

**Implementation Support and Follow-up
for
Knowledge Co-Creation Program
“Practical Technology on Intelligent
Transport Systems (ITS)”**

**Final Report
Summary**

February 2022

**Japan International Cooperation Agency
(JICA)**

**Nippon Koei Co., Ltd.
Hanshin Expressway Company Limited**

IM
JR
22-047

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Abbreviations

Abbreviation	Full Name
AI	Artificial Intelligence
DUR	Department of Urban Road
ETC	Electronic Toll Collection
EV	Electric Vehicle
EXAT	Expressway Authority of Thailand
FCTA	Federal Capital Territory Administration
GARBLT	General Authority of Road, Bridge and Land Transport
ICT	Information Communication Technology
ITARDA	Institute for Traffic Accident Research and Data Analysis
ITS	Intelligent Transportation Systems
JARTIC	Japan Road Traffic Information Center
JICA	Japan International Cooperation Agency
KCCA	Kampala Capital City Authority
KeNHA	Kenya National Highway Authority
KURA	Kenya Urban Roads Authority
LAMATA	Lagos Metropolitan Area Transport Authority
MaaS	Mobility as a Service
MHI	Mitsubishi Heavy Industry
MMDA	Metropolitan Manila Development Authority
MOD	Ministry of Defense
MOI	Ministry of Interior
MOT	Ministry of Transport
RFID	Radio Frequency Identifier
SATREPS	Science and Technology Research Partnership for Sustainable Development
UNDP	United Nations Development Program
VICS	Vehicle Information and Communication System
5G	5 Generation

1 Introduction

1.1 Background and Objectives

Since 2013, Japan International Cooperation Agency (hereinafter referred to as “JICA”) has outsourced the work of conducting a training program on ITS, Knowledge Co-Creation Program “Practical Technology on Intelligent Transport Systems (ITS)” (hereinafter referred to as “training”) to the Institute of Industrial Science, University of Tokyo (hereinafter referred to as “University of Tokyo”), and many trainees have participated so far.

From the countries participating in the training and the number of trainees, it can be said that the attention and interest in ITS technology is increasingly becoming high, and the knowledge of the trainees has improved remarkably with each training session. Furthermore, customization according to the situation of each country for ITS maintenance, operation and maintenance is indispensable, and the importance of follow-up after the trainees return to their countries is increasing in order to enhance the training effect.

The consulting service supports the implementation of the training and conducts the follow-up activities after the training. It also includes the research activities on ITS on ITS global trends. The service aims to support to improve the quality of implementation of KCCP on ITS.

1.2 Scope of Work of Consulting Service

The main body of the work for implementation of KCCP on ITS is outsourced to the University of Tokyo. The consultant carries out their work from the standpoint of providing advice and support related to the implementation of the training, while coordinating and discussing with the parties involved in the work, which will be carried out separately.

This work supports implementation of KCCP on ITS over the three years from FY2019 to FY2021.

1.3 Major Components of Activities

This report summarizes the training implementation results for 3 years as follows;

1st Year: FY2019

From June to July 2019, ITS training in Japan was conducted for about one month by inviting trainees from each country to Japan. After the training, a field survey was conducted in Egypt, which was the target country of follow-up activity selected among the countries participating in the training in FT2019. The field survey investigated the current situation of ITS for proposal of the overall direction of ITS in Egypt and carried out the preparation of ITS seminars to be held in Cairo. In addition, the consultants participated in the ITS World Congress 2019 held in Singapore to investigate the global trends in ITS technology.

The originally planned ITS seminar in Egypt was postponed for a while due to the postponement of travel from Japan due to the influence of COVID-19), and it was finally canceled.

2nd Year: FY 2020

Due to the worldwide spread of COVID-19 that occurred in December 2019, the following training was conducted online remotely without having the trainees go to Japan as training activities in FY2020 as follows.

- (i) Follow-up activities: For the returning trainees who participated in the training in FY2019, the progress of ITS after their return was confirmed connecting with them online.
(For one day in November 2020)
- (ii) KCCP on ITS for FY 2020: The online training was conducted for 11 trainees.
(For three days in February 2021)

3rd Year: FY2021

Similar to the previous year, due to the influence of COVID-19, the online remote training was conducted in the third year as follows.









- (i) Online ITS Seminar for Kenya: the online ITS seminar was held for Kenya, which was selected from the participating countries in the previous year FY2020, with almost 50 participants in the seminar.
(For two days in October 2021)
- (ii) KCCP on ITS for FY 2021: The online training was conducted for 11 trainees.
(For seven days in November 2021)

2 Outline of KCCP on ITS FY2019

2.1 Participating Trainees

The following eight trainees participated in KCCP on ITS FY2019. The trainee list is shown below.

Table 2-1 Participating Trainees in KCCP on ITS FY2019

		Name / Country		Organization
1		Mr. Mohamed Refat	Egypt 	Engineer responsible for axial loads and land transport General Authority for Roads, Bridges and Land Transport (GARBLT)
2		Mr. ENNIM Kobina Bortsie	Ghana 	Principal engineer, planning and development, Accra Department of Urban Road (DUR)
3		Mr. SHARIFF Ali Abdulrahman	Kenya 	Director of Operations, Transport County Government of Mombasa
4		Mr. ACHI Nneka Martha	Nigeria 	ITS Officer, Bus Services Lagos Metropolitan Area Transport Authority (LAMATA)
5		Mr. ALI Naiz	Pakistan 	Director ITS, Transport & Mass Transit Department Sindh Mass Transit Authority
6		Ms. BIRUNG Rachel Malupeng	Philippines 	Engineer II, Traffic Engineering Center – Metropolitan Manila Development Authority (MMDA)
7		Ms. CHAIKASETSIN Sruangsaeng	Thailand 	Civil Engineer, Practitioner Level, Bureau of Highway Safety Department of Highways
8		Ms. SSENYONJO Abudallah	Uganda 	Supervisor Electrical Services, Kampala Capital City Authority

(Source : JICA Study Team)

2.2 Program Schedule

The KCCP on ITS FY2019 was conducted in Japan by inviting trainees from June 23 to July 19, 2019. The program schedule is shown below.

Table 2-2 Program Schedule for KCCP on ITS FY2019

Date	Time	Program	Presenting Organization
6/23 (Sun)		Arrival in Japan	
6/24(Mon)	10:00 – 12:30	Briefing	JICA
	13:30 – 14:45	Program Orientation	JICA
	15:00 – 15:45	JICA’s Cooperation of ITS	JICA
6/25(Tue)	9:30 – 11:00	ITS Stakeholders	Tokyo University
	11:10 – 11:55	ITS Outline	Tokyo University
	13:30 – 14:15	ITS Outline	Toyo University
	14:30 – 16:15	ITS Master Plan	Nippon Koei Co., Ltd.
6/26(Wed)	10:00 – 14:20	Country Report Presentation	JICA
	14:45 – 16:15	ITS Japan	ITS Japan
	16:25 – 17:10	Road Asset Management	JICA
6/27(Thu)	9:30 – 11:00	Machine Engineering 1	Tokyo University
	11:10 – 12:40	Machine Engineering 2	Tokyo University
	14:00 – 15:00	Communication Frequency	Ministry of Internal Affairs and Communication
	16:30 – 17:10	Congestion Measures Using ICT	Ministry of Land, Transport and Tourism
6/28(Fri)	9:30 – 12:00	(Site Visit) JARTIC	JARTIC
	15:40 – 17:10	Information and Communications 2	Tokyo University of Science
6/29(Sat)		Holiday	
6/30(Sun)		Holiday	
7/1(Mon)	9:30 – 11:00	Land Planning 1	Tokyo University
	11:10 – 12:40	Land Planning 2	Tokyo University
	14:30 – 16:30	(Site Visit) VICS Center	VICS Center
7/2(Tue)	10:00 – 11:45	Budget/Private Fund	JICA
	13:00 – 13:55	Enterprise Support	Ministry of Economy, Trade and Industry
7/3(Wed)	9:30 – 11:00	Road Management 1	Tokyo University
	11:10 – 12:40	Road Management 2	Tokyo University Omron
	14:00 – 16:45	Group Work 1	JICA Study Team, Tokyo University and Japanese Companies
7/4(Thu)	9:30 – 11:00	Public Transportation	Ministry of Land, Transport and Tourism
	11:10 – 12:00	Traffic Safety	National Police Agency
	15:00 – 16:30	Traffic Control Center	National Police Agency
7/5(Fri)	9:30 – 11:00	Traffic Engineering 1	Tokyo University
	11:10-12:40	Traffic Engineering 2	Tokyo University
	14:00-15:20	Traffic Engineering 3	Nihon University
	15:35 – 16:25	Car Navigation	Tokyo University

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Date	Time	Program	Presenting Organization
7/6(Sat)		Holiday	
7/7(Sun)		Holiday	
7/8(Mon)	9:30-11:00	Information and Communication 1	Tokyo University
	12:45-14:00	(Site Visit) NEXCO East Traffic Control Center	NEXCO East
	15:10-17:30	(Site Visit) Nippon Signal	Nippon Signal Co., Ltd.
7/9(Tue)	10:00-12:00	(Site Visit) ITRARDA	ITARDA
	14:00-18:15	Presentations by Japanese ITS Companies	
7/10(Wed)		Travel: Tokyo → Kobe	
	14:00 – 16:00	(Site Visit) Mitsubishi Heavy Industry	Mitsubishi Heavy Industry
7/11(Thu)	8:30 – 13:00	(Site Visit) Kyoto	
	15:00 – 16:50	(Site Visit) Hanshin Expressway	Hanshin Expressway Company Limited
7/12(Fri)		Travel: Kyoto → Nagoya	
	14:20 – 16:30	(Site Visit) Nagoya Electric Works Co., Ltd.	Nagoya Electric Works Co., Ltd.
7/13(Sat)		Travel: Nagoya → Tokyo	
7/14(Sun)		Holiday	
7/15(Mon)		Holiday	
7/16(Tue)	9:30 – 11:10	Digital Map 1	Tokyo University
	11:10 – 12:40	Digital Map 2	Zenrin Data Com
	14:00 – 16:30	Group Work 2 (Preparation of Action Plan)	JICA Study Team, Tokyo University, Japanese Companies
7/17(Wed)	14:00 – 15:30	Individual Consultation	JICA Study Team
7/18(Thu)	10:00 – 14:20	Final Presentation	JICA
	14:30 – 16:00	Reception	JICA
7/19(Fri)	10:00 – 11:15	Wrap Up Meeting	JICA
	11:20 – 11:45	Closing	JICA
	12:00 – 13:00	Closing Party	JICA
7/20(Sat)		Departure from Japan	

(Source: JICA Study Team)




3 Outline of KCCP on ITS FY2020

3.1 Participating Trainees

The following ten trainees and one observer participated in KCCP on ITS FY2020. The trainee list is shown below.

Table 3-1 Participating Trainees in KCCP on ITS FY2020

		Name / Country		Organization
1		Mr. WASSWA Joel	Uganda 	Manager Traffic Management and Control, Engineering and Technical Services, Kampala Capital City Authority (KCCA)
2		Mr. BWIKA Mwinyi	Kenya 	Senior ITS Analyst, Traffic Management and Road Safety, Kenya Urban Roads Authority (KURA)
3		Ms. MAHMUD Halima	Nigeria 	Senior Planning Officer, Economic Planning Research & Statistics, Federal Capital Territory Administration (FCTA)
4		Mr. UNOGWU Onjefu	Nigeria 	Principal Technical Officer, Directorate (VIO) Head Office Mabushi Abuja, Directorate of Road Traffic Services, (FCT)
5		Mr. MOMOH Samuel	Nigeria 	2I/C Planning Research and Statistics, Planning Research and Statistics Unit, Directorate of Road Traffic Services Abuja
6		Mr. RECIO Vincent Joel	Philippines 	Project Evaluation Officer II, Traffic Engineering Center / Planning and Design Division, Metropolitan Manila Development Authority (MMDA)
7		Mr. ZIRIKANA Francois	Uganda 	Safety and Licensing Compliance Senior Engineer, Transport, Ministry of Infrastructure (MOI)
8		Mr. AZIZ Aamir	Pakistan 	Assistant Engineer, Planning and Development Department, Government of Balochistan

		Name / Country		Organization
9		Ms. TAHIRU Nadrata	Ghana 	AG. Traffic Engineer, Traffic and Development, Department of Urban Roads
10		Mr. LUEANPECH Pornnarong	Thailand 	Engineer, Operation Planning Department, Expressway Authority of Thailand (EXAT)
11		Mr. BOGE Alphonse (Observer)	Tanzania 	Road Transport Officer, Directorate of Transport Services, Ministry of Works, Transport and Communication

(Source: JICA Study Team)

3.2 Program Schedule

KCCP on ITS FY2020 was conducted online for three days from February 16 to February 18, 2021. The program schedule is shown below.

Table 3-2 Program Schedule for KCCP on ITS FY2020

Date	Time (JST)	Program	Presenting Organization
		Briefing and connection test	JICA Study Team
2/16 (Tue)	18:00 – 18:05	Opening	JICA
	18:05 – 18:20	Introduction of JICA’s Projects	JICA
	18:20 – 19:15	Orientation	JICA / JICA Study Team
	19:15-20:05	ITS Master Plan and Important Considerations for Implementation	JICA Study Team
	20:05-20:10	Break	
	20:10-20:55	Country Report and Discussion	JICA Study Team
	20:55 – 21:00	Wrap Up for 1 st Day	JICA Study Team
2/17 (Wed)	18:00-18:05	Introduction	JICA
	18:05-19:00	ITS and Roads in Japan	Tokyo University
	19:00-19:10	Break	
	19:10-20:10	Global ITS Trend	Tokyo University
	20:10-20:20	Wrap Up for 2 nd Day	Tokyo University
	20:20-20:30	Explanation about Group Work	JICA / JICA Study Team
2/18 (Thu)	18:00-18:05	Introduction	JICA
	18:05-20:00	Group Work and Discussion	Tokyo University / JICA Study Team
	20:00 – 20:05	Break	
	20:05 – 20:40	Presentations by Trainees	Trainees
	20:40 – 20:50	Supplementary Explanations	JICA Study Team

Date	Time (JST)	Program	Presenting Organization
	20:50 – 20:55	Closing	Tokyo University
		Individual Consultations after Online Training	JICA Study Team

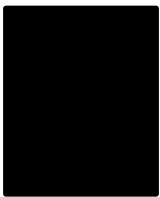

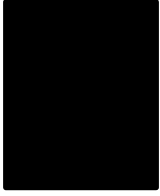

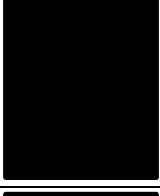

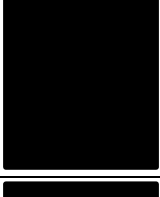

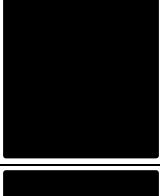

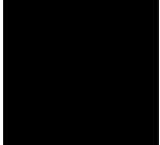

(Source: JICA Study Team)

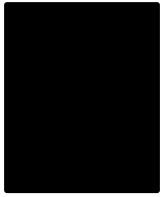

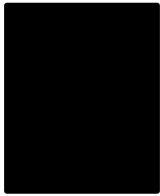

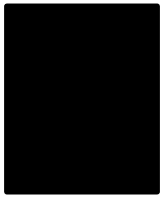

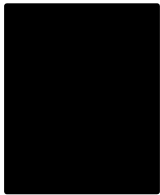

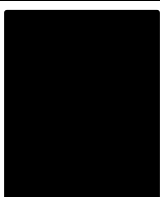

4 Outline of KCCP on ITS FY2021

4.1 Participating Trainees

The following eleven trainees and one observer participated in KCCP on ITS FY2021. The trainee list is shown below.

Table 4-1 Participating Trainees in KCCP on ITS FY2021

		Name / Country	Organization
1		Ms. ELMASRY Eman Maaty 	Planning Engineer, Planning Department, Land Transport Regulation Authority
2		Ms. AFRIYIE- DARKWA Victoria 	Principal Engineer, Planning and Development, Department of Urban Roads
3		Mr. AMZAT Mutiu Adebayo 	Security and Enforcement, Rail Transport /Enforcement, Lagos Metropolitan Area Transport Authority
4		Mr. ARUWA Joel Thomas 	Principal Technical Officer, Traffic Management, Directorate of Road Traffic Services (VIO) FCT
5		Mr. MOSSURO Olusegun Richard 	Principal Traffic Management Officer, Traffic Management, Directorate of Road Traffic Services (VIO) FCT
6		Mr. NODAMUSHIMA Gonzague 	Acting Public Transport Senior Engineer, Transport, Ministry of Infrastructure

		Name / Country		Organization
7		Ms. STEVIC-LEDENCAN Olivera	Servia 	Head of Road Safety Group, Sector for Road Transport, Roads and Road safety, Ministry of Construction, Transport and Infrastructure
8		Ms. KORNKRAI Thaksina	Thailand 	Engineer, Research and Development Division, Expressway Authority of Thailand
9		Mr. KAMOGA Abel	Uganda 	Civil Engineer, Transport Services and Infrastructure, Ministry of Works and Transport
10		Ms. BOUKHAMES Nora	Algeria 	Head officer, Division of Railway, Ministry of Transport
11		Mr. REZAGUI Riad	Algeria 	Land Transport Engineer, Land Transport Directorate, Ministry of Transport

(Source: JICA Study Team)

4.2 Program Schedule

The KCCP on ITS FY2021 was conducted online for seven days from November 15 to November 25, 2021. The program schedule is shown below.

Table 4-2 Program Schedule for KCCP on ITS FY2021

Date	Time (JST)	Program	Presenting Organization
11/15(Mon)	17:00 – 17:30	Orientation	JICA, Tokyo University, JICA Study Team
	17:35 – 18:05	Introduction of JICA’s Projects	JICA
	18:15 – 19:15	ITS Outline, ITS Technology Overview, ITS Policy	Tokyo University
	19:30-20:30	Country Report and Discussion	JICA, Tokyo University, JICA Study Team
11/16(Tue)	17:00 – 18:30	Traffic Engineering, Road Management	Tokyo University
	18:40 – 20:00	Country Report and Discussion	JICA, Tokyo University, JICA Study Team
11/17(Wed)	17:00 – 18:30	ITS Master Plan and Important Considerations for Implementation	JICA Study Team
	18:40 – 19:55	Budgeting, Private Fund Resource Group Discussion	JICA
11/18(Thu)	17:00 – 18:45	Examples of ITS Practices (1)	JICA Study Team
	18:55 – 20:00	Consultation for Action Plan Preparation	JICA Study Team
11/22(Mon)	17:00 – 18:00	Examples of ITS Practices (2) - Case Study of Traffic Information Provision Project	Nagoya Electric Works Co., Ltd.
	18:10 – 19:10	Examples of ITS Practices (3) - Case Study of Traffic Signal Project	Sumitomo Electric Industries Limited
	19:20 – 20:00	Group Discussion	Nagoya Electric Works Co., Ltd., Sumitomo Electric Industries Limited, JICA
11/24(Wed)	17:00 – 18:40	Consultation for Action Plan Preparation	JICA, Tokyo University, JICA Study Team
	18:50 – 19:50	Global Trend of Mobility	Tokyo University
11/25(Thu)	17:00 – 19:30	Presentation of Action Plan and Wrap Up	JICA, Tokyo University, JICA Study Team
	19:40 – 20:00	Closing	JICA, Tokyo University, JICA Study Team

(Source: JICA Study Team)

5 Outline of Field Survey in Egypt

5.1 Objectives

A field survey was conducted as a follow-up activity for KCCP on ITS FY2019. It aims to clarify traffic issues and ITS needs in the country and to prepare for holding an ITS seminar to share ITS technology and knowledge on ITS with ITS stakeholders in Egypt. (But holding the ITS seminar was cancelled due to COVID-19 which broke out after the field survey.)

5.2 Survey Area

Arab Republic of Egypt

5.3 Survey Period

From 24th November 2019 to 13th December 2019

5.4 Survey Itinerary

The survey was conducted according to the itinerary below.

Table 5-1 Survey Itinerary

Date	Event	Place	Remarks
11/25 (Mon)	Arrival	Cairo Airport	—
	Meeting	JICA Egypt Office	Explanation of Survey
11/26 (Tue)	Kick Off Meeting	GARBLT (General Authority of Road, Bridge and Land Transport)	Requesting cooperation, explanation of ITS Seminar and purpose of survey/background etc.
	Meeting	GARBLT Office	Discussion on details of survey and preparations for necessary procedures, etc.
11/27 (Wed)	Site Visit	Major Roads / Highways, Cairo City, etc.	Field survey on traffic situations in the city, traffic signal conditions, metro rails, bus terminals, and other related ITS facilities, etc.
11/28 (Thu)	Meeting	GARBLT Office	Discussions on details in preparation of ITS Seminar, invitations of stakeholders etc.
	Meeting	LTRA (Land Transport Regulatory Authority)	Confirmation of roles and demarcation in regard of regulator of public transport under Ministry of Transport
	Meeting	JICA Egypt Office	Reporting on the progress of survey and findings
	Site Visit	CONRAD, SEMIRAMIS	Confirmation of Seminar Preparation
11/29 (Fri)	Holiday	—	—
11/30 (Sat)	Holiday	—	—
12/1 (Sun)	Site Visit	Cairo ICT 2019	Visited the 23 rd ICT Fare and Forum, and collected information on the overseas companies e.g. Europe, USA, China, etc.
12/2 (Mon)	Meeting	MWASALAT	Visiting public bus operator and their control room of bus operation system
	Meeting	JETRO Egypt Office	Explanation of survey and ITS seminar, and request for cooperation of holding ITS seminar
	Meeting	GARBLT Office	Discussion on details in preparation of ITS

Date	Event	Place	Remarks
			Seminar
12/3 (Tue)	Site Visit	6 th OCTOBER City, etc.	Visited the field of POC on smart bus and park and ride initiatives
12/4 (Wed)	Meeting	CEDARE (Center for Environment and Development for Arab Region and Europe)	Visited the organization established jointly by UNDP and AFESD
	Meeting	Cairo ICT 2019	Follow up of 12/1 technical visit
12/5 (Thu)	Meeting	EL SWEDEY Co., Ltd.	Visited the contractor of ITS project phase 1 and discussion on ITS in Egypt
	Site Visit	HILTON, MARRIOT	Seminar preparation
12/6 (Fri)	Site Visit	Alexandria and Highways	Field survey on road condition, traffic condition and ITS facilities in Alexandria
12/7 (Sat)	Holiday		—
12/8 (Sun)	Meeting	GARBLT Office	Confirmation in detail of seminar preparation
12/9 (Mon)	Meeting	ACE (Arab Consulting Engineering)	Visited the local company and requested the cooperation on ITS Seminar
12/10 (Tue)	Meeting	NCGA (New Capital Government Authority)	Visited the organization in charge of New Capital
12/11 (Wed)	Meeting	NTRA (National Telecom Regulatory Authority)	
12/12 (Thu)	Meeting	JICA Egypt Office	Report on the result of survey
	Meeting	CONRAD Hotel	Confirmation of seminar preparation
	Departure		—

(Source: JICA Study Team)

5.5 Major ITS Facilities in Egypt

The major ITS facilities in Egypt are shown below.



Traffic Signals in the City



Traffic Signals and Congestion



Bus Operation Center



Park & Ride Trial Site



Parking Information Provision



Toll Booth

(Source: JICA Study Team)

Figure 5-1 Major ITS Facilities in Egypt

5.6 Overall ITS in Egypt

The overall situation of ITS in Egypt is summarized in the table on the next page.

Table 5-2 Overall ITS in Egypt

Category	Governing Agency	Implementing Agency	Existing ITS	Planned ITS	Related Company
Expressway including Traffic Control and Toll Collection	Ministry of Defense Ministry of Interior Ministry of Transport	National Road Company	N/A	ITS Project Phase 1 which covers almost 1000km highway all over Egypt, including traffic control system, toll collection system and weight monitoring system	El Swedey (Contractor for ITS Project Phase I)
General Road	Ministry of Interior Ministry of Transport	GARBELT City Government National Tunnel Agency	Al Azhar Tunnel Facilities (Cairo Underground)		VINCI Construction Group (Al Azhar Tunnel Facility)
Traffic Management and Traffic Signal	Ministry of Interior	Traffic Police	Traffic Signals and CCTV in the City (Cairo, Giza, Alexandria)	Traffic Signals Planned in New Capital Area	
Public Transportation (Bus)	Ministry of Transport, and Cairo Transport Department	Public Transport Operators	Bus Monitoring System (MWASALAT) and Park & Ride Trials with Payment System	Expansion of bus system by MWASALAT	AMCO Co., Ltd.
Vehicle Management	Ministry of Interior	Traffic Registration Office (General Directorate of Traffic)	RFID Tag Obligation Policy (Started from 2019)	Planned Utilization of RFID for Toll Collection, Parking Payment, Traffic Violation Enforcement	KATHREIN Solutions, GmbH (RFID)
Commercial Vehicle Control	Ministry of Transport Ministry of Interior	Logistic Companies Truck Companies	Fleet Management System by Some Private Companies		ETIT SOSFTEC GoPlus
Parking Management	Ministry of Environment	Cairo City	Parking Guidance System in Cairo		

(Source: Summarized by JICA Study Team based on the interviews)

6 ITS Global Trend Survey

6.1 Background

The survey on ITS global trend was conducted by participating in the ITS World Congress to collect the information on ITS in 2019. Since the ITS World Congress 2019 was held in Singapore, many participants were expected from developing and emerging countries such as ASEAN countries, and advanced ITS countries such as Western countries, Singapore, China and South Korea. Therefore, it was decided to participate in the ITS World Congress in Singapore 2019.

6.2 Survey Method

Since many sessions and demonstrations related to ITS were held simultaneously, the themes that are expected to have increasing needs in the future, especially in the developing and emerging countries, were selected, and each member of the study team participated in the sessions and demonstrations.

6.3 Major Focus Areas for Information Collection

The main areas for collecting information at the ITS World Congress are as follows. The focus was placed on the areas where needs are expected to increase in the developing and emerging countries.

- Traffic Control System
- Traffic Data Utilization
- Sensing, and Probe Data Utilization
- Traffic Safety
- Public Transport Assistance, MaaS
- Sharing Mobility
- Electric Vehicle
- Logistic Assistance, Fleet Management
- Assistance for Operation and Maintenance of ITS Facilities
- ITS Planning Related Matters
- Latest Communication Technology e.g. 5G
- Chinese Technology

6.4 Summary of Results of Survey

The results of the survey are summarized as follows.

<Summary of Survey Results>

- There were many exhibitions and presentations on services applicable to each field of ITS using general-purpose technologies widely used in developing and emerging countries such as cloud and smartphone applications.
- There were also many exhibitions and presentations on technologies and services that mutually link big data and services in various fields such as smart cities and MaaS.
- In the fields of ITS payment, road management, traffic management, and information provision to users, where Japan has been regarded as technologically superior, the services were widely introduced and those were used inexpensively, using the technologies such as cloud and smartphone applications.
- There are also trends to apply the latest technologies such as AI (artificial intelligence) to the field of ITS, including such purposes as road management, traffic management, autonomous driving, etc.

<Considerations for Future Training on ITS>

- It is desirable to introduce to the trainees the background and history of technologies (e.g. ETC, road management, traffic management, information provision to users, etc.) that Japan has cultivated over many years, taking into account the trends and services as introduced at the ITS World Congress in relation with recent global technical trend.
- The developing countries face the issues of lack of mechanism of information collection and implementing bodies. At this ITS World Congress, there were many technologies that enable to collect and provide road traffic information in a wide range of countries even in the developing countries using such technologies as the Internet, IoT, and AI. Those technologies are expected to be of interest to the ITS trainees in the future training.
- In addition to introducing traditional ITS technologies, it is advisable to introduce the latest technologies and services that ITS trainees will be interested in, such as MaaS, cloud, and AI. It is desirable to provide training so that the most suitable ITS can be selected and examined in the city including such latest technologies, taking into account the traffic issues, urban issues that need to be tackled and prerequisite including communication environment, laws, social acceptance of road users, etc.

7 ITS Online Seminar for Kenya (Follow Up Activity FY2020)

ITS online seminar for Kenya was held after selecting it as the country that has a potential of ITS in the future, from the countries participating in KCCP on ITS FY 2020.

7.1 Schedule and Program

Date: From 16:00 to 19:00 (JST) on the 24th and 25th October 2021

Venue: Zoom Online

Table 7-1 ITS Seminar Program for Kenya

Day 1						
Date	Time	(min)	Item	Contents	Presenting Body	Presenter
25th (Mon)			Introduction	Brief Explanation of ITS Seminar	Consultant	Mr. Hiroya Totani Senior Manager, Nippon Koei Co., Ltd.
	10:00	5	Opening	Opening Remarks 1	MOT	Prof. (Arch) Mr. Paul Maringa Principal Secretary, State Department for Infrastructure, Ministry of Transport, Infrastructure, Housing and Urban Development (MOT)
	10:05	5		Opening Remarks 2	JICA	Ms. Mari Kato Deputy Director, JICA Kenya Office
	10:10	15	Presentations	JICA's Cooperation in Transport Sector in Kenya	JICA	Ms. Caroline Nzioka Staff, JICA Kenya Office
	10:25	20		Major Issues in Transport Sector in Kenya	KURA	Eng. Mr. Silas Kinoti Director General, Kenya Urban Roads Authority (KURA)
	10:45	20		Current Situation of Urban Transport and ITS and Measures Taken	ITS Trainee from KURA	Mr. Mwinyi Bwika Senior ITS Analyst, KURA ITS Trainee Participated in JICA KCCP Program 2020
	11:05	20		Current Situation of Urban Transport and ITS and Measures Taken	ITS Trainee from Mombasa County Government	Mr. Ally Shariff ITS Director, Mombasa County Government ITS Trainee Participated in JICA KCCP Program 2019
	11:25	20		Traffic Measures Taken for Tokyo Olympic in Japan	University of Tokyo	Prof. Mr. Takashi Oguchi University of Tokyo
	11:45	20	Discussion	Free Discussion for Day1	-	All participants
12:05	5	Closing	Wrap Up	Consultant	Mr. Hiroya Totani	
Total Min		130				
Day 2						
Date	Time	(min)	Item	Contents	Presenting Body	Presenter
26th (Tue)	10:00	5	Opening	Explanation of Day 2	Consultant	Mr. Hiroya Totani
	10:05	20	Special Lecture	Traffic Signal Project in Kampala Uganda	Special Guest from Uganda	Eng. Mr. Jacob Byamukama Officer, Kampala Capital City Authority (KCCA), Republic of Uganda
	10:25	20		Smart City Project in Chennai India	Special Guest from India	Mr. Raj Cherubal Chief Executive Officer, Chennai Smart City Corporation, Republic of India
	10:45	20	Presentations	Major Activities and Projects of ITS Implemented in Kenya	NAS International from Kenya	Eng. Mr. Nicholas Airo Managing Director, NAS International Ltd.
	11:05	20		ITS Technology for Urban Highway and Important Tips for Sustainable Operation and Management	Hanshin Expressway from Japan	Mr. Takumi Uno Assistant Manager, Hanshin Expressway Co., Ltd.
	11:25	20		ITS Technology for City Traffic Management and Important Tips for Sustainable Operation and Management	Japan Traffic Management Technology Association from Japan	Mr. Koichi Tsubaki Senior Engineer, Japan Traffic Management Technology Association
	11:45	20	Discussion	Free Discussion for Day2	-	All participants
	12:05	5	Closing	Closing Remarks 1	JICA	Mr. Yoshimoto Koyanagi Manager, JICA Headquarters
	12:10	5		Closing Remarks 2	KURA	Eng. Ms. Jacinta Mwangi Director Urban Roads Planning and Design, KURA
Total Min		135				

7.2 Participated Organizations

1) Kenya Side

(Government)

- 1) Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works (MOT)
- 2) Kenya Urban Roads Authority (KURA)
- 3) County Government of Mombasa (CGM)
- 4) Kenya National Highways Authority (KeNHA)
- 5) Kenya Rural Roads Authority (KeRRA)

- 6) Nairobi Metropolitan Area Transport Authority (NaMATA)
- 7) Nairobi Metropolitan Services (NMS)
- 8) Nairobi City County Government (NCCG)
- 9) Kenya National Police
(Private)
- 10) NAS International (Major Kenyan private company which is implementing ITS projects)

2) Japan Side

- 1) JICA
- 2) University of Tokyo
- 3) Consultant
- 4) Hanshin Expressway
- 5) Japan Traffic Management Technology Association

3) Other Countries

(Special Guest Speaker)

- 1) Kampala Capital City Authority (KCCA) , Republic of Uganda
- 2) Chennai Smart City Corporation, Republic of India