

Taking Actions against  
Climate Change

# Promise of Seoul



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# Promise

## Make Seoul a sustainable climate & environment city

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a sustainable  
climate &  
environment city



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Citizen Involvement Matters the Most

An answer to a challenging and persistent problem can often be found when citizens put their heads together to tap the collective wisdom. Citizen involvement, therefore, is the most meaningful beginning and a crucial process when addressing any problem.

The ‘Promise of Seoul’ embodies a strong and collective resolve of 10 million Seoul citizens who came together to create a healthy, safe city for the next generation. We believe that the ‘Promise of Seoul’ will inspire other cities to follow the footsteps of Seoul and eventually create the ‘Promise of the World’, triggering a wave of change across the globe.



# Promise of Seoul:

## Taking Actions against Climate Change

Global warming is happening at an unprecedented rate, and extreme weather conditions such as heat waves, heavy rain and drought are causing natural disasters that, cost the lives and significant property of many citizens. Given such severe weather events are a major consequence of climate change, reducing greenhouse gas emissions—the main culprit of global warming—is of the paramount importance in tackling climate change. Such mitigation measures, however, have limits in effectively responding to climate change. Therefore, adaptation measures which focus on turning the challenge to an opportunity are required to supplement mitigation efforts.

Although responding to climate change is of a national concern, there is an increasing emphasis on the key role that cities play in meeting specific targets to address climate change. Against this backdrop, it is time for cities around the world to make a bold shift from a development-oriented approach to a low-carbon, energy-saving approach. The Seoul Metropolitan Government, in this regard, has demonstrated to the world the very possibility of a sustainable urban development by reducing greenhouse gas emissions through its One Less Nuclear Power Plant policy.

Seoul is now committed to becoming a role model in climate change response as part of its efforts to prepare for the Post-2020 New Climate Regime. Seoul also aspires to build a resilient and sustainable city by adopting approaches tailored to its unique characteristics and conditions.

Calling on all cities around the world to join in the cause at the ICLEI World Congress in April 2015, Seoul declares the ‘Promise of Seoul: Taking Actions against Climate Change’, an embodiment of the vision embraced by the 10 million citizens of Seoul and the Seoul Metropolitan Government.

Seoul hereby declares the following eleven pledges that embrace the intent of citizens, businesses and the city government to take actions against climate change:

### 11 Promises of Seoul

Seoul will reduce its CO<sub>2</sub> emissions by 25% by 2020 and by 40% by 2030 from the 2005 level, thereby creating a low-carbon, high energy-efficient city.

Seoul will ensure energy welfare by sharing energy with underprivileged communities that are vulnerable to climate change.

Seoul will set an example in countering climate change by adopting an integrated and comprehensive management system for greenhouse gas and air pollutants.

Seoul will create a city resilient to climate change.

Seoul will reduce greenhouse gas emissions by raising reuse and recycling level while reducing food waste.

Seoul will reduce greenhouse gas emissions by saving water and utilizing collected rainwater.

Seoul will strengthen its adaptive capacity to climate change by creating an eco-city with a rich and harmonious biodiversity.

Seoul will cut energy consumption by expanding urban agriculture to be practiced widely in citizen’s daily lives.

Seoul will ensure the health of the city by employing preventive measures against infectious diseases and heat waves while improving its capacity to respond to climate change.

Seoul will ensure safety by building the capacity to respond to and prevent climate disasters.

Seoul will stay at the forefront in pursuing cooperation at home and abroad as well as establishing an implementation system to effectively tackle climate change.



Meaning of ‘Promise of Seoul:  
Taking Actions against Climate Change’

A number of declarations and plans for greenhouse gas (GHG) emission reduction have been announced in the past. While Seoul’s own energy initiative, the One Less Nuclear Power Plant, has been a remarkable success, many such declarations and plans failed to galvanize public action.

Recognizing the need to engage the public, the city of Seoul decided to draw up detailed tasks and action plans against climate change together with its citizens. It was an effort to change the lifestyles of Seoul’s 10 million citizens while living up to and enhancing the city’s reputation as a climate and environmental capital in the world. The result of such effort is manifested in the ‘Promise of Seoul: Taking Actions against Climate Change (hereinafter referred to as the ‘Promise of Seoul’). Though in line with the Seoul Agenda 21 and the Seoul Action 21 in principle, the ‘Promise of Seoul’ differs significantly from the already existing declarations, policies or plans associated with climate change in the following ways:

‘Promise of Seoul’ is

A common resolve for action unveiled to the world, made through the participation of citizens, business and the city government.

The first attempt of Seoul to take an integrated approach to both mitigation and adaptation as a way to actively tackle climate change;

A comprehensive strategy covering all areas of climate change, including energy, air quality, transportation, resource recycling, water, ecology, urban agriculture, health, safety and urban planning;

Not only declarative in nature but also carries practical significance focusing on action. It suggests specific visions and tasks for each area as well as current status, targets and action plans for each task;

A goal-oriented policy with indicators for each area and task, with target years set progressively as 2020 and 2030;

A bridge to facilitate the shift to the Post-2020 Climate Change Regime which will be confirmed at the 21<sup>st</sup> Conference of the Parties of the United Nations Framework Convention on Climate Change to be held in Paris in December of 2015; and

A pledge that reaffirms the vital role cities play in making substantial reductions in GHG emissions and actively responding to climate change.

Background

The passage of the ‘Basic Ordinance on Low Carbon Green Growth for the City of Seoul’ in July of 2011 obliged the Seoul Metropolitan Government to seek measures to meet its targets for energy saving and GHG emissions reduction.

In an attempt to proactively respond to climate change, the Seoul Metropolitan Government launched the One Less Nuclear Power Plant initiative in April 2012. The project facilitated the city to manage energy production, energy efficiency and energy saving in a comprehensive matter. Later in July of 2014, Seoul introduced the second phase of the initiative under the name of ‘Seoul Sustainable Energy Action Plan’. The plan promotes public engagement to better the lot of citizens and the city at the same time.

On a global stage, the Compact of Mayors was launched at the UN Climate Summit held in New York City in September of 2014. Partnered with global city networks—ICLEI, C40 and UCLG—the Compact highlights the vital role cities play in combating climate change. In addition, the 21<sup>st</sup> Conference of the Parties of the United Nations Framework Convention on Climate Change will be held in Paris in December of 2015, during which the Post-2020 Climate Change Regime will be confirmed.





Furthermore, there has been an increasing focus on policy changes on a national level and the role of city governments in promoting voluntary participation. In this regard, at the ICLEI World Congress to be held in Seoul in April 2015, ICLEI will support the shift to the new global climate regime at the city level.

Recognizing that cities play a key role in tackling climate change and GHG emissions reduction, Seoul announced the ‘Promise of Seoul’ to deliver its duty as the host city of ICLEI World Congress and to publically announce the resolve of its citizens for actions.

**Preparation Process**

Citizen involvement was a crucial feature in the ‘Promise of Seoul’ even from agenda preparation. In fact, it was the Citizen Committee for Green Seoul—the city’s most representative body of eco-governance, Citizen Commission of One Less Nuclear Power Plant and

Executive Committee of One Less Nuclear Power Plant that called for visions and action plans to be drawn up to reduce GHG emissions.

Accordingly, the Preparation Committee was formed, consisting of members of each committee as well as qualified experts with extensive research experiences from Seoul Institute. To assign power to execute the plan, a working-level administrative organization consisted of public officials in charge of the action agenda was launched.

Aiming at citizen engagement from the initial stage, the Committee informed the public of all the information available at each stage of preparation while opening up to listen to the opinions of citizens via online and offline. Information was shared with the public through major web portals including the city government’s official website. Civil groups as well as schools played their part by proposing tasks for the ‘Promise of Seoul’ and participating in the

pledge for GHG reduction.

The ‘Promise of Seoul’ consists of the vision, goal, indicator, action plan and implementation strategy. In addition to the mitigation and adaptation measures on climate change, it also covers ten areas: Energy, Transportation, Air Quality, Resource Recycling, Water, Ecology, Urban Agriculture, Health, Safety and Urban Planning.

The ‘Promise of Seoul’ specifies detailed action plans on 36 tasks in 10 different areas for citizens, businesses and the city administration. In particular, the action plan for the administration focuses on the direction for the city’s support mechanism in helping all stakeholders meet their targets.

To be in line with the national GHG reduction targets and prepare for the Post-2020 New Climate Regime, the ‘Promise of Seoul’ modified the baseline year from 1990 to 2005. Accordingly, the target years for the ‘Promise of Seoul’ are set as 2020 and 2030.

The city of Seoul made every effort to ensure a governance that centers around civil society and to include as much valuable inputs from citizens and experts as possible. To this end, Seoul provided an online platform where citizens can freely submit their opinions while civic groups and school reached out to the public to listen to the real voices on the ground.

Seoul’s administrative districts also took part by holding various meetings and discussions with citizens from all walks of life, and the People’s Assembly held at the Gwanghwamun Square served as an important chance to include the collective wisdom into the ‘Promise of Seoul.’

An online survey was conducted with twenty questions on how to cut GHG emissions in everyday life. At the same time, an online poll helped the city prioritize the most important tasks in its fight against climate change.

Civil groups that participated in the drafting of the ‘Promise of Seoul’ pointed out the importance of taking initiative, leading to the establishment of the Citizen’s Movement Headquarter for ‘One Ton Less CO<sub>2</sub>’, a move calling on each individual to reduce 1 ton of CO<sub>2</sub>. The Korean Federation for Environmental Movement is playing a role as assistant administrators while several environment, women, and occupational associations are also partaking in the voluntarily formed headquarters. Seoul Metropolitan Office of Education, in particular, made every endeavor to engage young students—the leaders of tomorrow—by providing a variety of education programs on environment issues such as global warming. A total of 1,064,000 people from 1,299 schools have participated in the process, during which practical action plans were suggested.

Tremendous efforts have been made in drafting the ‘Promise of Seoul’, but we need to do more to put words into action. In light of this, a civil campaign was launched to garner 1 million pledges for individual actions, calling on everyone to reduce 1 ton of CO<sub>2</sub> to achieve 10 million tons of CO<sub>2</sub> emission reduction by 2020.

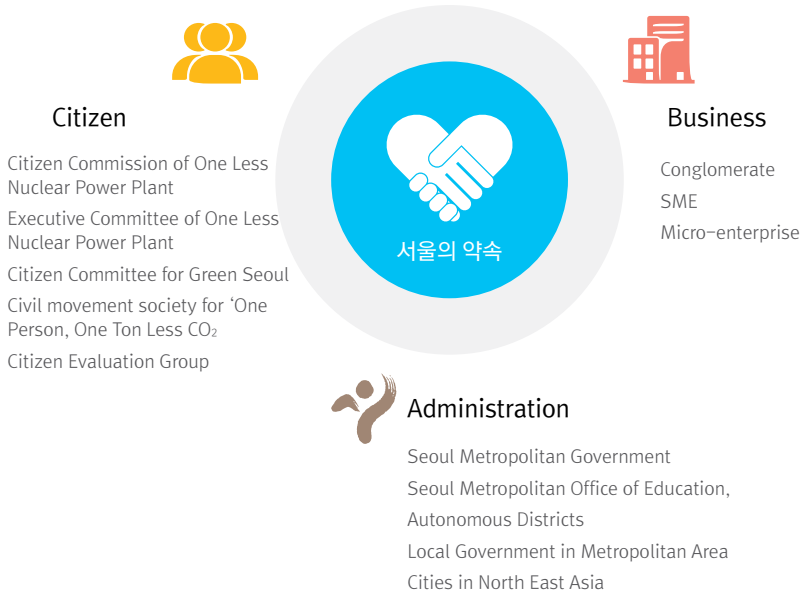
Endorsed by participating cities, Seoul is now planning to announce the ‘Promise of Seoul’ at the ICLEI World Congress 2015.





Promise of Seoul  
Implementation and  
Monitoring System

The city of Seoul cannot overcome climate change alone. To deliver the action plans in the ‘Promise of Seoul’ and thus meet the GHG reduction targets, the city of Seoul needs the support and cooperation from its 25 administrative districts, Gyeonggi Province, Incheon City and the central government, not to mention citizens and businesses in Seoul. Further, Seoul needs to build a cooperative front with the international community including cities in Northeast Asia.



- In particular, the Seoul Metropolitan Government will take the following measures to deliver the ‘Promise of Seoul’:
- Develop a mobile-based application for citizens and companies to readily make suggestions on policies related to climate change;
  - Operate an online bidding system for a project associated with addressing climate change;
  - Establish a comprehensive system to effectively support activities of environmental groups committed to climate change;
  - Develop a system embracing citizen participation across the implementation process of the ‘Promise of Seoul’;
  - Operate an efficient management system for GHG reductions targets; and
  - Strengthen international collaboration in its response to climate change by forging partnership with like-minded international organizations such as ICLEI.







## Evaluation System

Seoul will

Establish a citizen-led evaluation group in order to provide a greater opportunity for public engagement while building public consensus on the need for actions against climate change. Seoul will also establish a system that can evaluate action plans and implementation process and reflect the outcomes of the evaluation.

Evaluate progress of each year and use the result to adjust targets and action plans for the following year. Seoul will also publish an annual evaluation report on the ‘Promise of Seoul’.

Use comprehensible language in explaining evaluation process and results in the report to help the general public easily understand.

Suggest an alternative evaluation mechanism in case of redundancies and conflicts between adaptation and mitigation, which are inevitable considering the comprehensive nature.

Maximize synergistic effects of integrating mitigation and adaptation measures by setting concrete evaluation criteria that can comprehensively review the impact of the ‘Promise of Seoul’ on GHG emission reduction, adaptation by area and impact on the vulnerable communities.



## Management of Indicators and GHG Emission Reduction Targets

Seoul will

Manage the targets outlined in the ‘Promise of Seoul’ as indicators.

Require climate mitigation tasks to have a set GHG target and conduct an annual evaluation of the GHG reductions progress for each task.

Manage indicators with high priority as ‘Indicator of the Year’.

## Report of Inventory Compatible with Global Standards and ‘City Climate Commitments’ Registry

Seoul will

Raise awareness on new and existing city-level efforts and commitments through the Compact of Mayors by making annual reporting data on local climate action publically available, such as U.S. Mayors Climate Protection Agreement in 2015, UN Covenant of Mayors in 2008, Mexico City Pact in 2010 and Durban Adaptation Charter in 2011.

Register ‘City climate commitments’ or targets for GHG emissions reduction and plans to adapt to climate change.

Report annually on progress towards achieving GHG emissions reduction targets and assessing climate hazards, using standards established through City Networks; and

Disclose this information publicly by reporting through a recognized city platform.



Tasks and Action Plans  
by Area

Seoul,  
a Sustainable,  
Climate-  
Environment  
City

Making Seoul a Sustainable, Climate-Environment City

Energy	Air Quality	Transport	Resource Recycle	Water
Low Carbon High Energy Efficiency	Clean and Safe Air To Breathe	Low Carbon by Green Transport	Resource Circulating City	Saving Water and Utilizing Rainwater
Ecology	Urban Agriculture	Health	Safety	Urban Planning
Rich and Harmonious Biodiversity	Urban farming in Everyday Life	Preventing Health Risks and Enhancing Adaptive Capacity	Building Capacity to Respond to and Prevent Climate Disasters	Building a City Resilient to Climate Change



## Energy



### Realize a low-carbon, high-efficiency energy

More than 90% of green house gases emitted in Seoul are coming from the use of energy. Accordingly, it is urgent to transform Seoul into a low-carbon, high-efficiency energy city to tackle climate change.

For this, the most important thing is to save and efficiently use energy. Seoul would like to be a city that utilizes energies wisely through ‘conservation’ and ‘efficiency improvement’. Moreover, to lessen the GHG emissions, it is a must to produce safe and clean energy. So, Seoul will also do its best in producing and distributing new and renewable energy.

The ultimate goal of being the low-carbon, high-efficiency energy city is to be a ‘Caring and Vibrant City’. Seoul seeks to be a caring city which shares conserved energies that we generate by ourselves with neighbors. In addition, Seoul will be a vibrant city that provides decent jobs to our citizens by nurturing green industries.



# ENERGY

## Action Plan

Save energy and use  
energy efficiently

Produce a safe and  
clean energy

Realize energy  
sharing and welfare

Nurture Green  
industry and create  
decent Green jobs

5M TOE

Reductions of Energy  
Consumption

20M CO<sub>2</sub>

GHG reductions

33.0 %

Electricity Self-reliance

14 %

Penetration rate of New  
and Renewable energy

2,900 MW

Capacity of Electricity  
Producing Facility

200,000 persons

Participate in Energy  
Sharing

100 institute

Coop. / Social  
Enterprise

10,000 persons

Nurture HR

50B KRW

Green SME Loan

※ Figures of Infographic is the target to achieve till 2030.

## Save Energy and Use Energy Efficiently

The energy consumption and GHG emissions of Seoul in 2011 accounted for about 7.5% and 9.8% of the nationwide portfolio respectively. In case of electricity taking 10.9% of the national consumption, the self-reliance rate is meager 2.95%.

Recently, as the efforts of SMG with its citizens have born a fruitful result, in 2013, the consumption of electricity and city gas have decreased by 1.4% and 3.54% separately. Seoul will concentrate all efforts further to save and efficiently use energy based on these achievements.

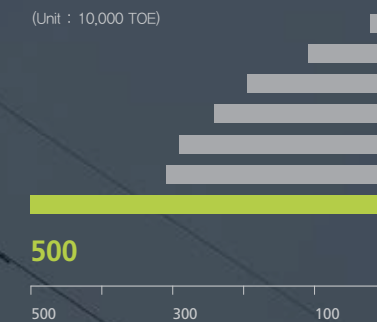
### Goal

Seoul shall reduce energy consumption by 5 million TOE and 20 million tons of GHG emissions, respectively, by 2030 by saving and efficiently using energy.

### Performance Indicator

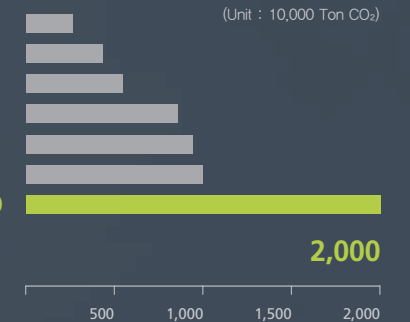
#### ► Reductions of energy consumption

(Unit : 10,000 TOE)



#### ► GHG reductions

(Unit : 10,000 Ton CO<sub>2</sub>)





#### ■ Citizen

Sign up for Eco-mileage and check energy consumptions more than one time a month

Reduce unnecessary energy loss in heating and cooling by enhancing insulation

Purchase products with high energy efficiency

Attend educations on energy and climate change.

#### ■ Business

Improve energy efficiency of the production process and products

Set and implement the goal of reducing energy consumptions for a building

Comply with the proper room temperature at offices and working places

Purchase and use highly energy efficient office supplies

Change a signboard and landscape lighting to high efficient lighting devices



#### ■ Seoul Metropolitan Government

Foster energy saving culture by extending the members of Eco-mileage

Enlarge the distribution of LED lightings to the private sector

Activate Building Retrofit Project (BRP)

Broaden the supports of energy diagnosis



What is Eco Mileage? It is a compound word using Eco (environment friendly) and Mileage (accumulate) and a citizen participatory program that tackles climate change by reducing GHG through voluntary energy conservation at home, school and work.

## Produce a Safe and Clean Energy

#### Goal

The ratio of producing new and renewable energy in Korea has tripled within 10 years, recording 78,000 TOE in 2003 and 233,000 TOE in 2012. However, it still only accounts for 2.6% of national production (8.851 million TOE) and compared to the energy consumptions of Seoul, it merely accounts for 1.5% which is very low. Accordingly, it is needed to continuously extend the basis of producing a clean and safe energy while enlarging distributions of new and renewable energy.

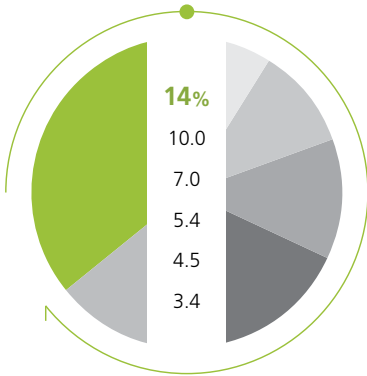
Seoul shall provide new and renewable energy amounted to 14% of the total energy consumptions by 2030 while enhancing the electricity self-reliance rate and capacities of facilities that produce electricity to 33.0% and 2,900MW separately.



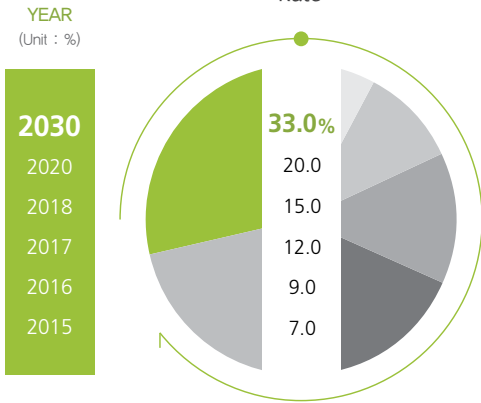


Performance Indicator

► New and Renewable Energy Distribution Rate



► Electricity Self-Reliance Rate



► Capacity of Generating Facilities

		(Unit : MW)					
Year		2015	2016	2017	2018	2020	2030
Generating Capacity		800	1,280	1,360	1,440	1,920	2,900



■ Citizen

Install PV panels on the roof of a house or balcony of an apartment

Invest a Co-operation or fund related to solar power

Attend educations on installing or maintenance of renewable energy facilities

■ Business

Install facilities for new and renewable energy like PV system or hydrogen fuel cell

Extend an use of low NOx and high efficient Boilers

Trade saved electricities via Negawatt Market

Maintain generating facilities at an optimal condition

■ Seoul Metropolitan Government

Provide information regarding new and renewable energy fit into citizens and companies

Enlarge PV ownership or member of PV Coop.

Expand fuel cell generating facilities

Extend installations of Combined Heat and Power

Foster an energy independent village with citizens



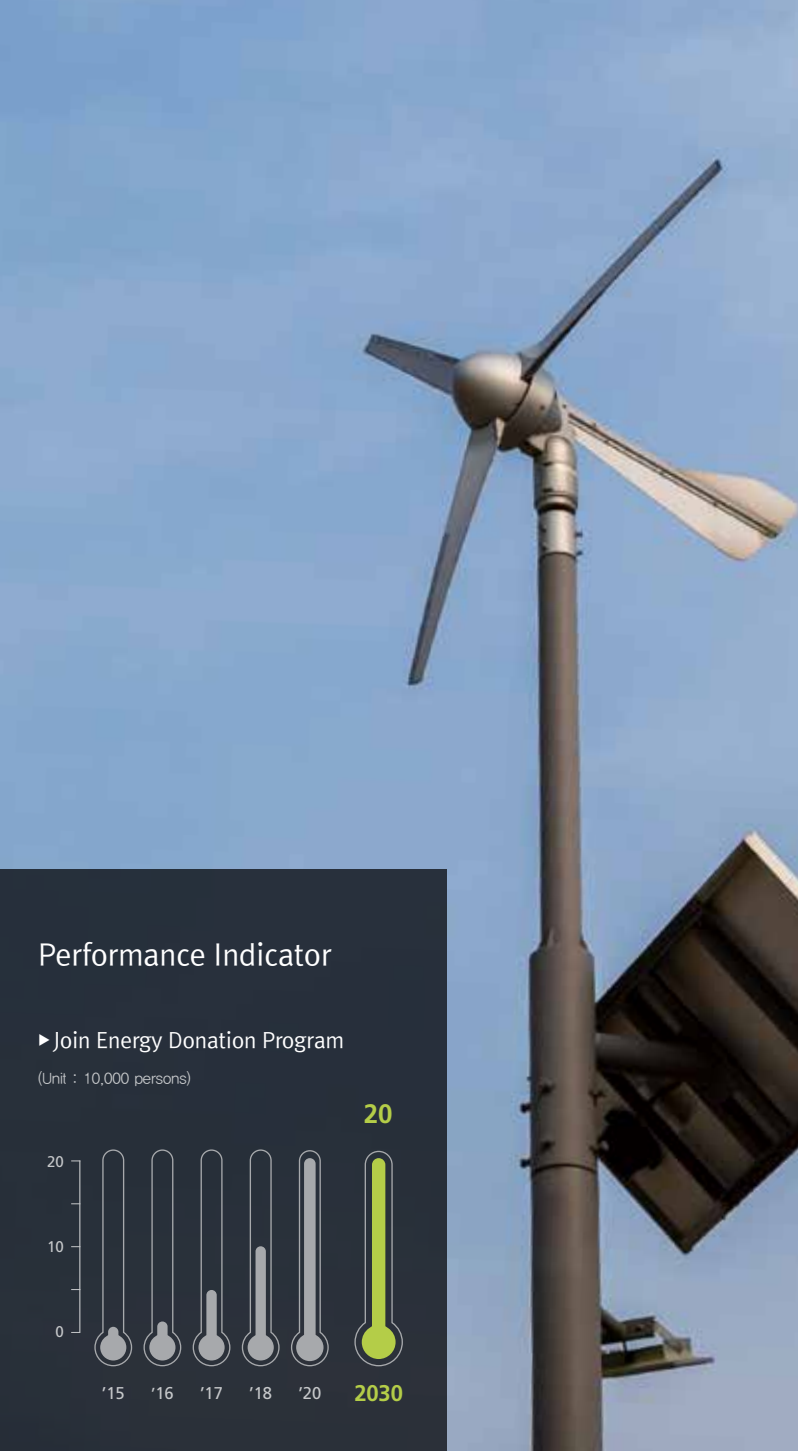
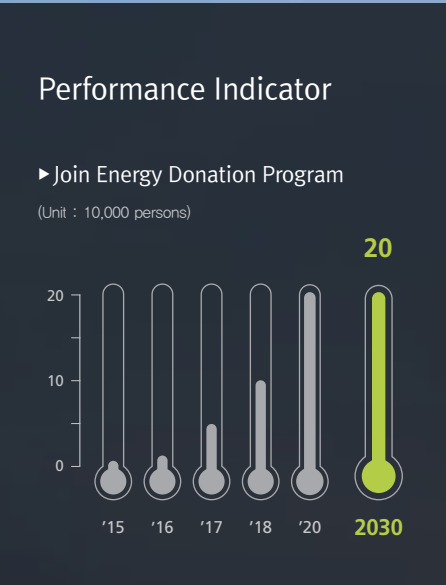
# Realize Energy Sharing and Welfare

There are 210,000 households in Seoul at the minimum cost of living. Moreover, about 360,000 household - 10.3% of total households in the city - fall into the energy poor. Families at the lowest income bracket spend 34% of their income for lighting and heating expenditures.

Bi-polarization of electricity consumption is very serious. It is recorded that the electricity bill for the families at the bottom 10% of income bracket accounts for 46% of those at the top 10% of income bracket.

## Goal

Seoul shall increase the number of citizens up to 200,000 who will join energy donation program by 2030.



## Action Plan



### ■ Citizen

- Execute Energy Welfare Charter
- Participate in raising Energy Welfare Fund
- Broaden Energy Sharing Culture

### ■ Business

- Extend CSR activities in sharing energies with the vulnerable social group
- Consider executive and staff members to easily donate their talents in Energy Efficiency Project for low income families
- Join voluntary activities like energy welfare projects run by Housing Welfare Support Center

### ■ Seoul Metropolitan Government

- Actively support the activities of raising Energy Welfare Fund and promoting its activities
- Pursue a project of improving energy efficiencies of a house targeting the energy poor
- Provide ‘Visiting Service’ by increasing energy welfare social workers.
- Pursue Seoul style energy welfare policy in line with the survey result on the status of the energy poor







# Nurture Green Industry and Create Decent Green Jobs

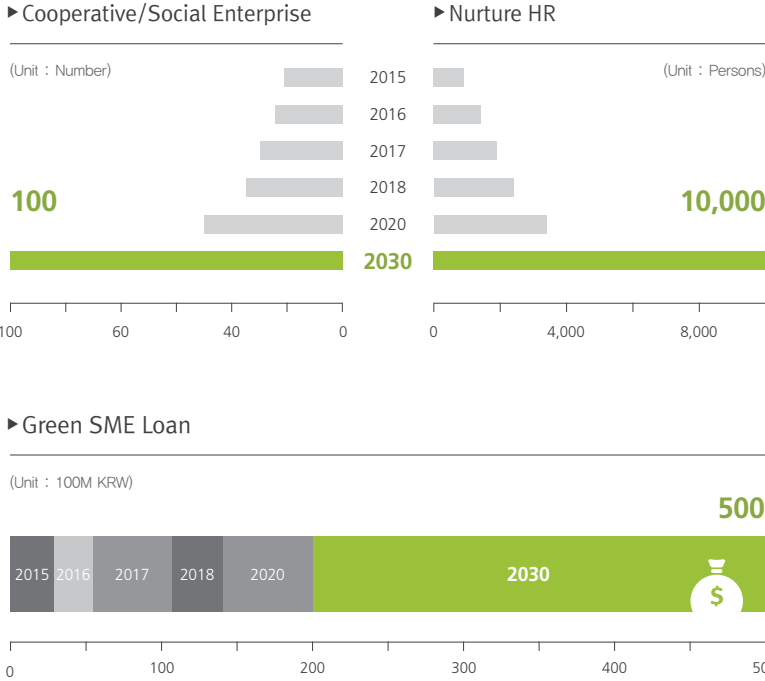
Green Industry means an industry that improves efficiency of energy and resources generally across economic activities, produces goods and provides services.

Green Industries have higher employment inducing effects than other industries when inputting the same scales of finance. Accordingly, by supporting R&Ds in green technologies and continuously nurturing professionals, the expansion of Green Industries shall result in job creation.

## Goal

Seoul shall enlarge the number of cooperative and social enterprise by 100 and green technology professionals by 10,000 till 2030.

## Performance Indicator







## Action Plan

### ■ Citizen

Sign up for Seoul Citizen's Solar Power Coop  
Purchase low carbon green products  
Attend educations on green energy/technology

### ■ Business

Strengthen renewable energy projects like PV generation  
Develop high energy efficient products  
Develop disaster prevention technologies and facilitate relevant businesses  
Train manpower needed for green industry

### ■ Seoul Metropolitan Government

Promote green interior stores  
Extend the use of eco-friendly high efficient energy equipments  
Promote green products by enlarging the use of eco-friendly products  
Nurture and support industry ecosystem of new and renewable energy like Solar Power Coop





## Make a clean city where all safely breathe

The changes in the climate environment due primarily to excessive use of fossil fuels have been recognized as a threat against human civilization as generations pass at a global scale. This is also closely related to the challenges of air pollution that has directly adverse effects on citizen's daily health.

The requirements for responding to climate change have further highlighted the role of local government to prioritize citizen's quality of life and health protection from changes in the climate environment. Especially, local government is the player of implementing active and voluntary measures on changes of climate environment, thus it is expected to improve urban air quality as well as environmental benefits through efficiency in using energies.

To foster a healthy and pleasant living environment and respond to the Post 2020 New Climate Regime, the city of Seoul shall be world's best city equipped with comparable competitiveness in tackling changes in the climate environment with citizens while practicing comprehensive management of GHG emissions and air pollutants.



# AIR QUALITY

## Action Plan

Promote environment-friendly driving culture	Facilitate low carbon, eco-friendly modes of transport
10,000 persons Experience-based Education for Eco-friendly, Economic Driving	2,600,000 cars Distribute Electric Vehicles(EVs) 100,000 cars Distribute Hybrid cars
Build domestic and international cooperation and implementation system responding to climate change	Make Seoul a safe city against Fine Particles
50 zones Low Emission Zone Forum Operation of International forum to improve air quality in North East Asia	15 $\mu\text{g}/\text{m}^3 \cdot \text{year}$ Fine Particles (PM2.5) 60,000 cars Project of Low Emission for Diesel Vehicle

※ Figures of Infographic is the target to achieve till 2030.

## Promote environment-friendly Driving Culture

The most fundamental and cogent way to cope with air climate change in the city is to encourage citizens to cultivate a green life-style: it is additionally expected to see the effects of reducing GHG emissions and energy consumptions in line with reductions of air pollutant emitted from vehicles.

Advanced cities have pursued a policy on inducing reductions of GHG emissions and energy consumptions in the public sector to secure the ground of low carbon, green growth while doubling the interests on expanding capacity of green life in private sector.

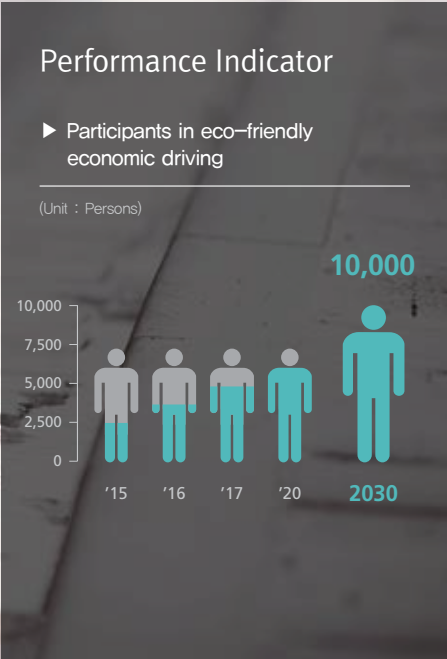
The city of Seoul has initiated various policies like adopting car-sharing, enlarging voluntary weekly-no-driving day, operating car-free day, fostering and extending car-free street, restricting car-driving in downtown, distributing eco-friendly driving device, conducting eco-friendly economic driving education and improving efficiency of operating intra-city buses as the transport section of the project that implements reductions on GHG and Energy consumption. Under these circumstances, the city of Seoul expects to see the actual practice of an environment-friendly car driving culture along with citizens.

In the future, it is needed to innovate citizen's life-style, especially the eco-friendly driving culture. It will be a driver for Seoul to be equipped with comparable competitiveness in addressing climate change and environment-friendly capabilities as the exemplary model city.

## Goal

It is expected to reduce GHG emissions and energy consumption in line with air pollutants emitted from vehicles by encouraging citizens to cultivate an eco-friendly car driving culture.





■ Citizen

Restrain excessive use of heating during wintertime and cooling during summer time in the car

Restrain unnecessary idling

Adjust the fueling time in summer to before 7am or after 6pm

Not fill the fuel tank to the brim when fueling the car

Habituate eco-friendly economic driving like banning sudden acceleration and attend eco-friendly car experience class

■ Business

Restrain idle of cargo/parcel delivery car and company car

Share information on eco-friendly economic driving and low carbon vehicle and conduct regular education and promotion for consumers and its personnel

Raise interests of eco-car rental service and facilitate the service

■ Seoul Metropolitan Government

Progress a campaign called ‘One citizen, One tone less CO<sub>2</sub> (reduction of 10 million tons of CO<sub>2</sub>)’

Operate experience-facilities and effectively provide information to citizens to promote citizens’ eco friendly driving culture

Provide information on restraining car-idling and efficiently manage the idling restricted areas





Facilitate low carbon  
eco-friendly modes of  
transport

The city of Seoul kicked into a high gear a project called low emission from vehicles including installation of a device for low emission and Early Vehicle Scrap(End of Life Vehicles) so that we could see the coast of Incheon from Seoul’s Mt. Namsan (around 34 km) back in 2005. Since then, the project has obtained desired effects. However, the increased number of registered vehicles as well as increased total mileage have offset the effects of reducing emissions while restricting the effects of the project.

In particular, 52% of fine particles (PM-2.5) that seriously threat Seoul citizen’s health come from the transport section including automobile and construction equipments. What’s worse, NOx which is the secondary pollutant of fine particles accounts for 67% of emission contributions from diesel vehicles. Against this backdrop, the development and distribution of low carbon, eco-friendly modes of transport are recognized as the most critical task to improve air quality.

It is needed to broaden the ground of distributing Electric Vehicles (Bus, Car, Truck, Motor cycle) that certainly do not emit air pollutants. The cases in point are raising the EV fund, supporting joint purchases and extending charging infrastructure: it will lead green innovations of transport with key policies that respond to the changes in the climate environment and improve the effects of citizen’s health.

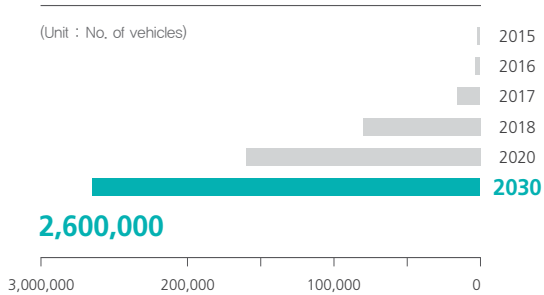


Goal

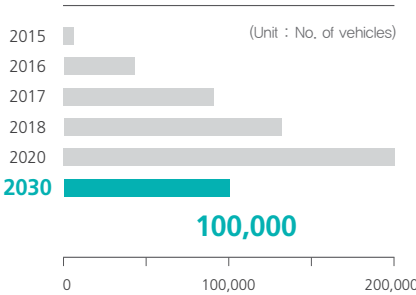
It shall contribute to achieving the goal of 15 $\mu\text{g}/\text{m}^3$  fine particles (PM2.5) till 2020 and promote distribution and operation of low carbon, eco-friendly modes of transport to be transformed to green transportation.

Performance Indicator

► Distribution of EV



► Distribution of Hybrid car





#### ■ Citizen

Be aware the culprit of air pollution is vehicle emissions  
 Minimize emissions by changing driving habit  
 Do not use illegal fuels  
 Join the initiative of purchasing zero-emission EVs  
 Cooperate the installation of EV charging facility that will be set at an apartment house

#### ■ Business

Minimize emission by routinizing check and management of vehicles with devices for low emission  
 Work with air quality policies by enlarging the purchase of low emission/low carbon vehicles for works  
 Provide areas for charging facilities and cooperate the group purchase to broaden the distribution of EVs  
 Promote eco cars via newsletter or company magazine at the company, associations or meetings with small enterprises  
 Spearhead in developing technologies for eco cars

#### ■ Seoul Metropolitan Government

Extend supports like raising funds to distribute eco cars  
 Strengthen a foundation of distributing eco cars like EVs  
 Support pilot project to commercialize low carbon eco cars  
 Operate a comprehensive system for Low Emission Zone in metropolitan area

## Build domestic and international cooperation and implementation system for responding climate change



The air quality of Seoul is affected not only by internal pollutants but also by air pollutants occurring in Korea as well as pollutants coming from overseas countries. In light of this, it is needed to improve the air environment by laying a ground of mutual cooperation nationally and internationally and to enhance implementation system.

It is estimated that the influence of emissions from neighboring regions like Incheon and Gyeonggi-do is higher than that of Seoul so it is desirable to strengthen practical cooperation to resolve challenges of air pollution in metropolitan regions. Accordingly, it is required to go beyond the management system so called 'Metropolitan Air Quality Management Committee' which is based on a legal duty to draw up and progress

the existing implementation plan of metropolitan air quality management. Fostering a working-oriented collaboration system, including benchmarking air quality improving project by a city and province and information exchanges by composing a working level organization that is voluntarily managed and organized by the three regions, is required.

In addition, North-East Asia has significant symbolic meanings as a single space in which exchanges of politics, society, economy and culture will be much actively pursued. It is required that Seoul Metropolitan Government prepare practical and effective 'mutual cooperation and implementation mechanism', while fitting into discussions of national level environmental cooperation, to improve air quality of major cities in North-East Asia like Seoul, Beijing and Tokyo and take considerable actions for climate change.



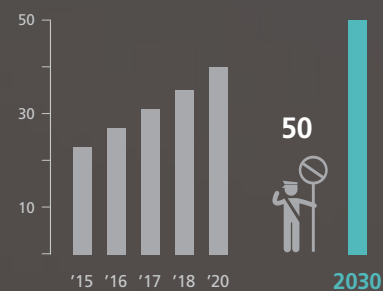
## Goal

To resolve challenges of air quality in metropolitan area in Korea as well as to improve air quality of major cities in North East Asia, the establishment of domestic and international cooperation and implementation system is required.

### Performance Indicator

#### ► Low Emission Zone Monitoring System

(Unit: No. of Zones)



Operation of international forum on improving air quality in North East Asia



### ■ Citizen

Participate in citizen's campaign on Making Clear Sky

Always check the degree of air pollution in our community

Install a device for low emission on old automobile driving metropolitan region

### ■ Business

(For transport companies) Preferentially allocate low carbon eco friendly mode of transport to metropolitan region line

Activate developments of advanced technologies responding to the changes of climate environment

Share up-to-date information and technologies regarding climate environment with cities in North East Asia

### ■ Seoul Metropolitan Government

Support the operation of citizen's campaign headquarter for Making Clear Sky

Operate a council on improving air quality in North East Asia and broaden civil participation

Strengthen international cooperation responding to changes of climate environment

## Make Seoul a safe city against fine particles

Seoul Metropolitan Government has concentrated all efforts to improve the fine dust (PM10) situation to bring about a citizen-sensible Air Quality Index with a project of low emission for diesel vehicle and change intra-city buses into CNG buses: it has recorded clear achievements like decreasing fine dust level to  $41\mu\text{g}/\text{m}^3$  in 2012 from  $71\mu\text{g}/\text{m}^3$  in 2001 but the level is still very high compared to that of fine dust in other major cities around the globe.

Especially, the World Health Organization (WHO) designated fine particles (PM2.5) mainly emitted from diesel vehicles as a first class carcinogen (cancer-causing agent). So, the demands of managing fine dust and fine particles to enhance citizen's environment welfare are newly emerged.

As the importance of the climate environment in the 21st global competitive society has been in the limelight, advanced cities in the world are focusing on coming up with strategies to promote the brand value of being a healthy city. This has turned into the point that citizen's environment welfare could be advanced by caring for the effects on citizen health in line with changes of climate environment and drawing up proper solutions.

In the future, Seoul Metropolitan Government will make 'Seoul where all can safely breath' for generations along with its citizens as the international capital of climate and environment recognized by the world while addressing changes in climate and environment and satisfying citizen's various needs of managing air quality.

## Goal

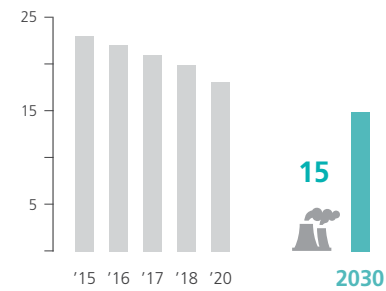
The level of fine particles(PM2.5) shall be maintained at  $20\mu\text{g}/\text{m}^3$  by 2018 and  $15\mu\text{g}/\text{m}^3$  by 2030, thereby allowing the citizens of Seoul to breathe air safely and making Seoul a global model of a climate environment city.



## Performance Indicator

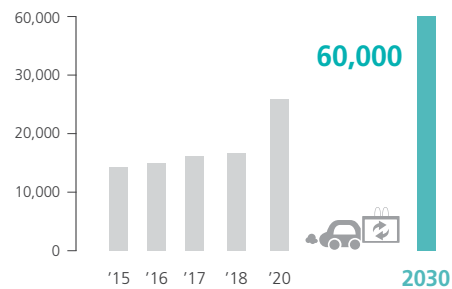
### ► PM2.5

(Unit :  $\mu\text{g}/\text{m}^3 \cdot \text{year}$ )



### ► Project of low emission for diesel vehicle

(Unit : No. of cars)



### ■ Citizen

Report automobile that excessively emits exhaust gases to autonomous districts and cities

Participate in the project of low emission for old diesel vehicle

Utilize early vehicle scrap for old automobiles that excessively emits pollutants

Understand information on responding to short-term high density air pollution warning system

Restrain driving when enacting air pollution forecasting or warning

### ■ Business

Develop and provide eco-friendly fuel

Develop a technology reducing emissions of automobile

Transform vehicles for a work into eco friendly/low emission automobile

(For Large charcoal grill/roast restaurant) Install and run a facility preventing air pollutants

Contribute to improving citizen-sensible air quality by changing motor cycle for delivery into electricity motor cycle

### ■ Seoul Metropolitan Government

Pursue a project of low emission for old diesel vehicles

Enlarge supports to R&D to develop a device reducing NOx emitted from automobile

Support a project of changing buses into CNG Hybrid buses

Establish detailed PM2.5 monitoring system to manage emission sources efficiently







### Make a low carbon city by enlarging energy-efficient modes of transport

Transport is one of the major sources of GHG emissions, taking 30% of energy consumption in Seoul. To realize a low carbon green city, green transport systems will be built to reduce GHG emissions from modes of transports as well as energy consumption.

Transport environment prioritizing pedestrian and bicycles will be fostered. In addition, the public transportation system will be promoted for citizens to conveniently move even though they do not drive their private vehicles. Moreover, Seoul Metropolitan Government will stimulate energy efficient urban transport environment, including the improvement of low carbon and energy efficiency in the modes of transport.

# TRANSPORT

## Action Plan

Further develop transport culture by prioritizing pedestrians and bicycles

Improve Public Transport Share

Reduce the usage of private vehicles

Improve energy efficiency with low carbon green transport

2,000<sub>km</sub>

Extend Bicycle roads

250<sub>zones</sub>

Operate Pedestrian-only-street

8.50<sub>score</sub>

Satisfaction on walking environment

68.0%

Public Transport Share

223.3<sub>km</sub>

Expand Medium Bus-only Lane

20.0%

Personal Car Transport Share

1M<sub>persons</sub>

Member of Car-sharing

1.2M<sub>persons</sub>

Join Weekly-no-driving day

30%

Improve Observance Ratio of Transport Signal

595<sub>zones</sub>

Traffic Forecast Road

※ Figures of Infographic is the goal to achieve till 2030.

## Further develop transport culture by prioritizing pedestrians and bicycles

Seoul Metropolitan Government has initiated a pilot project, Pedestrian Priority Zone, since 2007 as a part of a pedestrian-oriented project. Currently, 67 centers for Pedestrian-Only-Street (Car-free Street), including 30 centers operated 24/7 and 13 centers operated in part time basis and 24 centers based on daily operation, have been installed and operated.

In addition, to foster conditions of using bicycles, which are an eco-friendly green transport mode, Seoul Metropolitan Government is operating public bicycle centers at Yeouido and Sangam-dong as a pilot project (44 Bicycle holders, 378 bicycles) and the autonomous districts are operating 64 bicycle rental centers (3,482 bicycles).

To promote the use of public bicycles, Seoul Metropolitan Government has a plan of constructing a Seoul style public bicycle system which is low-cost and highly efficient and then operating public bicycle center by additionally introducing 2,000 bicycles to Yeouido, Sangam-dong, Shinchon, Seongsudong and Guidong (within the four main gate of old Seoul) since September, 2015.

The general satisfaction regarding the pedestrian environment has been gradually improved but the downtown are, in which traffics are concentrated, is still a place where automobile traffic is prioritized over pedestrian traffic.

Accordingly, to restore Seoul's historical and cultural identity and make a pleasant road environment in which pedestrian, public transport, and eco-friendly transport modes are harmoniously co-existed, it is needed to make strenuous efforts in widening sidewalks by down-scaling roads, improving pedestrian only street to promote pedestrian culture and developing contents.

Promise of Seoul : Taking Actions against Climate Change





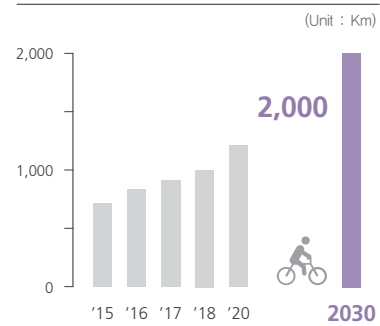
Goal

Both pedestrian oriented projects and public bicycle system will be extended to restore Seoul’s historical and cultural identity and establish public transport culture prioritizing pedestrians and bicycles.

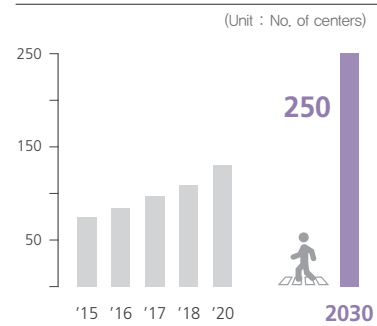


Performance Indicator

► Extend Bicycle Lanes



► Operate Pedestrian Only Street



► Satisfaction on Pedestrian Environment

(Unit : Score)

2015	2016	2017	2018	2020	2030
6.60	6.73	6.86	7.00	7.25	8.50



■ Citizen

Use green transport(bicycle, walking) for short distance

Report difficulties on safe walking and riding bicycles to the related administrative department in charge

(For driver) consider pedestrians and bike users first

Make concerted effort to develop transport culture and safe transport like not driving motor cycle on a sidewalk and not parking illegally

■ Business

Improve the company building as “pedestrian friendly environment considering pedestrians”

Arrange spaces for relaxing and washing in working place for the convenience of bike using personnel

Encourage bicycle club and its activities at work

Consider pedestrians by enlarging narrow sidewalks like retreating building line, removing road hump and install eaves on exterior of a building to shade sunlight and rain

Not allow vehicles and motor cycles to block spaces for pedestrians on sidewalks or cause inconveniences or risks to pedestrians

■ Seoul Metropolitan Government

Continuously expand pedestrian only streets in residential area

Enlarge and manage infrastructure for bike roads fit into local conditions

Expand and install bike lanes on widened and newly constructed roads

Actively pursue narrowing road in the down town area and improve pedestrian environment



# Improve Public Transport Share

In case of the sharing ratio by modes of transport in Seoul, 65.6% goes to public transportations recording 38.2% of subway and 27.4% of bus as of 2012. In addition, users of public transportation amounted to 11.141 million persons a day (5.345 million subway users and 5.796 million bus users) in 2014 showing an increase at a CAGR (Compound Annual Growth Rate) of 1.4% over the past five years.

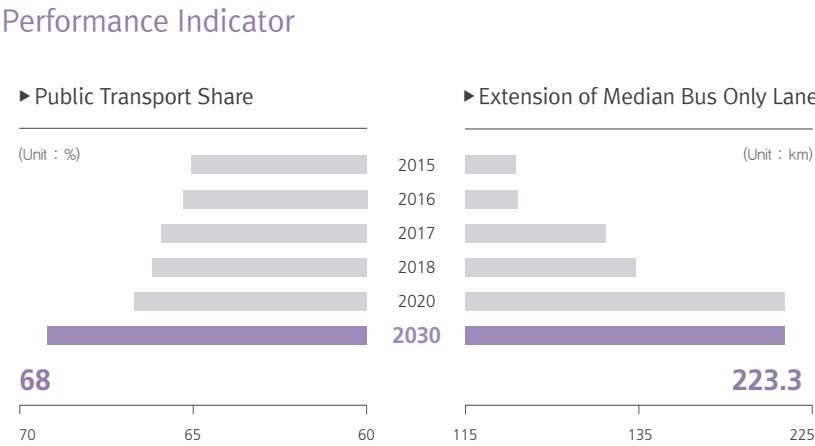
Especially, Seoul Metropolitan Government has installed and operated Median Bus Only Lanes for 12 road networks (extended length: 117.5km) to advance the public transport share: the bus speed has improved about 30% from 15km/h to 19km/h and bus users have increased by about 12% from 5.17 million persons to 5.79 million persons while doing its best to strengthen a sustainable green transport system along with improvements in transport capacity.



It will be needed to shift certain portions of traffic volume into public transportation by gradually increasing the ratio of utilizing public transportation like subway and inter-city buses. Moreover, along with efforts of advancing the public transportation environment like applying the concept of universal design considering the mobility impaired (the transport vulnerable), it is needed to extend the infrastructure for a more convenient and attractive public transportation through comprehensive management of the transport environment as a key element of taking actions for climate change.

Goal

The expansion of transportation infrastructure will be considered for a more convenient and attractive public transportation that to comprehensively deals with climate change and transport-related air quality management.





#### ■ Citizen

Use Public transportation like subway and bus when commuting

Join the campaign of restraining the usage of private vehicles

Play a role of citizen ombudsman for a continuous public transport service

#### ■ Business

Be equipped with a guiding system attracting visitors to use public transportation

Conduct a supporting program encouraging the use of public transportation (for example, the program on supporting fuel cost)

Join a program managing transport demands for companies that reduce the usage of private vehicles

Consider safe driving and law observance as the key item not to do reckless driving, refusal of passengers and non-stop rather than driving performed in evaluating working attitude of drivers in transport and mobility industry (For Transport Provider) put a low floor bus first when introducing new buses for the convenient use of the transport vulnerable.

#### ■ Seoul Metropolitan Government

Make strenuous efforts in extending eco-friendly green transport network based on railways

Create convenient bus-using-environment for citizen by securing punctuality in arranging intra buses

Extend infrastructure for public transport guaranteeing safe mobility of female and seniors

Improve transport capacity of public transportation by enlarging median bus only lanes

Broaden a citizen monitoring system to improve public transport service



## Reduce the usage of private vehicles

The number of registered vehicles has annually increased with the rapid urbanization and increase of income. However, starting from 2010, this trend has been slowing down. Still, pollution due to mobility and transport on the roads accounts for 61.5% of the portfolio of air pollutants. Reducing this and recognizing the challenges of improving air quality in line with vehicle emissions are the most important and urgent challenges to solve.

As of 2014, among registered automobiles (3.013 million), cars accounted for whopping 79.2% with 2.387 million cars. Accordingly, the reduction of fossil fuel in transport sector and improving air pollution is the foremost basic solution to easily respond to the changes of climate environment.

In particular, according to the energy consumption statistics of the city of Seoul, the transport sector consumes about 31% of energy. So, in the future, preemptively reducing car use for transport/environment measures, an Avoid-Shift-Improvement, is needed.

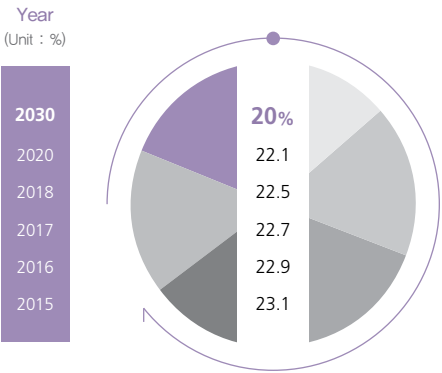
### Goal

It shall contribute to establish eco-friendly transport culture, where low-consuming energy is encouraged by adopting transportation demand management that leads to the reduction of car use.



Performance Indicator

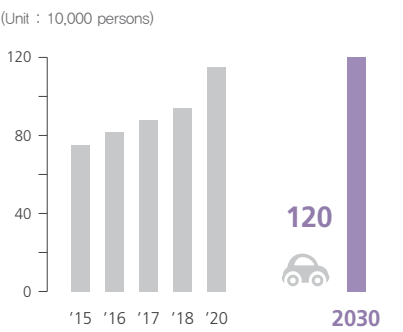
► Car Transport Share



► Member of Car Sharing



► Participants of Weekly~ no-driving-day



■ Citizen

Reduce the usage of private vehicles for short distances (within 2.5km)  
Promote car pool rather than drive a car alone  
Participate in voluntary weekly-no-driving day and reduce accumulated mileage

■ Business

Strengthen incentives encouraging the use of public transportation  
Prepare a program of transport demand management for companies and let the employees implement the program  
Promote car pool rather than driving a car when working  
Make the best use of “taking a taxi” program for works

■ Seoul Metropolitan Government

Seek for a policy that can reduce the use of a car  
Boost the practice of transport demand management thought improving the system of Traffic Congestion Charges  
Foster a circumstance that voluntarily manages demands by promoting car pool

Improve energy efficiency with low carbon green transport

Considering air pollutants, impact on citizen’s health and GHG emissions in line with the use of fuel, Seoul Metropolitan Government, as the exemplary city of climate environment, shall pay more attention to transport information in addition to the transport signal system.

Constructing a new road has spatial and financial limitations. Rather, introducing an intelligent transport signal system reflecting traffic situations in real time can greatly contribute to cutting fuel consumptions and air pollutant emissions while improving the capacity of a road. In addition, providing collected information on roads and traffic situations to drivers in real time by utilizing IT technologies can decentralize the traffic volumes and eventually reduce GHG emitted from the transport sector.



Seoul Metropolitan Government shall spare no efforts in improving traffic flow and reducing GHG by building an intelligent transport system that utilizes sophisticated IT technologies to actively tackle climate change.

Goal

Intelligent Transport Systems(ITS) for smoothing traffic flows will be launched extensively to reduce air pollutants emissions and increase fuel efficiency.



Performance Indicator

► Improve observance ratio of traffic signal (Unit : %)		31.2	31.1	31.0	30.9	30.7	30
		Year	2015	2016	2017	2018	2020
► Traffic Forecast Rods (Unit : centers)		7	27	103	284	595	



## ■ Citizen

Check traffic information on roads to the destination

Check and drive the traffic and safety information guided during driving

Check parking information of the destination and use public transportation when going to the downtown

Comply with traffic signal and do not presume the signal

Do not tailgate at the crossroad

## ■ Business

Convey road and traffic information to drivers via GPS(Navigation)

Develop information technology integrating road and traffic information

Mark information on handling parking lots to be seen outside

Check traffic information and set up cargo transport plans

## ■ Seoul Metropolitan Government

Build intelligent traffic signal system reflecting vehicle information

Let citizens use alternative transport modes by adopting Traffic Forecast System

Guide drivers to know real time traffic information at main roads

Survey Traffic volume and driving speed by each road and inform results to citizens



I like to walk for a short distance and use public transportation. But, Seoul has many streets that are not good to walk. If the conditions of pavements are improved and car-free-street or street-go-to-walk is promoted, more people will prefer to walk.

Kim Dong-Hyun / University student



Still, Seoul city has difficulties against the disabled to move. I hope facilities will be upgraded for a safe walk. In addition, I hope Seoul to be a barrier-free city while all citizens actively join efforts of addressing climate change by saving the use of fossil fuel.

Ha Yeon-Ju / Korea Blind Union



I usually use public transportation to cope with climate change. Bus stations located in the medium lane have convenient factors but in summer time, it is difficult to use due to extreme heat. I hope measures to improve this situation will be drawn up for citizens who use a bus. In addition, I hope more low-floor bus will be on the road for convenience of the transport vulnerable.

Yun Seon-Hwa / Co-representative of SAFIA



I prefer to walk or ride a bicycle for a short distance. It is hard to take some time to exercise but if we walk or ride a bicycle, we can have a time to enjoy life or can work out. Likewise, it will be good for our health. I hope to see a clean and safe transport culture.

Moon Jung-Won / University student





## Waste to Resource

### Make a recycling city that completes the cycle of resource circulation

To foster a resource circulating city, Seoul Metropolitan Government has made strenuous efforts in reducing wastes and recycling more. It also keeps expanding treatment facilities to reduce the dependency on landfills. As a result, it reaped significant achievements of a 65% recycling rate and a landfill-use rate of just 7%.

However, there are still many sources producing waste that Seoul Metropolitan Government shall handle. Usually, most items are serviceable and plenty of recyclable materials can be found in garbage bags. All are keen in separating recyclables but there is little interest in purchasing recycled products.

The condition of completing the cycle of resource circulation is an organic connection in separating recyclables, producing recycled products and consuming recycled products. Here, more waste reductions and recycling activities will strengthen this cycle further. Cutting resource consumption leads to cutting emission of environment pollutants and GHG emitted during the process of manufacturing, distributing and disposing a product.



# WASTE TO RESOURCE

## Action Plan

Reduce food waste	Use once more before throwing away
2,000 ton/day Food waste	3,500,000 persons Participants of Sharing markets
	2,000 times No. of hosting Sharing markets
Waste to resource	Purchase green products
75% Recycle rate	500 companies No. of companies received supports for Green product exhibition and sales

※ Figures of Infographic is the target to achieve till 2030.

## Reduce food waste

Food waste produced in Seoul was 3,301tons a day in 2012. It means that one citizen produces 0.32kg of food waste. Since adopting a volume-based waste fee system back in 1995, Seoul Metropolitan Government separately handles food waste: there are five treatment facilities (handling 1,360 tons of food waste a day) located in Seoul, which mainly treat food waste and there are about 30 private treatment facilities that are consigned to handle food waste of Seoul being scattered in Gyeonggi-do and other regions. The flip side over handling food waste with the recycling methods connotes various problems. Most of all, during the processing of moving food waste to the facilities outside Seoul, enormous energies are consumed and various environment related problems are invited while giving serious suffering to residents living near the facility. In addition, the compost and forage produced from food waste are not welcomed by the market. Waste water from food waste arising from the treatment process acts as another environment load.

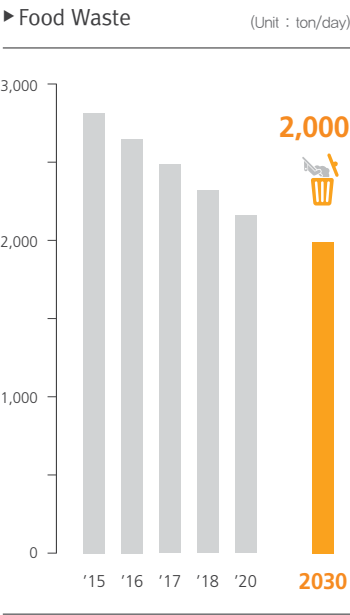
It is the most important to reduce food waste fundamentally rather than recycling food waste. Improving dietary life at home and changing table settings and menus at a restaurant will be enough. However, this is easier said than done. So, the promise with citizens is needed.



Goal

Seoul shall reduce food waste to 2,000tons a day till 2030.

Performance Indicator



Action Plan

■ Citizen

- Purchase food properly not to store it at a refrigerator for a long time
- Cook just enough to eat and consume all
- Restrain excessive food orders and do not make leftovers
- Teach right eating habits to children
- Remove moist when discarding food waste
- Join volume based waste fee system not to illegally throw away food waste

■ Business

- Provide a proper table setting, not a generous table setting
- Develop a menu considering preference of customers and adjust food volume
- Provide benefits to customers who do not leave behind food
- Offer a doggy bag or donate leftovers to food bank
- Conduct regular education and promotion on improving food culture
- (For cafeteria) operate 'leftover free day' and manage volume of food waste

■ Seoul Metropolitan Government

- Improve policy and system on reducing food waste
- Draw up comprehensive plan to reduce food waste
- Develop and distribute customized measures by each cause of making food waste
- Adopt volume based food waste system in a way for citizens to easily use it
- Support the spread of treating source of food waste like making compost with raw food waste
- Support the construction and operation of food waste treatment facility





Use once more before  
throwing away

The household waste in Seoul was 9,189 tons a day or o.89 kg per capita a day in 2012. The waste is handled in a right formation which shows a high rate of recycling and low rate of landfill (Recycling 65.3%, Incineration 26.9%, Landfill 7.8%). However, there are usable clothes and books in recyclables. Serviceable electronic goods are also in recyclables. What’s more, It is easily seen that furnitures in a good condition are discarded with construction waste at the business place undergoing a change in ownership.

Producing and using a product consumes enormous resources and energies. The more the product is used for a long time, the more the value of resources already input in the product is raised and the less environment pollutants are emitted. It is known that there are more than 2,000 stores for secondhand products in Seoul and the recycle centers supported by the autonomous district are amounted to 34. Seoul Metropolitan Government regularly opens sharing market on an annual basis at Ttukseom and Gwanghwamun. However, we do not know how many products are reused and recycled. Even, we do not know the number of citizens participating in re-using. These prove that the interests on re-using are lacking and the infrastructure for re-using is very poor. From now on, it is needed to shift Seoul as a re-using society in which the more are recycled and the more citizens join the re-using movement.

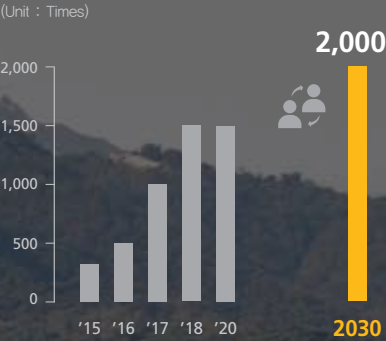


Goal

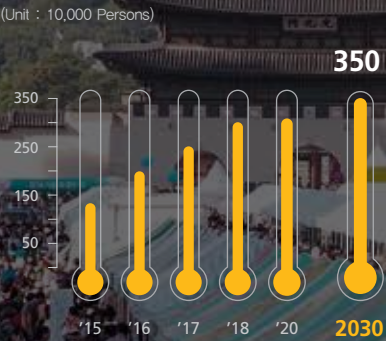
Seoul shall increase participants of sharing markets to 3.5 million persons by 2030.

Performance Indicator

► Sharing Market at Gwanghwamun and Ttukseom and autonomous districts



► Participants of sharing market at Gwanghwamun, Ttukseom and autonomous districts







### ■ Citizen

- Get a habit of using a product for a long time through repairing
- Give or donate reusable products to neighbors
- Purchase many secondhand products via sharing market, re-using store and internet
- Check a store for secondhand products in the community
- Be with children when purchasing secondhand products

### ■ Business

- Produce eco-friendly product reflecting recycle design with durability
- Donate reusable products
- Try to purchase reused or up-cycling products
- Promote distribution stores for reused or up-cycling products
- Produce and sale reused products that consumers can trust
- Offer jobs to citizens through re-using projects
- Set up and fulfill corporate reuse goal

### ■ Seoul Metropolitan Government

- Establish a system that citizens can easily donate reusable items
- Facilitate permanent operation of sharing-markets
- Support the development of up-cycling industry and re-using culture by operating a plaza for reuse
- Encourage participants of citizens by hosting recycle exhibitions (Recycle Art Festival, etc.)
- Provide distribution information of a product by operating sharing-market homepage

## Waste to resource

### Goal

It shall increase the recycle rate of household waste to 75% till 2030.



World waste can be a large market in its scale, worth of about 457 trillion Korean won with the waste volume of 5 billion tons a year, recording 2.2 times and 17.3 times larger than that of world grain productions (2.3 billion tons) and world meat production (290 million tons) respectively. Advanced countries like Europe and Japan have concentrated all efforts in creating ‘resource circulating society’ by recycling waste resources and converting them into energy.

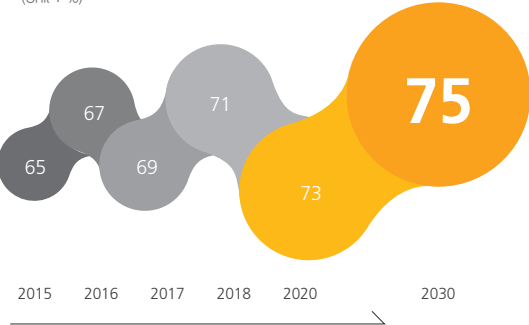
Korea is greatly influenced by foreign markets with 96% of dependency on energy imports as definitely a resource/energy poor country. Despite this situation, among landfill waste, 56% are disposed as a garbage even though they are the items that can be recovered as a resource or energy. Given the condition that the treating facilities are insufficient and Seoul has to use far-away metropolitan landfill site or incineration facilities in Gyeonggi-do, disposing of recyclable items is an excessive waste.

Social disputes over treatment facilities could be narrowed down by recycling all items that can be recycled and finding new recyclable items, converting waste into resources.

### Performance Indicator

#### ► Recycle Rate

(Unit : %)







Action  
Plan

## ■ Citizen

Purchase eco products good to be recycled  
Understand and practice the way of separating recycled items  
Discharge recycled goods after perfectly separated from waste  
Do not put foreign substances in recycled items  
Discrete and separate paper pack and paper  
Join the collecting activity of the recycle station

## ■ Business

Produce eco-friendly product with materials and designs that are easy to be recycled  
Purchased eco-products easy to be recycled  
Not discharge recyclables as waste  
Do not put foreign substances into recycled goods  
Develop technologies for resource circulation and tap into relevant business  
Conduct promotion and education on separating recycled goods for personnel and customers regularly

## ■ Seoul Metropolitan Government

Prepare optimal collecting system for separately discharged recyclables  
Establish infrastructure for waste recycling  
Nurture resource circulation industry and support ‘resource circulation professionals  
Lay a systematic ground to encourage civil participation  
Support various programs for citizen’s voluntary participation  
Find and promote the way of practicing recycling in daily life  
Support funds of nurturing businessman in recycle and activate recycle industry  
Systemize educations to raise awareness on resource circulation  
Pursue policy development that is well-made and practicable through cooperation by building private-public cooperative governance

## Purchase green products

Green Products mean goods and services that reduce environmental degradation and minimize the use of natural resources and hazardous materials during the whole process of production, consumption and disposal. The Framework Act on Low Carbon Green Growth specifies “Green Product” in Paragraph 5, Article 1: Compared to other products or services with the same usage, as a product that contribute to resource conservation and reduce environment pollution, it shall satisfy environment mark certificated products or equivalent to certificate criteria in accordance with the regulation of Paragraph 2, Article 17 in the ‘Environmental Technology and Environmental Industry Support Act’ or Good Recycled (GR) marked products or a product equivalent to the criteria, designated and notified by the Minister of Trade, Industry and Energy in accordance with Article 33 of the ‘Act on the

Promotion of Saving and Recycling of Resources’ and Article 15 of the ‘Industrial Technology Innovation Promotion Act’.

Citizens are accustomed to separating recycled items well. Seoul’s achievement, 65% of recycle rate, is possible thanks to citizen’s active engagement in separating and discharging recycled items. However, they have no interest in purchasing products produced by utilizing recyclables. The same is true for companies. The government’s request of public agencies for mandatory purchase disproves that it is difficult to create demand for green products.

Now is time for Seoul citizens and companies located in Seoul to be passionate purchasers of green products going beyond active separator of recycled goods. The circle of recycling will be finalized only when citizens seek for and consume green products.

## Goal

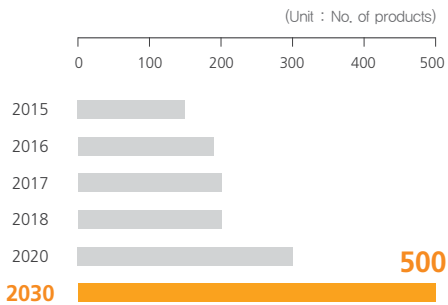
Seoul shall enlarge companies that sell and exhibit green products with the support of Seoul to 500 by 2030.





Performance Indicator

► No. of companies getting supports for sale and exhibition of green products



Action Plan

■ Citizen

Purchase a green product preferentially when buying a product

Promote a green product to widely spread its information and purchase

Conduct monitoring on public agencies’ preferential purchase of green products

Monitor whether retailers operate green stores for consumers’ easy of use

■ Business

Produce best green products that consumers will prefer

Open environmental information on produced items

Purchase green products preferentially after preparing Green Purchase Guideline

(For retailers) Construct a shop selling green products for consumers to easily buy green products

Conduct a promotion and education on green products for personnel and customers

Adopt clean technologies and environment design

■ Seoul Metropolitan Government

Establish and operate Green Purchasing Support Center of Seoul Metropolitan Government

Conduct an education on group buying for green products

Conduct a promotion and education on green products with citizens and companies

Nurture green industry and support HR nurturing



I thoroughly recycle the recyclables like plastic and vinyl and cook just enough to eat and consume all. When walking the street, there are some sections that do not have a garbage can. But it is cumbersome to bring waste. I hope this situation is resolved.  
Kim Mi-Hee / Housewife



I am practicing 'separate and discard waste battery or parts of electronic goods'. Usually, people think it is hard to separate and discard it. However, it is not that difficult once it is used to. I hope many citizens recognize and practice it. If SMG prepares a campaign or program that is fun to join while advertising it, resource recycle can be activated.  
Kim Min-Seung / University student



I am offering a class that makes a toy with recyclables. But, it seems that many people don't know the way of converting waste to resource. If we use a box for a storage space and a milk carton or can for a coin bank, we can easily re-use, not separating and sending out the recyclable waste. I hope SMG will support citizens to buy products made with recyclables at an affordable price.  
An Ran / Recycle guide



I prefer to use an electronic goods for a long time by repairing them rather than buying new one. It is pity that it is hard to see the culture of conservation and re-use. we can buy desirable items at a cheaper price if we use an online or offline second-hand store. I have a keen interest in recycle or upcycling and hope many events related these are held.  
Jung Hyun-Cheol / University student



## Make a water circulating city by reducing waste water and utilizing rainwater

The city of Seoul with 10 million population requires various water supply sources for domestic use water, commercial water, public water, water for baths and water for industrial use. Moreover, the annual water consumptions are amounted to 1.2 billion tons. The waterworks use per capita is at least 285 liters a day (Tokyo: 323 liters, New York: 378 liters). It is thanks to the efforts of improving the water flow rate in waterworks (94.5% in 2012), distributing a water saving machine and water reuse facility and reusing storm water and treated waste water(sewage).

However, Seoul heavily depends on water resources from outside. External dependency is whopping 91.3%; internally, it only obtains water amounted to a meager 9%. The concern will be deepened as Korea has entered the water scarcity countries due to climate change.

Seoul shall increase the volume of water resources that are internally supplied. For that, it is needed to extensively broaden water saving, finding alternative water sources and water reuse. When reducing the amount of water use and increasing water reuse, the resources and energies input to production and supply of tapping water will be saved and GHG emissions will be proportionally decreased.



Water

# WATER

## Action Plan

Reduce water waste	Collect and utilize rainwater
<div>12M ton/year</div> <div>Target to reduce the amount of water supply</div>	<div>1M ton</div> <div>Amount of using rainwater</div>
Drink tap water rather than a commercial bottled water	Use water once more before throwing away
<div>60%</div> <div>Tap water drinking rate</div> <div>7.0%</div> <div>Rate of drinking tap water as it is</div>	<div>20M ton</div> <div>Amount of using heavy water</div> <div>200M ton</div> <div>Amount of using treated sewage</div>

※ Figures of Infographic is the target to achieve till 2030.

## Reduce water waste

Tap water consumptions of Seoul Citizens were 285 liters a day in 2012. Compared to 323 liters of water consumption in Tokyo and 378 liters in New York, it is hard to say Seoul citizens spend water resources too freely. However, when comparing 150 liters of consumption in Germany, 225 liters in Australia, and 188 liters in Denmark with Korea which consumes 278 liter on average, it is hard to say the water consumption of Seoul citizens is at a low level.

In particular, the city of Seoul obtains 91% of water resources from neighboring regions. Renewable Water Resources per capita is 1,491m³, half of Japan’s status and water resources per capita ranks 146th places around the globe. Seoul citizens use tap water for various usages like washing toilets, doing laundry, watering and cleaning cars. Under this circumstance, it is fair to say that Seoul consumes water resources excessively.

It is important to develop and make the best use of alternative water like using rainwater, utilizing treated wastewater and reusing treated sewage but what is the most important is reducing the amount of water consumptions fundamentally. These days, many buildings have adopted toilets, washbowls and showers using treated waste water and Seoul Metropolitan Government also recommends this trend. However, still, there is a huge room for saving water and it calls for all of citizens and stakeholder’s interests and practice. Conserving water will reduce energy like electricity and city gas consumed during the process of collecting and purifying tap water and supplying the purified water into the place used, which, in turn, plays a role of lessening relevant GHG.







Action Plan

■ Citizen

Exchange the old interior piping

Store water and use it

Re-use water for various purposes

Dispel distrust on tap water

Choose a water saving machine in installing waterworks facilities

(For civic group) wage a water saving campaign and be in charge of education

■ Business

Develope process technologies that lower the amount of water usage and water saving devices

Improve the producing process to water-saving type

Adopt a facility that recycles sewage and waste water

Provide information on saving water and educate the necessity to executive and staff members as well as customers

■ Seoul Metropolitan Government

Maintain world’s best water flow rate

Subsidize construction costs to exchange the old inside water pipe

Find leakage with a systematic leakage detector in early stage

Improve effective ratio of the purification plant

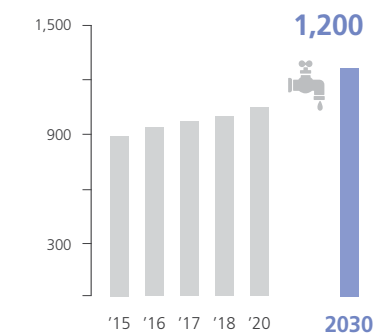
Goal

Seoul shall reduce the amount of tap water supply to 12 million tons annually by 2030.

Performance Indicator

► Goal of reducing the amount of water supply

(Unit : 10,000 ton)



Collect and utilize rainwater

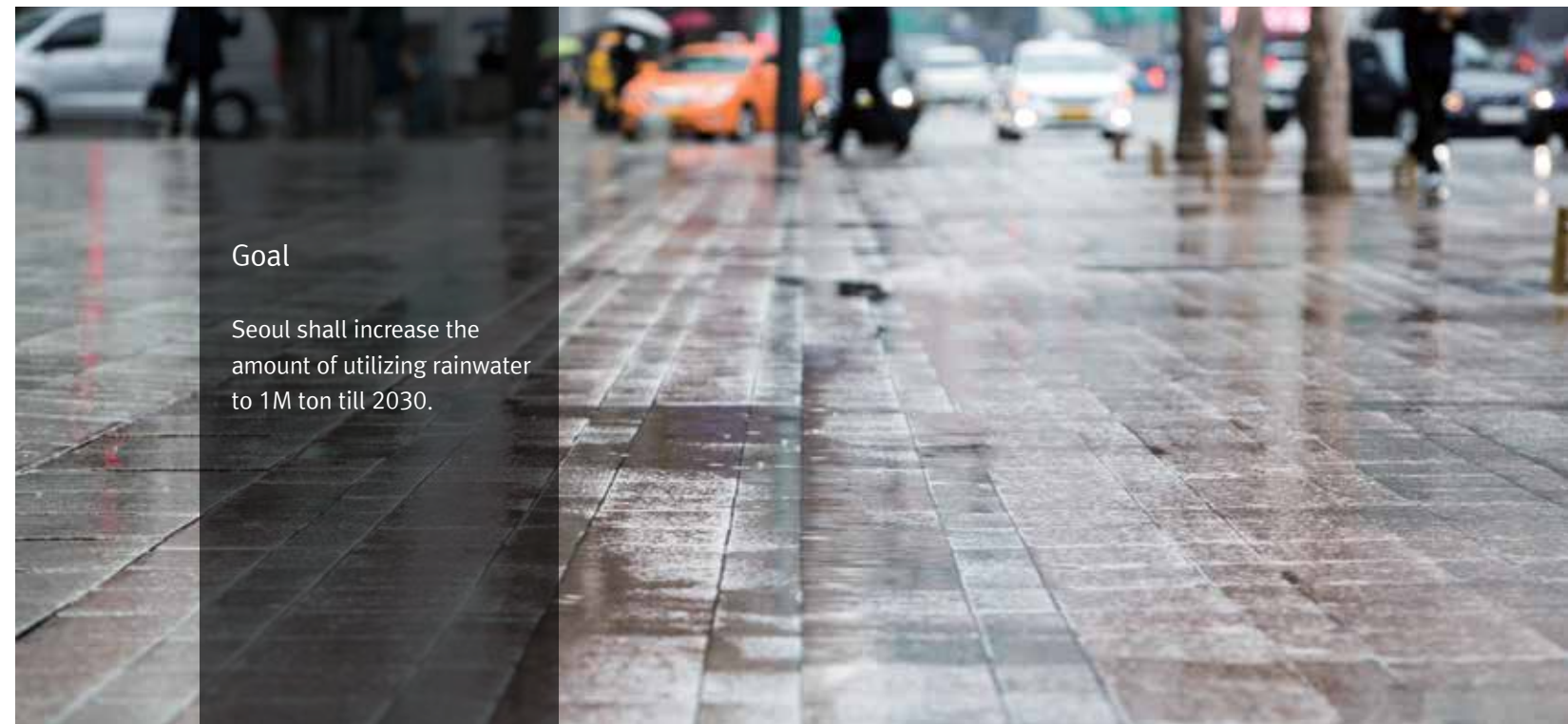
Seoul Metropolitan Government has depended on policies that obtain water mainly by constructing a large sized dam or reservoir to secure water resources. However, recently it is hard to build a large sized dam due to objections of neighboring regions along with high water compensation costs, reduced places for constructing a dam and environmental degradation. Currently 91% of the water consumption of Seoul depends on Hangang and it is closely related to policies in securing water resources.

Water from Hangang is utilized as the source water of tap water; mostly, it is rainwater from the upper region of Hangang. Seoul does have rain (940 million m³ as of 2010) but 29% of rains are infiltrated into the soil and the rest are discharged to outside of Seoul along with the sewer, failing to be utilized. The amount of rainwater used in 2010 was 110,000 tons, accounting for a meager 0.01% of the total rains in Seoul.

In the future, rainwater shall be actively utilized as precious water resources. When using rainwater, energies consumed to collect water from Hangang to produce tap water can be saved and eventually relevant GHG emissions can be restrained.

Goal

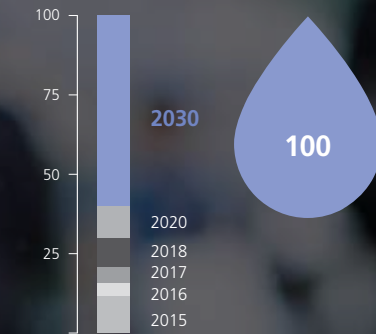
Seoul shall increase the amount of utilizing rainwater to 1M ton till 2030.



## Performance Indicator

### ▶ Rainwater usage

(Unit : 10,000 Ton)



## Action Plan

### ■ Citizen

Collect rainwater for a flowerpot or garden tree

Install a rainwater collecting and infiltrating facility when building a house

Cooperate with local community to use rainwater

Join a PR activity and campaign of using rainwater

(Civic group) Monitor whether rainwater utilizing facilities are operated

(Civic group) participate in operating Rain Expert System.

### ■ Business

Install a rainwater collecting facility at a company site

Install a rainwater utilizing facility and infiltration facility when constructing a building

Research various methods to make the best use of rainwater

Develop a facility using rainwater and new business model

Research, develop and utilize water treatment technologies for rainwater using facilities

### ■ Seoul Metropolitan Government

Subsidize installation costs for private and public institutes to adopt a rainwater utilizing facility

Operate Rain Expert System.

Drink tap water rather than a commercial bottled water



The drinking rate of tap water in Korea is subdivided into less than 5% for drinking right after turning the faucet on and collecting tap water, and 53.3% for drinking after boiling tap water. Compared to the cases of Japan and the United State, this rate is too low: It is almost the same with Seoul citizens' case, recording a scanty 4.9% of drinking tap water as is.

Citizens drink about 2 liters of water a day. Citizens who do not directly drink tap water purchase commercial bottled water. As a result, drinking mineral water has been increased annually (13.2% in 2009 and 23.8% in 2013). Meanwhile, direct drinking of tap water has been decreasing. Commercial bottled water emits GHG, 1,000 times more than that of tap water during the producing and distributing process- compared to tap water production, its process is small size and plenty of transport fuels are needed for the long supply process. What's more, bottles with synthetic resin materials must be manufactured and treated after use.

This task has the meaning of efficiently using already committed waterworks facilities and of doubling the efforts of encouraging Seoul citizen to drink tap water as well as Seoul Metropolitan Government to supply tasty and safe tap water to protect the earth environment.







Goal

Seoul shall increase tap water drinking ratio to 60% till 2030.

Performance Indicator

(Unit : %)

▶ Tap water drinking ratio		54.3	54.8	55.2	55.6	56.3	60
	Year	2015	2016	2017	2018	2020	2030
▶ Ratio of drinking tap water as it is		5.2	5.4	5.5	5.7	5.9	7

※ As of 2013, Tap water drinking ratio is 53.3%. Among them, ratio of drinking tap water directly is 4.9%,  
※ Tap water drinking ratio : In case of directly drinking tap water as it is or after boiling it

■ Citizen

- Maintain interior piping and clean water tank regularly for tasty tap water
- Think environmental value of drinking tap water
- Drink directly tap water or boil tap water to drink
- Monitor local government for water quality management and information offering
- (Civic group) Inform problems of commercial bottled water or water purifier
- (Civic group) Educate necessity of drinking tap water

■ Business

- Educate environmental value of drinking tap water for personnel and customers
- Maintain building piping for tasty water
- Adopt direct connecting water supply system and install drinking fountain
- Develop a technology cleaning a building piping- Inform problems of commercial bottled water or water purifier
- Educate necessity of drinking tap water

■ Seoul Metropolitan Government

- Enact direct connecting water supply system for high rising apartment
- Retrofit old pipes
- Provide visiting services to check water quality of tap water
- Pursue premium tap water like advanced purifying treatment
- Unveil and notify problems of commercial bottled water and water purifier





Use water once  
more before  
throwing away

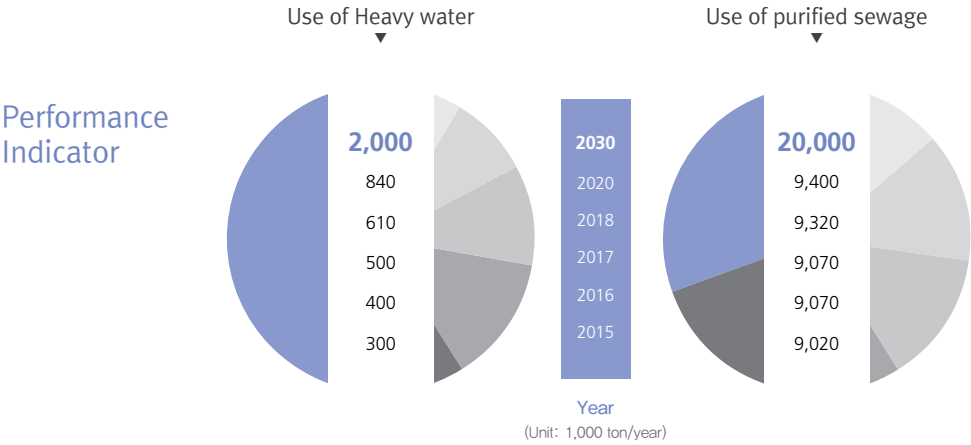
The city of Seoul utilizes water for various purposes like domestic water, commercial water, industrial water and municipal water to maintain the function of a city. Used water is gathered in sewers. The sewage volume in 2010 was 1.58 billion m³ and the origins of sewage were waterworks (95%), underground water (4%) and rainwater. The discharged volume of sewage purified at the sewage treatment plant via water ways like downstream of Hangang is the same with the amount of sewage generated, which is 1.58 billion m³.

In other word, an enormous amount of water resources are used only one time and finalized as sewage. (The amount of reused sewage in Seoul in 2010 was just 3%.) Moreover, the volume of heavy water that is reused after re-purification at the place used is about 1.5 million tons, scantily amounted to 0.1% of the sewage.

The measure of securing water resources puts saving water first and recognizes the value of using rainwater in terms of finding new water resources. In line with this, heavy water and reuse of purified sewage are another way of securing water resources that cannot be overlooked. The value is very high given that Seoul shows a high ratio of outside dependency when it comes to water resources.

Goal

Seoul shall increase the volume of using heavy water and purified sewage to 220M ton/year till 2030.







## Action Plan

### ■ Citizen

Recognize necessity of water reusing projects

Reduce the use of detergent or use eco-friendly detergent

Review installation of treated wastewater facility when building a new house

Join PR activities or campaigns for water reusing projects

(Civic group) Conduct monitoring and training

### ■ Seoul Metropolitan Government

Pursue a project of supplying re-treated water at the district of urban regeneration project

Prepare methods of activating re-treated water supply in urban management plan

Install and manage water reusing facilities and check normal operations

### ■ Business

Review installation of a treated waste water facility in a building  
(Factory owner) Review installation of treated waste water facilities

Develope technologies for a treated waste water/purified sewage water re-handling facility

(Buildings near sewage treatment plants) check the status of using purified sewage water

Set up and implement recycle goal on waste water



Water saving is the same with saving energy by exchanging an equipment into highly efficient one. We can save our precious water resources by exchanging old interior piping and installing a water-saving machine that can reduce the amount of water consumption. The habit of using stored water rather than running water will reduce the waste of water.

Min Kyeong-Gu / Company employee



First measure to efficiently use water is 'conservation'. Of course, we can practice water saving personally but the better way is installing a water-saving machine when building or repairing a house. Many citizens prefer to use a water purifier or spring water on sale but I hope they will love to use clearly purified tap water.

Yeom Hyeong-Chul / Secretary General, Friend of Earth Korea



I catch rainwater to utilize it for urban agriculture. It is pity that many people don't know rainwater is a precious resource. Rainwater is not acid-rain or pollutant. Rather, it is a good medicine for herbs because rainwater is distilled water. And, eventually, we can practice water saving. When we reduce the frequency of flushing a toilet and utilize urine as a fertilizer, we can tend a vegetable garden in an eco-friendly manner.

Lee Eun-Su / CEO of Nowon Urban Agriculture Network



When we save water and use rainwater, we can save energies consumed during the process of in-taking, purifying and distributing tap water. However, it is rare to practice. It is needed to preemptively do PR activities by preparing participatory program that citizens can watch, listen and finally follow, not just providing a series of information.

Jung Ho-kyeong / (Kangseo-gu) Company employee





## Ecology

### Make a ecologically harmonized city with various living organisms

Greenness prevents direct sunshine and heat by forming shade and lowers temperature through evaporation while contributing to energy conservation by preserving and broadening green spaces as well as protecting health against impact of climate change like heat wave.

When urban ecology is cared and preserved well, more carbon can be saved in tress and soil which in turn makes a significant contribution in saving GHG. The adaptation of climate can be enhanced by improving the health of urban ecology like upgrading greenness in quality.





# ECOLOGY

## Action Plan

Lower average temperature of Seoul by extending green spaces	Make mountains of Seoul a forest of relaxing and healing with healthy management
7.00㎡ Area of park in living zone per capita	1,043km Foster a healthy forest rail (Seoul trail)
30 rooftop gardens Foster spaces for rooftop gardens	100 places Healthy Forest Experience Field
Make a biodiversity city with blooming flowers and singing birds	Create a culture that citizens voluntarily care forests and streams
7.32 ㎢ Areas of Greenbelt zone	130,000 persons No. of Green activists

※ Figures of Infographic is the target to achieve till 2030.

## Lower average temperature of Seoul by extending green spaces

The city of Seoul has 170㎢ of park area, a park ratio of 28.1% and 16.3㎡ of park area per capita. When it comes to each autonomous district, Seocho-gu holds the largest park area (15.8㎢) followed by Gkgangbuk-gu (14.3㎢) and Nowon-gu (14.2㎢). On the opposite end, the smallest area of parks and green goes to Dongdaemun-gu (1.2㎢). Moreover, Yongsan-gu and Geumcheon-gu also have small green and park areas, reporting 1.8㎢ and 2.2㎢ respectively. It is evaluated that autonomous districts showing high ratio of park and green areas are covering large-sized forests located on outskirts of Seoul like Mt. Cheonggyesan, Mt. Bukhansan and Mt. Gwanaksan, so they hold relatively larger green areas than that of other autonomous districts.

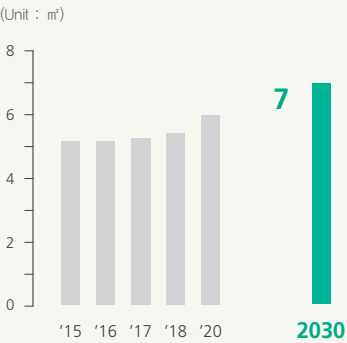
70% of parks in Seoul lean too much toward outskirts and the green area per capita in living zones is 5.03㎡. So, the actual greenness in living zones is too small. In addition, 26% of households are not satisfied with the size of parks or streams that can be reached within a 10-minute walk.

It is needed to continuously broaden green areas to reduce carbon dioxide and lower urban temperature in line with resolving park-marginalized regions to enhance the daily life of citizens.

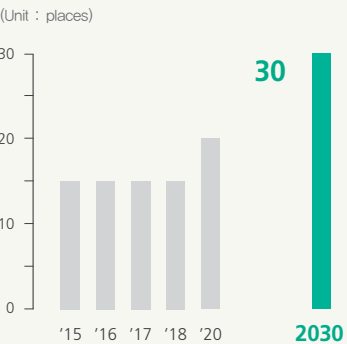
Goal Seoul shall enlarge the green area of residential zones by more than 30% compared to 2014 while extending parks in residential areas, rooftop gardening and planting street trees.

### Performance Indicator

#### ► Park area per capita in residential area



#### ► Rooftop gardening



#### Park area in residential area =

(Urban natural park×0.08)+Neighborhood park+children's park+small park+sports park+cultural park+historic park+waterside park+other parks

\*The goal of park area per capita is the value calculating the total.

\*The no. of rooftop gardening is single year performance.



#### ■ Citizen

Find neglected empty place in a village and foster a small flower garden

Make a garden in the roof of my house, place flower pots along with the ally of my house and cultivate them together

Take care street trees near my house or working places together

Suggest making school forest to my children's school and plant and cultivate trees together

Join tree planting event with families or friends more than 1 time a year

#### ■ Business

Support a restoration project for impermeable pavements

Set up and fulfill a plan of greening the roof and wall of a building as well as broadening greenness

Support greening project like a project of fostering village parks

Minimize cutting areas in construction and do its best to secure green and part higher than the criteria

Open a public space, street furniture and green space of a company to provide comfortable and relaxing area

#### ■ Seoul Metropolitan Government

Create a small forest and garden in downtown (1,000 forest and 1,000 garden project)

Foster green spaces on the roof of public/private buildings

Provide nature friendly educational environment by fostering green ecology spaces within a school

Be greening the wall of concrete structure in city with plants

Make a well-shaded street with trees that wants to take a walk by strengthening street tree management

## Make mountains of Seoul a forest of relaxing and healing with healthy management

A survey unveiled that Seoul citizens had a high interest in health by ranking 'Health' as the No. 1 welfare service that Seoul citizens hoped to enjoy in 2013; 20.5% of respondents also thought that the health care facilities (Public hospital, Community health center, etc.) are needed and shall be enlarged.

350,000 persons and 2.5 million persons in Seoul aged from 19 to 59 are climbing mountains weekly or more than one time a month respectively. According to the research results, just watching scenes including forests causes the brain to emit alpha waves( $\alpha$ ), restoring mental health. Forest healing is an activity of improving the immune system of the human body and restoring mental and physical health by utilizing various environmental aspects of the forest. Medical expenses and energies can be saved by preserving health and preventing diseases. So, Seoul Metropolitan Government's initiatives like Caring Mountain and forest healing programs have been activated.

Accordingly, it is needed to secure high quality green spaces and develop programs to provide a pleasant living environment which will eventually lessen the stress of Seoul citizens and promote disease prevention and health improvements.

#### Goal

Seoul shall improve health of citizens by fostering healthy forest trails (1,043 km) and 100 healthy forest experiencing places like the forest experience field for children and for teenagers as well as healing forests by 2030.

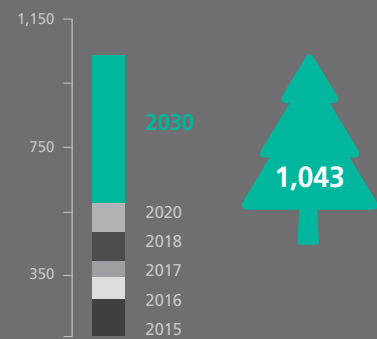




## Performance Indicator

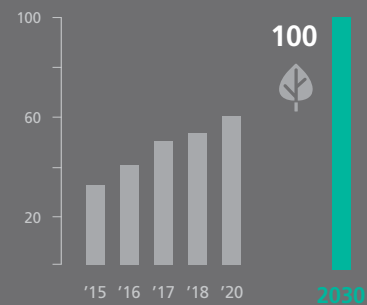
### ► Create healthy forest trail(Seoul Trail)

(Unit : km)



### ► Healthy forest experience fields

(Unit : places)



**Healthy forest trail** : Mountain trail, Walkaway along with the foot of the mountain, Seoul Trail

**Experience Healthy forest** : Forest experience field for children, Forest experience field for teenagers, Forest healing

## Action Plan

### ■ Citizen

Join forest caring events, more than 1 time annually

Use designated trail in forest, not to make byroads recklessly

Contact an administrative institute or environmental organization when finding trees with disease/pest or withered leave of pine tree, nut pine and oak

Experience a forest with families or friends more than 1 time monthly

Participate in efforts of removing noxious plants and caring native plants in a neighbor mountain

### ■ Business

Preserve and not damage greenness and neighboring regions when undergoing various developments

Do a business of planting and cultivating trees at a company level like 1 mountain for 1 company or 1 park for 1 company campaign

Conduct forest healing programs like Yoga or Meditation for personnels as a part of green welfare

Support personnels to enjoy forest cultures during their relaxing time

### ■ Seoul Metropolitan Government

Provide an opportunity of experiencing nature by fostering a forest experience field for children

Provide healing and leisure time by fostering a forest experience program for teenagers

Retrofit forest trails and extend Barrier-free forest trail

Find a walkway with theme

Plant native plants in destroyed forests

Protect trees by strengthening the monitoring and prevention on disease/pest on trees and forest fire

## Make a biodiversity city with blooming flowers and singing birds

The total species in Seoul are amounted to 5,228 kinds including 2,168 kinds of plants, which is the highest, 2,157 kinds of insects, 240 kinds of birds, 364 kinds of fungus and 29 kinds of mammals. Seoul Metropolitan Government has designated and maintained 17 areas(4,818,361㎡) as Ecological Landscape Preservation Area to systematically protect areas which have ecological importance with enriched biodiversity or specially hold high value of preservation. In addition, 7 places have been selected and protected as a ‘Wildlife Conservation Area’ and among them, three areas, downstream of Jungrangcheon, Cheeonggyecheon and Anyangcheon, have been designated and managed as a Migratory Bird Protected Area.

As the habitat has been decreased and separated into pieces due to urban sprawl and highly condensed development, negative influences affect the inhabitant and it is hard to maintain biodiversity due to continuous artificial disturbances. Various trials to draw up a strategy of improving biodiversity and to restore ecosystems shall be done and managing biodiversity like fostering small sized habitat for species, restoring species and securing habitat are needed. What’s more, it is needed to activate a network for biodiversity like raising citizen awareness on biodiversity and citizen’s involvement in efforts of enhancing biodiversity.



Goal

It shall broaden the areas of Natural Ecology Protection Area to 7.32km<sup>2</sup> till 2030, 17% of increase compared to 2014.

Action Plan

■ Citizen

- Organize or participate in activities of Natural observation group
- Attend NGO regarding biodiversity and regularly support it
- Actively suggest opinions with interests in biodiversity policies of Seoul
- Figure out biodiversity and endangered plants/ animals
- Report rare plants/animals to administrative institute or environmental institute when finding them
- Restrain entrance of Natural environment protection area

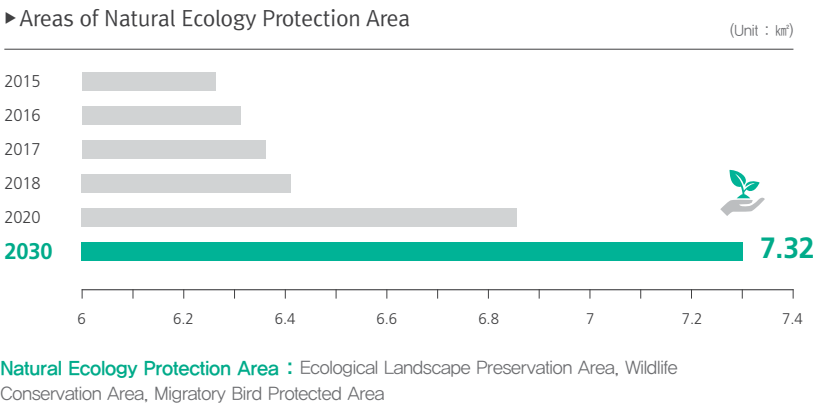
■ Business

- Minimize negative effects on surrounding species in using a land
- Support citizen’s activities of preserving biodiversity
- Attend activities of preserving biodiversity as a volunteer

■ Seoul Metropolitan Government

- Draw up biodiversity strategy and implementation plan
- Extend the natural environment protection area and strengthen the management
- Improve biodiversity by fostering small ecology ponds
- Host biodiversity exploration activities along with citizens, experts and SMG
- Handle species that disturbs ecosystem and increase the number of protected wildlife
- Select and monitor biological indicator species of climate change

Performance Indicator



Create a culture that citizens voluntarily care forests and streams

Seoul Metropolitan Government has communicated with citizens through various programs utilizing ecological resources like mountains and parks: the cases in point are forest experience programs like ‘Expedition of completing Seoul Trail’, ‘Seoul Trail Walking Festival’, and ‘Travel to Forest Trail’, a venue of an ecological education such as ‘Citizen gardener’, ‘Landscaping academy’, ‘Forest education academy’, and ‘Park ecology class’, ‘Angel of parks and trees’ and ‘Town forest’. In addition to this, citizens are playing a role of creating and sharing green culture going beyond simple participations. Accordingly, the trends that citizens form a solidarity by actively joining the efforts of diffusing green culture are gradually on the rise.

In addition, citizen engagement, civic groups, and experts in fostering, operating and managing green spaces have been extended. As the interest and demands of citizens on nature and ecology increase, it is needed to depart from government-oriented practice and to systemize and reinforce programs while requiring more practical and continuous participation of citizens.

Goal

It shall increase green activists like ‘Park Angel’ and ‘Tree Angel’ to 130,000 persons by 2030 by operating ecological education programs.





Performance Indicator

► No. of green activists

2015	2016	2017	2018	2020	2030
30,620	34,120	37,620	41,000	48,000	130,000

Green activists : Park angel, Tree angel, Citizen gardener, etc. (Unit: Persons)

Action Plan



■ Citizen

- Establish ‘Town company’ caring forest and green to preserve nature of the town directly
- Participate in activities of caring street tress in front of my house
- Acquire basic knowledge regarding gardening
- Participate in a public contest regarding citizen’s greening activities together with neighbors
- Join activities of park angel, caring parks in our village
- Attend educational programs like nurturing citizen gardeners and forest experience

■ Business

- Join the efforts of spreading green culture in community and return certain portion of profits to local society to be harmonized with local community
- Open a meeting room or green space to local residents
- Conduct green culture programs working with local residents
- Attend activities of caring parks and greens as a volunteer

■ Seoul Metropolitan Government

- Support activities of citizens that plant and care flowers and trees in daily life
- Operate educational programs to spread green culture further
- Host a garden exhibitions along with private/public experts
- Extend citizen’s angel activities caring parks and street trees
- Operate Cultural Plaza and leisure programs in parks that citizens are joining

Utilizing spaces in rooftop will be helpful to revive urban ecology and improve our health. Also, we can feel warm affections by sharing food in the dreary city and restore relations with our neighbors. In addition to private places, I hope there will be more green spaces that can share together at places like a school or public institutes.  
Gwak Sun-Mi / Urban agriculture instructor

Usually, I like to take a walk with my child who is an elementary school student but near my house, there are few green spaces. I’ve been to Wow mountain and Boramea park but I am not frequently visit those places due to the lack information on something to see and enjoy. If green spaces are fostered, I want to care forest and do ecology class with my child.  
Kim Mi-ra / Housewife

I love to climb a mountain or walk a forest trail with my family or friends. I try not to eat food in the forest and to bring back waste like a plastic bottle by putting it on my bag. It is sorry to see many waste and damages in forests. I hope SMG will exhaustively manage and care the forest.  
Kim Su-Min / University student

I care more than 300 flowerpots at home and when people pass by my house, they stopped and look around. They said that it feels that air is clearer and good. I hope more people are planting at their home even though it is not a separated house. Also, hope to see many forests in downtown. Because, flowers and trees are precious assets that save our environment.  
Lim Mae-Hwa / Company employee



## Urban Agriculture

### Activate Urban Agriculture in our daily life

If local food becomes a way of life, oil consumptions and CO<sub>2</sub> emissions could be less than with transporting food within existing food system. Urban agriculture, which is an activity of directly producing local food, contributes to reducing GHG.

When urban agriculture is activated, it will contribute to reducing CO<sub>2</sub> emission in line with shortened transport distance of agricultural products as well as to conserving heating and cooling energies by greening buildings through rooftop vegetable gardens.



# URBAN AGRICULTURE

## Action Plan

Broaden places for urban agriculture  
producing healthy food

10 <sup>km<sup>2</sup></sup>

Areas for Urban Agriculture

Save energies needed for  
distribution by activating Farmer's  
Market

2,000 <sup>times</sup>

No. of operating Farmer's market

Increase the number of urban  
farmers by raising public  
awareness on urban agriculture

1M <sup>persons</sup>

No. of Urban Farmers

※ Figures of Infographic is the target to achieve till 2030.

## Broaden places for Urban agriculture producing healthy food

### Goal

It shall enlarge spaces  
for urban agriculture  
by 10 times till 2030  
compared to the  
original year of urban  
agriculture(2012).

Since 2011, spaces where urban agriculture is practiced have continuously increased in line with the project of activating urban agriculture: it grew four-fold over a three-year period through 2011. Here, a whopping 65% of urban agriculture places in Seoul go to weekend farms located in the outskirt of Seoul: greenbelt zones in Gangdong-gu, Dobong-gu and Seocho-go and the surroundings of Paldangho Lake account for about 70% of all weekend farms. That is, urban agriculture areas in Seoul are 118ha, a scanty 0.2% of the size of Seoul and 0.7% of the size of its parks.

Against this backdrop, most places where urban agriculture is engaged in are weekend farm-type vegetable gardens located in suburbs of Seoul. They have not been absorbed into community culture in town, and are merely at the level of a family weekend leisure activity. It is hard to acquire agricultural lands in town and the gaps between each autonomous district in case of urban agriculture spaces and interest are very wide. What's worse, there are difficulties in fulfilling urban agriculture continuously while reducing the satisfaction of the users due to the location of vegetable gardens far from residential places.

It is needed to foster various and creative spaces for urban agriculture in a manner of moving the space from the outskirt of Seoul to downtown and increasing user satisfaction.







#### ■ Citizen

Create vegetable garden and cultivate agricultural products in an apartment complex

Community mutually foster and manage vegetable gardens in spare places within residential area

Conduct activities of finding cultivatable places and making a map

Share cultivatable places with neighbors

Create spaces for community vegetable gardens by each village

Produce food directly through a balcony, roof and box garden

Suggest School Farm at school operation organization like School operation committee and join School Farm

Join weekend farms with families and neighbors

#### ■ Business

Establish and develop Social Enterprise and Coop in urban agriculture  
Benchmark best practice of social-economic enterprise in urban agriculture nationally and internationally

Develop urban agriculture technic optimized by space and food type

Recycle old building to use it as a mushroom farm or earthworm raising space

Provide smoothly urban agriculture equipments for citizens to easily practice urban agriculture

Join efforts of enlarging agricultural spaces via a campaign, ‘1 company to 1 local community, making agricultural spaces’

Support civil activities regarding urban agriculture

#### ■ Seoul Metropolitan Government

Create rooftop vegetable gardens at public buildings or apartments

Establish supporting system to activate private/public governance

Enact or react laws and ordinances to extend spaces for urban agriculture

Foster a farm in a school and operate education programs for students

Create vegetable gardens by utilizing spare places in downtown

## Save energies needed for distribution by activating Farmer's Market

Direct transactions between a producer and consumer provides ‘new resources for producers’ and ‘best products at an affordable price for consumers’, which in turn, contributes to reducing distribution costs. Agriculture marketplaces in Seoul like the Farmer's Market and Seoul Marketplace has rapidly been on the rise since 2012.

In particular, the Farmer's Market, supported by Seoul Metropolitan Government, was expanded to 23 places including downtown parks and Hangang parks in 2014 from 12 places in 2013 and one place in 2012

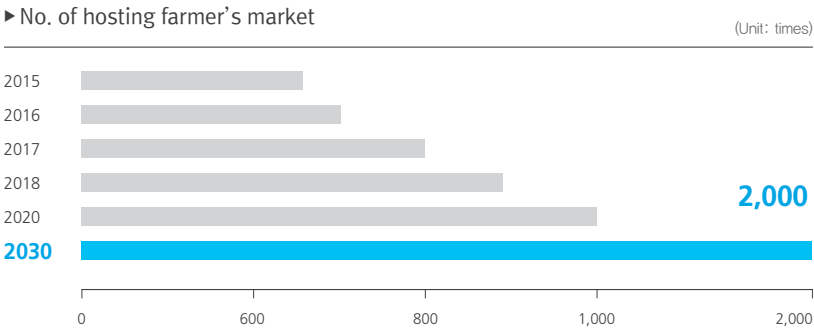
The operation of the Farmer's Market has been confined to certain places. Seoul Metropolitan Government is on the way of increasing the number of places to host the market and operating frequencies to compensate downsides like restricted access to the market. As a result, the survey on visitors of the Farmer's Market showed high satisfaction regarding freshness of the product as well as easy access.





**Goal** Seoul shall extend the whole operation frequency by more than 10% annually. Seoul shall increase the number of hosting ‘Farmer’s market’ in which producers and customers directly meet each other.

**Performance Indicator**



| Urban Agriculture |

■ Citizen

- Pursue nature circulating organic agriculture not using vinyl, chemic fertilizers and agricultural chemicals
- Share food produced in a community with neighbors
- Make or use restaurants using eco-friendly agricultural products
- Consume eco-friendly agricultural products to support the producer
- Find local food marketplace near my house
- Host Farmer’s market with local producers and urban agriculture groups regularly
- Understand energy consumptions during the process of producing and distributing food that I eat

■ Business

- Use local food and utilize Farmer’s market for food materials consumed at a company
- Promote contents of using local food at PR activities of a company
- Use local food and mark right origins of the food when offering communal feeding

■ Seoul Metropolitan Government

- Expand and operate Farmer’s market, a regular direct transaction of agricultural products and fisheries that producer sells personally
- Operate Seoul Market during holiday seasons, Chuseok and Lunar New Year that provide credible agricultural/fisheries products for citizens at lower prices and an opportunity of broadening the market for producing farm
- Promote understanding on farming and fishing villages through cooking classes and an experience program of harvesting seasonal agricultural and fishery products by operating one day farming village experience program, ‘Urban Family, Weekend Farmer’.

Action Plan





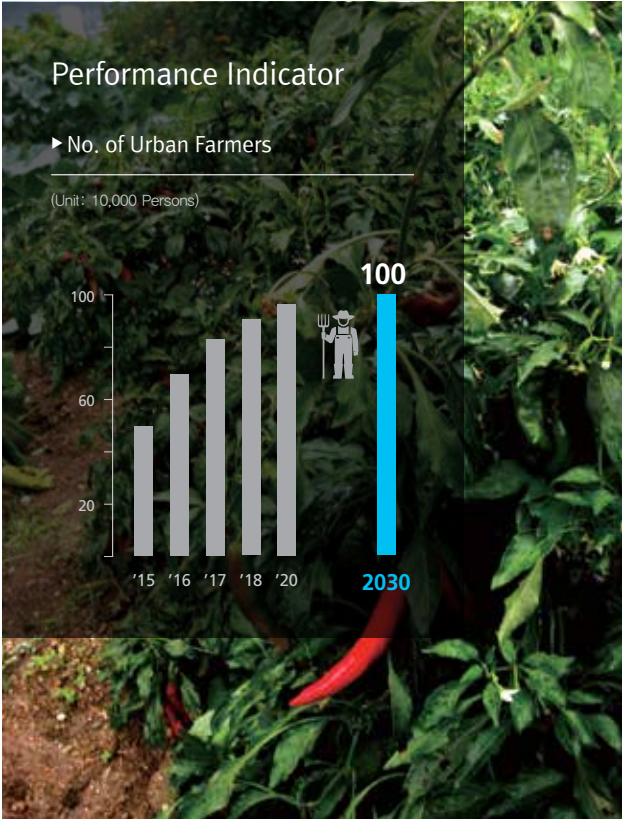
# Increase the number of urban farmers by raising public awareness on urban agriculture

The interest and participation of citizens in urban agriculture have been increased in line with continuous distribution of Seoul-type urban agriculture like vegetable garden in remnant places, container vegetable garden and eco-friendly vegetable garden farm. In addition to citizens who are directly participating in urban agriculture at various places, 10,146 persons attended the urban agriculture experience center that operates educational program on urban agriculture and 5,000 persons took part in Urban Farmer’s school in 2014. Likewise, civil network that shows interests and willingness of participation in agriculture has gradually extended. Given the number of participants in relevant programs like urban agriculture fair and workshop, it is fair to say that citizen’s interest on urban agriculture has explosively risen since 2011.

Compared to other areas in which citizens participated in educations and programs with interests for a long time, still urban agriculture is not that familiar to citizens. It is needed to develop various programs and provide educations in a systematic manner to improve social awareness while sympathized with the necessity and effects of urban agriculture.

## Goal

It shall double the number of urban farmer in Seoul till 2030 by diffusing these trends further through various educations on urban agriculture, fairs and festivals.



Action Plan

### ■ Citizen

- Raise understanding on urban agriculture by attending urban farmer’s school
- Support food education for children by being a lecturer of vegetable garden education
- Create and utilize socio-economic enterprise regarding urban agriculture
- Activate programs like sharing native seed and cultivating land
- Participate in NGO regarding urban agriculture and regularly support it
- Talk about urban agriculture and green life with families and neighbors
- Arrange a space to produce organic fertilizer at places of performing urban agriculture at the scale of weekend farm

### ■ Business

- Support personnel to participate in agriculture experience programs during leisure time
- Open places for vegetable gardens like rooftop of a building and operate educational program on urban agriculture targeting personnel and residents
- Fund educational programs on urban agriculture hosted by private organizations

### ■ Seoul Metropolitan Government

- Enlarge operations of urban farmer’s school for novice urban farmer
- Nurture an urban agriculture leader by conducting educations on producing professionals in urban agriculture
- Strengthen field experience education by operating an urban agriculture experience center
- Share cases of urban agriculture in the world and new technologies by hosting the world class urban agriculture fair
- Raise citizen’s awareness on urban agriculture by hosting vegetable garden festivals by seasons





Fostering a vegetable garden at the rooftop of an apartment will not only produce safe food but also restore community. I am involved in this field and recycle many wastes like waste water, sewage and food waste. Technical upgrade and administrative support are needed to utilize resource circulation agriculture in a city by making the best use of waste resource

Go Chang-Rok / Company CEO



Urban agriculture is not a big deal. It is planting vegetables by using small spaces nearby. It is connected not only to food but also to gardening and landscaping so we can do much various activities. And, anyone can do it because even though there is no balcony, we can use a rainwater tank or plant hanger. I hope to help many people to live a healthy life via urban agriculture.

Beak Hye-Seok / Company CEO



Urban agriculture is economic because we can save cost for groceries. Also, it is good to share home made mother's food with families and neighbors. I want regular Farmer's market where we can easily buy healthy local food. Hope to get support to open small sized Farmer's market at holidays in closed companies or public institutes.

Song Chi-Kyeong / Teacher of a daycare



Once urban agriculture is activated, resting places like rooftop gardens can be created more. Accordingly, it can solve the problem of heat island effect. Activities of caring a vegetable garden or general garden could alleviate stress. I want to spread urban agriculture that heals our body and mind to many people.

Oh Yeong-Gi  
/ Chairman of Seoul Urban Agriculture Expert's Association



Health

## Make a healthy city by preventing health risk factors and improving the capacity of climate change adaptation

As the impact of climate change has been severe, the importance of adapting to climate has been outweighed along with mitigating measures against climate change such as reducing GHG emissions. All human beings around the globe face the challenges of climate change but the impact caused by climate change differs in line with regions and classes. Accordingly, the adaptation measure for climate change shall be prepared in line with various conditions of Seoul.

Health problems due to climate change can be triggered not only by direct factors like heat wave or climatic damage but also by indirect factors like increase of vectors/parasites and spread of air pollution. Climate change gives rise to new risky factors against health while amplifying existing health problems, which, in turn, enlarge the scale of damages as well as the number of people exposed to health impact due to climate change. However, the level of health damage could be clearly changed in proportional to society's capacity of adapting to climate change.

Seoul Metropolitan Government will find and prevent risky factors and health vulnerable areas caused by climate change and eventually make healthy Seoul equipped with capacity of adapting to climate change.



# HEALTH

## Action Plan

Protect vulnerable group by reducing the exposure on heat wave

**6,000** centers

Cooling centers to escape extreme heat

Protect citizen's health with prevention on infectious disease and rapid response

**99.9 %**

Rate of completing tracing survey on entrants from polluted foreign region

**154** units

Install detector for a vector carrying mosquito

Protect health by reducing exposure on air pollution

**40 %**

Decreased rate of premature death caused by air pollution

**5,000** places

Check Environmental safety management on children's activity area

※ Figures of Infographic is the target to achieve till 2030.

## Protect vulnerable group by reducing exposure on heat wave

Unlike most climatic disasters, heat waves can be lethal to human health instead of damaging properties. Last 2012, when the highest temperature went to 36.7°C and 17 days of heat wave warnings came into force, the number of patients (Heat-related illnesses) due to the heat wave in Seoul amounted to 119. Given the tendency of under-evaluating the real number of patients with heat wave and of the dead due to the lack in awareness of health risk factors due to heat waves and difficulties in clinical diagnosis, the number of patients could be higher.

The green house gas scenario of the National Institute of Meteorological Research in 2011 expected that heat wave-related deaths will double to about 1.5 deaths per 100,000 persons in 2036~40 from about 0.7 death in 2001~10.

Accordingly, a public action and prevention system shall be prepared to minimize damage from heat waves while conveying information rapidly and correctly and reacting properly when heat waves occur. Especially, it is needed to consider high-risk and vulnerable groups like seniors, homeless, residents of shabby one-room homes and outdoor workers who are prone to heat waves, set the order of priority and prepare preemptive protection measures.



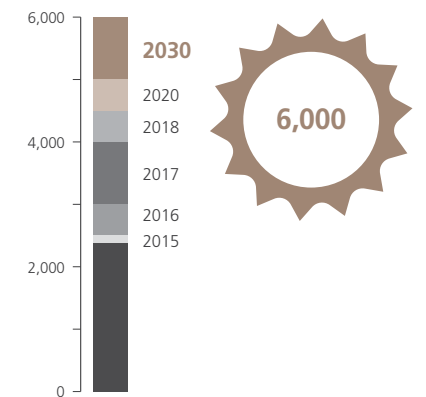
## Goal

Seoul shall secure 6,000 sharing sanctuary(cooling center) to escape from heat wave till 2030.

## Performance Indicator

► Cooling center to escape from heat wave

(Unit : No. of centers)





#### ■ Citizen

Understand and practice Citizen Behaviour Manual

Check the location of places in advance that can escape from heat wave

Join efforts of fostering green spaces in living zone like rooftop gardening or vegetable gardens

Help vulnerable group(seniors, etc.) nearby during heat wave

Compose information alarming network for information vulnerable groups in neighborhoods

(For religious facility) provide cooling center for heat wave and hang signboard of cooling center

#### ■ Business

Provide a cooling place that can escape from extreme heat and hang a signboard of cooling center

Install canopy of building and plant trees to provide shade

Develop and produce power-saving cooling products

Provide salt, ice and resting time for outside workers

Restrain from various outside events and activities



#### ■ Seoul Metropolitan Government

Operate Countermeasure Headquarter for Citizen Safety in preparation for heat wave

Operate a cooling center for the vulnerable group

Come up with a measure to protect homeless during extreme heat

Support a stable living of residents in shabby one-room

## Protect citizen's health with prevention on infectious diseases and rapid response

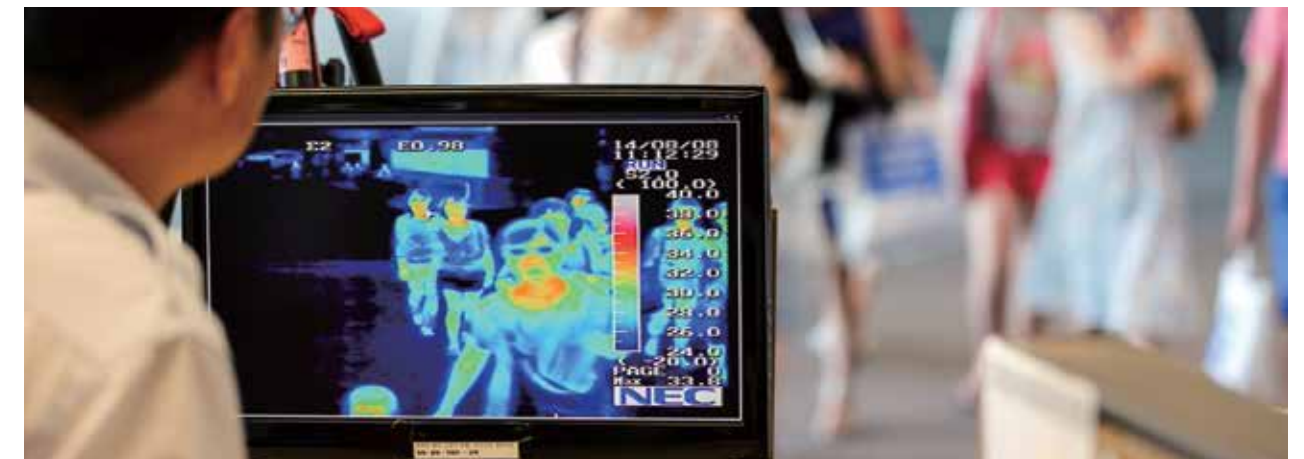
#### Goal

Seoul shall establish a tracing survey system on infections introduced from foreign countries and management system for mass outbreak of diarrhea patients.

In light of climate change and advancements in the food service industry, cases of mass outbreak of water-borne/food-borne diseases like food poisoning decreased to 34 cases with 707 patients in 2013 from 39 cases/825 patients in 2010, 33 cases/740 patients in 2011 and 35 cases/740 patients in 2012 but, on the other hand, the number of patients have increased or maintained at the same level.

The outbreak of Tsutsugamushi (Japanese Tsutsuga “illness” and mushi “insect”), a vector-borne infection, has gradually increased from 187 patients in 2010, 204 patients in 2011, 376 patients in 2012 to 343 patients in 2013. What’s worse, the number of countries attacked by foreign contagious diseases (Dengue fever, AI, MERS, Ebola, etc.) are on the rise as well. So, it is hard to ignore the possibility of foreign pathogens naturalizing in Seoul after their introduction.

Seoul Metropolitan Government shall minimize damage to citizens’ health by figuring out changes in the vector portfolio of Seoul, monitoring vectors that invite contagious diseases to prevent naturalization of infections coming from foreign countries and strengthening the monitoring and management of water-borne and food-borne diseases. In addition, it is needed to minimize the population exposed to infections by promoting and educating management of food and personal sanitation and by promoting vaccinations for our citizens to prevent infections caused by climate change in advance.



Performance Indicator

▶ Rate of completing tracing survey on entrant from overseas polluted areas	📊	99.7	99.8	99.8	99.9	99.9	99.9
	Year	2015	2016	2017	2018	2020	2030
▶ Install a detector to check mosquito spreading the vector	🕒	104	104	129	129	154	154

Action Plan

■ Citizen

Abide by prevention regulations like vaccinations to prevent native infections of the destination country when traveling foreign countries

Report mosquito inhabitant in residential areas when finding it

Minimize the exposure of skins not to be bitten by a vector like a mite during field activities.

Routinize washing hand, eating cooked food and boiled food in daily life

(For academia) pursue development of diagnosis treatment technology, impact evaluation or prediction on climate change(a kind of vector)-borne diseases

■ Business

Report an infection suspicious patient

Conduct preventive measures on surroundings of a company to control the vector regularly

(For food company) Abide by prevention regulations while understanding food-borne diseases that are frequently occurred by certain periods

Educate personnel of food industry to practice sanitation regulations with the sense of hygiene

Mark correct origins of the food and food ingredient

■ Seoul Metropolitan Government

Strengthen rapid response system when food poisoning occurs

Intensively manage a facility that is prone to food poisoning

Strengthen educations and PR activities to prevent food poisoning

Strengthen monitoring and management of the mass outbreak patients with water-borne/food-borne diseases

Strengthen monitoring on infections coming from foreign countries like new infections

Strengthen prevention and promotion on tackling infections spread by a vector like mosquito

Protect health by reducing exposure on air pollution

Goal

Seoul shall reduce the number of premature death due to air pollution by 40% compared to 2013 till 2030.

Climate change influences the occurrence, movement and diffusions of air pollutants by changing local climate conditions. In addition, the rise in cooling and heating demands caused by climate change has not only increased emissions of air pollutants itself but also accelerated the creation of air pollutants like fine particles and ozone in line with the increase of temperature and humidity.

In addition to the efforts of lessening artificial air pollutants with reduction in the use of automobile and fuel for heating and cooling, it is needed to minimize damages on health by preventing in advance and actively handling the situation of being exposed to air pollution.

Recently the emissions of natural air pollutants like yellow dust and pollen have also raised due to the influence of climate change, which in turn, impacts citizens’ health.

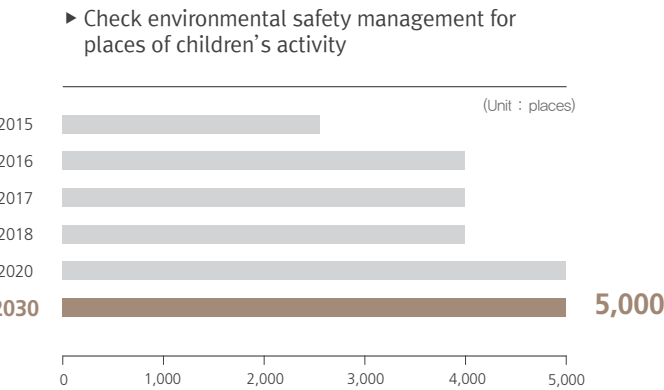
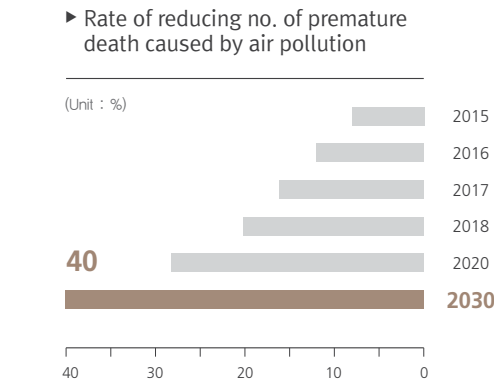
Especially, the number of children with allergies, including atopic dermatitis, which are sensitive to changes in the environment has continuously increased. The results of environment and safety diagnosis in 2014 unveiled that 17.8% of spaces for children’s activities like daycare centers in Seoul surpassed the criteria. It is needed to strengthen the efforts of pursuing environmental health policies such as education and promotion to protect the health of children whose immune systems are weak.







Performance Indicator



■ Citizen

- Understand and practice Citizen Behaviour Manual
- Apply for alarming service on air quality information and check the information everyday
- Introduce information alarming network for information vulnerable groups in neighborhoods
- Escape places which emit enormous pollutants like roads with heavy traffics
- Restrain outdoor activities during air pollution warning
- Wear a certificated mask blocking fine particles when going outside during air pollution warning (Patients with lung function related disease and pregnant woman shall wear the mask after consultation with a doctor.)
- Wear long sleeves and long clothes to minimize skin exposure when going out during air pollution warning
- Manage indoor air safely by using eco friendly construction equipment, finishing materials and household items
- Utilize Atopy/Asthma Education Information Center run by Seoul Metropolitan Government

■ Business

- Encourage personnel to use public transportation during air pollution warning
- Cooperate with measure of SMG during air pollution warning
- Cut business hours of large sized working places during air pollution warning
- Donate certificated masks blocking fine particles to vulnerable group as a part of Corporate Social Responsibility.
- Develop devices of reducing emissions for small sized working places
- Manage indoor air safely by being equipped with ventilation and air purification facilities
- Develope and use eco friendly construction materials, finishing materials and household items

■ Seoul Metropolitan Government

- Convey information swiftly by operating air pollution forecast/warning system
- Provide certificated masks blocking fine particles for vulnerable social group
- Strengthen education, promotion and inspection on the environment safety management for places of children's activity
- Operate Atopy/Asthma Education Information Center and safe schools





Climate change increases the risk of water-borne disease as well as of falling infectious disease caused by a vector like mosquito and mite but it seems that awareness of citizens is far behind. I hope SMG will conduct thorough surveys and diversified PR activities for citizens to abide by the prevention regulations and keep their health.

Ryu Bo-Young / Researcher



To take a countermeasure for climate change, the efforts of having an interest in the vulnerable social group like seniors are needed. In addition to understanding and practicing citizen's behavior manual, helping solitary seniors and homeless is important. I will help them in case of heat wave and support them to have a healthy life via Information notification network.

Yoon Jong-Guk / Reporter



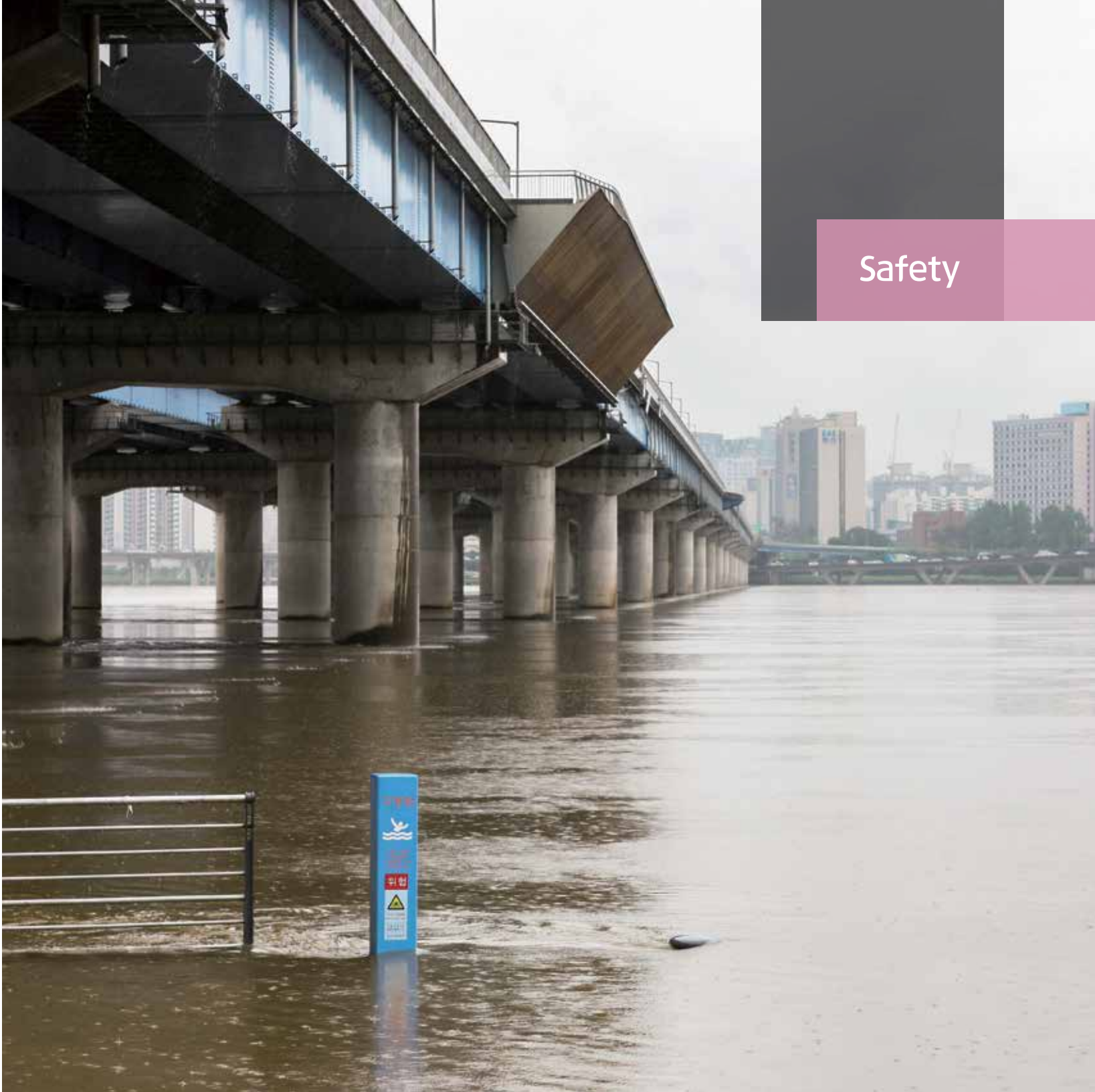
When planning overseas travel or study abroad, it is needed to check the country in detail whether there is a contagious disease or if there is, what is the preventative measure. Because, it affects others. And, like saving energy by reducing unnecessary power consumptions, we can save unnecessary medical cost and social cost by understanding and keeping the preventative measure.

Kim Hyun-Hee / University student



Our district office sends out a text message to refrain from going outside when there is a heat wave, heavy rain or yellow dust. It is very helpful. As a citizen, I routinize 'washing my hands' to prevent food-borne disease like food poisoning. I hope SMG will exhaustively manage and supervise restaurants and street vendors to keep the hygiene regulation.

Lee Eul-Sun / Housewife



Safety





Make a safe city  
by enhancing  
response capacities  
and preventing the  
climate disaster

Climate change increases the frequency and intensity of natural disaster and deteriorates vulnerability of human beings on the natural disaster. Abnormal weather caused by climate change is not directly inviting natural disaster: Natural disaster is the result of combining persons or local communities that are not sufficiently prepared and, rather, prone to disaster situations and extreme weather events.

Measures to respond to intensified natural disasters could include ‘being equipped with a system that can prevent natural disasters resulted from unusual weather like torrential rainfall or heavy snow’ and ‘establishing safety nets to minimize damage to human life and properties with prompt predictions and responses’.

For this, vulnerable areas shall be recognized first and then preventative measures by each area shall be drawn up while nurturing adaptation capabilities. In addition, to reduce damage to human beings and properties, it is a must for citizens themselves to have preventative capabilities to tackle natural disasters. The capacity of caring for neighbors who suffer financial and physical damage from climatic disasters and of self-support shall be cultivated as well.

Seoul Metropolitan Government will make a safe Seoul being equipped with adaptive capabilities to disasters that enable swift rescue and restoration of damage while finding and preventing vulnerable areas and risky factors of climatic disasters due to climate change.

SAFETY

Action Plan

Strengthen Citizen’s capability  
responding to disaster

Prevent damage by clearing  
snow just in time

100,000 persons  
Nurture Citizen Safety Guardian

116 units  
Modernize snow-plowing  
equipments

Reduce damage risk caused  
by heavy rain

Support prompt rescue from  
disaster

Zero place  
Flood Vulnerable Region

4,679 projects  
Pursue projects against land  
erosion and collapse to prevent  
landslide

275.2B KRW  
Accumulate Disasters Management  
Fund (Relief account)

131 teams  
Operate Medical Support Center

※ Figures of Infographic is the target to achieve till 2030.

## Strengthen Citizen's capability responding to disaster

Natural disasters caused by abnormal weather in various forms of unexpected heat waves, cold waves, heavy snows and heavy rains are part of our daily lives. Prompt and right measures to disasters in their initial stages along with preventative measures can significantly lower the scale of damage. So far, disaster countermeasures were based on the government and public officials in charge and the importance of citizens' first response has been neglected.

A system that the public and private are comprehensively responding while letting citizens learn countermeasures on various disasters in advance will be the most desirable methods in minimizing the scale of damage. The preparation on disaster shall be much reinforced by coming up with and promoting countermeasures on disasters customized to the disaster vulnerable like seniors, the disabled, children and foreigners.

### Goal

Seoul shall nurture 100,000 'Citizen's Safety Guardian' to strength the capabilities of responding to risks.



### ■ Citizen

Understand and practice Citizen Behaviour Manual to cope with disaster

Join a safety watchdog in our community

Be the member of Citizen's safety guardian

Install preventative devices for family use

(For School) conduct an education on disaster countermeasure targeting students

### ■ Seoul Metropolitan Government

Provide Disaster Countermeasure Manual to citizens in real time

Nurture 100,000 Citizen's safety guardian to strengthen citizen's capabilities of coping with crisis in the early stage of the disaster

Operate a safety watchdog for each community

Operate safety bulletin and safety reward

Execute voluntary and repeated drills based on crowded area like high rising building and Goshiwon(studio/one-room)

### ■ Business

Understand and practice Company Behaviour Manual to cope with disaster

Lead executive and staff members to join Citizen's safety guardian

Introduce a position in charge of safety management and educate and train the personnel regularly while preparing disaster safety manual fit into each company

Establish Emergency Response System that can be worked in emergency

Install preventative devices





Prevent damage  
by clearing snow  
just in time

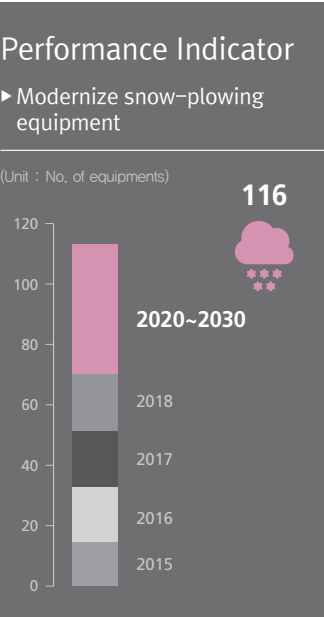
Goal

Seoul shall beef up first response and snow-plowing capacities by modernizing snow-removing equipment and upgrading facilities.



Since initiating meteorological observations in Seoul, four of Seoul’s top 10 heaviest snow days have occurred in the 2000s alone. This situation heightens the possibilities of heavy snow. (16.7cm in 2013, 25.8cm in 2010, 23.4cm in February of 2001, 15.6cm in January of 2001). Back in 2010, there were severe social and economic damages: After 10 days of heavy snow, while snow was thawing naturally, the lack in snow plowing equipment and ice formation invited difficulties in transporting patients, crash accidents, hurts from fall and increased costs of removing snow.

Seoul Metropolitan Government shall improve technologies for snow plowing equipment, enhance snow-removing mechanism/system and strengthen citizen’s capabilities of first response by encouraging residents’ active participation including building owners. Coping with the heavy snow promptly at the early stage based on the cooperation between the public and private will be the way of minimize damages of citizen’s life, safety and properties.



■ Citizen

- Remove snow in front of my house and my store by myself
- Furnish snow-plowing devices like a wooden shovel and broom for snow removing works
- Do not put removed snow from the building on a sidewalk or road
- Prevent slippery accident by pouring sands on the icy road near my house
- (For old house) Conduct safety check and remove snow on the roof right away to prevent collapse accidents
- Use public transportation and restrain the use of personal car in snowy day
- Join the voluntary activities of snow-plowing works in heavy snow
- (For apartment house) Activate resident’s association to remove snow

■ Business

- Remove snow near my work place
- Prevent slippery accident by pouring sands on the icy road near the work place
- Support company owned equipment to snow-plowing works in heavy snow
- Adjust commute time and encourage the use of public transportation in heavy snow
- Furnish snow-plowing devices like a wooden shovel and broom for snow removing works
- Develop eco-friendly snow-removing materials
- Advance snow-removing equipment and develop small-sized snow removing equipment

■ Seoul Metropolitan Government

- Operate Disaster and Safety Countermeasures Headquarter 24/7 in preparation for heavy snow (Forecast snowfall, First response system)
- Enlarge the installation of automatic liquid spray machine to shorten the initial time of removing snow
- Extend eco-friendly wet-salting type snow-plowing system
- Exchange old snow-removing equipments





Reduce damage risk caused by heavy rain

In line with the increase of heavy rain due to abnormal weather, the impermeable areas resulting from rapid urbanization like decrease in green and waterfront spaces and increased ratio of road pavement in Seoul have been expanded. Against this backdrop, the cases that rainwater results in an overflow are also on the rise. Accordingly, the capacity of coping with floods is weakened which, in turn, invites frequent flooding damages to stream sides and lower places. Furthermore, the landslide risky zone resulting from heavy rains is becoming serious. Seoul experienced big damages due to consecutive heavy rains in 2010 and 2011 (In 2010, the houses of more than 24,000 households were flooded and landslides were occurred in 37 regions. In 2011, there were flooded houses for more than 14,000 household and landslides in 81 regions).

Seoul Metropolitan Government has concentrated all efforts to reduce damages caused by heavy rains by figuring out landslide risky zone with slope investigations and by researching repeatedly flooded regions due to its lower land or poor drainage. Along with SMG’s efforts in lessening damages due to heavy rains, citizens and companies shall understand damaged areas of heavy rains and keep in mind the countermeasure manual by each situation to minimize damages and safety accidents.

Goal

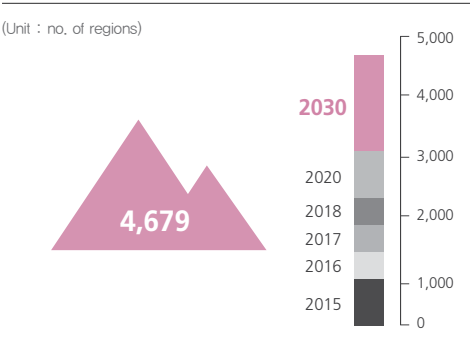
Seoul shall profoundly remove flood vulnerable regions.  
Seoul shall pursue preventative projects on landslides vulnerable regions.

Performance Indicator

► No. of flood vulnerable regions



► No. of progressed projects against land erosion and collapse to prevent landslides





#### ■ Citizen

Understand and practice customized responding manual  
Clean the drip box in preparation for heavy rains  
Check surrounding risky zone like landslides and flooding in advance  
Join caring services for vulnerable regions  
(For vulnerable region), be admitted to the insurance of damages of flood and wind  
Initiate information alarming networks for information vulnerable groups in neighborhoods  
Be equipped with rainwater storage facilities

#### ■ Business

Provide information on countermeasure manual for heavy rains to executive and staff members and if necessary, educate them  
Clean the drip box in preparation for heavy rains  
(For Vulnerable region), be admitted to the insurance of damages of flood and wind  
Cooperate in providing underground parking lot as flood plane  
Secure rainwater storage facilities

#### ■ Seoul Metropolitan Government

Root out flood vulnerable regions by fulfilling countermeasure on floods  
Implement a project against land erosion and collapse to prevent landslides  
Establish slope exhaustive survey and landslide damage reducing system  
Prepare countermeasure manual customized to each flood vulnerable regions and promptly respond to flood  
Extend facilities preventing damages of flood and wind (Flood Pumping Station, Rainwater Recycling Facility)

## Support prompt rescue from disaster

### Goal

Seoul shall establish a prompt rescue system for disaster sufferers.

### Performance Indicator

► Reserve Disaster Management Fund (Rescue account)



							(Unit : 100M KRW)
	2,705	2,711	2,725	2,731	2,745	2,752	
Year	2015	2016	2017	2018	2020	2030	

► Operate medical clinic for a disaster victim



	81	106	131	131	131	131	
							(Unit : No. of teams)

Historic heavy rains in the south east region in September of 2010 and Mt. Umyeonsan landslide in July of 2011 prove the phenomenon that natural disasters caused by climate change invite large scale damage and the increased numbers of disaster victims. So, prompt and stable welfare-oriented rescue for disaster sufferers is needed.

Especially, a swift rescue and systematic support on disaster vulnerable groups is necessary for stabilizing lives. In addition, the support for current climatic disasters is mostly based on supporting damage to properties and restorations. In the future, the support for mental or physical damages like psychology consultations shall be considered as well.





## ■ Citizen

Join local voluntary organization for disaster prevention and support swift damage rescue when disaster occurs

Join damage relief activities for our neighbors

Join voluntary relief activities for disaster

Attend disaster relief education

## ■ Business

Join economic supports like raising fund for a relief

Provide physical supports considering characteristics of each company when disaster occurs

Join human services like voluntary relief activities when disaster occurs

Encourage participation in disaster relief education

## ■ Seoul Metropolitan Government

Designate proper temporary residential facilities for disaster victims considering local conditions

Accumulate Disaster Management Fund (Relief account) to pay disaster subsidies

Reserve disaster relief supplies higher than the reservation standards compared to various disasters

Conduct professional educations for local voluntary organization for disaster prevention in the field of relief

Strengthen customized psychology supports for disaster sufferers' mental stability and social adaption

Establish medical support system (Organize and train Seoul medical support team, collective training responding to massive disaster and training of installing and operating medical clinics for disaster victims on the spot).







## Urban Planning

### Make a city, strong against climate change

To realize urban planning addressing climate change, in the long term, the whole spatial structure of Seoul shall be restructured. Moreover, city hierarchy and density management satisfying local conditions are needed. To be a strong city against climate change, climate change-responding urban infrastructure shall be constructed.

Urban planning that enables space arrangement of parks and green considering carbon absorption and storage is also required. When setting up urban planning, convergence technologies shall be applied while comprehensively approaching plans by each fields such as transport, energy and parks and green.

To make Seoul a strong city against climate change, function-intensive land use plans shall be established at the early stage of urban planning that considers urban climate by securing greenness and open spaces. Land use plans give significant influence on realizing a strong city against climate change and are a key element of climate change-responsive urban planning.

In addition, buildings can maximize the effects of energy conservation so the methods of utilizing new and renewable energy and strengthening building insulation shall be taken into consideration from the onset. Urban planning that takes a countermeasure for climate change shall be basically under the principle of sustainable development and actively reflect mitigation and adaptation measures of climate change.

# URBAN PLANNING

## Action Plan

Draw up an urban planning  
responding to climate change

3,000,000 ton CO<sub>2</sub>

Reduce GHG in the field of Urban  
Planning

1<sup>+++</sup> grade

Building Energy Efficiency Rating

Pursue citizen-oriented, Seoul  
style urban regeneration  
project

327.5B KRW

Seoul style Urban Regeneration Project  
Priming water investment plan

※ Figures of Infographic is the target to achieve till 2030.

## Draw up an urban planning responding to climate change

The city of Seoul has transformed from a mono-centric city to multi-centric city in line with rapid urban sprawl, industrialization and increased demands on public service since 1960. Accordingly, the urban lands have expanded and enlarged while unnecessarily lengthening moving distances: in light of this situation, not only public transportation but also general cars started to emit enormous volume of environment-polluting materials. In addition, when it comes to the central area system between regions, the status of central areas in the southern part of Hangang has been strengthened. Meanwhile, the status of central areas in the northern part of Hangang has been weakened, which, in turn, invites serious imbalances.

For climate-friendly urban planning and efficient urban planning, the 2030 Seoul City Basic Plan restructured existing central area system from one based on a mono-centric, simply hierarchy spatial structure with one downtown, five secondary downtowns and 11 regions centered to three downtowns, seven metropolitan areas and 12 regions. What's more, it focuses on the directions of constructing a Compact City to embody the 'vicinity of a house to work' that harmonizes daily life and working places and prioritizes pedestrians. The Compact City can lead to the restoration of city character and humanity by fostering communities and making convenient and pleasant aspects in the living environment. Also, it can take a countermeasure for climate change by reducing energy consumptions and GHG emissions.





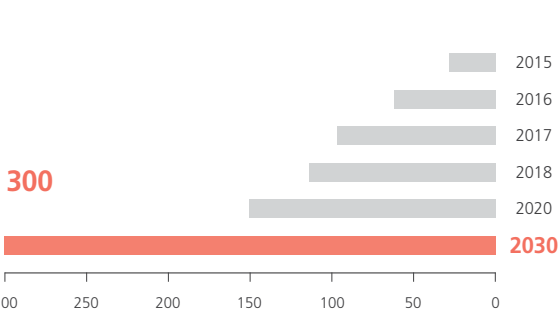
Goal

It shall realize a low energy consumption city via systematic urban planning.

Performance Indicator

► GHG reductions in urban planning field

(Unit : 10,000 ton CO<sub>2</sub>)



► Building energy efficiency rating

(Unit : Grade)

(Unit : kWh/m<sup>2</sup>)

		Residential	Non-residential
2	150~190	260~320	
1	120~150	200~260	
1	120~150	200~260	
1*	90~120	140~200	
1**	60~90	80~140	
1***	Less than 60	Less than 80	

Annual consumptions of the prime energy



■ Citizen

Participate in urban planning that reduces GHG in a various manner  
Suggest ideas to activate eco-friendly village community  
Join activities of the village community  
Preferentially use green architecture and green construction materials

■ Business

Consider energy and urban climate when setting up the plan of development project  
Let biotope be improved when developing and constructing a city  
Develop urban planning methodology that improves capacities of tackling climate change  
Design and construct a building by reflecting green architecture



■ Seoul Metropolitan Government

Conduct evaluation on climate threats against Seoul in middle and long term and improve capacities of adapting climate change for climate vulnerable baskets and regions  
Reflect urban climate in adopting urban management plan  
Set up a management plan for a energy conserving city  
Guarantee participation of female in local community as a liver to improve convenience and wellness of citizen’s daily life  
Extend various benefits to set up eco-friendly urban management plan  
Forecast energy consumptions in line with the development project and suggest the way of saving energy  
Prefer green architecture and strengthen energy consumption cap of buildings

Pursue citizen oriented,  
Seoul style urban  
regeneration project



Goal

Seoul shall pursue urban planning in a sustainable manner that is citizen oriented and reflects local characters.

Performance Indicator

▶ Seoul style Urban Regeneration Project Priming water investment plan				
(Unit : 100M KRW)				
2015	2016	2017	2018	
1,008	4,318	4,748	3,275	

※ it is a broad plan on 27 areas as the first phase project and scheduled to decide the detailed investment plan when setting up the project implementation plan.

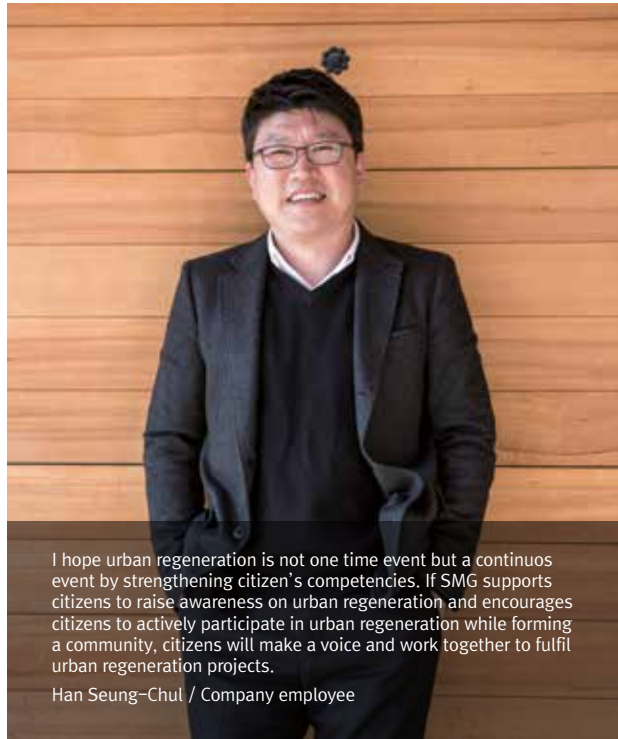
Seoul has achieved unprecedentedly remarkable growth in the world for the last half century. In retrospect, Seoul has continuously changed in different forms and methods by each period. Also, in light of the needs of the times, the existing spaces have been generated under other names. During the rapid growth, in the short term, Seoul Metropolitan Government failed to care for isolated social groups and neighbors and in the long term, SMG did not consider the assets of Seoul and future generations. Under these circumstances, Seoul has entered the era of low growth with aging society and increased youth unemployment. And, the needs of the times for urban growth and development have been changed as well.

Seoul Metropolitan Government prepared an Urban Regeneration Plan that pursues ‘Make together, Live well together and Happy together’ for 100 years of Seoul while regretting the past and reflecting new paradigms that fit the era of low growth. In addition, SMG has sought an urban regeneration project with the big goal of ‘Improving the quality of life’ for old residential areas by enhancing the residential environment and restoring community and ‘Strengthening competitiveness’ to make another leap forward. For this, SMG designated leading regions that consider local character and substantiality as a pilot project and is planned to make a successful regeneration model that citizens can passionately join with the active support of the public.

- Citizen
- Have interest and affection on the assets of the region and communities that I live
- Actively participate in educational programs and contests regarding urban regeneration
- Passionately suggest opinions to a public institute like Urban Regeneration Support Center
- Exert competence as the regeneration player by joining urban regeneration project
- Business
- Consider residents first rather than short term benefits of development
- Pursue development of the local community by forging partnership with the public
- Set up a plan that is harmonized with surrounding environment and considers the whole community
- Reject excessive development in the regions where preservation is needed
- Seoul Metropolitan Government
- Concentrate all efforts and capacities for leading regions to be the corner stone of urban regeneration
- Actively accept opinions of citizens during the whole process from planning to implementation
- Preemptively seek for educational programs and contests that can improve residents’ self-reliance to enable sustainable regeneration
- Build cooperative partnership between the public and private for ‘urban regeneration together with all stakeholder’
- Perform customized regeneration that revives local identify by utilizing local assets







I hope urban regeneration is not one time event but a continuous event by strengthening citizen's competencies. If SMG supports citizens to raise awareness on urban regeneration and encourages citizens to actively participate in urban regeneration while forming a community, citizens will make a voice and work together to fulfil urban regeneration projects.

Han Seung-Chul / Company employee



When we tear down old housing complex and perform an urban regeneration project, it is needed to set up eco-friendly urban management plan and collect as many opinions of citizens as possible. Hope to see an urban regeneration project that is based on people to vitalize a village community in which citizens actively suggest their opinions.

Lee Ki-Beok / Company employee



When drawing up a plan of development projects, energy and urban climate must be considered. I hope SMG will support a company which applied an urban design technic that improves a capacity of tackling climate change or realized a green building that reduces energy consumptions (ex. using LED). As a business man, I will spare no efforts to embody energy-consume-less city.

Park Seong-Jun / Company CEO



I am taking part in an urban planning that reduces GHG and I think for Seoul, now is time for eco-friendly regeneration projects rather than reckless developments. At a place where the development is underway, the efforts of securing green spaces and constructing a building that can lessen energy consumptions shall be made. I believe if SMG and citizens are trying to form a social consensus on urban regeneration, Seoul will be a great place to live.

Lee Seung-jin / Company employee

Environment is our everything.

It is our life, existent and future.

For us and future generations, inheriting a beautiful  
and healthy environment is the reason why we are  
living here today.

## Online Survey on Promise of Seoul : taking actions against climate change

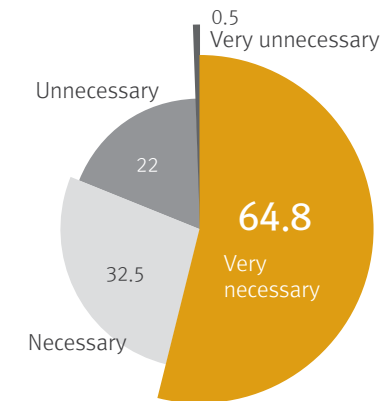
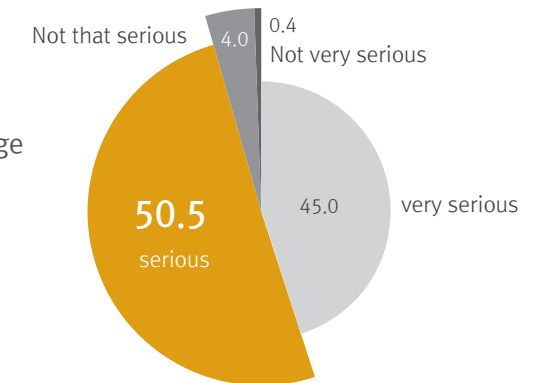
>> Survey objects: Online Panel  
>> Valid participants: 2,736 persons  
>> Survey period: March 3~8, 2015

※ This survey was conducted targeting Seoul online survey panel.  
<http://research.seoul.go.kr>

Online survey on  
Promise of Seoul:  
taking an action  
against climate  
change

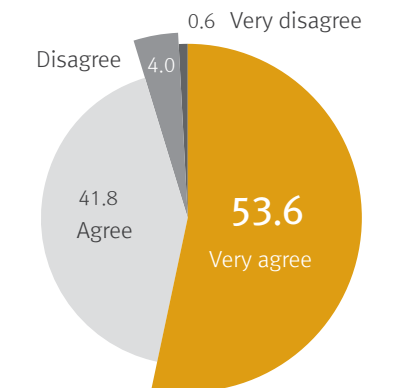
n = 2,736(Unit : %)

Do you think the challenges of climate change  
caused by global warming like Heat wave,  
Heavy rain and Drought are serious?



Do you think it is necessary to build a  
cooperative system between nations and  
cities to respond to climate change?

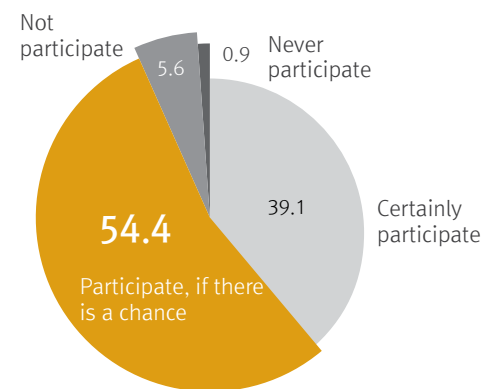
Seoul Metropolitan Government has a plan of conducting  
citizen campaign, so called One citizen, One ton less CO<sub>2</sub>,  
that draws up a plan, sets a goal and performs the campaign  
together with Seoul citizens. Do you agree with the campaign?





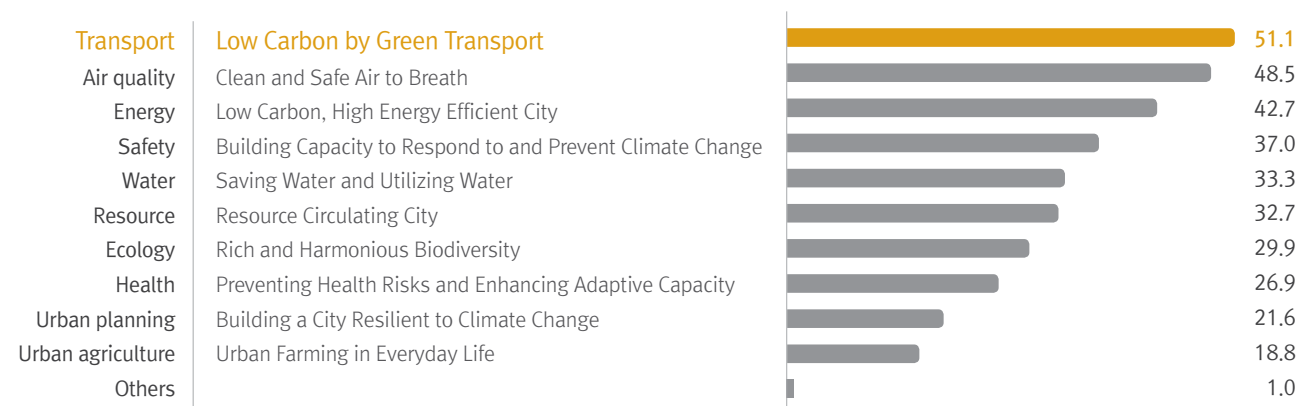
Online survey on  
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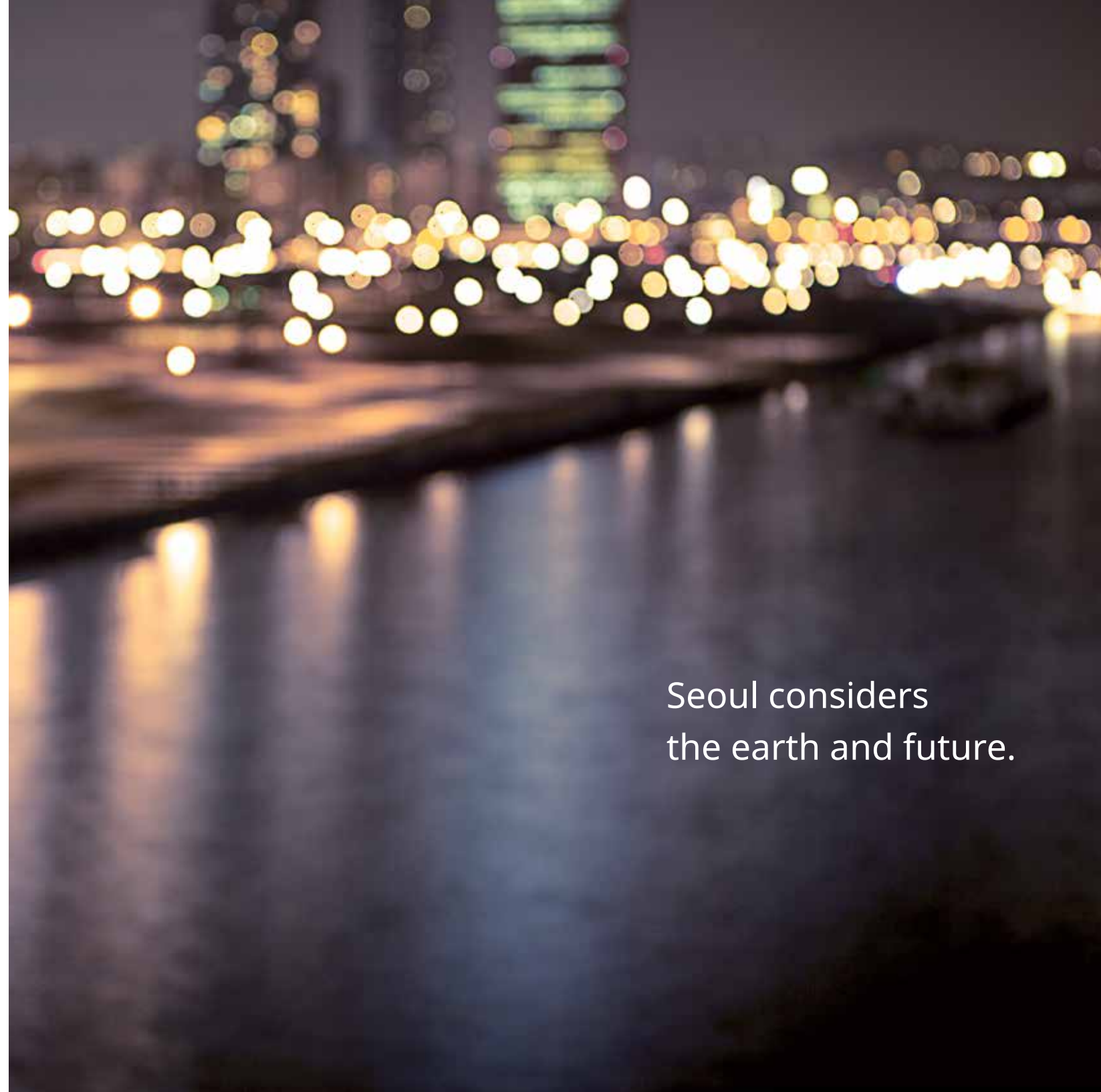


Then, will you join the citizen campaign,  
One citizen, One ton less CO<sub>2</sub>?

For the successful result of the citizen campaign, One  
citizen, One ton less CO<sub>2</sub>,  
could you name one vision among 10 areas of visions for  
SMG and Seoul citizens to prioritize?



Seoul considers  
the earth and future.





### On the road together

To realize a dream, we start from dreaming together.

Making a much healthier and safer city in which we live today

It is not an easy or short journey but we think of children who will fully  
enjoy and appreciate the beauty of four seasons.

‘Promise of Seoul: Taking actions against climate change’ will come into  
our real life with the resonance of 10 million citizens.



Taking Actions against  
Climate Change

## **Promise of Seoul**

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