

Water-Energy-Environment Nexus **Incheon Metropolitan City**

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GLOBAL TOP 10 CITY
INCHEON

세계
10대 도시
인천



Contents

I . Incheon Metropolitan City

II . Water-Energy in an Urban context

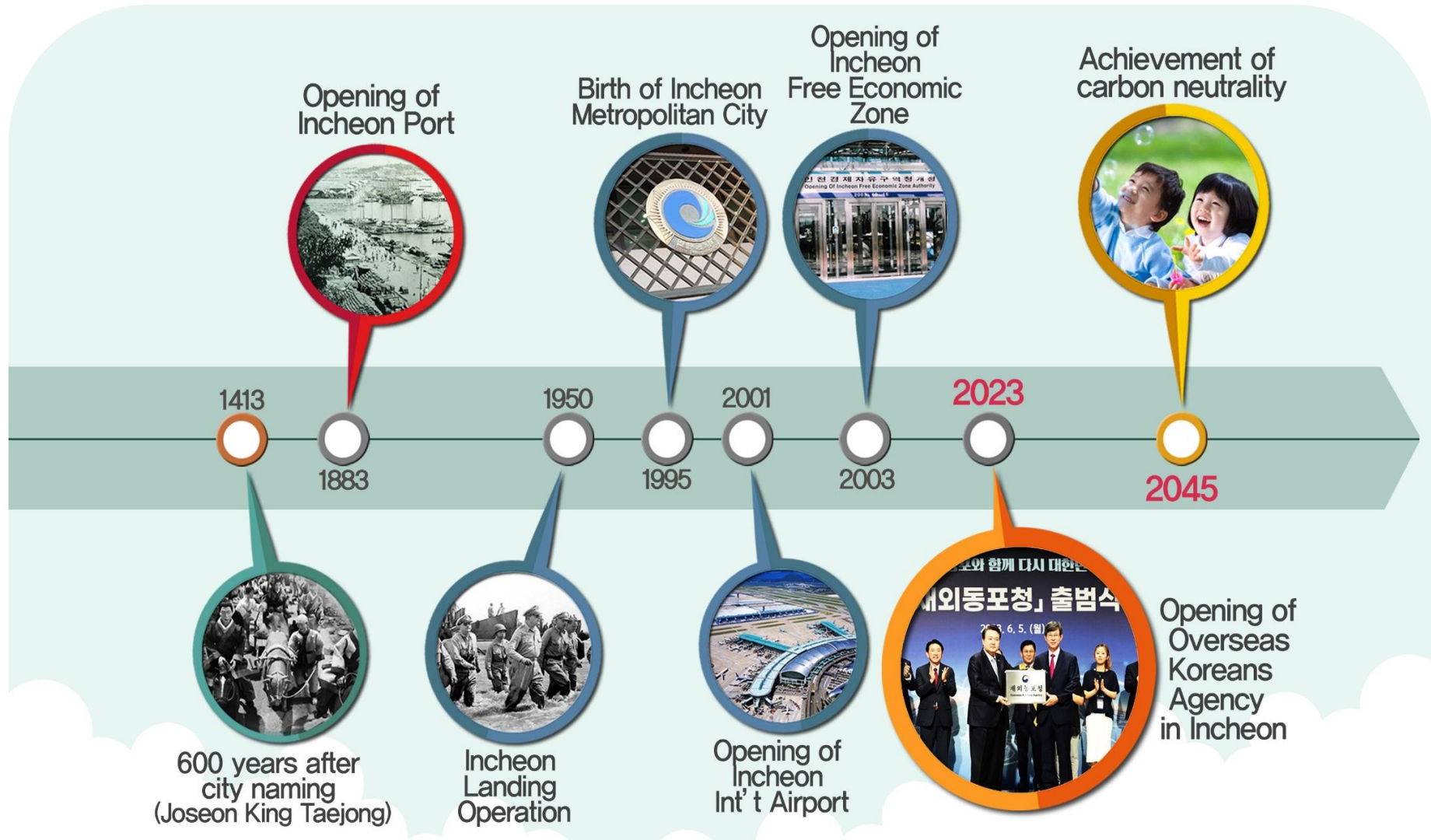
III . Sustainable water-energy resources

I . Geogrphic location of Incheon City



➔ **Incheon 3 Million Population, 1,066 km² Area , 185 island, with the economic scale of GRDP 900Billion USD**

Brief history of Incheon City



Incheon, advanced Urban Development



Incheon's Carbon Neutrality Policy



2045 Incheon Carbon Neutrality vision
 five years ahead of Government's goal

Reduction plan of GHGS

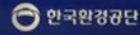
4 Policies, 15 Missions, 154 Reduction projects

[Power generation(17), Industry(48), Building(28), Transportation(21), Waste(20), Agriculture(6), Sinks(14)]

10 years
 Excellent performance

(2011년-2020년)

Incheon City



Carbon-free Energy Mix

74,813 kiloton (2018) → 49,423 kiloton (2030) → Carbon Neutrality (2045)

Incheon Carbon Neutrality Visions and Goals

Vision

Declaration of 1.5, Realization of Carbon Neutrality by 2045
Carbon Neutral Global City, Incheon

Goals

(2018) 74,813 kiloton → (2030) 49,423 kiloton (△33.9%) → (2045) Carbon Neutrality (△100%)

4 Policy directions



Low Carbon Economic system



Expansion of Citizens action



Global cooperation system



Enhancement of Safe climate crisis

15 Missions

- ① Energy transition
- ② Energy self-supply buildings
- ③ New Climate industry
- ④ Eco-friendly transportation

- ⑤ Carbon Neutrality governance
- ⑥ Future generation education
- ⑦ Green practice movement
- ⑧ Climate change living lab

- ⑨ Climate cluster
- ⑩ Climate city / Global leader
- ⑪ Global network

- ⑫ Carbon absorption source
- ⑬ Virtual cycle of resources
- ⑭ Fair transition
- ⑮ Customized climate welfare

System

[System]

- ▣ Carbon Neutrality center
- ▣ Carbon Neutrality ordinance
- ▣ GHGs cognitive budget

[Governance]

- ▣ Carbon Neutrality committee
- ▣ Local government alliance
- ▣ Information share by sector

[Global Leadership]

- ▣ Carbon Neutral MICE city
- ▣ G-Blocks [GCF complex]

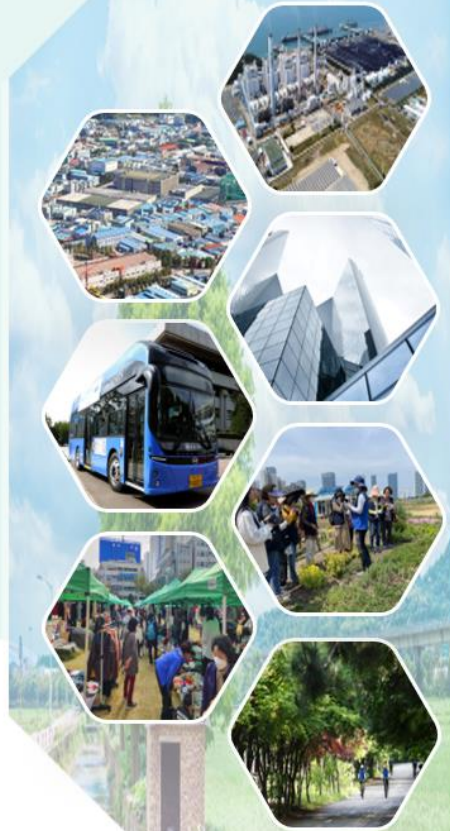
[Resources]

- ▣ Climate response fund
- ▣ Evaluation / Management system

KOREA GLOBAL ADAPTATION WEEK 2023
2023 유엔기후변화협약 제28차 당사국총회










Reduction plan by sector



Reduction plan by sector for Net-zero



Sector	Means of reduction
 Power Generation	<ul style="list-style-type: none"> ➤ Fire power generation → Carbon-free transition
 Industrial	<ul style="list-style-type: none"> ➤ CCUS (Carbon Capture Utilization and Storage) ➤ Creation and operation of smart green industrial complex
 Building	<ul style="list-style-type: none"> ➤ Zero energy building, Green remodeling building
 Transportation	<ul style="list-style-type: none"> ➤ Eco-friendly vehicles transition (electricity, hydro), GTX, KTX
 Agriculture	<ul style="list-style-type: none"> ➤ Eco-friendly agriculture, Transition in diet ➤ Introduction of livestock manure resources facilities
 Waste	<ul style="list-style-type: none"> ➤ Reduction of waste generation and revitalization of recycling ➤ Moderation of incineration facilities
 Sinks	<ul style="list-style-type: none"> ➤ Restoration of 5 streams, creation of Parks ➤ Blue carbon, protection of wetlands

※ Carbon Neutral goal management system, Citizen's practice group and education

Major Achievements



Offshore wind power plants (~2027)
(Incheon Sea, 3.7GW)



Expansion of Hydrogen buses
[500 buses (2024), All buses (2030)]



Incheon Smart Green Complex Project
(Smart Energy Platform, Energy Self-sufficient infrastructure)



Blue Carbon Expansion
(Securing absorption sources using marine plants)

Major Achievements



**SDG INNOVATION AWARD 2024, The Senat der Wirtschaft and the UNIDO
(TOP 5 category Cities / Municipalities / Districts)**

GHGs cutback recognition budget

❖ Overview

- **(Subject) Capital expenditure more than 100 million KRW**
- **(Sector) Environment, Energy, Forestry**
- **(Contents) 67 projects, 330 billion KRW, 162,032ton CO₂eq cutback estimated**



Classification	Environment	Energy	Forestry	Total
Projects	38	11	18	67
Budget (Billion KRW)	54	261	15	330
GHGs reduction (Ton CO ₂ eq)	116,140	37,418	8,474	162,032

❖ Major projects

- **Reduction of road re-scattered dust (51,619 ton CO₂eq cutback)**
- **Gas Heat Pump renovation (41,400 ton CO₂eq cutback)**
- **Carbon Neutral Incentive (Energy, Vehicle) (22,995 ton CO₂eq cutback)**



Waterworks organization

**Consists of 1 Headquarters, 4 Department , 1 Research Institute ,
 4 water purification plant, 5 Branch, 807 staff,
 Estimated Budget for 2025, 460 Billion won(3.3 Billion USD)**



II. Incheon water Supply Management

Water supply Households	Water supply population	Waterworks population	Village waterworks population
1,350,846	3,078,149	3,051,646	19,297
Small-scale water supply facility populations	Island area water supply population	Waterworks supply rate(%)	Water supply rate(%)
7,206	16,868	99.1	99.9

Water supply rate ➔ **Waterworks**
 + **Village waterworks**
 + **Small-scale water supply facility**

Drinking water problem in island

Problem? There are 185 island, and winter season drought depletion of groundwater and inflow of seawater...need solution



III. Finding sustainable water resources

Water source development

Seawater desalination facility

Underground water reservoir



II. Finding sustainable water resources

1

Water source development

- Small-scale water supply facility
- Laying pipes
- Installation of water tanks



2

Seawater desalination facility

Installation of seawater desalination facility for the stable domestic water supply in islands, where scarce or saline groundwater



2

Deacheongdo(island) Seawater desalination facility

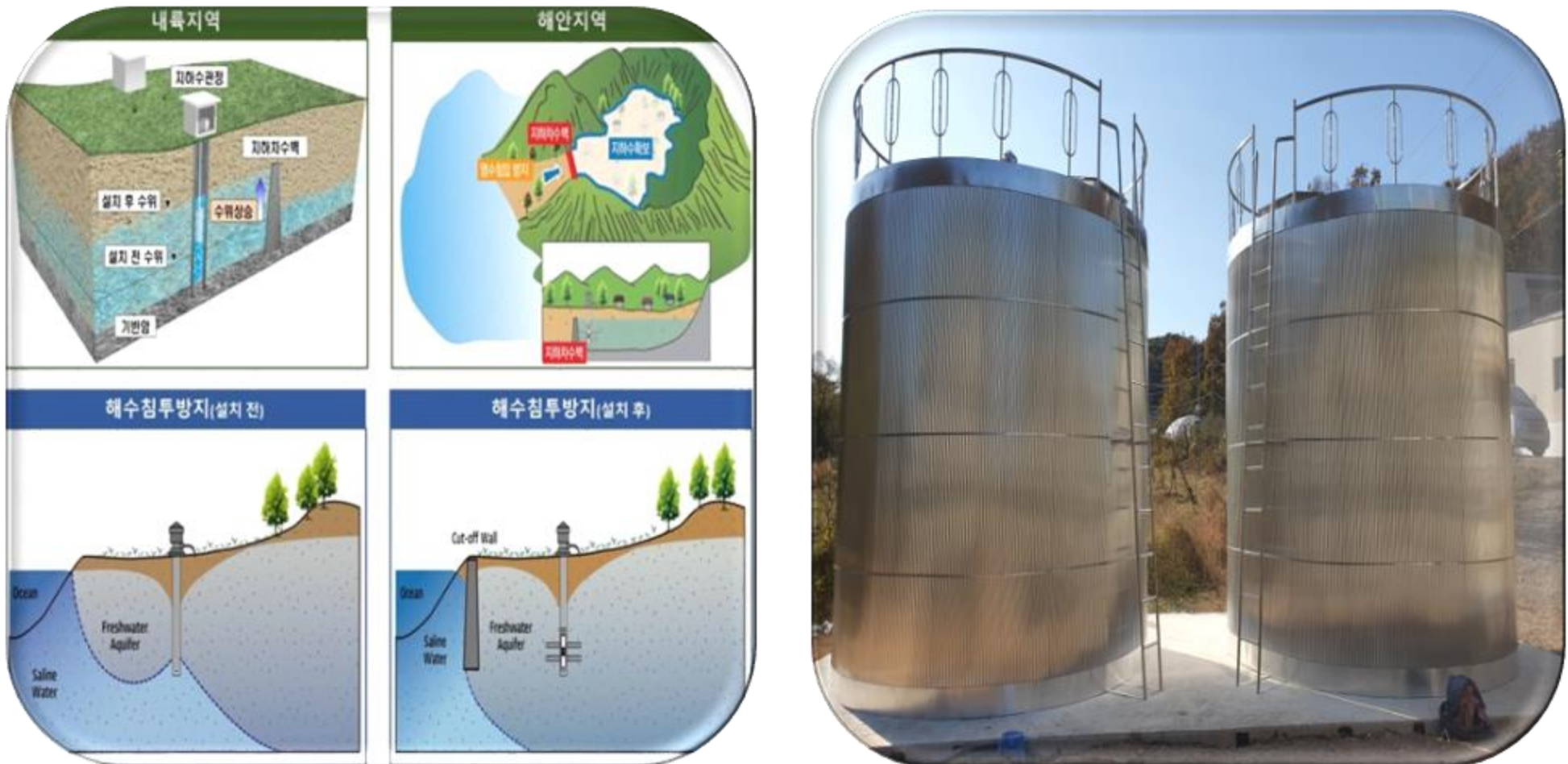
Installation of seawater desalination facility for the stable domestic water supply in islands, where scarce or saline groundwater



3

Underground water reservoir

- Secure water resources by installing dams can block the flow of ground water inside underground to raise the groundwater level.



3 Daiijakdo(island) Underground water reservoir



Climate Crisis and Actions



1.5°C 상승까지 남은 시간

YEAR

4

DAY

145

TIME

05:31:29

출처: 독일의 베를린 기후 연구소 MCC

Thank You !!

감사합니다 !!

< 탄소중립 >