

Efforts to Achieve Green Transition and Strengthen Urban Resilience

in Incheon Metropolitan City
Republics of Korea

Incheon Carbon Neutrality Center

KANG, Min-kyung
Research Fellow / Dr. rer. silv.

Incheon Metropolitan City

Population	3,000,043(2024) 5.8% out of the national population
Area	1,067km²
Population Density	2,801 person/km² (Korea 515 person/km²)
GRDP	US\$ 83 billion

- **Capital area where population and industry are concentrated**
 - Industrial Complex, Commercial Core, Public Transport, etc.
- **Marine City**
 - One of the top 5 mudflat in the World
- **Logistic Hub with Airport and Harbor**
 - Incheon International Airport / Incheon Port
- **Global City**
 - Incheon Free Economic Zone
 - Major UN organization, inter-government organization located in
 - Green Climate Fund, ESCAP-ENEA office, etc.



Crisis and Challenges to Incheon City's Urban Resilience

- **Sea Level Rise and Climate Change**
 - Incheon is vulnerable to rising sea levels and natural disasters like floods and typhoons, requiring stronger disaster prevention measures.
- **Lack of Resources for Climate Response**
 - Developing large-scale green infrastructure demands significant financial resources, which poses a challenge for the city.
- **Aging Infrastructure**
 - Incheon's old infrastructure needs upgrades, creating conflicts with plans for new smart and green systems.
- **Population Growth and Urban Density**
 - High population density increases resource demand and limits the space for green infrastructure expansion.
- **Low Public Acceptance of Technology**
 - Public understanding and trust in smart city technologies and AI-based systems are insufficient.

Policies Necessary for Urban Resilience in Incheon

Key Issue	Policy Direction
Improvement of Natural Disaster Vulnerable Areas	<ul style="list-style-type: none"> • Strengthen infrastructure to respond to river disasters, earth and sand disasters, slope disasters, and coastal disasters
Improvement of residential environment and support for vulnerable people	<ul style="list-style-type: none"> • Improvement of old housing • Improvement of residential environment in old residential areas • Support for vulnerable people in housing • Regeneration of residential areas and restoration and reinforcement of communities
Strengthening and expanding infrastructure maintenance	<ul style="list-style-type: none"> • Improvement of old infrastructure • Expansion of public transportation and consideration for the weak in transportation • Expansion of recycling facilities • Improvement of public health services in island areas
Expansion of green space and preservation of natural ecosystem	<ul style="list-style-type: none"> • Expansion of Urban Parks • Expansion of buffer green areas around industrial areas • Conservation of mudflats • Creation of eco-friendly facilities on the landfill space of the Seoul metropolitan area
Development of Climate Change Response Strategies	<ul style="list-style-type: none"> • Prepare strategies to respond to floods, heat waves, heavy snow, drought, and rising sea levels
Expansion of multi-purpose infrastructure in case of emergency	<ul style="list-style-type: none"> • Installation of multi-purpose disaster evacuation facilities • Creating a disaster prevention park
Increase civic participation and access to information	<ul style="list-style-type: none"> • Expansion of Citizen Participation in the Space Planning Stage • Improve access to citizens' information

Incheon's Efforts to Strengthen Urban Resilience

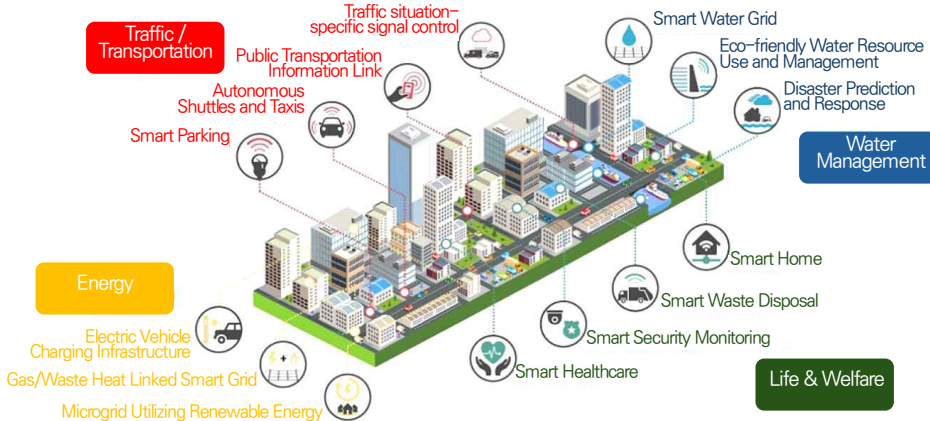
- **Smart City**
 - IoT-based traffic management, smart building systems, and disaster response for urban efficiency and resilience.
- **Smart Water Management**
 - Real-time monitoring and IoT-based systems to prevent floods and manage water resources.
- **Green Infrastructure (Central Park & Urban Greening)**
 - Expanding green spaces and natural solutions to combat heat islands and improve air quality.
- **AI-based Disaster Prediction**
 - AI and big data to predict and respond quickly to natural disasters like floods and typhoons.
- **Circular Economy Systems**
 - Waste-to-energy and recycling technologies to increase resource efficiency and reduce carbon emissions.

I

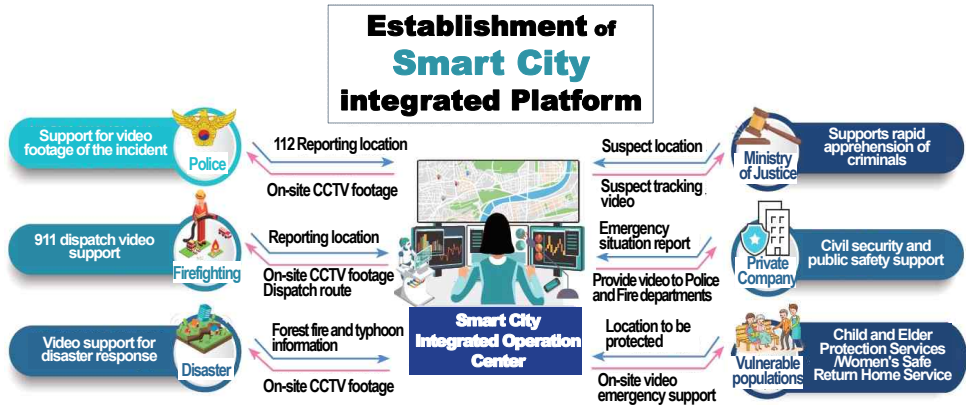
Smart City-Songdo, Incheon



Smart City



Establishment of Integrated Platform for Smart City



Carbon-neutral Strategy in the Transportation Sector

GOAL

Establishment of Eco-Friendly Transportation System for Carbon Neutral Cities

Main Strategy



Expansion of Carbon-reducing public Transportation Infrastructure
 - Implementation of Median Bus Lane
 - Establishment of Bus Rapid Transit(BRT)



Promotion of Policies to Promote the Use of Public Transportation
 - Improvement of bus service / expansion of hydrogen buses
 - Citizens' Happiness Transportation Expenses Support Project



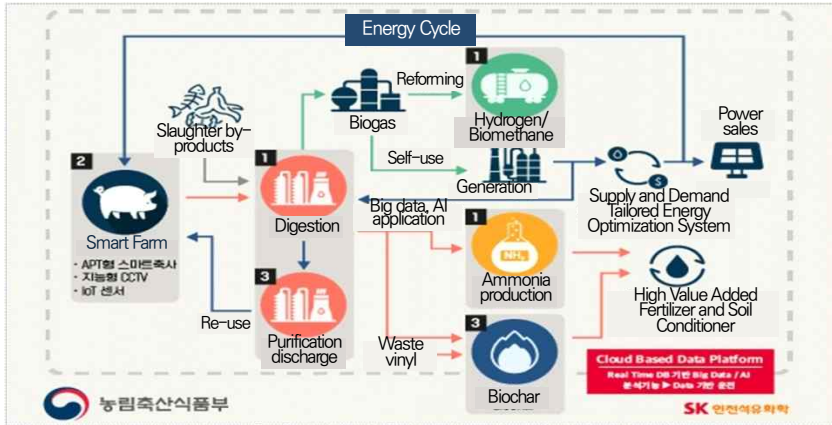
Reducing the Use of Cars to Reduce Emissions and Relieve Urban Congestion
 - Activating the day of the week and co-use of automobiles
 - Operation of public bicycles and expansion of bicycle paths



Creating a Carbon-reducing Transportation Environment using Big Data and AI
 - Construction and operation of digital twin-based C-ITS



Eco-friendly Livestock Farming Model



- Incorporating advanced convergence technologies of private companies
- Appropriate environmental management based on ICT and IoT, expansion of new and renewable energy using livestock manure



Thank you

mkkang@ii.re.kr