

2019 INTEGRATED SUSTAINABLE SOLUTIONS FOR SMART CITIES CAPACITY BUILDING WORKSHOP



Integrated Sustainable Solutions for Smart Cities Capacity Building Workshop

Specially designed for urban actors and decision makers in line with the smart growth for urban development. This capacity building workshop offered a unique opportunity to practice knowledge transfer and to exchange best practices on smart city development especially on innovative ideas to improve existing urban infrastructure. Through this programme, participants were given a chance to think about how to map strategies and policies via study visit and group discussions with other city members as well as partner organizations.

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INTRODUCTION

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ORGANIZERS



CityNet Secretariat

CityNet is the largest association of urban stakeholders committed to sustainable development in the Asia Pacific region. Established in 1987 with the support of UNESCAP, UNDP and UN-Habitat, the network of cities has grown to include 154 municipalities, NGOs, private sector and research centers. CityNet connects actors, exchange knowledge and build commitment to more sustainable and resilient cities. Through capacity building, city-to-city cooperation and tangible projects, we help our members respond to Climate Change, Disaster, Sustainable Development Goals (SDGs) and rising Infrastructure demands.



Seoul Metropolitan Government (SMG)

Seoul Metropolitan Government (SMG) is the administrative organization of the city of Seoul. Seoul is the capital city of the Republic of Korea and has been the center of the country throughout its long history from prehistoric era to the present day. In addition, in just five decades, Seoul has seen its population increase by 43.3 percent and income soaring by 1,389 percent. Along with this fast and tremendous development of Seoul, there were strenuous efforts to tackle urban challenges. With those efforts, Seoul is now one of the most prosperous cities in the world. Nowadays, Seoul Metropolitan Government is supporting other countries to achieve sustainable development by sharing their own experiences and technologies.



UN ESCAP

The Economic and Social Commission for Asia and the Pacific (ESCAP) serves as the United Nations' regional hub promoting cooperation among countries to achieve inclusive and sustainable development. The largest regional intergovernmental platform with 53 Member States and 9 associate members, ESCAP has emerged as a strong regional think-tank offering countries sound analytical products that shed insight into the evolving economic, social and environmental dynamics of the region. The Commission's strategic focus is to deliver on the 2030 Agenda for Sustainable Development, which is reinforced and deepened by promoting regional cooperation and integration to advance responses to shared vulnerabilities, connectivity, financial cooperation and market integration.



Seoul Human Resource Development Center (SHRDC)

Established in 1962, the Seoul Human Resource Development Center (SHRDC) is an institute to provide training programs as well as promotion and recruitment exams for the public officials of the Seoul Metropolitan Government and its 25 autonomous districts. The best practices and policies of Seoul have been developed into training programs not only for the benefits of public officials in Seoul but for all global cities. As the Asian Center, the SHRDC had run 13 training programs for approximately 200 public officials from cities in the Asian region, contributing to the development of good administrative practices while promoting cross-border cooperation.

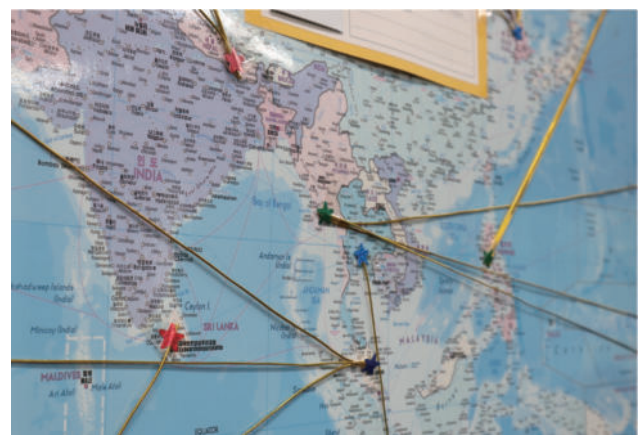
WORKSHOP OVERVIEW

BACKGROUND

Asia Pacific is the world's fastest urbanizing region, and the rate of population growth in Asian cities is very rapid. However, various areas of urban development is still needed to meet the needs of heavily growing population, and many of Asian cities challenges.

In 2019, through the Urban SDG Knowledge Platform best practices, CityNet received a request for having a capacity building workshop on Smart Cities and ICT Development solutions. In addition to that request, CityNet ran a survey targeting CityNet members to understand which specific topics were their priorities. The workshop connected urban professionals to discuss best practices and challenges implementation problems in Asia Pacific region, exchange innovative practices and explore potential solutions to the problems raised.

The workshop, staged by Seoul Human Resource Development Center and the Urban SDG Knowledge Platform partners (CityNet, UNESCAP and SMG), took place from August 18th - 25th, 2019. Specifically designed for urban practitioners and decision makers from rapidly growing contexts, the workshop offered discussion with urban actors for sustainable policy making and an opportunity to strategize on a new agenda for urban development.



LEARNING OBJECTIVES

By the end of the workshop, participants were able to better understand Smart City system and ICT development, concept, design and implementation; foster cooperative relation between Seoul and CityNet member cities by sharing and transferring knowledge, technology and information on smart city; understand challenges from members' cities on implementing best practices in the Asia Pacific region; analyze problems with other city leaders and find out solutions to develop smart city policies for rapidly developing cities and lastly, with action plan and SWOT analysis, understand any current smart city development performance and contemplate how to enhance smart city policy strategies as per cities.

PARTICIPANTS



Muhammad Ridha

COUNTRY : Indonesia

CITY / ORGANIZATION : Banda Aceh Municipality

POSITION : Head of Economic & Cooperation Division

DEPARTMENT : Economic & Cooperation Division

EXPERTISE AND INTEREST : Making the policies and initiating city-to-city cooperation



Abd Aziz Bin Abd Rahman

COUNTRY : Malaysia

CITY / ORGANIZATION : Kuala Lumpur City Hall

POSITION : Deputy Director

DEPARTMENT : Licensing & Petty Traders Development Department

EXPERTISE AND INTEREST : SME business, NGO



Mohd Adli Amir

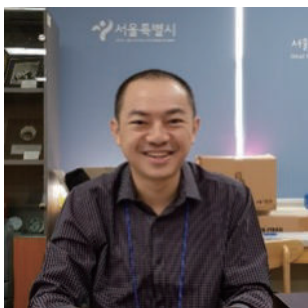
COUNTRY : Malaysia

CITY / ORGANIZATION : Kuala Lumpur City Hall

POSITION : Senior Town Planning Officer

DEPARTMENT : Enforcement Department

EXPERTISE AND INTEREST : Town management and implementing enforcement action



Tan Lin Hai

COUNTRY : Malaysia

CITY / ORGANIZATION : City Council of Penang Island

POSITION : Architect

DEPARTMENT : Building Department

EXPERTISE AND INTEREST : Architectural sustainable development

PARTICIPANTS



Aung Myint

COUNTRY : Myanmar

CITY / ORGANIZATION : Yangon Region Government

POSITION : Member

DEPARTMENT : Transportation Department, Yangon Region Transport Authority

EXPERTISE AND INTEREST : Road Transport, Transportation System, Urban Transport, and Road Safety



Myo Thaw

COUNTRY : Myanmar

CITY / ORGANIZATION : Yangon Region Government

POSITION : Member / Advisor

DEPARTMENT : Transportation Department, Yangon Region Transport Authority

EXPERTISE AND INTEREST : Mechanical, Electronical, IT, Transportation



Than Win

COUNTRY : Myanmar

CITY / ORGANIZATION : Yangon Region Government

POSITION : Member / Advisor

DEPARTMENT : Transportation Department, Yangon Region Transport Authority

EXPERTISE AND INTEREST : ITS, Traffic control center, Urban Planning



Bhagawan Aryal

COUNTRY : Nepal

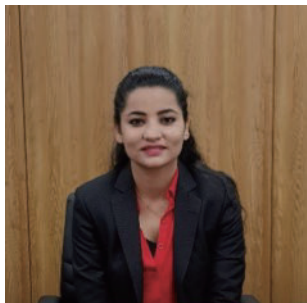
CITY / ORGANIZATION : Hetauda Sub-Metropolitan City

POSITION : Chief Administrative Officer

DEPARTMENT : Chief of the Organization

EXPERTISE AND INTEREST : Urban management, especially waste management

PARTICIPANTS



Pramila Parajuli

COUNTRY : Nepal

CITY / ORGANIZATION : Kathmandu Metropolitan City

POSITION : Architect / Section Chief

DEPARTMENT : Environment Management Department

EXPERTISE AND INTEREST : Design, Sustainability, Urban Planning, and Environment management



Raju Maharjan

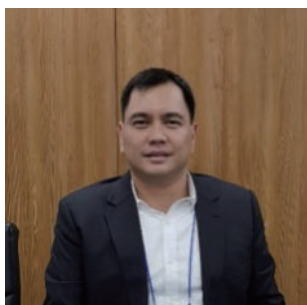
COUNTRY : Nepal

CITY / ORGANIZATION : Lalitpur Metropolitan City

POSITION : Aide to the Mayor

DEPARTMENT : Mayor's Secretariat

EXPERTISE AND INTEREST : Components of smart city and how to materialize it



Francis Anthony Sandejas Garcia

COUNTRY : Philippines

CITY / ORGANIZATION : City of Balanga

POSITION : Mayor

DEPARTMENT : City Mayor's Office

EXPERTISE AND INTEREST : Smart City



Marilen Zabala Alonzo

COUNTRY : Philippines

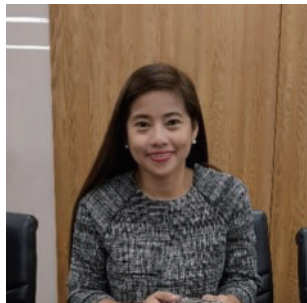
CITY / ORGANIZATION : City of Balanga

POSITION : Department Head

DEPARTMENT : City Assessor's Office

EXPERTISE AND INTEREST : Civil engineering knowledge and real property appraisal

PARTICIPANTS



Nenette Bugay Santos

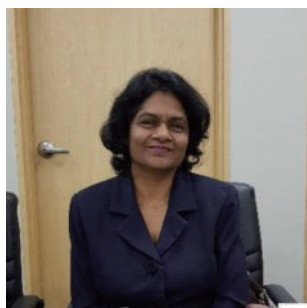
COUNTRY : Philippines

CITY / ORGANIZATION : City of Balanga

POSITION : Department Head

DEPARTMENT : Management Information Services Office

EXPERTISE AND INTEREST : Smart Solution, Leadership and Management



Subasing Arachchige Kusum Subasinghe

COUNTRY : Sri Lanka

CITY / ORGANIZATION : Colombo Municipal Council

POSITION : Deputy Director

DEPARTMENT : Traffic Design and Road Safety Division

EXPERTISE AND INTEREST : Traffic engineering



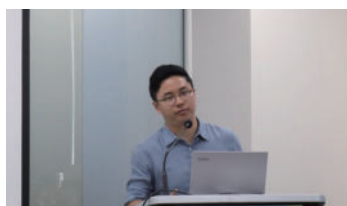
LECTURERS



Curt Garrigan

Chief of Sustainable Urban Development Section
Environment and Development Division
United Nations Economic and Social Commission for Asia and the Pacific

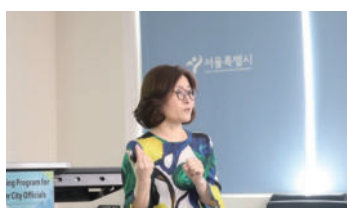
Chief Curt Garrigan has served in the Sustainable Urban Development Section for the Environment and Development Division of UN ESCAP. Before joining UN ESCAP, Mr. Garrigan served as Cities and Buildings Programme Manager for UN Environment based in Paris, France. He led UN Environment's efforts to plan, along with major building sector stakeholders, the first 'Buildings Day' at COP21, and to launch the Global Alliance for Buildings and Construction, which has mobilized 24 countries and more than 70 organisations to scale up building sector climate actions. He also coordinated UN Environment's efforts to assist countries in Southeast Asia to develop Nationally Appropriate Mitigation Actions (NAMAs) for the building sector. Prior to UN Environment, Mr. Garrigan served more than 20 years in many operational and management roles for the Metropolitan Government of Nashville, Tennessee USA including as Deputy Mayor. Mr. Garrigan holds a Bachelor of Science in Architecture degree from Temple University in Philadelphia, and a Certificate of Advanced Studies in Environmental Diplomacy from the University of Geneva.



Kee Sei Lee

Researcher / Urban Infrastructure Department
The Seoul Institute of Technology, Republic of Korea

Researcher Kee Sei Lee is working at Seoul Institute of Technology as a chief researcher. He focuses on smart operation & maintenance (O&M) of city infrastructures such as bridges, buried pipe lines. In addition, as a research professor at Korea University, Kee Sei Lee had performed some significant research projects which are funded by national government. He had conducted several projects related to design specifications such as "establishment of consistent Load Resistance Factor Design(LRFD), design fundamentals of curved steel bridges". Through these projects, he researched about various limit states of curved girder such as ultimate state, shear buckling, and flange local buckling. He contributed to suggest a guideline for design of horizontally curved steel girder in Korea.



Kyung Hee Ko

Director / Smart City Division
Seoul Metropolitan Government, Republic of Korea

Kyung Hee Ko is director of Seoul Metropolitan Government (SMG). She leads the smart city division which establishes and implements Seoul's smart city master plan. In addition, she operates smart city cooperative system, promotes Seoul's smart city policies, implements IoT projects and manages the S-plex center which is the big-data center of SMG. Director Ko is currently focusing on applying block chain technology throughout Seoul and cooperating with private sectors and citizens to develop livable and sustainable smart city. She holds a bachelor's degree in computer science from Kyunghee University, located in Republic of Korea and a master's degree in computer science from California Lutheran University, located in USA.

LECTURERS



Jeong Joon Ahn

Director / Big Data Division
Seoul Metropolitan Government, Republic of Korea

Director Jeong Joon Ahn has served in the Data & Statistics Division of Seoul Metropolitan Government (SMG) since 2016. He is in charge of utilizing and integrating Seoul's data and implementing policies related to the big data. In addition, Mr. Ahn committed to making the policies to improve citizens' lives by using the statistical information data such as developing urban policy indicators of Seoul. Before working at Seoul Metropolitan Government, he worked at private sectors such as KT corporation (previously Korea Telecom), KEB Hana bank, and IBM. He got his degree in economics and business administration in Korea University, located in Republic of Korea.



Young Jun Han

Researcher / Department of Transportation Systems Research
The Seoul Institute, Republic of Korea

Researcher Young Jun Han is an associate research fellow in the department of transportation system research of the Seoul Institute (SI). He earned a doctorate degree in civil and environmental engineering from University of Wisconsin-Madison, located in USA, and particularly focused on future transportation system with connected-automated vehicles. Before studies in UW-Madison, he majored in urban planning & engineering. He holds bachelor's degree and master's degree followed by several years of practical experience in a Korea Land and Housing Corporation (LH) in Korea. Since he joined Seoul Institute in 2019 April, he has participated diverse projects related to public transportation and smart cities such as 'Improvement of Seoul bus operation system', 'Traffic demand management for green-traffic area in Seoul', and 'Research for Seoul smart city projects'.





INTEGRATED SUSTAINABLE SOLUTIONS FOR
SMART CITIES WORKSHOP

BACKGROUND

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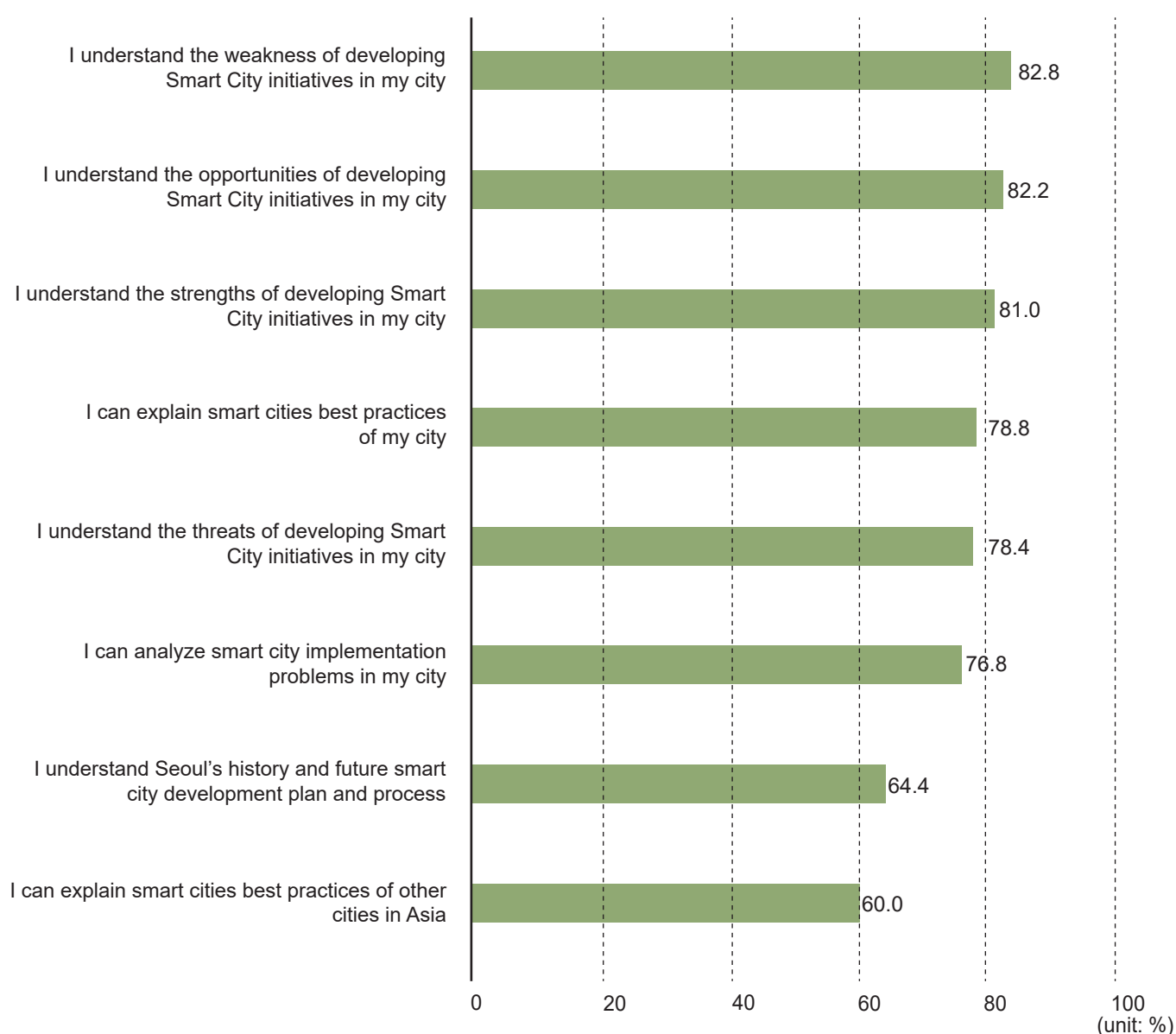
SELF-ASSESSMENT SURVEY

About Self-Assessment Survey

Integrated Sustainable Solutions for Smart Cities Workshop's contents were based on the participants' responses. The Self-Assessment Survey is focusing on smart technologies/ innovations supporting SDGs of participant's city.

Part 1. Information about participant's personal knowledge on Smart Cities initiatives

A. Overall Assessment

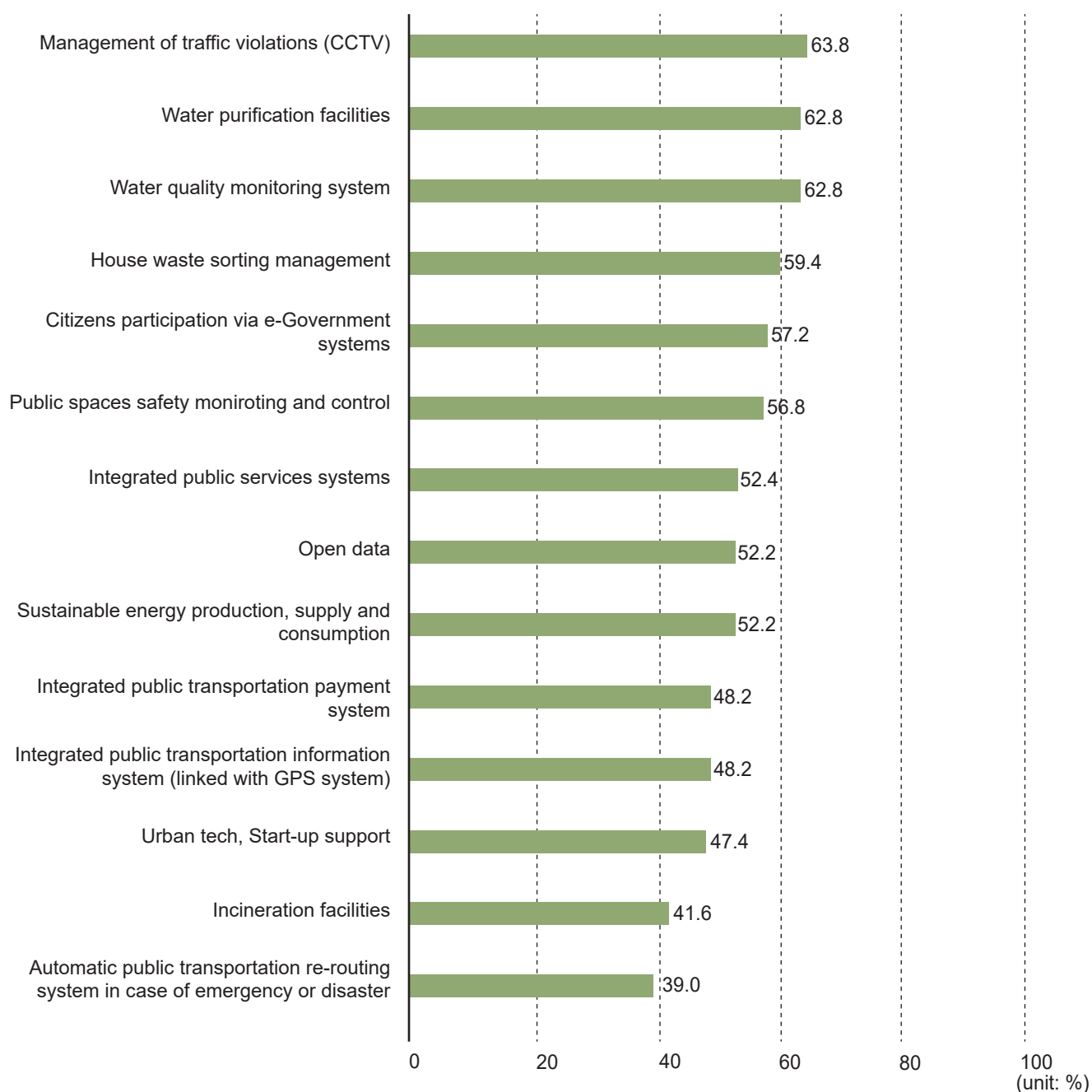


* 37 respondents answered this question coming from 19 cities: Banda Aceh Municipality, Barisal City, Capital Development Authority, City Council of Penang Island, City of Balanga, Colombo Municipal Council, Hetauda Sub-Metropolitan City, Johor Bahru, Kathmandu Metropolitan City, Kuala Lumpur City Hall, City of Manila, Lalitpur Metropolitan City, Quezon City, Perbadanan Putrajaya, City of Santa Rosa, Municipal Council of Seberang Perai, Sylhet Municipality, Yangon Region Government, and City of Yokohama .

SELF-ASSESSMENT SURVEY

Part 2. Information about participant city's development status

B. Assessment of your city

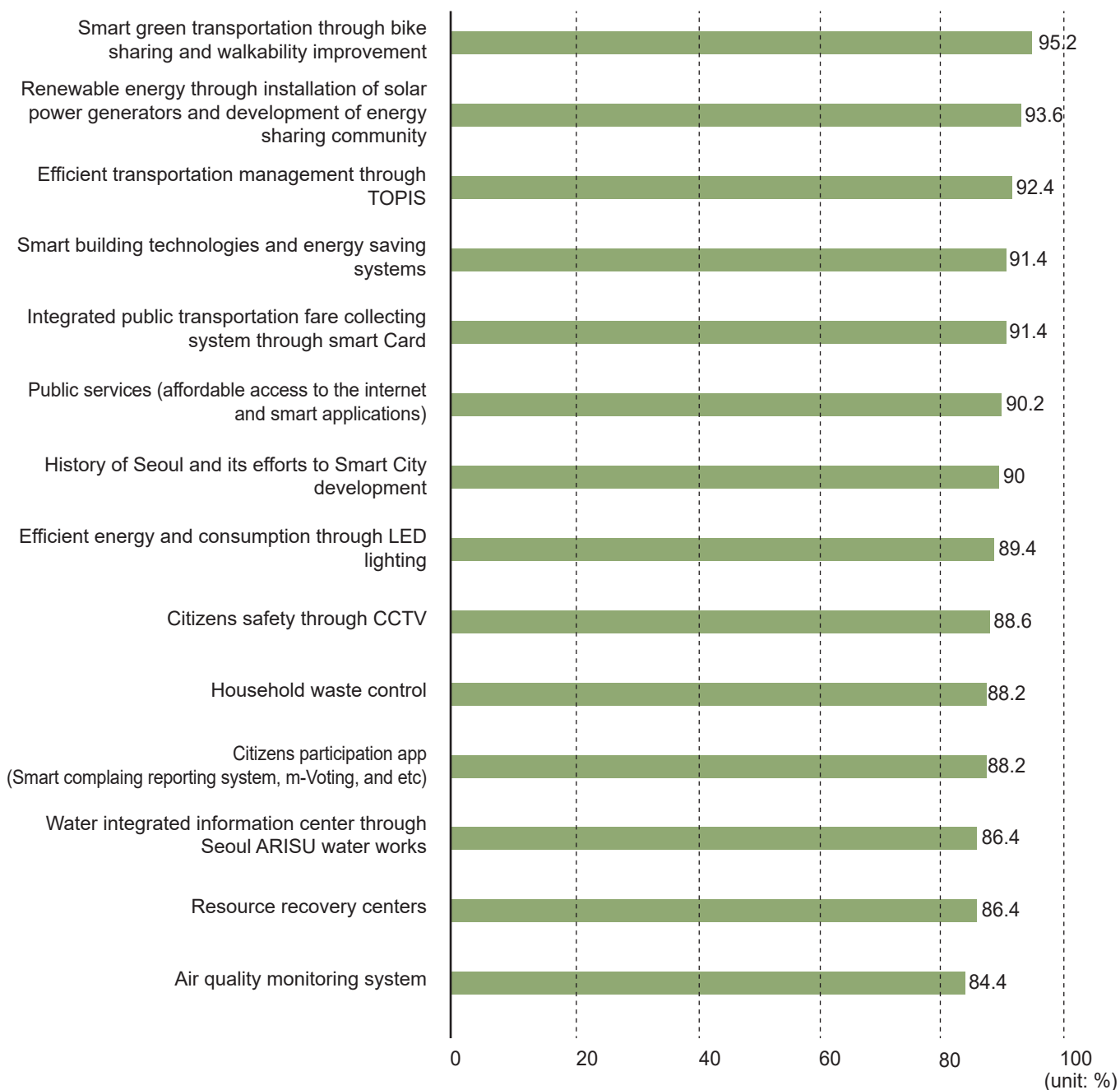


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SELF-ASSESSMENT SURVEY

Part 2. Information about participant city's development status

C. What would you like to learn from the training?

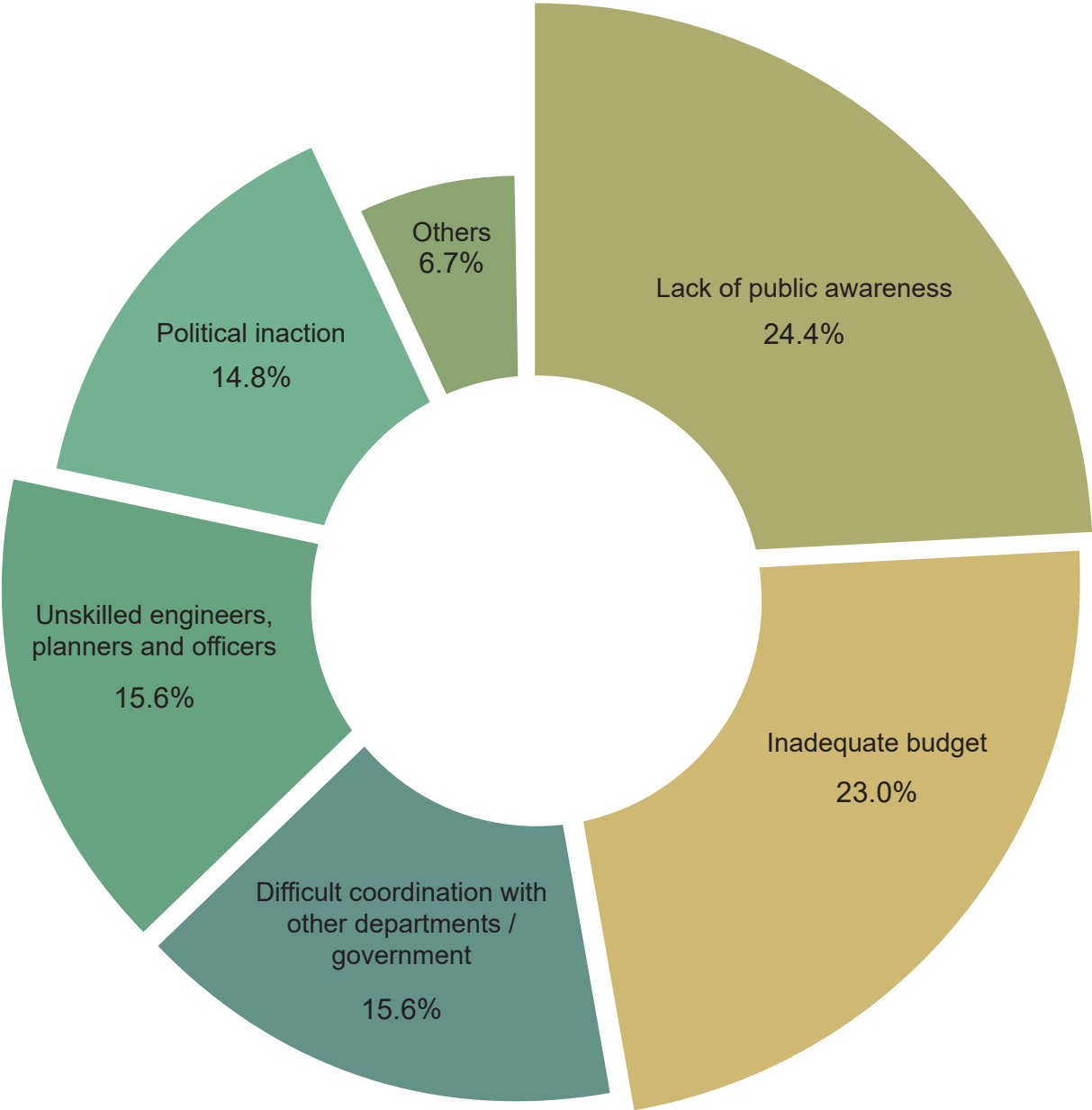


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SELF-ASSESSMENT SURVEY

Part 2. Information about participant city’s development status

D. Challenges that your city faces in terms of Smart City



* 37 respondents answered this question coming from 19 cities: Banda Aceh Municipality, Barisal City, Capital Development Authority, City Council of Penang Island, City of Balanga, Colombo Municipal Council, Hetauda Sub-Metropolitan City, Johor Bahru, Kathmandu Metropolitan City, Kuala Lumpur City Hall, City of Manila, Lalitpur Metropolitan City, Quezon City, Perbadanan Putrajaya, City of Santa Rosa, Municipal Council of Seberang Perai, Sylhet Municipality, Yangon Region Government, and City of Yokohama .

CITY PROFILE

○ Hetauda Sub-Metropolitan City

Country : Nepal

Total number of Population (City) : 152,875 (2015)

Current Smart Cities Policies :

Hetauda Sub-Metropolitan City has online systems regarding the national ID, civil Registration, and integrated property tax.

Policy Challenges:

The biggest challenge that Hetauda Sub-Metropolitan City is facing is inadequate budget and lack of public awareness.

○ Kathmandu Metropolitan City

Country : Nepal

Total number of Population (City) : 975,543

Current Smart Cities Policies :

Kathmandu Metropolitan City installed solar street light with sensor system in 2016.

Policy Challenges:

Kathmandu Metropolitan City has many challenges including political inaction, lack of public awareness, and difficult coordination with other departments and governments.

○ Lalitpur Metropolitan City

Country : Nepal

Total number of Population (City) : 226,728 (2011)

Current Smart Cities Policies :

Lalitpur Metropolitan City is planning to install smart street light.

Policy Challenges:

Lalitpur Metropolitan City has various challenges such as: inadequate budget, political inaction, unskilled engineers and officers, lack of public awareness, and difficult coordination with other departments.

○ Yangon Region Government

Country : Myanmar

Total number of Population (City) : 4,477,638 (2019)

Current Smart Cities Policies :

Yangon Region Government has a payment system of electric bill on the bank website, bus ticket using mobile application, and online reservation system for vehicle license renewal.

Policy Challenges:

Yangon Region Government challenges are political inaction and inadequate budget.

○ Colombo Municipal Council

Country : Sri Lanka

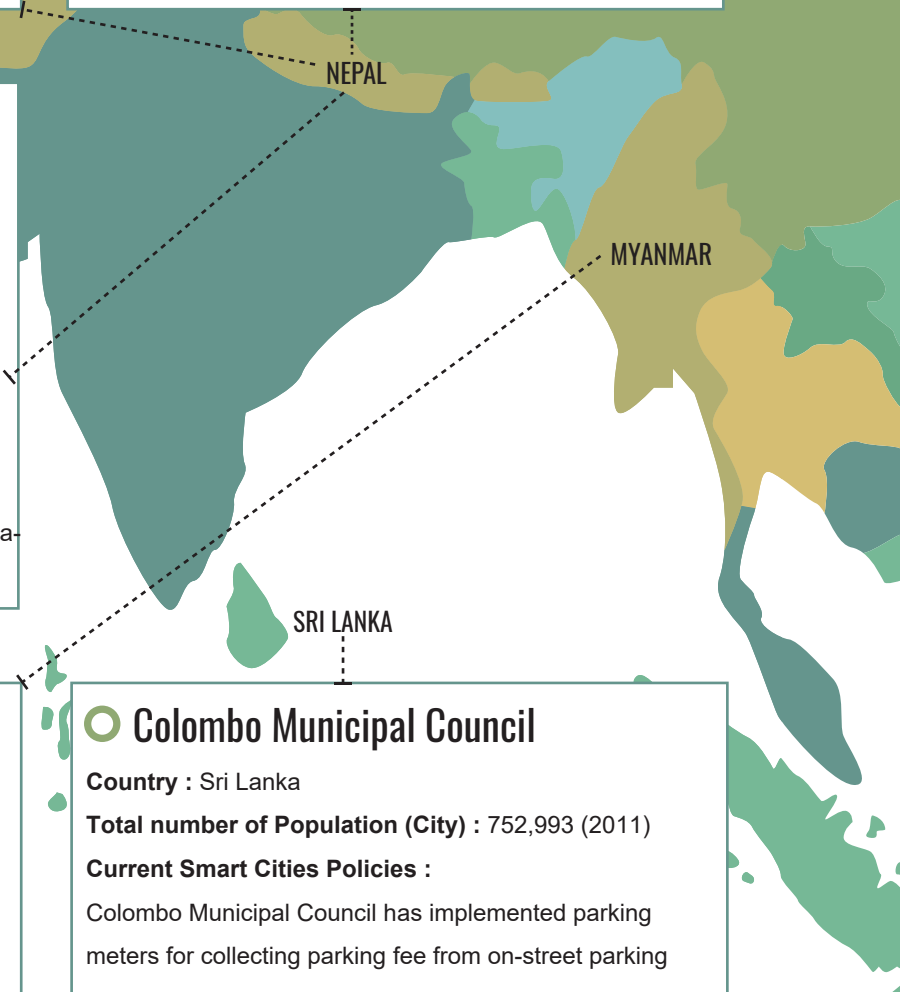
Total number of Population (City) : 752,993 (2011)

Current Smart Cities Policies :

Colombo Municipal Council has implemented parking meters for collecting parking fee from on-street parking areas.

Policy Challenges:

Colombo Municipal Council challenges are regarding budget, political inaction, unskilled human resources and difficult coordination with other departments.



CITY PROFILE

Kuala Lumpur City Hall

Country : Malaysia

Total number of Population (City) : 1,808,000 (2017)

Current Smart Cities Policies :

Kuala Lumpur City Hall implements Low Carbon Cities project and Integrated Transportation Information System (ITIS).

Policy Challenges:

Kuala Lumpur City Hall has issues regarding the political inaction, lack of public awareness, homeless and illegal foreigners.

City Council of Penang Island

Country : Malaysia

Total number of Population (City) : 1,767,000 (2018)

Current Smart Cities Policies :

City Council of Penang Island strives to encourage more green buildings to achieve energy efficiency, indoor environmental quality and sustainable site planning & management.

Policy Challenges:

The main challenge in City Council of Penang Island is lack of public awareness.

City of Balanga

Country : Philippines

Total number of Population (City) : 102,679 (2019)

Current Smart Cities Policies :

City of Balanga developed the eLGU version 2.0 project, an in-house information system on computerization and an automation of internal process of all departments of the city government.

Policy Challenges:

City of Balanga has challenges of inadequate budget, unskilled human resources, and lack of public awareness.

Banda Aceh Municipality

Country : Indonesia

Total number of Population (City) : 254,904

Current Smart Cities Policies :

Banda Aceh Municipality focuses on various fields such as transportation, environment, community and etc. to achieve smart city.

Policy Challenges:

There are some challenges including low development of innovation sectors, lack of water recycle and waste water treatment plan in Banda Aceh Municipality.

**Number of population is based on Google search.*



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SUMMARY

Integrated Sustainable Solutions for Smart Cities Capacity Building Workshop was organized into in-class sessions – such as lectures, presentations of city profile and concluding action plan sessions – and site visits.

The Workshop was launched with participants' presentation on their cities performance, including successes, failures and future strategies on smart city. The participants benefitted from the opportunity to reflect upon their own cities, existing problems and exchange feasible solutions.

The lectures provided an insightful overview of Seoul's smart city initiatives / technology, including the big data, transportation, and smart operation & maintenance (O&M) technologies for infrastructures. A wider range of topics were also examined in the lectures, such as the smart city pilot complex in Magok M-valley located in Seoul, Machine learning process known as AlphaGo, Open Data Plaza where SMG shares their big data with citizens, and existing Smart Monitoring & Management System which are placed on bridges and buried pipes.

Site visits allowed the participants to closely observe Seoul's best practices. The participants visited TOPIS, Seoul City Hall, Digital Civic Mayor's Office, Seoul Botanic Garden, Big Data Campus, Seoul Cyber Security Center, Seongsu IoT Street Lab and Seoul Data Center. Site visits offered the participants a chance to directly communicate with Seoul's experts on smart city technologies and policies.

The workshop concluded with a specialized session for Action Plan designing. The participants were asked to perform a SWOT (Strengths · Weaknesses · Opportunities · Threats) analysis. With the CityNet's guidelines, the participants elaborated on their analysis to design an Action Plan. The drafting and designing of the Action Plan allowed the participants to explore specific implementation schemes, including day-to-day operations of smart city policies in their respective cities. Upon sharing their Action Plans with fellow participants and urban development experts, dialogues to enhance future strategies and explore fields of future cooperation continued.



WORKSHOP SCHEDULE

Aug 19 (MON)	Aug 20 (TUE)	Aug 21 (WED)	Aug 22 (THU)	Aug 23 (FRI)
Orientation 09:30 - 10:00	Lecture 2 Direction of Linking Big Data and Transportation Policy Dr. Han Seoul Institute 09:30 - 11:30	Lecture 3 Public Data Service of Seoul Dir. Ahn Seoul Metropolitan Government 09:30 - 11:30	Lecture 4 Smart O&M Technology for Infrastructures Dr. Lee Seoul Institute of Technology 09:30 - 11:30	Wrap-up and Build Action Plan CityNet 09:00 - 11:00
Lecture 1 Seoul's Smart City Initiatives Dir. Ko Seoul Metropolitan Government 10:00 - 12:00				Closing Ceremony 11:30 - 12:00
Introduction SMG / CityNet / UNESCAP 14:00 - 14:20	Public Transportation Experience Bus & Subway 13:00 - 14:00	Study Visit 4 Seoul Botanic Park 14:00 - 15:00	Study Visit 7 Seongsu IoT Street Lab 14:00 - 15:30	Seoul's Cultural Experience
City-Paper Presentation CityNet / Participants 14:20 - 16:00	Study Visit 1 TOPIS 14:00 - 16:00			
	Study Visit 2 City Hall Tour 16:00 - 17:00	Study Visit 5 Big Data Campus 15:30 - 16:45	Study Visit 8 Seoul Data Center 16:00 - 17:00	
Special Session Smart Cities Solutions supporting SDGs Curt Garrigan UNESCAP 16:30 - 18:00	Study Visit 3 Digital Civic Mayor's Office 17:00 - 18:00	Study Visit 6 Seoul Cyber Security Center 16:45 - 18:00	Pre-Wrap Up CityNet 17:00 - 18:00	

LECTURES

1

Seoul's Smart City Initiatives

Kyung Hee Ko

Director / Seoul Metropolitan Government

The lecture focused on the current situation of Seoul as a smart city and the vision for achieving sustainable smart city. Director Ko introduced Seoul Metropolitan Government's smart city program which is based on 5 core values: 1) people-centered; 2) service centered; 3) governance including public-private cooperation, industry-academy cooperation and citizen's participation; 4) sustainability; and 5) innovation growth. In addition, Director Ko introduced Seoul's smart city policy covering transportation, safety, environment, welfare, economy and administration. The participants could learn about the currently ongoing smart city projects of Seoul such as the test-bed for autonomous driving, parking lot sharing based on IoT, AI-based taxi, intelligent CCTV, smart streetlight, etc.



2

Direction of Linking Big Data and Transportation Policy

Young Jun Han

Researcher / The Seoul Institute

The lecture provided a direction of linking big-data and transportation policy. Researcher Han introduced the concept of big data with its characteristics and success-failure examples. To better understand big data, examples including Google Flu trends, a case of using search engine data to detect influenza epidemics, and AlphaGo, which shows the deep learning mechanism, were provided. The participants could learn how to use big data for making better transportation policy with the introduction of international case studies of big data application in transportation such as origin & destination (O-D) study in USA, public transit in UK, and owl (night) bus in Seoul, Republic of Korea.



LECTURES

3

Public Data Service of Seoul

Jeong Joon Ahn

Director / Seoul Metropolitan Government



The lecture introduced Seoul Metropolitan Government's IT master plan 'Global Digital Seoul 2020' and data value chain system. From this lecture, the participants could understand the whole process of data management including data acquisition, data storage, data analysis and data usage.

To better understand the data management process and how to provide public data services, Director Ahn introduced data convergence services on living population and statistics example on Gross Regional Domestic Product (GRDP).

Director Ahn also presented useful guidelines on how cities can use and systemize the public data and showed case studies on Seoul's social innovation, big data campus, and digital civil mayor's office located in Seoul City Hall.

4

Smart O&M Technology for Infrastructures

Kee Sei Lee

Researcher / The Seoul Institute of Technology



The lecture introduced smart technologies for operation and management (O&M) of city infrastructures with various examples. The lecture especially focused on the O&M case of buried pipes and bridges in Seoul. Researcher Lee presented 4 facility management systems for bridge: Building Information Modeling(BIM), drone, ground penetrating radar, and 3D modeling using unmanned aerial vehicle drone. In addition, he introduced about leak detection technologies including the guided wave, inspection robot, and Time Domain Reflectometry (TDR) sensor. The participants were able to understand water management system using CCTV, GPS, multi-spectra camera, and ultrasonic technology.

SITE VISITS

1. TOPIS

August 19

Seoul TOPIS refers to the general transport control center responsible for operating and managing Seoul's overall traffic. TOPIS does this by collecting traffic information from the bus management system, the transit card system, the unmanned surveillance system and traffic-related authorities and institutions. The system is designed to clear heavy traffic of Seoul and avoid sudden traffic issues by collecting information on bus operations, the number of people using public transport, traffic density, traffic speeds, incidental situations such as traffic accidents and demonstrations, status of express ways, private traffic information and other information related to transportation, and establishing science-based public transit policies through analysis of integrated traffic information.



2. Seoul City Hall Tour

August 19

Seoul City Hall Tour took participants to various places around Seoul City Hall, including the vertical garden (which has been listed as the largest vertical garden in the Guinness Book of World Records), the former mayor's office, gungisi (a military weapons depot during the Joseon dynasty) relics exhibition hall, citizen's hall, and the Seoul metropolitan library.

The participants were able to visit the Sky Park, which applies smart construction material that support to keep the building temperature. The front wall of the Sky Plaza is made of two-layer vinyl, not glass. Its official name is "Ultra thin fluoropolymer film" and it helps the Seoul City Hall keep warm by holding air between films. In addition, due to its opacity, this vinyl wall contributes to beautiful landscaping lights on Seoul City Hall every weekend night.



DAY 2



Seoul TOPIS



Seoul City Hall Tour

SITE VISITS



3. Digital Civic Mayor's Office

August 19

At the Digital Civic Mayor's Office, the participants could experience a real-time information system with a collection of 16 million administrative big dataset out of 290 systems and 1,200 CCTVs in Seoul.

Digital Civic Mayor's office is launched in 2017, it is the first platform in the world that integrates all administrative data in Seoul. With this platform, citizens are able to access the information that is given to Mayor Park Won-soon, through their personal computers and smart phones. Since April 2019, citizens are also able to find data at three major subway transfer stations: Hongdae station, Changdong station and Yeouido station. Currently, Seoul Metropolitan Government is upgrading and updating the system to have motion data, voice recognition and AI (Artificial Intelligence) function.

4. Seoul Botanic Park

August 20

Seoul Botanic Park is located in Magok area and is the first facility in Seoul to combine 'Botanical garden' and 'Urban park' in one space.

Seoul Botanic Park showed participants smart environment technologies regarding maintenance of green facilities in a smarter way. Seoul Botanic Park uses special materials for the roof: Ethylene Tetra Fluoro Ethylene (ETFE) film, which has the advantage of light penetration. In addition, Seoul Botanic Park considered various systems that re-uses rainwater and controls the temperature and light. The participants had the opportunity to directly communicate with Seoul's expert in charge of Seoul Botanic Park. During this experience, the participants could understand the components using IoT technologies embedded in the park.



Digital Civic Mayor's Office



Seoul Botanic Park

SITE VISITS



5. Big Data Campus

August 20

The aim of Seoul Big Data Campus is to establish enabling environments for big data analysis with public, private, industrial and academic sector by sharing relevant data with citizens. Lecturer introduced strategy to utilize big data, Big Data Sharing Platform and the roles of Seoul Big Data Center.

Seoul Big Data center put effort into operating partnership with different stakeholders to emphasize its contents and facilities. Since the opening of this center on July 2016, 1,530 teams and 2,931 individuals utilized the center to create project by using the provided data. 785 projects were completed and covered 10 sectors include urban development, economy, and transportation. To better understand Big data usage, the case of Dream Tree Card (the food support card for poorly-fed children) was introduced.



Big Data Campus

6. Seoul Cyber Security Center

August 20

Seoul Cyber Security Center is in charge of monitoring network traffic and issuing alerts on potential, imminent or actual cyber threats, vulnerabilities or incidents affecting the critical network infrastructure of 73 organizations including Seoul Metropolitan Government, its district offices and the affiliated organizations. It also runs Digital Forensic Center to collect the evidence of the intrusion incidents.

The lecturer introduced the main responsibility of Seoul Cyber Security Center and how they respond to emergency situation. The participants could also see the integrated information board shows real-time situation of cyber attack.



Seoul Cyber Security Center

SITE VISITS

7. Seongsu IoT Street Lab

August 21

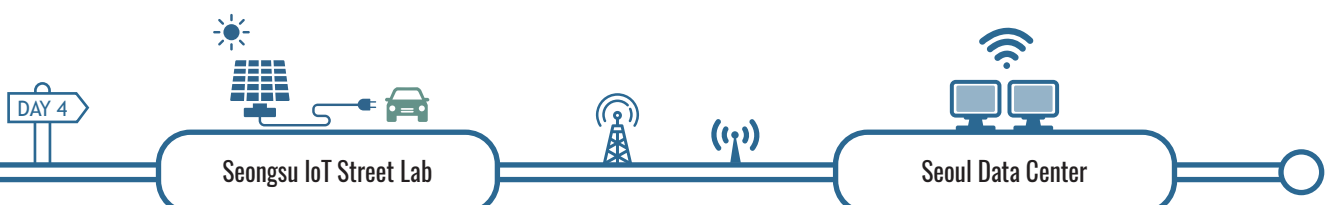
Seongsu-dong is carrying out a “street lab” project that uses advanced technologies such as wireless communication technology and various sensors. 'Street Lab' is a project to 'test the street' by installing various Internet of Things (IoT) facilities on the street. The participants could see the automatic fire detection system, smart street light, real-time fine dust detection system and LTE plugs. The participants also visited a solar panel facility, which is the only facility in Seoul. During the visit, the participants could ask questions to person who is directly in charge of managing those facilities and technologies.



8. Seoul Data Center

August 20

Seoul Data Center operates and manages the communication infrastructure and information system of Seoul Metropolitan Government, such as internet server, data storage and information and communication devices, in order to support the administration of Seoul. One of its major tasks is to operate integrated monitoring system, which monitors information and communication system and infrastructure unceasingly. The lecturer also introduced Seoul's informationization project including citizen's participation, ICT infrastructure, information disclosure, new technology based administration innovation, citizen services, and e-Government as well as detail information about Seoul Data Center.





INTEGRATED SUSTAINABLE SOLUTIONS FOR
SMART CITIES WORKSHOP

CONCLUSION

SWOT Analysis & Action Plan	35
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SWOT ANALYSIS & ACTION PLAN

SWOT Analysis and Action Plan design are conducted after the lectures and site visits. It was essential to understand participants' city position on smart cities development and to seek opportunities or further partnerships, cooperation among intersectoral, and city-to-city cooperation.

SWOT ANALYSIS

For SWOT, the participants were invited to consider:

- 1) Strengths: What are the strengths your city have in relation to the Smart City Program?
- 2) Weaknesses: What are the disadvantages your city have in relation to the Smart City Program?
- 3) Opportunities: What are the opportunities your city have in relation to the Smart City Program which would make the implementation possible?
- 4) Threats: What are the threats your city have in relation to the Smart City Program?



ACTION PLAN ANALYSIS

Based on participant city's current situation and the contents of the program, participants were expected to present an 'Action Plan' on how they will implement their learning experience and knowledge to their city's project or their day-to-day operation.

Having mentioned that, within the action plan, participants also have opinions on lessons and implications learned as well as criteria or index which can be used for future evaluation survey.

For Action Plan, the participants were invited to answer the questions below:

- 1) From the topics that have been presented during the workshop and site visits, which smart city policy/ technology/ practice would you like to see in your city?
- 2) Which urban problem would it solve?
- 3) What would be the plan to implement the chosen smart city policy/ technology/ practice in your city?
- 4) What are the barriers to adopting your chosen smart city policy/ technology/ practice in your city?



SWOT ANALYSIS & ACTION PLAN

INDONESIA

BANDA ACEH MUNICIPALITY

SWOT Analysis

STRENGTHS

Strong commitment of the mayor to decrease Non- Revenue-Water which means the produced water which get lost before reach the customer; and implementation of SCADA Water Supply Control System which helps control clean water and display real time operational data during the production time.

WEAKNESSES

Lack of human resources that can manage water system; water source coming only from the rivers since there is no mountain in Banda Aceh; and flat land which does not provide natural pressure when distributing water.

OPPORTUNITIES

Banda Aceh is one of the cities that has pilot project for smart city in Indonesia; support from international partners such as CityNet for the training and workshop related with water management; and good collaboration with partners and clients from ASPAC, ADB, World Bank and others.

THREATS

Citizens demand increase for better water system and water supply.

Action Plan

APPLICABLE SMART CITY POLICY

Time Domain Reflectometer (TDR) sensor technology.

LOCAL URBAN PROBLEM TO BE SOLVED

Time Domain Reflectometer (TDR) sensor technology. It will solve the leak in water pipes and inefficient water management system.

IMPLEMENTATION PLAN

Banda Aceh plans to conduct several internal workshops in order to introduce the TDR sensor technology and increase awareness from the government.

BARRIERS

Since it would need a new technology to be implement, the barriers would be lack of human resource; lack of expert personnel; lack of technology resources; and lack of operation & maintenance

MALAYSIA

CITY COUNCIL OF PENANG ISLAND

SWOT Analysis

STRENGTHS

Penang has a plan to implement Light Rail Transit (LRT) in the city until 2020 to improve and provide more efficient transport mode towards Smart and Intelligent City.

WEAKNESSES

The government has a lack of funding to upgrade and improve the current infrastructures from the city; citizens still use motor bike as the most methods for transportation; land usage constraints; and disintegrated government agencies since each agency belongs from different department.

OPPORTUNITIES

Penang already has a system that collects data from CCTV and GPS used in the transportation system, therefore the data can be easily combine if big data system is implemented.

THREATS

Since the level of competition among local companies is considered low, there is no completion which makes the service's quality decrease; also ways to protect the data is also something which should be taken care of.

Action Plan

APPLICABLE SMART CITY POLICY

Seoul's Big Data System to analyze and implement better policies for citizens while creating a green city.

LOCAL URBAN PROBLEM TO BE SOLVED

Big data system will support the government to monitor its policies and run in a more smart and sustainable way to improve the living standard from the citizens of Penang. It would also help to reduce traffic congestion and improve commuting methods.

IMPLEMENTATION PLAN

As for the beginning stages for Big Data system implementation, there is a need to make a list of companies owned by the private sector and build a trust relationship among the public and private sector.

BARRIERS

Since the budget from the city is separated by sector, the government will have to seek how much from each sector would need to be allocated to implement Big Data.

SWOT ANALYSIS & ACTION PLAN

MALAYSIA

KUALA LUMPUR CITY HALL

SWOT Analysis

STRENGTHS

ITIS is a comprehensive traffic information system to monitor traffic flow and analyze data of road condition in Klang Valley to provide useful traffic information to road users.

WEAKNESSES

The equipment and tools such as CCTV is not up to date and can be used in a limited area.

OPPORTUNITIES

Since the traffic management center is managed by the Kuala Lumpur City Hall, the local government can function as an autonomous body and develop its own policies. Also the city has a strong partnership with several international organizations to receive support during the implementation of traffic management system.

THREATS

There is a lack of budget that need to be considered for approval from the highest management of the government.

Action Plan

APPLICABLE SMART CITY POLICY

Establishment of Seoul's Smart CCTV system.

LOCAL URBAN PROBLEM TO BE SOLVED

Smart CCTV system shall improve traffic management challenges and safety problems.

IMPLEMENTATION PLAN

CCTV system shall be implemented by first upgrading and improving the existing ITIS system and integrating with other software and systems.

BARRIERS

Because of the current government and economic conditions, there is a lack of budget and new ways of funding mechanism should be secured.

MYANMAR

YANGON REGION GOVERNMENT

SWOT Analysis

STRENGTHS

Yangon traffic control center constructed data center with 4,800TB capacity and 96 core fiber network for 154 intersections in Yangon area.

WEAKNESSES

The equipments and machinery from the data center need to be improved since the network connection is unstable and CCTV traffic cameras are old.

OPPORTUNITIES

Since Yangon Region Government already has a system to collect transportation data through the bus operation, the city can analyze the data and improve the current public transportation routes.

THREATS

There is a need to partner with bus operation companies to use the data provided by them. Also since there is limited budget amount, it is required to further allocate funds for improving public transportation.

Action Plan

APPLICABLE SMART CITY POLICY

Real-time bus information at bus stops and phone.

LOCAL URBAN PROBLEM TO BE SOLVED

By providing actual information of bus operation, it will improve public transportation system and it will also be possible to further integrate the city's public transportation.

IMPLEMENTATION PLAN

During the beginning stages of implementation, the government would collaborate with the bus operator companies to collect the raw data and then make a new department which would be able to process it.

BARRIERS

Since this would be a newly implemented system, the biggest barrier would be the lack of experience human resource and allocated budget.

SWOT ANALYSIS & ACTION PLAN

NEPAL

HETAUDA SUB-METROPOLITAN CITY

SWOT Analysis

STRENGTHS

Hetauda Sub-Metropolitan City has strong legal power and political commitment, which makes the city able to develop its own policies and initiatives to improve the life of the citizens.

WEAKNESSES

The city is still under development process, therefore, there is a need to have a long-term plan and include smart city solutions and practices in the plan.

OPPORTUNITIES

Since the local and international NGOs and citizens are willing to participate in government's projects and initiatives to improve the life quality, Hetauda Sub-Metropolitan City can implement various projects to achieve smart city.

THREATS

The government has lack of expertise in the technical field to develop and implement smart city related plan.

Action Plan

APPLICABLE SMART CITY POLICY

Install the optical fiber cable, which can provide higher bandwidth and transmit data over longer distances, to government division.

LOCAL URBAN PROBLEM TO BE SOLVED

Fiber-optic communication by using optical fiber cable shall improve public service delivery system in terms of speed and effectiveness. It would also bring the city a more transparent government.

IMPLEMENTATION PLAN

Hetauda Sub-Metropolitan City plans to make a long-term smart city plan, and install the optical fiber cable to data service center.

BARRIERS

There is a need to coordinate among related departments from the government and partner organizations to install and link the advanced IT network.

NEPAL

KATHMANDU METROPOLITAN CITY

SWOT Analysis

STRENGTHS

Kathmandu Metropolitan City is willing to make a new long-term plan and urban policies reform adding smart city initiatives at it.

WEAKNESSES

The local government lacks technical experience including infrastructure and human resources.

OPPORTUNITIES

Kathmandu has a strong partnership with other cities from Nepal which enable urban policies to be engaged and connected.

THREATS

Kathmandu Metropolitan City does not have an integrated plan for developing smart city.

Action Plan

APPLICABLE SMART CITY POLICY

Seoul Smart Environment Policies to improve water quality.

LOCAL URBAN PROBLEM TO BE SOLVED

This policy will support to improve Kathmandu River's water pollution.

IMPLEMENTATION PLAN

Smart Environment Policy shall be initially implemented by increasing the awareness of citizens and receive permission for data collection. Later, a monitoring system shall be implemented to maintain the project sustainability.

BARRIERS

To proceed with this policy implementation, budget constraint and lack of human resources shall be overcome.

SWOT ANALYSIS & ACTION PLAN

NEPAL

LALITPUR METROPOLITAN CITY

SWOT Analysis

STRENGTHS

The current Mayor has strong willingness to develop a smart city Plan for Lalitpur City. Therefore, budget allocation can be provided to smart city related field.

WEAKNESSES

Due to the low salary payment provided to local government officials, there are not many skilled qualified staffs that are able to develop smart cities policies.

OPPORTUNITIES

Since domestics and international donor agencies are willing to provide support to Lalitpur urban development projects, there are high possibilities of building public-private partnership.

THREATS

The government has a lack of cooperation with other technical skilled agencies.

Action Plan

APPLICABLE SMART CITY POLICY

Transportation policy focused on Bus Rapid Transit.

LOCAL URBAN PROBLEM TO BE SOLVED

Bus rapid transit system shall improve the transportation problem

IMPLEMENTATION PLAN

BRT system shall be implemented by first introducing a smart transportation card to citizens and securing the budget through public-private-partnership and investment.

BARRIERS

Since the government doesn't have a willingness to focus on BRT system, there are needs for mediator between government and private companies to improve technologies for BRT system

PHILIPPINES

CITY OF BALANGA

SWOT Analysis

STRENGTHS

The current Mayor of Balanga City has a strong leadership which is being supported by various stakeholders and legislative council.

WEAKNESSES

Since there are various information systems in City of Balanga, the government needs to integrate the information system which has different data coming from different sources.

OPPORTUNITIES

City of Balanga already has an ability to provide solutions based on ICT technologies. Strong partnership with an international partners would be great opportunity to achieve smart city policy.

THREATS

For geographical reason, the City of Balanga is vulnerable to climate change and disaster, which makes the city vulnerable for various attacks during implementation of new policies.

Action Plan

APPLICABLE SMART CITY POLICY

Seoul Metropolitan Government Mayor's Dashboard.

LOCAL URBAN PROBLEM TO BE SOLVED

By implementing the Mayor's Dashboard, Balanga will be able to analyze real-time conditions of the city and provide active support to improve the citizens' life quality.

IMPLEMENTATION PLAN

For implementing Mayor's Dashboard, it would be necessary to analyze which data shall be collected and contact with the department in charge. Also, strong partnership with international organizations and C2C(city-to-city cooperation) are needed to speed-up the process and benchmark best practices on smart cities.

BARRIERS

With the political change, local government willingness is not sustainable and further funding shall also be discussed among sectors.

SWOT ANALYSIS & ACTION PLAN

SRI LANKA

COLOMBO MUNICIPAL COUNCIL

SWOT Analysis

STRENGTHS

With the mayor's positive attitude toward implementation of smart city project, Colombo Municipal Council already has an experience in smart city project.

WEAKNESSES

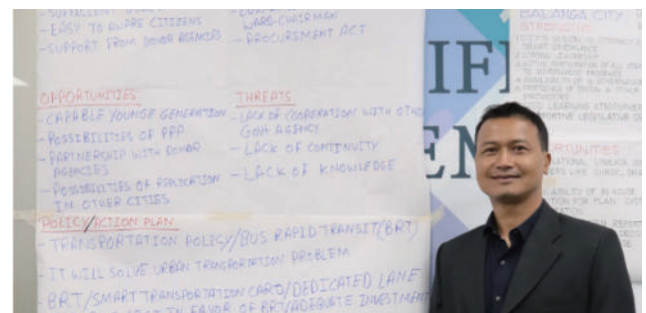
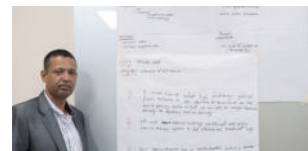
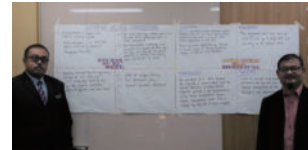
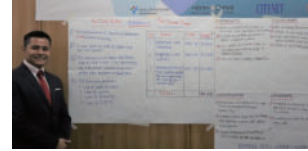
Because of the budget constraint and political intervention, there is financial limitation regarding the investment on improvement of equipment.

OPPORTUNITIES

Colombo Municipal Council has a potential to secure the advanced equipment by getting support from international affairs such as CityNet, KOICA, etc.

THREATS

Since the government staffs have a negative attitude toward additional work, the government is required to allocate human resources to assign staffs for new projects to avoid additional work.



Action Plan

APPLICABLE SMART CITY POLICY

Seoul's Smart Mobility system.

LOCAL URBAN PROBLEM TO BE SOLVED

Since Colombo is the largest city from Sri Lanka, the traffic congestion is terrible during day time. This policy shall improve urban problem regarding traffic congestion.

IMPLEMENTATION PLAN

Colombo Municipal Council need to introduce the GIS system and prepare GIS database for road infrastructure to collect data and analyze the best routes and transportation system.

BARRIERS

New funding mechanism in cooperation with donor organizations would be needed.



CONCLUSION & LEARNING POINT

I was able to know the detail characteristics of Seoul as one of the best smart cities in the world.
I would like to apply the case of TOPIS, which has potentiality to improve the existing Integrated Transportation Information System (ITIS) in Kuala Lumpur City Hall.

Abd Aziz bin Abd Rahman
Kuala Lumpur City Hall
Deputy Director



The lecture “Big Data and Transportation policy” from Seoul Institute was directly concerned with Yangon Region Transport Authority. I would like to share the details from this capacity building workshop to mayor of Yangon City and chief minister of Yangon division.



Aung Myint
Yangon Region Government,
Member of Yangon Traffic Control Center Assessment Committee

The lecture “Smart City Initiatives” from Seoul Metropolitan Government was very relevant to Hetauda Sub-Metropolitan City so that I can apply it to Hetauda Sub-Metropolitan City. I am willing to formulate smart long-term policy for Hetauda Sub-Metropolitan City.

Bhagawan Aryal
Hetauda Sub-Metropolitan City,
Chief Administrative Officer



I was very impressed with Mayor’s dashboard at Seoul City Hall. If the city mayor updates the current situation with real-time information, this will make governments respond directly to the public needs. That is why I would like to apply dashboard system in City of Balanga.



Francis Anthony Sandejas Garcia
City of Balanga
City Mayor

Integrated Sustainable Solutions for Smart Cities Workshop was well-structured, comprehensive, informative and useful. Site visits were also well organized. Facilitators and staffs were very accommodating, kind and sensitive to the needs of everyone. Thank you very much for the wonderful experience in Korea.

Marilen Zabala Alonzo
City of Balanga
Head of City Assessor’s Office



CONCLUSION & LEARNING POINT

The lecture “Smart City Initiatives” from Seoul Metropolitan Government provided better and more comprehensive systems including improved security levels for citizens, better traffic controls, and efficiency with advanced technologies.

Mohd Adli Amir
Kuala Lumpur City Hall
Senior Town Planning Officer



Seoul has very good system in providing excellent public services for its citizen. In addition, the mindset of citizen has already support the smart city of Seoul. It was so impressive that Seoul identifies the leak of water pipes by using smart technologies. I will try to apply the Time Domain Reflectometry(TDR) technology to Banda Aceh Municipality.



Muhammad Ridha
Banda Aceh Municipality
Head of Economic Cooperation Division

Seoul is considering the pedestrians’ needs when making their urban policies. Among the policies that I learnt in this capacity building workshop, I would like to apply the concept of public mobility right, open data, and safe environment for pedestrians.

Myo Thaw
Yangon Region Government
Member of Yangon Traffic Control Center Assessment Committee



The lecture “Smart City Initiatives” from Seoul Metropolitan Government will surely realize the vision of City of Balanga, an established hub for global technology businesses. I will reflect policies of Seoul by implementing smarter solution in all government processes in my city and by using tri-media platform to develop awareness in the community about city government program on ICT.



Nenette Bugay Santos
City of Balanga
Head of Management Information Services Office

The lecture “Big Data and Transportation policy” from Seoul Institute was very insightful and new for me. I would like to apply new policies such as Smart card system, solar powered cars and data analysis & management. As a follow-up, I will bring this policies to Kathmandu Metropolitan City’s policy makers and try to implement it in Katmandu Metropolitan City

Pramila Parajuli
Kathmandu Metropolitan City, Architect Section
Chief



CONCLUSION & LEARNING POINT

The lecture “Big Data and Transportation policy” from Seoul Institute was directly related with what Lalitpur Metropolitan City is looking for. I will first try to implement this idea in a small area for data collection and try to explain the importance of data to improve the public transportation system.

Raju Maharjan
Lalitpur Metropolitan City
Aide to the Mayor



Smart Operation & Management (O&M) technology for Infrastructure is directly related to my work. I would like to reflect policies of Seoul by introducing good database in Geographic Information System (GIS), implementing the project on renewable energy, and increasing greenery in the city with green building and vertical gardening as we saw in the Seoul City Hall.



Subasing Arachchige Kusum Subasinghe
Colombo Municipal Council
Deputy Director Engineering

Big data won't solve 100% of the urban challenges, however, it will help local government to better control and monitor the cities' development. It will also provide more smart and efficient ways for making better living standard for the people. I hope Penang can have living standard as Seoul in a near future.

Tan Lin Hai
City Council of Penang Island
Architect



The lecture “Big Data and Transportation policy” from Seoul Institute was directly related to my work and I could learn how the policy could be related to big data and analysis. I will look forward to ways of applying Seoul's policy by convincing Yangon Region Transport Authority as well as Chief Minister of Yangon Region Government.



Than Win
Yangon Region Government, Advisor
Director of Yangon Transportation Authority



Thank You !



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