ANNEX11-2: 2nd JCC Meeting

Minutes of the 2nd Joint Coordinating Committee Meeting

of

The Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC)

The 2nd Joint Coordinating Committee (JCC) meeting between Phnom Penh Capital Administration (PPCA), Department of Public Works and Transport of Phnom Penh (DPWT), Japan International Cooperation Agency (JICA), and the concerned members of the Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC) was held in a hybrid format, on-line and in-person at Phnom Penh Capital Administration (PPCA) on 22nd of February, 2023. The comments and the discussions were made on several items as described below.

1. Opening remarks by PPCA and JICA:

(Before delivering the Remarks, Mr. Masato Koto, team leader of JICA expert team announced the passing of Mr. Chikahiko Machida, one of the active key member of PPTMTC project and, who prior to his death, had contributed a lot to the development on urban transport of Phnom Penh City through the implementation of JICA's ODA projects. All the participants of the meeting took a moments of silence to pay tribute to the loss of Mr. Machida)

Ms. Ai Miyahara, senior representative of JICA Cambodia office, welcomed all the participants. She continued giving her brief remarks on the long history of JICA cooperation and support to the Kingdom of Cambodia, particularly in the Social, Industrial and Infrastructure Development. She continued adding that this technical cooperation project aims to improve traffic management measures in Phnom Penh. She further mentioned that traffic congestion has become more serious in Phnom Penh after overcoming the crisis of COVID-19 and traffic management is very critical for urban management. Through this meeting, an important approval is expected to be taken for the implementation of the pilot project which determine the target locations for Outcome 3. She would like to express her sincere appreciation to the colleagues from DPWT, PPCA and JICA expert team for the close and active cooperation will achieve outstanding outcomes, thereby contributing to the growth of Phnom Penh Capital City. Before closing her remarks, she also expressed her sincere condolence to the loss of Mr. Machida who has played a very important role in this project and wish this JCC meeting a successful and fruitful discussion.

H.E. Nuon Pharat, Vice Governor of PPCC and PPTMTC project director, welcomed all the participants and expressed his sincere thanks to the Government of Japan for extending support through JICA, as well as to JICA expert team for the implementation of the PPTMTC project. He mentioned that this project complements the Traffic Control Center (TCC) project (Grant Aid Project) which was handed over in December 2018 to PPCA. He continued stating that this project has 5 expected outcomes including (1) the establishment of maintenance management system of traffic control system, (2) strengthening capacity of TCC staff on the operation of traffic control system, (3) strengthening the capacity to design traffic signals is through the implementation of pilot projects for traffic signal improvement, (4) strengthening the capacity of the relevant staff to traffic control in PPCA, DPWT and TCC staff to develop the expansion plan of traffic control system and (5) strengthening the capacity of urban transport related organizations on traffic management measures toward the enhancement of the project sustainability. He also added that this project duration was starting from January 2022 to February 2025 and has set up a Joint Coordinating Committee (JCC) which is headed by H.E. Governor and two Vice Governors. After the first JCC Meeting, this project has achieved fruitful results throughout the project activities especially training activities. The same to Ms. Miyahara, he pointed out that this 2nd JCC meeting aims to discuss the proposed structure of TCC organization chart and its approval procedure, as well as the approval on the implementation of the proposed pilot projects, in this regard, he calls on all the participants to provide comments and inputs so that the consultant can achieve the goal of the project effectively and efficiently. On behalf of H.E. Governor of PPCC, he sincerely thanked to the JICA for continuous support to the development of Cambodia, especially

in Phnom Penh Capital City on traffic management and drainage system, and finally expressed his sincere condolence to Mr.Chikahiko Machida who was an important key player of this project.

2. Contents of Presentations:

Mr. Masato Koto responded to the questions during the first JCC meeting about the TCC organization structure that TCC has 14 staffs currently and expect to 20 staffs for the future. He continued adding that PPTMTC team has already formulated the draft of TCC organization chart and working closely with DPWT for processing to get the approval from the PPCA management. He further added that the project team also invited the relevant person from other organizations such as Institute of Technology of Cambodia (ITC) and Ministry of Public Works and Transport (MPWT) to join this 2nd JCC meeting. He further made the presentation on the overall outline of the PPTMTC project covering outline of the project, DX and PPTMTC project, proposed of the TCC organization structure, result of PPTMTC training and pilot project. For the details, please refer to the presentation material.

3. Main Points of Discussion:

No.	Comments/Questions	Answers
1.	**TCC organization structure**	
(1)	**H.E Nuon Pharat** asked if there is existing TCC organization chart has been used before??	- **Mr. So Phara**, Chief of Development and Construction Management office, responded that the TCC organization chart have not gotten official approval from the governor of PPCA yet. - **Mrs. Pheng Pharinet**, Chief of TCC, responded that previously TCC organization chart have never gotten official approval from PPCA. We have tentatively used the one drafted by the project team during the Grant Aid project. So that within this project, the JICA expert team of PPTMTC project aim to set up an official TCC organization chart with the official approval from DPWT and PPCA to be used in the future for the proper management of the TCC.
(2)	**H.E Nuon Pharat** agreed with the proposed TCC organization structure, except the financial section which is considered to be complicated issue for TCC to deal with financial issue.	- **Mr. Masato Koto** responded that financial section is in charge of financial planning and how much TCC need annually for TCC operation. - **Mr. Chou Kimtry** agreed with this TCC organization chart and further explained that this proposed organization chart is very important for sustainability of TCC operation. The most problem is a financial issue, as it is difficult and takes long time to get the budget for maintenance and operation, therefore a financial section is important to plan such a thing in advance for allocating annual maintenance and operation budget.
(3)	**H.E Suy Serith** suggested to consider the existing structure of the two offices which are currently under organizational structure of DPWT, namely Public Lighting and Traffic Signal Office and Road Safety Office. Therefore, it is not recommended to establish a new financial section under TCC, instead he suggested to consider integrating the financial to	

	public lighting/road safety office and included the requested annual budget through the two said offices requested.	
(4)	**H.E Nuon Pharat** basically agreed with the proposed TCC organization chart, but for the financial section, he suggested to revise the structure by allocating only two staff under this section (one section chief and one officer). For technical staffs can be increased as much we could for the efficient and effective operation of TCC.	
(5)	**Mr. Chou Kimtry** suggested the project team to consider including the capacity building for the traffic management including parking management and public transport. He further added that the increase amount of paratransit in the city and how to limit or control of paratransit services become a major of concern for Phnom Penh City.	**Mr. Koto** responded that during the master plan project, the study team also introduced the zoning system for paratransit operation, but need subsidies from PPCA for the introduction of public transport.
(6)	**H.E Nuon Pharat** additionally suggested the expert team to include how to smooth communication between traffic police and TCC staff as part of the training agenda.	
2.	**Pilot Project**	
(1)	**Ms. Tema Vichekal,** regarding the procurement of equipment for the pilot project, she suggested that the expert team should cooperate with the international relation office and submit the necessary document eg. Master List ...etc., in case it is expected to have a request for import permit and import tax exemption.	**Mr. Koto** took note on this suggestion and will further discuss closely about this issue later.
(2)	**Ms. Tema Vichekal,** Deputy Director of Administration of PPCA, concerned about the implementation schedule of pilot projects since there will be big international events such as SEA game and Para-game to be held soon in Phnom Penh, therefore it is suggested to include the schedule of these upcoming events into consideration when the project team prepare the schedule plan to implement the pilot projects.	**Mr. Koto** took note on this information and added that the survey may be conducted end of March, before 10 of April. The survey should be finished before the event, or else the condition of the traffic will not be normal for conducting the survey.
(3)	**Dr. Phun Vengkheang**, Head of Transport and Infrastructure Engineering Department from ITC agreed that the study also included location number 3 and 4 in this pilot project. He also suggested the project team to consider the signal modification at intersection No. 136 (in front of Institute of Foreign Languages) in order to improve the traffic flow along the main road if possible. He further suggested the project team to study one-way system which can help improve the traffic flow in the city.	**Mr. Koto** responded that the pilot project is already fixed. But this suggestion will be considered for further study.
(4)	**Ms. Tema Vichekal** also asked if the project team has included the parking system, one-way system as well as bus priority signal into this study (under this project)?	**Mr. Koto** responded that we also include the parking system and now one of our expert members who is in charge for traffic management is working with MPWT on the process for set up of parking law. Currently, the project team try to concentrate on implementing the 7 proposed pilot locations.

		For the rest of the issues, JICA will consider further cooperation with PPCA.
3.	**Procurement of Equipment for the Pilot Project**	
(1)	**H.E Nuon Pharat** agreed with the proposed sustainable procurement, however please ensure that the procurement should be quick with low cost and high quality.	
(2)	**Mr. Koto** mentioned that the warranty inspection period is usually one year for construction, but for this pilot project, it is should be shorter to ensure that the warranty period will be schedule within the implementation period of the project. However, this issue is subject to further discuss in detail during the detailed design study for this pilot project.	

4. Closing and Conclusion:

Before closing, **H.E Suy Serith** summarized and concluding the main points of discussion among the participants during the 2nd JCC meeting as the followings:

(1) The proposed TCC organization structure is basically agreed by the meeting participants; however it is required to modify the financial section of the structure following the comments provided above before further submit to the governor for approval.

(2) The 7 proposed pilot projects and its location are agreed by the meeting,

(3) For the procurement of the equipment for the pilot project, the project team is required to consider the country whose product have equivalent quality to the Japan and or to those procured during the Grant Aid Project, with quick procurement procedure and low cost to sustain the operation of the TCC.

(4) The training should be continued to improve the capacity of the staff and to achieve the training goals.

The meeting was adjourned at **11:30 AM**.

CONFIRMED BY:

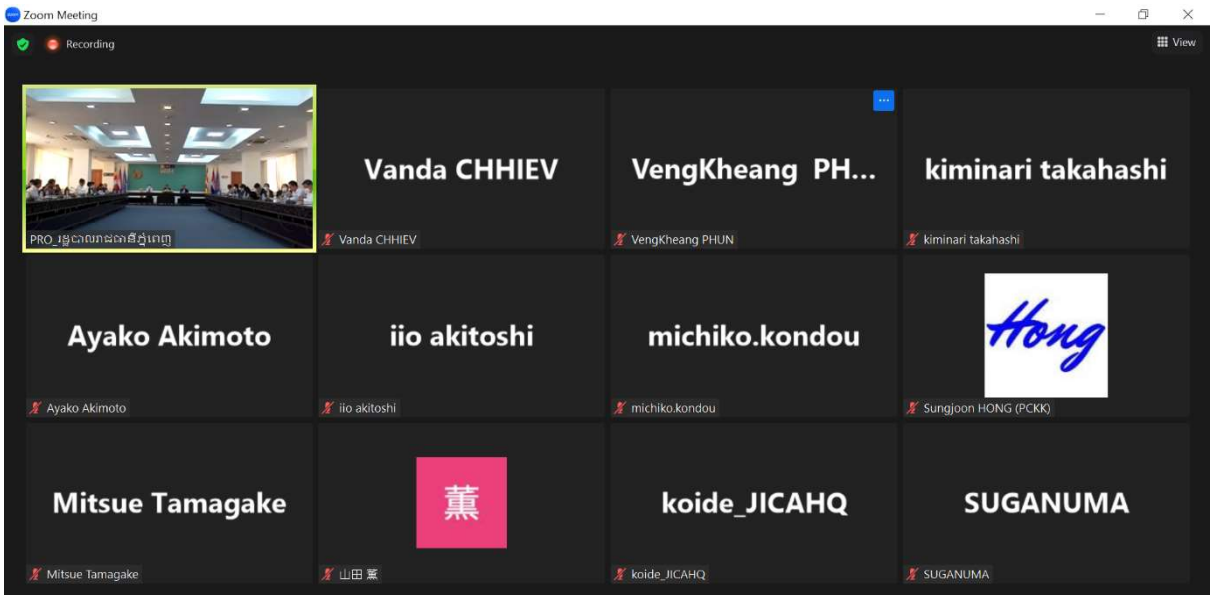
H.E. NUON PHARAT
Vice Governor
Phnom Penh Capital City

Ms. AI MIYAHARA
Senior Representative
JICA

Mr. MASATO KOTO
Team Leader
JICA Expert Team

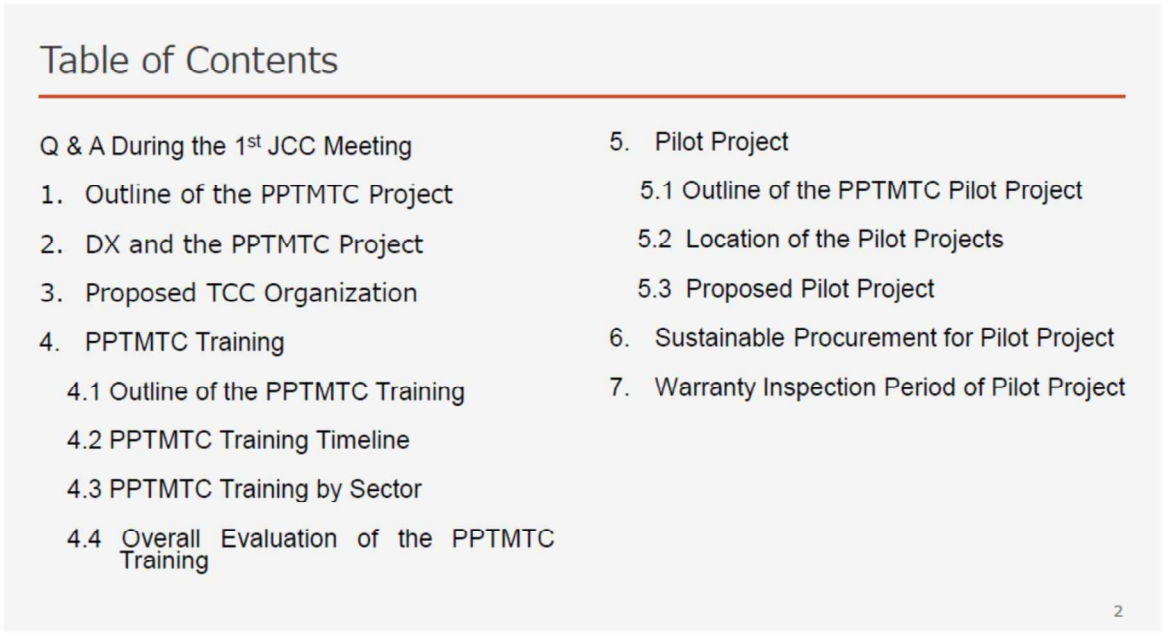
2. Photos

H.E. Nuon Pharat, Vice Governor, PPCC (middle)
H.E. Suy Serith, Vice Governor, PPCC (right)
Ms. Ai Miyahara, Senior Representative of JICA Cambodia Office (left)



Participants of 2nd JCC meeting

3. Presentation Material



Questions and Answers during the 1st JCC Meeting held on 22 July 2022

Items	Question/Comment	Answer
Number of TCC Staff	• How many staff will be expected to increase with this proposed organization? (HE Nuon Pharat, PPCA) • Mr. Chou Kimtry, Deputy Director of DPWT raised up some challenges for the implementation of this project the limitation of human resource and budget as well as do not have enough equipment/spare parts for repairing.	Proposed Organization: 14 In the Future: 20 Overall goal is more comprehensive Already includes indicators related reduce congestion and accidents
About TCC Organization	• Mr. Sor Phara, Chief of Development Management & Construction Office, PPCA, stated that TCC needs a permanent organizational structure which required experts and financial resource for its sustainable operation. Therefore, he suggested that PPCA should consider how to set up an organization structure for TCC either under the structure of PPCA or DPWT.	H.E Nuon Pharat suggested that the organizational structure of TCC should be flexible, strong and low cost. And we need to consider about work demarcation between the public and the private sector.
Participation of the stakeholders to PPTMTC Project	• H.E Nuon Pharat suggested that the expert team should consider to involve the participants from academic institutions such as ITC to the capacity training to increase human resource necessary for the future operation of TCC. And if possible, should provide a presentation at ITC about this project.	Mr. Koto responded that he will invite universities and transport study group to the next JCC meeting and consider how to involve them the next project activities.

1. Outline of the Project

Project Name	**Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City**
Project Period	January 2022 to February 2025
Overall Goal	Sustainable Urban Transport Environment is Formed
Project Purpose	Traffic Management Measures Including Traffic Safety Measures in Phnom Penh is Improved
Expected Output	**Output 1**: Maintenance Management System of Traffic Control System is Established **Output 2**: Capacity of TCC Staff on the Operation of Traffic Control System is Strengthened **Output 3**: Capacity to Design Traffic Signals is Strengthened through the Implementation of Pilot Projects for Traffic Signal Improvement **Output 4**: Capacity of the Relevant Staff to Traffic Control in PPCA, DPWT and TCC Staff to Develop the Expansion Plan of Traffic Control System is Strengthened **Output 5**: Capacity of Urban Transport Related Organizations on Traffic Management Measures is Strengthened towards Enhancement of the Project Sustainability
Counterpart Institution	Implementing Agencies: Phnom Penh Capital Administration (PPCA), Department of Public Works and Transport (DPWT), Traffic Control Center (TCC) and Phnom Penh Traffic Police (PPTP)
Project Area	Whole Area of Phnom Penh

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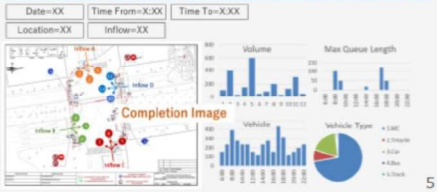
2. DX and the PPTMTC Project

One of the Digital Transformation (DX) competencies worked out by Phnom Penh is the new centralized traffic control system, which replaced the old standalone analog traffic lights. This DX has transformed the daily life of PP inhabitants with having to follow the rules to enable smooth travel; it has also improved the urban environment. These are major first steps taken by Phnom Penh towards supporting the SDGs and becoming a smart city.

(1) Changes in people's awareness of road use

(2) Travel speed changes in 2017 (11.3 km/hr.) and 2018 (15.2 km/hr.) and reduced travel time cost (Saving travel time cost of Monivong Blvd. drivers is 2.5 million USD/year compare before and after traffic signal installation)

(3) Contributing to the Urban Environment and the Reduction of Global Warming



Digitalization: Traffic volume is collected from CCTV video images using artificial intelligence (AI)-driven data processing technology from manual work and utilized in urban transport policy/measures.

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3. Proposed TCC Organization

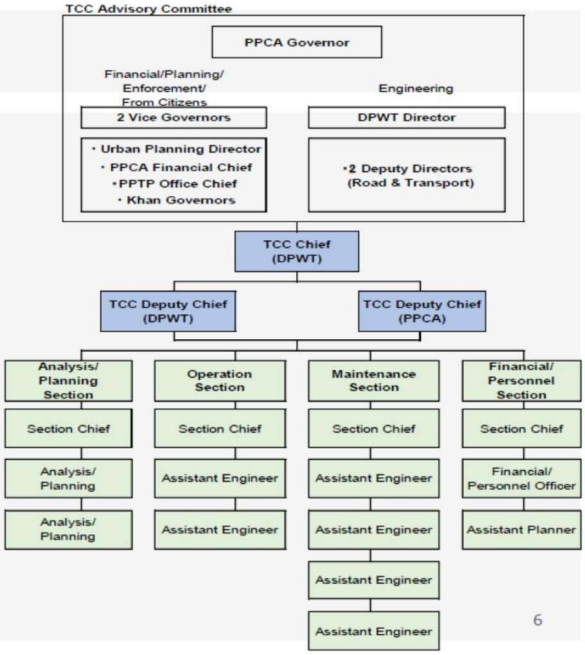
In order to sustain the comfortable urban environment, especially the mobility of Phnom Penh citizens, it is very important to officially approve the TCC as an organization of the Phnom Penh Capital City. Maintaining this environment, it is necessary for at least 14 TCC staff to monitor traffic conditions 365 days a year.

(1) Addition of the Governors of all 14 Khans in Phnom Penh to TCC Advisory Committee,

(1) Designation of two Deputy Directors of DPWT (Road and Transport) as Committee members,

(2) Removal of DPWT advisor from the committee membership, and

(3) Appointment of two TCC deputy chiefs in TCC.



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4. PPTMTC Training 4.1 Outline of the PPTMTC Training

Due to the soft components of the Grant Aid, TCC staff has general operational skills and knowledge. With the strong support of PPCH and DPWT, TCC has been operating sustainably from 2019 when the signal system was handed over to Phnom Penh to the present, but it is hard to say that the current SUMIDEN system is fully used. In order to minimize the occurrence of signal system accidents and accidents repair time by maximum use of current signal system, conduct of training will be implemented in line with Phnom Penh's traffic control system and traffic conditions.

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4.2 PPTMTC Training Timeline

4.3 PPTMTC Training by Sector

(1) Maintenance Management of Traffic Signal System

After assessing the capabilities of the TCC staff in maintenance management, the training content was customized to address the weak spots such as maintenance operating procedure. It was found that preventive maintenance is seldom done and no routine inspection is performed, among other things. However, corrective maintenance is fairly done and fortunately, no major hardware problem has yet been encountered during the 3 years of operation.

Contents and summary of the maintenance training are as follows:

A: Pre-evaluation and introduction to maintenance management

B: Maintenance Management in some other countries including experiences in Japan and the Philippines

C: Maintenance Management in Phnom Penh

D: Inventory Management & Reporting

E: Preventive Maintenance

F: Corrective Maintenance

G: Occupational Safety

H: Field training

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(1) Maintenance Management of Traffic Signal System

Maintenance Classroom Training

Maintenance Training Field Work

(2) Practical Aspect of Operation Training

The Phnom Penh TCC has been in continuous operation since its 2018 handover, thanks to the PPCH's financial support and the efforts of the TCC staff, although their capabilities need to be developed further.

This training is designed to provide TCC staff with the operational knowledge necessary to maintain TCC in the future.

Issues in TCC operation

Certain staff members are responsible for changing settings and other operations, but the following issues remain that prevent them from properly operating the system:

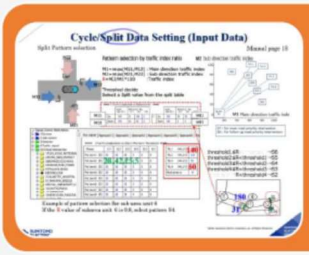
- Lack of understanding of the function of the traffic control system.
- Lack of knowledge of traffic engineering (intersection design, operational parameter design, etc.)
- Lack of knowledge and experience to better understand local traffic conditions.

This training, led by a traffic control system manufacturer (Sumitomo Electric Industries, Ltd.), focused on operating procedures and the basics of traffic engineering.

(2) Practical Aspect of Operation Training

Contents

TCC operation Explanation
- Data Backup
- Procedure for changing signal control parameters (Cycle・Split・Offset・Fixed seconds)
- Signal control transition procedure (Intervention Control→Time Control→automatic control)



TCC Function Description
- Automatic control (Cycle ・Split・Offset)
- Gap actuation control
- Traffic data collection (Traffic index)

(3) Training for Traffic Signal Control

Current Abilities and Issues of TCC Staff

- Signal operation capability of TCC has been built up and secured, based on the experience since the establishment of TCC in December 2018.
- Most of TCC staff have not received official education of traffic engineering and signal control.
- TCC staff heavily rely on the previous experience, but the experience is limited.
- To properly conduct the signal operation and take an important role as a fundamental organization that can carry out traffic management, basic knowledge of traffic engineering and traffic signal control is required.

Training Planning

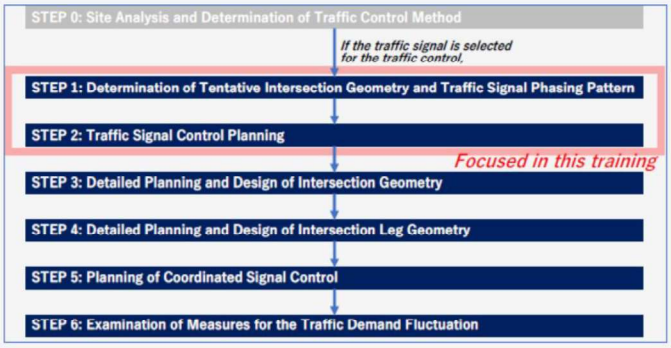
Training prepared and organized to improve TCC staff's understanding and provide basic knowledge of traffic engineering and traffic signal control

- Lectures on the basics of traffic engineering
- Lectures on the basics of traffic signal control
- Exercise on traffic signal parameter determination

(3) Training for Traffic Signal Control

Training Implementation

- Training held on 7th, 8th, and 9th of September 2022
- Trainees: nine in total
  - Seven TCC staff including Chief of TCC
  - One from PPCA and one from Traffic Police



General Procedures of Signalized Intersection Planning and Design

- ◆ Basics of Traffic Engineering
  - Basics of traffic engineering required to understanding the signalized intersection planning & design
- ◆ Basics of Signalized Intersection
  - Basics of signalized intersection and traffic signal control
- ◆ Planning and Design of Traffic Signal Control
  - Minimum knowledge but the details, which covers the overall procedures from the initial planning of signalized intersection to the determination of signal split (timing)
- ◆ Exercise
  - Exercise of traffic signal control planning & design for two simple cases of signalized intersection
- ◆ Introduction of Traffic Simulation

(4) Training for Communication System

Current Situation of Communication System and TCC

The communication system problem reported by TCC is mainly disconnection of optical fiber cables laid outdoors. In addition, failures of communication equipment have also occurred due to power outages at traffic signal points. Although the causes of these accidents are considered to be other than the TCC, they cause network failures between each traffic signal point and the TCC. Currently, network failures can be detected at TCC, and TCC personnel are able to identify the cause of its failure through field investigations, eliminate the problem, and restore the network. However, it is difficult to prevent network failures in advance, and it is necessary to respond to each failure on-site and to procure replacement parts, resulting in downtime until the network is restored.

Training Planning

The training policy is to focus on identifying the root cause of failures, understanding trends in failures, and learning the knowledge to continuously improve network availability through maintenance and management activities.

(4) Training for Communication System

Training Implementation

- Training held on 14th and 15th of September 2022
- Trainees: seven in total
  - Seven TCC staff including Chief of TCC
  - One from PPCA

☐ Photos of the training

Communication System Training (1st Day)

Communication System Training (2nd Day)

- ◆ Introduction of Communication System
  - Scope of Communication and Components
  - System Components
  - Type of Transmission Method
  - Pilot Project
- ◆ Introduction of Network
  - Network Topology
  - Network Monitoring
  - Data Transmission
- ◆ Introduction of KPI
  - What is Key Performance Indicator?
  - Reliability System Flow Chart
  - KPI Monitoring
- ◆ Introduction of Conservation Activities
  - What are Conservation Activities?
  - Example of Conservation Activities
  - Japanese Manual of Optical Fiber Cable

(5) Traffic Management

1) Agreed objectives for improved traffic management

PDM stipulates agreed objectives for improved traffic management under JICA Project:

Overall goal: Sustainable urban transport environment is formed.

Project purpose: Traffic management measures including traffic safety measures in Phnom Penh is improved.

Output (5): Capacity of urban transport related organizations on traffic management measures is strengthened towards enhancement of the project sustainability.

Implementing agencies: PPCA, DPWT/TCC (Phnom Penh), Traffic Police (Phnom Penh)

Definition of Traffic management: Traffic management refers to the combination of measures that serve to preserve traffic capacity and improve reliability of the overall road transport system. It covers **(i) Traffic circulation, (ii) Parking management, (iii) Pedestrian environment improvement, (iv) Demand management, and (v) Public transport and modal shift** under JICA Project.

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2) Training Plan: Target

Concerned counterpart more or less engaged in the intensive training and OJT, depending on traffic management measure. Through implementation of pilot project, OJT targets its implementing agencies (shown as ◎ in the table) and other concerned counterparts.

	Intensive Training				OJT				Pilot Project (Tentative)
	MPWT/ MLMUPC	PPCA	DPWT/TCC	Traffic Police	MPWT/ MLMUPC	PPCA	DPWT/TCC	Traffic Police	
Traffic circulation		○	○			○	◎		One-way system and improved parking control
Parking management	○	○	○	○		◎	○	○	On street parking contract
Pedestrian improvement		○	○			◎	○		Transit mall and improved walkway
Demand management		○				◎			
Public transport	○	○				◎			Intercity bus terminal

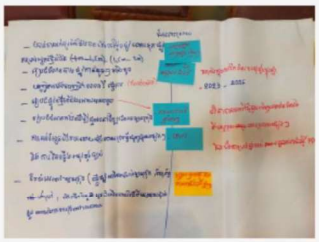
3) Implementation of training: Training subjects

Training subject designed for improved understanding to identify traffic management issues in Phnom Penh and international traffic management practices and examine applicability of these practices to Phnom Penh.

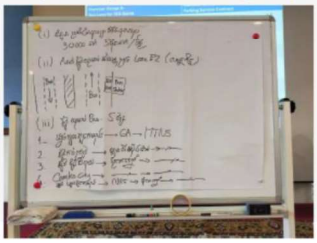
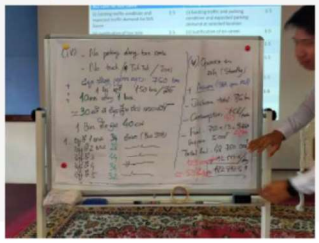
Traffic Management	Parking Management	PT Priority Measures
1. Objective of JICA PPTMTC 2. Expected goals of today's training 3. Why is traffic management necessary? 4. Urban transport in Phnom Penh at glance 5. Comparison with other GMS cities 6. Proposed Traffic Management Scheme by JICA/ADB Studies 7. Traffic management in general 8. Draft traffic management strategy for Phnom Penh:	1. Objective of JICA PPTMTC 2. Expected goals of today's training 3. Situation analysis on parking 4. Parking management interventions 5. Institutional and legal framework 6. Issues and benefits of parking management 7. Integrated parking policy and strategies 8. Planning toolkit	1. Objective of JICA PPTMTC 2. Expected goals of today's training 3. Situation analysis and issues arising for public transport in Phnom Penh 4. Public transport priority measures across the world 5. Draft urban transport development strategy proposed by JICA Result of Trial test for Bus Priority Control Bus Priority Measures for Bus Line 4

4) Implementation of training: Groupwork

Traffic management groupwork (Group B)


PT priority measures groupwork (Group A)


4.4 Overall Evaluation of the PPTMTC Training

- These training programs were conducted to improve the operational maintenance and management capacity of the Phnom Penh Traffic Control Center. As we have seen above, it was confirmed that the attitude and motivation of the participants have increased.
- Each training course is not standardized in content and method, but is conducted in a unique style according to the instructors' backgrounds and themes, and is designed to provide participants with the opportunity to learn from each other's experiences.

Results of Pre- and Post Evaluation of Training

- A target score of 60 points was set, and evaluation tests were conducted before and after the training regarding maintenance management, traffic signal control, and communication systems. The results are shown in the table on the right. Although the target score was achieved for training on traffic control and communication systems, maintenance management was not achieved, although the rate of increase before and after the training was high.

■ Score of Pre- and Post Evaluation Test

Type of Training	Pre-test	Post Test
Maintenance	7.8	44.2
Traffic Signal Control	16.5	72.4
Communications	34.7	61.2

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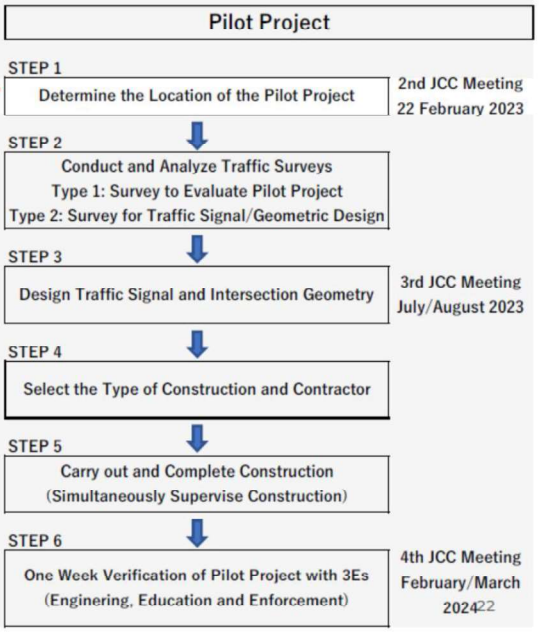
5. Pilot Project
5.1 Outline of the Pilot Project

The pilot project is part of the PPTMTC training as well as materials for the training. Therefore, the location of the pilot project was decided through discussions with TCC staff and JICA experts in addition of the Contractor's comments. And after that the location was also coordinated with DPWT Director, Deputy Director, Phnom Penh Traffic Police officers, etc. mainly for engineering and safety aspects.

A pilot project is a whole series of activities as shown on the right.



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Location of the Pilot Project

(1) Between #140 and #152: To cope with City Center development

(2) #502: To improve the signalized intersection from roundabout

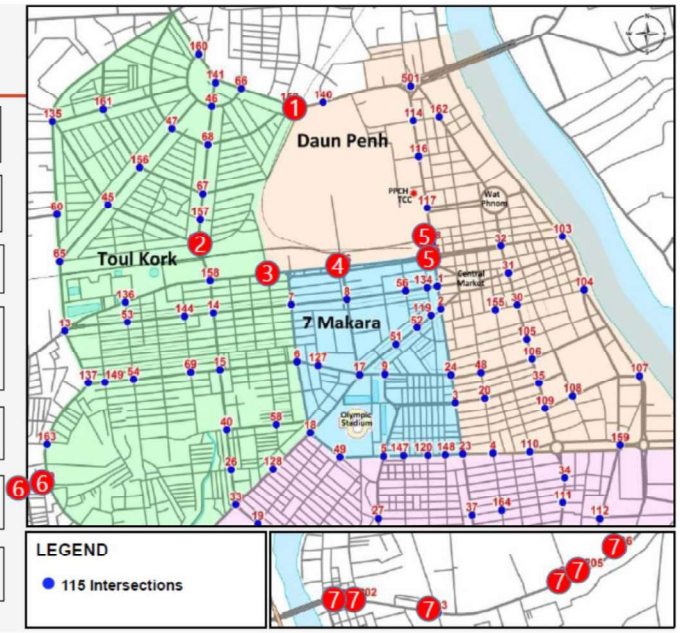
(3) #28: Additional left-turn arrow

(4) #126: To cope with intersection improvement, mainly revision of the signal phasing/timing

(5) #25 and #118: Coordination of two intersections in the CBD

(6) #59 and St.2004/St.371: Coordination of two intersections at the CBD fringe

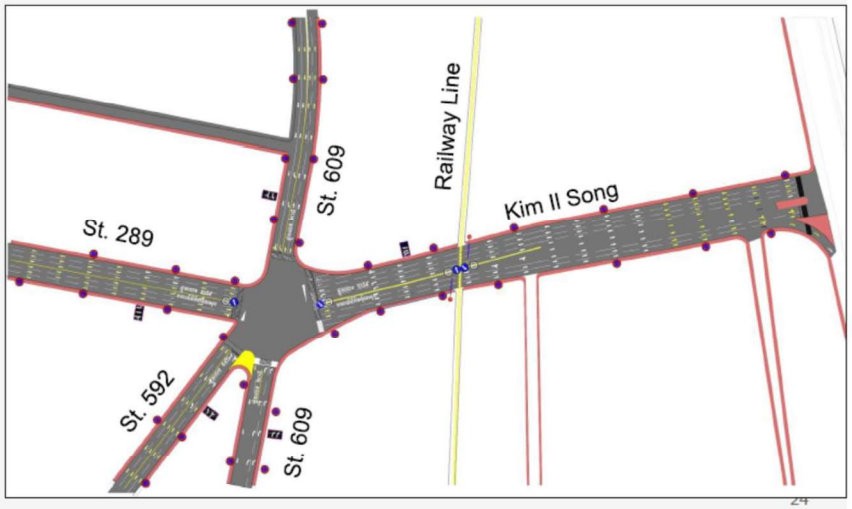
(7) #201 - #206: Connecting between TCC and 6 intersections along NR No.1



5.3 Proposed Pilot Project

(2) #502: To cope with intersection improvement

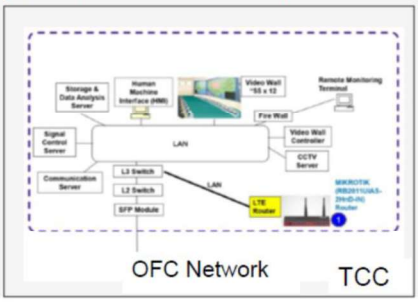
From Roundabout to 5-leg Signalized Intersection

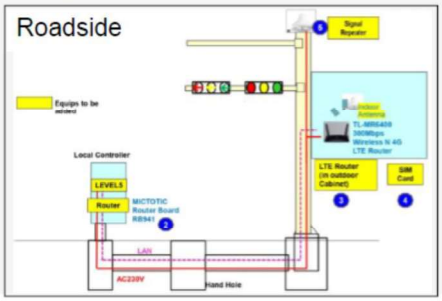


5.3 Proposed Pilot Project

(6) #201 - #206: Connection TCC and 6 intersections along NR No.1

The 6 intersections along NR No.1, which will have a wireless connection to TCC, will be used to solve problems/issues at these intersections. As a result, all 115 signalized intersections developed by the Japan Grant Aid project will be connected to TCC. Also, if the pilot project of this new communication system is successful, it can be one of the alternatives to the communication system when the traffic control system is expanded to the suburban area. There is also the advantage that all the wireless routers (yellow devices in the image below) required for this trial can be procured in Cambodia.





6. Sustainable Procurement for the Pilot Project

For Sustainable Maintenance of Traffic Control Systems

◆Procurement of Japanese products and services for critical components of TCC
- -Signal controllers
- -Media converters
- -TCC program changes, etc.

◆Equivalent products that can be procured in Phnom Penh
- -Signal poles
- -Signal lanterns, etc.

Promote genericization and make it easier for TCCs to procure and maintain.

Items	Grant Aid		Pilot Project
Civil Works	Cambodia		Cambodia
Signal Pole	Thailand	→	Cambodia
Signal Lantern	Japan	→	Third Country
Local Controller	Japan		Japan
TCC Equipment/ Software	Japan		Japan

■ What Issues to Discuss In This 2nd JCC Meeting

1. How to Officially Approve TCC Organization in PPCA/DPWT
   → Submit the first draft letter to the DPWT Director on 20 February 2023
2. PPTMTC Training Results → Evaluate the technical level of the TCC staff and make effective use of it in future PPTMTC activities.
3. Location of Pilot Projects → The pilot project is part of the PPTMTC training as well as materials for the training. The pilot project is not just about designing of signalized intersections, but as shown in Sheet 25, it also involves executing a lot of steps, so it takes nearly a year from start to finish. Therefore, considering the overall project period and other factors, it is necessary to determine the target locations in this JCC meeting.
4. Sustainable Procurement for Pilot Project → For the sustainability of TCC operation, it is extremely important to ensure the basic performance of equipment and to purchase equipment quickly and at a low cost.
5. Warranty Inspection Period of the Pilot Project → Since this project is a technical cooperation project, we would like the warranty period to be set within the project period. And design and construction will be done as a part of training by collaboration with TCC, PPCH/DPWT and JICA experts.

ANNEX11-3: 3rd JCC Meeting

Minutes of the 3rd Joint Coordinating Committee Meeting

of

The Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC)

The 3rd Joint Coordinating Committee (JCC) meeting between Phnom Penh Capital Administration (PPCA), Department of Public Works and Transport of Phnom Penh (DPWT), Japan International Cooperation Agency (JICA), and the concerned members of the Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC) was held in a hybrid format, on-line and in-person at Phnom Penh Capital Administration (PPCA) on 14th of August, 2023. The comments and the discussions were made on several items as described below.

1. Opening remarks by PPCA and JICA:

H.E. Suy Serith, Vice Governor of PPCC and Vice-chair of JCC, welcomed all the participants and expressed his sincere thanks to the Government of Japan for extending support through JICA, as well as to JICA expert team for the implementation of the PPTMTC project. He mentioned that this project duration was starting in January 2022 to February 2025. He continued stating that this project will be implemented including the installation of traffic signals, maintenance management of TCC, expansion capacity of TCC staffs, DPWT officials and Traffic Police. He also added that this meeting will put into the discussion for some challenges of the pilot project and there is another presentation about parking management which is proposed by JICA expert team. He further added that parking management is also important for the current situation of Phnom Penh capital city. Before closing his remarks, he wishes this JCC meeting a successful and fruitful discussion.

Mr. Kazumasa Sanui, Chief Representative of JICA Cambodia office, welcomed all the participants. He continued that the rapid urbanization and economic growth of Cambodia lead to face with many challenges, one of those challenges is the increased number of vehicles in the city which causes traffic congestion and environmental impact. This project was designed with the purpose of improving traffic management and securing safety for the city of Phnom Penh by enhancing the capacity of operation, maintenance and management of traffic control system established by Japan Grant Aid project. To achieve these, this project has been implementing many measures such as re-install new traffic signals at specific locations to optimize traffic flow, mitigating the local camera surveillance to analyze the traffic flow, and also parking management plan in Phnom Penh to ensure smooth traffic and safe in Phnom Penh city. He added that the project has smoothly progressed and had positive results. He hoped that this meeting will bring a fruitful discussion.

2. Contents of Presentations:

Mr. Masato Koto, team leader of the project, made a presentation on the PPTMTC project covering outline of the project, DX and PPTMTC project, project schedule and pilot project locations. For the details, please refer to the presentation material.

Mr. Kiminari Takahashi, Traffic Management Planning Expert, JICA PPTMTC Project Team, made presentation on parking management plan in Phnom Penh. For the details, please refer to the presentation material.

3. Main Points of Discussion:

No.	Comments/Questions	Answers
1.	**Pilot Project Locations**	
(1)	- **H.E Suy Serith** suggested the project team to consider adding sound alert device to the traffic signal.	
(2)	**Mr. Chou Kimtry,** Deputy Director of Department of Public Works and Transport of Phnom Penh Capital (DPWT), said that the JICA Project Team has been working closely and fully discussed with DPWT on the pilot projects. He continued that DPWT agreed with the pilot project's locations. He further added that if there is no more revision, the installation work of pilot project will be scheduled to implement in November 2023. With the implementation of these pilot projects, we will observe.	
(3)	**Mr. Ly Visal,** Deputy Chief of Road Traffic Police office of the Commissariat of Phnom Penh Police, said that JICA project team has discussed with traffic police earlier. He continued that Phnom Penh traffic police agreed with the proposed pilot project locations.	
(4)	**H.E Nuon Pharat** agreed with the implementation of pilot project and asked CBA about the possibility of proposing new bus line along the new road connecting from National Road No.5 to the pilot location No.1 (City Center).	- **Mr. Keo Channarith**, Governor of CBA, responded that there is a possibility to apply bus route along the new road, as currently an existing bus route (Line 12) is linked with this area. He added that the study on the ridership demand along this new road is also important for the consideration. CBA will conduct the further detailed study on this road.
(5)	**Dr. Phun Vengkheang**, Head of Transport and Infrastructure Engineering Department from Institute of Technology of Cambodia (ITC), agreed with the implementation of pilot project locations and with the selected countermeasures to improve traffic flow at those proposed locations, which are technically appropriate. He continued that the combining of new road with bus route is also good for traffic flow improvement, but the project team should also consider another alternative such as sky train for long-term consideration,as well as the parking management along this new road.	
(6)	**Mr. Ou Thunsal**, Deputy Chief of Department of Urban Public Transport (MPWT), agreed with the project team regarding the proposal of the pilot projects. And he further suggested as the followings: 1.to equip sound alert device to traffic signal since it is convenient for the people with disabilities. 2. to install more priority signs 3. to consider providing free-right turn lane at the intersections to smooth traffic flow	

	4. MPWT has been developing parking masterplan covering the transport management hub which allow people from provinces to be able to change the transport mode, from private to public mode to travel into the city. He continued that MPWT is preparing Prakas for Parking Law which will be amended to traffic law in the future. 5. to consider the parking plan before any new major road construction and new buildings.	
(1)	**H.E Nuon Pharat** asked that if there is any detailed discussion between project team, MPWT and DPWT on parking management plan in Phnom Penh? HE strongly advised public sector should manage and operate parking in order to make compliant with law/regulation.	- **Mr. Kiminari Takahashi**, JICA Expert Team, said that he has been supporting the MPWT currently to draft the Parking Law. He continued that he suggested to MPWT to clearly define the type of parking and as well as define who is the owner/operator. After the parking law is enacted, we can define who is the owner/operator whether private sector or government authority.
(2)	**H.E Suy Serith** raised the concern about the parking management plan in Phnom Penh since it is difficult to enforce illegal parking. He continued that when the parking law is enacted, it will facilitate local authority or traffic police for enforcement actions.	
(4)	**Mr. Moeung Sophan,** advisory of DPWT, suggested the project team that not only for parking management, but the project team should also consider about the taxi way and paratransit problem in the city.	
(5)	**Mr. Chou Kimtry** suggested that when conducting the study of on-street parking, the one-way system should be included in the study.	**Mr. Kiminari Takahashi** responded that on-street parking studies generally involve the one-way system.

4. Closing and Conclusion:

Before closing, **H.E Nuon Pharat** summarized and concluded the main points of discussion during the 3rd JCC meeting as the followings:

(1) The proposed pilot projects is agreed in principle by the meeting ; however, the pilot project should be implemented based on the 3Es approach, 1) Engineering: TCC staffs and DPWT officials should carefully study together on how to install traffic signals; 2) Education: DPWT official and the concerned authorities should work collaboratively to disseminate the information and traffic safety education to the citizens especially those living along the pilot locations to engage them to the project's activities; and 3) Enforcement: Traffic police is also requested to contribute to this activity to successfully implement this project.

(2) For parking management in Phnom Penh, we has no objection nor approval on this proposal, however, we support the study of parking management plan.

(3) After having Prakas on Parking Law issued, we would like to request JICA to consider the possibility of conducting the feasibility of parking development plan in the next Technical Cooperation Project.

(4) As for on-street parking is involved with many streets, the project team should carefully study to clearly define the areas where charged and free parking will be applied.

(5) Not only traffic signal and parking management, but also public transport is very important to improve urban transport

Suggestions:

- Request JICA to continue the cooperation on bus priority lane project. Without priority lane, the service of the city bus remains limited.
- Request MLIT of Japan (through the Embassy of Japan in Cambodia) to continue the cooperation on Smart Bus Shelter project since the project has already completed the feasibility study.

The meeting was adjourned at **16:45 PM**.

CONFIRMED BY:

H.E. NUON PHARAT
Vice Governor
Phnom Penh Capital City

Mr. KAZUMASA SANUI
Chief Representative
JICA Cambodia Office

Mr. MASATO KOTO
Team Leader
JICA Expert Team

2. Photos

Participants of 3rd JCC meeting

3. Presentation Material

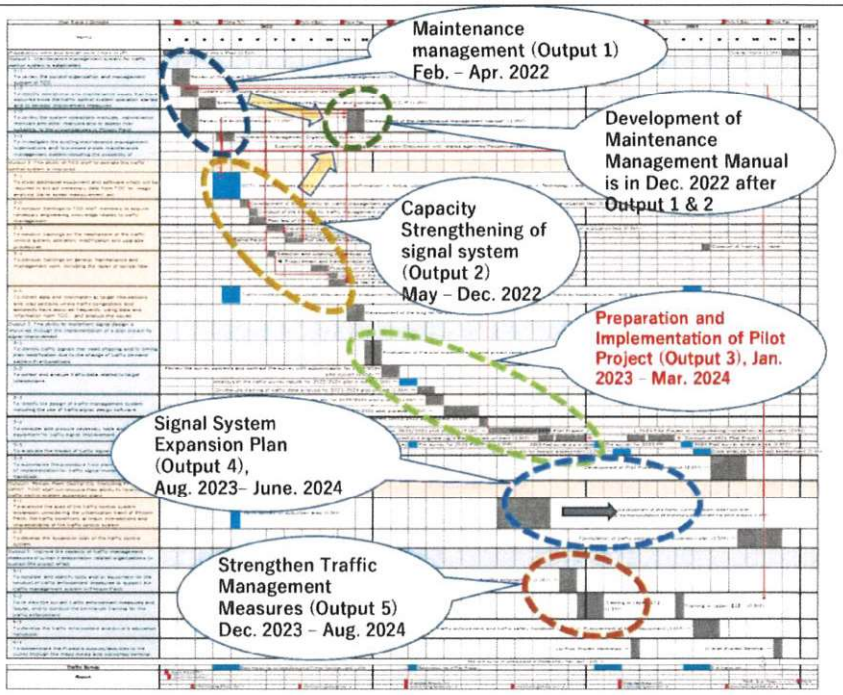
1. Outline of the Project

Project Name	Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City
Project Period	January 2022 to February 2025
Overall Goal	Sustainable Urban Transport Environment is Formed
Project Purpose	Traffic Management Measures Including Traffic Safety Measures in Phnom Penh is Improved
Expected Output	**Output 1**: Maintenance Management System of Traffic Control System is Established **Output 2**: Capacity of TCC Staff on the Operation of Traffic Control System is Strengthened **Output 3**: Capacity to Design Traffic Signals is Strengthened through the Implementation of Pilot Projects for Traffic Signal Improvement **Output 4**: Capacity of the Relevant Staff to Traffic Control in PPCA, DPWT and TCC Staff to Develop the Expansion Plan of Traffic Control System is Strengthened **Output 5**: Capacity of Urban Transport Related Organizations on Traffic Management Measures is Strengthened towards Enhancement of the Project Sustainability
Counterpart Institution	Implementing Agencies: Phnom Penh Capital Administration (PPCA), Department of Public Works and Transport (DPWT), Traffic Control Center (TCC) and Phnom Penh Traffic Police (PPTP)
Project Area	Whole Area of Phnom Penh

2

Project Schedule

- Project Schedule: January 2021 – January 2025 (37 months)
- In 2022: Traffic signal maintenance management including Manual and TCC staff training
- In 2023: Pilot Project
- In 2024: Signal system expansion plan and Strengthen traffic management organization in PP.



Location of the Pilot Project

(1) Between #140 and #152: To cope with City Center development (new signal)

(2) #502: To improve the signalized intersection from roundabout (new signal)

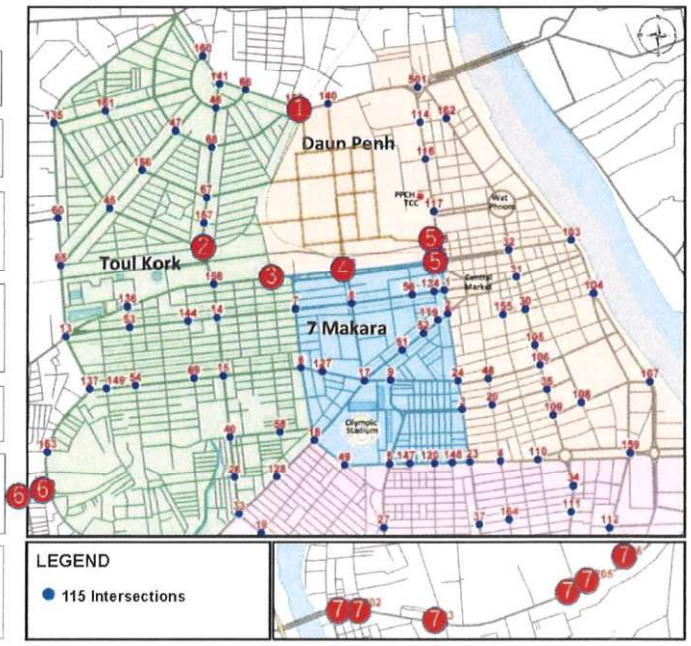
(3) #28: Additional left-turn arrow (revision of the phasing + left-turn arrow + revision of road marking)

(4) #126: To cope with intersection improvement, mainly revision of the signal phasing/timing (revision of the phasing)

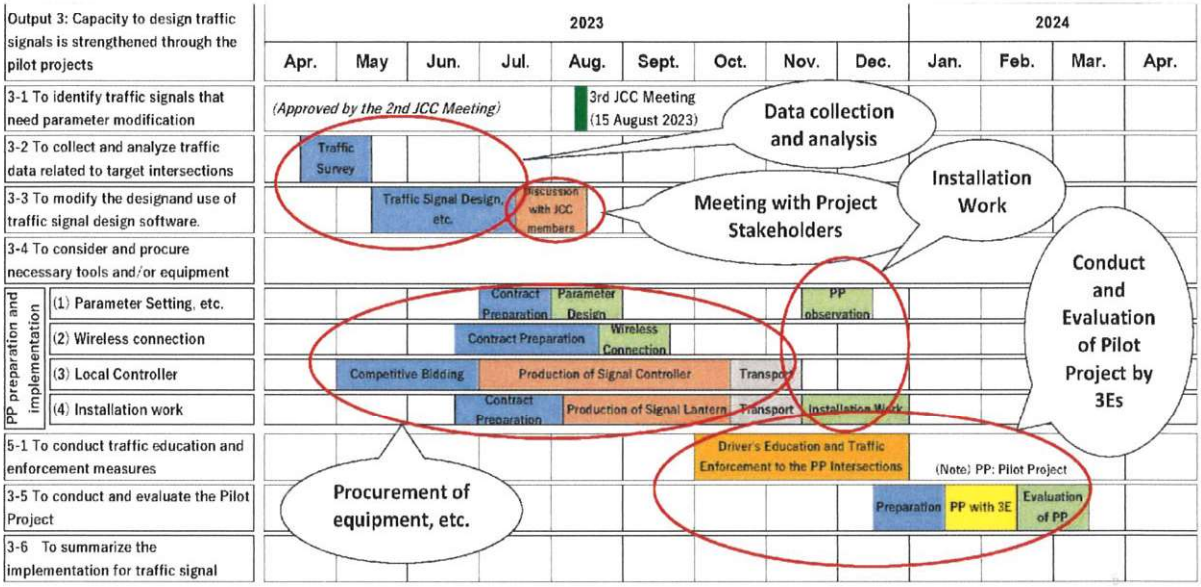
(5) #25 and #118: Coordination of two intersections in the CBD (introduction of 3Es)

(6) #59 (revision of phasing) and #59 West (new signal): Coordination of two intersections at the CBD fringe

(7) #201 - #206: Wireless connection between TCC and 6 intersections along NR No.1 and #59 West (wireless connection)



Pilot Project Schedule (April 2023 - April 2024)



PPTMTC Pilot Project and Its Project Design Matrix, and SDGs

PPTMTC's Overall Goal: Sustainable Urban Transport Environment is Formed.
Project Purpose: Traffic Management Measures Including Traffic Safety Measures in Phnom Penh is Improved.

Goal 13. Take urgent action to combat climate change and its impacts

Goal 3: Good health and well-being: Ensure healthy lives and promote well-being for all at all ages

Road Traffic Accident Cost in 2019: 466.8 million USD (1.7% of GDP)
Source: Human Capital Cost calculation approach and using RCVIS data (NRSC, MPWT)

Goal 11: Sustainable cities and communities: Make cities and human settlements inclusive, safe, resilient and sustainable

Saving the Travel Time Cost of Monivong Blvd. Users by the Traffic Signal Installation in PPCH: 2.5 Million USD/Year

How to Implement the Signalized Intersection for Pilot Project

- Engineering and Education aspects are discussed between DPWT, TCC Staff and JICA Expert Team
- Enforcement aspects are discussed with Phnom Penh Traffic Police Department


TCC Staff and JICA Experts


Phnom Penh Traffic Police and JICA Experts


DPWT, TCC Staff and JICA Experts

Current Status and Issues of Pilot Project Intersections (1)

1. #140 West

- From 3-leg to 4-leg intersection in the near future
- Traffic volume at this intersection will increase in the future
- New road has the potential of introduction of public transport system
- Phasing plan will be reconsidered after completion of new road

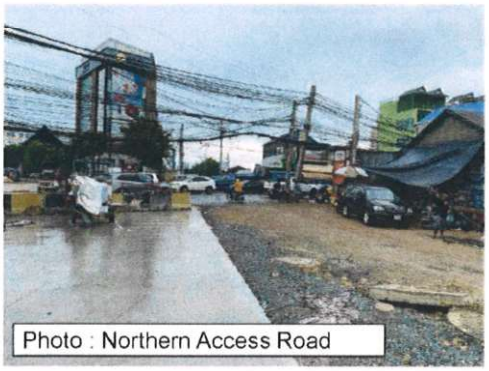
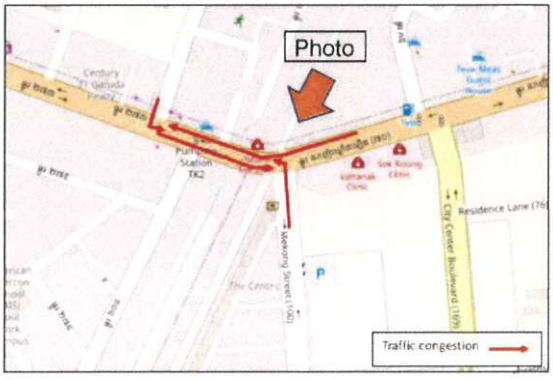
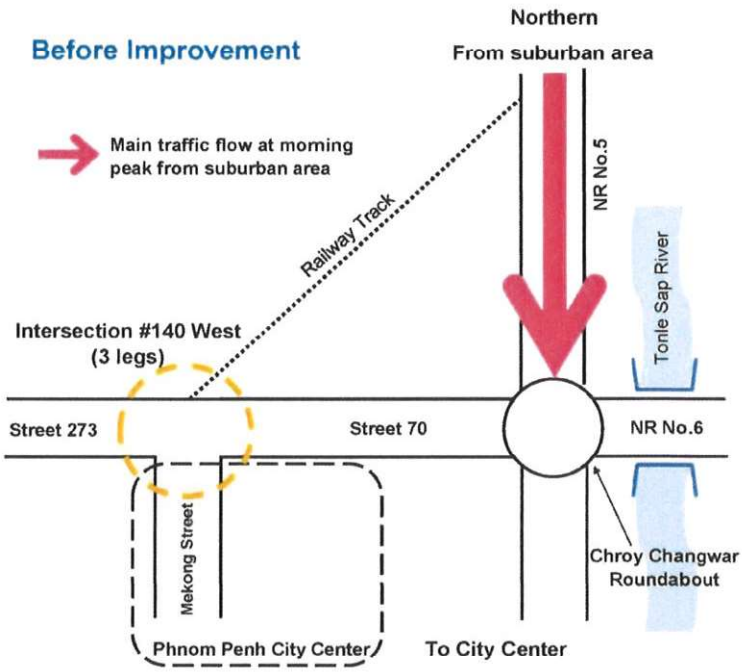
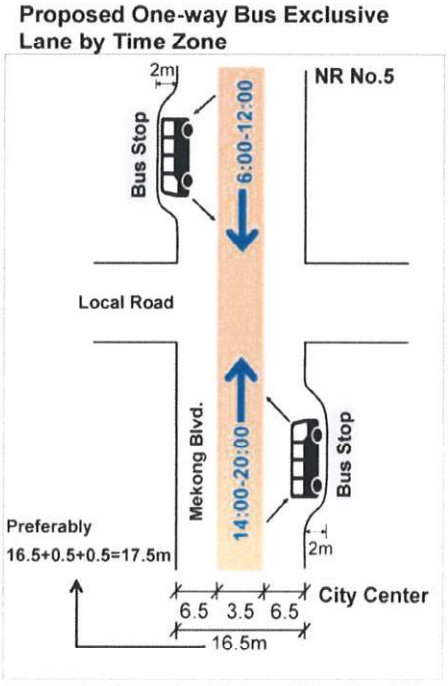
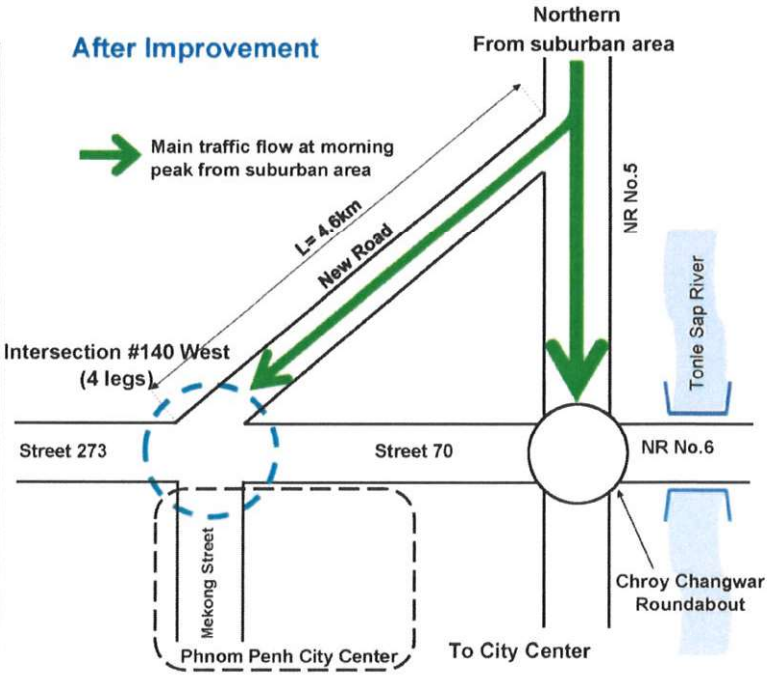


Photo : Northern Access Road

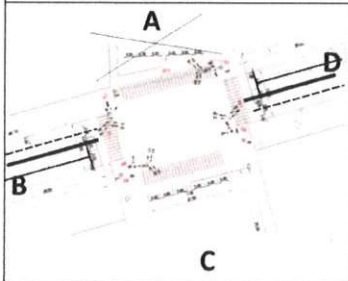


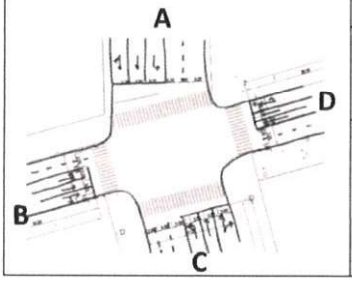

Before Improvement
Northern
From suburban area
Main traffic flow at morning peak from suburban area
Railway Track
NR No.5
Tonle Sap River
Intersection #140 West
(3 legs)
Street 273
Street 70
NR No.6
Mekong Street
Chroy Changwar Roundabout
Phnom Penh City Center
To City Center


Proposed One-way Bus Exclusive Lane by Time Zone
2m
NR No.5
Bus Stop
6:00-12:00
Local Road
Mekong Blvd.
14:00-20:00
Bus Stop
2m
Preferably
16.5+0.5+0.5=17.5m
City Center
6.5
3.5
6.5
16.5m


After Improvement
Northern
From suburban area
Main traffic flow at morning peak from suburban area
L= 4.6km
New Road
NR No.5
Tonle Sap River
Intersection #140 West
(4 legs)
Street 273
Street 70
NR No.6
Mekong Street
Chroy Changwar Roundabout
Phnom Penh City Center
To City Center

Traffic Signal Phasing Plan at #140 West

Lane Configuration (Current)	Phase (Current)					Flow ratio of intersection	
	1	2	3	4	5	By time zone	
	No Signal					Morning	
						Afternoon	
						Evening	
Traffic conditions ・The intersection is currently an unsignalized T-junction, which leads to frequent traffic congestion, especially on the main road. ・At Outflow B, traffic is congested due to merging and diverging at a nearby unsignalized intersection.							

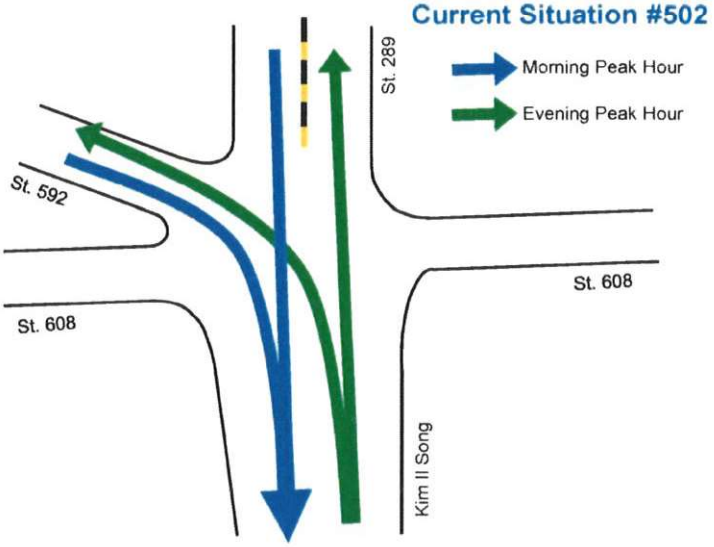
Lane Configuration (Proposal)	Phase (Proposal)					Flow ratio of intersection		
	1	2	3	4	5	By time zone		Difference
						Morning	-	-
						Afternoon	-	-
						Evening	-	-
Proposal ・Consider changes in traffic conditions after the opening. In particular, phase is proposed to facilitate control of left-turning vehicles.								

Current Status and Issues of Pilot Project Intersections (2)

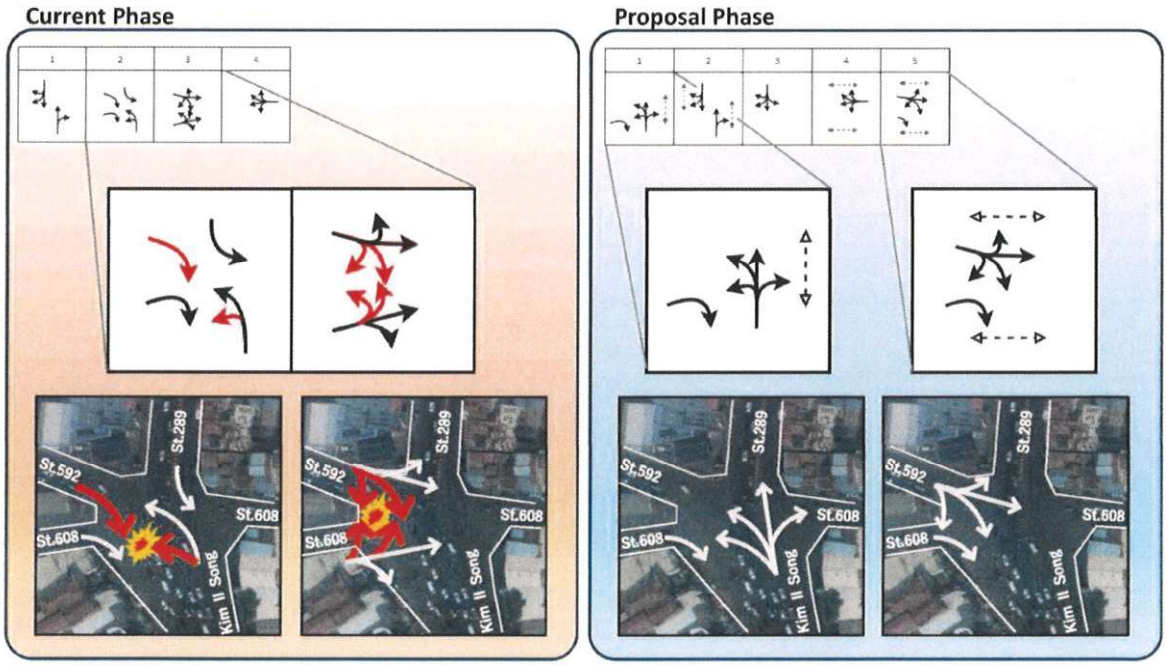
2. #502

- Converted signalized intersection from 5-leg roundabout
- Large intersection area causes the lost time of the traffic signal
- Generates crossing several traffic flows under the current phasing pattern, which causes a dangerous situation to drivers

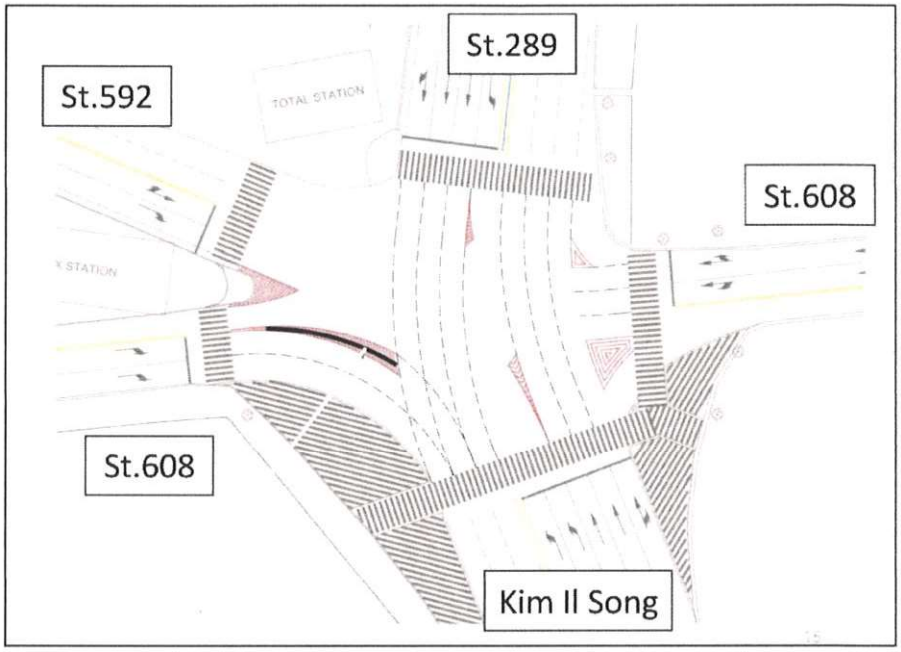
Current Status and Issues of Pilot Project Intersections at #502



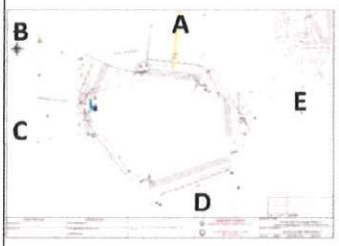
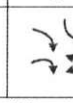
To minimize the intersection size

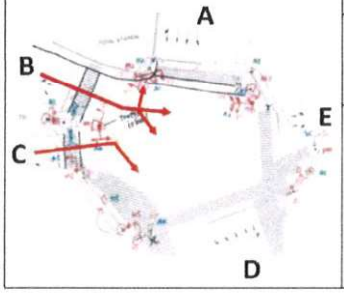


Installation of Guide Marking and Island Marking at #502



Traffic Signal Phasing Plan at #502

Lane Configuration (Current)	Phase (Current)					Flow ratio of intersection	
	1	2	3	4	5	By time zone	
						Morning	0.945
						Afternoon	0.729
						Evening	1.099
Traffic conditions ・In Phases 2 and 3, vehicles confliction and it is dangerous.							

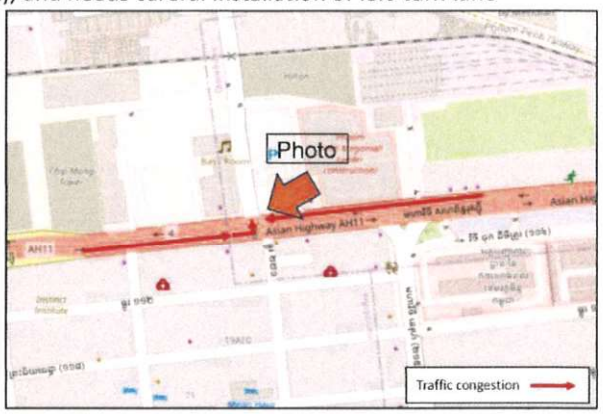
Lane Configuration (Proposal)	Phase (Proposal)					Flow ratio of intersection		
	1	2	3	4	5	By time zone		Difference
						Morning	0.861	-0.084
						Afternoon	0.748	-0.197
						Evening	1.070	-0.029
Proposal ・Add right-turn arrow on inflow C-only restriction on Inflow Road C. ・Main road has very different left turn volume so apply read & rag phasing.								

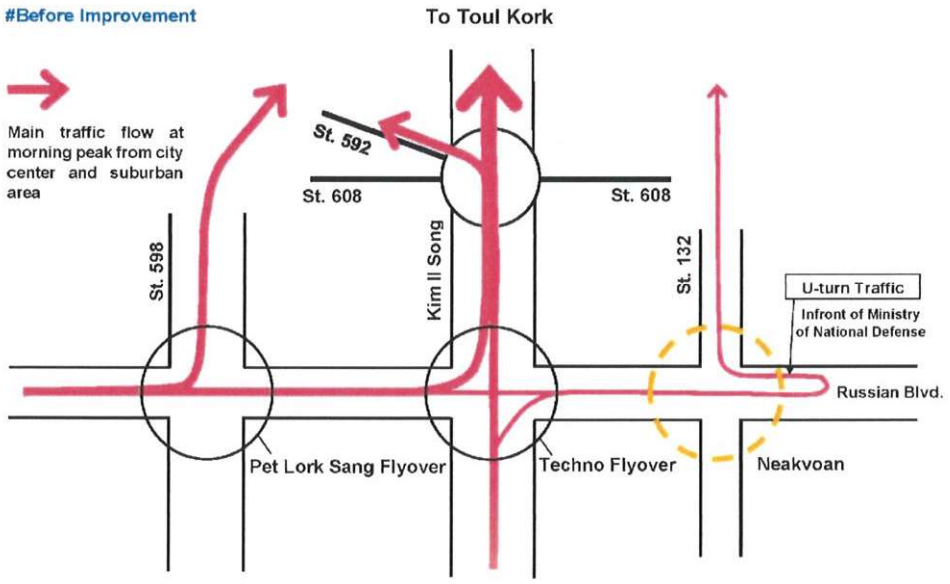
Current Status and Issues of Pilot Project Intersections (3)

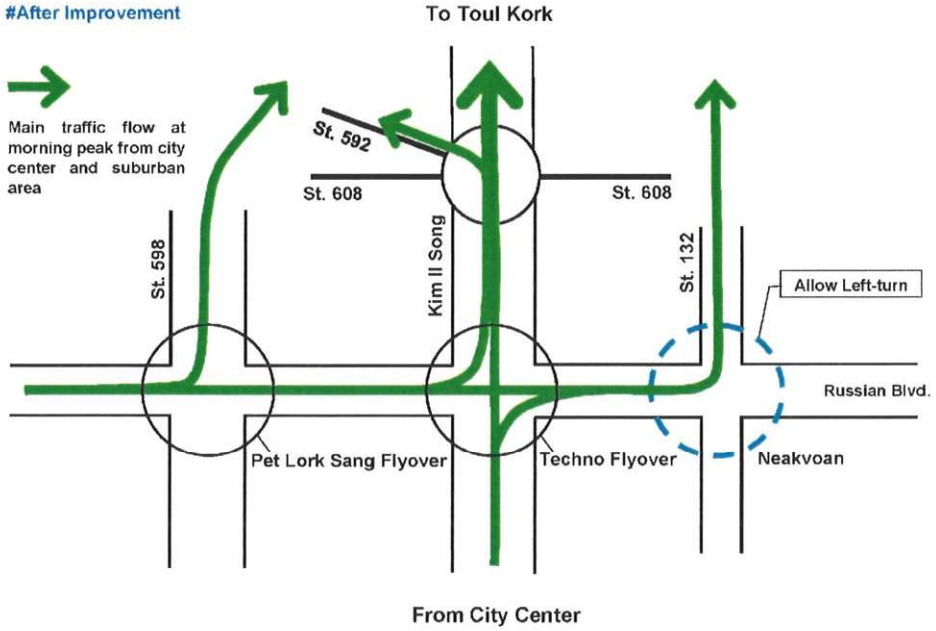
3. #28

- 4-leg intersection but currently prohibits left turn from the west (airport side) to the north.
- Widened north access and expected to become a new access road to the Toul Kork area
- Easing traffic concentration on #502
- Limited width of the Russian Blvd. (W = 17.6m), and needs careful installation of left-turn lane

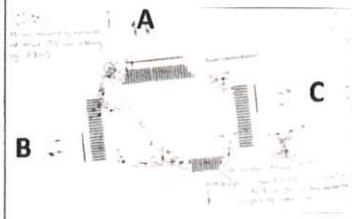
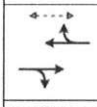
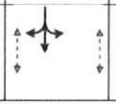

Photo : Illegal Left-turn from West to North

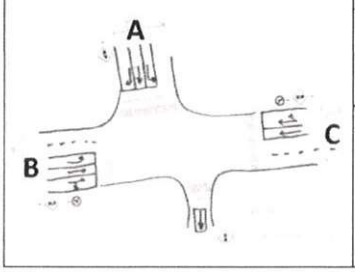
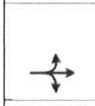
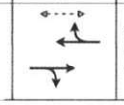
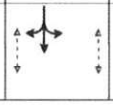






Traffic Signal Phasing Plan at #28

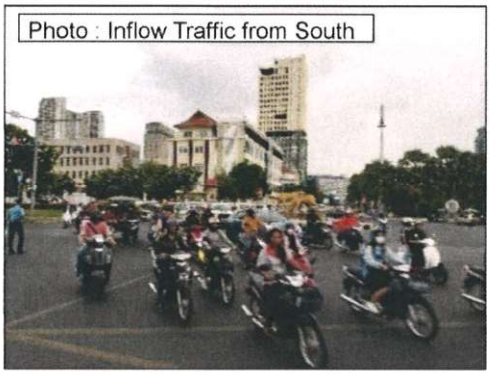
Lane Configuration (Current)	Phase (Current)					Flow ratio of intersection	
	1	2	3	4	5	By time zone	
						Morning	1.181
						Afternoon	0.758
						Evening	1.056
	Traffic conditions ・Although left turns are prohibited on the main road, traffic congestion caused by illegal left-turning vehicles occurs on approach B. ・At approach A, right-turning vehicles often ignore the signal.						

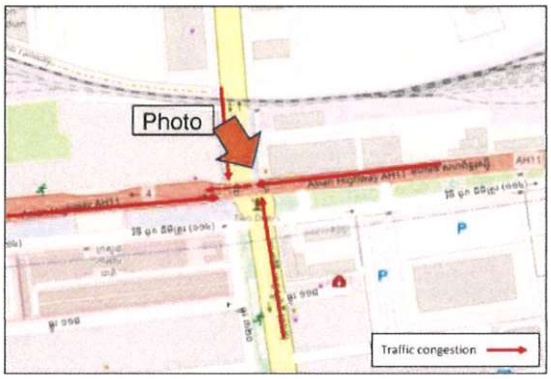
Lane Configuration (Proposal #1)	Phase (Proposal #1)					Flow ratio of intersection		
	1	2	3	4	5	By time zone		Difference
						Morning	0.923	-0.258
						Afternoon	0.635	-0.123
						Evening	1.182	0.126
	Proposal ・Allow left-turn at inflow B and add time-differentiated signals. ・By controlling left-turn demand with traffic signals, safety can be improved.							

Current Status and Issues of Pilot Project Intersections (4)

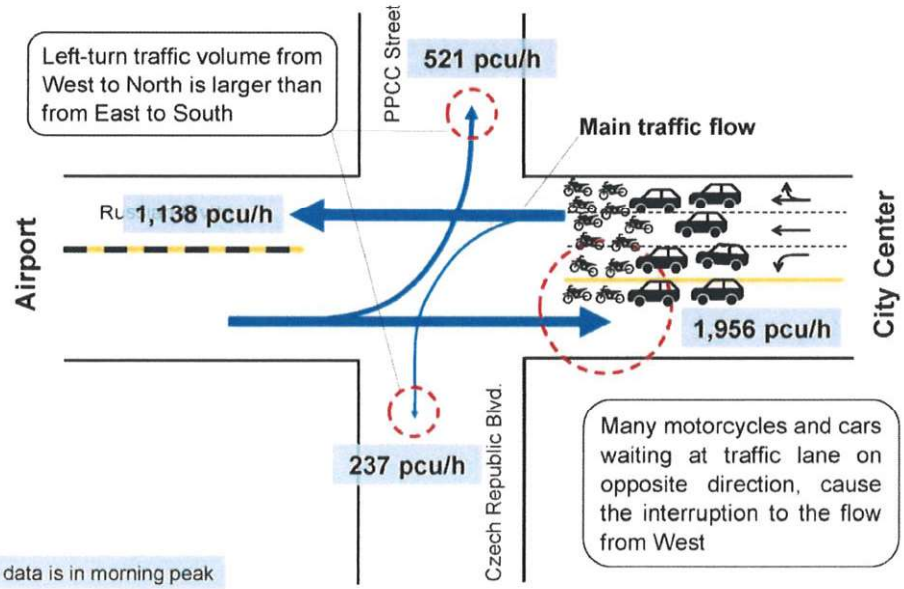
4. #126

- T intersection became a 4-leg intersection
- It is an intersection of radial (Russian Blvd.) and circular (Czech Blvd.) roads, the major arteries that form the framework of Phnom Penh City
- Therefore, a large volume of traffic is concentrated in this intersection



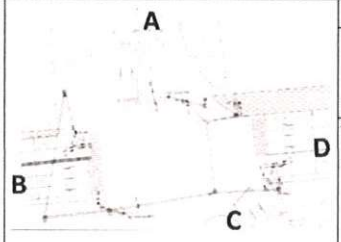
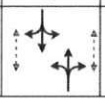


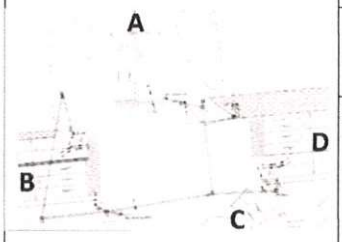
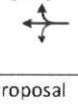
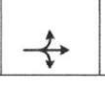
Current Situation #126 (Kdan Pir)



Note: Traffic data is in morning peak

Traffic Signal Phasing Plan at #126

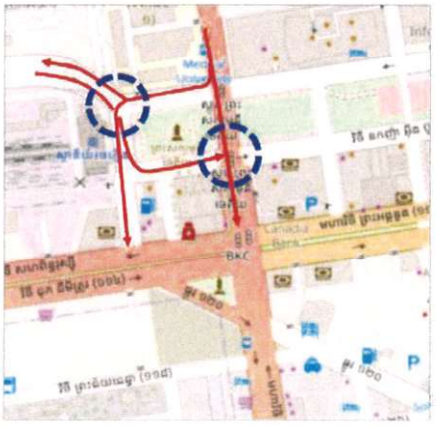
Lane Configuration (Current)	Phase (Current)					Flow ratio of intersection	
	1	2	3	4	5	By time zone	
						Morning	0.926
						Afternoon	0.717
						Evening	0.970
Traffic conditions ・Each inflow road is congested.							

Lane Configuration (Proposal)	Phase (Proposal)					Flow ratio of intersection		
	1	2	3	4	5	By time zone		Difference
						Morning	0.746	-0.180
						Afternoon	0.630	-0.087
						Evening	0.939	-0.031
Proposal ・Propose time-differentiated signaling on main roads. ・Change Phase 1 to westbound from eastbound.								

Current Status and Issues of Pilot Project Intersections (5)

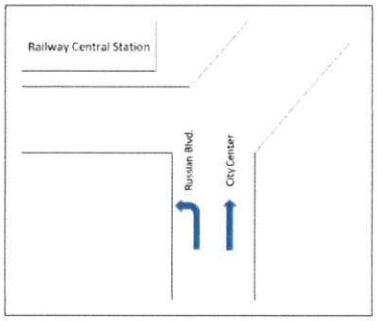
5. #25 & #118

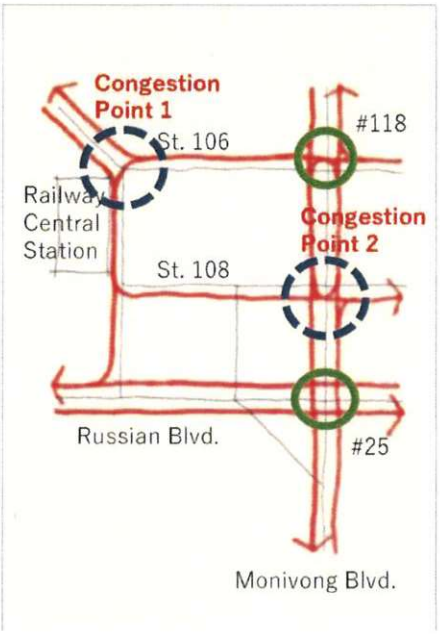
- Cross point in the CBD between Russian Blvd. and Monivong Blvd., which are major radial arterial roads
- Railway central station is located nearby, many local roads are located within 160m, and very dense
- Traffic signal parameters have been generally adjusted by the efforts of TCC staff
- Lack of drivers' traffic safety education and the lack of traffic enforcement by the traffic police officers (not keeping to road lanes, illegal parking in and between intersections, etc.) are causing a lot of traffic congestion.



Traffic Congestions between #25 and #118

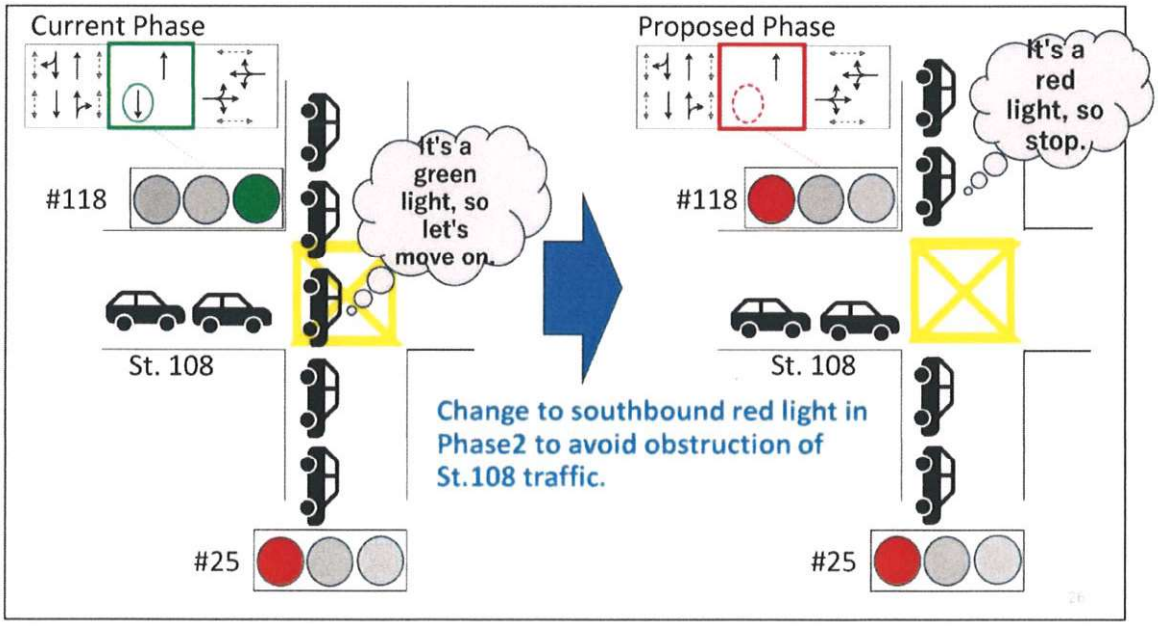
Introduction of 3Es Activities (Engineering, Education and Enforcement)





25

Countermeasures to Congestion Point 2 at Monivong Blvd./St. 108



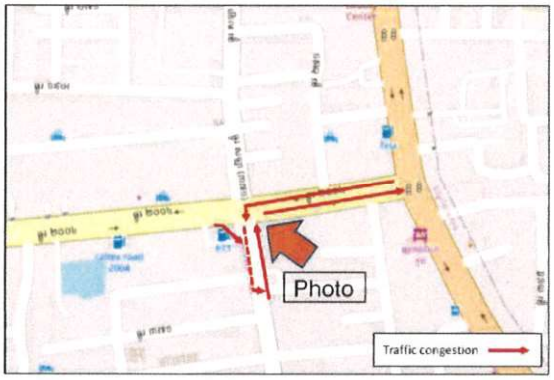
26

Current Status and Issues of Pilot Project Intersections (6)

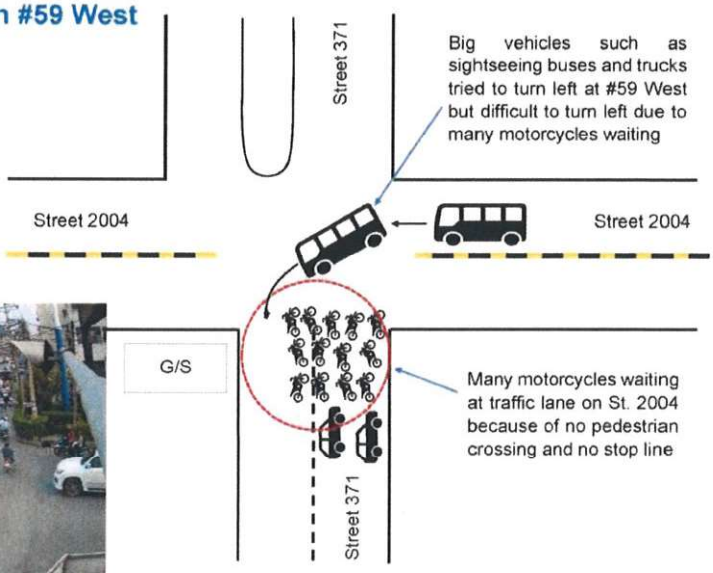
6. #59 & #59 West

- Traffic signal #59 networked with TCC, and #59 West developed by DPWT as stand alone (distance between both is about 200m).
- Between the two intersections, serious traffic jams occur during peak hours.
- Factors are (1) there is no road marking or it is not clear. (2) traffic rules such as traffic signals are not obeyed, and (3) large buses and trucks enter the local road of St. 371
- TCC plans to adopt a wireless connection system (between #59 and #59 West).

Photo : Heavy Left-turn Traffic from East to South during Evening Peak

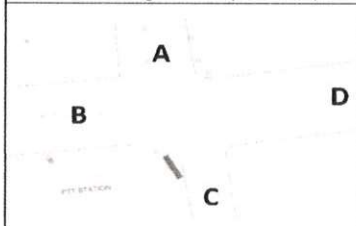
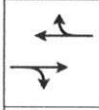


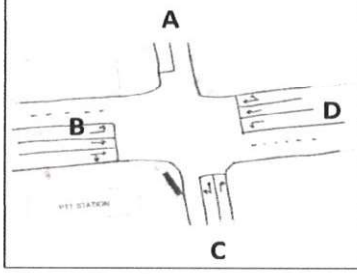
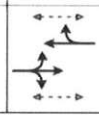
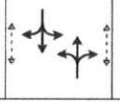
Current Situation #59 West



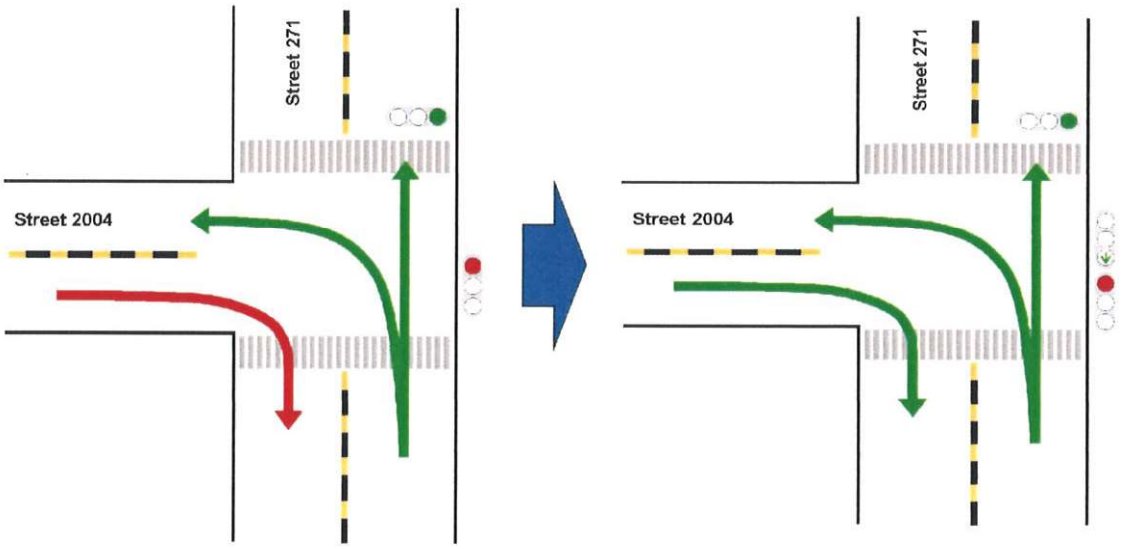
Heavy truck tried to turn left to narrow St.371 at #59 West

Traffic Signal Phasing Plan at #59 West

Lane Configuration (Current)	Phase (Current)				Flow ratio of intersection	
	1	2	3	4	By time zone	
					Morning	0.955
					Afternoon	0.935
					Evening	1.154
	Traffic conditions ·The congestion that occurs at approach D is caused by left-turning vehicles. ·Most right-turning vehicles on approach D pass through the gas station site. ·Traffic congested at Outflow C due to the many left-turn traffic at non-signalized intersection and merging from the gas station.					

Lane Configuration (Proposal)	Phase (Proposal)				Flow ratio on intersection		
	1	2	3	4	By time zone		Difference
					Morning	0.836	-0.119
					Afternoon	0.808	-0.127
					Evening	0.920	-0.234
	Proposal ·Reducing the phase decreases Flow ratio of intersection. ·The congestion that occurs at approach D is caused by left-turning vehicles. ·The left-turn demand on approach B is low and will be handled in Phase 2.						

Before and After Improvement at #59



Introduction of 3Es in the Pilot Project

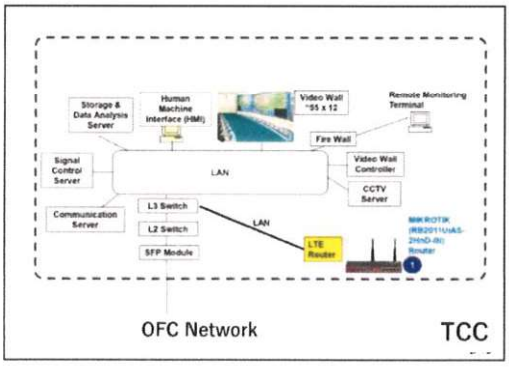
1. Meaning of traffic signal, green: go, yellow: caution and red: stop
2. Straight going vehicles do not stop at left-turn lane (follow the road marking)
3. No parking in and around the intersection
4. Follow yellow box in the intersection (do not stop in the intersection)
5. Follow the traffic rules in the Pilot Project

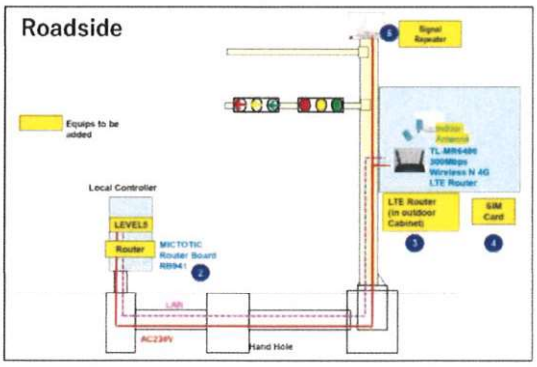
   For examples, #502: St. 608 has only left-turn and #59 West: Ban of large vehicles along #371 south

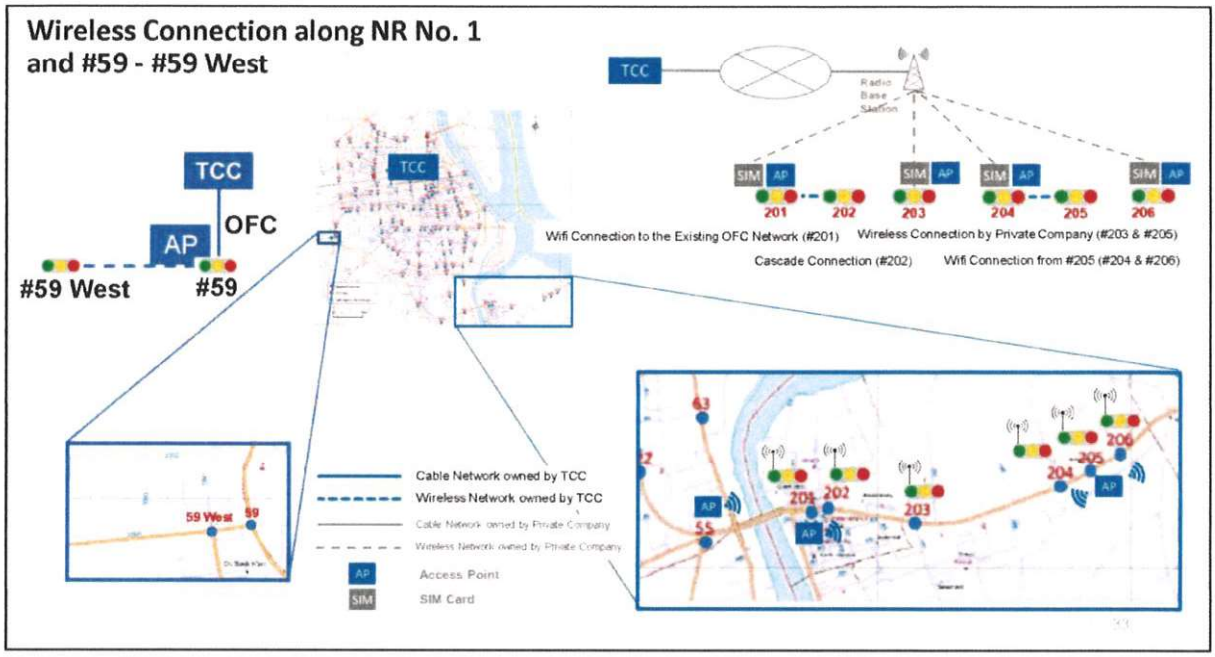
- Dissemination of the traffic safety education through SNS, at roadside and at schools, etc., and enforcement by traffic police
- And review the Pilot Project after evaluation

7. Wireless Connection

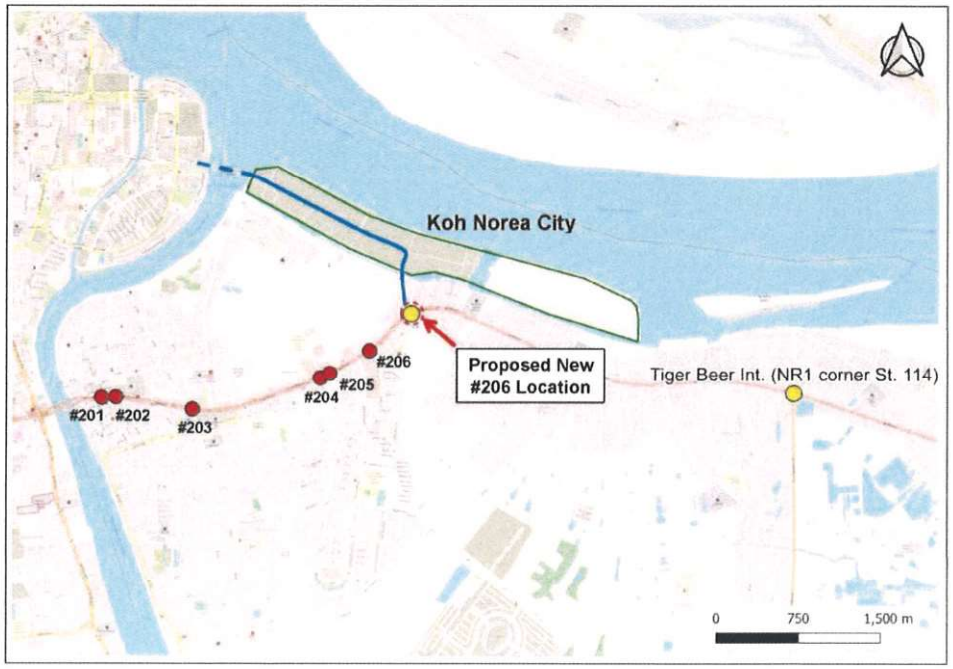
- Only 6 intersections (NR No.1) not connected to TCC out of 115
- Proposed wireless connection to TCC, will be used to solve problems/issues at these intersections
- Also, it can be one of the alternatives to the communication system when the traffic control system is expanded to the suburban area.
- Advantage is all the wireless routers required for this trial can be procured in Cambodia

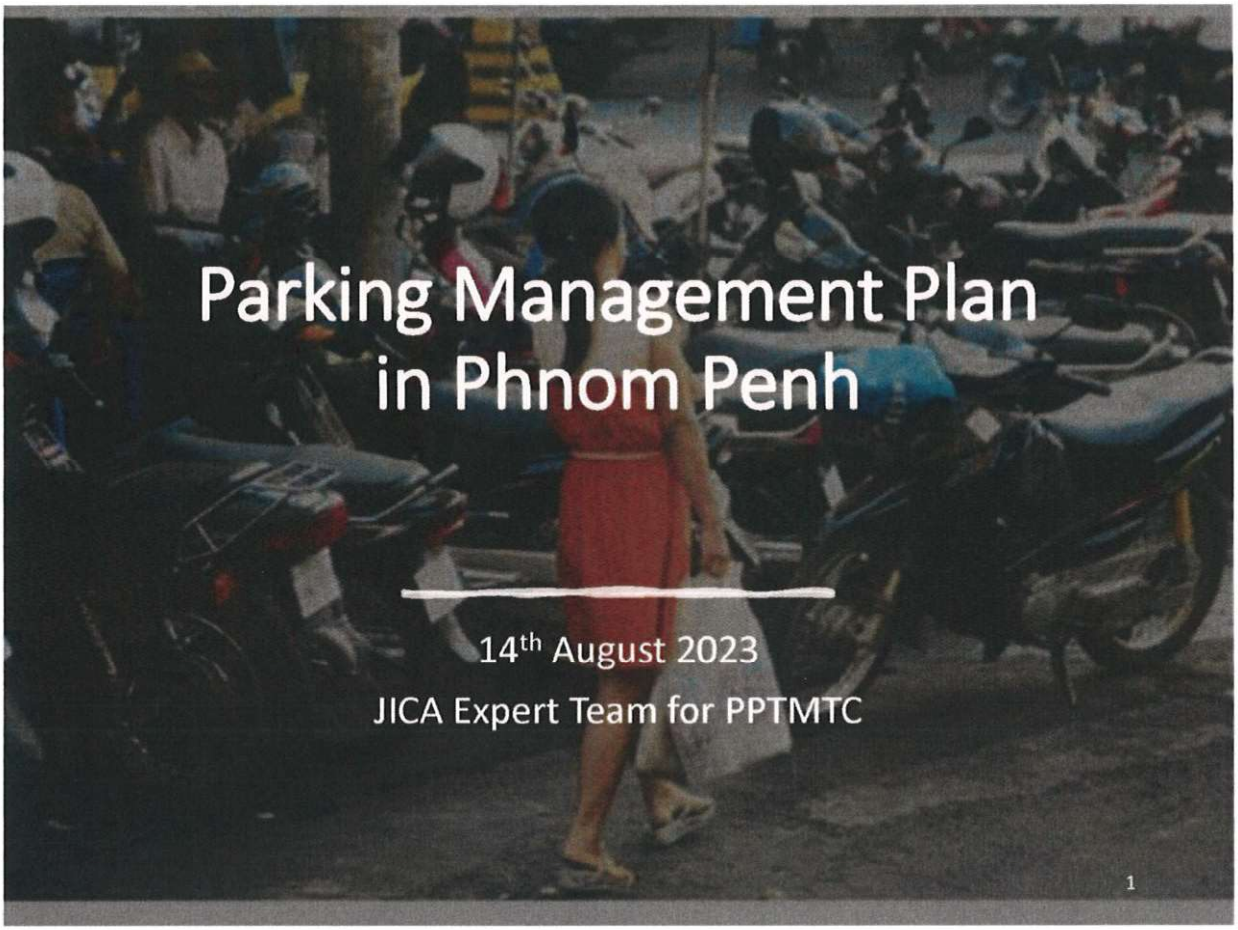






Relocation of #206




Parking Management Plan
in Phnom Penh
14th August 2023
JICA Expert Team for PPTMTC
1

1. Background of Parking Management Plan

JICA PPTMTC aims at **strengthening capacity of urban transport related organizations on traffic management measures** and enhancing the project sustainability:

- In Sep 2022, intensive training conducted for traffic management and groupworks proposed traffic management implications, including (i) traffic circulation, (ii) parking management, (iii) public transport improvement.
- Since Dec 2022, MPWT and JET coordinated to draft the Parking Prakas and JET provided (i) Parking Law and Parking Planning Guideline in Japan, (ii) Draft Notice for Parking Management in Vientiane Capital, Laos.
- In April 2023, JET prepared draft Parking Management Plan for Phnom Penh thru engagement with concerned departments (MPWT, DPWT, DoF, DoUM, Selected Khan).

2. General parking issues in Phnom Penh

- No control on on-street parking especially at local roads
- On street parking causes safety and congestion problems
- Parking on footpath makes streets inaccessible
- No local recognition of '**setback parking**' as public space
- Free on-street parking vs paid off-street parking
- Parking regulation is not enforced
- Uncontrolled parking encourages commuters to use their car
- Non-existence of parking law/management guideline/standards
- No champion in parking management policy and implementation
- Loss of opportunity cost for parking levy and special-purpose fund

2. General parking issues in Phnom Penh

Legal or Illegal?

Who manages under which legal framework?

2. General parking issues in Phnom Penh

Uniqueness of Set-back parking: Private asset owners build walkway in public space and use as parking space

On-street/Off-street/Set-back parking and responsibilities by concerned entities defined by Law/Regulation?

	On-street parking	Off-street parking	Set-back parking
Owned by	PPCA/Khan	Private/public	PPCA/Khan
Operated by	PPCA/Khan (mostly designated market)	Private/public	Private
Regulated/ enforced by	Road traffic law but not enforced	Only compulsory parking regulation	NA

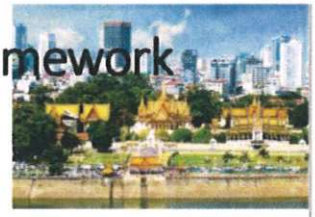
3. Previous and on-going parking management interventions

Various proposals and actions taken in improved parking management:

- JICA PPUTMP (2014)
  - Development of parking policy suggested
  - Parking management in CBD as priority traffic management measure
- Increase illegal parking fine (upto 25 USD) by MOI (2016)
- Parking ticketing system by Sonatora (2017)
  - 31 ticketing machine in Wat Ounalom
- Underground parking by Oversea Cambodia Investment Corporation (2018-)
  - 300 parking lots at 9,000 m2

4. Issues in institutional and legal framework

PPCA developed **Sustainable City Plan (2018-2030)** and included parking measures as priority mid-term measure.
→ Who is a champion? How to implement?



in use of e-bikes while at the same time addressing concerns related to safety thorough an integrated policy package.

23. Parking support package for Phnom Penh In many places parked cars and motorbikes and encroachment by commercial activities make sidewalks impassable. This project envisages a package of measures to better regulate parking.	Medium Term	• PPCA, MLMUPC, MPWT, Phnom Penh District and Commune authorities
24. Piloting pedestrianized areas This project would support i) a consultative and awareness raising process involving residential and commercial residents,	Medium Term	• PPCA, MLMUPC, MPWT

Source: Phnom Penh Sustainable City Plan 2018-2030

4. Issues in institutional and legal framework

Road Traffic Law only stipulates prohibited areas for parking or stopping vehicles which restricts parking on footpath:

- ✓On the roadway, at sidewalk reserved for pedestrians, and at the space of at least 5 meters away from the zebra crossing for pedestrians, or on the zebra crossing,
- ✓On the paths reserved for pedestrians,
- ✓At places reserved for some specific vehicles parking or stopping,
- ✓At places less than 20 meters away from road- railway intersections,
- ✓At places less than 10 meters away from the front or the rear of the bus-stop sign.
- ✓At places where parking/stopping is banned

→ ***Currently MPWT engaged in drafting Parking Prakas***

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4. Issues in institutional and legal framework

Sub-decree on Urbanization of the Capital, Municipalities and Urban Areas (2015) instructs compulsory parking lots by building type.

Type	Floor size per parking	Applied to
Residential building	Every 100-150 m2 floor size	Detached house, house, condos and apartment
Commercial building	Every 20-50 m2	Restaurant, pub, club, supermarket, other buildings
Industrial building	Every 250-400 m2 for passenger car Every 1250-2000 m2 for truck	Factory, warehouse
Educational building	Every 100-300 m2	Primary to tertial education, sport
Health care facility	Every 100-120 m2	Hospital, sport club

*Hall, hotel, office building, gas station, transport office and other building facilities separately stipulated in sub-decree

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4. Issues in institutional and legal framework

Fragmented and overlapping responsibilities distributed among different entities requiring coordination by PPCA as a champion of parking management

Parking Management Tools	MPWT	PPCA/ DPWT	Khan	Traffic Police	Present situation
1. Policy and strategy	☐	☑			
2. Law/Guideline	☑				(+) MPWT drafts parking prakas
3. Regulator		☑			**(-) No operational plan and guide in place**
4. Enforcement			☑	☑	
5. Operator		☑	☑		**(-) Sub-let contract in limited area on ad-hoc basis**
6. Standard	☑	☐			**(-) No standard in place**
7. Finance (including collecting fees)		☑	☐		**(-) Limited parking revenue**
8. HRD	☐	☑			

☑: Key actor, ☐: Stakeholder

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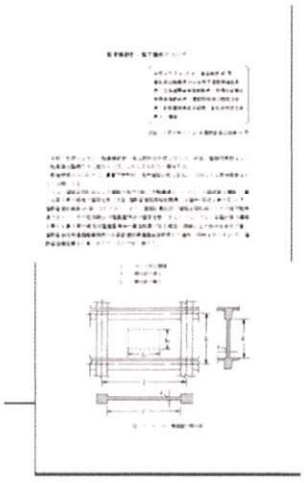
5. Drafting Parking Management Plan

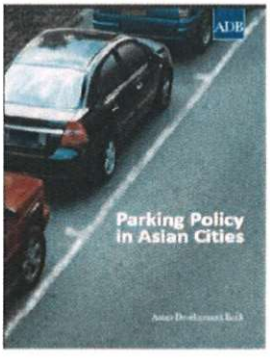


Step 1: Designation of Parking Improvement Zones

Step 2: Baseline surveys & demand/supply analysis

Step 3: Development of goals and parking strategy

Step 4: Feasibility analysis
- Parking development plan and cost estimate
- Institutional responsibility and parking management entity
- Contract model and specification
- Level of parking charges/levy
- Economic analysis and financial model



Step 1 Designation of Parking Improvement Zones

Sample Criteria to define Parking Improvement Zone

Criteria	Indicator	Requirement as Parking Management Area*
Traffic volume	Volume capacity ratio Peak hour volume	V/C ratio>1 700-800 vehicles/peak hour
Level of service	Travel speed	20 km/hour during peak hour
Parking	Parking volume/capacity	10-20 vehicles/ha during peak hour
Land use and building	Floor size/area	Total floor size/area size>100%
Traffic issues related to parking	Traffic congestion Air pollution Accident rate Illegal parking Non-compliance with parking regulation	Unacceptable level

Source: Parking Management Guide in Tokyo, Japan

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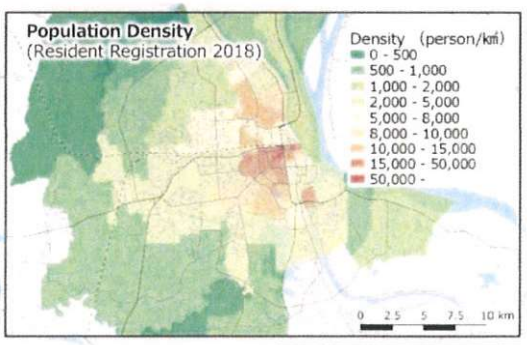
Step 1 Designation of Parking Improvement Zones

2023 JICA Survey provides socio-economic and traffic features which helps to define Parking Improvement Zones:

- CBD concentrates 23% of total population in Phnom Penh
- CBD attracts 42% of trips generated from Phnom Penh
- Trunk roads across CBA over-saturated and service level of these roads go down below 10 km/hour

→ **CBD (Chamkar Mom, Doun Penh, Prampir Meakkakra, Toul Kouk, Boeng Keng Kang)** suffices criteria for Parking Improvement Zone

Population Density



Source: 2023 JICA Survey

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Step 2 Baseline surveys & demand/supply analysis

Sample Baseline Parking Surveys

Type	Method	Survey Items
Parking Facility Survey	On-site survey Questionnaire survey	Parking type, No. of lots, lots by contract type (hourly, daily, monthly), parking charge
Parking Condition Survey	Number plate survey Interview survey	In & out time, parking duration, occupancy rate, turnover rate
Opinion Survey	Interview survey	Trip purpose, trip OD, type of car, no. of passenger, reason to park car, user opinion including willingness-to-pay
Traffic Survey	Count survey	No. of vehicle by hour/type/direction, capacity ratio

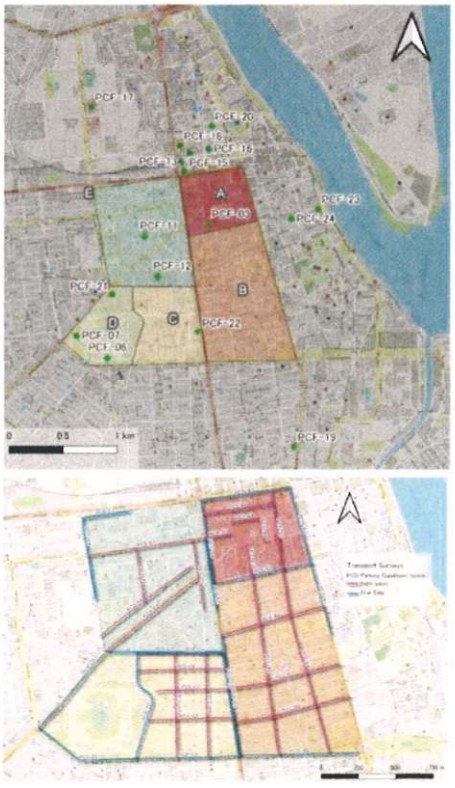
Source: Parking Management Guide in Tokyo, Japan

Step 2 Baseline surveys & demand/supply analysis

2023 JICA Survey characterizes parking facilities in designated CBD:

- **Only 100 legally designated on-street parking space** where PPCA assigns parking service providers, mainly at/around market places
- On-street parking charges only **one-time charge of 2,000 Riel/use**
- **4,800 off-street parking space available** mainly operated by private and operates 24 hours
- These off-street parking **charges 1,000-2,000 Riel/hour** (one-time charge of around 1,000 Riel for motorbike)

Parking Survey Area

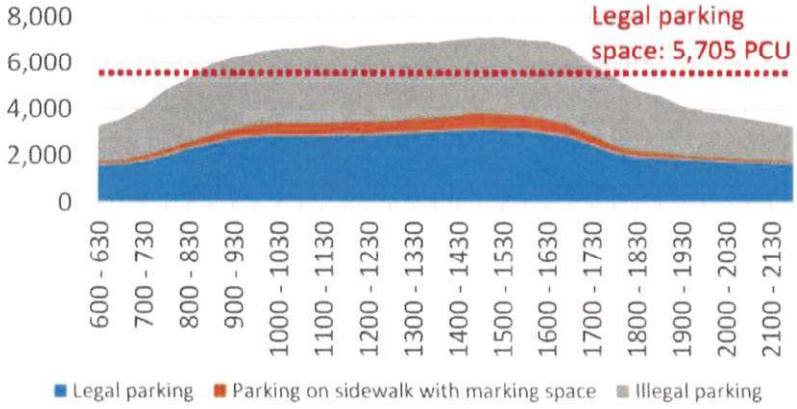


Source: 2023 JICA Survey

Step 2 Baseline surveys & demand/supply analysis

2023 JICA Survey found parking demand in designated CBD **constantly over-saturates between 8 AM and 5 PM and excess parking demand left at illegal parking** and hinders safety and results in congestion.

Parking Demand and Capacity in CBD
(Parking survey result. All vehicle types in PCU)



Target Area of Parking Survey (CBD)

Source: 2023 JICA Survey

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Step 3 Development of goals and parking strategy

2022 ADB TA proposed 5 goals/objectives of parking strategy in Phnom Penh

Main Goals and Objectives	Detail
Improve Urban Environment and Better Manage Traffic	To improve the urban environment and vitality of the city, particularly air quality, noise, road safety, and livability, by reducing travel demand and managing parking and traffic in a more orderly way. Respecting all road users with safe, unobstructed space for walking. Create attractive and safe streets, improving the attractiveness of the city center to locals (including women and children), as well as visitors;
Enhance User Experience through better parking management	Increasing the vacancy of on-street parking, improving convenience, safety, and equitable sharing of space. To respect residents' parking needs while balancing the availability of parking for general use and serving commercial interests (shops/ restaurants and service centers) for economic vitality.
Manage Travel Demand and Improve Management and Efficiency of Parking	To manage (reduce) demand for parking by providing alternative transport options such as better public transport. Properly enforce parking rules Employing modern technologies for parking management. To optimize on-street and off-street parking more efficiently through management measures such as parking charges, time limits, and public information;

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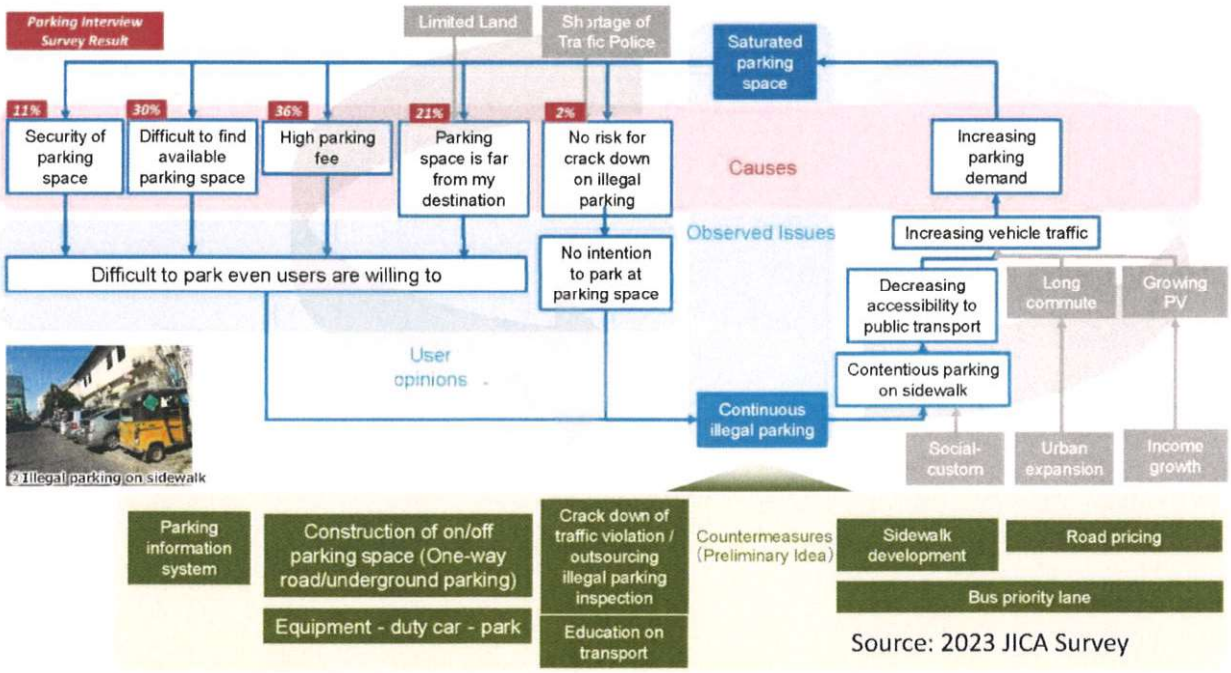
Main Goals and Objectives	Detail
Create Revenue Opportunity and Ensure Financial Sustainability	Applying a cost for parking both on-street and off-street acts as a price mechanism to control demand and generate revenues to support management costs and potentially fund more comprehensive transport and urban improvements. Also, On-street parking charges act to manage and optimize the balance between on-street and off-street parking. For off-street parking, charges need to reflect the economic cost of using city space and should not require public subsidy.
Collect Parking Data	The parking data collection is essential for planning to improve efficiency and optimization (including pricing and demand management).

Source: ADB (2022) TA-9503 CAM: Supporting Sustainable Integrated Urban Public Transport Development

Step 3 Development of goals and parking strategy

2023 JICA Survey also proposed countermeasures to address parking issues in Phnom Penh.

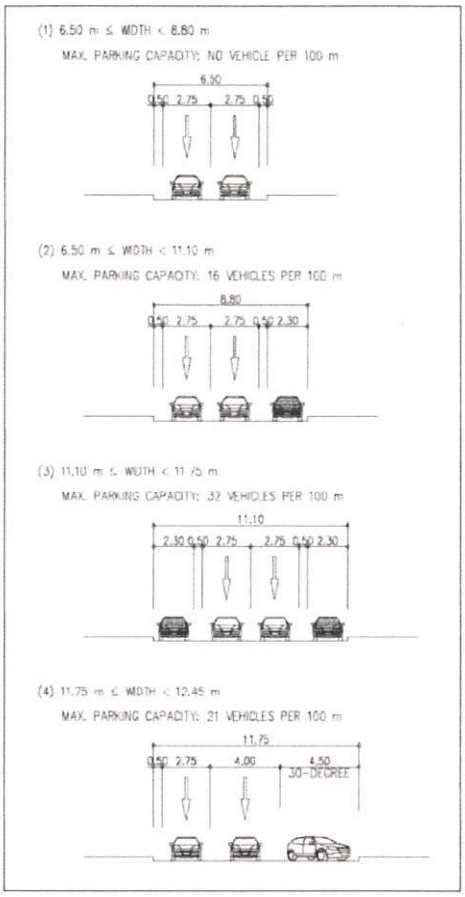


Source: 2023 JICA Survey

Step 4 Feasibility analysis

(1) Parking development plan

- Define arterial/ secondary/tertiary roads
- Arterial road in principle prohibits on-street parking
- On-street parking designed basing on design standards considering available carriageway width
- Minimal infra including (i) road marking, (ii) road signage, (iii) bollard, etc.
- Set-back parking should secure minimal walkway space



Step 4 Feasibility analysis

(1) Parking development plan

- Following sample-based site investigation, each parking measure estimated by street KM.

S/N	Parking type	Road Class	Total length (km)	Percentage applied	Actual street length (km)
1	On-street parking street	Secondary road	100	20%	20
		Tertiary road	150	20%	30
2	Set-back parking street	Arterial road	50	30%	15
		Secondary road	100	30%	30
		Tertiary road	150	30%	45
3	No-parking street	Arterial road	50	70%	35
		Secondary road	100	50%	50
		Tertiary road	150	50%	75
	Total				**300**

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Step 4 Feasibility analysis

(2) Private vs public operation and contract model

Option 1: Concession Model

- The city gives concessionaire the business opportunity for full management of the system in return for set fee payments

Option 2: Parking Services Agreement

- The city lets a contract for the private sector to manage parking services in return for set payment and performance bonuses.
- Parking Revenue collected is directly credited to the bank account of the city (via electronic means) – total gross revenue returns to the city.
- The city makes payment to the parking contractors for managing the fee collection & managing parking space

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Step 4 Feasibility analysis

(3) Level of parking charge/levy

1. General approach:
   - On-street charges higher than off-street
   - Charges higher in areas of high demand (congested areas)
   - Charges sufficient for profitable parking management
   - Time limits – short-stay encouraged over long-stay
   - Reserved parking – e.g. Residents' Zones, Disabled parking, taxi parking
   - Start minimum amount of Parking levy for Set-back parking
2. Parking charge/levy:
   - Acceptable level of charges?
   - Regular increases
   - Exemptions? Residents?

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(4) Preliminary cost estimate

Parking development in CBD requires around **9.3 M USD**

S/N	Item	Specification	Target road (km)	QTY	Unit	UP (USD)	Sub-total (USD)
1. On-street Parking (applied only for Secondary/Thirtiary road)							
1-1	On-street parking marking	White color (Thermoplastic), 5.0m*2.5m*0.2m, include 'P' marking	50	20,000	nos	39	780,000
1-2	On-street parking paint	Black/white paint on curbstone	50	100,000	m	1	100,000
1-3	Traffic sign	Every 100m	50	1,000	nos	200	200,000
2. Set-back Parking							
2-1	Walkway marking	Blue color (Thermoplastic), 1.0m width, include 'Walk' pictogram	15	30,000	m	110	3,300,000
2-2	Set-back parking marking	White color (Thermoplastic), 5.0m*2.5m*2*0.2m, include 'P' marking	15	6,000	nos	39	234,000
2-3	Set-back parking paint	Black/white paint on curbstone	90	180,000	m	1	180,000
2-4	Traffic sign	Every 100m	90	1,800	nos	200	360,000
3. No-parking							
3-1	No-parking paint	Red/white paint on curbstone	160	320,000	m	1	320,000
3-2	Bollard installation	Every 2m, 30cm(D)*50cm(H)	5	5,000	nos	80	400,000
3-3	Traffic sign	Every 300m	160	1,067	nos	200	213,333
3. Ancillary Infrastructure							
3-1	Sidewalk improvement		30	60,000	m2	30	1,800,000
3-2	Greenery	Street tree/Flower pot	30	30,000	m	10	300,000
Total construction cost (A)							**8,187,333**
Contingency (10% of A)							**818,733**
Admin cost (3% of A)							**245,620**
Total project cost							**9,251,687**

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(5) Financial analysis

Parking operation requires **4.0 M USD annually**. Parking revenue generates **4.5 M USD to 9.0 M USD annually** under different occupancy/coverage scenario.

	1 Renumeration	QTY	Unit	UP (USD)	Sub-total (USD)
1-1	Management	5	nos	1,500/month	90,000
1-2	Admin	20	nos	800/month	192,000
1-3	Parking operator	500	nos	500/month	3,000,000
1-4	Cleaner	100	nos	250/month	300,000
	2 Direct Cost	QTY	Unit	UP (USD)	Sub-total (USD)
2-1	Office rental	12	month	2,000/month	24,000
2-2	Car rental	12	month	1,500/month	18,000
2-3	Telecommunication	12	month	2,625/month	31,500
2-4	Mobile app dev	1	LS	100,000	20,000
2-5	Mobile app maintenance	12	month	1,000/month	12,000
2-6	Admin	12	month	1,500/month	18,000
	3 Overhead (10%)				370,550
Total annual operation cost					**4,076,050**

S/N	Item	UP	QTY	Sub-total (USD)	Note
1	On-street parking charge	2,000 Riel/hour	20,000 parking	4,171,429	20% occupancy rate
2	Set-back parking levy	10,000 Riel/month	36,000 parking	324,000	30% coverage rate
Total annual parking revenue				**4,495,429**	

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(5) Financial analysis

Proposed parking development plan evaluated **financially feasible with NPV of 8.4 M USD and IRR of 17% per annum** under 40% occupancy rate for on-street parking and 60% coverage ratio for set-back parking in 10 years

Case study: 40% occupancy rate for on-street and 60% coverage for set-back parking in 10 year
Inflation: 1.5% p.a.

Year	Expense	Revenue	Balance
0	13,327,737		-13,327,737
1	4,137,191	4,495,429	358,238
2	4,199,249	5,394,514	1,195,266
3	4,262,237	5,844,057	1,581,820
4	4,326,171	6,293,600	1,967,429
5	4,391,063	6,743,143	2,352,079
6	4,456,929	7,192,686	2,735,756
7	4,523,783	7,642,229	3,118,445
8	4,591,640	8,091,771	3,500,131
9	4,660,515	8,541,314	3,880,800
10	4,730,422	8,990,857	4,260,435
11	4,801,379	8,990,857	4,189,478
12	4,873,399	8,990,857	4,117,458
13	4,946,500	8,990,857	4,044,357
14	5,020,698	8,990,857	3,970,159
15	5,096,008	8,990,857	3,894,849
16	5,172,449	8,990,857	3,818,409
17	5,250,035	8,990,857	3,740,822
18	5,328,786	8,990,857	3,662,071
19	5,408,718	8,990,857	3,582,140
20	5,489,848	8,990,857	3,501,009
	NPV		**8,463,440**
	IRR		**17%**

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(6) Summary of benefits derived from parking management

Benefit	Details
Maximize efficient use of public/private asset	- Improved local recognition of on-street parking and set-back parking space as public assets - Clearly define on-street and set-back parking by Prakas or Notice and improved management for these parking by local government authority - Increased investment opportunities for off-street parking business by private sector
Reduce traffic congestion	- Improved road capacity thru zero parking and managed on-street and set-back parking space - Reduction of traffic demand thru development of fringe parking and public transport system - Optimization of traffic demand thru parking control and pricing measures in CBD area
Improved service quality and security	- Improved accessibility and mobility of the pedestrian walkway - Reduced risk in traffic accident caused by pedestrian/vehicle collision
Facilitate travel cost saving	- Reduction of travel time/cost thru reduced and optimized traffic demand
Revenue generation	- Increased amount of development fund/special purpose funding for urban transport - Use parking revenue as cross-subsidy for urban transport improvement - Improved financial sustainability of local government and which enables eligible to receive a loan endorsed by MEF

(7) Institutional arrangement for parking management



	On-street parking	Off-street parking	Set-back parking
Design standard	Designated parking following street/parking design guide	Vehicle Geometric Design	Designated parking following street/parking design guide
Owner/ Developer	PPCA or Khan	Private	PPCA or Khan
Contract	Parking service agreement	Private	Levy borne by property owner
Charge level	2000-3000 Riel/hour		8000-10000 Riel/parking/month
Note		Suggest incentives thru tax reduction/ subsidy for fringe parking	Suggest to pay by ID electricity/solid management

Step 4 Feasibility analysis

(8) ICT & payment system

Wide range of payments systems available. Technology is constantly changing and improving

- Displayed pass or permit (Monthly or annual)
- Attendants: cash payment & paper tickets
- Pay-and-display meters
- Prepaid or post-paid by smartphone



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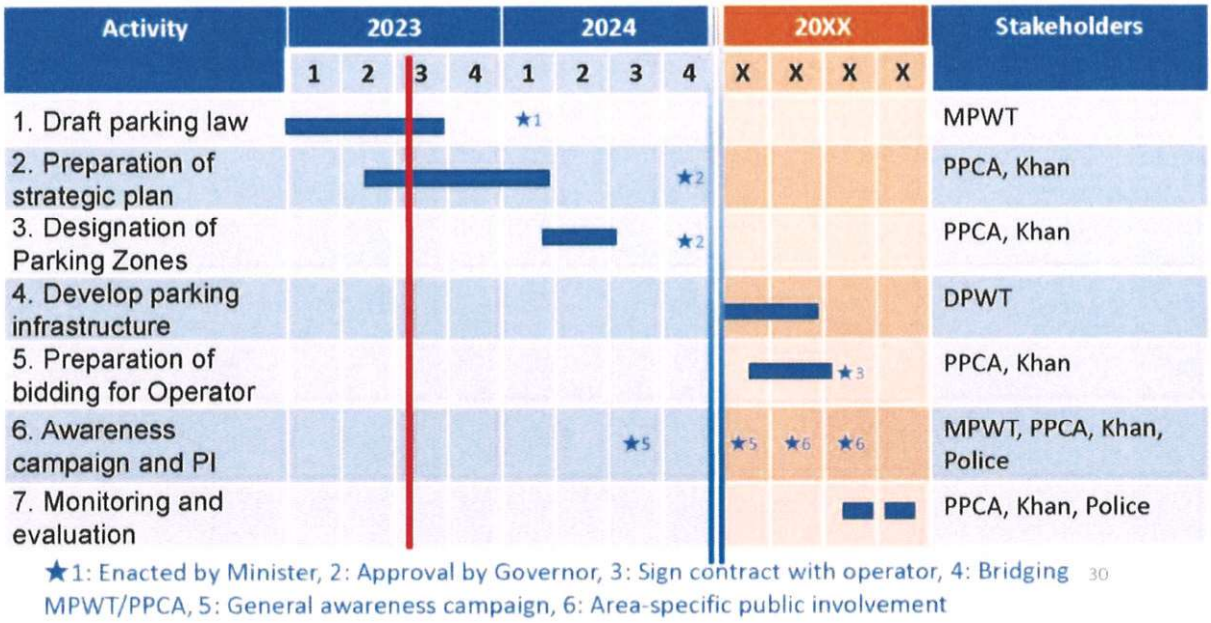
6. Proposal on Pilot parking management project

MPWT currently drafts Parking Law. Propose MPWT/PPCA/Khan to design and implement area parking management plan as part of forthcoming JICA's project activities.



★1: Enacted by Minister, 2: Approval by Governor, 3: Sign contract with operator, 4: Bridging MPWT/PPCA, 5: General awareness campaign, 6: Area-specific public involvement

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A. International practice for parking management

(1) Typical parking management policies & strategies

Policy	Strategies	Improved traffic flow
Increase parking facility efficiency	i. On-street/Off-street parking dev ii. Fringe parking dev iii. Design standard iv. Building permit/enforcement v. Parking tax reform	+++ ++ (with PT) + +++ +
Reduce parking demand	i. Parking control ii. Ride-sharing iii. Parking pricing iv. Financial incentive (e.g., Corporate tax reform)	+++ + +++ +
Supporting strategies	i. Improved user information ii. Strict parking enforcement iii. Introduce ICT and payment	+ +++ +

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A. International practice for parking management

No parking

On-street parking bay and time control

Fluctuated parking charge [32]

A. International practice for parking management

Enforcement against illegal parking

Odd and Even Day parking permit

Park and Ride [33]

ANNEX11-4: 4th JCC Meeting

Minutes of the 4th Joint Coordinating Committee Meeting

of

The Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC)

The 4th Joint Coordinating Committee (JCC) meeting between Phnom Penh Capital Administration (PPCA), Department of Public Works and Transport of Phnom Penh (DPWT), Japan International Cooperation Agency (JICA), and the concerned members of the Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC) was held in a hybrid format, on-line and face-to-face at Phnom Penh Capital Administration (PPCA) on 23rd of July, 2024. The comments and the discussions were made on several items as described below.

1. Opening remarks by PPCA and JICA:

Ms. Miura Yoshiko, Senior Representative of JICA Cambodia office, welcomed all the participants and expressed her deepest appreciation to H.E. Ek Khundoeurn and Mr. Kong Sophal for presiding over this meeting. She continued that the rapid urbanization and economic growth of Cambodia lead to face with many challenges, one of those major challenges is the increased number of vehicles in Phnom Penh which causes traffic congestion, traffic accidents and environmental impacts. This project was designed with the purpose of improving traffic management and enhance safety in Phnom Penh by strengthening the capacity of operation, maintenance and management of traffic control system established by Japanese Grant Aid project. To achieve these, this project has been implementing many measures such as installation of new traffic signals at specific locations to optimize traffic flow, and also effective parking management plan to ensure smooth traffic and safety in Phnom Penh. Before concluding her remarks, she expressed her sincere appreciation to the colleagues from DPWT, PPCA and JICA expert team for the continuous cooperation, unwavering support and active collaboration which will achieve outstanding outcomes align with the project schedule. She wished that this meeting will bring a productive discussion and establishment of a strategic plan for future implementation stages.

H.E. Ek Khundoeurn, Vice Governor of PPCA and Vice-Chair of JCC, on behalf of the PPCA Governor, welcomed all the participants and expressed his sincere thanks to the Government of Japan for extending support through JICA, as well as to JICA expert team for the implementation of the PPTMTC project. He mentioned that this project is the technical cooperation project to sustain the Traffic Control Center (TCC) operation, which was proposed by the Phnom Penh Urban Transport Master Plan in 2014 and implemented in 2018 by the Japanese Grant Aid. He continued stating that this PPTMTC project composed of the following 5 outputs which will be explained by JICA Experts Team later, and today mainly present and discuss about Output 3 (Conduct Pilot Project), Output 4 (Traffic Control System Expansion Plan), Output 5 (Traffic Management Plan) including training in Japan and the PPTMTC Seminar proposed on August 8th, 2024. He further added this 4th JCC meeting is held almost one year after the third JCC meeting and the presentations cover many activities that TCC staff and JICA expert team have carried out during that time. Before closing his remarks, he expressed his sincere thanks to JICA and people of Japan for continuous support to Phnom Penh and people of Cambodia. He hoped that this collaboration would be retained and wished this JCC meeting a successful and fruitful discussion.

2. Contents of Presentations:

Mr. Chou Kimtry, Deputy Director of the Department of Public Works and Transport of Phnom Penh (DPWT), briefly explained about the PPTMTC project and purposes of the 4th Joint Coordinating Committee meeting. He finally expressed his sincere thanks to JICA for unwavering support on the grant aid project and also the technical cooperation project to Phnom Penh.

Mr. Masato Koto, team leader of the project, made a presentation on the PPTMTC project covering outline of the project, progress of PPTMTC project, evaluation of pilot project, training in Japan, traffic signal system expansion plan, traffic management plan and pilot project seminar. For the details, please refer to the presentation material.

3. Main Points of Discussion:

No.	Comments/Questions	Answers
(1)	**Mr. Moeung Sophan,** advisor of DPWT, raised some points as follows: 1. Request to the project team to prepare the technical specification of the expansion plan for the possibility of future implementation. 2. Suggest project team to consider some intersections located at the section between inner-ringroad to city center for the expansion plan. 3. Request to project team to provide the evaluation report for the effectiveness of wireless connection work and as well as the comparative evaluation between wireless connection and optical fiber cable network. 4. Current Traffic Control System life time is expected by 2035, so what is the next plan after 2035? 5. Suggest PPCA to consider of road marking painting along the main road at suburban areas (along with the public bus routes).	**Mr. Koto** responded as follows: 1. This technical cooperation project (TCP) is only the planning stage for expansion traffic signal to suburban area which mean this TCP does not include the preparation of technical specification. 2. DPWT should suggest the location between inner-ring road into the city center where prioritize to install traffic signal. 3. The wireless connection status is still in the monitoring stage. The evaluation report of wireless connection work and comparative evaluation between wireless connection and optical fiber cable (OFC) will be prepared by expert team, probably by October 2024. 4. Basically, Sumiden's traffic control system lifetime is expected to be around 15 years. In the case of Japan, the system is replaced every 5-7 years. For the TCC system, there should be further discussion on this matter.
(2)	**Mr. Sam Phalla** mentioned that PPCA has an existing OFC network which is currently being used with CCTV security cameras at or near the locations where the project team has installed traffic signals and the proposed locations within the expansion plan. In this case, the traffic signals at those locations can be used with OFC and can be connected to TCC at PPCA. He added that the traffic signals at most of the projects do not have CCTV security cameras, so to be more efficient for management work and easily for monitoring the traffic situation in those areas if there is an integration between traffic signals and CCTV security cameras together in those areas.	**Mr. Koto** responded that the project team also considered about the existing OFC networks at suburban areas, but some sections are not available with OFC networks. He continued that project team will bring idea of alternative study for communication system. He further added that for CCTV camera which is helpful for monitoring the traffic condition at those areas, but CCTV camera for monitoring traffic condition should be more specific and separated.
(3)	**Dr. Phun Vengkheang**, Head of Transport and Infrastructure Engineering Department from Institute of Technology of Cambodia (ITC), raised about the concern of road user related violation such as motorcycle user and paratransit driver. He continued that the project team should consider not only improvement of the intersection and traffic control system, but should also include the road user behavior. He suggested project team to consider putting "Road User Behavior" as issue No.7 into the presentation material and also involving the traffic police for participating in the technical aspect for preparation of comprehensive expansion plan of	**Mr. Koto** mentioned that most of the violators are motorcycle users, of which 80% of them have no driving license. He added that the expert team received some ideas from H.E. Ek Khundoeurn that considered for the alternative way of involving the motorcycle user to understand traffic safety and rules. This alternative raised that before applying for a plate number, the motorcycle user should be required to take the questionnaire test related to traffic safety and rules in order to get the plate number in case they pass the test.

	traffic signal in the future.	
(4)	**Ms. Tema Vichekal,** Deputy Director of Phnom Penh Capital Administration, expressed her appreciation for the project team for continuous supporting and working to reduce the traffic congestion and accident in Phnom Penh city which is aligned with government policy and global warming action. She agreed with the proposed idea from Dr. Phun Vengkheang that road user behavior should be taken into consideration including the classification and characteristics for effective study and planning in the future.	**Mr. Koto** mentioned that the project team will arrange a small-scale traffic safety campaign before Phcum Ben or Water Festival. He continued that after this small-scale campaign, Road Safety Section in DPWT can arrange it by themselves later. He also added that in the case of Japan, the traffic safety campaign has been conducted twice a year, in April and October annually.
(5)	**Mr. Kong Sophal**, Deputy Director General of General Department of Land Transport, Ministry of Public Works and Transport (MPWT), on behalf of MPWT, expressed his appreciation to JICA and the project team for continuous support to improve the traffic condition in the city. He raised few points as follows: 1. He suggested the project team to maintain the traffic data generated from the traffic survey under this project as baseline data such as travel speed and traffic volume for further comparison study in the future. 2. He mentioned that tricycle driver for commercial purpose, they are required to get the driving license. 3. He further asked about the effectiveness of the wireless connection work?	**Ms. Pheng Pharinet**, Chief of Traffic Control Center (TCC), stated that after the pilot project under PPTMTC, there are 118 signalized intersections connected to TCC where 112 intersections using optical fiber cable network (OFC), and remaining 6 intersections along national road No.1 that using wireless connection under pilot project (still under monitoring stage). She continued that the wireless connection is not regularly stable for communicating from local controller to TCC currently. She further added that the project team needs more comprehensive study in order to evaluate the effectiveness of wireless connection versus optical fiber cable network.

4. Closing and Conclusion:

Before closing, **H.E Ek Khundoeurn** summarized and concluded the main points of discussion among the participants during the 4th JCC meeting as the followings:

(1) The meeting agreed with the followings:

1) Revised Project Design Matrix

2) Completion of Activities Output 1, 2 and 3.

(2) The remaining activities that should be completed by end of 2024

1) PPTMTC Seminar for Phnom Penh citizens will hold in 8th August 2024 (First Seminar) and in mid of December 2024 (Final Seminar)

2) Small-scale Traffic Safety Campaign before Pchum Ben or Water Festival

3) Conduct the Final Traffic Survey in October 2024

4) Materials will get approval from DPWT Director:

1. Maintenance Management Manual
2. Pilot Project Handbook
3. Traffic Control System Expansion Plan
4. Traffic Management Plan
5. Traffic Enforcement and Traffic Safety Education Manual

Suggestions:

- Suggest DPWT prepare a proposal for road marking painting along the main roads in the city.
- Suggest DPWT and the project team work closely together to define the signalized intersection's name appropriately and consider the installation of the direction sign.

The meeting was adjourned at **11:45 AM**.

CONFIRMED BY:

H.E. EK KHUNDOEURN
Vice Governor
Phnom Penh Capital Administration

Ms. MIURA YOSHIKO
Senior Representative
JICA Cambodia Office

Mr. MASATO KOTO
Team Leader
JICA Expert Team

1. Agenda

AGENDA

4th Joint Coordinating Committee Meeting for Project for Capacity Development on Comprehensive Traffic Management Planning and
Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC)

Venue: PPCA and Online Zoom Meeting

Date: 23rd July, 2024
Time: 09:00 to 11:00 Cambodia Time
Time: 11:00 to 13:00 Japan Time

09:00 –09:20	**Opening Keynotes**	
Representative of JICA		
Ms. Miura Yoshiko		**10**
Senior Representative of JICA Cambodia Office		**min**
Representative of the Governor		
H.E. Ek Khundoeurn		**10**
Vice Governor, PPCA		**min**
09:20 – 10:15	**Presentation of the PPTMTC Project**	
Mr. Sam Piseth, Director, DPWT, PPCC, Project Manager of the PPTMTC Project (Introduction)		**10 min**
Mr. Masato Koto, Chief Consultant, JICA PPTMTC Project Team 1. Progress of the PPTMTC Project 2. Overall Evaluation of the Pilot Project 3. Training in Japan 4. Traffic Signal System Expansion Plan 5. Traffic Management Plan 6. PPTMTC Seminar 7. Conclusion		**45 min**
10:15 – 10:45	**Discussion**	
10:45 – 11:00	**Closing Remarks**	
Representative of the Governor		
H.E. EK Khundoeurn		
Vice Governor, PPCA		

2. Proposed Participant List to be invited for the 4th JCC meeting

1. PPTMTC's JCC Members (based on PPCA's Decision No.183/23 *សសរ.ទរ* dated 31 October 2023)

1	H.E. Khuong Sreng	Governor, PPCA	Chairperson of JCC
2	H.E Nuon Pharat	Vice Governor, PPCA	Project Director of PPTMTC project and Vice Chairperson of JCC
3	H.E. EK Khundoeurn	Vice Governor, PPCA	Vice Chairperson of JCC
4	Mr. Sam Piseth	Director, DPWT	Project Manager of PPTMTC project and Member of JCC
5	Mr. Sem Ratana	Deputy Commissioner, PPTP	Member of JCC
6	Mr. Seng Vannak	Director of Administration, PPCA	Member of JCC
7	Ms. Tema Vichekal	Deputy Director of Administration, PPCA	Member of JCC
8	Mr. Long Sokhom	Deputy Director of Administration, PPCA	Member of JCC
9	Mr. Chhean Vuthy	Director of IRIC Division, PPCA	Member of JCC
10	Mr. Chou Kimtry	Deputy Director, DPWT	Member of JCC
11	Mr. Man Kimchhuon	Deputy Director of IRIC Division, PPCA	Member of JCC
12	Mr. Sor Phara	Deputy Director of Urban Management Division, PPCA	Member of JCC
13	Mr. De Mao	Chief of Traffic Police Office, PPTP	Member of JCC
14	Mr. Chea Sovan	Chief of Public Lighting and Traffic Signal, DPWT	Member of JCC
15	Ms. Som Sreyleak	Chief of IR Office, PPCA	Member of JCC
16	Mr. Prom Kampoul	Chief of Traffic Safety Office, DPWT	Member of JCC
17	Mrs. Pheng Pharinet	Chief of Traffic Control Center, DPWT	Member of JCC
18	Mrs. Theam Ridthydeka	Deputy Chief of IR Office, PPCA	Member of JCC
19	Mr. Ouch Sansothy	Deputy Chief of Traffic Signal, TCC	Member of JCC

20	Mr. Moeung Sophan	Advisor, DPWT	Member of JCC
21	Mr. Sam Phalla	Technical Staff, TCC	Member of JCC
22	Ms. Kosal Nita	Officer of IRIC Office, PPCA	Member of JCC
23	Mr. Kheang Khy	Officer of IRIC Office, PPCA	Member of JCC
24	Mr. Takanori Kuribayashi	First Secretary, Japan Embassy	Member of JCC
25	Mr. Kazumasa Sanui	Chief Representative, JICA Cambodia	Member of JCC
26	Mr. Shota Okuno	JICA Headquarter	Member of JCC
27	JICA PPTMTC Experts	-	Member of JCC

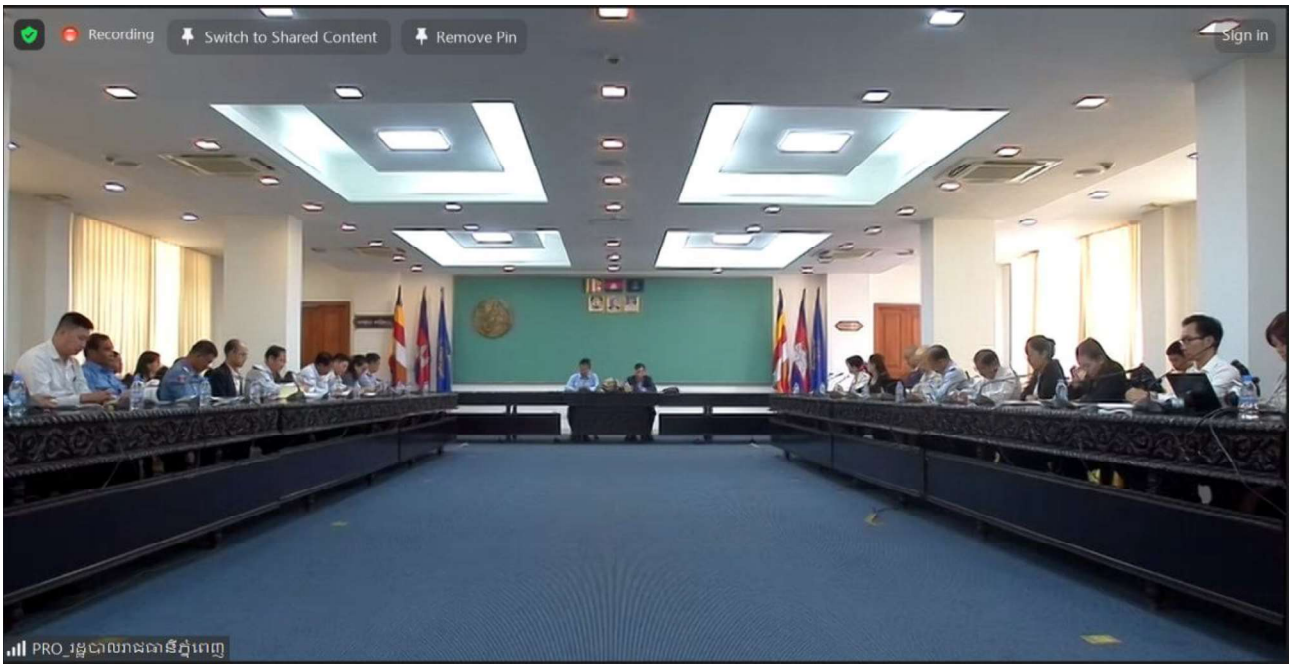
2. Stakeholders/Counterparts

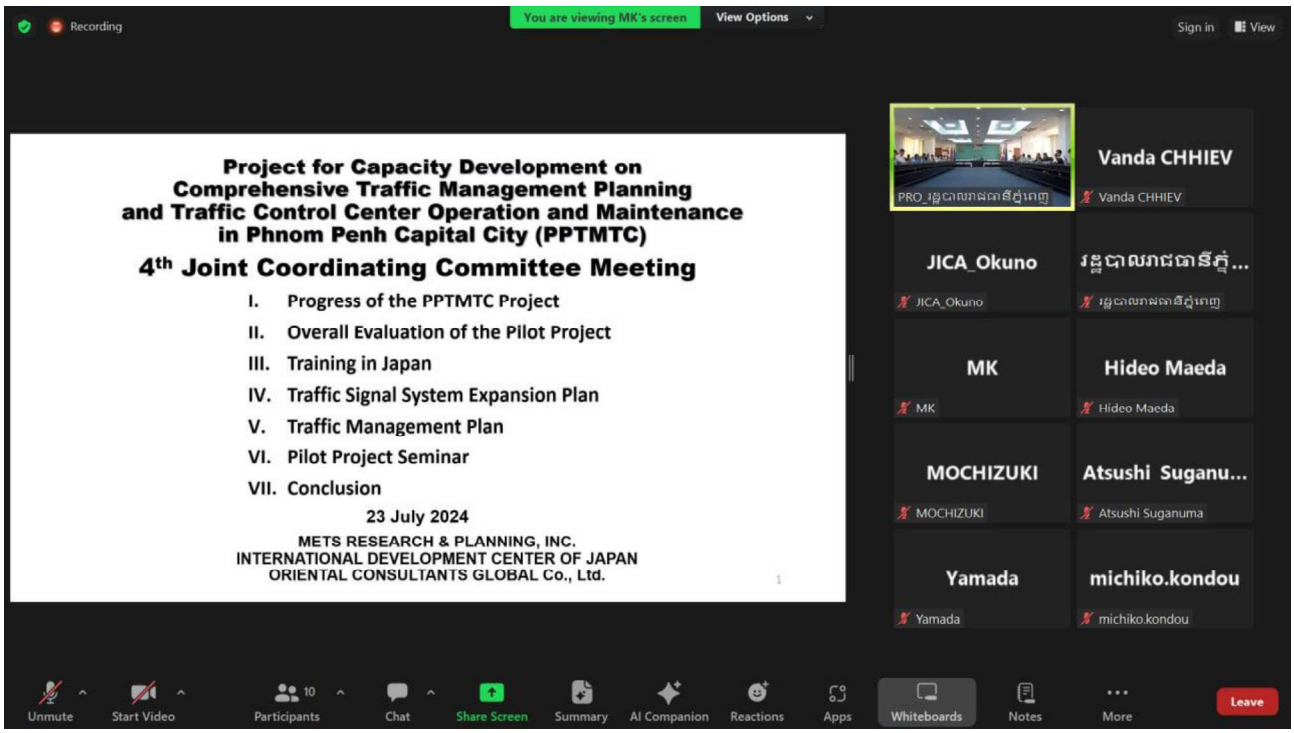
1. Mr. Kong Sophal (Deputy Director General, Land Transport Division, MPWT)
2. Mr. Ryuji Yamasaki (JICA Transport Policy Advisor, MPWT)
3. Dr. Phun Veng Kheang (Head of Transport and Infrastructure Engineering Department, ITC)
4. Ms. Lak Sivcheng (Officer, Public Lighting and Traffic Signal Office, DPWT)
5. Mr. Chea Vandeth (Technical Staff, TCC)
6. Mr. Keo Channarith (Governor, CBA)

4. Photos

H.E. Ek Khundoeurn, Vice-Governor of PPCA (Left)

Mr. Kong Sophal, Deputy Director General of General Department of Land Transport, MPWT(Right)





Participants of 4th JCC meeting

5. Presentation Material

Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC)

4th Joint Coordinating Committee Meeting

I. Progress of the PPTMTC Project
II. Overall Evaluation of the Pilot Project
III. Training in Japan
IV. Traffic Signal System Expansion Plan
V. Traffic Management Plan
VI. Pilot Project Seminar
VII. Conclusion

23 July 2024

METS RESEARCH & PLANNING, INC.
INTERNATIONAL DEVELOPMENT CENTER OF JAPAN
ORIENTAL CONSULTANTS GLOBAL Co., Ltd.

1

I. Progress of the PPTMTC Project

Project Name	Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City
Project Period	January 2022 to February 2025
Overall Goal	Sustainable Urban Transport Environment is Formed
Project Purpose	Traffic Management Measures Including Traffic Safety Measures in Phnom Penh is Improved
Expected Output	**Output 1**: Maintenance Management System of Traffic Control System is Established **Output 2**: Capacity of TCC Staff on the Operation of Traffic Control System is Strengthened **Output 3**: Capacity to Design Traffic Signals is Strengthened through the Implementation of Pilot Projects for Traffic Signal Improvement **Output 4**: Capacity of the Relevant Staff to Traffic Control in PPCA, DPWT and TCC Staff to Develop the Expansion Plan of Traffic Control System is Strengthened **Output 5**: Capacity of Urban Transport Related Organizations on Traffic Management Measures is Strengthened towards Enhancement of the Project Sustainability
Counterpart Institution	Implementing Agencies: Phnom Penh Capital Administration (PPCA), Department of Public Works and Transport (DPWT), Traffic Control Center (TCC) and Phnom Penh Traffic Police (PPTP)
Project Area	Whole Area of Phnom Penh

2

Progress of the PPTMTC Project (1)

Project Design Matrix

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Progress as of 23 July 2024
Overall Goal	1. Travel speed of the main road after the project increases by 5%(*1) compared to before the project. Note: Target corridors are selected before the Pilot Project.	1. Travel speed survey (Daily Average along 3 Major Corridors in the Phnom Penh Central Area)	Before Pilot Project: 15.38km/h. After Pilot Project: 15.33km/h. (Increased by 0.0%)
Sustainable urban transport environment is formed through effective operation of the traffic control system.	2. Number of interviewees who understand traffic rules/regulations increases. Note: Interviewees are selected from the participants in the Final Seminar of the Project.	2. Interviews with government agencies and citizens	Not yet During the Final Project Seminar expected mid-December 2024.
Project Purpose	1. Availability of the Traffic Control System (Key Performance Indicator. KPI) is increased by 15% compare to before PPTMTC Training. (*2)	1. TCC Monthly/Annual report	Before PPTMTC Training: 83.24% After PPTMTC Training. 94.37% (Increased by 11.13%)
Traffic management measures including traffic safety measures in Phnom Penh is improved through strengthening capacity of operation and maintenance of traffic control system.	2. Results of the traffic data analysis at major intersections are summarized in the monthly report.	2. Traffic Volume Monitoring Report in Evening Peak (17:30 - 18:00)	Summarized in Dashboard Data: CCTV Camera Video Image Analysis:DataFromSky
	3. Number of traffic violators decrease by 10% (*1). * Target major intersections was determined before the Pilot Project.	3. Pilot Project Traffic Survey on the number of traffic offenders of Traffic Rules at Pilot Project Intersections	Before Pilot Project: 944 Persons After Pilot Project: 689 Persons (Decreased by 27.0%)
Outputs	1-1. A trouble list that occurred after the traffic control system started operation is developed.	1-1 Responses to Accidents to the Traffic Signal System (2018 - 2023)	Top 3 problems 1. OFC related: 29.48% 2. Site Survey: 19.19% 3. Local Controller related: 18.81%
Output 1: Maintenance management system of traffic control system is established.	1-2. Proposed maintenance system is approved by DPWT Director.	1-2 Maintenance Management Manual	Explain in the Maintenance Management Manual
	1-3. Developed manual by counterparts is approved by the DPWT Director.	1-3 Maintenance Management Manual	Expected to get Approval by the DPWT Director by October 2024

Progress of the PPTMTC Project (2)

Output 2: Capacity of TCC staff on the operation of traffic control system is strengthened.	2-1. Through the training, TCC staff are able to analyze / design / repair problematic intersections by themselves. 2-2. Target score of the evaluation test for TCC staff (55 points) is achieved (*3). Note: Target score was decided by experts and counterparts before Pilot Project 2-3. TCC staff can repair quickly at cutting OFC by themselves	2-1 TCC Monthly Report and Pilot Project Handbook	Perform TCC Staff's Activities through PPTMTC Training and Pilot Project
		2-2 Evaluation test results of PPTMTC Training (before and after).	Before Training: 21.0 points After Training: 57.2 Points (Target Score is 55 points)
		2-3 TCC Monthly Report	Processing of Procurement of Fusion Splicer, Optical Time Domain Reflectometer and Light Truck
Output 3: Capacity to design traffic signals is strengthened through the implementation of pilot projects for traffic signal improvement.	3-1. TCC staff can select the intersections which need revision of traffic control system design by using evaluation criteria developed by themselves. 3-2. A pilot project is implemented and the queue length at the target major intersections are reduced by 10% (*1). 3-3. The counterparts take the lead in compiling pilot project handbook, which explains the procedure from planning to project evaluation.	3-1 Pilot project Work at Site and Pilot Project Handbook	Completed
		3-2 Intersection queue length survey results (Total Queue Length/Intersection)	Before Pilot Project: 567m After Pilot Project: 447m (Decreased by 21.2%)
		3-3 Pilot Project Handbook	On-going Completion of the Pilot Project Handbook is expected in October
Output 4: Capacity of the relevant staff to traffic control in PPCA, DPWT and TCC staff to develop the expansion plan of traffic control system is strengthened.	4-1. Counterparts can analyze the base data for the development of traffic control system extension plan such as urbanization in Phnom Penh and traffic situation at intersections where traffic signals are needed. 4-2. Traffic control system expansion plan is approved by the DPWT Director.	4-1 Pilot Project Work and Traffic Control System Expansion Plan	Completed
		4-2 Expected to approve by the DPWT Director by November 2024	On-going
Output 5: Capacity of urban transport related organizations on traffic management measures is strengthened towards enhancement of the project sustainability.	5-1. Implementation training on traffic control is carried out 2 times or more. 5-2. Traffic safety enforcement and a traffic safety education manual are developed and approved by the traffic police. 5-3. Workshops / seminars are held 2 times or more.	5-1 Training	Completed 1st Training: October 2022 from PPTMTC Experts and SUMIDEN Engineers 2nd Training: January 2024 from SUMIDEN Engineers
		5-2 Traffic Enforcement and Traffic Safety Education Manual	On-going Expected completion of the report is October 2024
		5-3 Workshops/Seminars	Not yet 1st Seminar: Hold in 8th August 2024 2nd Seminar: Hold in mid-December 2024

Revision of Project Design Matrix (PDM)

(1) OVERALL GOAL: 1. Travel speed of the main road after the project increases by 5.0%. (*1) compared to before/after the project ➡ Before:15.38 km/h. and After: 15.33 km/h., Increased by 0.0%

(2) PROJECT PURPOSE: 1. Availability of the Traffic Control System (Key Performance Indicator: KPI) is increased by 15% compare to before PPTMTC Training. (*2) ➡ Before PPTMTC Training: 83.24% and After PPTMTC Training: 94.37%, Increased by 11.13%

(3) PROJECT PURPOSE: 3. Number of traffic violators decrease by 10% (*1). Note: Target score was decided by experts and counterparts before Pilot Project. ➡ Before Pilot Project: 944 Persons and After Pilot Project: 689 Persons, Decreased by 27.0%

(4) OUTPUT 2: 2-2. Target score of the evaluation test for TCC staff (55 points) is achieved (*3). Note: Target score was decided by experts and counterparts before Pilot Project.➡Before Training: 21.0 points and After Training: 57.2 Points

(5) OUTPUT 3: 3-2. A pilot project is implemented and the queue length at the target major intersections are reduced by 10% (*1). ➡ Before Pilot Project: 567m and After Pilot Project: 447m, Decreased by 21.2%

II. Overall Evaluation of the Pilot Project

Intersection List

No.	Intersection Name	Intersection ID	Location
1	R3	#165	St. 70 corner Old Railway (St. 100)
2	2004	#167	St. 371 - St. 2004
3	Neakvoan Pagoda	#28	Russia Blvd. - St.132 - St.221
4	Rongvong Moul Tuol Kouk	#166	St.289 - St.608 - St.592
5	Be Ka Se	#25	Preah Monivong Blvd. - Russia Blvd.
6	Kdan Pi	#126	Czech Republic Blvd. (St. 169) - Jok Dimitrov Blvd.

6

1. Location of the Pilot Project

(1) #165: To cope with City Center development (new signal)

(2) #166: To improve the signalized intersection from roundabout (new signal)

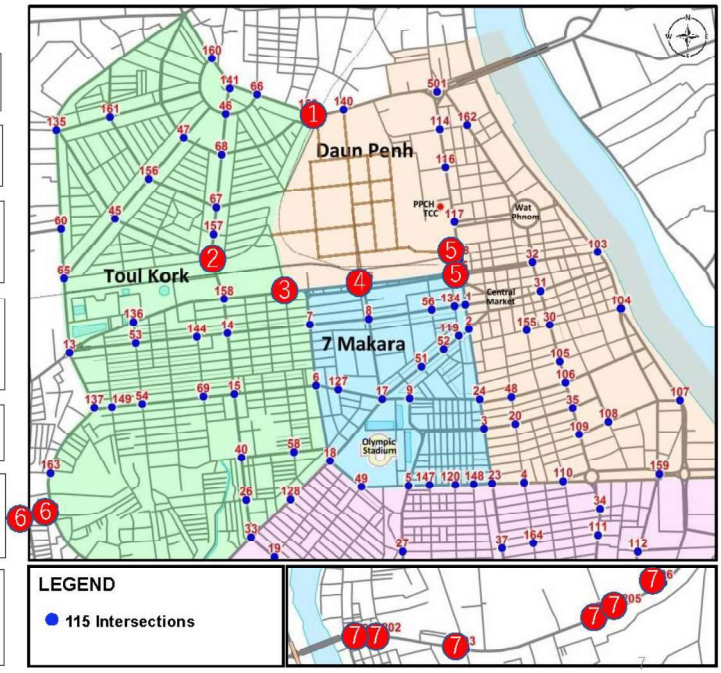
(3) #28: Additional left-turn arrow (revision of the phasing + left-turn arrow + revision of road marking)

(4) #126: To cope with intersection improvement, mainly revision of the signal phasing/timing (revision of the phasing)

(5) #25 and #118: Coordination of two intersections in the CBD (introduction of 3Es)

(6) #59 (revision of phasing) and #167 (new signal): Coordination of two intersections at the CBD fringe

(7) #201 - #206: Wireless connection between TCC and 6 intersections along NR No.1 and #167 (wireless connection)



2. PPTMTC Project Schedule (January - September 2024)

Output 3, Output 4 and Output 5	2024								
	January	February	March	April	May	June	July	August	September
3-4 To implement the Pilot Project construction, etc. — (1) Manufacturing & transport of Equipment (Signal Latern & Controller)	Signal Lantern, Arriving at Norak (25 Jan. 2024)	Controller, Arriving at Norak (10 Feb. 2024)							
3-4 To implement the Pilot Project construction, etc. — (2) Civil works and Wiring Work					Final Inspection in 18 March 2024				
3-4 To implement the Pilot Project construction, etc. — (3) Wireless Connection		Completed in 11 January 2024							
5-1 To conduct of traffic education and enforcement measures			Traffic Safety Campaign with 3Es 26 - 28 March 2024	Traffic Survey after Campaign					
3-5 To evaluate the impact of traffic signal design modification					Evaluation				
3-6 To summarize the implementation for traffic signal improvement in a handbook								Draft Report, 1st Edition	
4-1 To examine the area of the traffic control system expansion, considering the urbanization trend, the traffic conditions and the traffic control system									
4-2 To develop the expansion plan of the traffic control system									
Other Activities		Training in Japan			4th JCC Meeting (July 2024)			Pilot Project Seminar (August)	

Equipment Procurement
Installation Work
Traffic Safety Campaign with 3Es
Development of Pilot Project Handbook
Development of Traffic Signal System Expansion Plan
Training in Japan

3. PPTMTC Pilot Project and Its Project Design Matrix, and SDGs

Goal 13. Take urgent action to combat climate change and its impacts

PPTMTC's Overall Goal: Sustainable Urban Transport Environment is Formed.
Project Purpose: Traffic Management Measures Including Traffic Safety Measures in Phnom Penh is Improved.

Goal 3: Good health and well-being: Ensure healthy lives and promote well-being for all at all ages

Road Traffic Accident Cost in 2019: 466.8 million USD (1.7% of GDP)
Source: Human Capital Cost calculation approach and using RCVIS data (NRSC, MPWT)

Goal 11: Sustainable cities and communities: Make cities and human settlements inclusive, safe, resilient and sustainable

Saving the Travel Time Cost of Monivong Blvd. Users by the Traffic Signal Installation in PPCH: 2.5 Million USD/Year (From 11.34km/h to 15.23km/h)

9

SUSTAINABLE DEVELOPMENT GOALS (SDGs)

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs) with 169 Targets, which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

PPTMTC Project contributes SDGs' Goal 3, Goal 11 and GOAL 13.

Target 3.6: By 2020, halve the number of global deaths and injuries from road traffic accidents

Target 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

10

4. How to Implement the Signalized Intersection for Pilot Project

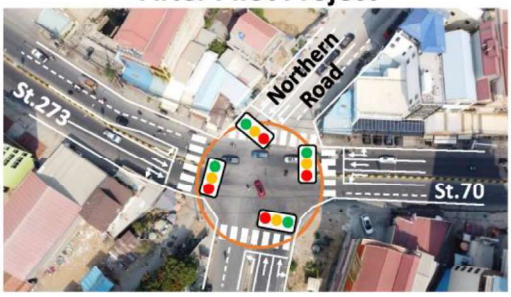
1. Implementation of Pilot Project based on the 3Es with stakeholders' collaboration
2. Developing an intersection with safely and smoothly traffic flow. To achieve this, 1) consider pedestrian safety and convenience, 2) design the intersection compact, and 3) eliminate conflict traffic flows within the intersection
3. In order to ensure the sustainability of the traffic signal system and its costs, we actively purchased equipment from neighboring countries

5. #165 R3 (St.70 corner Old Railway)

Before Pilot Project

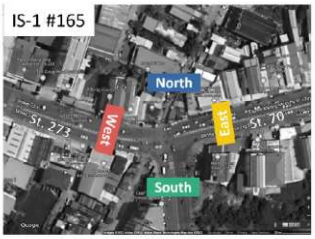
- 3-leg intersection (No northern road)
- No traffic signal
- Invisible road marking
- Many traffic flow conflict in the intersection

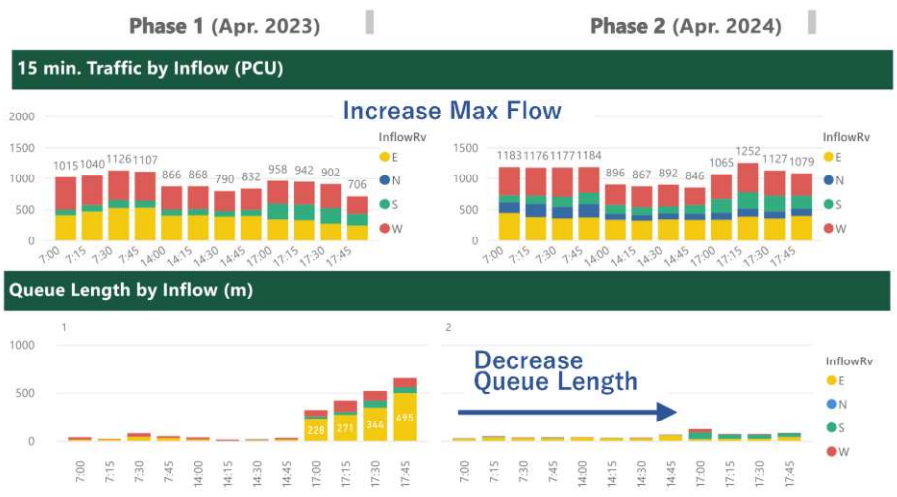
After Pilot Project



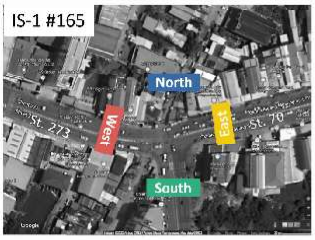
- 4-leg intersection (Northern road is partially open)
- Installation of traffic signal
- Visible road marking
- There are no conflicts in the intersection

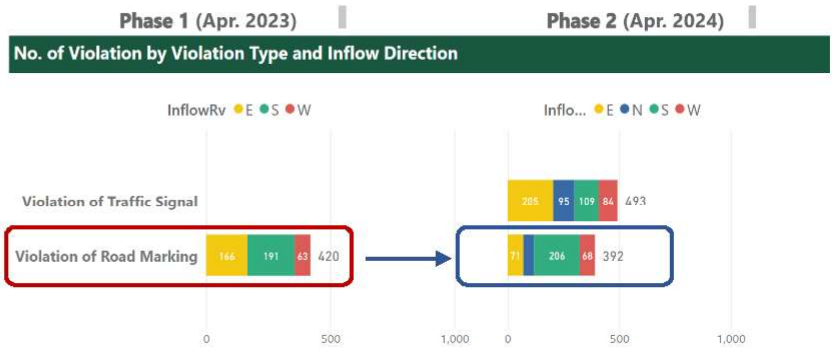
5. #165 R3 (St.70 corner Old Railway)





5. #165 R3 (St.70 corner Old Railway)

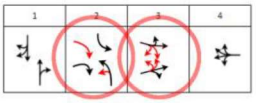


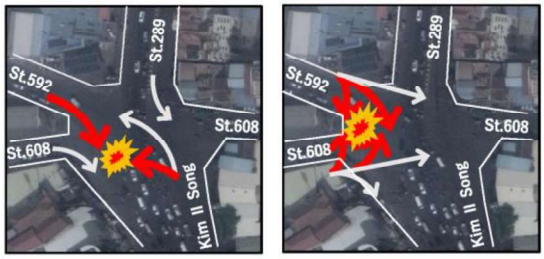


- There was no northern access road and nor traffic signal at #165
- Road marking was also invisible.

6. #166 Rongvong Moul Tuol Kouk (St. 289/St. 608/St. 592)

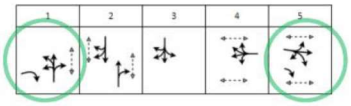
Before Pilot Project

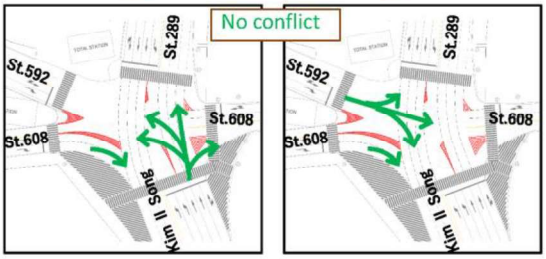




- Large intersection area
- Many traffic flow conflict even with traffic signal

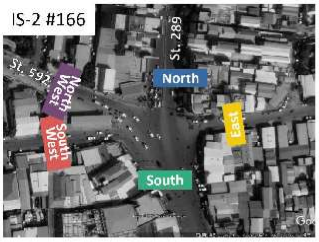
After Pilot Project

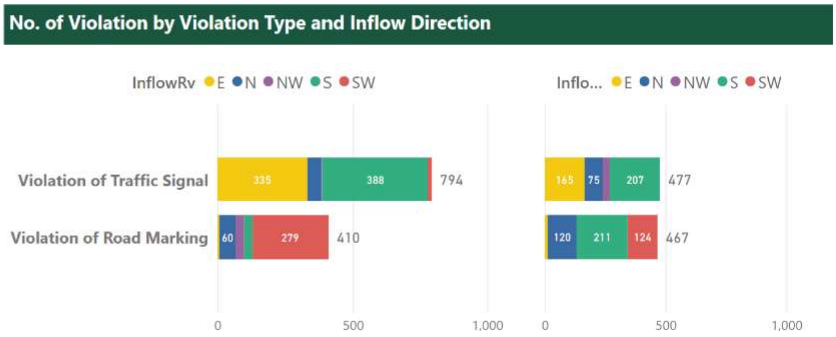




- Compact intersection area
- No traffic flow conflict after installation of traffic signal by the Pilot Project

6. #166 Rongvong Moul Tuol Kouk (St. 289/St. 608/St. 592)





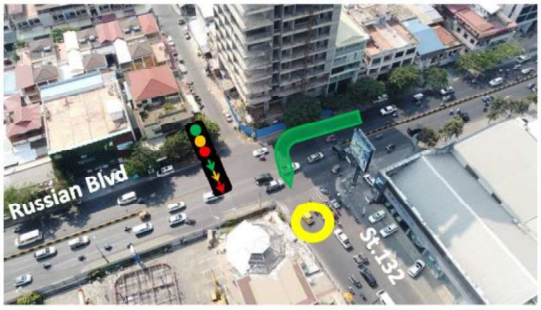
- Due to VIP traffic, major roads were often closed or traffic was restricted by traffic police.

7. #28 Neakvoan Pagoda (Russia/St. 132)

Before Pilot Project

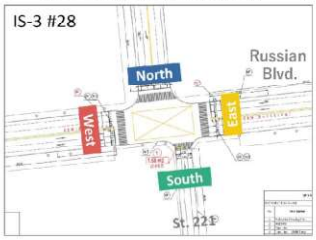
- Left turns prohibited, no left turn arrow
- There were many illegal left-turn traffic from Russian Blvd to St.132

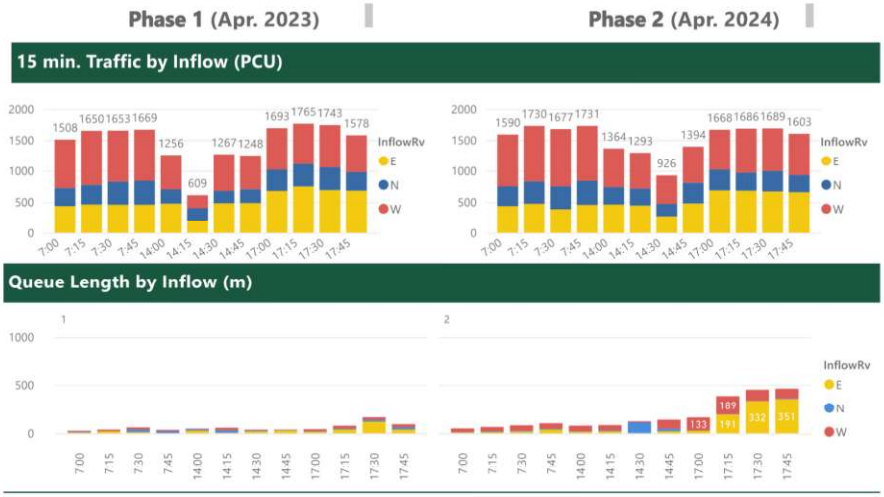
After Pilot Project



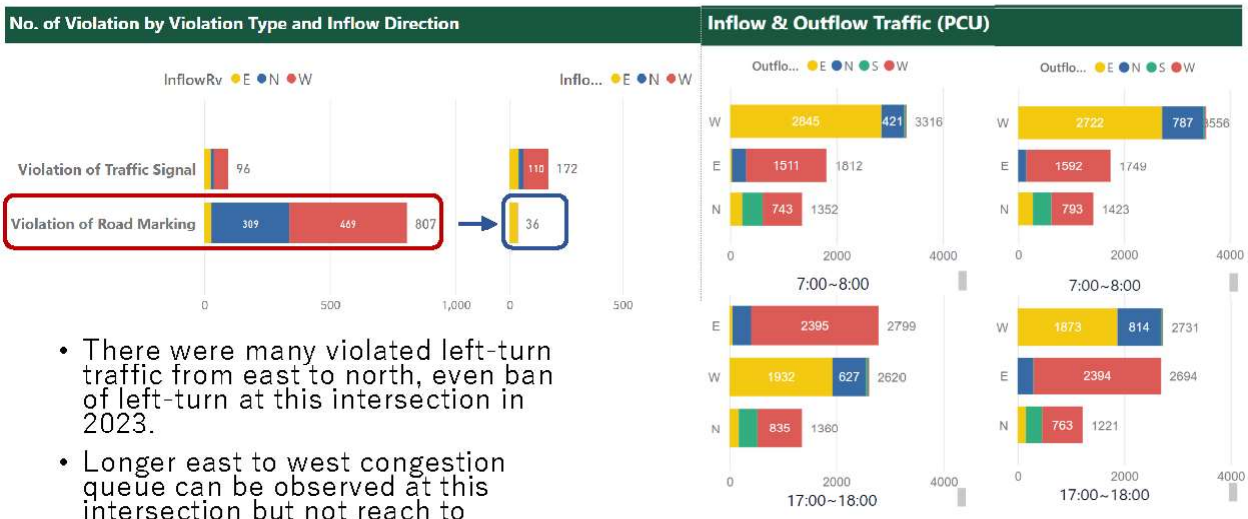
- Installation of Left-turn Arrow.
- It is object that the conjestion quele from east to west along Russian Blvd but shorter than Kdan Pi intersection

7. #28 Neakvoan Pagoda (Russia/St. 132)





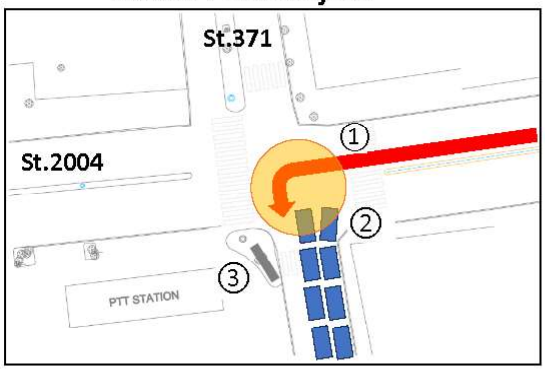
7. #28 Neakvoan Pagoda (Russia/St. 132)



- There were many violated left-turn traffic from east to north, even ban of left-turn at this intersection in 2023.
- Longer east to west congestion queue can be observed at this intersection but not reach to #126(Kdan Pi).

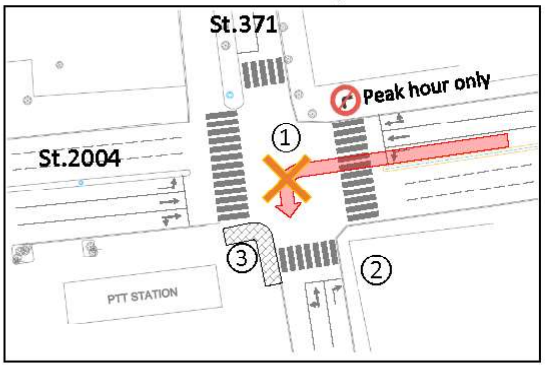
8. #167 2004 (St.371/St.2004)

Before Pilot Project



①Many large vehicle left turn
Long queue due to no coordinated between #59 and #167
②Vehicles ignore the stop line and waiting in the intersection
③No sidewalk

After Pilot Project



①Ban of large vehicle left turn during the pilot project
Shorter queue length due to coordinated between #59 and #167
②Visible stop line
③Installation sidewalk

8. #167 2004 (St.371/St.2004)

- Traffic signal #59 networked with TCC, and #59 West developed by DPWT as stand alone (distance between both is about 200m).
- Between the two intersections, serious traffic jams occur during peak hours.
- Factors are (1) there is no road marking or it is not clear. (2) traffic rules such as traffic signals are not obeyed, and (3) large buses and trucks enter the local road of St. 371
- TCC plans to adopt a wireless connection system (between #59 and #59 West).


Heavy Left-turn Traffic from East to South at Peak hour

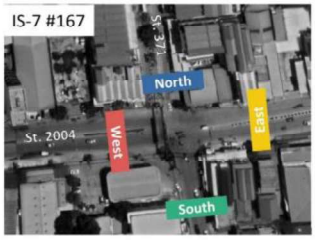

Engineering (Install new traffic signal)

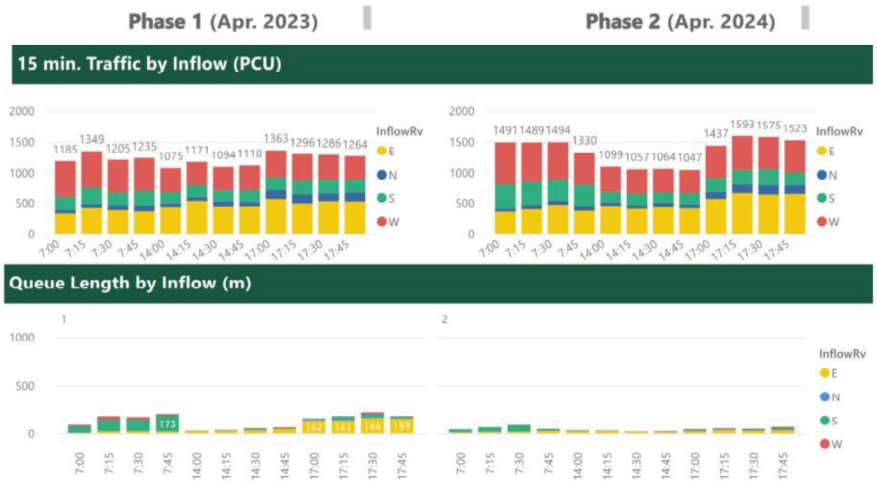

Enforcement (Traffic Police)


Engineering (Sidewalk Installation)

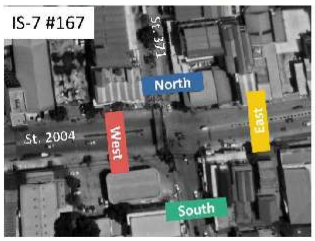

Safety Education

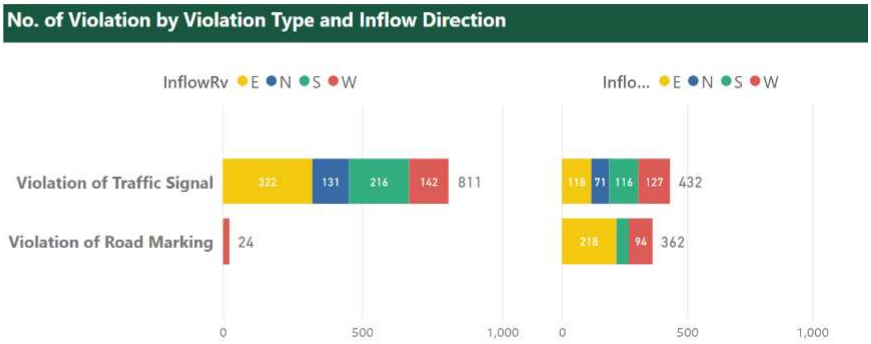
8. #167 2004 (St.371/St.2004)





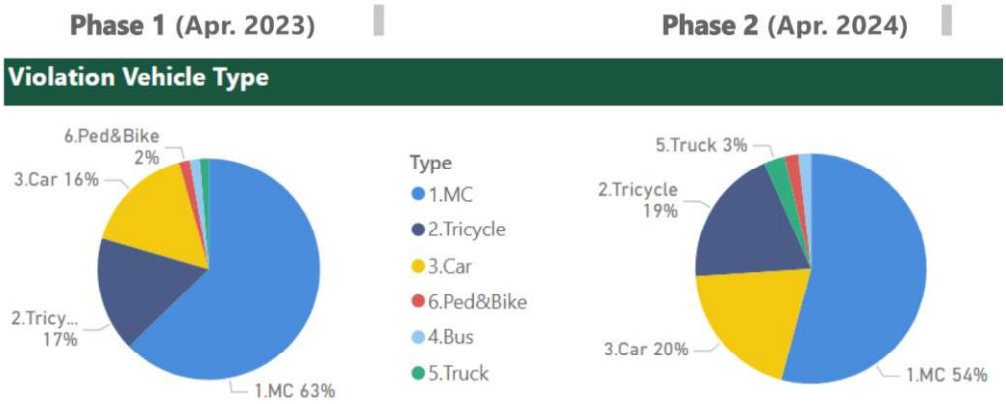
8. #167 2004 (St.371/St.2004)



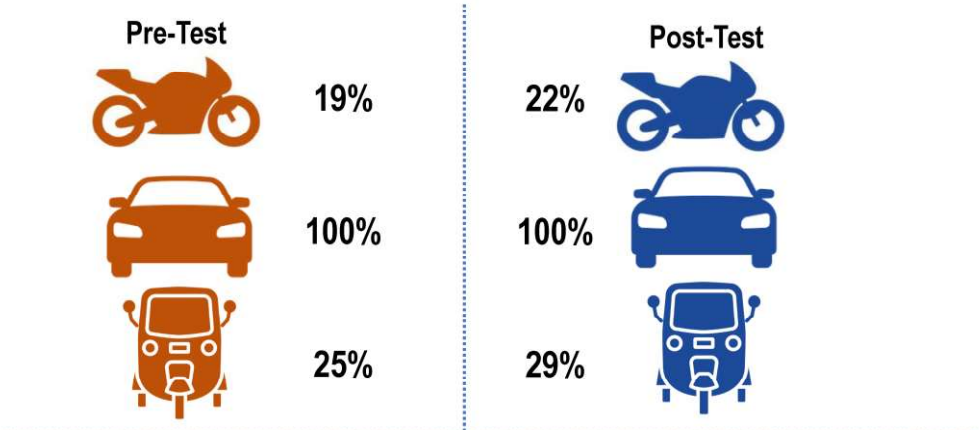


- At #167 intersection on the fringe of the Central Area, parameter settings and road markings were insufficient.
- After the intersection improvement, congestion queue length improved.

9. Vehicle Type of Traffic Rule Violation at 6 Intersections



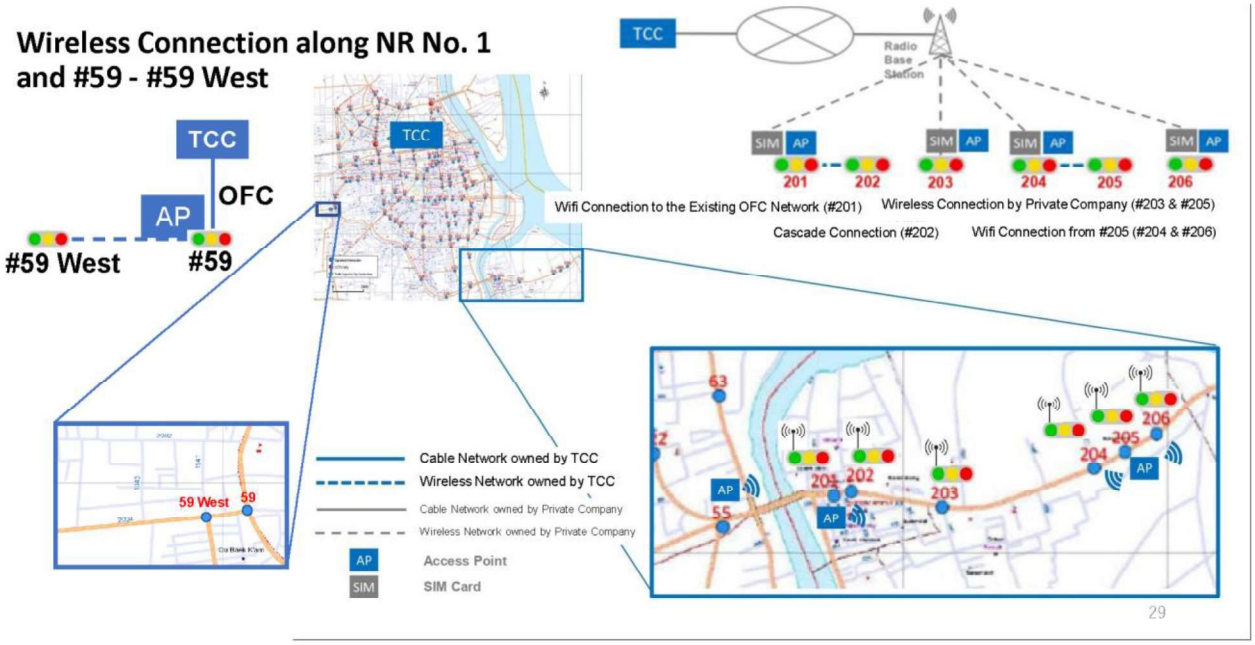
10. Type of Vehicle with Driving License



Among all motorbike drivers, ONLY 19% hold a valid driving license, while 100% of car drivers have a driving license and 25% of Tuk Tuk or Remork drivers have a driving license at pre-test and this number is similar at the post-test.

28

11. Wireless Connection



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11. Evaluation of the Wireless Connection of 6 intersections along NR No. 1 and #167

Local controller malfunction monthly report

Month of report: 2024/06
Date of print: 2024/07/01 (Mon) 09:10
Area: Phnom Penh

Objective dates: 30

Seq.	Jurisdiction No.	ID	Name	(Upper rows : Count of all error) (Lower rows : Count of communication line error) Down	Controller error	Status error	Step error	Unexpected error	Failure	Status error	Step error	Total Time (HH:MM)	Ratio/month
113	1	201	201;NR_No1-St363	220	0	0	220	0	644	0	644	139:32	19%
				10	0	0	10	0	0	0	0		
114	1	202	202;NR_No1-St628	107	0	0	107	0	277	0	277	66:51	9%
				4	0	0	4	0	0	0	0		
115	1	203	203;NR_No1-St351	54	0	0	54	0	132	0	132	21:54	3%
				2	0	0	2	0	0	0	0		
116	1	204	204;NR_No1-Bayon_TV	365	0	0	365	0	1035	0	1035	131:11	18%
				29	0	0	29	0	0	0	0		
117	1	205	205;NR_No1-GDI	247	0	0	247	0	569	0	569	72:22	10%
				31	0	0	31	0	0	0	0		
118	1	206	206;NR_No1-Cho_Ray_PP_Hospital	20	0	0	20	0	60	0	60	5:11	1%
				0	0	0	0	0	0	0	0		

Observation
The number of disconnections was less than expected.
Even #204 and #205, which have high frequently disconnection, are only around once a day.
However, the total monthly breakdown time at many intersections accounts for 20% of the total.

Minor Problem
Moderate Problem
Serious Problem

Results of the Analysis
The connecrion is unstable, so it seems that normal information communication is not possible.
The log data received by email in 15 February 2024 showed numerous errors such as the following:

Remote control error	Remote control status of local controller has been different from center.
Behavior status reception error	Center has not received behavior status data from local controller.
Actual step reception error	Center has not received actual step data from local controller.

This is thought to be an error caused by the inability to send and receive normal information between the TCC and local controllers.

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III. Training in Japan

- What was particularly memorable about this training in Japan was being able to see and hear about Hiroshima City's efforts in urban transportation by TCC staff themselves. Hiroshima City has a population of 1.2 million, and 600,000 people use public transportation daily. The city has developed a number of public transport systems, including buses, JR, private railways, LRT and AGT, in line with the characteristics and development of the urbanization in the city, and has maintained this system for a long time. The trainees learned that a balanced development of roads and public transportation is essential for urban development.

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1. Training Organization/Place

Target	Training Organization/Place	Contents of Training, etc.
Policy and Plan of Traffic Management in Japan	Otemachi-Marunouchi-Yurakucho (Dai-Maru-Yu) Urban Planning Council	Urban Planning and Parking Measures around Tokyo Station (Central Station in Japan)
	Tokyo Metropolitan Hall	Visit to Capital Hall in Japan (Same as Phnom Penh as the Capital Hall)
Learn Traffic Management Measures including Urban Planning in Japan	Institute for Traffic Accident Research and Data Analysis (ITARDA)	Role and Outline of ITARDA
	Traffic Control Center in Tokyo Metropolitan Police Department	Visit to Traffic Control Center
	Hiroshima City	Lecture of Public Transport System Planning, Visit to Redevelopment in Southern Hiroshima Station Plaza and Visit to Hiroshima Bus Center
	Kyoto City	Lecture for Urban Transport Planning in Kyoto City
	Basta Shinjuku	Largest Bus Terminal in Japan
Learn Japan's Cutting-edge ITS Technology	Professor OZAKI, Toyo University	Lecture on Japanese ITS technology
	Sumitomo Electric Company	Lecture for Repair of Optic Fiber Cable Cutting
Learn Japanese Culture	Tokyo Tower	Second tallest Radio Tower
	Odaiba (Commercial center in Tokyo Bay Reclamation Area)	The central commercial district of Tokyo Waterfront New City in the reclaimed land area of Tokyo Bay
	Kinkaku-ji Shrine	Japanese Shrine in Kyoto, Designated a World Heritage Site
	Hiroshima Peace Memorial Park	Hiroshima Peace Memorial Park is a Urban Planning Park established to commemorate the victims of the atomic bomb and to pray for lasting world peace.

2. Trainees by Group

No.	Name	Sex	From	Position
GROUP 1: January 31st to February 10th, 2024 Course Number: 201903196-J001				
1	CHOU KIMTRY	M	DPWT	Deputy Director, DPWT
2	PHENG PHARINET	F	DPWT	Chief of TCC
3	PROM KAMPOUL	M	DPWT	Chief of Road Safety Office
4	KUN SOKHIM	F	PPCA's Contracted Staff	Technical Staff at TCC
5	HENG VENGLIM	M	PPCA's Contracted Staff	Technical Staff at TCC
6	KEM RAVY	M	PPCA's Contracted Staff	Technical Staff at TCC
7	UY LYSIN	M	PPCA's Contracted Staff	Technical Staff at TCC
Group 2: February 14th to February 27th, 2024 Course Number: 201903196-J002				
1	MAN KIMCHHUON	M	PPCA	Technical Staff of TCC
2	SAM PHALLA	M	PPCA	Technical Staff at TCC
3	CHEA VANDETH	M	PPCA's Contracted Staff	Technical Staff at TCC
4	PHOK UY	M	PPCA's Contracted Staff	Technical Staff at TCC
5	IM SETHA	M	PPCA's Contracted Staff	Technical Staff at TCC
6	LAK SIVCHENG	F	DPWT	Officer, DPWT

Learn about "Administrative management using data-based road planning and ITS" from Professor Ozaki of Toyo University

Visit to the Traffic Control Center (TCC) in Tokyo Metropolitan Police Department's

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3. Photos

Mr. Miyaura, Hiroshima City Hall and Mr. Matsuda, a former professor at Hiroshima University, gave a lecture on "Hiroshima City's public transportation initiatives"

Final Presentation by Group 1 as summary of the training in Japan

Visit to the construction site for the LRT terminal at South Hiroshima Station Plaza

Final Presentation by Group 2 as summary of the training in Japan

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IV. Traffic Signal System Expansion Plan

By covering not only central Phnom Penh but also the rapid urbanized suburbs with the traffic control system, safer and smoother traffic flow will be ensured. And, this contribute to the revitalization of Phnom Penh and the improvement of the urban environment. Preconditions for considering the expansion area of the traffic control system.

(1) Urbanization has spread to 216.6ha in the suburban areas, and if a traffic control system were to be established in these urbanized suburban areas, it would need to cover an area 7.6 times larger than the 28.4ha in the central Phnom Penh (PP) where the current traffic control system is in place.

(2) On the other hand, the road network in suburban areas is less dense but more varied than in the central PP.

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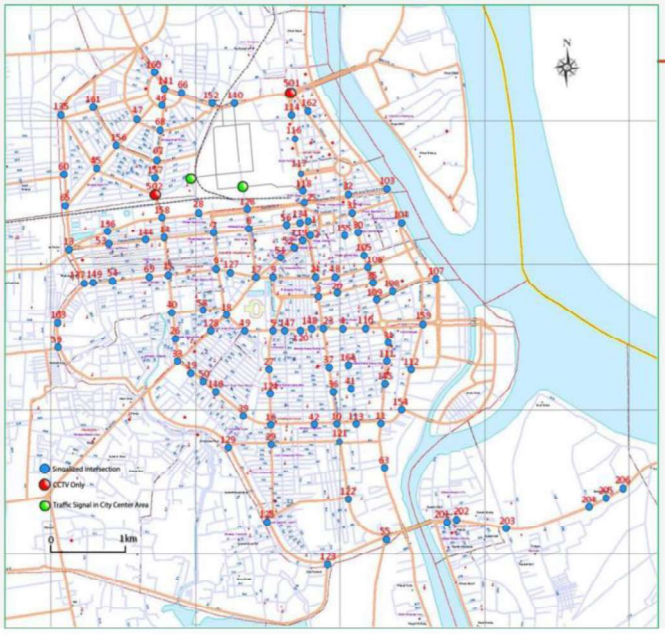
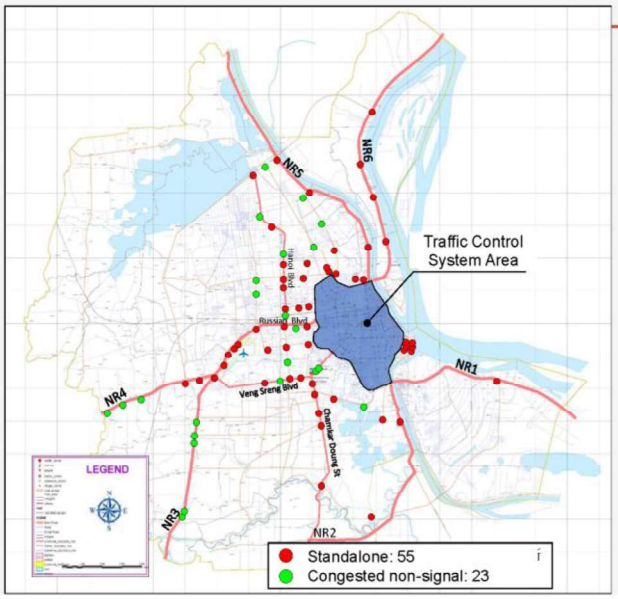
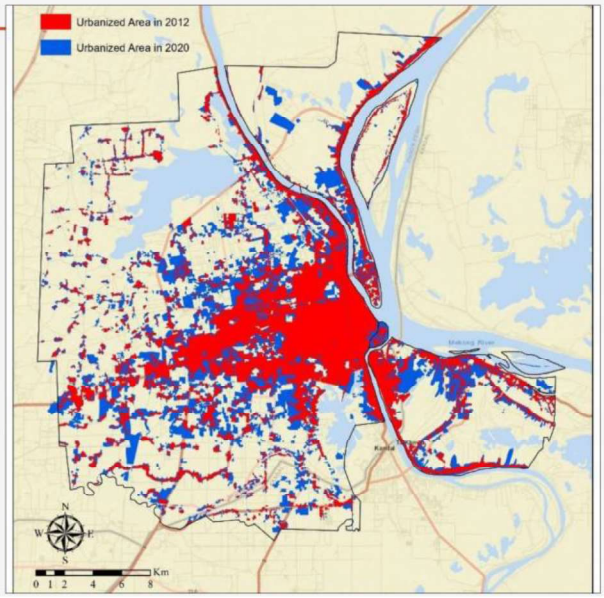
1. Current Conditions in Central Phnom Penh (1)



36

1. Current Conditions in Phnom Penh Suburban Area (2)





1. Current Conditions in Phnom Penh Suburban Area (3)

Different signal lantern/poles

Inconsistent traffic signals confuse drivers

Problematic roadside traffic sign/marking

Conflicting traffic rules and disappearing lane marking cause traffic congestion

Malfunctioning of Roadside Equipment

Leaving deterioration of equipment will lead to increase in accidents and a decline in reliability of signals.

City bus operation in the suburban area

There are many bus routes in the suburban area

In suburban area, there are traffic management related problems, such as deterioration of equipment, and inconsistent road signs and markings, etc. On the other hand, since there are many bus routes for residents, improving the traffic environment is also an issue.

2. Issues of Traffic Signal System Expansion Plan

ISSUE 1: Number and Location of Signalized Intersections in the Suburban Area (As of January 2024)

ISSUE 2: Traffic Control System

ISSUE 3: Communication System

ISSUE 4: Intersection Improvement

ISSUE 5: Maintenance Management System

ISSUE 6: Organization
Integration of the current TCC and the Traffic Signal Section in Public Lighting Division of the DPWT (become an official organization of PPCH/DPWT)

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ISSUE 1: Signalized Intersections in the Suburban Area (As of January 2024)

As of January 2024, there are 186 signalized intersections in Phnom Penh, of which 118 are in the central PP and 68 are in suburban areas. DPWT plans to build 25 new signalized intersections in suburban areas where urbanization is progressing. The PPTMTC project, a JICA-TCP project that began in 2022, proposed 38 new signalized intersections. The above plans and proposals were consulted at a coordination meeting (held on January 25, 2024) inviting representatives from Khans, mainly from suburban areas, and 19 additional signalized intersections were requested. In light of the above, the PPTMTC project decided to focus on 268 signalized intersections as part of the suburban expansion of the traffic control system.

Table 1: No. of Signalized Intersections by Type

Control System		Management Body	No. of Intersections	Remarks
Existing	Centrally Control	TCC/DPWT	118	109 (Central Area) 6 (Along NR No. 1) 3 (Pilot Project)
	Pre-time Setting	Public Lighting/DPWT Standalone	68	70 (Existing) 2 Relpaced by PPTMTC PP
	Sub Total		186	
Plan	DPWT		25	2021 - 2023
	JICA-PPTMTC		38	Proposed
	Requested by Khan		19	By Coordination Meeting held in 25 Jan. 2024
	Sub Total		82	
Grand Total			**268**	

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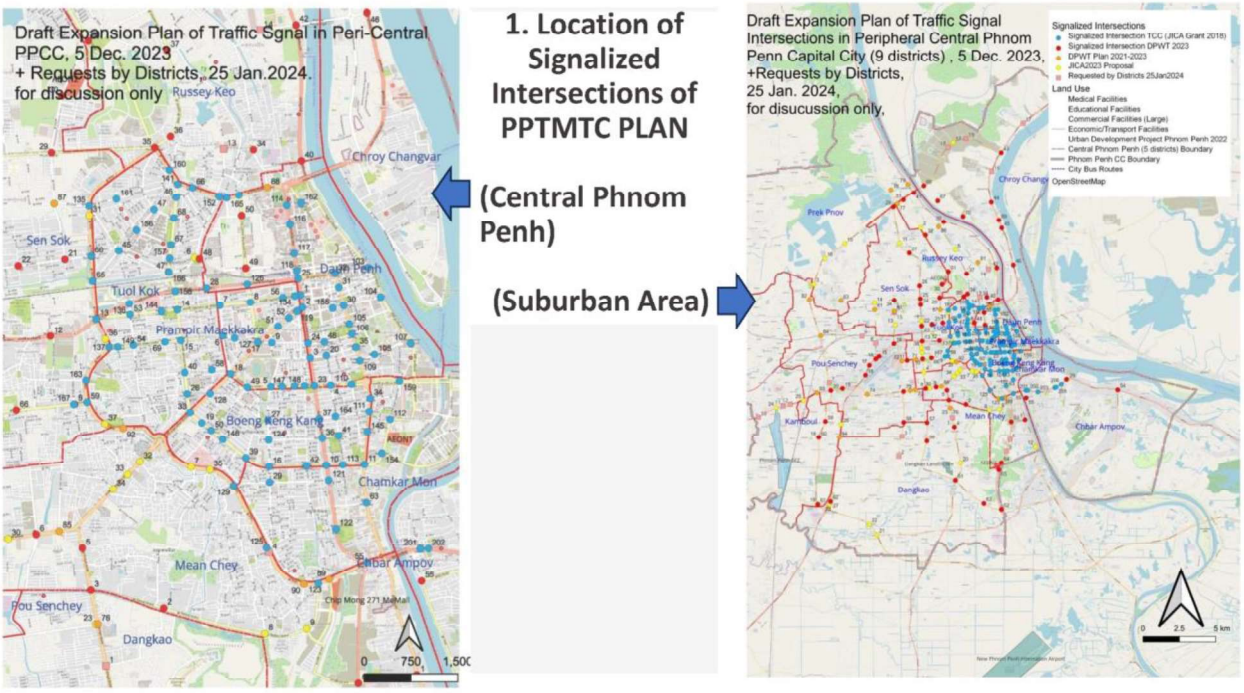


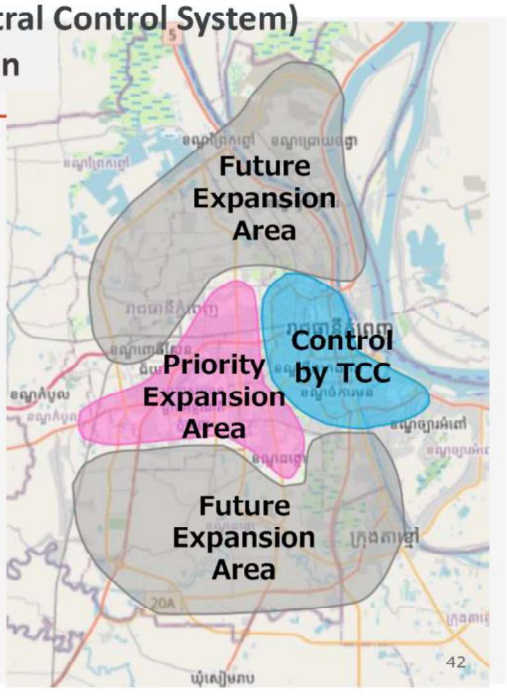
Issue 2: Suburban Traffic Control System (Central Control System)

1. Planning Directions of Signal Expansion Plan

Priority will be given to the expansion to the Russia and Veng Sreng Corridor Area, located on the west side of the central area where urbanization is most active in the suburbs, and it is desirable to apply a system that is consistent with the central area.

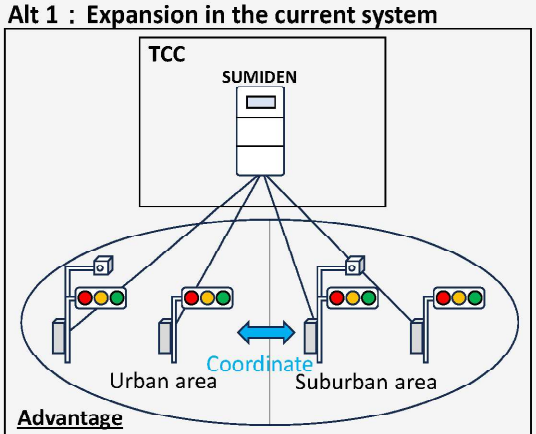
- This is the suburban area where population growth is most rapidly,
- As the population increases, traffic congestion occurs on many roads,
- The density of standalone signals is already high, and
- There are many public transport (bus) routes and convenience is expected to improve by realizing smooth traffic

The aim is to expand in other areas in line with the area characteristics of the suburban area, but due to the spacing of signal intersections and the current conditions of urbanization, standalone systems will be used for the time being.



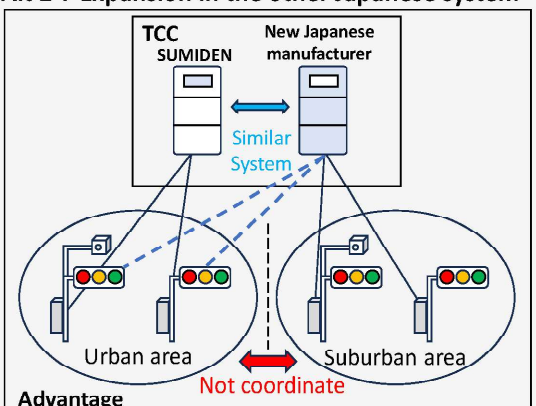
2. Alternatives of Suburban Area System Configuration (1)

Alt 1 : Expansion in the current system



Advantage
Increase signal management capabilities
Disadvantage
Dependency on existing manufacturers

Alt 2 : Expansion in the other Japanese system



Advantage
Retain similar system and equivalent functions
Disadvantage
Multiple systems within one city

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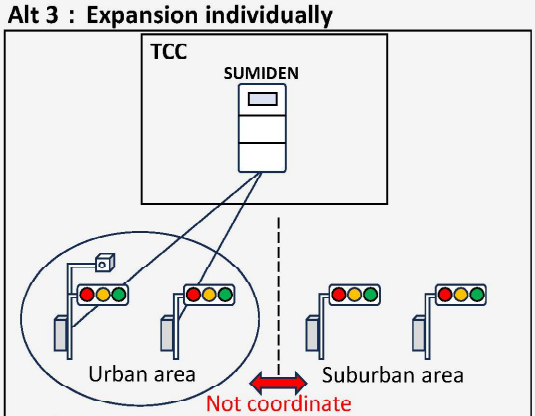
2. Alternatives of Suburban Area System Configuration (2)

Alt 3 : Expansion individually



Advantage
Low cost
Disadvantage
Cannot be controlled by TCC

Alt. 1: The existing system will also accommodate suburban area
TCC can utilize the skills acquired in the current system as is.

Alt. 2: Build a new traffic control system that is different from the existing system (made in Japan with high compatibility with the existing system)
Although the user interface and operation method will be different, it will have the same functions as the existing system and will have a similar system configuration.

Alt. 3: Signalized intersections in suburban areas will not be incorporated into the traffic control system
Even if they are not under the control of the traffic control system, the traffic environment can be improved by renewing the current infrastructure and applying system control functions and traffic-responsive control.

3. Preferable functions and measures

Standardization of signal lantern
It is preferable for the signal system to be unified with the same standard in the city. In suburban area, the signal lantern of neighboring traffic lights are different, and they are also different from the traffic signals in the central area connected to the traffic control system. It is desirable to develop a signal system that is unified with the central area.

Systemized control and control optimization
Each traffic signal in suburban areas is controlled independently, and coordinated control at multiple intersections is not possible. A consistent signal system and coordinated control on the same route and in the same area will improve the deteriorated traffic conditions.

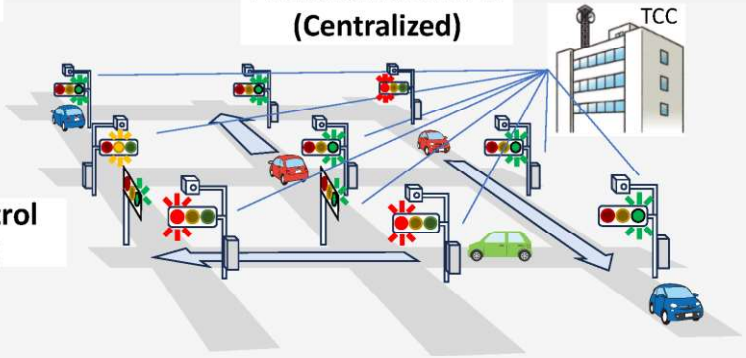
Intersection Improvement
Most of intersections in suburban areas lack clear road signs and markings, and are poorly equipped with traffic signals. Intersection improvements combined with traffic signal installations are recommended.

Expansion of maintenance management
In suburban areas, there are cases where equipment that has broken down due to aging is left unattended. The scope of maintenance will be expanded by implementing monitoring and regular inspections using the traffic management system, just as in urban areas.

Signal Control Method

Standalone (Non-centralized)

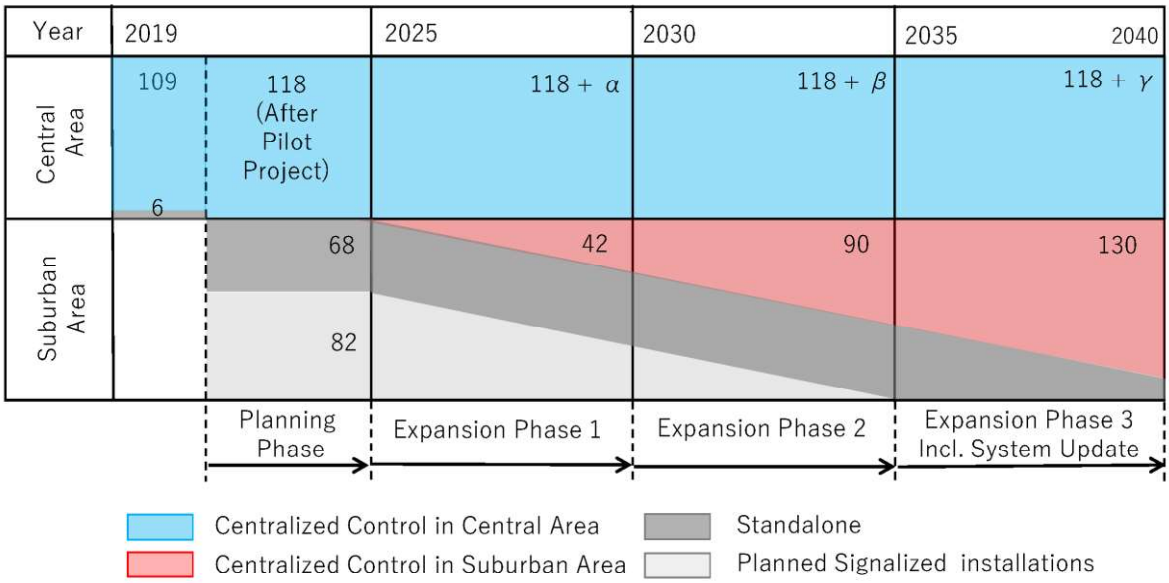
Area traffic control (Centralized)



Coordinated control/Corridor control (Centralized or non-centralized)

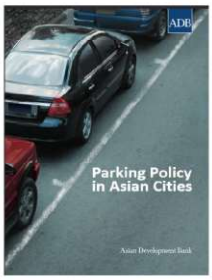
Area traffic control (Centralized control) is applicable to all traffic conditions. However, due to the road network pattern and traffic conditions of suburban area, there are many areas where coordinated control or independently control can be applicable.

4. Staging of Traffic Signal System Development in Phnom Penh (1)



V. Traffic Management Plan

1. Parking management plan



- Using parking survey result by JICA Study (2023), the parking management plan prepared and justified by feasibility analysis

- Draft parking management plan presented to PPCA/MPWT and recommendation made to MPWT to draft Parking Prakas to define the parking type/responsibilities for management.

Step 1: Designation of Parking Improvement Zones

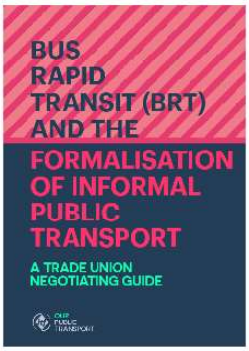
Step 2: Baseline surveys & demand/supply analysis

Step 3: Development of goals and parking strategy

Step 4: Feasibility analysis
- Parking development plan and cost estimate
- Institutional responsibility and parking management entity
- Contract model and specification
- Level of parking charges/levy
- Economic analysis and financial model

2. Paratransit management

- Learning lessons from paratransit management in African countries, paratransit management scheme prepared with multiple stakeholders tasked among MPWT, PPCA, Khan, Informal workers association (IDEA) and RHS App operator(s).
- Draft scheme presented to MPWT, DPWT, IDEA and PassApp and fine-tuned.



Step 1: Identification of stakeholders and target groups

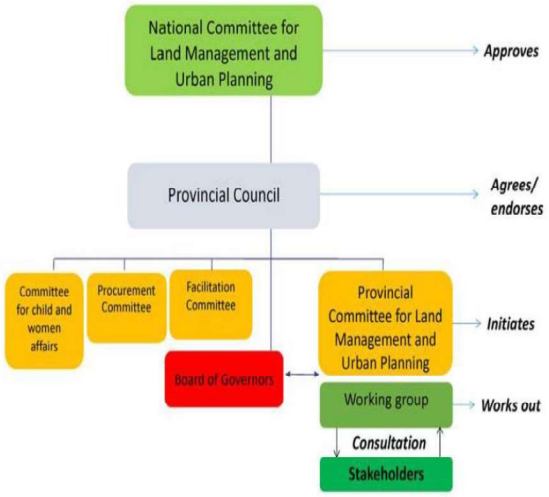
Step 2: BRT design and operation with integration of informal transport

Step 3: Conduct Environmental and Social Impact Assessment for informal transport workforces

Step 4: Formalization of informal transport

3. Support to MPWT's Land Transport Law

- As part of drafting Parking Management Plan, concept of Parking Law prepared and presented to MPWT. Parking Law in Japan also shared with MPWT.
- A separate meeting with MPWT discussed draft Land Transport Law and recommendations made: Inclusion of (i) parking and para-transit management and (ii) overall institutional arrangement including establishment of Public Transport Authority and Public Administrative Enterprise and (iii) overall financial arrangement and subsidy policy, in the said law.



4. Revitalization of CBA

- CBA successfully improved ridership at 26,000 pax per day by May 2024 and reached to the similar number recorded before COVID-19.
- Multiple efforts made by CBA contributed to this increased ridership, including improved network and service, PR activities, fleet and driver management.
- CBA also generated significant revenue from non-passenger business including advertisement and bus wrapping.
- CBA continue to seek for other business opportunities following JICA's recommendation including shuttle services for company and school.

VI. PPTMTC Pilot Project Seminar

1. Purpose of the Seminar

Through the presentation of the Pilot Project and the signal system future expansion plan, implemented in the PPTMTC project, this Seminar will help city and government officials and citizens understand the current state and future of Phnom Penh's signal system. The Seminar will also help government officials and citizens to understand how TCC and the Public Lighting Department are working on a daily basis to alleviate serious traffic congestion in Phnom Penh.

2. Date and Venue

- 08 August 2024
- Cambodia & Japan Cooperation Center (CJCC)

3. Agenda

- Opening and Closing Speech from PPCC Vice Governors
- Outline of the Pilot Project and Traffic Signal System Expansion Plan
- Daily Activities of TCC and Public Lighting Division, DPWT
- Activities of Road Safety Division, DPWT
- Q & A

4. Expected Attendees

- PPCH, Khan, DPWT, PPTP, MPWT, MEF, NRSC, MLMUPC, University Students and JICA etc.

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VII. Conclusion of the 4th JCC Meeting

1. Completed Activities

- Revised Project Design Matrix (PDM)
- Output 1, 2 and 3.

2. Remaining Activities but should Completed by November 2024

Following activities of Output 4 and 5

- Seminars （First: 8th August 2024 and Second: Final Project Seminar, mid- December 2024)
- Small-scale Traffic Safety Campaign (Before Pchun Ben or Before Water Festival)
- Final Traffic Survey in October 2024
- Approval by the DPWT Director

(1) Maintenance Management Manual (Competed and Waiting for approval)
(2) Pilot Project Handbook (On-going)
(3) Traffic Control System Expansion Plan (On-going)
(4) Traffic Management Plan (Almost completed)
(5) Traffic Enforcement and Traffic Safety Education Manual (On-going)

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ANNEX11-5: 5th JCC Meeting

(Final)

Minutes of the 5th Joint Coordinating Committee Meeting

of

The Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC)

The 5th Joint Coordinating Committee (JCC) meeting between Phnom Penh Capital Administration (PPCA), Department of Public Works and Transport of Phnom Penh (DPWT), Japan International Cooperation Agency (JICA), and the concerned members of the Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC) was held in a hybrid format, on-line and face-to-face at Phnom Penh Capital Administration (PPCA) on 8th of January, 2025. The comments and the discussions were made on several items as described below.

1. Opening remarks by PPCA and JICA:

H.E. Ek Khundoeurn, Vice Governor of PPCA and Vice-Chair of JCC, on behalf of the PPCA Governor, welcomed all the participants and expressed his sincere thanks to the Government of Japan for extending support through JICA, as well as to JICA expert team for the implementation of the PPTMTC project. He mentioned that the strong cooperation between the government of Cambodia and Japan for continuously strengthening and expanding the comprehensive partnerships strategy allows both countries to strengthen the cooperation in all sectors. He continued stating that PPCA and JICA has been working closely and continuously to improve the infrastructure of transport system in Phnom Penh capital city. He added that this project is the technical cooperation project to sustain the Traffic Control Center (TCC) operation, which was proposed by the Phnom Penh Urban Transport Master Plan in 2014 and subsequently implemented as a Japanese Grant Aid project in 2018 which connected 109 intersections with a traffic control center and contributing to the improvement of urban transport conditions in central Phnom Penh. From 2022, this PPTMTC technical cooperation project was launched so that TCC staff can operate and maintain the traffic control system themselves, and today's final JCC meeting is held. He underscored that the development of the traffic control system has achieved for improving Phnom Penh's urban traffic environment, but there are still several issues in the field of urban traffic management planning, such as sidewalks for pedestrians, not for illegal on sidewalk parking, and progress must be made in the future in order to become a high-income country by 2050, as set out in the government's current national development strategy, the "Pentagonal Strategy," and to become a smart city in Phnom Penh. Fortunately, a technical cooperation project aimed at revising the urban transport master plan has also begun in 2024, and it would be even better for the improvement of the urban transport system in Phnom Penh capital city. Before closing his remarks, on behalf of the PPCA Governor, he expressed his sincere thanks to all the participants of this 5th JCC meeting.

Ms. Miura Yoshiko, Senior Representative of JICA Cambodia office, welcomed all the participants and expressed her deepest appreciation to H.E. Ek Khundoeurn and Mr. Kong Sophal for presiding over this meeting, thank all the representatives from the relevant ministries and departments, as well as JICA project team for participating this meeting. She mentioned that Phnom Penh is experiencing with a rapid increase of traffic volume, which continues to cause significant challenges, including severe traffic congestion, traffic accidents and environmental impacts. She continued that this project has been implemented since January 2022, aiming to improve the traffic management and enhance safety in Phnom Penh. To achieve this, the project activities include installing new advanced traffic signal at key intersections, validating surveillance systems, strengthening the operation, maintenance, including management of traffic control system, and implementing car parking management measures. Furthermore, traffic safety campaigns and training activities, include those conducted in Japan, have played an important role in building local capacity. As approach the crucial final stages, with the technical cooperation set to end in February 2025, she is looking forward to a productive discussion for future implementation stages, as this is now a critical moment for the project to continue operating sustainably after the project's completion. Before concluding her remarks, she expressed her sincere appreciation to PPCA, DPWT and the JICA project team for their continuous cooperation, unwavering support, and contribution to the project.

2. Contents of Presentations:

Mr. Chou Kimtry, Deputy Director of the Department of Public Works and Transport of Phnom Penh (DPWT), briefly explained the background of the PPTMTC project and the purposes of the 5th Joint Coordinating Committee meeting. He added that PPCA, DPWT, and TCC have cooperated and worked closely with the JICA project team during the project implementation in order to exchange experiences and gain knowledge for capacity building on the traffic control system in Phnom Penh. He finally expressed his sincere thanks to JICA for unwavering support on the urban transport sector, and drainage and sewage system to Phnom Penh Capital City.

Mr. Masato Koto, team leader of the PPTMTC project and **Mrs. Pheng Pharinet**, chief of traffic control center, jointly made a presentation on the PPTMTC project covering project design matrix, activities by output and PPTMTC's conclusion and way forward. For the details, please refer to the presentation material.

3. Main Points of Discussion:

No.	Comments/Questions	Answers
(1)	**Mr. Chou Kimtry,** deputy director of DPWT, raised about some challenges after the handover of Japan grant aid project and during this project implementation including electricity unstable/cut-off, optical fiber cable (OFC) cutting, traffic accident, problem caused by private construction and surrounding resident, and lack of spare parts. He underscored that for the management of traffic signals, DPWT is in charge principally for the whole area of Phnom Penh for both traffic control system under TCC and signalized intersections under public lighting and traffic signal office (PLTSO). He continued that the way forward of traffic control expansion plan for 2025-2030, it should be considered to integrate TCC and PLSTO as one organization to manage all the traffic signals in the whole city. He further added that PPCA should consider and strongly support for the allocation of budget plan for the additional 10 intersections as the next first phase between 2025-2030.	**Mr. Koto** responded that OFC cutting is reduced after there is a good collaboration between the technical teams. He agreed that TCC, and public lighting and traffic signal office both sections play very important role for the management of the traffic control system, and should be integrated as one organization to operate the whole traffic signals in Phnom Penh for the future plan.
(2)	**Dr. Phun Vengkheang**, Head of Transport and Infrastructure Engineering Department from Institute of Technology of Cambodia (ITC), asked about the management of signalized intersections whether it should be only one TCC to control all traffic signals in the city or separating the management of those traffic signals by zone, in order to manage and maintain this system efficiently since the number of signalized intersections will be increased from day to day in the future?	**Mr. Koto** responded that today's presentation is based on 268 intersections as January 2024. He continued that for the future expansion plan should be discussed and adjusted based on the land use plan and road development plan, which is prepared by the urban planning office, PPCA and DPWT. He further added that the future TCC system is basically the same as it is, but will incorporate advanced technology to keep up with the times. And the number of staff and their functions will be adjusted in response to the demand in the future.
(3)	**Mr. Sor Phara**, deputy director of urban management division, raised about the concern the traffic situation around intersection #118 in front of the train station, after the completion of the new bridge connecting from night market at riverside to Areiy Ksatr area whether the project team has also included this into the consideration or not?	**Mr. Koto** responded that project team did not include this concern into the consideration. He continued that project team also conducted the signal improvement at this intersection, but driving behavior is also a main problem causing the traffic congestion at this area. **Mr. Chou Kimtry** added that this intersection

		has not much traffic volume previously, but later there is increasing of traffic volume from other roads to this intersection, and also the drivers did not obey to traffic rules such as yellow box which is not allowed the vehicle stopped inside that area. He continued that traffic education should be mainly encourage in parallel with the intersection improvement.
(4)	**Mr. Moeung Sophan,** advisor of DPWT, raised about some concern points as follows: 1) Wireless connection work, is it possible to connect the signalized intersections along national road No.1 to TCC using the method as implemented at intersection #59 (Nokia intersection) and #167 (2004 intersection) or using corridor coordination management? 2) Traffic control area expansion plan, he suggested JICA and technical project team to consider about the study or design on how to integrate all traffic signals inside urban area and suburban area into TCC system for the future management, and also including the consideration of the area along to the new international airport. 3) Request to TCP team to consider on preparation of work plan which covering of the necessary activities for the next phase between 2025-2035.	**Mr. Koto** responded that: 1) Intersection #59 and #167 was connected using access point and from #59 to TCC using OFC connection, so it works well since the distance between these two intersections is just 200m. For corridor management, the distance should be less than 500m. But the distance between those intersections along national road No.1 are not suitable for using corridor management. Otherwise, the western area should be considered for implementing this corridor management. 2) The current traffic control system capacity at TCC is capable of covering around 500 intersections. For the new technology in the future, it should be considered to use the system which is accessible with the current system at TCC. For the new international airport area, project team did not include this area into consideration. 3) Project team try to consider preliminary work plan in this period in the Traffic Control System Expansion Plan. He further suggested that PPCA and DPWT should work together on how to allocate the budget plan and resource for maintenance and expansion of the traffic control system.

4. Closing and Conclusion:

Before closing, **H.E Ek Khundoeurn** summarized and concluded the main points of discussion among the participants during the 5th JCC meeting as the followings:

1) This project (PPTMTC) is a JICA technical cooperation project carried out for about three years from 2022 to 2025 with the aim of enabling TCC staff to operate and maintain Phnom Penh's traffic control system themselves. The project details are as follows:
   (1) Operation and maintenance of the traffic control system
   (2) Organizational challenges
   (3) A wide range of lectures from signal systems to traffic management plans
   (4) Fixed-point observation of traffic volume etc. using the latest AI technology
   (5) Installation of a new signal intersection as a pilot project to put the training into practice
   (6) Implementation of a 3Es road safety campaign during the pilot project
   (7) Future traffic control system expansion plans were implemented, and TCC staff themselves achieved above.

2) The technical cooperation project has been completed, but as a next step, as explained in the presentation, it is necessary to transition to a new next-generation traffic control system within the next 10 years. The next 10 years will be divided into two phases:
   (1) Phase 1 (2025 – 2030), Preparation period: This is a preparation period for the next-generation traffic control system, that is, the system concept, implementation method, costs, etc. will be considered, and current issues will be addressed. The current issue is to improve problematic standalone signalized intersections in the western suburban area adjacent to central Phnom Penh.
   (2) Phase 2 (2030 – 2035), Transition period: Construction of the next system will begin by around 2030, and the transition will be complete by around 2035.

Suggestions:

- Suggest DPWT should continuously cooperate and work closely with the JICA project team on how to allocate the budget plan for maintenance and expansion work of the traffic control system into the 5-year development plan and 3-year rolling investment program of Phnom Penh Capital City.

CONFIRMED BY:

H.E. EK KHUNDOEURN
Vice Governor
Phnom Penh Capital Administration

Ms. MIURA YOSHIKO
Senior Representative
JICA Cambodia Office

Mr. MASATO KOTO
Team Leader
JICA Expert Team

1. Agenda

AGENDA

5th Joint Coordinating Committee Meeting for Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City (PPTMTC)

Venue: PPCA and Online Zoom Meeting

Date: 8th January, 2025

Time: 09:00 to 11:15 Cambodia Time

Time: 11:00 to 13:15 Japan Time

09:00 –09:30	**Opening Keynotes and Handover Ceremony of JICA-PPTMTC's Deliverables**	
Representative of JICA		
Ms. Miura Yoshiko		**10 min**
Senior Representative of JICA Cambodia Office		
Representative of the Governor		
H.E. Ek Khundoeurn		**10 min**
Vice Governor, PPCA		
Exchange of signatures on Deed of Donation		**10 min**
09:30 – 10:30	**Presentation of the PPTMTC Project**	
Mr. Sam Piseth, Director, DPWT, PPCC, Project Manager of the PPTMTC Project (Introduction)		**10 min**
Mr. Masato Koto, Chief Consultant, JICA PPTMTC Project Team		**50 min**
Ms. Pheng Pharinet, Chief of Traffic Control Center		
I. Project Design Matrix		
II. Activities by Output		
III. PPTMTC's Conclusion and Way Forward		
10:30 – 11:00	**Discussion**	
		30 min
11:00 – 11:15	**Closing Remarks**	
Representative of the Governor		**15 min**
H.E. Ek Khundoeurn		
Vice Governor, PPCA		

2. Proposed participant List to be invited for the 5th JCC

1. PPTMTC's JCC Members

1	H.E. Khuong Sreng	Governor, PPCA	Chairperson of JCC
2	H.E. Seng Vannak	Vice Governor, PPCA	Project Director of PPTMTC project and Vice Chairperson of JCC
3	H.E. EK Khundoeurn	Vice Governor, PPCA	Vice Chairperson of JCC
4	Mr. Sam Piseth	Director, DPWT	Project Manager of PPTMTC project and Member of JCC
5	Mr. Sem Ratana	Deputy Commissioner, PPTP	Member of JCC
6	Mr. Long Sokhom	Deputy Director of Administration, PPCA	Member of JCC
7	Mr. Chhean Vuthy	Director of IRIC Division, PPCA	Member of JCC
8	Mr. Chou Kimtry	Deputy Director, DPWT	Member of JCC
9	Mr. Man Kimchhuon	Deputy Director of IRIC Division, PPCA	Member of JCC
10	Mr. Sor Phara	Deputy Director of Urban Management Division, PPCA	Member of JCC
11	Mr. Khan Saroeun	Chief of Traffic Police Office, PPTP	Member of JCC
12	Mr. Chea Sovan	Chief of Public Lighting and Traffic Signal, DPWT	Member of JCC
13	Ms. Som Sreyleak	Chief of IR Office, PPCA	Member of JCC
14	Mr. Prom Kampoul	Chief of Traffic Safety Office, DPWT	Member of JCC
15	Mrs. Pheng Pharinet	Chief of Traffic Control Center, DPWT	Member of JCC
16	Mrs. Theam Ridthydeka	Deputy Chief of IR Office, PPCA	Member of JCC
17	Mr. Ouch Sansothy	Deputy Chief of Traffic Signal, TCC	Member of JCC
18	Mr. Moeung Sophan	Advisor, DPWT	Member of JCC
19	Mr. Sam Phalla	Technical Staff, TCC	Member of JCC
20	Ms. Kosal Nita	Officer of IRIC Office, PPCA	Member of JCC
21	Mr. Kheang Khy	Officer of IRIC Office, PPCA	Member of JCC
22	Mr. Takanori Kuribayashi	First Secretary, Japan Embassy	Member of JCC

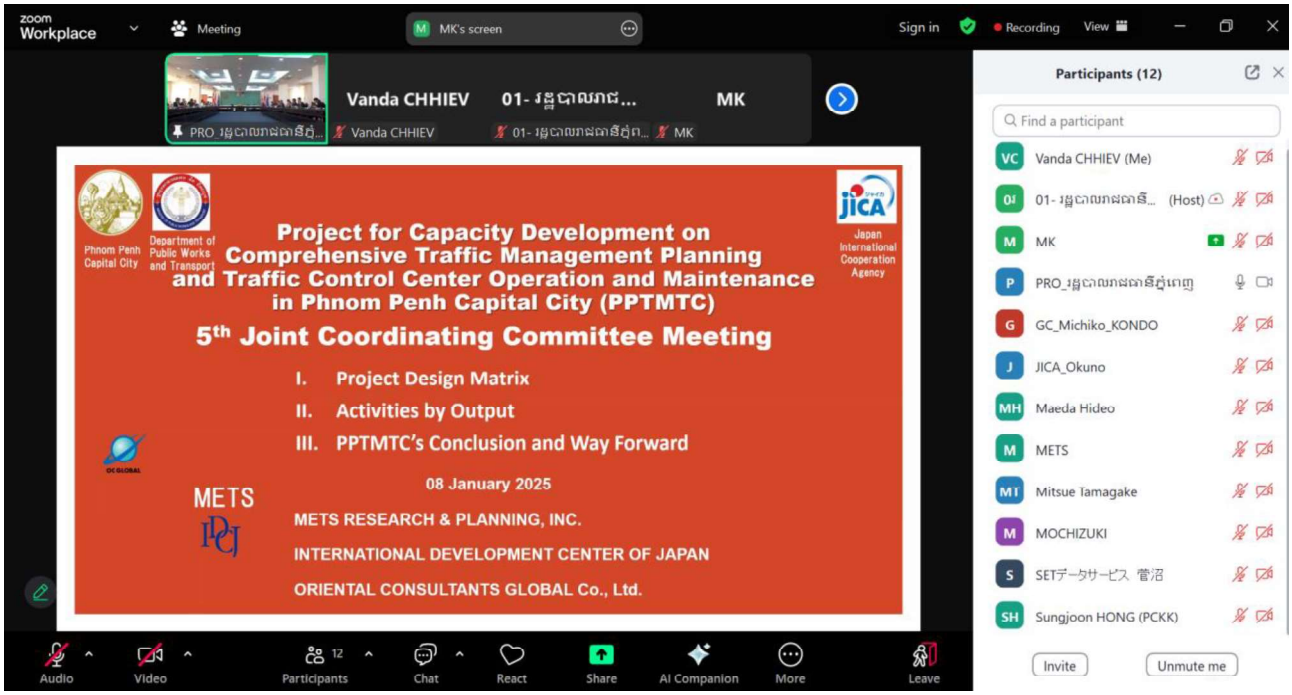
23	Mr. Kazumasa Sanui	Chief Representative, JICA Cambodia	Member of JCC
24	Mr. Shota Okuno	JICA Headquarter	Member of JCC
25	JICA PPTMTC Experts	-	Member of JCC

2. Stakeholders/Counterparts

1. Mr. Kong Sophal (Deputy Director General, General Department of Land Transport, MPWT)
2. Mr. Kyosuke Korematsu (JICA Transport Policy Advisor, MPWT)
3. Dr. Phun Veng Kheang (Head of Transport and Infrastructure Engineering Department, ITC)
4. Ms. Lak Sivcheng (Officer, Public Lighting and Traffic Signal Office, DPWT)
5. Mr. Chea Vandeth (Technical Staff, TCC)
6. Mr. Keo Channarith (Governor, CBA)

4. Photos

Exchange of Signatures on Deed of Donation



Participants of 5th JCC meeting

5. Presentation Material

Exchange of Signature on Deed of Donations

1. Reports
   (1) Project Completion Report
   (2) Maintenance Management Manual
   (3) Pilot Project Handbook
   (4) Traffic Control System Expansion Plan
   (5) Traffic Enforcement & Traffic Safety Education Manual
2. Equipment
   (1) Pick-up Truck
   (2) Fusion Splicer and OTDR
   (3) Signal Controllers, Signal Lanterns and Signal Poles
   (4) Others

2

I. Project Design Matrix of PPTMTC Project

Project Name	Project for Capacity Development on Comprehensive Traffic Management Planning and Traffic Control Center Operation and Maintenance in Phnom Penh Capital City
Project Period	January 2022 to February 2025
Overall Goal	Sustainable Urban Transport Environment is Formed
Project Purpose	Traffic Management Measures Including Traffic Safety Measures in Phnom Penh is Improved
Expected Output	**Output 1**: Maintenance Management System of Traffic Control System is Established **Output 2**: Capacity of TCC Staff on the Operation of Traffic Control System is Strengthened **Output 3**: Capacity to Design Traffic Signals is Strengthened through the Implementation of Pilot Projects for Traffic Signal Improvement **Output 4**: Capacity of the Relevant Staff to Traffic Control in PPCA, DPWT and TCC Staff to Develop the Expansion Plan of Traffic Control System is Strengthened **Output 5**: Capacity of Urban Transport-Related Organizations on Traffic Management Measures is Strengthened towards Enhancement of the Project Sustainability
Counterpart Institution	Implementing Agencies: Phnom Penh Capital Administration (PPCA), Department of Public Works and Transport (DPWT), Traffic Control Center (TCC) and Phnom Penh Traffic Police (PPTP)
Project Area	Whole Area of Phnom Penh

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Overall Progress of the Project

Project Schedule

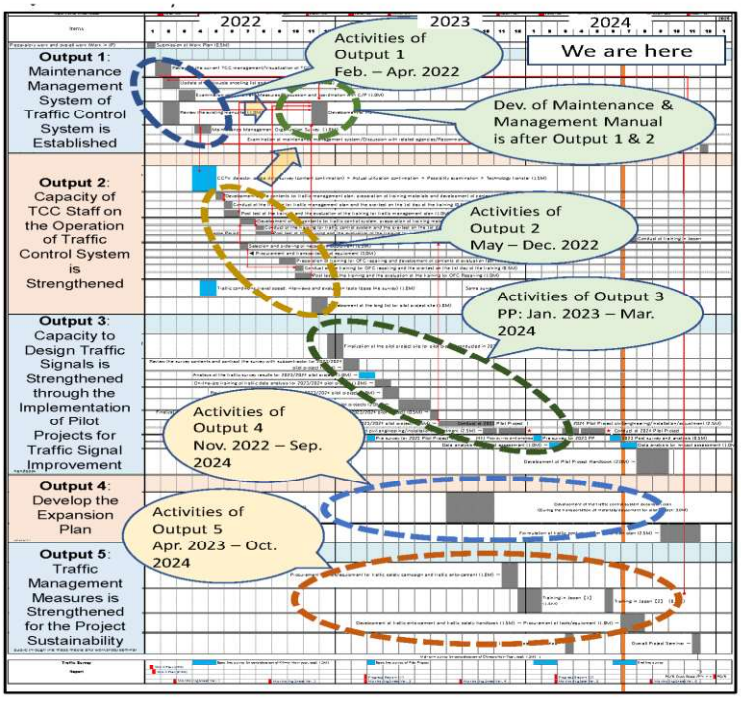
January 2022 – February 2025
(38 months)

Pilot Project (PP)
January 2023 – March 2024
(including Preparation, Procurement and Transport)

Traffic Survey: 3 times

Training in Japan: February 2024

Seminar: 1st, August 2024
2nd, December 2024



II. Activities by Output

Output 1: Maintenance Management System of Traffic Control System is Established

1. Analysis of the Problems of Traffic Control System

After the completion of the traffic control system, from 2019 onwards, the project has been analyzing the daily and monthly reports by TCC staff. As a result, problems were properly analyzed and produced the following data:

OFC troubleshooting/maintenance: 38%

Local controller problem/replace broken parts: 19%

Damage lantern or must-arm: 12%

2. Key Performance Index (KPI) of the Traffic Control System: Availability Rate of Traffic Control System

Availability Rate of the Traffic Control System (Key Performance Indicator: KPI) is increased by 15% compare to before PPTMTC Training.

Before PPTMTC Training: 83.24%

After PPTMTC Training: 94.37%, Increased by 11.13%

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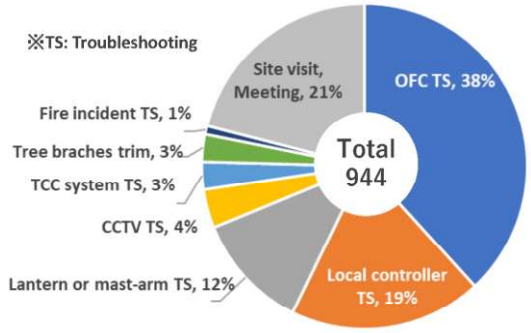
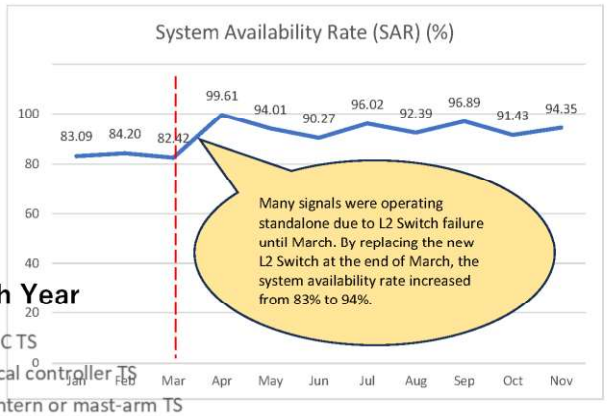
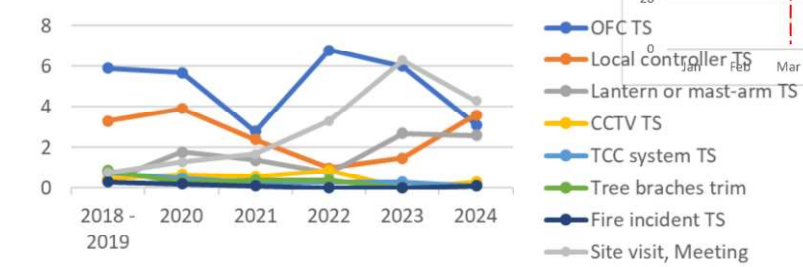
Major Activity of TCC Staff (Dec. 2018~Sep. 2024)



Traffic Control System Availability Rate (%)



Average Number of Activities per Month in each Year



Output 2: Capacity of TCC Staff on the Operation of Traffic Control System is Strengthened

1. Unutilized valuable traffic information collected from CCTV cameras

CCTV cameras installed at 26 intersections are monitored at the traffic control center. TCC staff examine camera image when they intervene in traffic signal parameters, and further advanced uses are expected.

On the other hand, the advent of Deep Learning has led to technological innovation in the field of image analysis, increasing the number of image analysis-related businesses and advancing the application of image analysis to automatic traffic volume counting. Based on the above, demonstration experiment of automatic traffic counters using CCTV camera image and image analysis was conducted. Using DataFromSky which is an automatic traffic counting service using image analysis AI, TCC will have a traffic volume monitoring function and will use it to operate the traffic control system.

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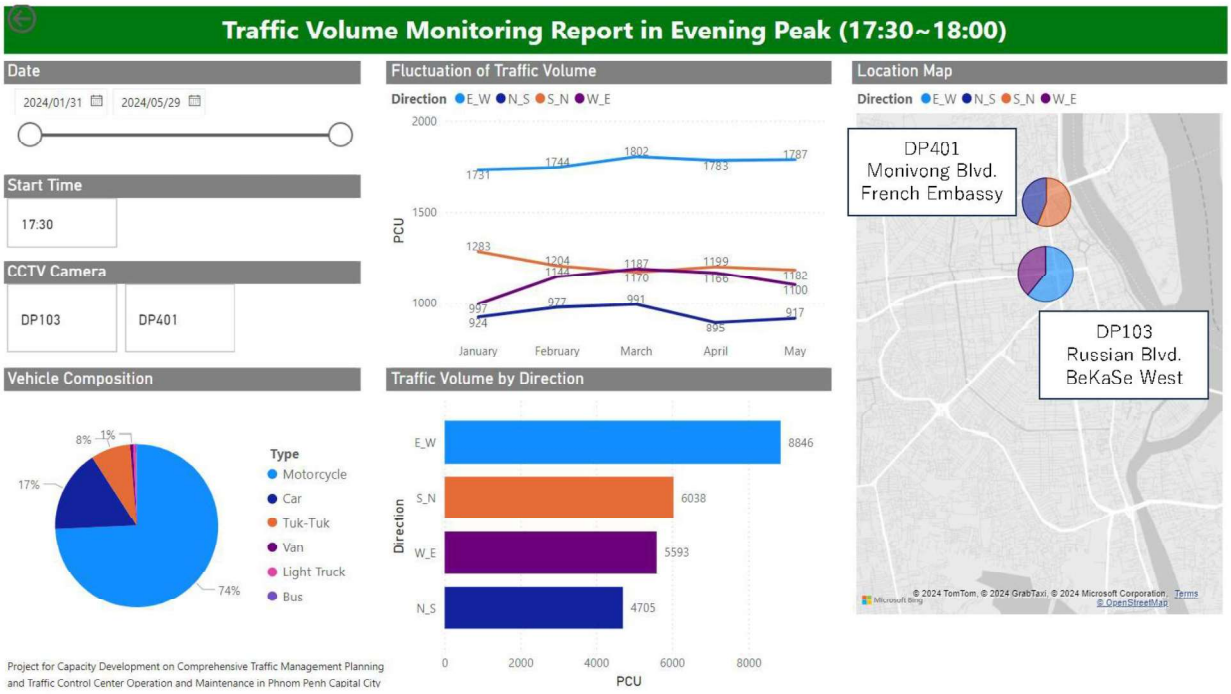

2. PPTMTC Training 2.1 Outline of the PPTMTC Training

The soft components of the Grant Aid made possible the capacity building of TCC staff. With the strong support of PPCH and DPWT, TCC has been operating sustainably from 2019 when the signal system was handed over to Phnom Penh to the present, but it is hard to say that the current system is fully used.

In order to minimize the occurrence of signal system accidents by maximum use of current signal system, conduct of training will be implemented in line with Phnom Penh's traffic control system and traffic conditions.

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2.2 PPTMTC Training Program and Timeline

Maintenance	Practical Aspect of Operation	Basics of Operation	Communication System	Traffic Management
1) Daily/monthly Report 2) Preventive Inspection 3) Corrective/ Accident Inspection 4) Spare parts inventory	1) Site survey of saturation flow rate and traffic volume 2) Site Survey of Congestion Queue Length and Vehicle Density in the Congestion Queue 3) How to revise the current settings without construction 4) How to check the history data when a local controller malfunctions	1) Site Analysis and Determination of Traffic Control Method 2) Determination of Tentative Intersection Geometry and Traffic Signal Phasing Pattern 3) Traffic Signal Control Planning 4) Detailed Planning and Design of Intersection Geometry 5) Detailed Planning and Design of Intersection Leg Geometry 6) Planning of Coordinated Signal Control 7) Examination of Measures for the Traffic Demand Fluctuation	1) What is Conservation Activities? 2) What is Key Performance Indicator (KPI)? 3) How to perform Conservation Activities?	1) Traffic Circulation 2) Parking Management 3) Pedestrian Improvement 4) Demand Management 5) Public Transport
Training Date 24 August 2022 to 26 August 2022	29 August 2022 to 02 September 2022	07 September 2022 to 09 September 2022	14 September 2022 to 16 September 2022	21 September 2022 to 23 September 2022 And the end of October(Tentative)
Expected Trainees TCC Staff (14) + DPWT(2)+PP Traffic Police (2) = 18	TCC Staff, only operation = 6	TCC Staff (14) + DPWT(2)+PP Traffic Police (2) = 18		

Output 3: Pilot Project

Intersection List

No.	Intersection Name	Intersection ID	Location
1	R3	#165	St. 70 corner Old Railway (St. 100)
2	2004	#167	St. 371 - St. 2004
3	Neakvoan Pagoda	#28	Russia Blvd. - St.132 - St.221
4	Rongvong Moul Tuol Kouk	#166	St.289 - St.608 - St.592
5	Be Ka Se	#25	Preah Monivong Blvd. - Russia Blvd.
6	Kdan Pi	#126	Czech Republic Blvd. (St. 169) - Jok Dimitrov Blvd.

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1. Location of the Pilot Project

(1) #165: To cope with City Center development (new signal)

(2) #166: To improve the signalized intersection from roundabout (new signal)

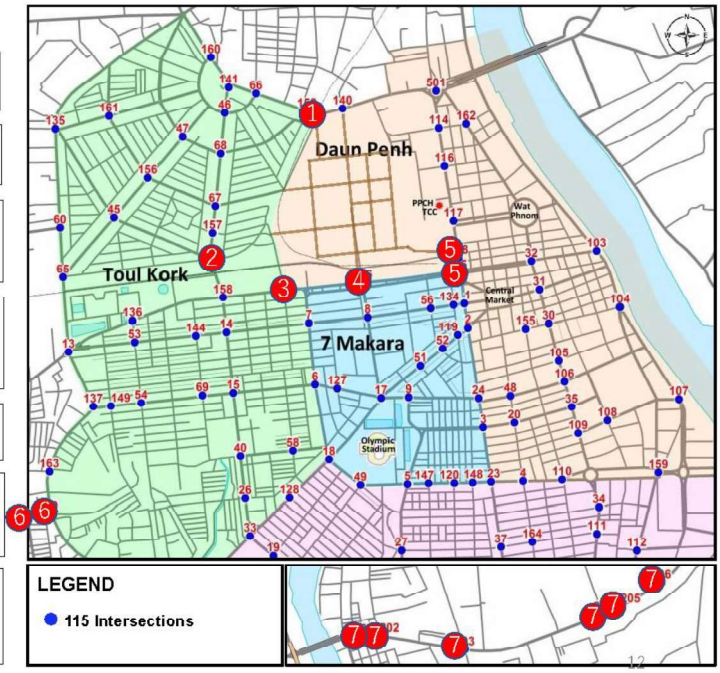
(3) #28: Additional left-turn arrow (revision of the phasing + left-turn arrow + revision of road marking)

(4) #126: To cope with intersection improvement, mainly revision of the signal phasing/timing (revision of the phasing)

(5) #25 and #118: Coordination of two intersections in the CBD (introduction of 3Es)

(6) #59 (revision of phasing) and #167 (new signal): Coordination of two intersections at the CBD fringe

(7) #201 - #206: Wireless connection between TCC and 6 intersections along NR No.1 and #167 (wireless connection)



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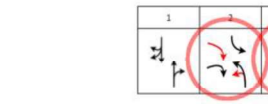
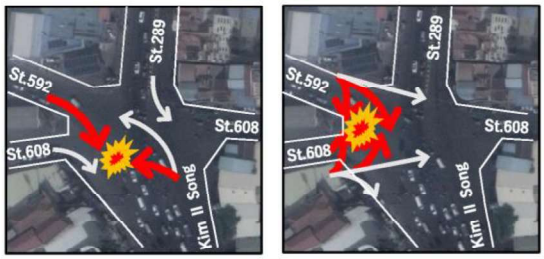
2.1 #166 Rongvong Moul Tuol Kouk (St. 289/St. 608/St. 592)

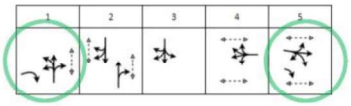
Before Pilot Project

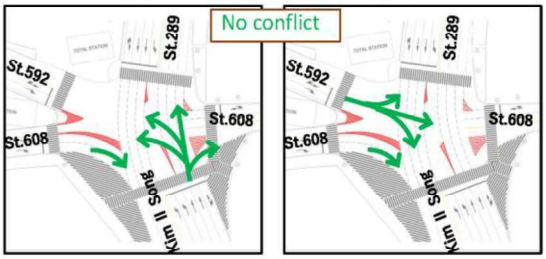




- Large intersection area
- Many traffic flow conflict even with traffic signal

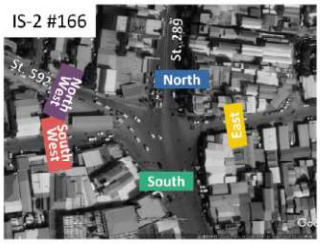
After Pilot Project

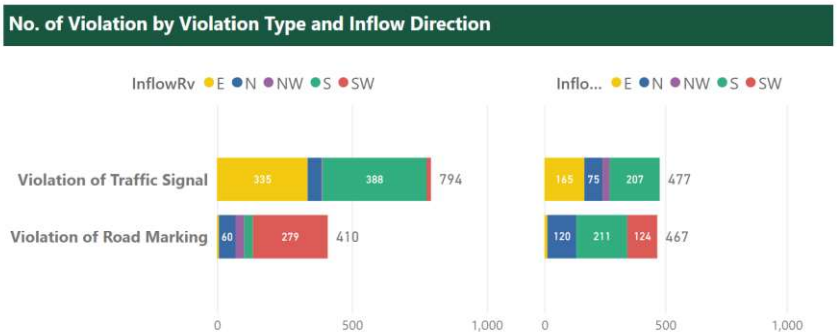




- Compact intersection area
- No traffic flow conflict after installation of traffic signal by the Pilot Project

#166 Rongvong Moul Tuol Kouk (St. 289/St. 608/St. 592)



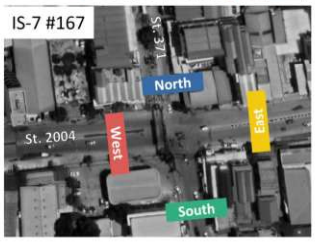


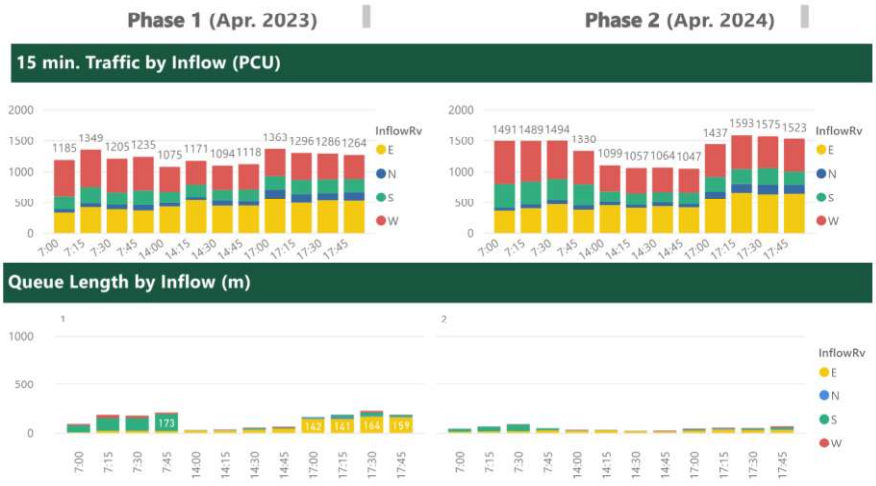
- Due to VIP traffic, major roads were often closed or traffic was restricted by traffic police.

2.2 #167 2004 (St.371/St.2004)

- Traffic signal #59 networked with TCC, and #59 West developed by DPWT as stand alone (the distance between them is about 200m).
- Between the two intersections, serious traffic jams occur during peak hours.
- Factors are (1) there is no road marking or it is not clear. (2) traffic rules such as traffic signals are not obeyed, and (3) large buses and trucks enter the local road of St. 371
- TCC plans to adopt a wireless connection system (between #59 and #59 West).

#167 2004 (St.371/St.2004)





2.3 Conduct of 1st Pilot Project Traffic Safety Campaign

2.3.1 Outline of the Campaign

(1) Age Group: 15 – 39 Years Old
(2) Vehicle: Motorcycle, Tuktuk, Car and Pedestrian
(3) Catchphrase: FOLLOW ROAD TRAFFIC RULES AT SIGNALIZED INTERSECTION FOR YOUR SAFE AND SMOOTH DRIVE
(4) Date: 26 – 28 March 2024
(5) Location: 6 Pilot Project Intersections
(6) Tools: Banner, Flyer, Video clips, Participation of Student Volunteers from CRC and Phnom Penh Traffic Police
(7) Hopefully 2 times a year done by Cambodian themselves
For example: Before Khmer New Year (End of March) and Before Pchum Ben (End of September)

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2.3.2 Target Age Group and Vehicles

(1) Age Group: Mainly 15 – 39 Years Old (Car, Tuk-tuk and Motorcycle Drivers)

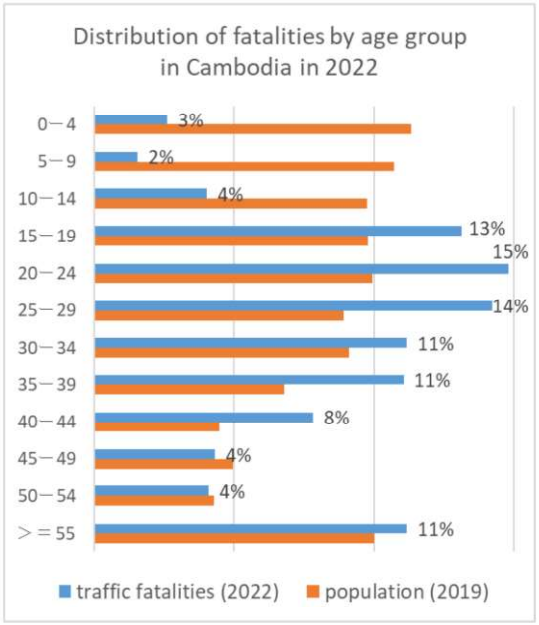
Primarily, the target age group is young people (aged 15 to 39), who have a high traffic-related death rate.

(2) Vehicles, etc.: Motorcycles, Cars and Tuk-tuk including Pedestrian

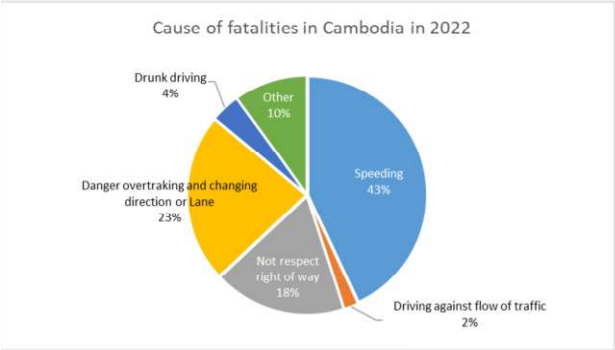
The target vehicle types will mainly be motorcycles, which account for approximately 80% of traffic accidents, and private cars, which account for 5%; however, consideration will also be given to pedestrians (which account for around 8% of accidents).

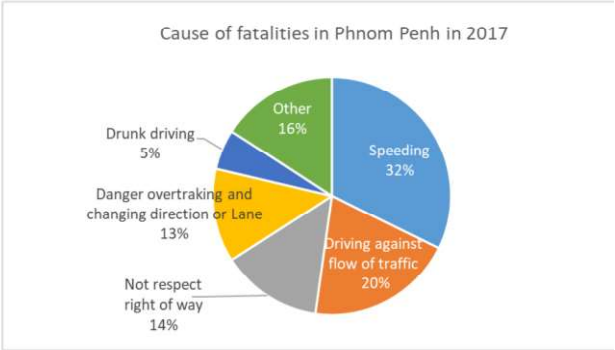
Source: RCVIS (Cambodia) and PPTP (Phnom Penh)

Figure A Fatalities by Age Group in 2022



Causes of Traffic Fatalities (2017 and 2022)





The most common cause of accidents in Phnom Penh is speeding, but accidents caused by ignoring traffic rules, such as driving the wrong way, reckless overtaking, and not staying in one's lane, account for about half of all accidents.

Source: RCVIS (Cambodia) and PPTP (Phnom Penh)

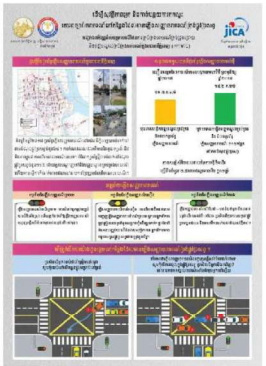
2.3.3 Campaign Tools

Tool 1: Banner, Flyer and Education Materials

Tool 2: Design of Video Clips for SNS (facebook of Phnom Penh Capital Hall)

Banner (Installed by CRC Youth Volunteers)

Flyer (A5 size)

Front 

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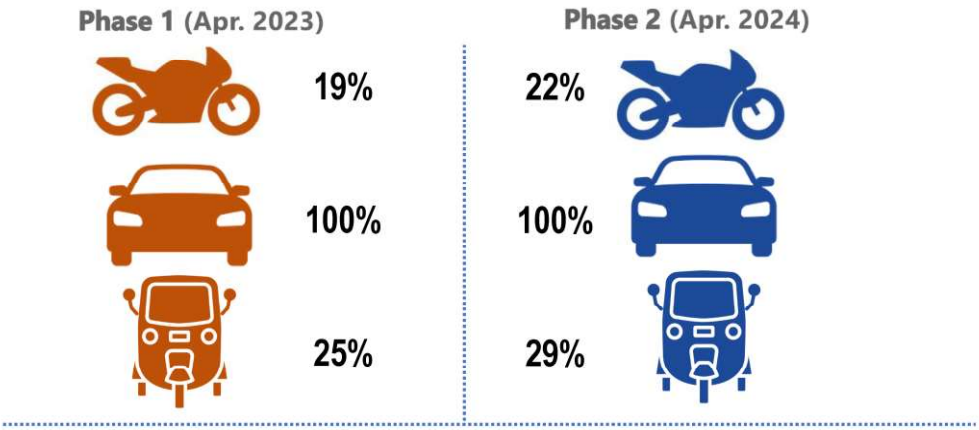
2.3.4 TYPE OF VEHICLE WITH DRIVING LICENSE



Among all motorbike drivers, ONLY 19% hold a valid driving license, while 100% of car drivers have a driving license and 25% of Tuk Tuk or Remork drivers have a driving license at pre-test and this number is similar at the post-test.

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2.4 Conduct of 2nd Pilot Project Traffic Safety Campaign

- In order to sustainably conduct traffic safety campaigns twice a year in the future, PPTMTC carried out a second traffic safety campaign from September 26th to 28th, 2024 (just before Pchun Ben).
- The concept is basically the same as the first traffic safety campaign, but the participation of the traffic police and CRC student volunteers was reduced, and the tools in the first campaign were effectively utilized, which minimized costs.
- The two video clips developed and posted on PPCH's Facebook page. Phnom Penh City Hall had about 500,000 Facebook followers; and there were 75,000 views of PPTMTC's Video 1 and 46,000 views for Video 2.

Note: Video 1:
https://www.facebook.com/share/v/1BDefkc6jW/?mibextid=WC7FNe

Video :2
https://www.facebook.com/share/v/1Ep7eSBUBX/?mibextid=WC7FNe

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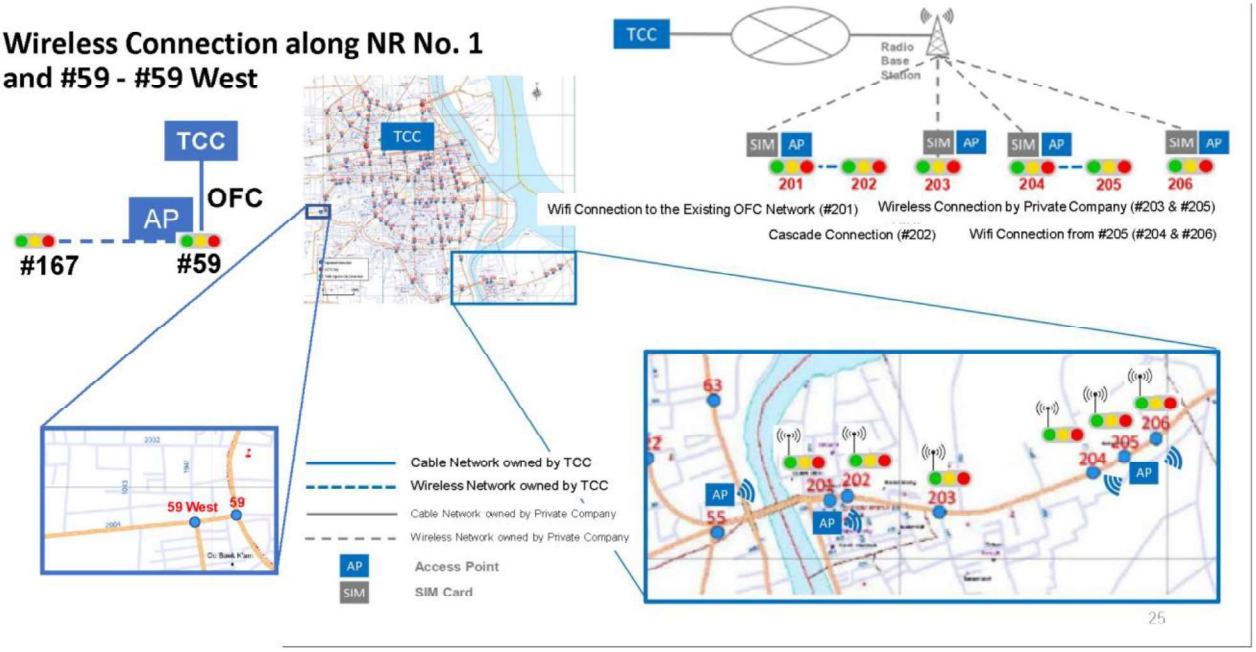
2.5 Wireless Connection

Wireless Connection along NR No. 1 and #59 - #59 West



3. Training in Japan

What was particularly memorable about this training in Japan was being able to see and hear about Hiroshima City's efforts in urban transportation by TCC staff themselves. Hiroshima City has a population of 1.2 million, and 800,000 people use public transportation daily. The city has developed a number of public transport systems, including buses, JR, private railways, LRT and AGT, in line with the characteristics and development of the urbanization in the city, and has maintained this system for a long time. The trainees learned that a balanced development of roads and public transportation is essential for urban development.

3.1 Trainees by Group

GROUP 1: January 31st to February 10th, 2024 Course Number: 201903196-J001				
No.	**Name**	**Sex**	**From**	**Position**
1	CHOU KIMTRY	M	DPWT	Deputy Director, DPWT
2	PHENG PHARINET	F	DPWT	Chief of TCC
3	PROM KAMPOUL	M	DPWT	Chief of Road Safety Office
4	KUN SOKHIM	F	PPCA's Contracted Staff	Technical Staff at TCC
5	HENG VENGLIM	M	PPCA's Contracted Staff	Technical Staff at TCC
6	KEM RAVY	M	PPCA's Contracted Staff	Technical Staff at TCC
7	UY LYSIN	M	PPCA's Contracted Staff	Technical Staff at TCC
Group 2: February 14th to February 27th, 2024 Course Number: 201903196-J002				
1	MAN KIMCHHUON	M	PPCA	Technical Staff of TCC
2	SAM PHALLA	M	PPCA	Technical Staff at TCC
3	CHEA VANDETH	M	PPCA's Contracted Staff	Technical Staff at TCC
4	PHOK UY	M	PPCA's Contracted Staff	Technical Staff at TCC
5	IM SETHA	M	PPCA's Contracted Staff	Technical Staff at TCC
6	LAK SIVCHENG	F	DPWT	Officer, DPWT

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3.1 Training Organization/Place

Target	Training Organization/Place	Contents of Training, etc.
Policy and Plan of Traffic Management in Japan	Otemachi-Marunouchi-Yurakucho (Dai-Maru-Yu) Urban Planning Council	Urban Planning and Parking Measures around Tokyo Station (Central Station in Japan)
	Tokyo Metropolitan Hall	Visit to Capital Hall in Japan (Same as Phnom Penh as the Capital Hall)
Learn Traffic Management Measures including Urban Planning in Japan	Institute for Traffic Accident Research and Data Analysis (ITARDA)	Role and Outline of ITARDA
	Traffic Control Center in Tokyo Metropolitan Police Department	Visit to Traffic Control Center
	Hiroshima City	Lecture of Public Transport System Planning, Visit to Redevelopment in Southern Hiroshima Station Plaza and Visit to Hiroshima Bus Center
	Kyoto City	Lecture for Urban Transport Planning in Kyoto City
	Basta Shinjuku	Largest Bus Terminal in Japan
Learn Japan's Cutting-edge ITS Technology	Professor OZAKI, Toyo University	Lecture on Japanese ITS technology
	Sumitomo Electric Company	Lecture for Repair of Optic Fiber Cable Cutting
Learn Japanese Culture	Tokyo Tower	Second tallest Radio Tower
	Odaiba (Commercial center in Tokyo Bay Reclamation Area)	The central commercial district of Tokyo Waterfront New City in the reclaimed land area of Tokyo Bay
	Kinkaku-ji Shrine	Japanese Shrine in Kyoto, Designated a World Heritage Site
	Hiroshima Peace Memorial Park	Hiroshima Peace Memorial Park is a Urban Planning Park established to commemorate the victims of the atomic bomb and to pray for lasting world peace.

3.2 Photos

Mr. Miyaura, Hiroshima City Hall and Mr. Matsuda, a former professor at Hiroshima University, gave a lecture on "Hiroshima City's public transportation initiatives"

Final Presentation by Group 1 as summary of the training in Japan

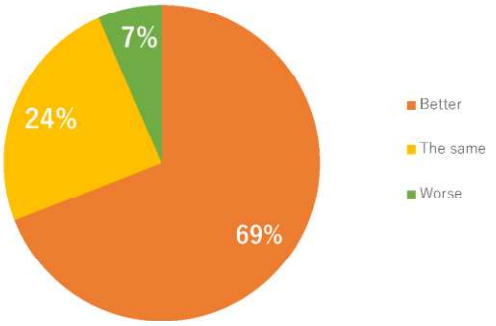
Visit to the construction site for the LRT terminal at South Hiroshima Station Plaza

Final Presentation by Group 2 as summary of the training in Japan

4. PPTMTC Pilot Project Seminar on 08 August 2024

Changes in traffic condition in Phnom Penh between 2023 and 2024

How has the traffic condition in Phnom Penh changed between 2023 and 2024? *(N=123)*



- Reasons of "Better"

  Improvement of urban transport related hard and soft components such as "Installation of infrastructure (signal, flyover, road marking or sidewalk.)" and "Conduct of traffic safety education".

About 70% of participants said the traffic situation has improved.

Output 4. Traffic Control System Expansion Plan

1. Introduction

By covering not only central Phnom Penh but also the rapid urbanized suburbs with the traffic control system, a safer and smoother traffic flow will be ensured. This will contribute to the revitalization of Phnom Penh and the improvement of the urban environment. The preconditions for considering the expansion area of the traffic control system are as follows:

(1) Urbanization has spread to approximately 220km2 in the suburban areas, and if a traffic control system were to be established in these urbanized suburban areas, it would need to cover an area 7.6 times larger than approximately 30km2 in central Phnom Penh (PP) where the current traffic control system is in place.

(2) On the other hand, the road network in suburban areas is less dense but more varied than in the central PP.

(3) The traffic control system in central Phnom Penh has been in operation for five years since it began operation in 2019, and has been operated by TCC staff without any major malfunctions, continuing to improving the traffic environment in Phnom Penh.

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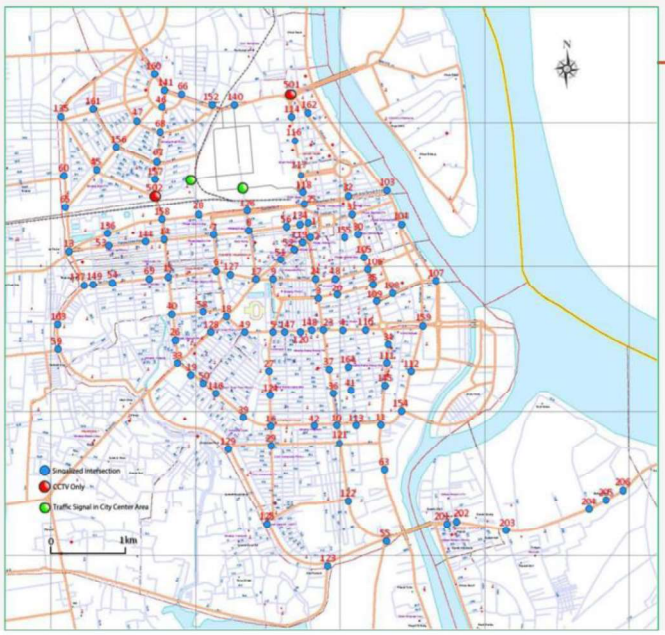
Central Phnom Penh in 2020



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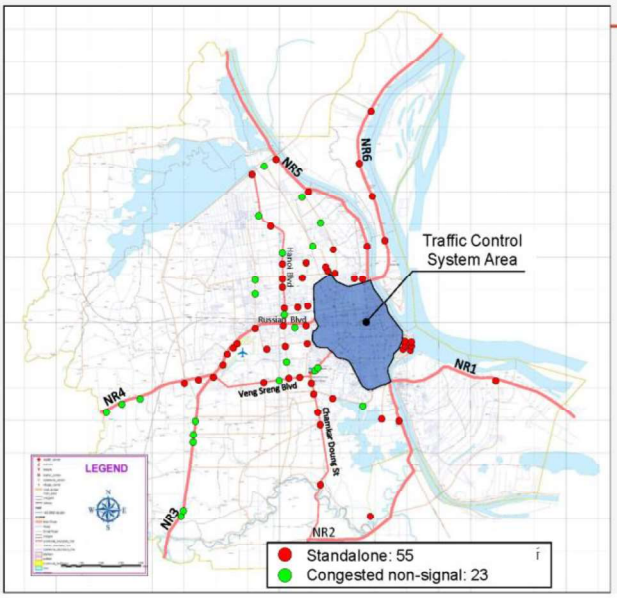
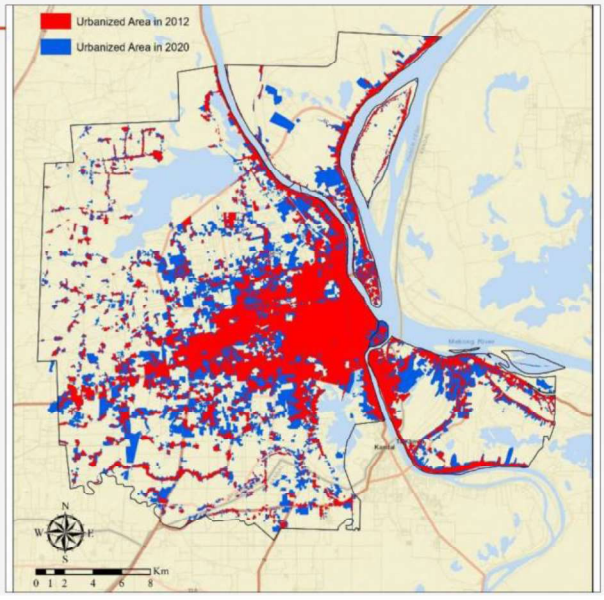
Phnom Penh Suburban Area in 2020





2. Current Conditions

2.1 Characteristics of the Suburban Area

In Phnom Penh, population growth and urbanization have been significant, with approximately one-third of the city urbanized as of 2020. Three distinct suburban areas have developed surrounding the urban core. Each of these areas has access to national roads that connect to the city center and is linked by a ring road. Given these circumstances, an increasing number of traffic signals will be required in suburban areas in the future.

The suburban areas can be classified into three regions: northern, western, and southern. The characteristics of each region are as follows:

(1) Northern Area (Major Roads: National Road 5 and 6)

- The density of intersections is low.
- Residential development is prominent.

(2) Western Area (Major Roads: Veng Sreng Boulevard, National Road 3 and 4)

- This area provides access routes from the city center to the current airport.
- This area is characterized by the intersection of significant east-west and north-south roads.

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(3) Southern Area (Major Road: National Roa

- Construction of roadways connecting to tl new airport is underway.
- The density of intersections is low.

(4) Common Characteristics of Suburban Are

- Each traffic signal operates independently
- The distance between traffic signals is considerable.
- There is no integrated road network.
- Urban development is progressing everywhere.
- Major roads serve as routes for public transportation.

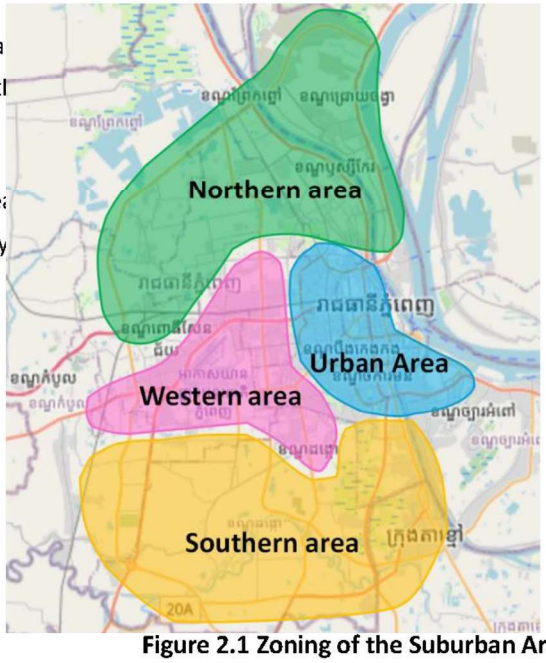

Figure 2.1 Zoning of the Suburban Area 34

2.2 Issues in the Suburban Area (Roadside Conditions)

The suburban area has different issues compared to the well-developed central Phnom Penh.

(1) Traffic Signal Lantern

There are various types of traffic signal lanterns, which can lead to confusion among drivers.

(2) Malfunction of Equipment

There are issues of malfunctioning pedestrian signals and countdown timers, and poor visibility of traffic signals.

(3) Unclear Road Marking

There are many intersections with unclear crosswalks, and yellow boxes. Road markings at most signalized intersections are unclear.

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(4) Problematic Installation of Traffic Signs and Road Marking

There are stop signs remaining at signalized intersections and traffic signs facing the wrong direction.

(5) Poor Road Conditions

There are intersections with poor drainage and intersections with very poor road conditions.

(6) Traffic Obstruction

In many points along suburban main roads, medians are open to accommodate traffic to/from narrow streets. Although this is convenient for traffic on narrow streets, many sections can be observed blocking traffic on the main road, causing congestion.

(7) Inconvenient Bus Use for Suburban Residents

The Phnom Penh City Bus System was established in 2016 and currently operates 13 routes. There are bus routes in suburban areas, mainly along major roads, but there are issues with accessibility and the environment at those stops, and measures such as bus priority signals have not been implemented, so the number of bus users is low.

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3. Signalized Intersections in the Suburban Area (As of Jan. 2024)

As of January 2024, there are 186 signalized intersections in Phnom Penh, of which 118 are in central PP and 68 are in suburban areas. DPWT plans to build 25 new signalized intersections in suburban areas where urbanization is progressing. The PPTMTC project, a JICA-TCP project that began in 2022, proposed 38 new signalized intersections. The above plans and proposals were consulted at a coordination meeting (held on January 25, 2024) inviting representatives from Khans, mainly from suburban areas, and 19 additional signalized intersections were requested. In light of the above, the PPTMTC project decided to focus on 268 signalized intersections as part of the suburban expansion of the traffic control system.

No. of Signalized Intersections by Type

Control System		Management Body	No. of Intersections	Remarks
Existing	Centrally Control	TCC/DPWT	118	109 (Central Area) 6 (Along NR No. 1) 3 (Pilot Project)
	Pre-time Setting	Public Lighting/DPWT Standalone	68	70 (Existing) 2 Relpaced by PPTMTC PP
	Sub Total		186	
Plan	DPWT		25	2021 - 2023
	JICA-PPTMTC		38	Proposed
	Requested by Khan		19	By Coordination Meeting held in 25 Jan. 2024
	Sub Total		82	
Grand Total			**268**	

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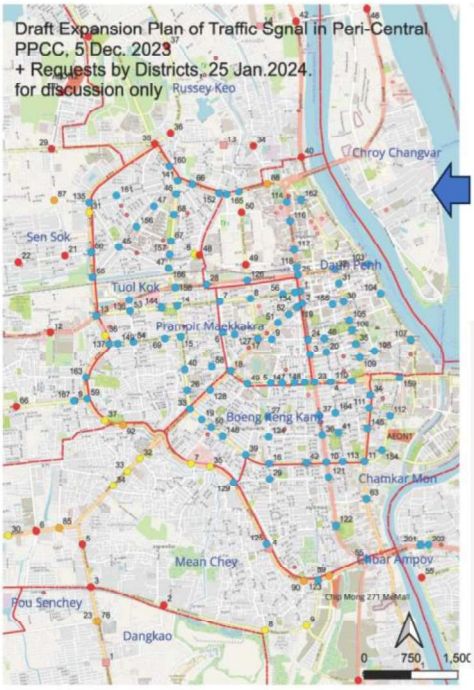
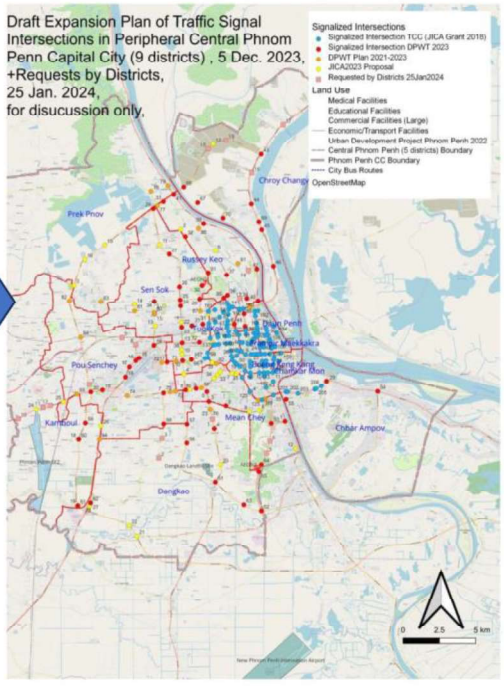


Location of Signalized Intersections of PPTMTC PLAN

(Central Phnom Penh)

(Suburban Area)



4. Traffic Control System

4.1 System Update Cycle

All products have a lifespan, and traffic control systems are no exception. The bathtub curve (Figure below) represents the life cycle of a product: a high initial failure rate, followed by a stable operational phase, and then an increase in failures due to wear and tear. The Traffic Control Center (TCC) has been in operation for five years (it was launched in 2019) and is currently stable. However, it may face performance degradation and security risks in the future.

IT systems typically require planned updates, including hardware renewals, software upgrades, and the application of security patches. However, since Phnom Penh's traffic control system lacks a clear update plan, it should consider system updates alongside plans for expansion to suburban areas.

Japan's update cycle of every five years can be a benchmark, but ideally, updates within 15 years are recommended.

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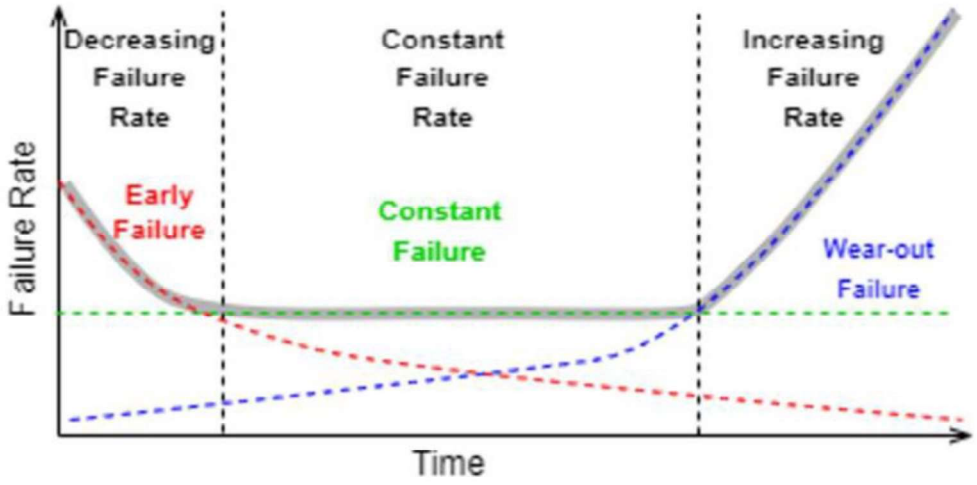

Bathtub Curve

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4.2 History and Roadmap to the Next Stage

Phnom Penh's traffic control system has been in operation for five years, from 2019 until 2024, without any major problems.

This is entirely due to the efforts of TCC staff and the support of PPCH, DPWT, PPTP, and citizens.

The lifespan of a Japan-made traffic control system is about 15 years, and the Japan-made Panasonic traffic control system in Manila, Philippines operated for 14 years from 1980 to 1994.

For these reasons, it is important to use the current Sumiden system for at least 10 years, and to renew Phnom Penh's traffic control system 15 years later, at least in 2035. This means that it is important for TCC staff to use the current system effectively for the next five years (2030).

History of the Mero Manila Traffic Control System (1981 - 2024)

PHASE	Implementation		Agency	Funding		No of	Traffic Control		Controller	Manufacturer /
	From	To	Responsible	Source	Amount	Int.	System	Country		Supplier
Planning & Design	1977	1980	TEAM PH-1							
Phase I	1980	1982	MPWH-TCC	IBRD/WB	US$5.8M	134	ATC	Japan	NEMA TSI-National	Matsushita Elec
Phase II	1984	1987	DPWH-TCC	OECF-Japan	3.86B Yen	170	ATC	Japan	NEMA TSI-National	Matsushita Elec
Phase III	1989	1994	DPWH-TEC	OECF-Japan	4.61B Yen	131	ATC	Japan	NEMA TSI-National	Matsushita Elec
Renewal of System										
Phase IV (P&D)	1993	1994	DPWH-TEC							
Phase IV (Imp.)	1998	2002	MMDA-TEC*	EFIC-AUS	US$22.8M	419	SCATS	Australia	Delta 5	AWA -Plessey
Upgrading/System Replacement										
Phase 1	2012	2017	MMDA-TEC**	Local	P295.26 M	93	Hermes	Spain	RSIM	Indra
Phase 2	2014	2018	MMDA-TEC	Local	P395.78 M	161	Cosmos	Korea	Korean LC	Keon-A Info Tech
Phase 3	2015	Terminated	MMDA-TEC	Local	P390.39 M	155	Cosmos	Korea	Korean LC	KYUNG BONG CO. LTD.
Phase 4	2017	2021	MMDA-TEC	Local	P229.00 M	48	Cosmos	Korea	Korean LC	Easy Traffic
Phase 5	2018	2024	MMDA-TEC	Local	P292.33 M	49	Cosmos	Korea	Korean LC	Easy Traffic
						506				

* Transfer of TEC Operation & Maintenance to the MMDA - Aug. 15, 1998 (Verify)
** Transfer of TEC whole office - Feb. 2003

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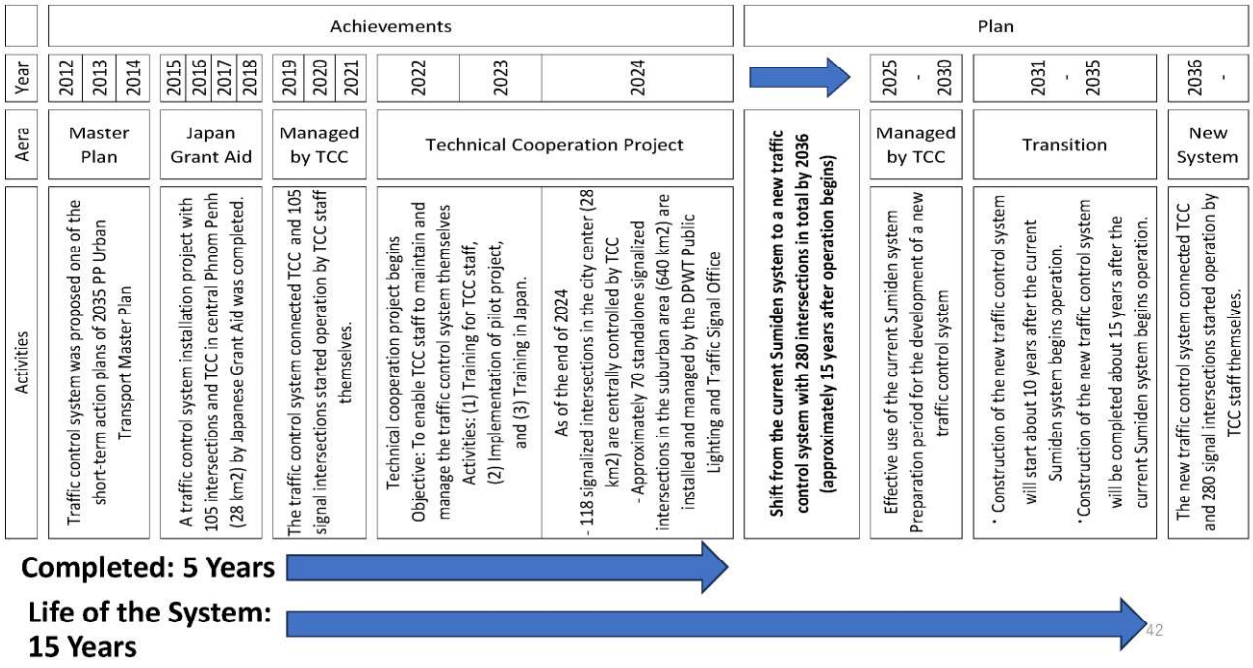
History and Roadmap to the Next Stage



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4.3 Scenarios to the Next Step to the System Update

From Current System to Other Japanese Traffic Signal Manufacturer

CASE	STAGE 1 (Until 2024)	STAGE 2 (2025 – 2030) Managed by TCC Period	STAG 3 (2031 – 2035) Transition Period	SAGE 4 (After 2035) Completion of Replacement
Under Other Signal Maker	・Current system	・If SUMIDEN will stop their service to Phnom Penh, other Japanese signal maker will be used to respond to the existing traffic control system. ・For the next 5 years, the SUMIDEN central server still will be used in the urban area. ・In the case of malfunction of spare parts in controller, it is necessary to replace whole controller of other signal maker's in the central Phnom Penh. Quality control is performed under the Japanese MODERATO system for compatibility with other companies in Japan. ・Problematic intersections in suburban areas will be replaced by the other signal maker's stand-alone traffic signals. At the same time, intersection improvement and other issues will be considered in collaboration with relevant offices under DPWT.	・Replacement to other signal maker's system from SUMIDEN's traffic control system within 3 to 5 years ・During this period, the central systems of SUMIDEN and other signal maker will coexist. ・Basically, almost all signalized intersections in Phnom Penh will be under new SUMIDEN system.	・Under new other signal maker's system

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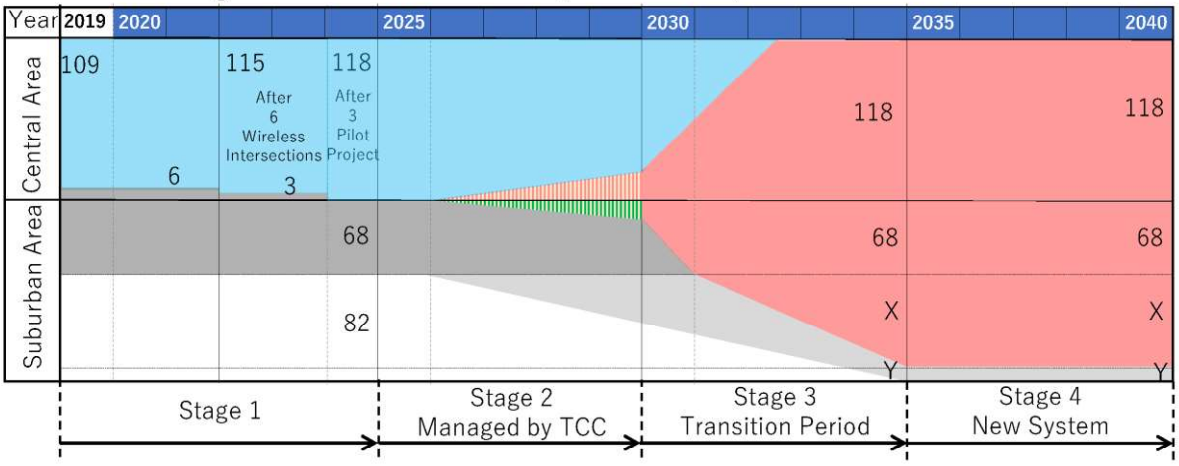
Number of Signalized Intersections (2019 2035)



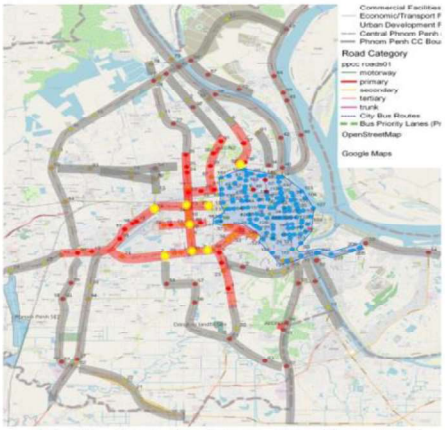
118 Centralized Control (Existing System)
268 Centralized Control (New System)
Replacement of Defective Controller
Repair/Upgrading of deteriorated intersections

68 Standalone (DPWT)
82 Planned Signalized installations

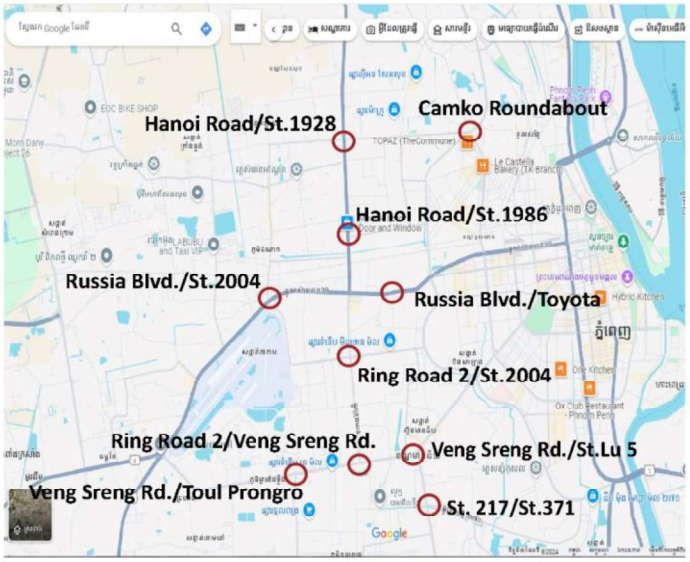
Suburban Area : 68 + X + Y = 150 intersections

4.4 Priority Area by Stage

(1) Priority Area for Improving Signalized Intersections in the Suburban Area is the rapidly urbanizing western area, focusing on major arterial roads such as Veng Sreng Blvd. and NR No. 4.



Priority Area for Improving Signalized Intersections before Upgrading



Reference: 10 Congested Intersections in the Western Suburban Area in Phnom Penh

(2) Proposed Area for Central Control by TCC after Completion of the Replacement of the Traffic Control System

In the future, the system will be extended to almost all Phnom Penh Area. This will enable to manage Phnom Penh's main arterial road traffic from the Traffic Control Center and improve traffic flow between central Phnom Penh and suburban areas.

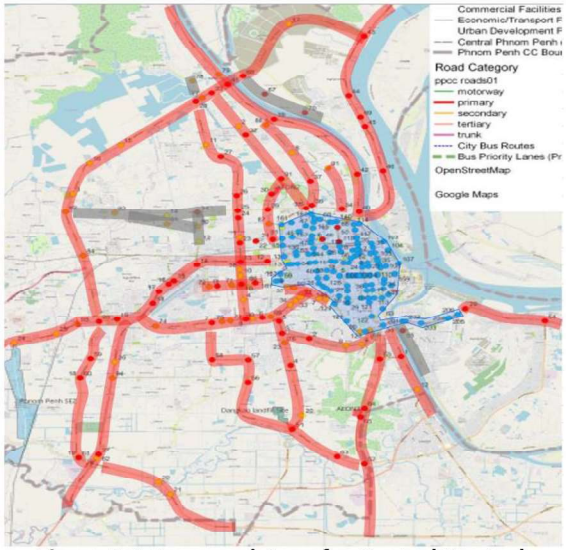


Figure 2.2 Proposed Area for Central Control by TCC after Upgrading

4.5 Signal Control Method

Traffic signal control systems can be categorized into three types: standalone, coordinated control, and area traffic control. Urban areas typically employ area traffic control systems to integrate and manage traffic across extensive regions. In contrast, suburban areas, characterized by their linear road layouts, benefit from coordinated control. Moreover, isolated signals, operating independently without coordination with neighbouring signals, do not pose significant issues in such settings. Given that suburban main roads frequently serve as public transportation routes, appropriate signal control can facilitate the smooth operation of public transit and encourage a shift from private to public transportation.

Since suburban areas typically have linear road networks, traffic flow can be effectively managed using a coordinated or standalone control system.

Table 4.1 Characteristics of each traffic signal control methods

	Standalone Non-centralized	Coordinated Control Corridor Control	Area Traffic Control Centralized
Purpose	Isolated intersection optimization	Intersections along major transport corridor	Areal Control
Control Summary	Signal controlled independently	Multiple signals under coordinated control	Area coordinated control
Requirement	Standard local controller	Controller with coordinated system functionality or centralized control	Centralized control by traffic control center (TCC)
Advantage	Low-cost for stable traffic	Effective for high-volume such as main roads	Effective for complex and dense road networks
Disadvantage	Weakness in adapting to traffic changes and uncoordinated signals	Not suitable for complex and road networks	High performance but expensive

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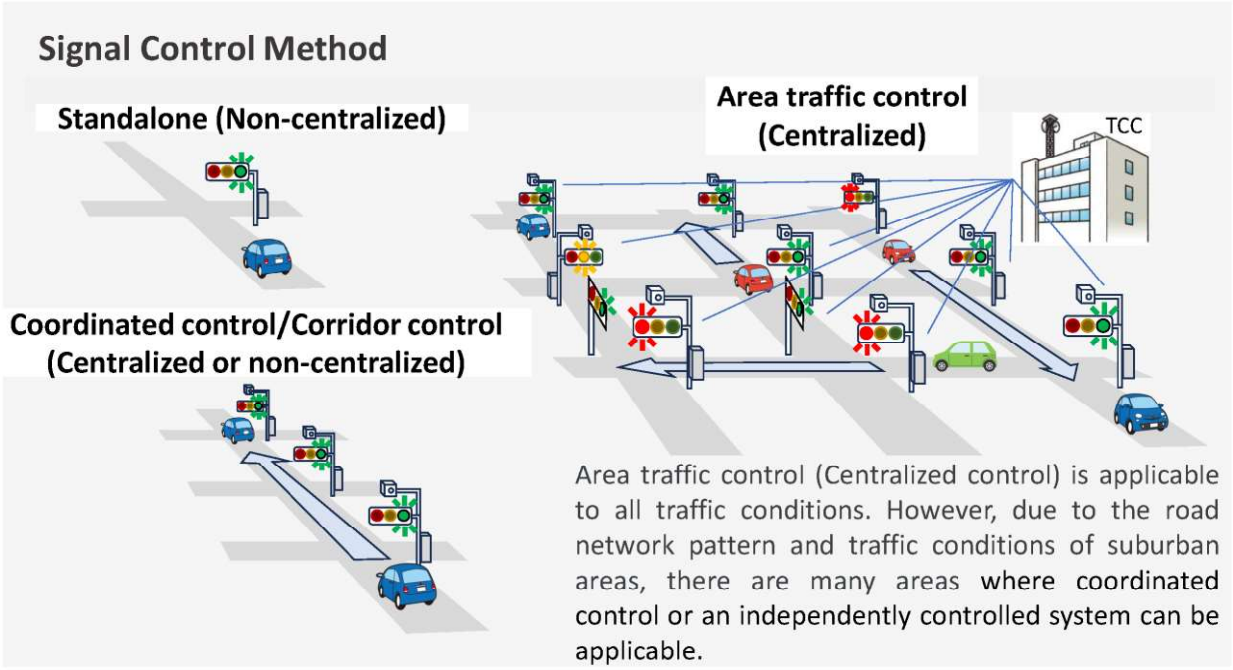

Area traffic control (Centralized control) is applicable to all traffic conditions. However, due to the road network pattern and traffic conditions of suburban areas, there are many areas where coordinated control or an independently controlled system can be applicable.

5. Maintenance Management System

5.1 Current Conditions

- Phnom Penh's traffic signal system is currently composed of two types of operation.

Centralized system of Area Traffic Control (ATC) installed in central Phnom Penh, and scattered standalone intersections located in Phnom Penh's suburban area.

The ATC system is currently managed by the TCC staff trained in the operation and maintenance of the system while the Standalone intersections are managed by Public Lighting & Traffic Signal Office (PLTSO), DPWT. Matrix of the current situation is shown in the table.

Current Situation

Operation & Management	TCC Team	Public Lighting & Traffic Signal Office (PLTSO)
System/Type of Controller	ATC-SUMIDEN	Standalone
No. of Intersections	118	68
Area / Vicinity	Central Phnom Penh	Phnom Penh Suburbs
Mother Org.	PPCA/DPWT	DPWT
Organization Status	Temporary	Regular/Permanent
Major Maintenance Equipment (Manlift, etc.)	Borrowed from PLTSO	Assigned to Unit

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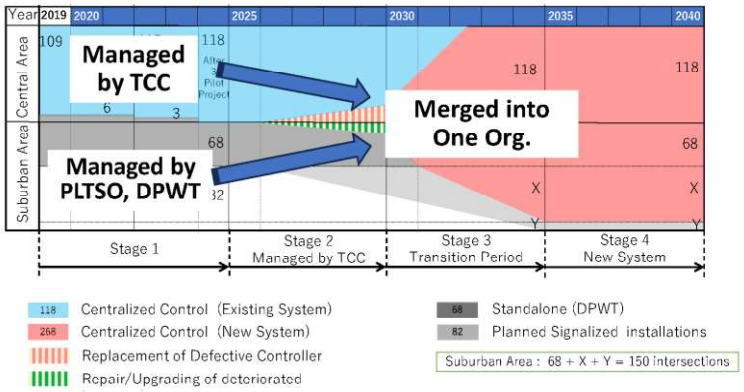
5.2 Traffic Control System Expansion Plan

- Expansion of the control system is recommended to include the future need in suburban areas. The recommendations shall include the upgrading of the existing standalone controllers and incorporating them into the system. The plan is to have only one system in Phnom Penh.



Implementation of Traffic Control System Extension Plan by One Maintenance Management Organization

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5.3 Consolidation of TCC and PLTSO

- Having a single umbrella organization is crucial for effectively managing a city's signal system. First, is because the management should have a uniform policy and directions, rules and regulations. Second, the consolidation of maintenance assets like vehicles, specialized equipment, repair tools, and office spaces minimizes duplication and additional expenses ensuring full utilization of resources.
- At present there are two groups managing the signal system with the Public Lighting and Traffic Signal Office (PLTSO) of DPWT maintaining the standalone controllers and the TCC team, also technically under DPWT, assigned in the operation and maintenance of the central coordinated signals. With the proposed expansion of signal installations to the outskirts of Phnom Penh by JICA, DPWT and Khans of the districts totaling 268 intersections, the area of operations will increase with the farthest intersection reaching 18 km from TCC office at Phnom Penh City Hall.
- The proposed future upgrading of DPWT's 68 standalone controllers together with the gradual replacement of SUMIDEN's 118 controllers, and integration of 82 future other controllers to be installed under a single system will leave only one option for the management, that is, consolidation of the two management groups into one. When the proposed expansion plan follows the strategy, the Phnom Penh Traffic Signals will be under one system and one supplier by the year 2035.

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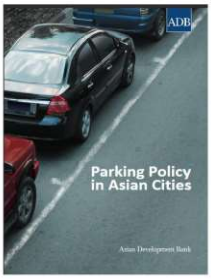
Output 5: Traffic Management Plan

1. Parking management plan



- Using parking survey result by JICA Study (2023), the parking management plan prepared and justified by feasibility analysis
- Draft parking management plan presented to PPCA/MPWT and recommendation made to MPWT to draft Parking Prakas to define the parking type/responsibilities for management.

2. Paratransit management

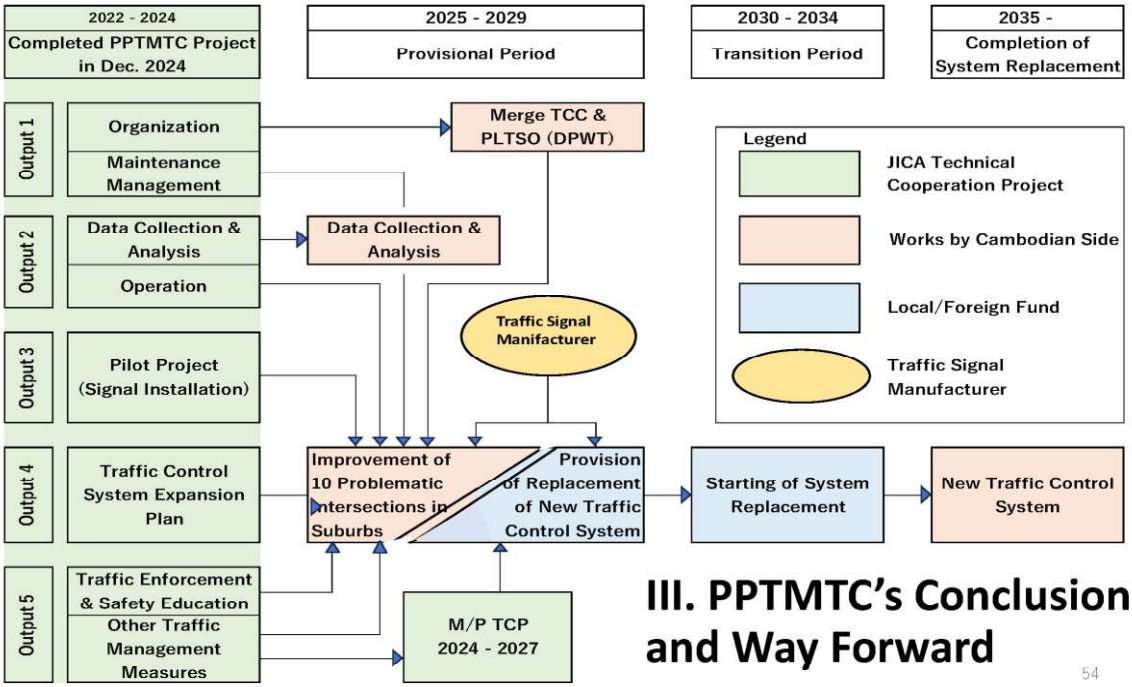
- Learning lessons from paratransit management in African countries, paratransit management scheme prepared with multiple stakeholders tasked among MPWT, PPCA, Khan, Informal workers association (IDEA) and RHS App operator(s).
- Draft scheme presented to MPWT, DPWT, IDEA and PassApp and fine-tuned.

3. Support to MPWT's Land Transport Law

- As part of drafting Parking Management Plan, concept of Parking Law prepared and presented to MPWT. Parking Law in Japan also shared with MPWT.
- A separate meeting with MPWT discussed draft Land Transport Law and recommendations made: Inclusion of (i) parking and para-transit management and (ii) overall institutional arrangement including establishment of Public Transport Authority and Public Administrative Enterprise and (iii) overall financial arrangement and subsidy policy, in the said law.

4. Revitalization of CBA

- CBA successfully improved ridership at 26,000 pax per day by May 2024 and reached to the similar number recorded before COVID-19.
- Multiple efforts made by CBA contributed to this increased ridership, including improved network and service, PR activities, fleet and driver management.
- CBA also generated significant revenue from non-passenger business including advertisement and bus wrapping.
- CBA continue to seek for other business opportunities following JICA's recommendation including shuttle services for company and school.



III. PPTMTC's Conclusion and Way Forward

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Project Design Matrix (1)

Project Design Matrix			
Narrative Summary	**Objectively Verifiable Indicators**	**Means of Verification**	**Achievement**
Overall Goal	1. Travel speed of the main road after the project increases by 8% (*1) compared to before the project. Note: Target corridors are selected before the Pilot Project.	1. Travel speed survey (Daily Average along 3 Major Corridors in the Phnom Penh Central Area)	Before Pilot Project: 13.3km/h. After Pilot Project: 13.2km/h. (decreased by 0.8%) (*4)
Sustainable urban transport environment is formed through effective operation of the traffic control system.	2. Number of interviewees who answered "Better" for the comparison traffic conditions between 2023 and 2024. Note: Interviewees are from the participants in the PPTMTC Seminar held on 08 August 2024.	2. Questionnare to PPTMTC Seminar participants of government agencies and citizens	69% of participants respond to the questionnare said "Better".
Project Purpose	1. Target Availability of the Traffic Control System (Key Performance Indicator: KPI) sets by 95% (*2). 2. Results of the traffic data analysis at major intersections are summarized in the monthly report. 3. Number of traffic violators decrease by 8% (*1). Note: Target major intersections was determined before the Pilot Project.	1. TCC Monthly/Annual report	Before PPTMTC Training: 83.24% After PPTMTC Training: 94.37% (Increased by 11.2%)
Traffic management measures including traffic safety measures in Phnom Penh is improved through strengthening capacity of operation and maintenance of traffic control system.		2. Traffic Volume Monitoring Report in Evening Peak (17:30 - 18:00)	Summarized in Dashboard Data: CCTV Camera Video Image Analysis:DataFromSky
		3. Pilot Project Traffic Survey on the number of traffic offenders of Traffic Rules at Pilot Project Intersections	Before Pilot Project: 1,592 After Pilot Project: 1,256 unit: drivers/intersection/3 hours (Decreased by 21.1%) (*5)

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Project Design Matrix (2)

Outputs	1-1. A trouble list that occurred after the traffic control system started operation is developed. 1-2. Proposed maintenance system is approved by DPWT Director. 1-3. Developed manual by counterparts is approved by the DPWT Director.	1-1 Responses to Accidents to the Traffic Signal System (2018 - 2023)	Top 3 TCC activites 1. OFC related: 38% 2. Local Controller related: 19% 3. Lantern/Must-arm related: 12%
Output 1: Maintenance management system of traffic control system is established.		1-2 Maintenance Management Manual	Explain in the Maintenance Management Manual
		1-3 Maintenance Management Manual	Completed
Output 2: Capacity of TCC staff on the operation of traffic control system is strengthened.	2-1. Through the training, TCC staff are able to analyze / design / repair problematic intersections by themselves. 2-2. Target score of the evaluation test for TCC staff (55 points) is achieved (*3). Note: Target score was decided by experts and counterparts before Pilot Project. 2-3. TCC staff can repair quickly at cutting OFC by themselves	2-1 TCC Monthly Report and Pilot Project Handbook	Perform TCC Staff's Activities through PPTMTC Training and Pilot Project
		2-2 Evaluation test results of PPTMTC Training (before and after).	Before Training: 21.0 points After Training: 57.2 Points (Target Score is 55 points)
		2-3 TCC Monthly Report	TCC staff can repair OFC problems using Pickup truck, Fusion splicer and OTDR.
Output 3: Capacity to design traffic signals is strengthened through the implementation of pilot projects for traffic signal improvement.	3-1. TCC staff can select the intersections which need revision of traffic control system design by using evaluation criteria developed by themselves. 3-2. A pilot project is implemented and the queue length at the target major intersections are reduced by 8% (*1). 3-3. The counterparts take the lead in compiling pilot project handbook, which explains the procedure from planning to project evaluation.	3-1 Pilot project Work at Site and Pilot Project Handbook	Completed
		3-2 Intersection queue length survey results (Average Queue Length of each Inflow)	Before Pilot Project: 40m After Pilot Project: 34m (Decreased by 15.4%) (*6)
		3-3 Pilot Project Handbook	Completed

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Project Design Matrix (3)

Output 4: Capacity of the relevant staff to traffic control in PPCA, DPWT and TCC staff to develop the expansion plan of traffic control system is strengthened.	4-1. Counterparts can analyze the base data for the development of traffic control system extension plan such as urbanization in Phnom Penh and traffic situation at intersections where traffic signals are needed. 4-2. Traffic control system expansion plan is approved by the DPWT Director.	4-1 Pilot Project Work and Traffic Control System Expansion Plan	Completed
		4-2 Approve by the DPWT Director by December 2024	Completed
Output 5: Capacity of urban transport related organizations on traffic management measures is strengthened towards enhancement of the project sustainability.	5-1. Implementation training on traffic control is carried out 2 times or more. 5-2. Traffic safety enforcement and a traffic safety education manual are developed and approved by the traffic police. 5-3. Workshops / seminars are held 2 times or more.	5-1 Training	Completed 1st Training: October 2022 from PPTMTC Experts and SUMIDEN Engineers 2nd Training: January 2024 from SUMIDEN Engineers
		5-2 Traffic Enforcement and Traffic Safety Education Manual	Completed
		5-3 Workshops/Seminars	Completed 1st Seminar: Hold in 8th August 2024 2nd Seminar: Joint Seminar with NR No. 5 Road Safety TCP Team hold in 03 December 2024

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