

12-13 July, 2023



CityNet Services for the Sidoarjo Regency

Seoul Smart Resource Management Program

FOR URBAN SDGS ACTION



This program has been designed and operated as a CityNet Service at the request of the Sidoarjo Regency in May 2023.

CITYNET SERVICES (Virtual and Offline)



CityNet Services is a regular program, designed so CityNet members can conduct sustainable learning exchanges across the network, and showcase good practices for other cities to replicate. It further enhances CityNet’s pool of experts, and ensures maximum outcome benefits to the participants. CityNet Services can be applied officially to the Secretariat 2 months in advance.

Although this Seoul Smart Resource Management Program was offered as an offline program, in light of the convenience of internet and technologies, CityNet Services will be conducted primarily online, with a focus on the two formats.

Advisory Assistance CityNet Services identifies resource persons from among its pool of experts and partner institutions and connects them to your local government for direct technical advice. Technical experts from other CityNet members can extend their advisory services as well. CityNet Secretariat may provide facilitation for the project.

City-to-City Partnerships CityNet Services enables its members to jumpstart proactive engagement in strengthening city relations. Peer Review of the focused area of topic and knowledge sharing will be conducted to initiate an effective and deep cooperation.

“Seoul Smart Resource Management Program for Urban SDGs Action”

[CityNet Services for the Sidoarjo Regency]

Background: At the request of Sidoarjo Regency, CityNet Secretariat¹ has organized a program for a delegation of civil servants from Sidoarjo to study smart city practices, especially focusing on waste and water management. The program consisted of lectures, briefings, and field visits aimed to provide insights into successful smart city strategies, technological innovations, and citizen engagement of Seoul, which bears the status as a leading smart city. The study visit will provide valuable learning opportunities for Sidoarjo, enabling officials to drive sustainable urban development by localising appropriate smart city policies and strategies.

Objectives: Facilitate a successful benchmarking program for Indonesian civil servants at the local government level to learn Seoul’s smart city practices. The Sidoarjo government’s priority on smart city adaptation is to improve the quality of life for citizens, so the study program will cover topics related to waste and water management, transportation, and digital inclusiveness.

Participants (9): 6 Indonesian civil servants + 1 spouse of the Regent + 2 translators

- 1. Mr. Ahmad Muhdlor (Regent of Sidoarjo)**
- 2. Mrs. Saadah Ahmad Muhdlor (Mr. Regent’s spouse)**
- 3. Mr. Ari Suryono (Head of Regional Tax Services Agency)**
- 4. Mr. Mulyono (Expert of Economics & Finance of Regent’s)**
- 5. Mr. Tripitono (Expert of Social Affairs & Governance of Regent’s)**
- 6. Mr. Perdiksa Cahya Binara (Aide of Regent)**
- 7. Mr. Dwi Hary Soeryadi (Director of Local Water Company)**

- 4-5 CityNet Secretariat staff
Director of Programs: Youngmin Chang
Program Officer: Jiyon Shin, Chris Di Gennaro
Program Assistant: Erin Um, Seoyoung Lee, Yejin Lee, Ara Ko

Duration: 2 days

Program content: 3 lectures and 5 site visits with a focus on Seoul’s urban growth, smart waste and water management and transition to a more inclusive city. Participants will also experience public transportation firsthand as part of the program.

Program budget and roles: Flights, accommodation, transportation, and translators were arranged by the delegation and the overall programming and delivery was designed and operated by CityNet.

¹ [CityNet](#) is an association of Asia Pacific cities and organizations dedicated to sustainable urban development. Established in part by UNESCAP, the network has existed since 1987 and is currently headed by the Secretariat in Seoul, the President City. There are over 150 active members. Membership is open to all Asia Pacific cities.

1. Itinerary

July 12 (Wed)

Time	Activity	Location
9:00	Depart hotel on tour bus or walk	
9:30	Teatime between CEO and Regent	CityNet Office
10:00	Meeting at CityNet Secretariat <ul style="list-style-type: none"> • Objective setting for study program & introduction to CityNet Services (10') Chris Di Gennaro CityNet officers • Presentation by Delegation (15') • Lecture on Seoul's urban development (25') <ul style="list-style-type: none"> ○ Jiyon Shin, CityNet officer 	CityNet meeting room
11:00(30')	Lecture on Seoul's PPP by Seoul Institute 주재홍 박사님(02-2149-1425, jhju@si.re.kr)	
12:00	CityNet sponsored lunch at nearby restaurant <ul style="list-style-type: none"> • CEO with Regent, Mr. Ari, translator @ 달개비 • The rest with CityNet staff @ the office 	
13:00	Leave from CityNet (Regent/ Mr. Ari, translator leaves from 달개비 to Mapo)	
14:00(1hr)	<ul style="list-style-type: none"> • Mapo Resource Recovery Center Tour <ul style="list-style-type: none"> ○ 최하림 주무관 02-374-8181 	Mapo RR Center
16:30 (1hr 30min)	<ul style="list-style-type: none"> • Guided Tour at Ddukdo Water Purification Center (16:30) & the water museum (17:15) <ul style="list-style-type: none"> ○ 이금재팀장님 02-3146-5510 ○ 수도박물관 전시 해설 정인종 주무관 02-3146-5921 	Ddukdo 아리수 정수장 주차 (15 인승1 대)

Day 3: July 13 (Thurs)

Time	Activity	Location
9:30	Depart from Lotte hotel on tour bus	Lotte Hotel
10:10	Self-guided tour of Haneul Park -- former landfill site	Haneul Park
11:00	<ul style="list-style-type: none"> • Tour of Seoul Smart City Center hosted by Seoul Digital Foundation (Link) <ul style="list-style-type: none"> ○ Seoul Digital Twin Lab ○ Seoul Digital Inclusivity Lab ○ Seoul tech startup presentations 	Smart City Center
12:30	Lunch at nearby restaurant (CityNet suggests 1 place)	Incanto (Italian)
14:00(1hr)	<ul style="list-style-type: none"> • Lecture: Seoul smart city best practices: smart eco-city Seoul <ul style="list-style-type: none"> ○ 기동원 연구위원 	Seoul Institute of Technology
15:00	Take public transit to get to CityNet office/dinner place	
17:00	<ul style="list-style-type: none"> • Wrap-up session <ul style="list-style-type: none"> ○ Jiyon Shin, CityNet officers 	Insadong Cafe
18:00	CityNet sponsored dinner with CEO (13 ppl reserved)	Insadong Okjung

2. Participants (7)

Name	Photo	Position
Ahmad Muhdlor		Regent of Sidoarjo
Saadah Ahmad Muhdlor		Mr. Regent's spouse
Ari Suryono		Head of Regional Tax Services Agency
Mulyono		Expert in Economics and Finance
Tri Pitono Adi Prabowo		Expert in Social and Regional Affairs
Perdigsa Cahya Binara		Policy Analyst
Dwi Hary Soeryadi		Director of Local Water Company

3. Lectures & Visits

Lecture 1

Jiyon Shin, Program Officer at CityNet (PhD in Urban Planning)

[Urban growth of Seoul: towards a sustainable and quality-driven growth]

Jiyon Shin has been specializing in sustainable and inclusive urban planning and has lectured on smart city and urban infrastructure and sustainable design at Universities (University of Utah at Songdo, Seongkyunkwan University graduate school). Prior to CityNet, she served as an urban planner at the Seoul Metropolitan Government Urban Planning Bureau and currently holds a position as a committee member to review Seoul's regeneration project funds.

Her presentation focused on the history of Seoul's sustainable growth, its challenges and policies to overcome its growth challenges while explaining about Seoul's future vision in terms of its comprehensive spatial plan 2040 Seoul Plan, and about Seoul's Smart City Policies and Projects.



Q&A

1. How did Seoul move people from Cheonggyecheon for its road project?

- For the overpass project (1958-1978), there were many illegal residents that had to be relocated. However, the government compensated people with land ownership to move out. They even built another city, such as Seongnam city, for their relocation (although they kept coming back!). And the government worked with a private company to operate negotiations. Nevertheless, in the 2000s for the Cheonggyecheon stream restoration, there were numerous processes for persuading & negotiating with the businesses and vendors²

² For more information, refer to <https://seoulsolution.kr/en/content/7475>.

2. Is the DDP in Dongdaemun owned by the government?

- Yes. It used to be a public sports facility built by the government and is now a museum/conference building designed by the world-renowned architect Zaha Hadid, operated and owned by the government.

3. In the Inclusive Society description, I would like to know more about Principles of Inclusivity in the Master Plan.

- The 2040 Master Plan and the previous 2030 Master Plan involved considerably more citizen participation from the 25 sub-districts (gu) than in past planning schemes. For the 2040 Master Plan, 1000 people were surveyed and involved in the planning. Where they live, their age, gender were considered for equal representation, and also separate attention was given to include the extreme poor, foreign residents, gender minorities, physically challenged, and the youth.
- Additionally, to actualize the Master Plan, each district has its own Neighborhood Town Plan (Community plan) designed and planned together with its neighborhood residents and facilitated by experts and government officials. They provide detailed guidelines on how to enact the master plan. It is important to plan well, but including residents is important because they know much about their neighborhood and will be directly affected by the plan in their every day lives.

4. Indonesian citizens also want to participate in urban planning, but there are limitations.

- Not every field in urban planning may need 100% citizen participation at every stage. There are many ways to involve citizens, some by officially letting them know what developments and planning changes will occur in the neighborhood through the news or a government homepage, some by including them in interviews or surveys at the latter stage of completion, some from the very beginning through simple surveys, or some through rigorous co-planning from the start. It depends on the situation and context. Should a government's decision be completely dependent on citizens' popular vote on the location of a city's landfill, dam, airport, or the width of the road? Inevitably, some have more weight given to the opinions of technicians, researchers, and top-level decision-makers.
- In the case of government-owned land or building, there could be relatively less difficulties in the planning process to garner public participation, when needed. Such as, what do you think the gov. should do with this old school building in this area? Should we renovate it as a community center or a public art gallery? How?
- Yet, in the case of including public participation on privately owned land, there is a significant need to persuade and educate individuals why "public interest" is important for planning.
- For example, the Han River is a beautiful public open space, but all the privately owned apartments located nearby wish to privatize the view and keep the view to themselves. This does not serve the public interest. So, the government must come up with a plan hopefully before the developer acts, such as the Han River Master Plan that also involved some public participation in the planning that highlights the importance of Han River for the City as a whole and to its citizens — whether one owns land in front of Han River or not. Once a plan is established with a consensus that the Han River and even the access (visual and physical access) should be protected for public interest, later when developments come with grand plans to privatize the Han Riverfront view and access, the Han River Master Plan that was established with citizen opinion can serve as the baseline that provides reasoning backed by citizen participation why the developer shouldn't privatize the Han Riverfront view/access can come in very handy.

Lecture 2

Joo, Jae-Hong, Researcher fellow at Seoul Institute [PPP in Seoul]

Jae-Hong Joo is a specialist in Economics, Finance, Public and Private Infrastructure Investment, and has been producing policy research reports on how to improve PPP through institutional changes. He has been involved in numerous PPP projects directly related to Seoul's investment systems.

And he worked at KDI PIMAC until 2012. Also he was dispatched to work for 3 years at the Ministry of Economy and Finance.

His presentation covered the system and method of PPP in Seoul with real examples of PPP. He also shared tips to bring more benefits when planning for PPP.



Q&A

1. How long does the city plan for BTO and BTL?

- For harbors in the BTO category, 50 years.
For schools in the BTL category, 20 years, sewage pipes for 30 years.
- There may be a difference between the school system in Indonesia and Korea. Since Korea provides free education, there is little benefit from school. Therefore, it is classified as a BTL.

2. Question about Seoul Underground Tunnel

- It is a tunnel that stretches 40 meters down. There is a toll (about 2,000-2,500 KRW).
- The plan is carried out by the Seoul Metropolitan Government, the implementation led by the private sector. The Seoul Metropolitan Government provides subsidies.

3. Will the Seoul Metropolitan Subway Plan period be 30 years?

- We usually plan for 30 years, but some are longer or shorter than this.

4. **In the case of this project plan for the Dongbuk Line, when will the 30-year plan be implemented?**
 - We calculate the 30-year from the year the operation begins when the profits are generated.
 - For the Dongbuk Line project, there were some major issues, so it was delayed 7 years.
5. **There are different types of PPPs, but I wonder how you decide whether to take the lead of the government or the private sector.**
 - It is determined by the VFM Tests. Social Benefit also plays an important role.
 - We decide on private business only if it is more efficient than financial business.
6. **The Indonesian government accepts projects when it has much profit, otherwise rejects them. Does the Korean government decide in this manner?**
 - We do not rate projects solely on the amount of revenue.
7. **How is water distributed and operated in Korea?**
 - K-Water works as the sole government corporation distributing water nationwide to municipalities. It is the municipalities' responsibility to further treat the water to become even more drinkable, and to treat wastewater.

Lecture 3

Dongwon Ki, Research Fellow at Seoul Institute of Technology [Pioneering Sustainable Urban Solutions: Seoul's Path to a Smart Eco & Carbon Neutral City]

Dongwon Ki works at the Living & Environment Research Division at Seoul Institute of Technology. His specialization is in waste management and resource circularity including wastewater. The Division he is part of (Living & Environment Research) is dedicated to addressing various environmental issues to create a pleasant living environment and make Seoul a better place to live. It continuously pursues comprehensive and practical research and development of tailored solutions in response to climate change, sustainable development, architectural environment for a comfortable living, water environment, resource circulation, and improvements in ecological and atmospheric environments.

Mr. Ki explained about Seoul's ambition to become more of an eco and carbon neutral city spanning from the areas of urban infrastructure, living environment, to urban strategies. He further gave examples of Seoul using AI, big data to secure citizen safety through cctv and real-time monitoring (including the Han Riverfront), expanding future transportation tech., and utilizing automated image-based management technology to collect information on urban safety and provide real-time solutions through predictive modelling.





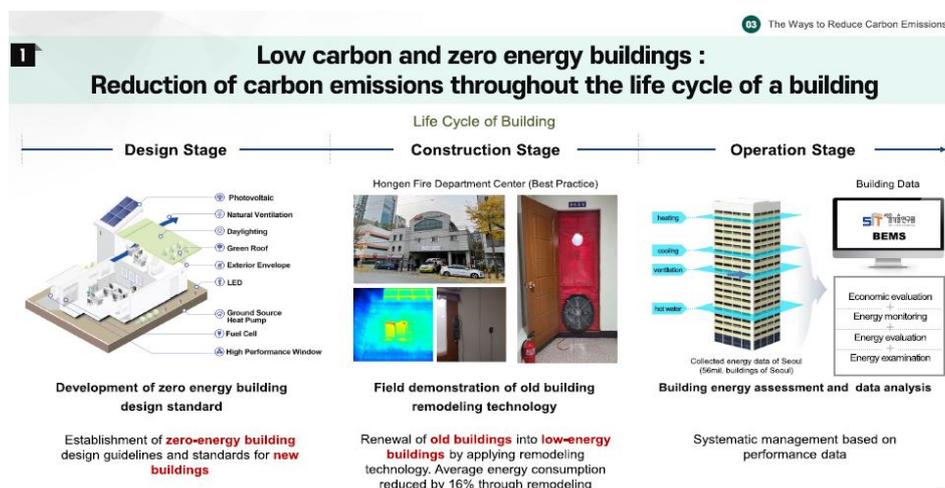
Q&A

1. Is there any motorcycle regulations? because in Indonesia, the motorcycle is the number one transportation.

- We have the regulation of the people, especially within the Seoul city hall, the center area, not only for motorcycles but also the auto bikes.
- There are regulations that ensure the level of air quality of the bikes, and they regularly check its emissions. If the level does not comply with the standard, they are not allowed and fined.

2. Limited resources and complicated problems, how does your city decide what to do first with the limited resources to solve the problems?

- Taking my area of research, waste management, as a case, we have abundant new technology however these tech-based infrastructure are typically very expensive. It also requires much energy and money. Seoul has the same issue, so we implement other policies, such as the four R campaign, "reduce, reuse, recycle, replace."
- So technology must come with education and raising awareness among citizens inducing behavioral change with the help of various campaigns.



04 The Ways to Reduce Carbon Emissions

Green vehicles : Establishment of strategies to expand green vehicles

2

Analysis of demand and supply

- Estimation of the number of electric vehicles
- Estimation of total energy demand
- Target amount of total energy supply

Appropriate # of charger

- Appropriate charger type for each facility and building
- Calculation of the apt quantity for each type of charger
- Comparison of appropriate quantity of chargers in Seoul

Demand analysis for charging infrastructure

Appropriate # of chargers

Expansion of green transportation promotion district, through the connection of high tech transportation

Selection of core expansion regions for autonomous electric vehicles

- 3 city centers (Gangnam, Yeouido) green transportation area
- 6 metropolitan areas + weak traffic
- Expansion throughout Seoul including 12 regional centers

► Contribution to the spread of electric vehicles through demand analysis and forecasting

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05 The Ways to Reduce Carbon Emissions

Waste to energy : Development of a standard on converting waste into energy

Combustible waste in Seoul (vinyl, plastic, and etc.)

Eco-cement

Standard analysis operating procedure for waste and cement

Converting waste into energy : alternative fuel use for cement kiln

Section	Carbon Emission Reduction (ton CO ₂)
Waste incineration (a)	254,093
Waste landfill (b)	211
Using coal to cement kiln(c)	112,457

► Energy production from wastes in cement manufacturing process

25

Transition to renewable energy with BIPV

4

- Color BIPV
- Building BIPV
- Special BIPV
- Road PV
- PV
- Etc

Solar System Demonstration Complex Concept (Hosted by Seoul City and SIT)

BIPV

The Building Integrated Photovoltaic System (BIPV) is a solar power facility installed in a building that can perform the role and function of building subsidiary materials and power generation at the same time.

► Expansion of the supply of renewable energy systems through technical verification and field demonstration

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Site Visit 1
Mapo Resource Recovery Facility

Established in May 2005, the Sky Park Incineration Facility is located in Mapo 86 (Sangam) and is operated by the Seoul Metropolitan Government's Resource Recycling Division. With a capacity of 750 tons per day (250 tons per day per unit, with three units in total), the facility utilizes a combination of stow car and rotary kiln systems for waste incineration. The primary purpose of the facility is to address the need for waste incineration due to prolonged landfill usage in the northwest region of Seoul. By incinerating waste at high temperatures of around 850 degrees Celsius, the facility ensures safe disposal while capturing and recycling thermal energy for district heating and other services, contributing to a clean and comfortable environment.

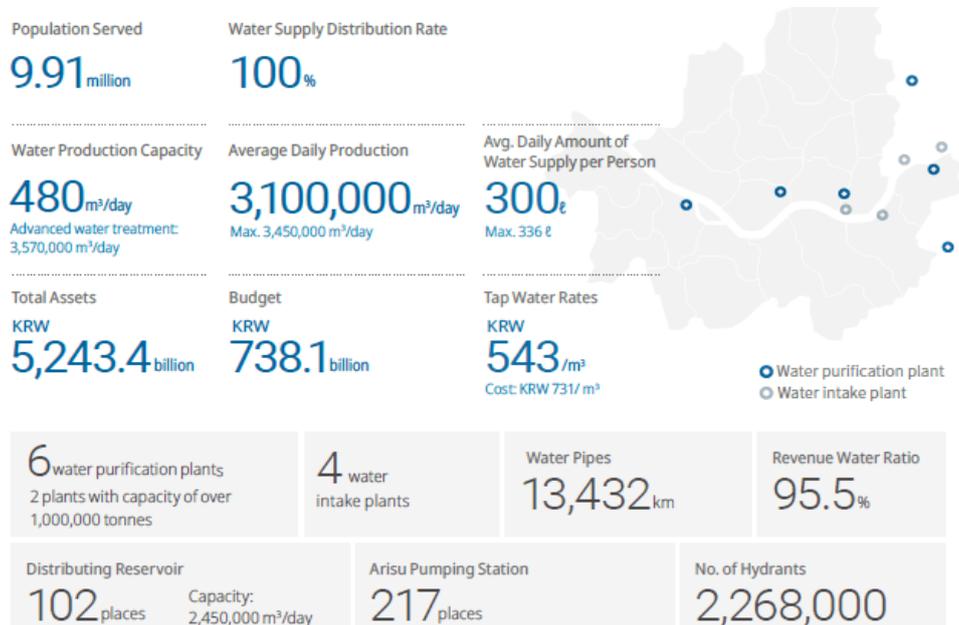


The facility has several significant effects, including a reduction in long-term landfill use and construction through safe waste incineration. Additionally, the production of steam and electricity from the incineration process leads to a decrease in greenhouse gas emissions by 21,405 tCO2 and serves as an alternative to crude oil imports, saving 34,070 barrels. The facility also promotes the use of renewable energy equipment and raises public awareness about its waste discharge processes.



Site Visit 2 Ddukdo Arisoo Water Purification Center + Museum

Ddukdo Arisoo Water Purification Center is a significant facility that holds the history of being the first modern water purification plant in South Korea, built in 1908. Initially, it supplied water to the residents in the old city center and Yongsan. Currently, it is responsible for providing clean water to 1.02 million people living in 71 neighborhoods belonging to Mapo-gu, Seodaemun-gu, Seongdong-gu, Seongbuk-gu, Yongsan-gu, Jongno-gu, and Jung-gu. Equipped with advanced water treatment facilities, Ddukdo Arisoo Water Purification Center produces and supplies Arisoo water 24 hours a day, establishing itself as an educational space where people can experience the excellence of Arisoo water.



Site Visit 3
Haneul Park (Sky Park)



For 15 years, from 1978, Nanji Island served as a landfill site for the waste of 10 million Seoul citizens. Over time, it transformed into the world's largest garbage mountain, standing at a height of 98 meters above sea level, with approximately 13 million truckloads (8.5 tons per truck) of waste. It earned the nickname "Samdado," which refers to the three major issues associated with it: flies, dust, and foul odor. This barren land became a major source of environmental pollution, with methane gas and leachate, contributing to its inhospitable conditions.



World Cup Park is located in the western part of Seoul and was created from 1978 to 1993 over a period of 15 years using waste discarded by Seoul citizens. It transformed two massive mountains and a large area of landfills into a 270,000 square meter environmentally friendly and ecological park, commemorating the hosting of the 2002 World Cup and the new millennium. The park consists of five theme parks, including Peace Park, which is the representative park and covers a vast area, as well as Sky Park, Sunset Park, Nanji Stream Park, and Nanji Han River Park. The transformation of Nanji Island Landfill into a stabilized and park-like environment has contributed to the development of a large-scale environmental and ecological park in Seoul.

Site Visit 4 Smart City Center

The Seoul Digital Foundation, established in 2016 as an affiliated organization of the Seoul Metropolitan Government, focuses on transforming Seoul into a global digital capital. It functions as a think tank that applies modern digital technologies to solve urban issues and aims to realize the vision of a digital city. The foundation seeks innovative ideas and technologies to develop and implement digital solutions in various fields such as urban infrastructure, administration, transportation, and the environment. Its efforts contribute to enhancing Seoul's competitiveness and efficiency, propelling its growth as a globally recognized digital city.

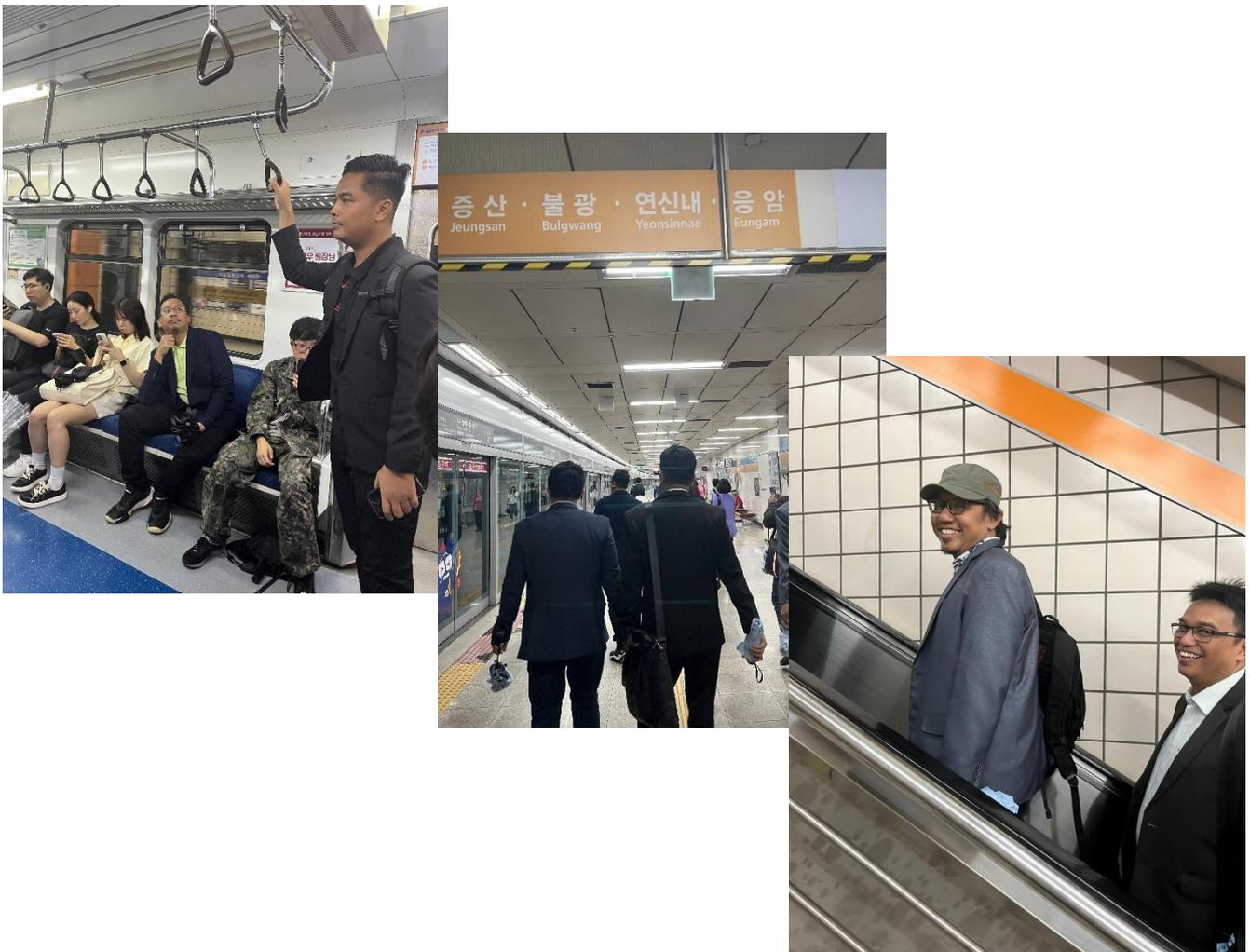
The Seoul Smart City Center, operated by the Seoul Digital Foundation, was established with the aim of creating a Seoul-style smart city by utilizing digital technologies. It serves as a hub for the development of infrastructure and support for business creation in the context of building a smart city.



Public Transit Experience

Seoul's public transit system represents a transformative and innovative model that seamlessly enables transfers between buses and subways, providing commuters with a highly efficient and convenient travel experience. With a well-integrated network of bus and subway routes, passengers can effortlessly switch between modes of transportation, eliminating the hassle of multiple tickets or long waiting times. The city's commitment to enhancing connectivity and accessibility is evident in its advanced technology, such as the T-money card system, which allows for seamless fare payment across various modes of transit. This fluid transfer system not only reduces congestion and travel times but also promotes sustainable transportation options, making Seoul a shining example of a modern, forward-thinking city.

In addition to the fluid transfer between buses and subways, Seoul's public transit system is further enhanced by the integration of the Topis (Transport Operation and Information Service) system. Topis serves as the backbone of Seoul's transportation management, providing real-time information on schedules, routes, and service updates. Through the use of advanced technologies like GPS tracking and intelligent transportation systems, Topis ensures accurate and up-to-date information for commuters. This seamless integration of Topis with the bus and subway systems enables travelers to plan their journeys more efficiently, allowing for smooth and reliable transportation across the city. The combination of fluid transfers and the reliable information provided by Topis has transformed Seoul's public transit into a truly world-class system, setting new standards for urban mobility.



Site Visit 5 Insadong area

Insa-dong, located in the heart of the city, is an important place where old but precious traditional goods are on display. There is one main road in Insa-dong with alleys on each side. Within these alleys are galleries, traditional restaurants, teahouses, and cafes. The galleries are the heartbeat of Insa-dong. There are about 100 galleries in the area offering every example of traditional Korean fine art from paintings to sculptures. The most famous galleries are Hakgojae Gallery, which functions as the center of folk art, Gana Art Gallery, which promotes many promising artists, and Gana Art Center. The teahouses and restaurants are the perfect complement to the galleries. They are hidden deep within the twisting alleyways, making it feel like a treasure hunt. The shops in Insa-dong are very popular among all age groups, because each one is unique.

Every weekend, the main street is blocked to vehicular traffic and it becomes a cultural space. Stores set up booths outside and Korean candy merchants and fortune teller stalls can easily be found; there are traditional performances and exhibits as well. Insa-dong is especially popular among international tourists.



4. Testimonials of participants & exit survey results



*CityNet
Services was
very helpful
and we hope to
further our
cooperation
with CityNet!*

*-Mr. Ahmad Muhdlor,
Regent of Sidoarjo*

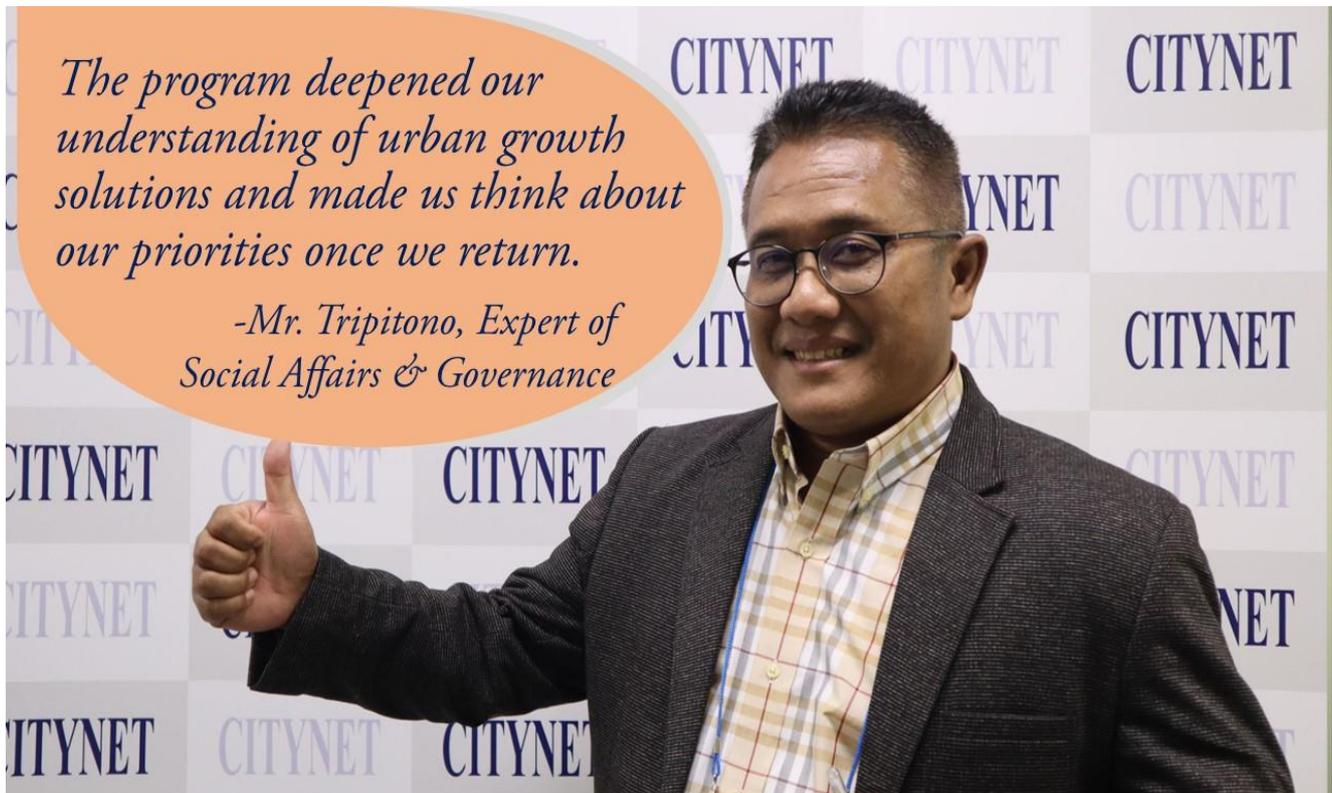


*We learned about
Seoul's many resource
management policies
that can be a good
reference for Sidoarjo's
green future.*

*-Mr. Ari Suryono,
Head of Regional Tax
Services Agency*

The program deepened our understanding of urban growth solutions and made us think about our priorities once we return.

-Mr. Tripitono, Expert of Social Affairs & Governance



Through this program, I learned a lot about water management and wish to learn more in-depth about the technical details on water management on another opportunity. Thank you!

-Mr. Dwi Hary Soeryadi, Director of Local Water Company





CityNet Staff was very hospitable and the program was very interesting. Thank you!

*-Mr. Mulyono,
Expert in Economics
& Finance*



We learned much and we wish to revisit Seoul to gain more knowledge in certain topics.

*Mr. Perdigsa Cahya
Binara, Policy Analyst*

Position and Organisation

6 responses

Sidoarjo Regency Expert in Regional and Community Planning, Lecturer of Development Planing , Trunojoyo Madura University

Binara

Head of the regional for.service agency of sidoarjo regency

Expert of economi and finance

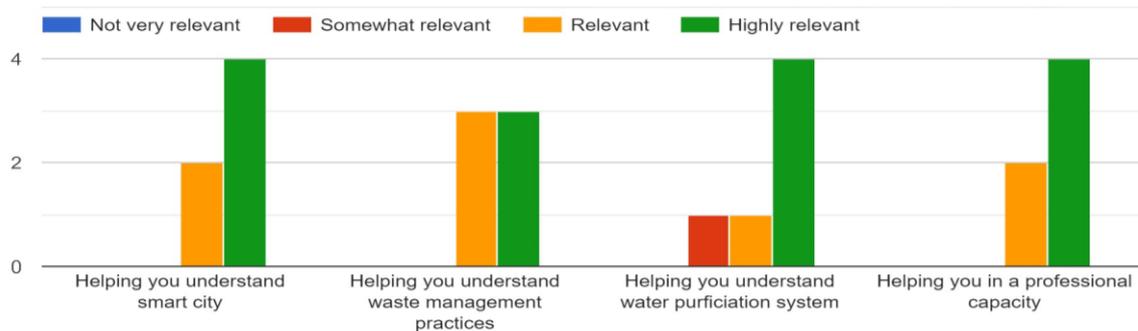
President Director of Local Water Company

Regent of sidoarjo

Program Feedback

Please rate how relevant this study program was to_____

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What were your key takeaways from this study program? Please also share an example of how you'll apply what you learnt in this study program to your city.

6 responses

We going to start with waste management

Good transportation, water purification

the discussion about PPP is very useful to further develop PPP in Sidoarjo Regency

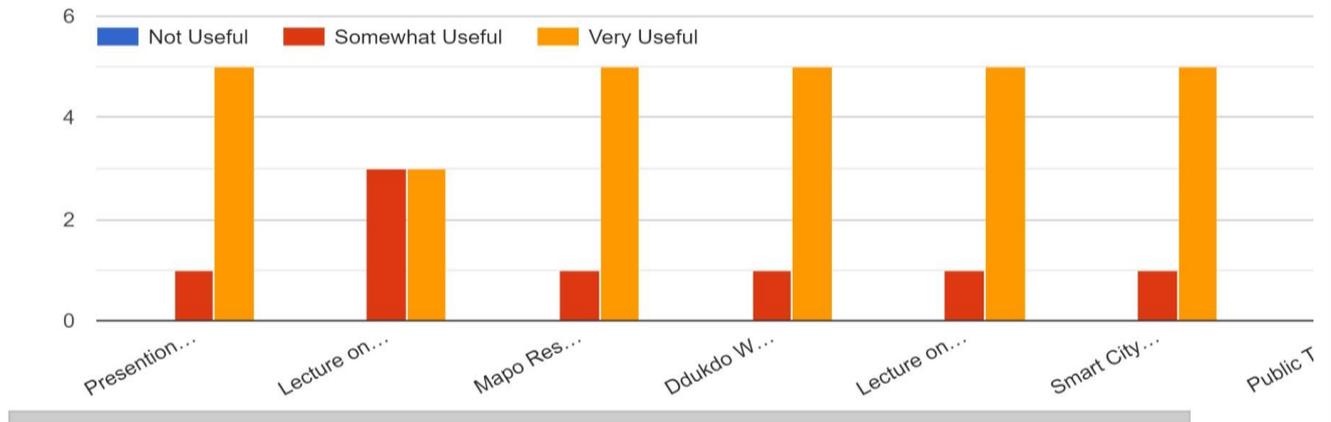
Ilmu yang luar biasa..

Very nice and interesting experiences for landfill and water purifying management.

In this program, i have some experince that make me know to upgrading my city services. But overall i learn somethings big, that the city can better if all development stakeholder support it. Im so proud when see korean people have strong nationality, thats the key how to build everything.

Which activity did you find most useful?

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How satisfied were you with the program content?

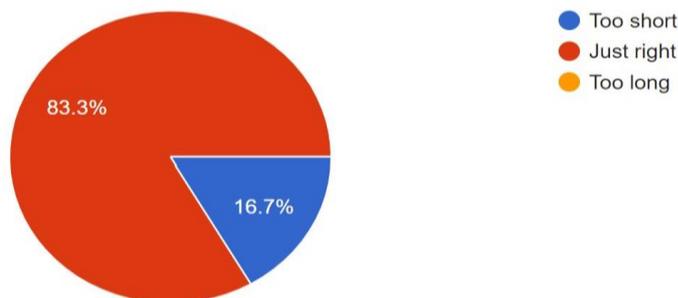
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How would you rate the duration of the site visits?

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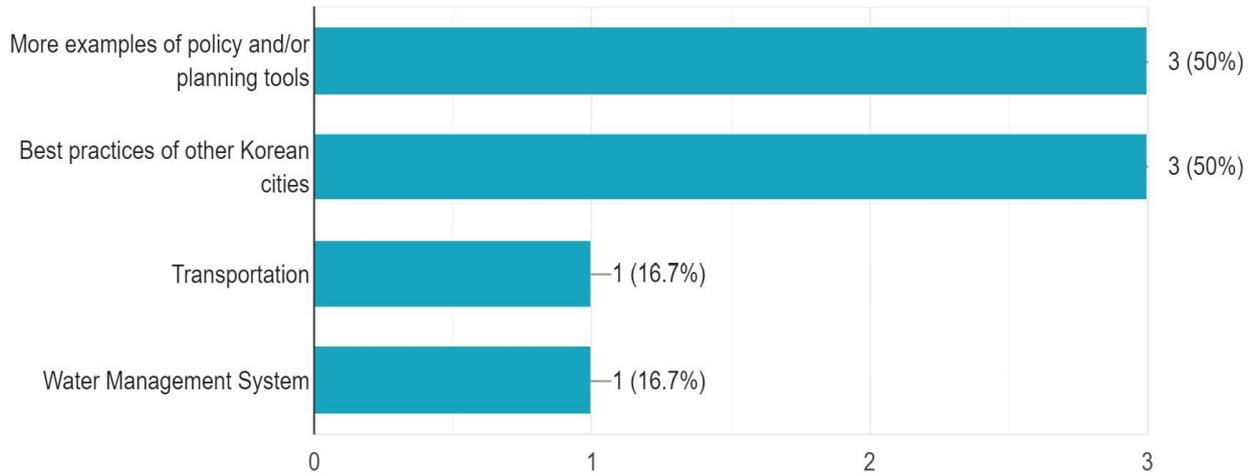
6 responses



Which topic(s) would you have liked additional or follow-up activity for? (select all that apply)

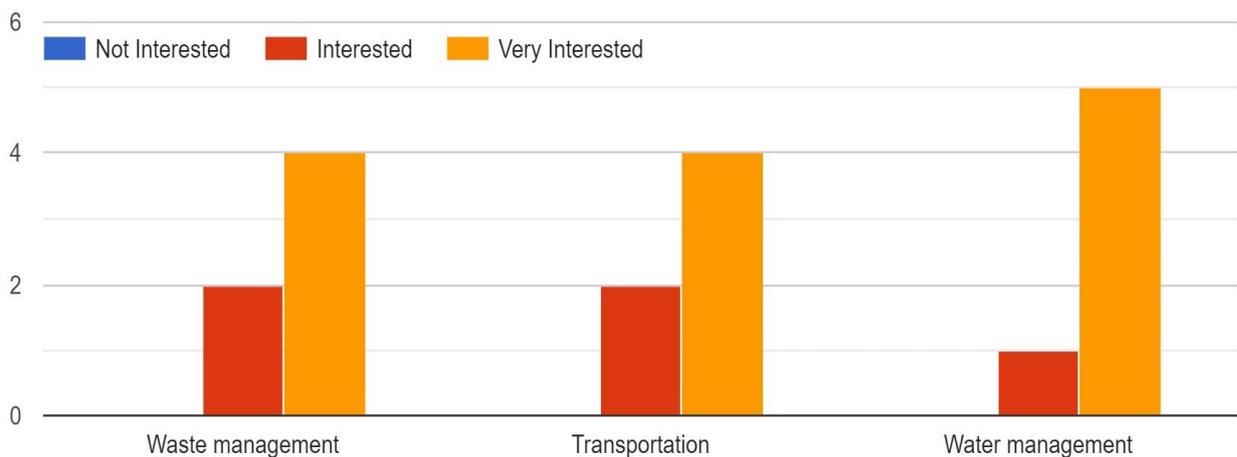
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6 responses



Please rate your interest in participation in follow-up workshops/online course on the topic of

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CITYNET

THE REGIONAL NETWORK OF LOCAL AUTHORITIES
FOR THE MANAGEMENT OF HUMAN SETTLEMENTS

Contact Us

CityNet Secretariat

10F, Seoul Global Center

38 Jongno, Jongno-gu

Seoul, Republic of Korea

CONTRIBUTIONS

Final Editor of Report: Director of Programs Youngmin Chang

Edited & Drafted by: Program Officer Jiyon Shin

Program Design & Operation: Program Officers Chris Di Gennaro, Jiyon Shin

Program Assistance: Program Assistants Erin Um (primary assistant), Yejin Lee, Seoyoung Lee, Ara Ko

Cover page of Report: Program Assistant Yejin Lee

