

# 2045 Carbon Neutral Strategy of Incheon

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인천광역시  
Incheon Metropolitan City



## **I . Climate Crisis and Global trends**

1. Severity of Climate Crisis
2. International Community's Climate Response Efforts

## **II. Incheon's Efforts to Respond to Climate Change**

1. Hosting and Participating in Climate-related International Conferences and Cooperation
2. Efforts to Respond to Climate Change

## **III. Carbon Neutral Strategy (NET-ZERO)**

1. 2045 Incheon Carbon Neutral Vision (Plan)
2. Climate Crisis and Carbon Neutral Leadership City
3. Operation of Research & Support Center for Carbon Neutrality
4. Establishment of 2045 Carbon Neutral Strategy
5. Increased Supply of New Renewable Energy
6. Coal-free Policy
7. Increased Cooperation with International Organizations and Hosting of International Conferences

# I . Climate Crisis and Global trends

1. Severity of Climate Crisis
2. International Community's  
Climate Response Efforts

## 1. Severity of Climate Crisis

- Abnormal high temperatures and heavy rains around the world, including Europe, North America, and Asia, resulting in numerous casualties and property damage
  - Millions of people across India and Bangladesh have been affected by floods (Jun. 2022)
  - Two-thirds of the European population have been suffered from drought, the worst in 500 years (Aug. 2022)
  - Eastern Canada was hit hard by Hurricane Fiona with nearly half a million homes suffering power outages (Sept. 2022)
- In Korea, the social and economic damage is severe due to record heat waves, heavy rains, and cold waves.
  - In the past 10 years, 290 people have been injured and about 200,000 people have been displaced due to meteorological disasters, resulting in about USD 10 billion in economic loss due to property damage and restoration efforts



Flood in Bangladesh



Drought in Europe (Aerial view)



Hurricane in Canada

## 2. International Community's Response Efforts

### ➤ Adoption of Paris Agreement to response to the climate crisis (Dec. 2015)

- The goal is to keep the global average temperature rise well below 2 ° C compared to pre-industrial levels, and to make efforts to keep it within 1.5 ° C
- A new climate change response system in which both developed and developing countries participate

### ➤ The IPCC published a special report 'Global Warming of 1.5 ° C' (Oct. 2018)

- Suggested a roadmap through which carbon neutrality must be achieved worldwide in 2050 to meet the goals of the Paris Agreement



## 2. International Community's Response Efforts

- Major countries such as the EU and the US are expected to impose carbon border taxes
  - EU: Considering border adjustment measures for steel, etc.
  - US: Imposing carbon tax on imports from countries with insufficient reduction measures
- Global companies are joining RE100 and establishing supply de-carbonization plans
  - Major companies such as Google and BMW joined RE100
  - Apple has announced a target of becoming carbon neutral across its supply chain by 2030
  - If RE100 is difficult, disruptions to factories or reductions in production is inevitable



출처: EKOENERGY



RE100 가입 기업들 (출처: EKOenergy)

## 2. International Community's Response Efforts

- Increased discussions about carbon neutrality around the world, including carbon neutrality declarations (2019-)
  - Raised awareness of the seriousness of the climate crisis due to heavy rainfall in many nations
  - Major countries have officially declared carbon neutrality, announced detailed economic and social policies, rapidly adopting climate crisis response systems.
  - 134 countries including EU, UK, US, China (2060) and Japan declared carbon neutral by 2050 (as of Sept. 2021)



윤석열정부 출범

### 과학적 탄소중립 이행방안 마련...녹색경제 전환

[윤석열정부가 드리는 20개 약속] (16)탄소중립 실현으로 지속가능한 미래  
초미세먼지 30% 감축 로드맵 추진...고부가가치 재활용 확대, 순환경제 완성

2022.06.15 정책브리핑 김차경



## II. Incheon's Efforts to Respond to Climate Change

1. Efforts to Respond to Climate Change
2. Hosting and Participating in Climate-related International Conferences and Cooperation



### 1. Efforts to Respond to Climate Change

- Date: Jul. 7, 2020
- Venue: COEX
- Host/Organizers: IPCC/ Meteorological Administration, Incheon Metropolitan City
- Participants: 80 metropolitan cities and local governments

- ❖ Joint recognition of local governments' will for climate action
- ❖ Sharing of best practices and mutual cooperation



인천 | 인천뉴스

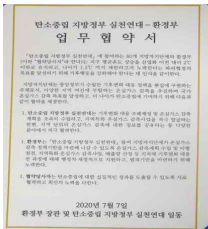
#### 인천시, 탄소중립 지방정부 실천연대 참여 추진...기후변화대응 선도도시 도약

승인 2020-09-19 18:32

인천시가 기후변화대응 선도도시로서 탄소중립 지방정부 실천연대에 참여한다.

19일 새벽 마르뎬 지난 15일 대한민국시도지사협의회에 탄소중립 지방정부 실천연대 참여동의를 제출했다.

탄소중립 지방정부 실천연대는 대구시(광역시대표)와 수원시(기초대표)를 필두로 탄소중립을 선언하고 탄소중립계획을 수립 추진하는 지방자치단체 연합이다. 이를 통해 지자체들은 기후변화 모범임을 확산한다는 방침이다. 탄소중립은 이산화탄소를 배출한 만큼 이산화탄소를 흡수하는 대책을 세워 실질적인 배출량을 0으로 만드는 개념이다.



## 1. Efforts to Respond to Climate Change

### ❖ Ranked 1<sup>st</sup> in GHG emission target achievement among public institutions

- City: Incheon Metropolitan City
- Facilities: Buildings and vehicles (43 places including direct agencies)

⇒ Compared to the 2020 goal of 30%, Incheon achieved 55.4%



### 기호일보

## 인천, 온실가스 감축 전국 지자체 1위

2021년 8월 25일 수요일 003면 종합

지난해 이행실적 분석 결과  
기존배출량 대비 55.4% ↓

인천시가 지난해 전국에서 가장 많은 온실가스를 감축한 지자체로 선정됐다. 시는 최근 환경부 등 4개 부처가 실시한 '2020년 공공부문 온실가스·에너지 목표관리제' 이행실적 분석 결과 지자체 부문 전국 1위를 차지했다고 24일 밝혔다. 분석에 따르면 시는 지난해 기준배출량(3만3천634t) 대비 1만8천648t(55.4%)을 감축했다. 이는 환경부가 지정한 감축 목표인 1만900t(30%)보다 8천558t을 더 줄인 결과이며, 시 자체적으로도 전년 감축률(51.1%) 대비 4.3%를 추가로 줄인 수치다.

세부적으로 시는 ▶조명 소등 및 냉난

방 온도 준수 ▶청사 내 일회용품 반입 금지 ▶직원 차량 2부제 실시 등 '행태 개선'으로 총 1만1천922t을 감축했다. 또 ▶신재생 발전설비 설치 ▶고효율 LED 조명기기 교체 ▶탄소포인트제 등 '시설 개선' 및 '실천적 노력' 분야에서 6천726t을 감축한 것으로 나타났다.

시는 이번 성과가 기후변화 대응 선도 도시로서 공공기관이 협력해 가능했다는 분석이다. 앞서 시는 2040년에는 온실가스를 기존배출량보다 5만2천977t(80.1%) 감축하는 등의 목표를 담은 '제3차 인천시 기후변화 대응 종합계획'을 발표하기도 했다.

환경부는 이번 분석 결과를 토대로 오는 11월 운영 성과대회를 열고 지자체 부문 1위를 달성한 인천시에 기관표창 및 포상금 1천만 원을 수여할 예정이다. 또 우수 사례 발표를 통해 지자체별 공유 및 확산 분위기를 유도할 계획이다.

유훈수 시 환경국장장은 "공공부문 실천수법을 통해 타 부문에서도 감축 분위기를 확산할 수 있도록 노력하겠다"며 "동시에 '2050 인천시 탄소중립 전략 용역'을 수립해 구체적인 중장기 온실가스 감축 목표를 제시하는 등 2050년 탄소중립 실현에 앞장서겠다"고 말했다.

김희연 기자 khy@khorib.co.kr



### 1. Efforts to Respond to Climate Change

#### ❖ Voluntary GHG reduction of industries

- Purpose : Encourage industries to reduce GHG emissions (Industries take up 77% of total GHG emissions of Incheon)
- Target : 35 work places in Incheon
- Activities
  - Meeting with heads of businesses(Jun. 2022)
  - Plan to make Private-Public agreement for voluntary GHG reduction



#### ❖ Carbon point system

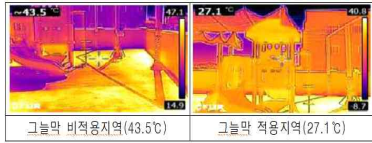
- Period : 2022. 1. ~ 12.
- Cost: KRW 449 million(State 50%, City 25%, Gu 25%)
- Target : Homes, commercial areas, apartments with more than 150 households
- Benefit : Provide incentives for saving energy



### 1. Efforts to Respond to Climate Change

#### ❖ Program to support vulnerable people to respond to climate change

- Period : From 2020
- Cost: KRW 1 billion
- Target : Nurseries, centers for the elderly etc.
- Activity : double windows, shade canopies, cool pavements

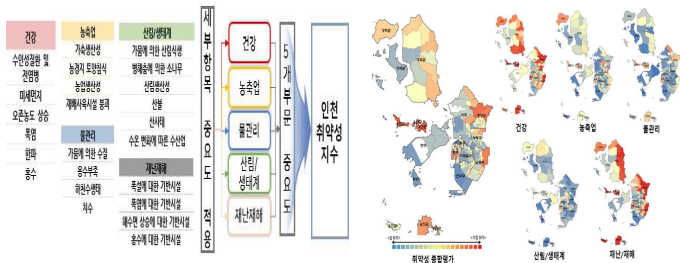


## 1. Efforts to Respond to Climate Change

### ❖ Assessment of Climate Change Impact and Vulnerability (1st in Korea)

- Assessment of optimized climate change adaptation measures and vulnerability based on regional conditions
- Set priorities for adaptation measures by sector and district (*gun, gu*) and identify key measures

### ➔ The 3<sup>rd</sup> Incheon Climate Change Adaptation Action Plan(2022~2026)



### 1. Efforts to Respond to Climate Change

#### ❖ [Civil servants] Education on carbon neutrality

- Period : 2022. 4. ~ 12.
- Type : On/offline education
- Area : Education for all civil servants, education for civil servants in 8 areas
- Result : 14 times, 8,047 people(Oct. 22)

#### ❖ [Citizens/experts] Academy, forum

- Incheon Green Climate Academy(4times/y)
  - Target : Citizens group, citizens and relevant institutions, etc.
  - 4 times/y(2,5,9,11) 308 people(Oct. 22)
- Incheon Climate & Environment Forum(4 times/y)
  - Target : Experts in climate area
  - 4 times/y(3,7,10,12), 70 people (Oct. 22)

인천시, 공직자 인식개선 통해 탄소중립사회 전환 가속화

김영희 기자 ygh6114@inmail.com | © 승인 2022.04.29 01:25 | # 댓글 0

시 전 직원 대상 탄소중립 공직자 교육 실시... 12월까지 계속  
탄소중립에 대한 공직자 인식제고, 분야별 직무 전문성 강화



### 1. Efforts to Respond to Climate Change

#### ❖ Opening of the CTCN PALO

- Period : 5 years(22. 7. 10~26. 10. 7)
- Office : G-Tower, Songdo Incheon
- Personnel : 6 people
- Budget : Total KRW 12.5 billion (5 years)
  - MIST: KRW 2 Bill/y, Incheon: KRW 500 Mil/y
- Main activities
  - Cooperation with the GCF
  - Readiness program for government leaders from developing countries in Asia Pacific
  - Technology assistances for developing nations

- ❖ Participated in CTCN readiness event(22. 9. 26)
- ❖ Supporting TEC and CTCN Advisory Board Meeting in Songdo (23. 3. 21 ~3. 29)



### 2. Hosting and Participating in Climate-related International Conferences and Cooperation

#### ❖ Hosting of International Conferences and Cooperation The 48th IPCC Session

- Date: Oct. 1 - 5, 2018
- Venue: Songdo Convensia
- Host/Organizers: IPCC/ Meteorological Administration, Incheon Metropolitan City
- Participants: 195 member countries and 500 observers
- Main Activity: Final approval of the Special Report on Global Warming of 1.5 °C

- ❖ Limit global warming to 1.5 °C
- ❖ Reduce emissions by at least 45% by 2030 and achieve net zero emissions by 2050





### 2. Hosting and Participating in Climate-related International Conferences and Cooperation

#### ❖ Korea Global Adaptation Week 2019

- Date: April 8 – 12, 2019
- Venue: Songdo Convensia
- Host/Organizers : Ministry of Environment/UNFCCC, Incheon Metropolitan City, Korea Environment Institute (KEI), Korea Adaptation Center for Climate Change (KACCC)
- Participants: 667 people including government representatives from 195 countries, international organizations, and experts
- Programs : NAP Expo 2019, Adaptation Vision Forum, Adaptation Committee Forum, Technical Expert Meeting

❖ Enhancing partnerships and sharing experiences among stakeholders related to climate change adaptation



### 2. Hosting of International Conferences and Cooperation

#### ❖ International Seminar at COP25

- Date : Dec. 10, 2019 (Tue.)
- Venue : Madrid, Spain (the Korea Pavilion)
- Host/Organizers: Incheon Metropolitan City/Incheon Climate & Environment Research Center (ICERC), ICLEI Korea Office
- Attendees: About 70 people including experts and staff from international organizations
- Programs
  - Activities of local governments to meet the NDC
  - Incheon City's greenhouse gas reduction policy and strategies
  - Greenhouse gas reduction case of Tainan City, Taiwan

- ❖ Strengthen global climate response capabilities
- ❖ Higher reputation of Incheon as a climate response hub by securing trust from the international community



## 2. Hosting of International Conferences and Cooperation

### ❖ International Forum on Low Carbon Cities

- Period : 21. 11. 23 ~ 11. 24 13:00~17:40
- Venue : UNESCAP ENEA meeting room
- [6F of G-Tower]
- Host : Incheon, UNESCAP
- Participants : 500 people
- Main activities
  - Signing of MOA between Incheon & UNESCAP
  - GHG emission reduction policies and strategies of Incheon
  - Discussions on ways to raise climate financing for urban key areas

❖ The 2nd International Forum on Low Carbon Cities [22. 12. 6 ~ 12. 8]

인천광역시, "2050 탄소중립 위한 국제사회 공조체계... 협력 통한 실현 가속화"

입력 2021-11-25 12:31 수정 2021-11-25 12:30



### III. Incheon Carbon Neutral Strategy

1. 2045 Incheon Carbon Neutral Vision(Plan)
2. Climate Crisis and Carbon Neutral Leadership City
3. Operation of Research and Support Center for Carbon Neutrality
4. Establishment of 2045 Carbon Neutral Strategy
5. Increased supply of New Renewable Energy
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7. Increased Cooperation with International Organizations and hosting of International Conferences

## 1. 2045 Incheon Carbon Neutral Vision (Plan)

Vision

**Declaration of 1.5 °C\***, Realization of 2045 Carbon Neutral  
**World's Leading Carbon Neutral City, Incheon**

Goal

2018 : 27million ton(excluding power generation)  
 66million ton (including power generation)



2030 : 16million ton(▲40.1%)  
 48million ton(▲27.0%)



2045 : Net-Zero(▲100%)

4대  
정책  
방향



저탄소  
경제생태계 조성



맞춤형 시민  
기후행동 확대



글로벌 기후  
협력체계 활성화



안전한 기후위기  
적응 강화

15대  
과제

- ① 신재생에너지 전환 가속화
- ② 에너지 자립형 건물 확대
- ③ 신기후 산업 육성
- ④ 친환경 교통수단 확충

- ⑤ 탄소중립 주체간 거버넌스 협력
- ⑥ 미래세대 교육 강화
- ⑦ 녹색 실천 운동 확대
- ⑧ 기후변화 리빙랩 추진

- ⑨ 기후 클러스터 조성
- ⑩ 기후국제도시/  
국제기구 리더
- ⑪ 글로벌 네트워크 구축

- ⑫ 탄소 흡수원 확충
- ⑬ 자원의 순순환 강화
- ⑭ 공정한 전환 실현
- ⑮ 맞춤형 기후복지 실현

기반  
체계

< 제도/체계 구축 >

- ❖ 인천탄소중립연구지원센터
- ❖ 탄소중립 기본조례
- ❖ 온실가스감축인지예산제

< 거버넌스 협력 >

- ❖ 인천탄소중립녹색성장위원회
- ❖ 탄소중립 지방정부 실천연대
- ❖ 감축원별 정량정성지표 공유

< 국제 리더십 >

- ❖ 탄소중립 mice도시
- ❖ GCF complex 조성

< 재원 확보방안 >

- ❖ 기후대응기금 운영
- ❖ 이행평가 관리체계 구축

## 2. Climate Crisis and Carbon Neutral Leadership City

- ❖ **Establishment and implementation of system to realize carbon neutrality**
  - Enactment & promulgation of ordinance for Incheon carbon neutrality [ '22.11. 9]
  - Establishment of Incheon Carbon Neutral · green growth strategy [ '22.11.30]
  - Operation of Committee on Incheon Carbon Neutral · green growth [ '23. 1.)
- ❖ **Creation of low carbon and green economy in Incheon**
  - Implementation of GHG reduction budget [ '23: Environment Bureau,' 24: all divisions]
  - Private-public agreement to carry out carbon neutrality (Top 30 GHG emitters)
  - Designation and creation of Incheon type carbon neutral City
  - Climate change impact evaluation [ '22]



## 3. Operation of Research & Support Center for Carbon Neutrality

➤ **Institution : Incheon Climate & Environment Research Center**

➤ **Period : 22. 7. 1. ~ 25. 6. 30.**

➤ **Personnel : 12 people**

➤ **Cost: KRW 200 million(State 50%, City 50%)**

※ **2023: KRW 400 million**

➤ **Activities**

- Plan and implement carbon neutral policy
- Develop and expand carbon neutral model and manage GHG statistics
- Consulting on GHG emission reduction budget
- Expansion of carbon neutral region, etc.

출처 : 인천 > 인천

### 인천시, 탄소중립 선도도시 실현할 탄소중립지원센터 개소

☎ 조희선 | 📅 승인 2022.07.06 19:07 | 📄 수정 2022.07.06 19:07 | 📍 댓글 0

인천시의 탄소중립 선도도시 실현에 중심 기관 역할을 할 '탄소중립지원센터'가 지난 5일 문을 열었다.

인천시는 글로벌 기후위기에 탄소중립 선도도시 실현에 핵심적인 역할을 수행할 '탄소중립지원센터'를 개소했다고 6일 밝혔다.

센터는 '기후위기 대응을 위한 탄소중립·녹색성장 기본법'에 따라 인천형 탄소중립·녹색성장 관련 계획의 수립 시행과 에너지 전환 촉진 등을 통해 탄소중립 사회로의 이행과 녹색성장 추진을 지원하는 역할을 하게 된다.



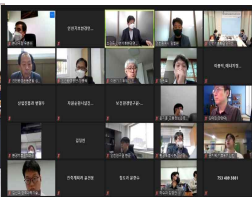
## 4. Establishment of 2045 Incheon Carbon Neutral Strategy

- Research period : 21. 4. ~ 22. 10.
- Researcher : The Incheon Institute
- Purpose : Establish 2045 Carbon Neutral Plan and hold vision forums

※ Sc\_B: It will be changed to 2045 Carbon Neutrality by reflecting National plan including energy mix plan in March 2023.

(단위: 천tCO<sub>2</sub>e)

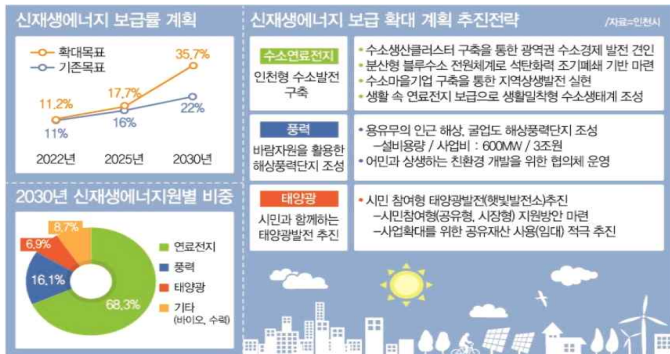
구분		2018	2030	2040	2045 (carbon neutral)	2050
시나리오A (Sc-A)	배출량	27,041				
	감축량	-	10,989	18,938	29,128	43,033
	감축후 배출량	-	16,187	8,942	-1,008	-14,777
	18년대비 감축률(%)		40.1%	66.9%	103.7%	154.6%
시나리오B (Sc-B)	배출량	66,243				
	감축량	-	18,015	38,487	69,255	85,334
	감축후 배출량	-	48,363	28,596	-1,903	-17,877
	18년대비 감축률(%)		27.0%	56.8%	102.9%	127.0%
* 2047 (carbon neutral)						





## 5. Increased Supply of New Renewable Energy

- Raise the renewable energy penetration rate target by 2030 from 22% to 35.7%
- Main strategies: hydrogen fuel cell, offshore wind power, solar power, etc.



## 5. Increased Supply of New Renewable Energy

### ❖ Incheon-type Offshore Wind Power Generation Project

➤ Improve environment and safety and create new growth engines through Incheon Green New Deal

- Establishment of an off-shore wind power generation complex in the waters near Incheon with a capacity of 3.7GW(18.5 trillion won)



## 6. Coal-free Policy

- Admission to the Powering Past Coal Alliance (PPCA) in November 2020 and joint declaration of city and districts to select main banks that will pursue coal phase-out investment in December 2020.
  - Prohibit adding new coal-fired power plants, phase-out of existing facilities
  - Adding "coal phase-out" and "renewable energy" investments as criteria for selecting main banks
- Plan for earlier phase-out of coal-fired power plant (close when expired)
  - Urge the government for earlier transition (closure) through civil organizations, environmental groups, other local governments, and public petitions
  - Prepare for a just transition to minimize the impact on the local economy

영흥화력발전소 발전설비 현황 (5080MW)

발전방식	발전원	설비용량	준공년도	
기력	유연탄	1호기	800MW	2004. 9
		2호기	800MW	2004.11
		3호기	870MW	2008. 6
		4호기	870MW	2008.12
		5호기	870MW	2014. 6
		6호기	870MW	2014.11



## 7. Increased Cooperation with International Organizations and Hosting of International Conferences

### ❖ International Organizations based in Incheon: 15 Organizations



### ❖ Increased Hosting of International Conferences

- **The 2nd International Forum on Low Carbon Cities**
  - Period/venue: 2022.12. 6.~8./ Sheraton Grand Incheon Hotel
  - Attendees : 400(UNESCAP, ICLEI, GCF, municipalities, etc)
- **2023 UNFCCC Adaptation Week**
  - Period/venue : 2023.8.28.~9.1[5 days] / Songdo Convensia
  - Attendees : 600(Government representatives and experts)
- **International conferences (GCF Board Meeting, etc)**
  - Period/venue : 3~5 times / Songdo
  - Attendees : 300~800/event(GCF, high-ranking officials, financial institutions, private investors, etc)





# THANK YOU

감사합니다

인천광역시