangon City Development Committee(YCDC)
- Target area and Beneficiaries: The Yangon City
- Duration : From February 2014 to March 2015

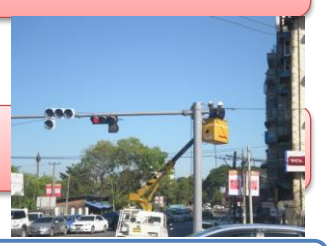
Concerned Development Issues in Myanmar ⟷ match ⟷ **Proposed Products / Technologies**

- Serious traffic congestion
  After relaxation of car import restriction measures in 2011, the Yangon City suffers from serious and constant traffic congestion caused by skyrocketing increase of vehicles.
- Traffic accidents are increasing; traffic pollution becoming more serious
  Increase in traffic accidents caused by congestion and traffic pollution caused by exhaust gas are a serious concern.
- Insufficient signal operation
  Shortage of traffic signals; many traffic signals are broken or even malfunction occasionally because of power cut.

- Introduction of traffic signals
  Provide heat-proof and water-proof traffic signal light and other related equipment suitable for Myanmar with a climate of high temperature and heavy rainfall.
- Development of a traffic control system
  Developing a traffic control system utilizing information on traffic flow by vehicle detectors in order to provide coordinated signal control, which controls traffic flows in many intersections by connecting control units. Traffic flow can be optimized by allocating cycle length of each signals properly.

Implemented Activities in the Survey

- Install traffic signals with traffic sensors in "bottleneck" intersection and connected 9 intersections along with traffic signal control system to provide coordinated signal systems to achieve safer and efficient traffic control in the Yangon City



Outputs and Outcomes of the Survey

- Verify the effectiveness of introduction of traffic signals and traffic signal control system to reduce congestion by collecting and analyzing the data obtained from those upgraded intersections

Impact on the Concerned Development Issues in Myanmar

Traffic congestion in 10 intersections has been relived and the traffic flow can be more efficient by the traffic signals and the traffic control system installed by Wako.