



**World Bank Technical Assistance Project**

# **Understanding K-ETS**

PilGon Kim Senior Researcher | KRIC - Climate Policy Research Department 1

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**KRIC**

**한국기후변화연구원**  
Korea Research Institute on Climate Change

Understanding KOREA Emissions Trading Scheme

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# CHAPTER 1

## Domestic and international climate change and response trends

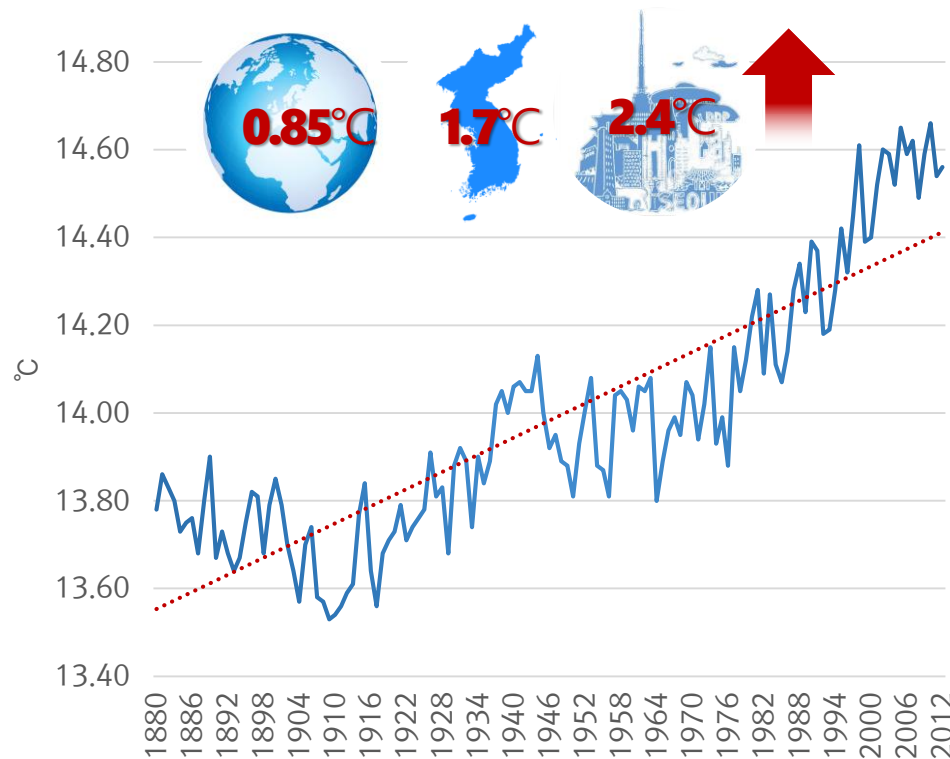
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# 01 Fact Check : Is the Earth's temperature getting warmer?

Greenhouse gas emissions are increasing due to human activities, and the global temperature is accelerating  
**Over the past 133 years (1880-2012), the average temperature of the Earth has risen by 0.85°C.**

※ Source: IPCC 5th Report

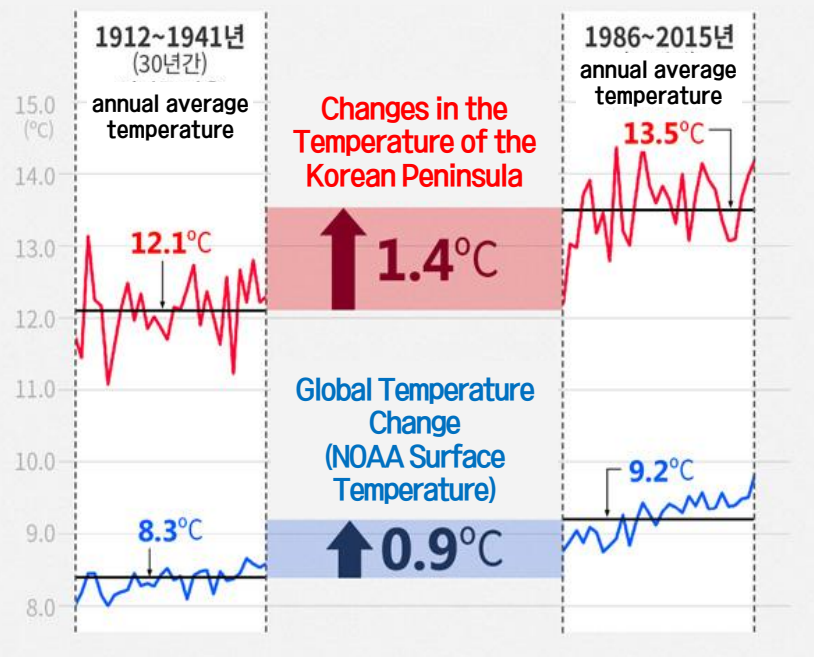


## 02 Climate change phenomenon in South Korea

In Korea, the average temperature has increased by  $1.4^{\circ}\text{C}$  over the past 100 years.  
Rapid temperature changes cause various extreme weather events

### KOREA vs. Global average annual temperature change

\* Based on six points where observation data exist continuously since 1912 (Seoul, Busan, Incheon, Gangneung, Daegu, and Mokpo)



*By 2100, climate change is expected to damage about KRW 2,800 trillion economically*

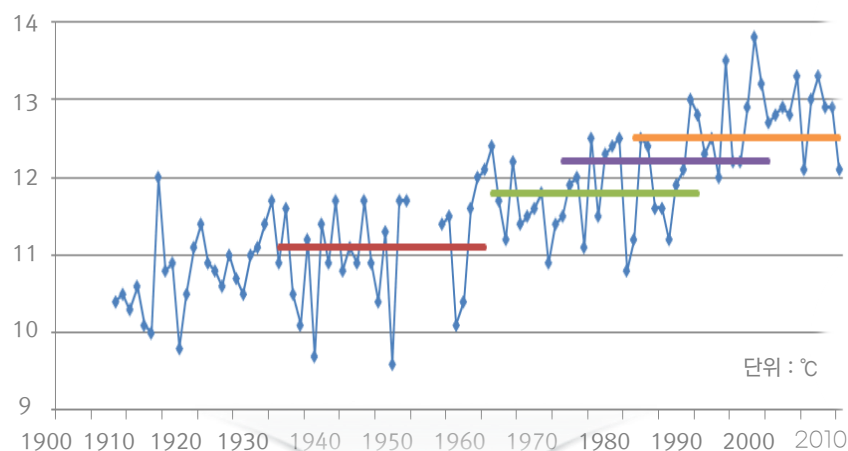
### A Case of Climate Change in Korea

- ① February 2015 Dense winter yellow dust occurs nationwide
- ② May 2015 High Temperature Phenomenon Achieves Highest Temperature in May Since 1973
- ③ Rainy season rainfall decreased by 73% compared to the average year
- ④ Frequent occurrence of heat waves and tropical nights
- ⑤ Precipitation phenomenon of more than 15 days in November; 1st highest on record
- ⑥ In December, the average temperature and lowest temperature since 1973 were ranked first,
- ⑦ Annual precipitation recorded 72% of average, 3rd lowest ever

## 03 Climate change impacts on Seoul

Over the past 100 years or so, the average temperature of the Earth has risen by  $0.85^{\circ}\text{C}$ , and the Korean Peninsula has risen by  $1.4^{\circ}\text{C}$ .

The average temperature in Seoul rose by a whopping  $2.4^{\circ}\text{C}$



Number of days  
below freezing  
Number of days  
with frost  
Relative humidity

Average temperature  
Heat wave, tropical  
nights  
Precipitation  
Rainy days  
Dry days

1950s  
50 DAYS



the present

14 DAYS



*The Han River's freezing period has become much shorter than in the early 20th century due to global warming.*



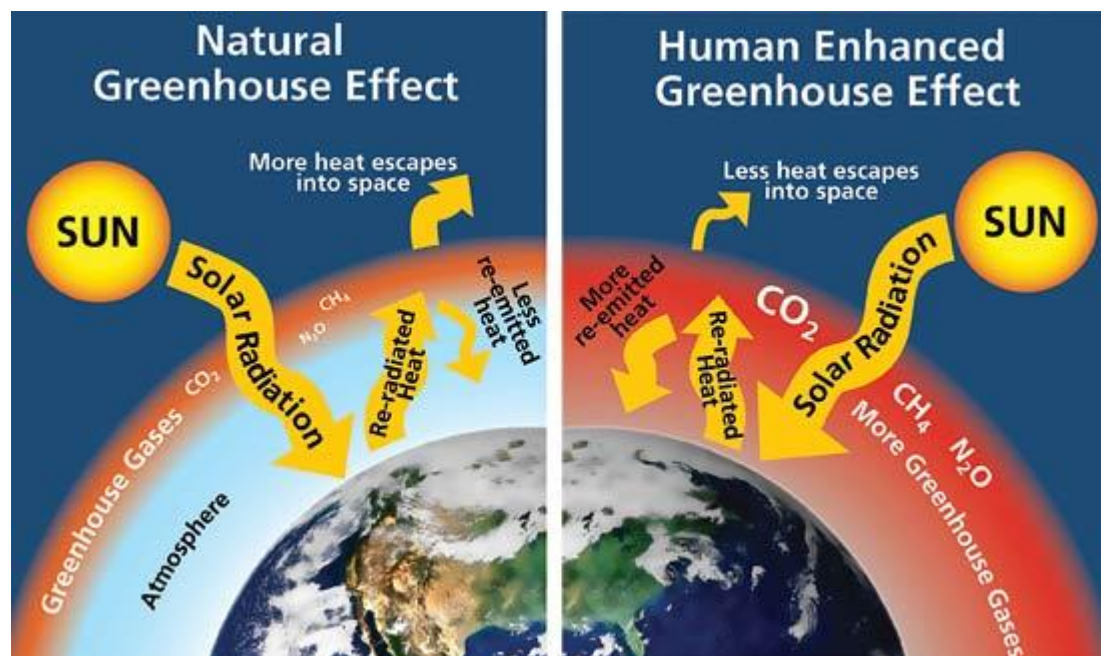
# 04 Greenhouse Gases and Global Warming Overview

## Greenhouse gases and global warming

CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>
<ul style="list-style-type: none"> <li>Fossil fuel combustion</li> <li>boilers/vehicles, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Organic matter decomposition</li> <li>ruminant trim etc.</li> </ul>	<ul style="list-style-type: none"> <li>Fossil fuel combustion</li> <li>nitrogen fertilizer use</li> <li>coal mining etc.</li> </ul>	<ul style="list-style-type: none"> <li>Refrigerator, air conditioner</li> <li>Refrigerant etc.</li> </ul>	<ul style="list-style-type: none"> <li>Cleaning in electronics,</li> <li>Plating industry, semiconductor manufacturing, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Insulating gas for electrical appliances, transformers, etc.</li> </ul>

Greenhouse gases (GHGs) refer to specific gases that absorb or reflect infrared radiation emitted from the Earth's surface into space, thereby increasing the temperature of the Earth's surface.

"Greenhouse gas" refers to a gaseous substance that causes a greenhouse effect by absorbing or re-emitting infrared radiation, including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), or sulfur hexafluoride (SF<sub>6</sub>), as defined in Article 2, Paragraph 9 of the Act. Details on hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) are as set forth in Appendix 3.



<https://www.c2es.org/content/climate-basics-for-kids/>

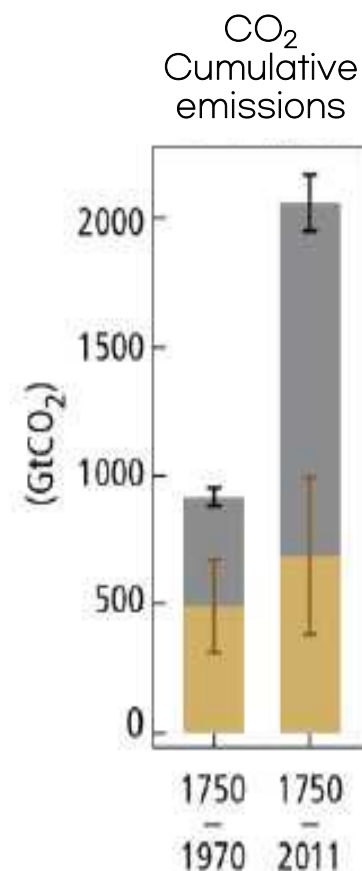
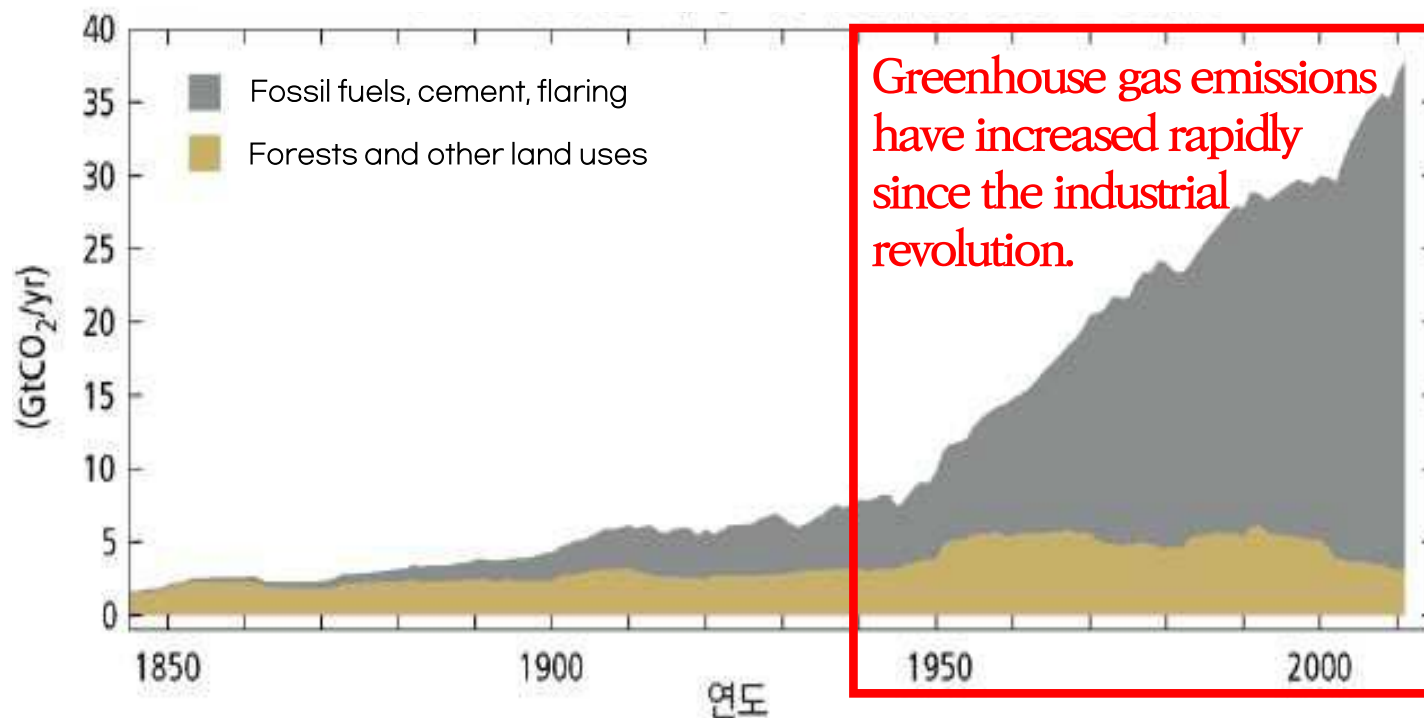
## 05 Global greenhouse gas emissions

**Between 1750 and 2011, approximately 204 billion tons of carbon dioxide were emitted artificially.**

Since 1970, cumulative emissions from fossil fuel combustion, cement production, etc. have tripled.

### Global anthropogenic carbon dioxide emissions

Quantitative information on CH<sub>4</sub> and N<sub>2</sub>O emission time series for 1805-1970 is limited.



※ Source: 2nd Basic Plan for Climate Change (2019, jointly organized by relevant ministries)



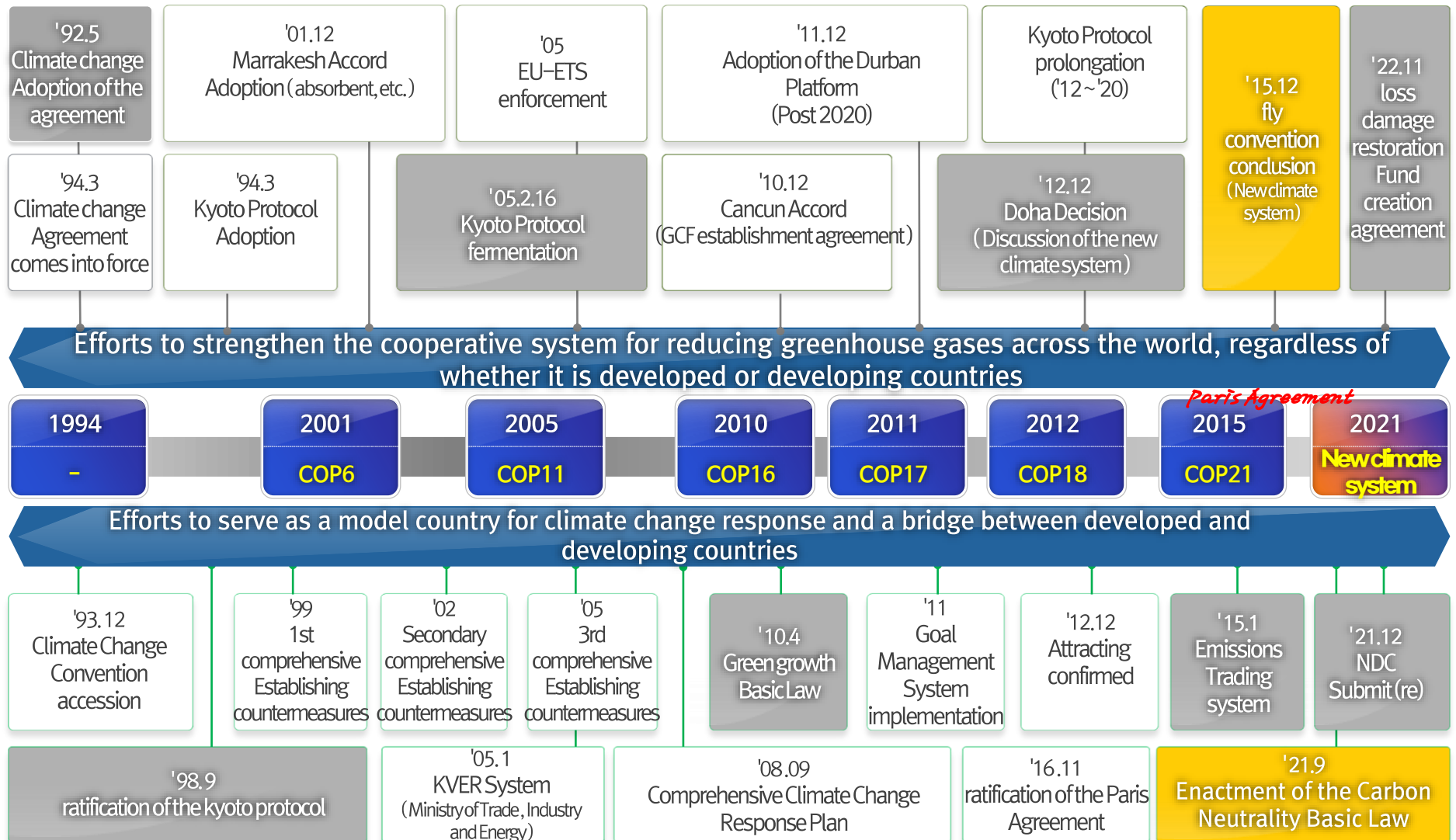
## 06 Differences between the Paris Agreement and the Kyoto Protocol

Protocols vs. Agreements: The Difference Between Legally Enforceable and Voluntary Reductions

A system in which all countries, regardless of whether they are developed or developing, voluntarily participate in reducing greenhouse gases.

Kyoto Protocol	distinction	Paris Agreement
Reduce greenhouse gas emissions (1st: average 5.2%, 2nd: average 18%)	Goals	Maintaining a level significantly lower than the global average temperature of 2°C (recommended 1.5°C)
Reduction system centered on the six major greenhouse gases	Range	Comprehensive NDC including GHG reduction, adaptation, finance, technology transfer, capacity building, and transparency
ANNEX I COUNTRY / OBLIGATIONS	Reduction obligation	All Parties / Voluntary
Base year emissions by country Considering conditions such as source of absorption, etc.	Goal setting	Submission of progress principles and voluntary reduction targets/ Five-year implementation review
Punitive (1.3 times the amount not achieved is deducted from the quota for the next commitment period)	Punishment	Non-punitive matters
1st 2012 / 2nd 2020	End point	End point not specified
National Center	Agent	Diverse Participants

# 07 Climate Change Negotiation Progress



Korea has submitted its NDC three times since 2016 - Strengthening its continuous Greenhouse gas reduction target

**Greenhouse gas emissions in 2018**  
**40% reduction in emissions (4.367 billion tons )** → **2.91 billion tons need to be reduced**

# 2030 National Greenhouse Gas Reduction Basic Roadmap

**Total reduction target (291 million tons)**

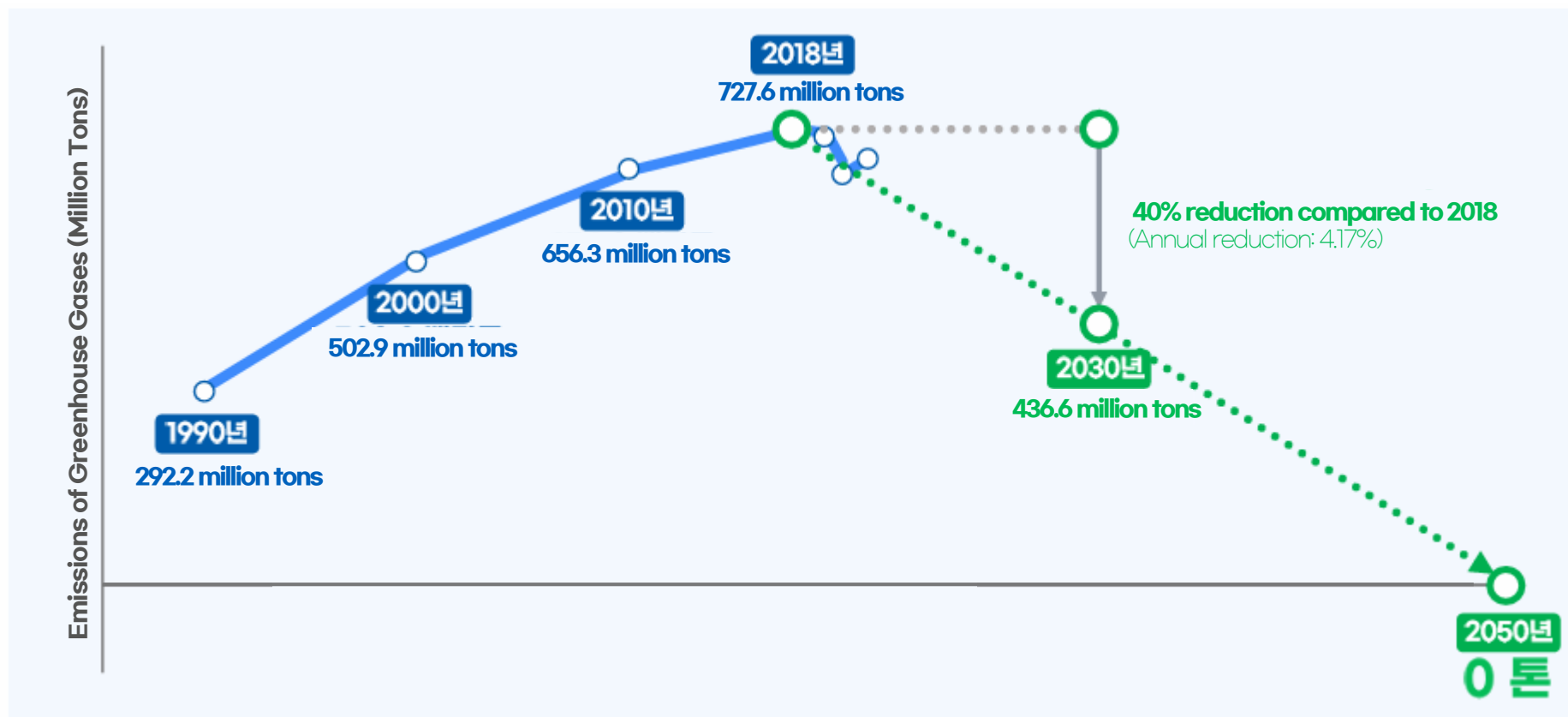
- Domestic (512 million tons emission target)**
  - conversion: 145.9 million tons
  - industry: 230.7 million tons
  - building: 35.0 million tons
  - transport: 61.0 million tons
  - Agriculture and livestock: 18.0 million tons
  - Waste: 9.1 million tons
  - hydrogen: 8.4 million tons
  - Others ( e.g., Tallu ) : 3.9 million tons
- Overseas, etc. (75.4 million tons reduction target)**
  - Absorber: 26.7 million tons
  - Overseas reduction: 37.5 million tons
  - CCUS: 11.2 million tons

**the six largest thermal power plants : about 200 million tons**

## Ref. South Korea's NDC reduction target

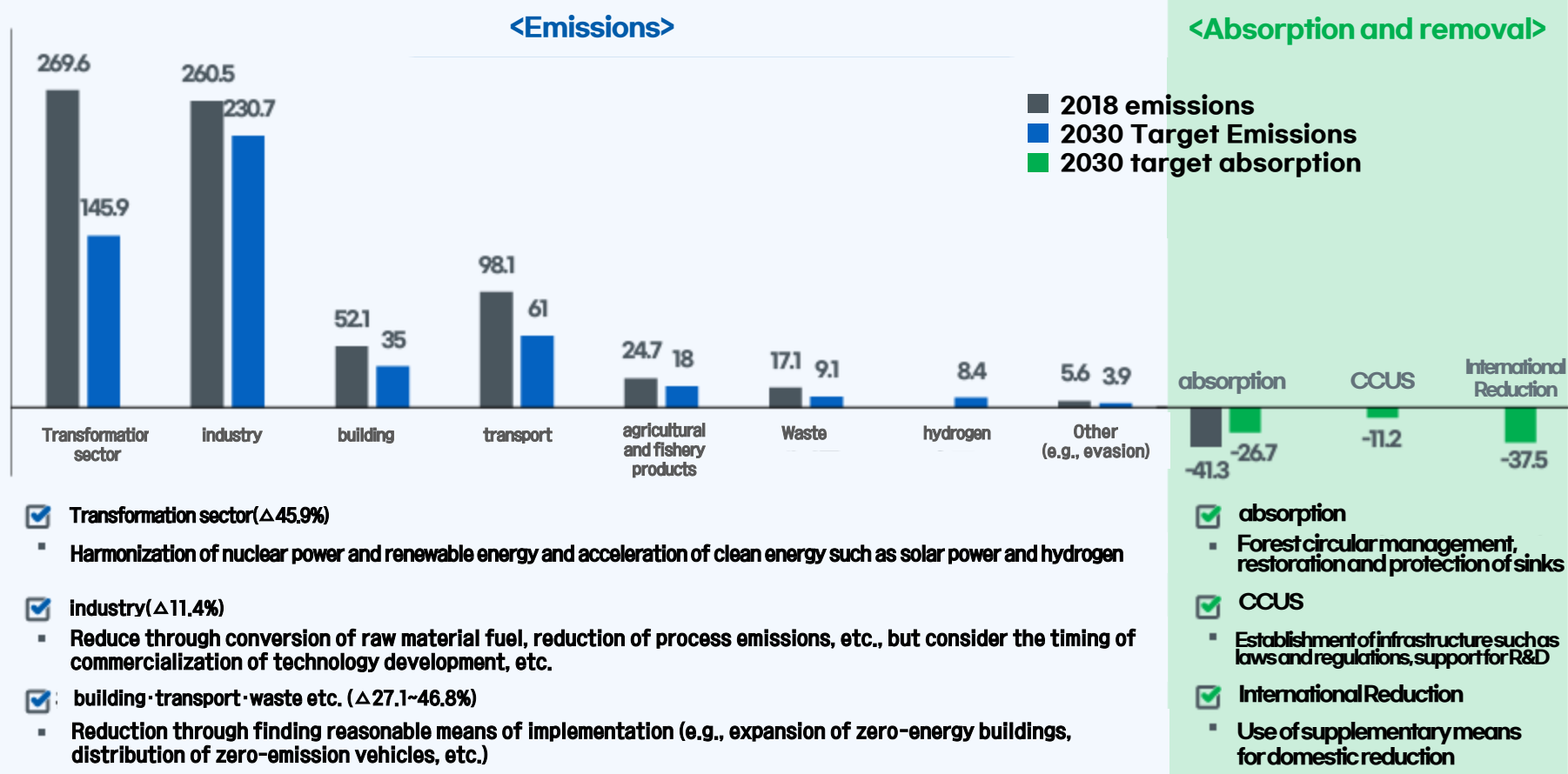
Considering the legislative intent of the Carbon Neutrality Basic Act and international trends, submit an NDC upward revision plan (December 2021)

**Reduce national greenhouse gas emissions by 40% by 2030 compared to 2018, and achieve carbon neutrality by 2050**



# Ref. South Korea's NDC reduction target

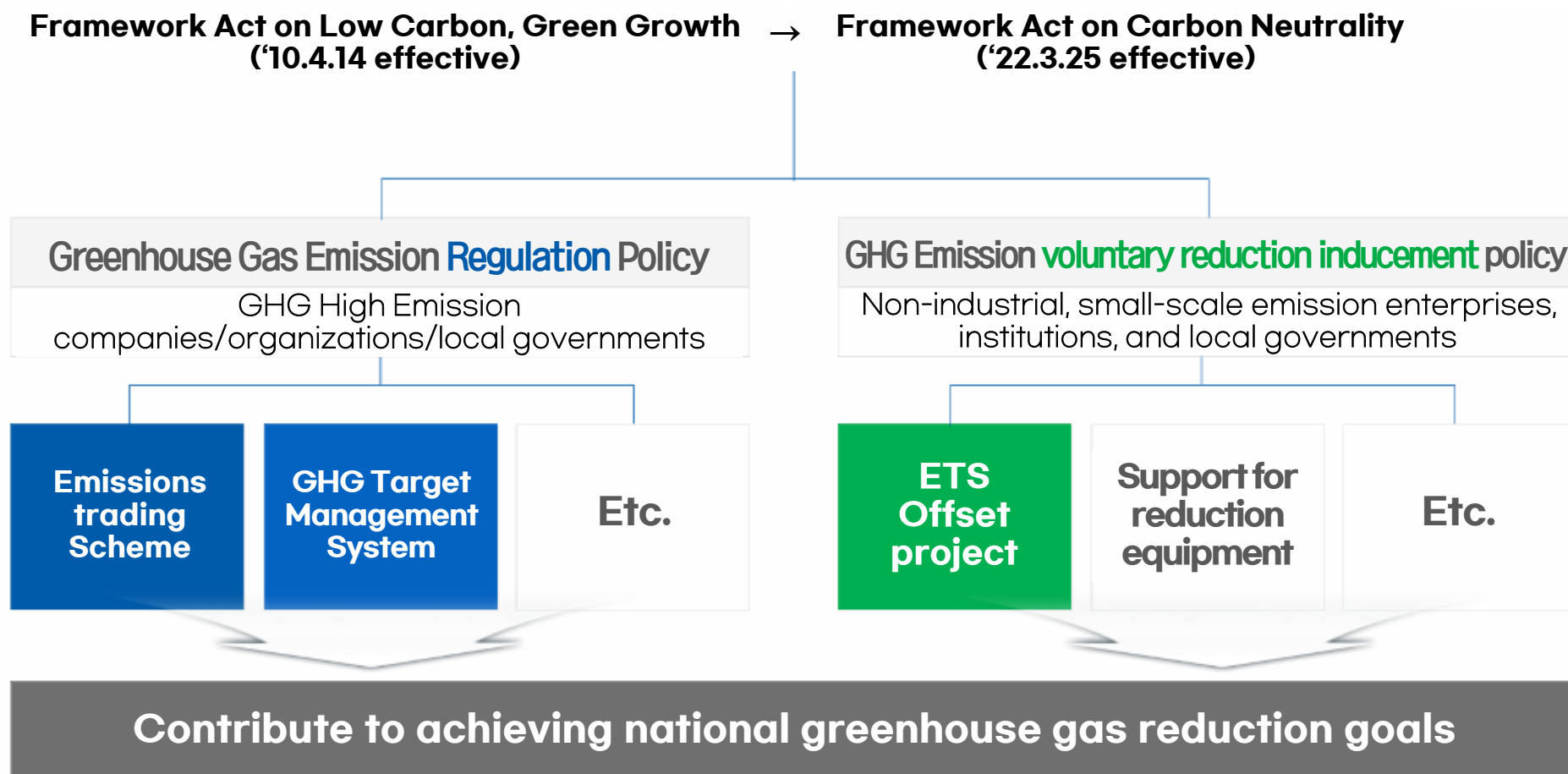
Establish a mid- to long-term reduction target for each sector to **reduce greenhouse gases by 40% by 2030**, and **announce a reduction policy for each sector that takes into account the current status and characteristics of each sector to achieve the reduction target.**





# Ref. South Korea's NDC reduction target

After establishing a national greenhouse gas reduction target, the Republic of Korea enacted and revised related laws to achieve this goal, and implemented a “regulatory” policy for areas with large emissions and a “voluntary reduction inducement” policy for areas with small emissions.



# 09 Linking the Paris Agreement and Domestic Carbon Markets

The reduction performance of the 6.2 and 6.4 mechanisms will be converted into ITMO and **used in the national NDC**.  
Adjustment of national total emissions through corresponding adjustments based on ITMO

## Promotion of the 6 research projects of the Paris Agreement

### Paris Agreement

6.4 Article Mechanism (PA 6.4)

Cooperative Appro

Art 6.4

Art 6.2

6.4 ERs (Emission Reduction)

MOs (Mitigation Outcome)

6.4 Registry

Int. Registry

(Transfer between countries - Approval of the business hosting country government)

ITMOs

(Internationally Transferred Mitigation Outcomes)

## Domestic use of overseas reduction performance

### National Greenhouse Gas Reduction Target (NDC)

Domestic reduction

Overseas reduction

Not reflected in overseas reduction of 37.5 million tons

Emissions trading system

Emission allowance

Offset Emissions

Voluntary reduction system

Domestic reduction performance

Overseas reduction performance

2

1

Can be reflected in overseas reduction of 37.5 million tons

Civilian

government

ITMOs

purchase

Acquire shares

## NDC national emissions after corresponding adjustments

### Achieving the 2030 reduction target

nation Total emissions

Overseas reduction performance (ITMO) 1 + 2

UNFCCC Report and Performance Check

Corresponding Adjustment

Target year national greenhouse gas emissions

ITMOs 1 + 2

Adjusted country Total emissions

# CHAPTER 2

## Understanding KOREA Emissions Trading Scheme

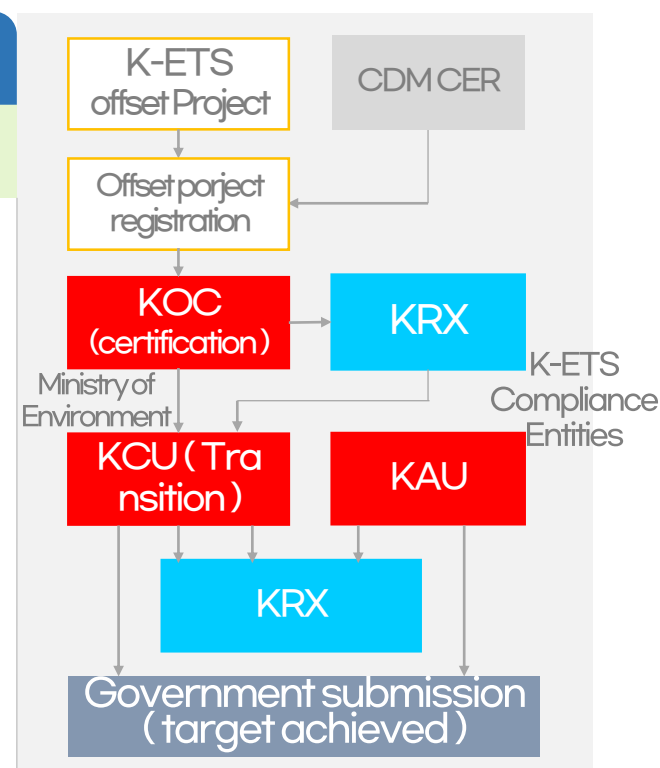
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# 01 South Korea's emissions trading Scheme

Covering approximately 73% of the country's total emissions, targeting approximately 800 companies (workplaces)

**Implementation of a global, complex concept of ETS including the six major greenhouse gases and indirect emissions**

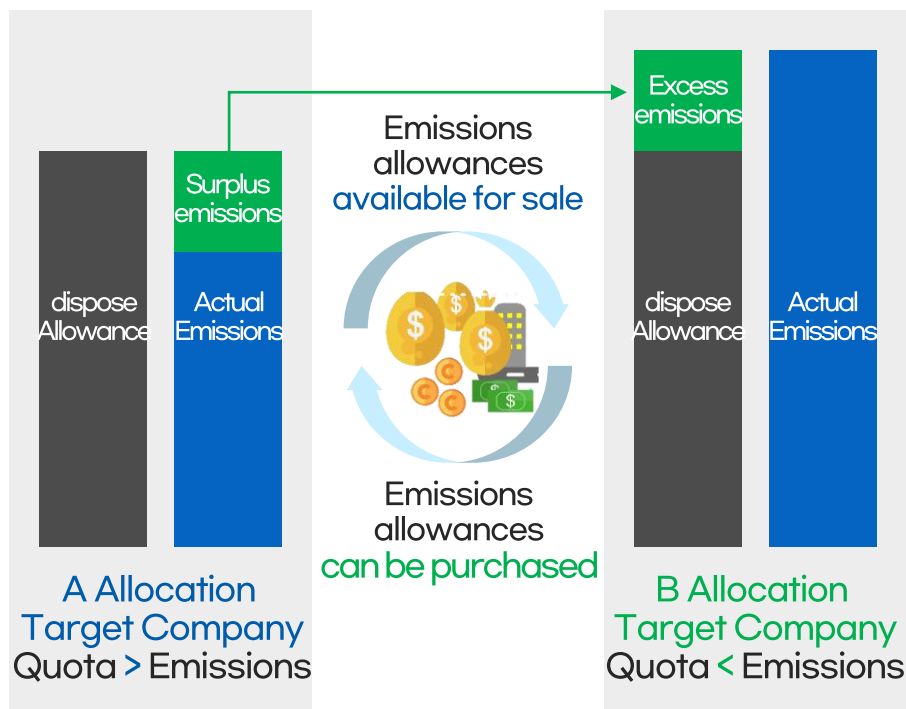
	1st			2nd			3rd				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Related laws	Law and Enforcement Decree on Allocation and Trading of Greenhouse Gas Emissions										
Target GHG	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs, SF <sub>6</sub> , PFCs										
Allocation target criteria	125,000tCO <sub>2</sub> eq. (company), 25,000tCO <sub>2</sub> eq. (workplace)										
Free allocation ratio	100%			97%			Within				
Scope	Direct emissions (Scope 1) and indirect emissions (Scope 2)										
Target industry	3rd Plan Period (Conversion, Industry, Transport, Buildings, Waste, Public and Other Sectors)										
Emissions	KAU, KCU, KOC (K-ETS offset credits)										



## 02 Emissions Trading Scheme Concept

A flexible system that **grants (allocates)** annual **emission allowances** (emission rights) to companies that emit large amounts of greenhouse gases and allows **trading of surplus or insufficient emissions** by company ► **Inducing cost-effective greenhouse gas reduction**

➡ What is an **emission allowances**? It is similar to a 'greenhouse gas bag', which is the right to emit a certain amount of greenhouse gases during a certain period.



### Allocation Target Company

- Companies with an average annual greenhouse gas emissions of **125,000 tons or more** over the past three years or **companies with at least**



Allocation  
Target Company



Workplaces **with less than**  
25,000 tons Several



Allocation  
Target Company



1 business site with

- Allocation Target Company for the 3rd planning period :  
847 (25.4.)

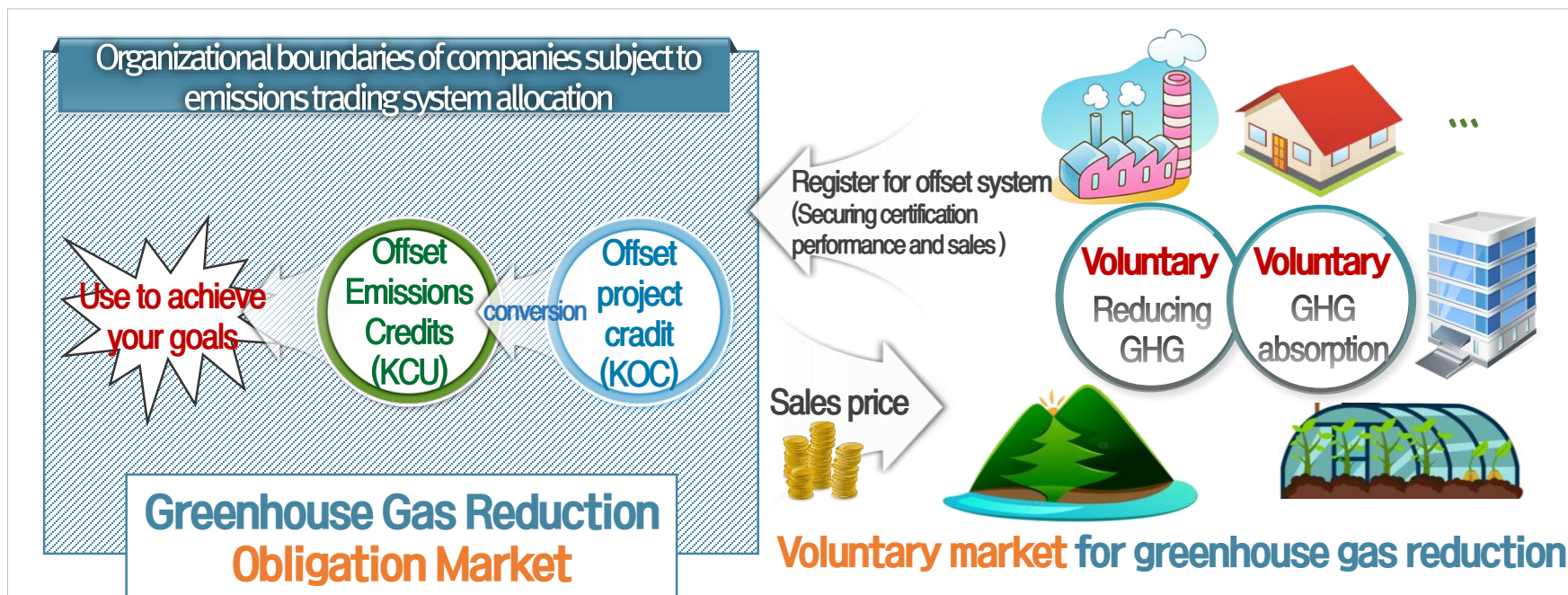
**Achieving national reduction targets!!**



## 03 Emissions trading Scheme offset project

### What is the Offset project of Greenhouse Gas Emissions Trading Scheme?

Offset project operators sell the **certification credit** issued through offset project to companies subject to the emissions trading system, and companies subject to the allocation convert the offset project certification credit they purchase into offset emission rights, which **can be used for offset (target achievement) or trading in the emissions trading system.**



Basis for promotion

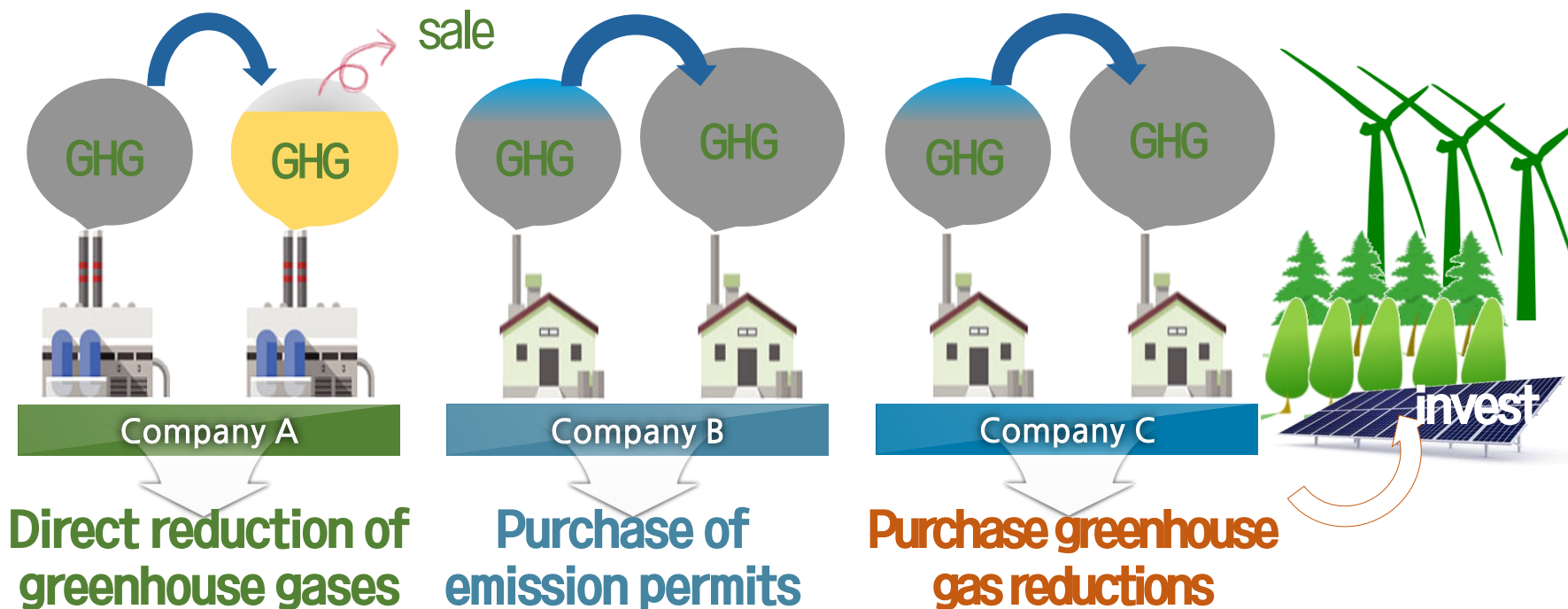
Article 29 (Offset), Article 30 (Certification of External Business Greenhouse Gas Reduction) of 『the Act on Allocation and Trading of Greenhouse Gas Emissions』, etc.

## 04 Emissions trading system offset system



### What is Offset project?

- Offset Project that reduces, absorbs or removes greenhouse gases in a manner that complies with international standards from **emission facilities or emission activities outside the organizational boundaries** of designated and announced **allocation target companies** (hereinafter referred to as “allocation target companies”).



In addition to directly reducing greenhouse gases or purchasing emission rights from other companies, companies can **purchase greenhouse gases reduced from places that are not required to reduce greenhouse gases** and use this to achieve their goals.

# 05 Emissions trading Scheme offset project system

## Legal basis

- Enactment of the Act and Enforcement Decree on the Allocation and Trading of Greenhouse Gas Emission Rights (Emissions Trading Act)
- Establishment of guidelines on offset project feasibility assessment and reduction certification (external business guidelines)
- The Ministry of Trade, Industry and Energy is designated as the Governing agency for the operation of external projects in the industrial development sector under the greenhouse gas emissions trading scheme offset project, and the 'Korea Energy Agency' is designated as the consigned operating agency



## Propulsion system

General organization

Ministry of Environment

Governing body

Ministry of Trade,  
Industry and Energy  
  
Industrial Development Sector  
Governing Body

Ministry of Environment  
  
Waste Sector  
Governing Body

Ministry of Agriculture,  
Food and Rural Affairs  
agriculture, forestry,  
livestock, and food sectors  
Governing Body

Ministry of Land,  
Infrastructure and Transport  
Building and  
Transportation Sector  
Governing Body

Operating agency

Korea Energy  
Agency

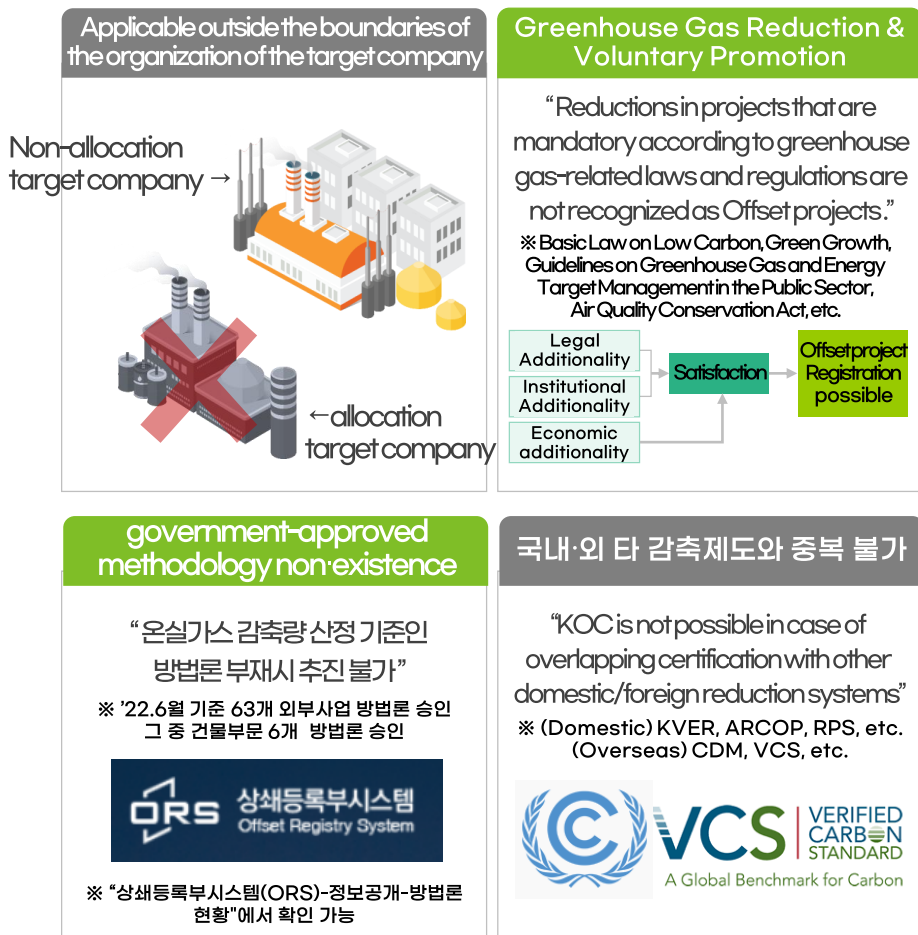
Korea Environment  
Corporation

Korea Forestry Promotion  
Institute,  
Korea Agriculture Technology  
Promotion Agency

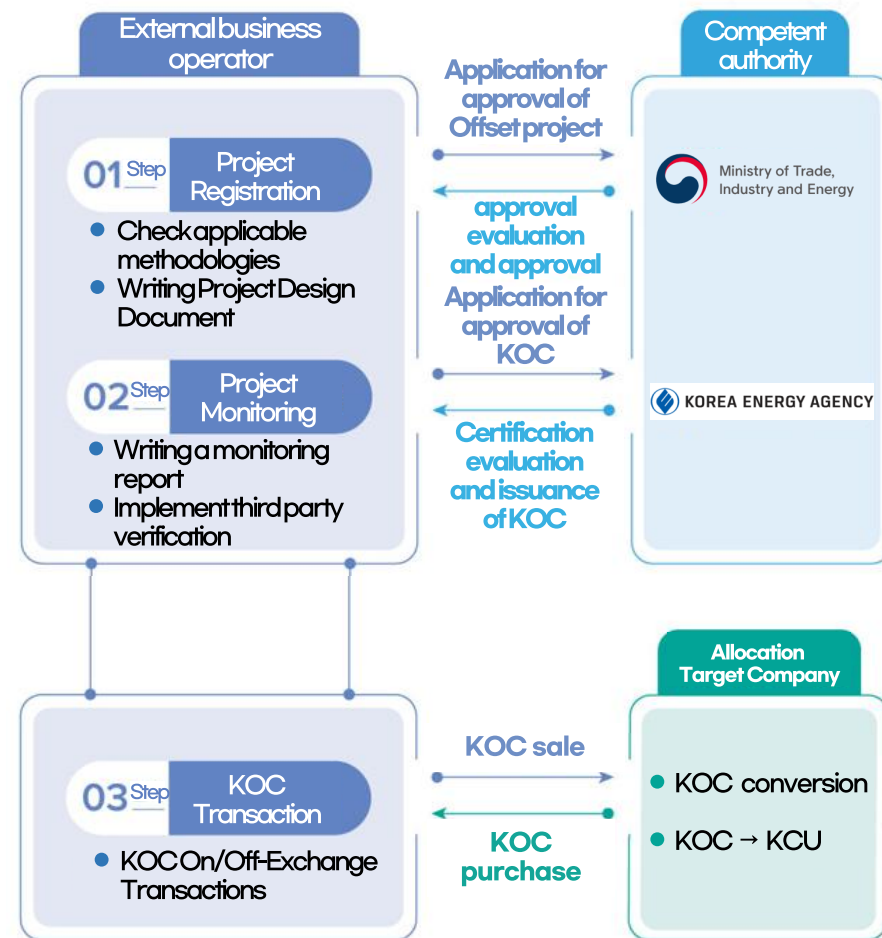
Korea Transportation Safety  
Authority (Transportation),  
Korea Energy Agency  
(Building)

# 06 Offset project Approval Requirements and Procedures

## Offset project Approval Requirements



## Procedure for promoting Offset project



## 07 Current status of Offset project methodology

### ◆ Status of approval of Offset project methodology by sector

Methodology that  
can be used for  
Offset project

**A total of  
308 cases**

'25년 3월 (인증위 승인)

✓ 외부사업 적용 가능  
CDM 방법론 **211 cases**

※ Certification Committee Approval of 211  
CDM Methodologies in October 2016

✓ 외부사업 승인  
방법론 **99 cases**

As of March, 2025



#### External Business Approval Methodology ( including CDM )



Unit: cases







	Waste	Industry / Power Generation / Energy	building	transport	agriculture	Forestry
General (99 cases)	11 cases	47 items	10 items	13 cases	13 items	5 cases
CDM (211 cases)	26 items	153 items	6 cases	17 items	5 cases	4 cases

※ CDM projects are classified into sectoral scopes on the UNFCCC website and the domestic management agency operation sectors.



# Ref. Offset project Operating agency system

## ➤ 2016.6. introduction of Governing body's responsibility system for GHG ETS and offset project

<p><b>Ministry of Trade, Industry and Energy (Industry and Power Generation Sector)</b></p> <p> <b>한국에너지공단</b> KOREA ENERGY AGENCY</p> <ul style="list-style-type: none"> <li>• Fuel conversion business (excluding rural areas)</li> <li>• Renewable energy business (excluding rural areas)</li> <li>• Unused thermal energy utilization project</li> <li>• Efficiency improvement project (excluding building lighting)</li> <li>• Methodology of electricity and heat production business using hydrogen fuel cells, etc.</li> </ul> <p>❖ <b>Business Type : 47 cases</b></p>	<p><b>Ministry of Land, Infrastructure and Transport (Transportation)</b></p> <p> <b>한국교통안전공단</b> Korea Transportation Safety Authority</p> <ul style="list-style-type: none"> <li>• Bio CNG production and automotive fuel utilization business</li> <li>• Methodology for greenhouse gas reduction project by replacing low-emission vehicles</li> <li>• Methodology for fossil fuel reduction projects through the introduction of hydrogen electric vehicles</li> </ul> <p>❖ <b>Business Type : 9 cases</b></p>	<p><b>Ministry of Land, Infrastructure and Transport (building)</b></p> <p> <b>한국에너지공단</b> KOREA ENERGY AGENCY</p> <ul style="list-style-type: none"> <li>• Building High Efficiency Lighting Replacement Project</li> <li>• Project to replace building power consumption devices with high-efficiency devices</li> <li>• Methodology for electricity and power generation and use business etc.</li> </ul> <p>❖ <b>Business Type : 10 cases</b></p>
<p><b>Ministry of Agriculture, Food and Rural Affairs (Agriculture)</b></p> <p> <b>농업기술실용화재단</b> Foundation of Agri. Tech. Commercialization &amp; Transfer</p> <ul style="list-style-type: none"> <li>• Fuel Conversion Project (Rural)</li> <li>• Renewable energy business (rural)</li> <li>• Efficiency Improvement Project (Rural Area)</li> <li>• Biogas plant (rural)</li> <li>• Nitrogen fertilizer reduction project, etc.</li> </ul> <p>❖ <b>Business Type : 13 cases</b></p>	<p><b>Ministry of Agriculture, Food and Rural Affairs (Forestry)</b></p> <p> <b>한국임업진흥원</b> Korea Forestry Promotion Institute</p> <ul style="list-style-type: none"> <li>• Afforestation/reforestation project</li> <li>• Wood product utilization project</li> <li>• Vegetation restoration project</li> <li>• Methodology of afforestation project in forest disaster-stricken areas</li> <li>• Methodology of forest management project through renewal afforestation</li> </ul> <p>❖ <b>Business Type : 5 cases</b></p>	<p><b>Ministry of Environment (Waste)</b></p> <p> <b>한국환경공단</b> Korea Environment Corporation</p> <ul style="list-style-type: none"> <li>• Waste wood utilization thermal energy production business</li> <li>• Biogas utilization project in sewage treatment plant</li> <li>• Biomethane city gas supply chain injection project</li> <li>• Methodology for business of using pyrolysis refined oil produced using waste plastic as a raw material for petroleum refined products, etc.</li> </ul> <p>❖ <b>Business Type : 11 cases</b></p>

# CHAPTER 3

## Understanding FOREST CARBON OFFSET Scheme

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## 03 Comparison of forestry offset project and forest carbon offset Scheme

### 🌿 forestry offset project vs forest carbon offset Scheme

- In the case of the forest carbon offset system, government support is available for project design document, monitoring reports, verification costs, etc.

distinction	Forestry offset project	Forest carbon offset Scheme
Goal	<ul style="list-style-type: none"> <li>● Achieving the nation's greenhouse gas reduction target by utilizing market functions by introducing a system for trading greenhouse gas emissions rights</li> </ul>	<ul style="list-style-type: none"> <li>● Responding to climate change and realizing a low-carbon society by maintaining and enhancing the carbon absorption function of forests</li> </ul>
Related Laws	<ul style="list-style-type: none"> <li>● 「Act on the Allocation and Trading of Greenhouse Gas Emissions」(Emissions Trading Act, effective '15.1)</li> </ul>	<ul style="list-style-type: none"> <li>● 「Act on the Maintenance and Promotion of Carbon Sink Sources」(Carbon Sink Source Act, '13.2 effective)</li> </ul>
Related Departments	<ul style="list-style-type: none"> <li>● General organization : Ministry of Environment</li> <li>● Governing body : Ministry of Agriculture, Food and Rural Affairs (Forestry and Agriculture)</li> <li>● Operating agency : Korea Forestry Promotion Institute</li> </ul>	<ul style="list-style-type: none"> <li>● General organization : Korea Forest Service</li> <li>● Operating agency : Korea Forestry Promotion Institute</li> </ul>
Target Business Operator	<ul style="list-style-type: none"> <li>● Entities responsible for developing, implementing, and operating external projects</li> <li>※ As defined in Article 2(2) of the "guidelines on offset project feasibility assessment and reduction certification"</li> </ul>	<ul style="list-style-type: none"> <li>● Public institutions, private organizations, companies, citizens, etc.</li> <li>※ As defined in Article 3(4) of the "Carbon Sink Act"</li> </ul>
Transaction type	<ul style="list-style-type: none"> <li>● Market transaction (based on Korea Exchange)</li> <li>● Off-Market Transaction</li> </ul>	<ul style="list-style-type: none"> <li>● Brokerage Transaction (based on Forest Carbon Registry)</li> <li>● Off-Market Transaction</li> </ul>

Q&A

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**Thank you for listening.**

