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# 1. Achieving Carbon Neutrality in Response to Climate Change

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Direction

Seoul is in the process of formulating and implementing greenhouse gas reduction policies, aiming to achieve carbon neutrality by 2050. Reducing emissions in high-emission sectors such as buildings and transportation is a key strategy.

## □ Overview

### ○ Establishment and implementation of the 2050 Greenhouse Gas Reduction Plan (Starting January 2021)

- In January 2021, Seoul established the 2050 Greenhouse Gas Reduction Plan, envisioning “a sustainable city where people, nature, and the future coexist.” The plan sets the goals of a 40% reduction by 2030, 70% by 2040, and achieving carbon neutrality by 2050, compared to 2005.
- The "2050 Greenhouse Gas Reduction Plan" comprises five strategies: Green Building, Green Mobility, Green Forest, Green Energy, and Green Cycle, encompassing a total of 75 tasks. Key initiatives include the green remodeling of aging public buildings and the widespread adoption of electric and hydrogen vehicles.

### < Implementation Strategies for the 2050 Greenhouse Gas Reduction Plan (January 2021) >

Category	Implementation Strategies
Green Building	Promoting the transition to low-carbon, zero-energy buildings
Green Mobility	Pioneering green mobility more than a pedestrian-friendly city
Green Forest	Offsetting greenhouse gas emissions by preserving green spaces
Green Energy	Accelerating the shift to renewable energy
Green Cycle	Reducing waste at its source and achieving zero landfill

- In June 2021, the 2050 Seoul Climate Action Plan, which outlines these strategies, received final approval from the C40 Cities Climate Leadership Group. This signifies international recognition of Seoul's policy efforts toward carbon neutrality and the practicality and effectiveness of Seoul's plans.

### ○ Announcement and implementation of Seoul's Comprehensive Climate Change Action Plan (2022-2026) (Starting January 2022)

- In January 2022, the Seoul Metropolitan Government announced the Comprehensive Climate Change Action Plan (2022-2026) as a short-term action plan to achieve carbon neutrality by 2050.
- As of 2023, the plan includes a total of 147 actions, comprising 79 greenhouse gas

reduction actions and 65 climate change adaptation actions. Greenhouse gas reduction actions span six sectors: buildings, transportation, waste management, energy production, parks and green spaces, and citizen participation. Adaptation actions cover four sectors: water management, ecosystems, facility management, and health.

## **Implementation Progress (Effects)**

### **Greenhouse gas reduction effects**

- Through efforts such as enhancing building energy efficiency and promoting the adoption of electric vehicles and charging infrastructure, Seoul has achieved a 12.2% reduction in greenhouse gas emissions compared to 2005 levels (as of 2021).
- In the building sector, initiatives such as the green remodeling of public buildings and the Building Retrofit Program (BRP) for private buildings have effectively curbed emissions despite an increase in floor area.
- In the transportation sector, efforts to boost electric vehicle adoption and implement traffic demand management policies have led to a 27% decrease in emissions compared to 2005 levels.
- In waste management, policies aimed at reducing household and food waste and fostering a zero-waste culture have resulted in a 22% decrease in emissions compared to 2005 levels.

## **Future Plans**

### **Establishment of the Master Plan for Carbon Neutrality and Green Growth (2024)**

- The Seoul Metropolitan Government is currently formulating the "Seoul Master Plan for Carbon Neutrality and Green Growth (2024-2033)" in accordance with Article 11 of the Framework Act on Carbon Neutrality and Green Growth for Coping with the Climate Crisis, slated for completion by April 2024. Under this plan, the city will establish sector-specific and annual greenhouse gas reduction targets for the next decade and enhance greenhouse gas reduction measures in alignment with national plans.

## Attachment 1 2023 Project List of Climate Change Response Plan

### Greenhouse Gas Reduction (79 detailed projects in 6 areas)

- Building (24 projects), transportation (18 projects), waste (10 projects), energy production (12 projects), park and green (2 projects), and civil partnership (13 projects)

Area	Task No.	Detailed Project	Responsible Dept.
Building (24 projects)	B1-1	Green remodeling of public buildings	Eco-Friendly Building Division
	B1-2	Promoting the green remodeling of public buildings	Eco-Friendly Building Division
	B1-3	Green remodeling of public rental housing	Seoul Housing & Communities Corporation
	B1-4	Expanding the Building Retrofit Program (BRP) for private buildings	Eco-Friendly Building Division
	B1-5	Expanding the distribution of LED lights to the vulnerable social group.	Eco-Friendly Building Division
	B1-6	Improving energy saving-type lights including LED signs and security lights.	Urban Landscape Division
	B1-7	Replacing the old road lighting and street lights with LEDs.	Road Facilities Division
	B1-8	Replacing old lighting on road facilities and motorways with LEDs.	Road Facilities Division
	B1-9	Making the display of energy efficiency rating mandatory for built-in household appliances.	Seoul Housing & Communities Corporation
	B1-10	Expanding the distribution of household eco-friendly boilers.	Green Energy Division
	B1-11	Making the certification of building energy efficiency rating (BEER) mandatory.	Eco-Friendly Building Division
	B1-12	Promoting the building energy performance disclosure system.	Land Management Division
	B1-13	Promoting the safe home repair project to convert housing to eco-friendly ones.	Housing Environment Improvement Division
	B1-14	Building energy efficiency project for a low-income group (Home Repair of Hope).	Housing Policy Division
	B1-15	Building energy efficiency project for a low-income group (Supporting old houses' energy efficiency).	Eco-Friendly Building Division
	B1-16	Easy, low-cost renovation for aged housing	Eco-Friendly Building Division
	B1-17	Establishing the Seoul Energy Management System (SEMS).	Eco-Friendly Building Division
	B2-1	Implementing the Zero-Energy Building (ZEB) certification for new public buildings by year.	Urban Space Planning Bureau
	B2-2	Implementing the Zero-Energy Building (ZEB) certification for new private buildings by year.	Construction Planning Division
	B2-3	Introducing the ZEB certification for new private buildings in its environmental impact assessment.	Eco-Friendly Building Division
	B2-4	Popularizing the ZEB certification for public tract and rental houses.	Seoul Housing & Communities Corporation
	B2-5	Establishing reasonable incentive criteria for green buildings.	Construction Planning

Area	Task No.	Detailed Project	Responsible Dept.
			Division
	B3-1	Implementing the Building Greenhouse Gas Emissions Inventory.	Eco-Friendly Building Division
	B3-2	Operating the greenhouse monitoring system.	Eco-Friendly Building Division
Transportation (18 projects)	M1-1	Prohibiting the registration of a combustion engine car.	Air Quality Policy Division
	M1-2	Promoting the conversion of cleaning vehicles into electric and hydrogen vehicles.	Living Environment Division
	M1-3	Compulsory introduction of zero-emission vehicles to public institutions.	Eco-Friendly Vehicle Division
	M1-4	Promoting the spread of electric vehicles.	Eco-Friendly Vehicle Division
	M1-5	Expanding the supply of electric vehicle chargers.	Eco-Friendly Vehicle Division
	M1-6	Compulsory introduction of eco-friendly buses.	Bus Policy Division
	M1-7	Promoting the conversion of taxis to eco-friendly ones.	Taxi Policy Division
	M1-8	Promoting the conversion of freight cars into eco-friendly ones.	Logistics Policy Division
	M1-9	Supplying electric school buses for children.	Eco-Friendly Vehicle Division
	M1-10	Expanding the supply of hydrogen vehicles.	Eco-Friendly Vehicle Division
	M1-11	Expanding the supply of hydrogen fueling stations.	Eco-Friendly Vehicle Division
	M1-12	Restricting the driving of combustion engine cars.	Air Quality Policy Division
	M2-1	Realizing zero-greenhouse gas emission in green transportation zones.	Transportation Policy Division
	M2-2	Expanding the railway transportation network.	Transportation Policy Division
	M2-3	Increasing the median bus lanes.	Transportation Operation Division
	M2-4	Establishing the bicycle path and vitalizing the use of a bike.	Pedestrian & Bicycle Division
	M2-5	Reorganizing the urban road space into a green transportation space.	Pedestrian & Bicycle Division
	M2-6	Operating the classification system of parking spaces.	Parking Planning Division
Waste (10 projects)	C1-1	Promoting the management system of household wastes treatment volume at public waste treatment facilities.	Resource Recirculation Division
	C1-2	Expanding waste treatment infrastructure.	Resource Recovery Facilities Division
	C1-3	Increasing the public recycling screening facilities.	Resource Recovery Facilities Division
	C1-4	Expanding the reuse of treated sewage water.	Waterside City Division
	C1-5	Reinforcing the refrigerant management of city-owned facilities.	Eco-Friendly Building Division
	C2-1	Expanding the establishment of Re- & Up-Cycling Plaza.	Resource Recirculation Division
	C2-2	Creating a culture of zero-single-use item in Seoul.	Resource Recirculation Division
	C2-3	Expanding the recycling of electronic wastes.	Resource Recirculation Division
	C2-4	Reducing the sources of food wastes.	Living Environment

Area	Task No.	Detailed Project	Responsible Dept.	
			Division	
	C2-5	Supporting the development of resource circulation technology	Resource Recirculation Division	
Energy production (12 projects)	E1-1	Operating a new solar photovoltaic technology demonstration complex.	Green Energy Division	
	E1-2	Supplying solar photovoltaic power.	Green Energy Division	
	E1-3	Implementing a public bid system for the development project of new & renewable energy.	Seoul Energy Corporation	
	E1-4	Spreading the supply of fuel cells.	Green Energy Division	
	E1-5	Expanding the use of other new & renewable energy.	Green Energy Division	
	E1-6	Installing a small hydro power facility.	Green Energy Division	
	E1-7	Utilizing idle energy in the outskirts of Seoul.	Seoul Energy Corporation	
	E1-8	Expanding the supply of group energy.	Seoul Energy Corporation	
	E2-1	Creating and expanding a model of Smart energy city.	Green Energy Division	
	E2-2	Operating Seoul City's integrated energy information system.	Green Energy Division	
	E2-3	Promoting a supply-based virtual power plant project.	Seoul Energy Corporation	
	E2-4	Implementing Demand Response (DR) for electricity supply.	Green Energy Division	
	Park and green (2 projects)	F1-1	Increasing parks and greens for climate change response.	Parks & Recreation Policy Division
		F1-2	Establishing and managing green infrastructure using biotopes and urban parks.	Facility Planning Division
Civil partnership (13 projects)	P1	Operating the eco-mileage system.	Eco-Friendly Building Division	
	P2	Operating the automobile-mileage system.	Eco-Friendly Building Division	
	P3	Operating the energy zero-energy village.	Green Energy Division	
	P4	Providing the environment education program for climate crisis response.	Climate & Environmental Policy Division	
	P5	Implementing the future youth employment project in the area of climate and environment.	Youth Policy Division	
	P6	Developing a greenhouse gas emission technology.	Seoul Institute of Technology	
	P7	Seoul City, the leader of ESG management!	Climate & Environmental Policy Division	
	P8	Fostering and supporting the green industry.	Green Energy Division	
	P9	Operating the climate budgeting system.	Climate & Environmental Policy Division	
	P10	Activating the purchase of green products.	Climate & Environmental Policy Division	
	P11	Supporting the operation of energy welfare civic fund.	Climate & Environmental Policy Division	
	P12	Spreading a civic practice culture for climate crisis response.	Climate & Environmental Policy Division	
	P13	Spreading a net-zero life culture at home.	Green Energy Division	

□ **Adaptation to Climate Change (65 detailed projects in 4 areas)**

- **Water management (16 projects), ecosystem (20 projects), facility management (9 projects), and health (20 projects)**

Area	Task No.	Detailed Project	Responsible Dept.
Water management (16 projects)	I -1-1	Securing the discharge capacity of sewage pipelines in areas vulnerable to flooding.	Water Reclamation Planning Division
	I -1-2	Implementing the comprehensive maintenance project for sewage pipelines.	Water Reclamation Planning Division
	I -1-3	Securing the facility capacity of rainwater pump stations.	Flood Control Safety Division
	I -1-4	Securing the safety of old facilities of rainwater pump stations.	Flood Control Safety Division
	I -1-5	Establishing and utilizing the river alert and warning system.	Flood Control Safety Division
	I -1-6	Expanding the rainwater detention facilities.	Flood Control Safety Division
	I -2-1	Expanding the installation of water reuse facilities.	Waterside City Division
	I -2-2	Preserving groundwater resources and using them systematically.	Waterside City Division
	I -2-3	Creating an integrated Smart water circulation city.	Waterside City Division
	I -2-4	Maintaining old water purification centers.	Planning & Design Division of the Seoul Water Headquarters
	I -2-5	Maintaining long-used water pipes.	Water Leak Response Division of the Seoul Water Headquarters
	I -2-6	Establishing Smart remote meter reading using IoT communication.	Measurement Management Division of Seoul Water Headquarters
	I -3-1	Expanding the installation of detention facility of Combined Sewer Overflows (CSOs).	Waterside City Division
	I -3-2	Strengthening the monitoring of water quality of Hangang River and its streams.	Water Reclamation Facility Division
	I -3-3	Strengthening the monitoring and management of water quality conservation by private organizations.	Water Reclamation Facility Division
	I -3-4	Expanding the waterfront areas by carrying out the Seoul Streams Renaissance Project.	Flood Control Safety Division
Ecosystem (20 projects)	II -1-1	Expanding urban parks.	Parking Planning Division
	II -1-2	Managing the forest environment.	Nature & Ecology

		Division	
	II -1-3	Creating roadside green belts.	Landscape Division
	II -1-4	Creating forests for carbon offsetting based on social contributions.	Landscape Division
	II -2-1	Strengthening forest disaster prevention activities and comprehensively managing them.	Forest Disaster Prevention Division
	II -2-2	Establishing forest fire prevention measures.	Nature & Ecology Division
	II -2-3	Maintaining hiking trails in the mountains near Seoul.	Nature & Ecology Division
	II -2-4	Reinforcing the management of forested hillslopes.	Forest Disaster Prevention Division
	II -3-1	Managing ecosystem-invasive species.	Nature & Ecology Division
	II -3-2	Strengthening the management of forest disease and pest.	Nature & Ecology Division
	II -3-3	Protecting wildlife and managing harmful wildlife.	Nature & Ecology Division
	II -3-4	Designating and monitoring Climate-sensitive Biological Indicator Species: CBIS).	Nature & Ecology Division
	II -3-5	Expanding and managing the ecosystem protection areas.	Nature & Ecology Division
	II -4-1	Developing and distributing a model of urban plant factory.	Agriculture Technology Center
	II -4-2	Establishing Eco-schools (pending project from 2023).	Landscape Division
	II -4-3	Creating green rooftops.	Landscape Division
	II -4-4	Enhancing ecosystem services.	Nature & Ecology Division
	II -4-5	Improving the ecological function of streams.	Nature & Ecology Division
	II -4-6	Creating vegetable gardens using spare urban spaces.	Parks & Recreation Project Division
	II -4-7	Creating school vegetable gardens and operating the related educational program.	Agriculture Technology Center
	II -4-8	Expanding and operating the urban farmers' school.	Agriculture Technology Center
Facility management (9 projects)	III-1-1	Maintaining and managing areas vulnerable to storm and flood damage.	Flood Control Safety Division
	III-1-2	Promoting the prevention of freezing and bursting of water meters in winter.	Water Measurement Management Division of Seoul Water Headquarters
	III-2-1	Managing the safety of road facilities.	Road Facilities Division

	III-2-2	Expanding the installation of a remote snow removal facility.	Road Management Division
	III-2-3	Implementing the environmental review of urban management plans.	Facility Planning Division
	III-3-1	Establishing and utilizing the disaster map.	Flood Control Safety Division
	III-3-2	100,00 Seoul Citizen Safety Guards	Safety Support Division of the Seoul Metropolitan Fire & Disaster Headquarters
	III-3-3	Organizing and operating a private snow removal mobility team.	Road Management Division
	III-3-4	Introducing and activating insurance for storm and flood damage for vulnerable social groups.	Flood Control Safety Division
Health (20 projects)	V-1-1	Strengthening the operation of the information delivery system and reduction system for the heat wave and cold wave.	Safety & Disaster Prevention Division
	V-1-2	Providing civic instructions against the heat wave and conduct manual at sites vulnerable to the heat wave, and vitalizing related education.	Safety & Disaster Prevention Division
	V-1-3	Strengthening the installation and management of AED (automated external defibrillator).	Medical and Health Policy Division
	V-1-4	Promoting measures to protect the street dwellers (homeless) from the cold and heat waves.	Self-Reliance Support Division
	V-1-5	Providing disaster information after utilizing the Smart Healthcare system.	Medical and Health Policy Division
	V-2-1	Strengthening the monitoring and preventive management of infectious diseases.	Infectious Disease Control Division
	V-2-2	Establishing an infectious disease response system against climate change.	Infectious Disease Control Division
	V-2-3	Strengthening the rapid response system for a food poisoning outbreak.	Food Policy Division
	V-2-4	Managing protentional facilities for food poisoning intensively.	Food Policy Division
	V-3-1	Operating a heat wave shelter for senior citizens.	Senior Citizen Support Division
	V-3-2	Operating the system to protect and support residents of dosshouses and street dwellers (homeless) in summer.	Self-Reliance Support Division
	V-3-3	Providing outreach healthcare service against seasonal weather events (heat and cold waves).	Medical and Health Policy Division
	V-3-4	Strengthening protective measures for workers at construction sites.	Urban Infrastructure Headquarters
	V-4-1	Operating an atopy- and asthma-safe school in consideration of areas vulnerable to air pollution.	Infectious Disease Control Division
	V-4-2	Operating the fine dust intensive management zone.	Air Quality Policy Division
	V-4-3	Operating the air pollution alert and warning system.	Air Quality Policy Division
V-4-4	Establishing and operating the air pollution measurement network.	Air Quality Policy Division	



	V-4-5	Implementing emergency reduction measures for highly concentrated fine dust.	Air Quality Policy Division
	V-4-6	Carrying out the vacuum cleaning of road dust and cleaning roads with water to reduce fine dust.	Living Environment Division
	V-4-7	Conducting the environmental safety management inspection and related education and promotion for children's activity spaces.	Infectious Disease Control Division

## 2. Operating the Building Greenhouse Gas Management System

### Direction

- Managing building greenhouse gas emissions at the usage stage, imposing effective reduction obligations and restrictions
- Implementing a reporting/grading system to raise awareness before the full implementation of the total emission quota system in 2026
- Enhancing awareness of collaborative efforts to address the climate crisis through private participation

### □ Operation of the Building Greenhouse Gas Management System

- **Gradual introduction of the Building Greenhouse Gas Management and Evaluation System**
  - The Building Greenhouse Gas Management and Evaluation System is a pioneering initiative by the Seoul Metropolitan Government to enhance greenhouse gas (GHG) management at the building usage stage. It aims to enforce GHG reduction obligations after conducting building energy surveys and raising awareness of the system.
  - The system evaluates and manages emission allowances for each building, rating and disclosing energy usage based on five grades (A to E) per building type.

#### < Introduction of the Building Greenhouse Gas Management and Evaluation System >

◆ **Target buildings: Approximately 14,000 public and commercial buildings (Public buildings with a gross floor area of 1,000 square meters or more; Commercial buildings with a gross floor area of 3,000 square meters or more)**

-Although comprising only 2.4% of the total 580,000 buildings, they account for 28.7% of GHG emissions

◆ **Enhanced measures: Enforcing GHG reduction obligations after conducting building energy surveys and raising system awareness**

System Name (Overview)	Energy Usage Reporting System (Self-inspection/reporting of usage)	Energy Usage Grading System (Building-specific grading/public disclosure)	Total Greenhouse Gas Emission Quota System (Assignment/limitation of emissions for each building)
(2024)	Mandatory for public buildings, voluntary for private buildings	Mandatory for public buildings, voluntary for private buildings	Mandatory for public buildings, voluntary for private buildings
(2025)	Full implementation	Full implementation	Data collection for reporting/grading systems
(2026)	Operation	Operation	Full implementation

◆ **Legal Basis: Amendment of the Energy Use Rationalization Act and Notification of Energy Use Goals (Ministry of Trade, Industry and Energy)**

○ **Institutional preparation and pilot operation of the total emission quota system since 2020**

- In 2020, Seoul City conducted a study on implementing the Total Greenhouse Gas Emission Quota System for Buildings, established and operated an expert advisory panel, and organized expert forums and citizen hearings to prepare for implementation.
- In 2021, Seoul launched a pilot project for the Total Greenhouse Gas Emission Quota System, initially targeting public buildings. In 2022, it expanded to include private buildings, with 1,629 buildings participating in the pilot (515 city-owned, 897 district-owned, and 217 privately operated).
- In July 2022, the Seoul Metropolitan Government signed an MOU with the Ministry of Trade, Industry, and Energy (MOTIE) to prepare institutional and financial support measures, setting targets for energy intensity per building unit area and laying the groundwork for delegating management authority to local governments. In February 2024, MOTIE notification (No. 2024-24) on managing energy intensity targets for buildings was implemented.
- Currently, Seoul is enhancing the system, drafting detailed guidelines, and developing an execution model in preparation for full implementation in 2026.

○ **Full implementation of the Building Energy Usage Reporting and Grading System in 2024**

- ◆ **(Reporting System) Building owners will report their energy usage for the previous year** (electricity, city gas, district heating).
- ◆ **(Grading System) Buildings' energy usage will be evaluated and disclosed in 5 grades (A to E) based on 11 different categories.**
  - Grade A: Buildings ranked in the top 3 of each category will receive certification as low-carbon buildings.
  - Grade E: Buildings will be eligible for [prioritized energy assessments and funding through the Building Retrofit Program \(BRP\)](#).

- This energy reporting and grading system, in effect since 2024, encourages building owners to voluntarily report their energy usage and evaluates it on a scale of A to E across different building types.
- This enables the comparison of buildings energy consumption and greenhouse gas emissions with similar buildings, thus providing motivation for greenhouse gas reduction efforts.
- This year, Seoul City plans to implement energy reporting and grading for a total of 4,326 public and private buildings. Going forward, there are plans in place to assess and offer consulting on the energy performance of buildings that receive lower grades.

○ **Full implementation of the Total Greenhouse Gas Emission Quota System for Buildings in 2024**

◆ **(Concept) This involves setting greenhouse gas emission standards\* based on building types, evaluating and managing total emissions per building to encourage reduction efforts (excluding residential buildings).**

- Incentives will be given to those who achieve their targets, while corrective orders or penalties will be applied to those who fall short.

\* An analysis of GHG emissions from 580,000 buildings between 2017 and 2019, GHG emissions per unit area across 12 types

- With the aim of reducing greenhouse gases by 87% in commercial and public buildings (14,000 buildings) by 2050, reduction targets will be assigned to each building every five years, with performance evaluations conducted accordingly.

- This year, Seoul City will implement the "Enhancement of the Execution Model of the Total Greenhouse Gas Emission Quota System for Buildings" project to refine emission standards and develop reduction strategies. This initiative aims to produce reduction guidelines tailored to different building types.

- In 2024, the city will allocate quotas for a total of 2,000 public and private buildings, with plans to conduct assessments and consulting. The system implementation will be expanded to cover 14,000 buildings in 2026.