KEY TAKEAWAYS OF COP29
AND KOREA'S ENERGY POLICY

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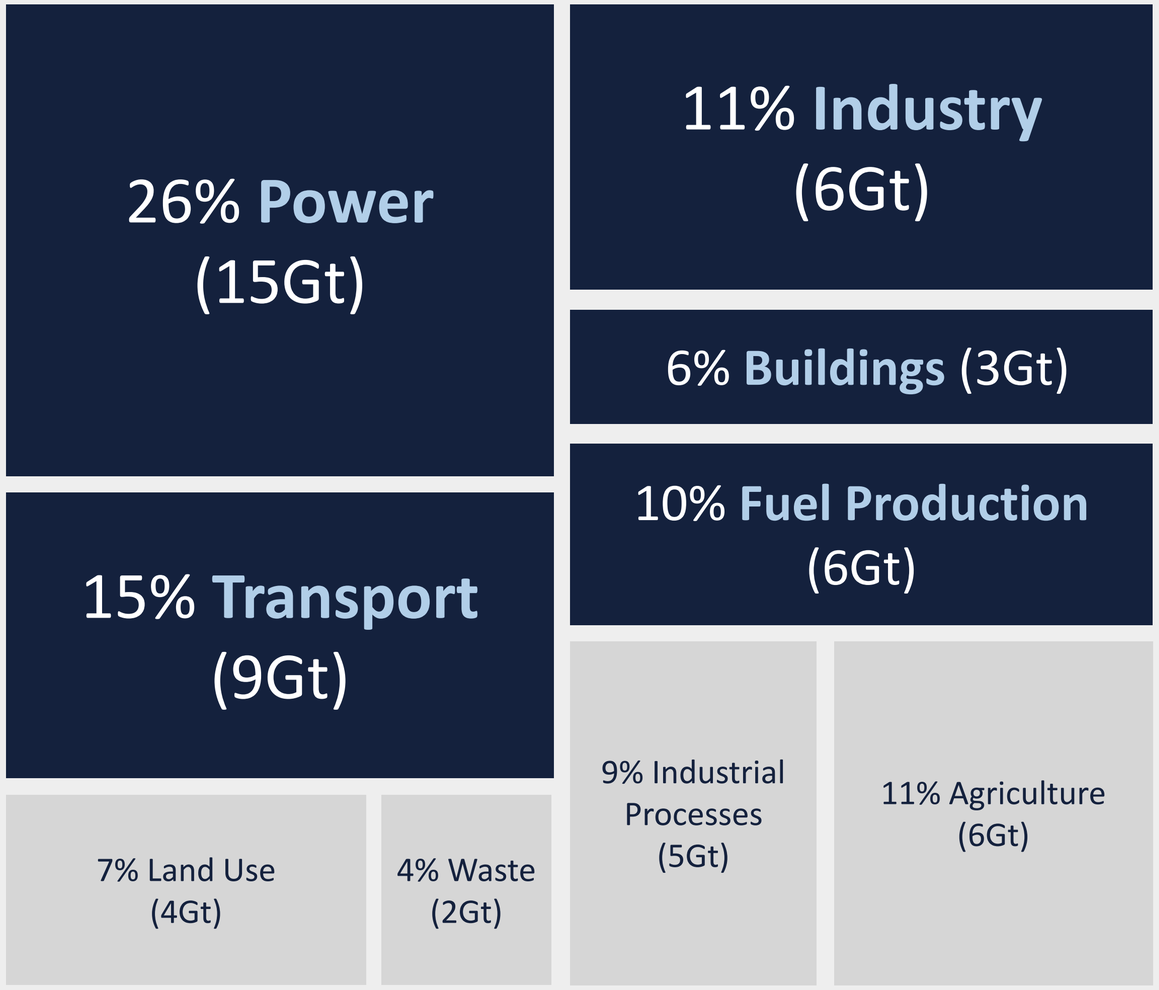
WHY DO WE NEED TO DECARBONIZE ENERGY



Source: UN-Emission Gap Report 2024

Nearly 70% of all GHG emissions come from **Energy**

Recurring ideas

- Phase out of fossil fuels
- Expansion of renewable energies
- Improving energy efficiency
- Methane emission reduction
- Financing and equitable transition

ENERGY RELATED DISCUSSION AT PAST COPS

COP3 Kyoto, 1997

The Kyoto Protocol established binding emissions reduction **targets for industrialized nations**, focusing heavily on **energy-related CO_2 emissions.**

COP17 Durban, 2011

Green Climate Fund (GCF) launched, aimed at financing **clean energy projects** in developing countries.

COP21 Paris, 2015

The landmark agreement set a goal to **limit warming to 1.5–2°C**, with **energy system decarbonization** central to achieving these targets. Countries submitted **Nationally Determined Contributions (NDCs)**, many focusing on renewable energy and energy efficiency.

COP26 Glasgow, 2021

Coal Phase-Out Commitment
Global **Methane Pledge**
Climate **Finance for Energy**
$100 billion annual commitment reaffirmed, with **funding for renewable energy projects** in developing nations.

COP27 SSH, 2022

Just Energy Transition Partnerships (JETPs)
South Africa's JETP was expanded, with additional partnerships for countries like Indonesia and Vietnam.
Focused on funding the **coal phase-out** while ensuring equitable transitions.

COP28 Dubai, 2023

Global Renewable Energy Target Proposal
Discussions began on setting a global target to **triple renewable energy capacity and double energy efficiency by 2030** laying the groundwork for the COP28 pledge.

KEY RESULTS OF COP28 & COP29

- Completion of Global Stocktake (GST) → Transitioning away from fossil fuels (phase out of unabated coal)
- Tripling renewable energy capacity and doubling energy efficiency by 2030

Accelerating Renewables and Grids
- Global Energy Storage and Grids Pledge: Tripling renewable capacity by 2030.
- TeraMed Initiative: 1 TW renewable capacity by 2030; $700B investment.
- No More Coal in Latin America: Regional commitment to phase out coal.

Doubling Energy Efficiency
- Latin America and Africa Programs: Efficiency targets across key sectors.
- Regional strategies to improve appliances, buildings, transport, and agriculture.

Advancing Hydrogen and Hydropower
- Hydrogen Action Declaration: Scaling clean hydrogen production globally.
- Hydro4NetZero Initiative: Modernizing hydropower in Latin America.

Collaboration and Policy
- Utilities for Net Zero Alliance: Doubling membership and investments.
- Breakthrough Agenda: Priority actions for sectoral decarbonization.
- Call for removal of trade barriers to clean energy technologies.

WHAT TO EXPECT FOR COP30

Belém, Brazil: November, 10–21, 2025

Nuclear energy as a key decarbonization strategy

Building momentum on COP28, **nuclear energy has been recognized as an essential part** of the global decarbonization strategy to **complement renewables**.

Apart from traditional nuclear power players such as the USA, UK, Japan, France, and Korea, many countries from Central and Eastern Europe are joining the initiative to finance and invest in nuclear projects.

Brazil’s stance on fossil fuels:

Ana Toni, Climate Envoy of Brazil has stated that **“Brazil will not shy away from addressing fossil fuels at COP30,”** despite being a major oil producer.

COP30 is the third consecutive UN climate conference hosted in a country planning to expand its fossil fuel production (UAE → Azerbaijan → Brazil).

While fossil fuel phase out discussions have been somewhat avoided, Brazil has deliberately stated that it will highlight this aspect in COP30.

CARBON FREE ENERGY INITIATIVE

Timeline

UNGA 78

CF Alliance formed

20 member firms including Samsung, SK Hynix, Hyundai, etc.

COP28 & IEA Declaration

Need for CFE acknowledged

Support from 10 countries

Saudi, UK, Japan, UAE, etc.

Fatih Birol, IEA E.D. Endorsed global CFE adoption.

Launch of CFE Global Working Group (2024.10.)

Source: Korean Ministry of Trade, Industry and Energy

1. Imperative

- Major countries expanding on Carbon-Free Energy (CFE) like renewables, nuclear, and hydrogen.
- **EU:** ESG disclosure starting 2025, **Japan & UK:** Non-fossil fuel energy mandates, contract-for-difference for CFE

2. Limitations to RE100

- Only recognizes renewable energy (high costs, limited scope, technology-specific).
- Focuses only on Scope 2 (energy use), excluding Scope 1 (industrial processes)

3. Carbon Free Energy Initiative (CFEI)

- Covers Scope 1 & 2 emissions.
- Includes all CFE sources (nuclear, hydrogen)

Key Elements:

- CFE standards (verification, scope)
- Public-private alliance (CFA)

Strengths of CFEI

Tech-neutral: All CFE sources, not just renewables.
Encourages the gradual adoption of 24/7 CFE.
Scalable, cost-effective for all nations.

4. Current Progress

CFEI introduced at UNGA 78 (2023).

- CF Alliance launched (Oct 2023), led by ex-IPCC Chair
- COP28 Decisions, IEA declarations recognized the necessity to deploy CFE
- Support from 10 countries (e.g., Saudi, UK, Japan, UAE)
- CFE Global Working Group launched at the 15th CEM (2024.10.)

Future Plans

- Develop CFE standards through global task force (2024+)
- Raise global awareness at APEC, G20, COP29 (2024).
- Industry and government collaboration to expand CFE.

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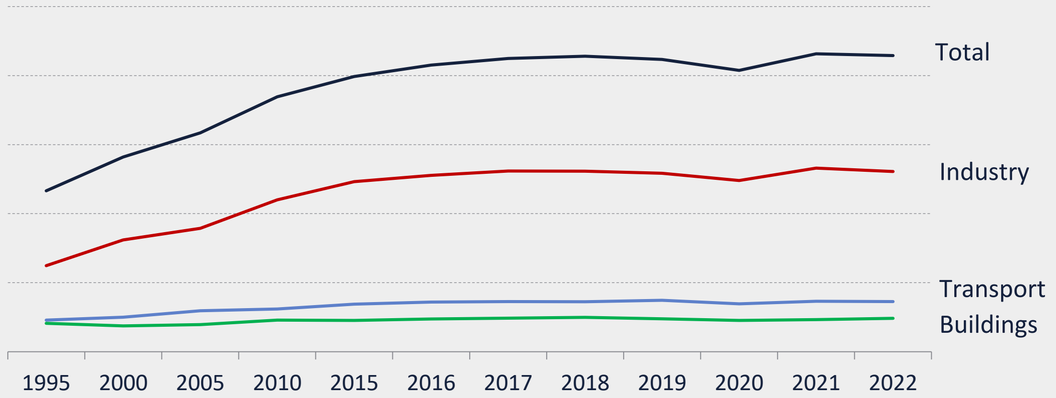
STATUS QUO ON ENERGY

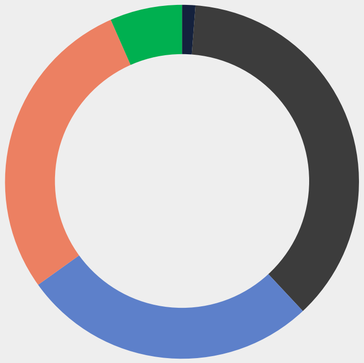
Characteristics of Korea's Climate Action

- High economic reliance on industrial sector makes it **difficult to decarbonize**, especially given hard-to-abate sectors (i.e. steel & cement)
- The **high import reliance** on foreign resources create great imperative for Korea to transition to renewables, but **less-optimal geography, passive public support, and limited grid capacity** is making such transition difficult.
- **11th Basic Plan of Long-Term Electricity Supply and Demand** currently under development (current draft open to public)

Sectoral Energy Consumption between 1995-2022

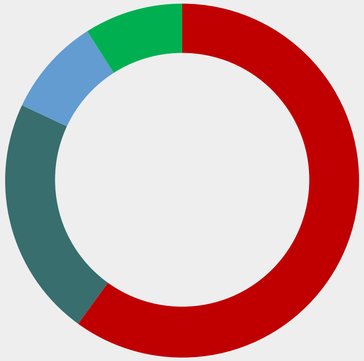


Secondary Energy Production Per Resource



- Crude Oil **1.2%**
- Coal **36.3%**
- Natural Gas **26.7%**
- Nuclear **27.9%**
- Renewables **6.5%**
- Other **0.7%**

Sectoral Energy Consumption **(approximated)**



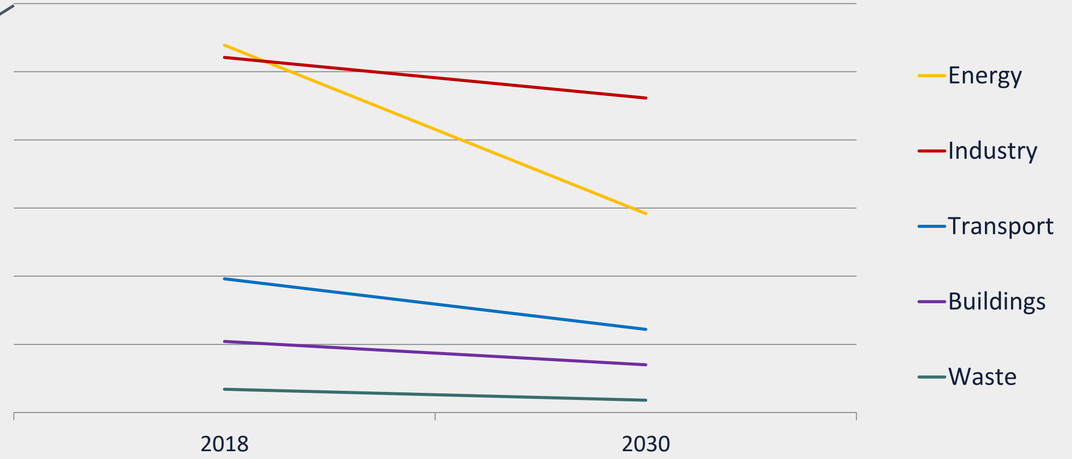
- Industry **60%**
- Transport **22%**
- Commercial **9%**
- Household **9%**
- \+ Buildings **18%**

Source: 2050 Carbon Neutrality and Green Growth Commission

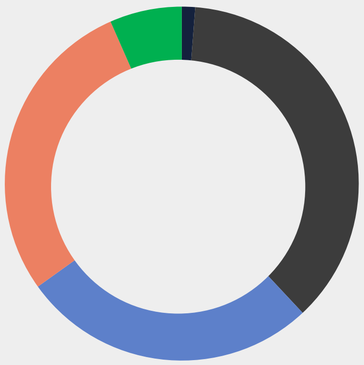
ENERGY TRANSITION FOR 2030 NDC

- Baseline Emissions: **727.6 $MtCO_2e$ in 2018**
- Target Emissions: **436.6 $MtCO_2e$ by 2030**

	2018	2030	Reduction
Energy	269.6	145.9	45.9%
Industry	260.5	230.7	11.4%
Building	52.1	35.0	32.8%
Transport	98.1	61.0	37.8%
Waste	17.1	9.1	46.8%



Current energy mix



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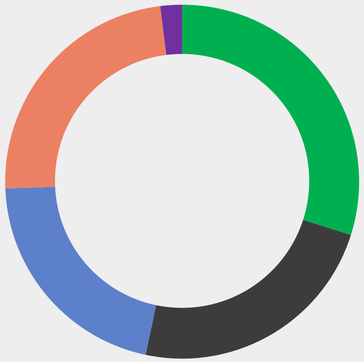
- Coal **36.3%**
- Natural Gas **26.7%**
- Nuclear **27.9%**
- Renewables **6.5%**
- Other **0.7%**

64% reliance on fossil fuels

Energy mix based on 2030 NDC



- Renewables **30.2%**
- Coal **23.7%**
- Natural Gas **21.3%**
- Nuclear **23.9%**
- Other **1%**

45% reliance on fossil fuels

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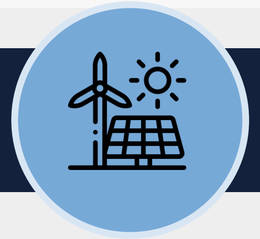
DOMESTIC ENERGY POLICIES



Renewable Energy

Market Mechanisms

- Feed-in-tariffs until 2011
- Renewable Portfolio Standards since 2012

Regulatory Support

- **Incentives for Direct Power Purchase Agreements (PPA):** Subsidizing transmission network fees
- Legislative Frameworks for Offshore Wind: **Offshore Wind Special Act** (Under legislation) to simplify complex approval processes, ensuring faster project development.

Nuclear Energy

Korea's Nuclear Policy

- Construction of Shin-Hanul Units 3 & 4.
- Ambition to decarbonization through nuclear energy

Development of Indigenous Nuclear Technologies

- Focus on Korea's proprietary reactors: APR1400, SMART (small reactors), and advanced SMRs.
- Exploring export opportunities (Recent deals with Czech Republic)

Hydrogen Economy

Hydrogen Economy Committee

- Launched in 2020, led by the Prime Minister.

Hydrogen Economy Promotion and Safety Management Act

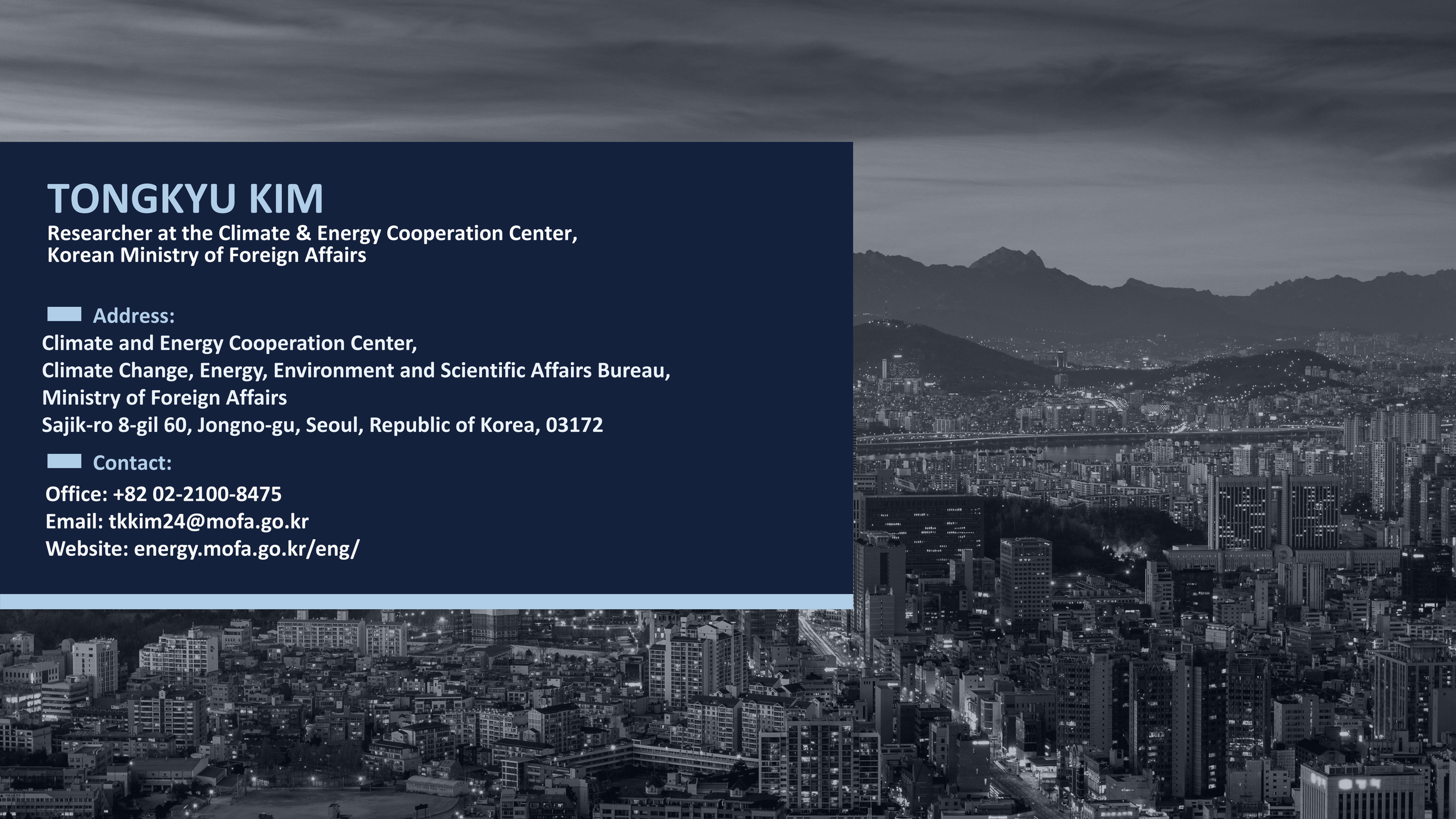
- First comprehensive hydrogen law enacted 2021.

Clean Hydrogen Portfolio Standards (CHPS)

- Establishment of the world's first **Clean Hydrogen Bidding Market** (2024)

Hydrogen Safety Roadmap 2.0

- Announced in 2024 to enhance safety across the hydrogen value chain.



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ABOUT KOREA

51,940,000

Total Population

$3.2 Trillion

Gross Domestic Production

213.7M TOE

Total Energy Use per year

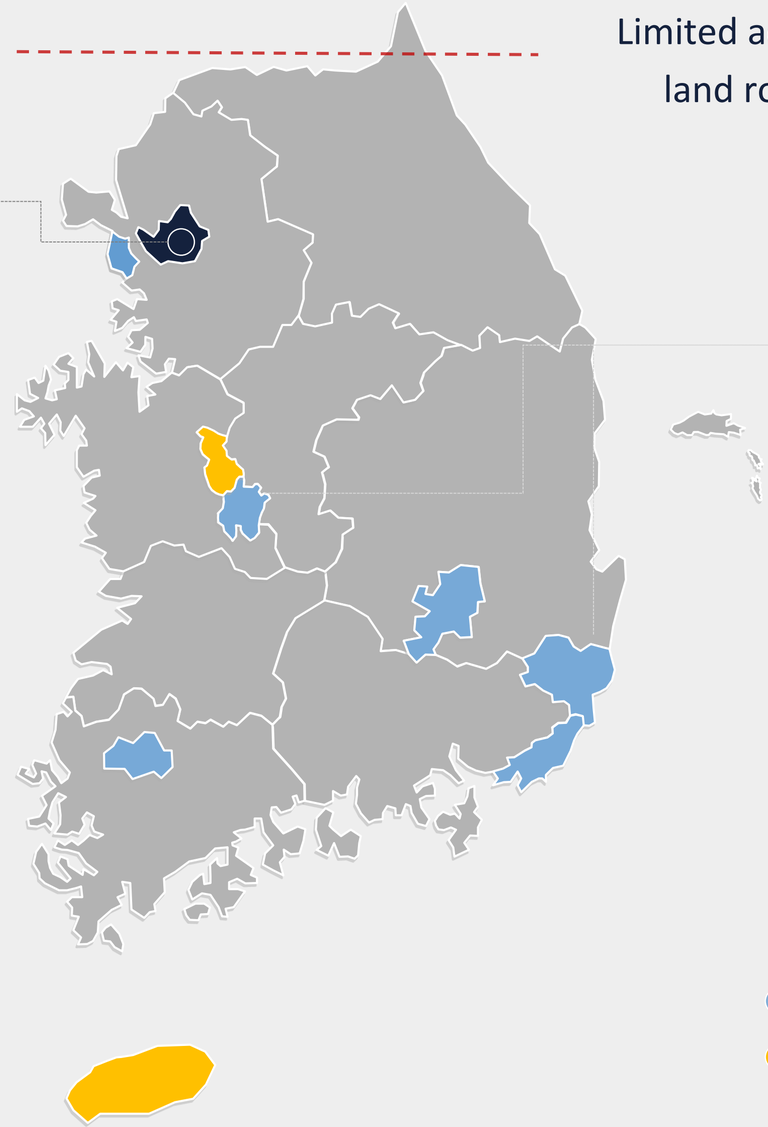
Seoul metropolitant

26,190,000 people

13.2M TOE

50.84% of total population

Total energy use: 5.6%



Urbanization

20,151,000 people

Other urban regions

Over 90% of the population
live in urban regions

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ABOUT KOREA

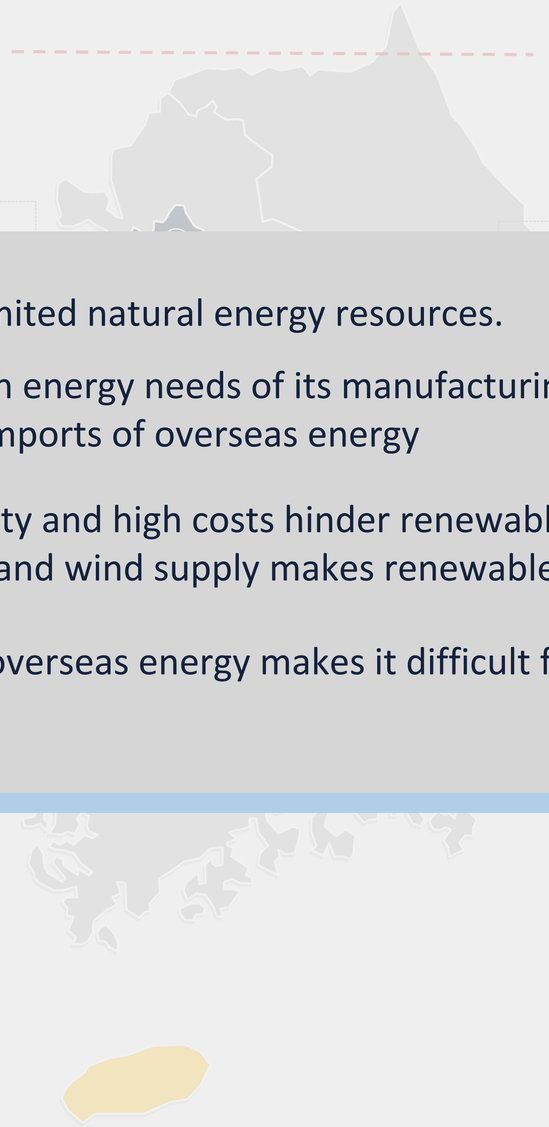
51,940,000

$3

Gross

213.7M TOE

Total Energy Use per year



8th Energy Consumer

Statista, 2023

1st China
2nd USA
3rd India
4th Russia
5th Japan
6th Canada
7th Brazil

Korea is home to very limited natural energy resources.

However, due to the high energy needs of its manufacturing industry,
Korea relies heavily on imports of overseas energy

- Limited land availability and high costs hinder renewable energy projects
- Sub-optimal sunlight and wind supply makes renewable energy less viable

→ High dependency on overseas energy makes it difficult for Korea to plan out domestic energy policies

APPENDIX: KOREA'S COMMITMENT TO CLIMATE CHANGE ACTION

2030 NDC

291.0MT

Emission reductions by 2030 compared to 2018 levels

40%

Reduction compared to 2018 levels

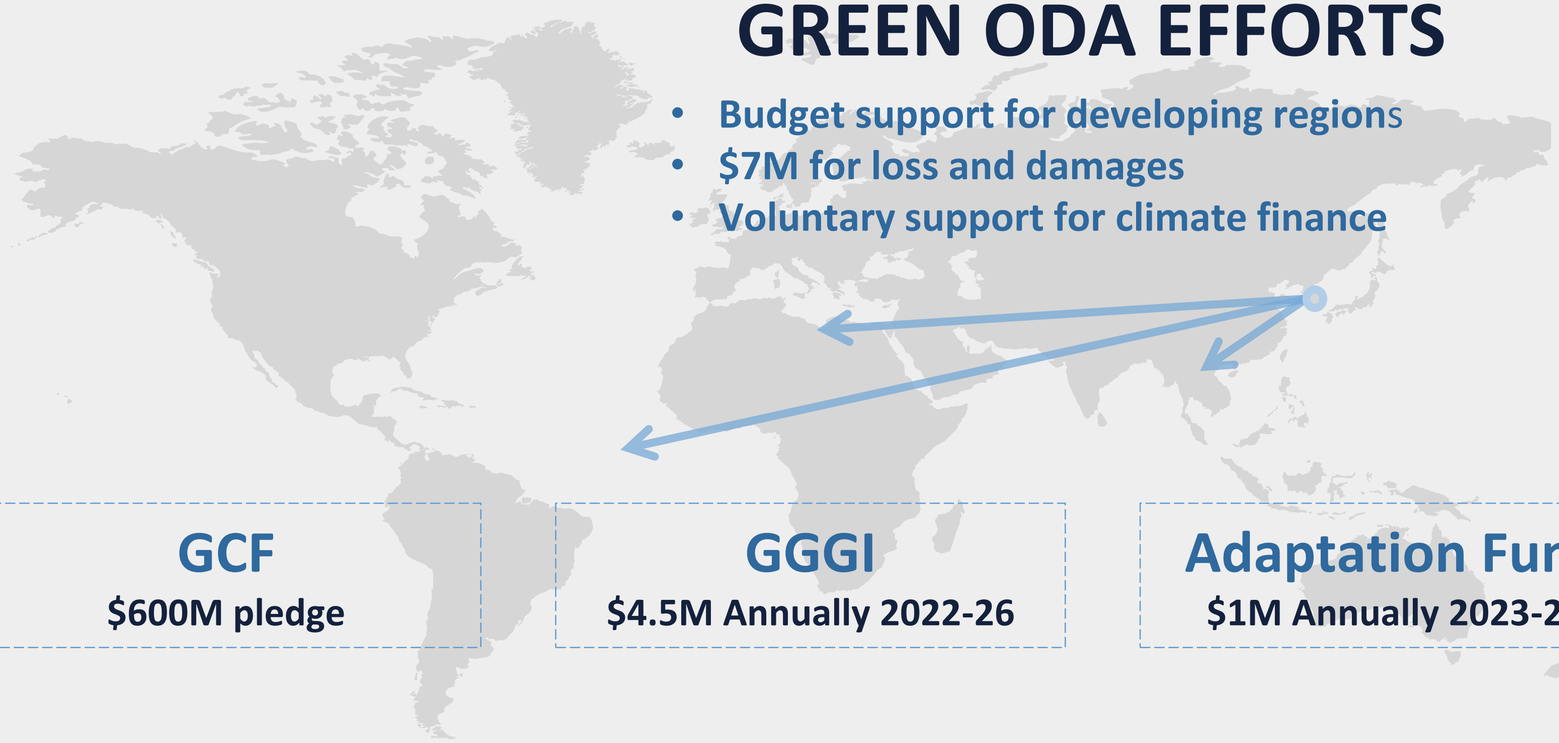
Consecutive reduction

Two year consecutive reduction exceeding target goals (2022-23)

- On December 10, 2020 Korea announced its national goal to achieve **carbon neutrality by 2050**.
- Korea aims to cut on emission from **727.6MT (2018) → 436.6Mt (2030)**
- Major areas include: Δ Transition, Δ Industry, Δ Buildings, Δ Transpiration, Δ Agriculture, Δ Waste, Δ Hydrogen, Δ Carbon sinks, Δ CCUS Δ Internationally Transferred Mitigation Outcome (ITMO)

GREEN ODA EFFORTS

- **Budget support for developing regions**
- **$7M for loss and damages**
- **Voluntary support for climate finance**



GCF
$600M pledge

GGGI
$4.5M Annually 2022-26

Adaptation Fund
$1M Annually 2023-25

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APPENDIX: GRID CAPACITY IN KOREA

144,421MW

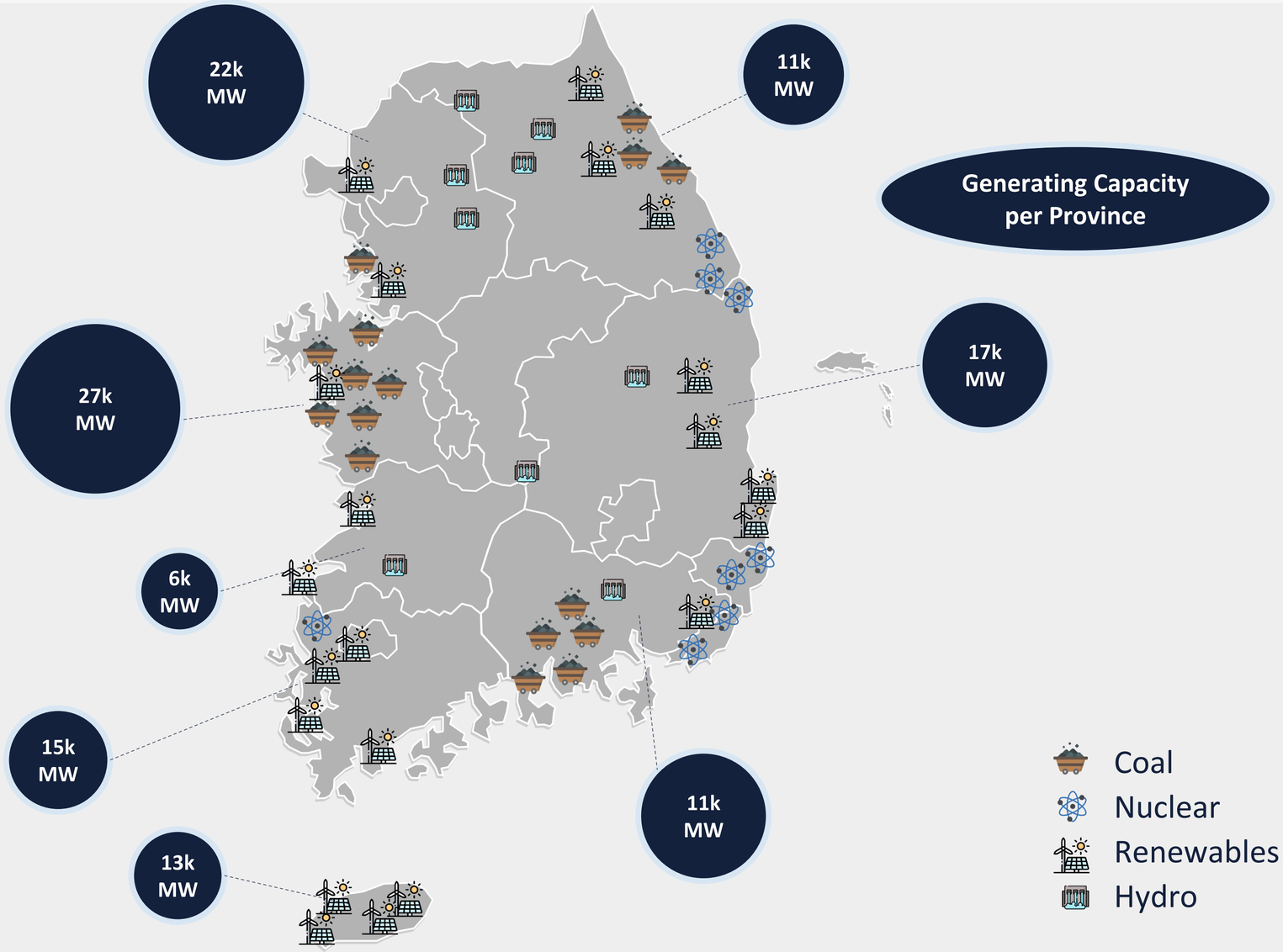
Total Installed Generating Capacity

31,396MW

Generating Capacity from Renewable Sources

64%

Reliance on Fossil Fuels to Support Our Grid



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APPENDIX: CARBON FREE ENERGY PROJECTS

$61B

Green New Deal Investment for carbon free energies (CFE)

31,396MW → 52,000MW

Generating Capacity from Renewable Sources

CEF Technology

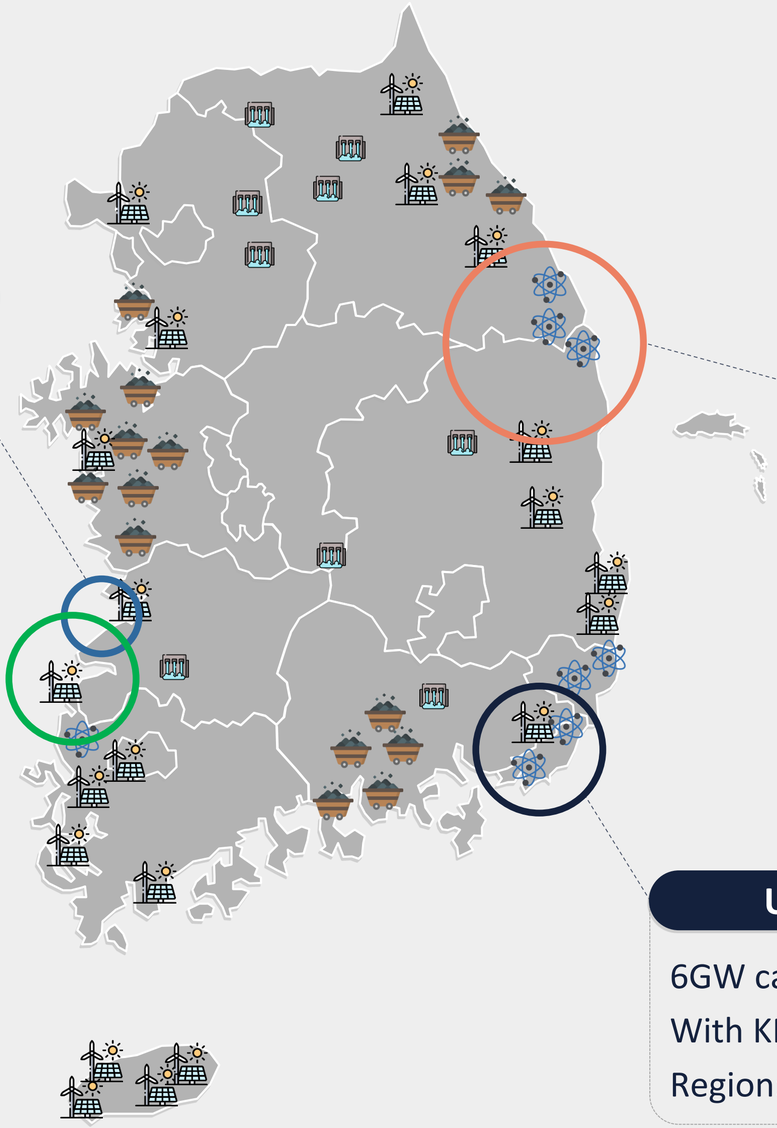
R&D for CCS, ESS , EV deployment(4.5M by 2030)

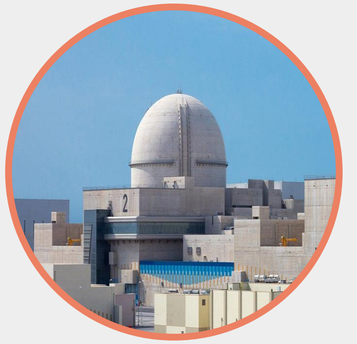
First Commercial Scale Electrolysis

Jeonbuk Technopark

Offshore Wind Power

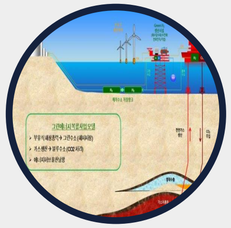
4GW capacity
Construction cost: $2B
Region: Boryeong, Taean, Dangjin





Shin-Hanul 3 & 4

100 GW each
Construction cost: $1.17B
Period: 2023-2033.10



Ulsan Offshore Wind

6GW capacity
With KNOC, Hyundai, ACE E&T
Region: Ulsan

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