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# Establishing and Implementing the Comprehensive Air Quality Improvement Plan

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## Direction

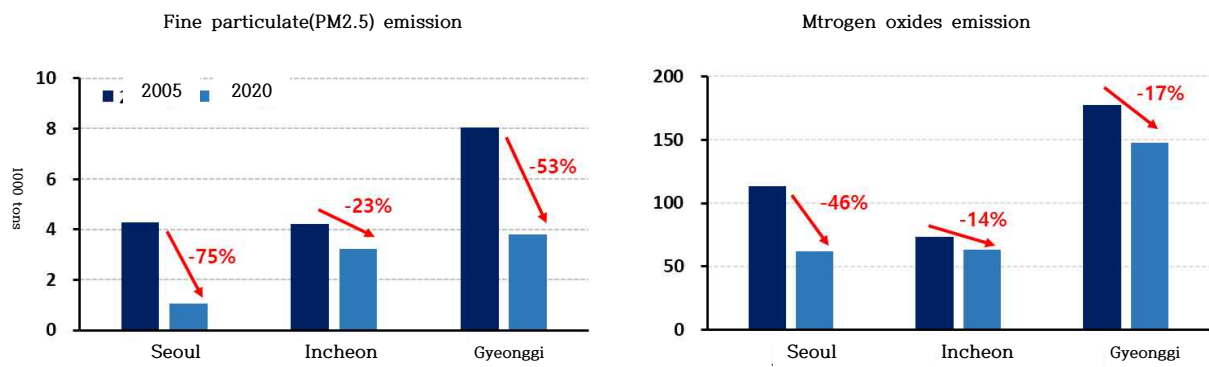
- Transitioning diesel vehicles in regulatory blind spots to low-emission alternatives and gradually expanding restrictions on internal combustion engine vehicles
- Establishing a continuous management system for air pollution sources to achieve noticeable improvements in air quality

## Policy Achievements of Seoul's Air Quality Improvement Plan (Until 2023)

- Introduction and enactment of the Special Act on Air Quality Improvement in the Seoul Metropolitan Area
  - The [Special Act on Air Quality Improvement in the Seoul Metropolitan Area](#), originally proposed by Mayor Oh Se-Hoon during his tenure as a member of the National Assembly on November 6, 2002, before assuming office as mayor and enacted in 2005, formed the basis for air quality initiatives in the metropolitan area, including Seoul. It also contributed to the air quality achievements announced by the [UN Environment Programme](#) in May 2023.

❖ **Joint air quality improvement assessment conducted by the Seoul Metropolitan Area and the UN Environment Programme (UNEP) (2005 – 2020)**

- A 75% reduction in fine particulate matter (from 4,300 tons to 1,100 tons) and a 14% reduction in carbon dioxide emissions (from 26.38 million tons to 22.60 million tons)
- ※ **(Incheon)** A 23% reduction in PM2.5 with a 7% increase in CO<sub>2</sub> / **(Gyeonggi)** A 53% reduction in PM2.5 with an 11% increase in CO<sub>2</sub>



○ **Implementation of the Special Plan 'Clear Seoul 2010' (2007 - 2010)**

- In July 2006, upon assuming office, Mayor Oh Se-Hoon pledged to "restore 3 years of lost life" to the citizens of Seoul and initiated air quality enhancement projects. With the aim of enabling Seoul residents to wear white shirts for a week, the special plan "Clear Seoul 2010" commenced in 2007.

#### ❖ Achievements of the Special Plan 'Clear Seoul 2010'

- Key indicator: Seoul achieved a **PM10** concentration of **47 $\mu\text{g}/\text{m}^3$**  in 2011
  - ※ **47 $\mu\text{g}/\text{m}^3$  A 22% reduction compared to pre-plan implementation (2006), with PM10 concentration decreasing from 60 in 2006 to 55 in 2008 to 47 $\mu\text{g}/\text{m}^3$  in 2011.**
- Major accomplishments
  - ① Transitioning diesel city buses to CNG buses, promoting diesel-free urban transportation
    - ▶ Conversion of 8,234 CNG city buses and establishment of 48 CNG refueling stations (by 2011)
  - ② Installation of emission-reducing devices on old diesel vehicles, alongside extensive promotion of low-pollution measures such as early retirement
    - ▶ Enactment of the Seoul Metropolitan City Ordinance on Designation of Low Emission Zones and Operational Restrictions (October 2010)
    - ▶ Implementation of pollution control measures for 232,378 old diesel vehicles (until 2011)
  - ③ Announcement of the "Green Car Smart Seoul Declaration," marking the onset of the electric vehicle era (2010)
    - ▶ Deployment of 410 electric buses, including operation on the Namsan Circulation Route, and installation of 62 temporary charging stations

#### ○ Key Policies Implemented Since 2011 (2011 - 2023)

- Efforts to improve air quality have been consistently pursued, including the launch of the eco-friendly boiler distribution program (2015), introduction of emergency measures for reducing fine dust pollution (2017), implementation of operational restrictions within green transportation zones (2019), establishment of the fine dust seasonal management system (2019), and declaration of the 10% electric vehicle era by 2026 (2022).

#### ❖ Major Project Achievements (Until 2023)

- ▶ Support for distributing eco-friendly boilers, totaling 405,411 units, and low-NOx burners for businesses, totaling 6,789 units.
- ▶ Completion of the low-pollution initiative for grade 5 vehicles, totaling 510,000 units, and the introduction of early scrappage for grade 4 diesel vehicles, totaling 9,127 units (initiated in 2023).
- ▶ Continued reduction in the number of vehicles violating operational restrictions during the seasonal management period (December to March)
  - ※ (2nd phase) 1,424 vehicles/day → (3rd phase) 228 vehicles/day → (4th phase) 94 vehicles/day → (5th phase) 46 vehicles/day

## □ Announcement and Implementation of the 'Clearer Seoul 2030' Comprehensive Plan

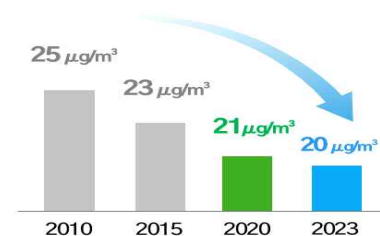
- In September 2022, Seoul unveiled the "Clearer Seoul 2030" comprehensive plan for enhancing air quality, aiming to strengthen air quality improvement policies to accelerate the shift to electric vehicles, restrict polluting vehicles, and phase out internal combustion engine vehicles.

### ❖ Overview of 'Clearer Seoul 2030,' Comprehensive Plan for Air Quality Enhancement

- Vision: Transforming Seoul into a clearer and more attractive special city!
- Objective: Meet air quality standards by 2026 and reach the air quality levels of major international cities by 2030
  - ▶ PM2.5( $\mu\text{g}/\text{m}^3$ ): **40 (2002)** → 20 (2023) → **15 (2026)** → **13 (2030)**
  - ※ PM2.5 concentrations in major international cities (2021): London  $11\mu\text{g}/\text{m}^3$ , Paris  $12\mu\text{g}/\text{m}^3$ , Los Angeles  $14\mu\text{g}/\text{m}^3$
- Investment Budget: A total of KRW 3.8 trillion by 2030 ※ Subject to adjustments based on budget allocation, including supplementary budgets
- Project Composition: Spanning 5 major sectors (automotive, home, business, etc.), with 11 key tasks and 50 detailed projects.

### ❖ Achievements of Clearer Seoul 2030 in 2023

- (Reduction) Decrease in fine particulate matter by 323 tons and nitrogen oxides by 6,954 tons
  - ▶ Exceeded the reduction targets for fine particulate matter (295 tons) and nitrogen oxides (6,158 tons) by 109% and 113%, respectively
  - ▶ Contributing factors include the expansion of eco-friendly construction machinery usage at construction sites and operational restrictions on grade 5 vehicles during the seasonal management period
- (Improvement in Concentration) Seoul sustains a continuous trend of enhancing the annual average concentration of fine particulate matter (PM2.5)
  - ▶ An increase of 70 days with "good" air quality ( $15\mu\text{g}/\text{m}^3$  or below) compared to the 2010 level (90 days → 160 days)
  - ▶ A decrease of 21 days with "poor" air quality ( $35\mu\text{g}/\text{m}^3$  or higher) compared to the 2010 level (56 days → 35 days)



【 Changes in PM2.5 Concentration 】

- **In the automotive sector**, Seoul aims to rapidly replace remaining diesel vehicles, such as diesel delivery trucks and motorbikes, with electric vehicles. The city plans to establish a neighborhood five-minute charging network and achieve a **10% penetration of electric vehicles in the overall vehicle fleet by 2026**.
- Furthermore, to phase out internal combustion engine vehicles, the city plans to implement operational restrictions on **grade 4 vehicles in green transportation zones** and enforce permanent operational restrictions on **grade 5 vehicles throughout Seoul by 2025**. Operational restrictions will be gradually expanded, including city-wide operational restrictions on **grade 4 vehicles by 2030** and a complete restriction on all internal combustion engine vehicles by 2050.
- In the **home and business sectors**, Seoul plans to install IoT continuous monitoring systems in small businesses (807 facilities) by 2026 and replace all outdated home boilers with eco-friendly alternatives by 2030.
- In the **construction sector**, the city plans to establish **500 "Seoul-style eco-friendly construction sites"** through voluntary agreements by 2026, implementing measures such as the Clean Road Responsibility initiative and restrictions on the use of outdated construction equipment. Additionally, continuous IoT monitoring systems will be installed at **70 large construction sites** (with an area of over 10,000 square meters) that generate fugitive dust by 2026.
- In the **neighborhood sector**, plans include completing the installation of **automated air quality monitoring devices at daycare centers** (823 facilities under legal supervision) by 2024 and mandating the use of **environmentally certified paint** for construction sites subject to **environmental impact assessments** (with an area of over 100,000 square meters).
- To enhance **response capabilities**, Seoul City is sharing its air quality policies and pursuing joint response measures through the Seoul Metropolitan Council on Air Quality Management, in collaboration with neighboring local governments such as Incheon and Gyeonggi-do. It also plans to reinforce international cooperation through the International Forum on Climate and Environment and the Seoul-Beijing Joint Committee.

※ Regional contributions to PM2.5 concentration in Seoul

▶ 24% China and other countries 40% > Other regions in Korea 36% > Seoul 24%

| Total | Korea    |       |               | Overseas<br>(including<br>China) |
|-------|----------|-------|---------------|----------------------------------|
|       | Subtotal | Seoul | Other regions |                                  |
| 100%  | 60%      | 24%   | 36%           | 40%                              |

< Source: Analysis of Detailed Monitoring of Ultra-fine Particulate Matter in Seoul, Seoul Institute, 2022 >