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KGID 2025 Green Growth: The Path to Sustainable Jobs

Korea's Nuclear Industry: From Domestic Growth to Global Leadership

Seung-Yeol, Lim, Vice President of Overseas Business Development, KHNP

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KOREA HYDRO & NUCLEAR POWER CO., LTD

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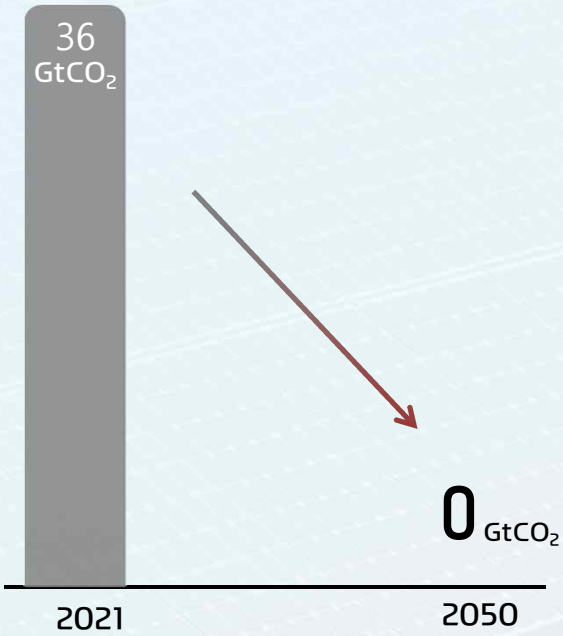
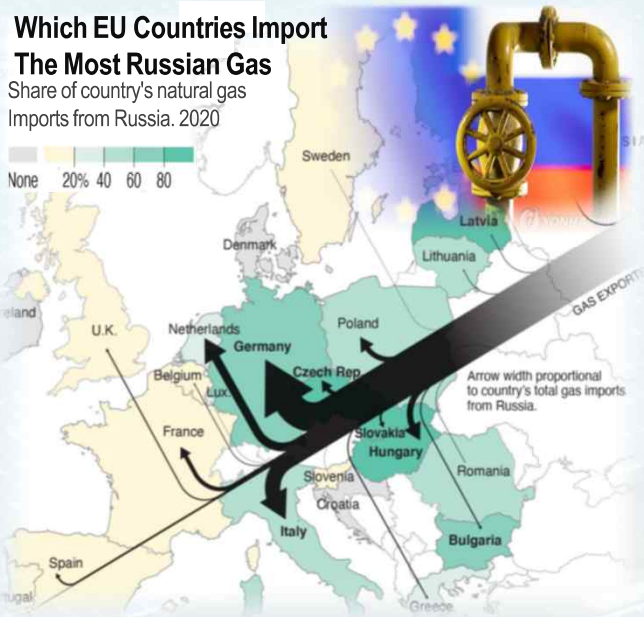
Electricity Demand Surge

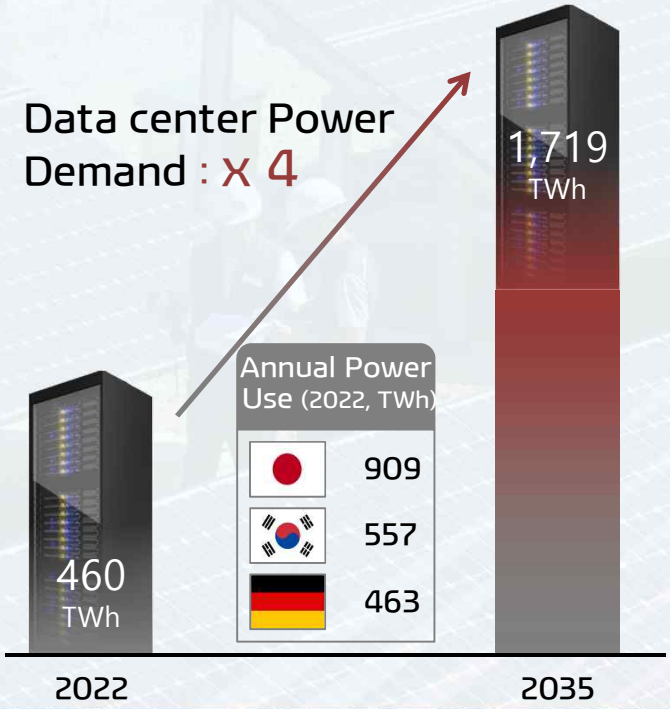
Net-Zero Target for 2050



Russia-Ukraine War



Big Tech is finding Enough Energy



*Source: IEA_AI and Energy(2025), IAEA(2024)

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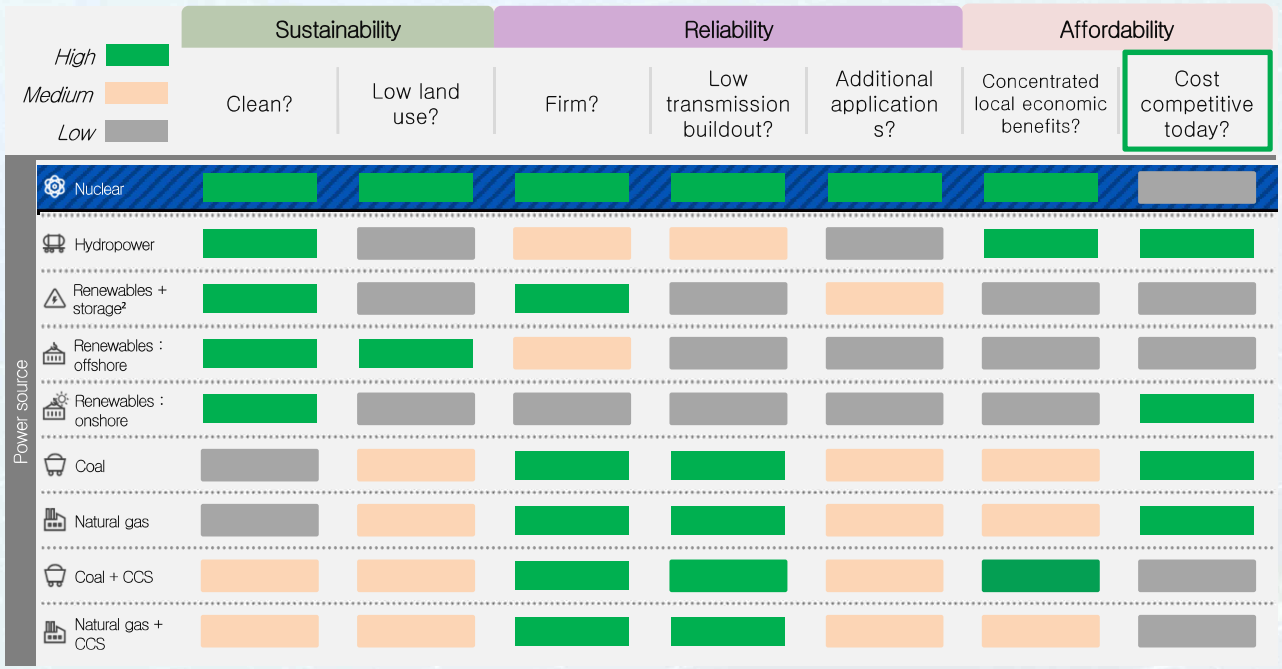
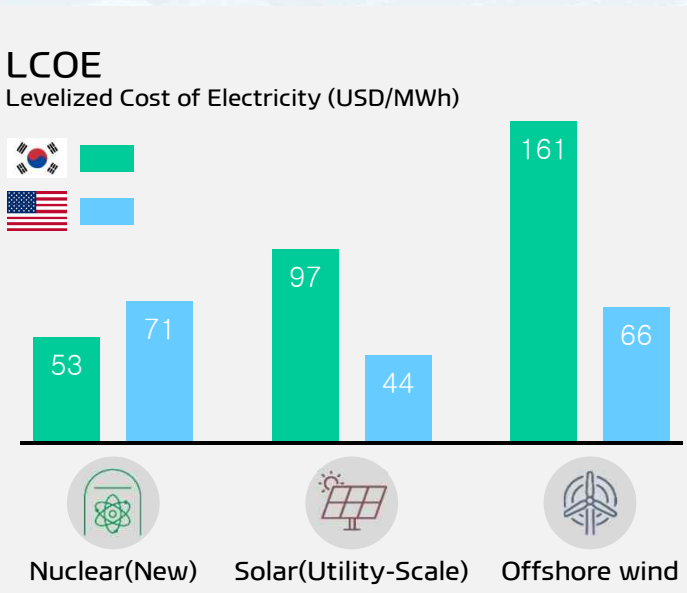
National Energy Mix

The Most Realistic and Balanced Option : Nuclear

U.S DOE Identifies Nuclear as the Most Balanced Energy Source



Economic Competitiveness by E-Policy



* Not include subsidies and system costs for renewables/ 7% discount rate

* Source : Pathways to Commercial Liftoff : Advanced Nuclear(DOE, 2023), Projected Costs of Generating Electricity(NEA, 2020), WKF(2020), Reuter(March, 2024)

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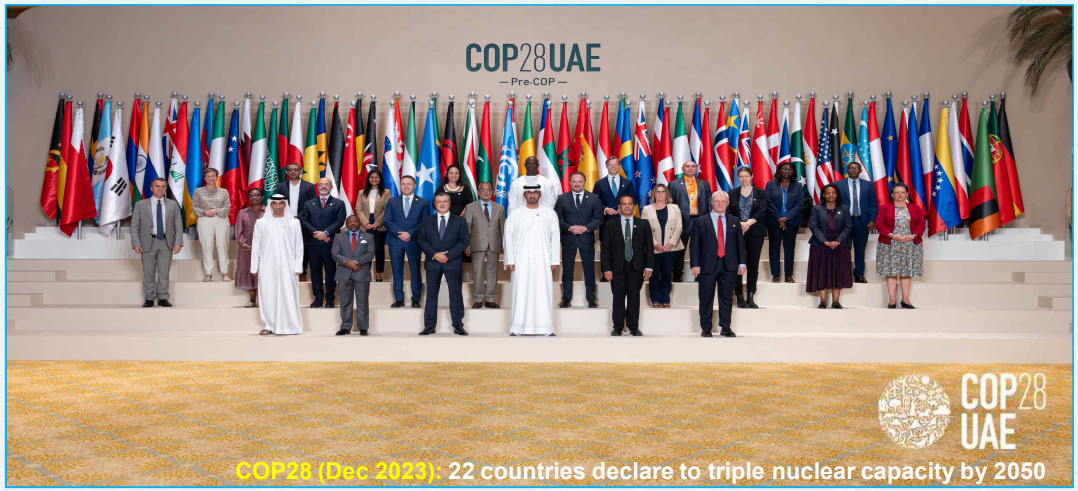
Nuclear Energy's Comeback



COP28 (Dec 2023): 22 countries declare to triple nuclear capacity by 2050

Nuclear Energy Summit (Mar 2024): 38 countries, including the EU, declare nuclear expansion

NEA Ministerial Meeting (Sep 2024): Declare international cooperation to expand nuclear power

14 Global Financial Institutions & Banks (Sep 2024): Declare support for nuclear expansion

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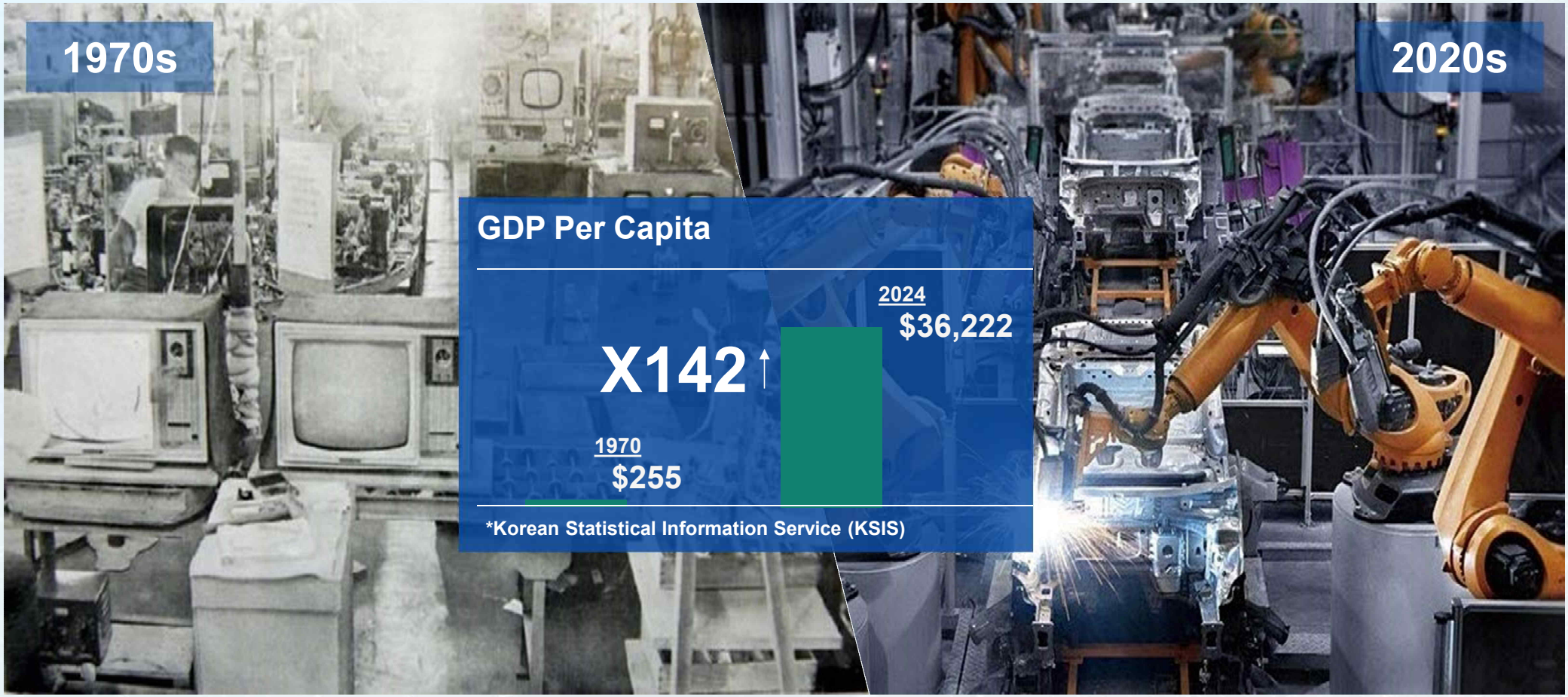
Korea's Success



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Korea's Nuclear Energy Success

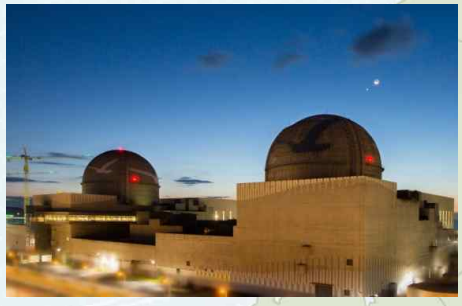
Hanul Nuclear Power Site

Number of Units Operated 8 Units
Installed Capacity 8,700MW

Wolsong Nuclear Power Site

5 Units
4,100MW

Saeul Nuclear Power Site



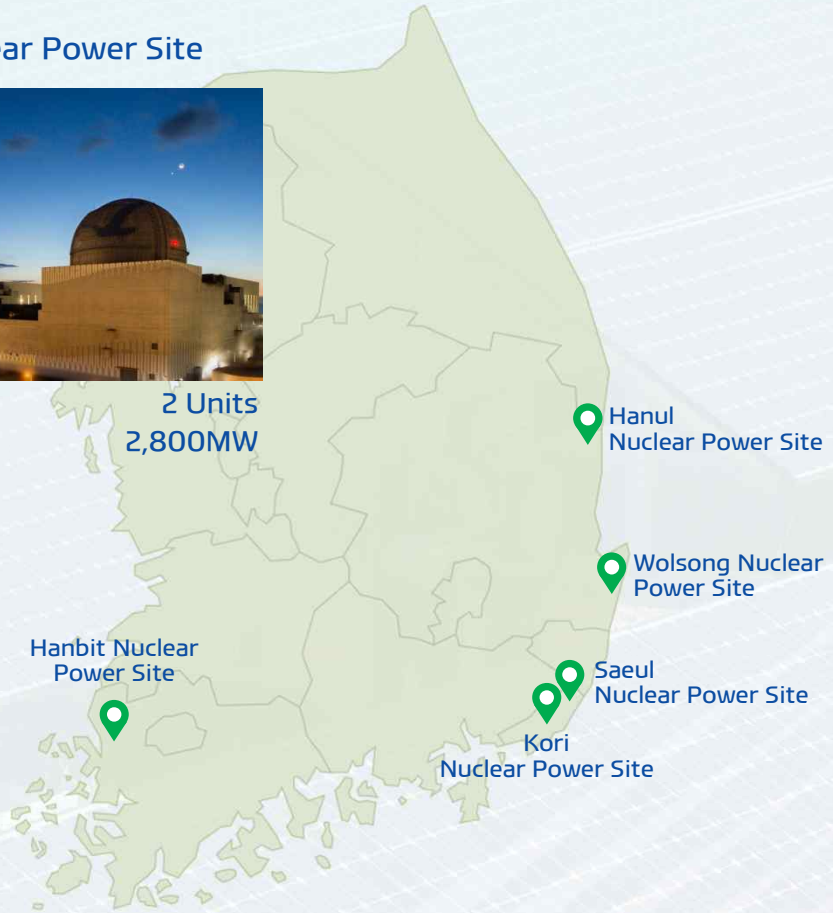
2 Units
2,800MW

Kori Nuclear Power Site

5 Units
4,550MW

Hanbit Nuclear Power Site

6 Units
5,900MW



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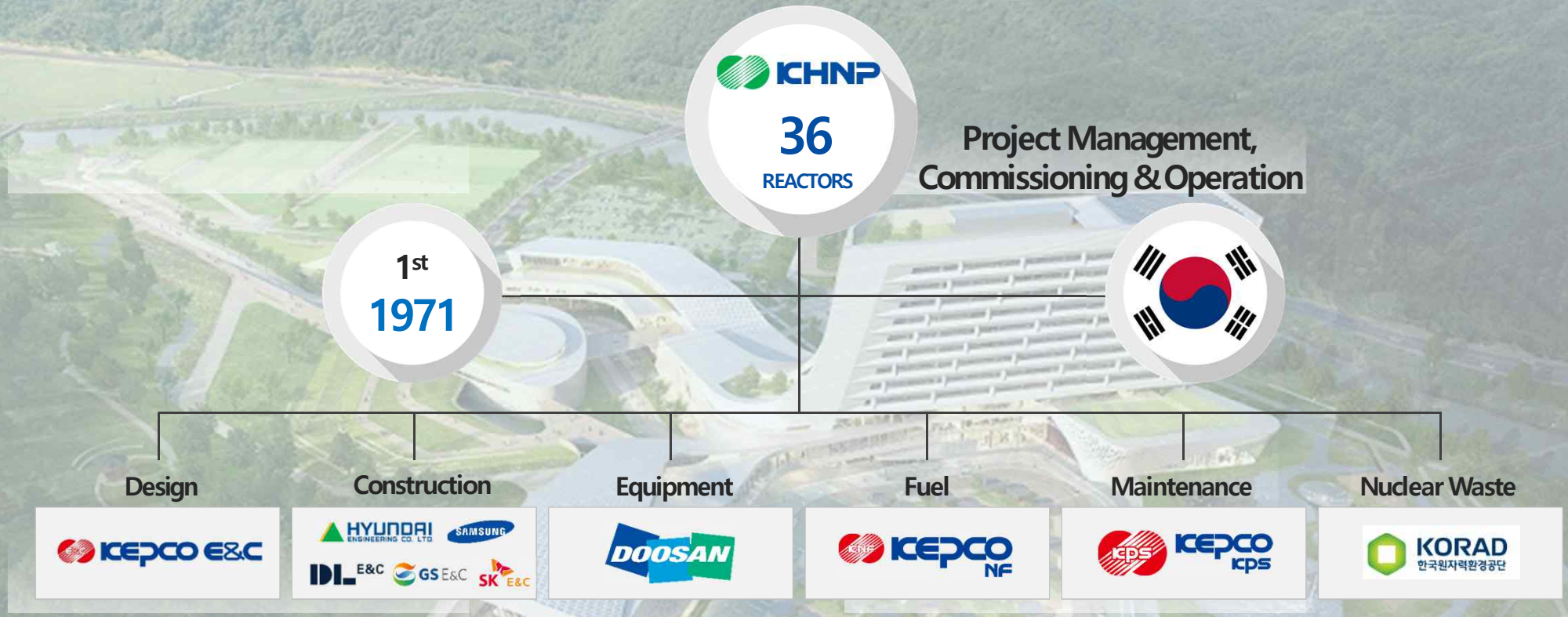
KHNP's Leadership and Team Korea



Overseas Business

UAE Barakah NPP

- The first-ever nuclear power in the Middle East
- 4 units of APR1400 (Total 5,600MW) Unit #1 (2021), #2 (2022), #3 (2023), #4 (2024)

The only case among OECD countries since 2009 where a nuclear power plant export project has been successfully completed construction on time.

Egypt

- Supply of equipment, construction of turbine buildings, etc. (2022-2029)

Second Part of El-Dabaa Project in Egypt

Romania

- Construction(retube, refurb), infrastructure and project management(2025-2030)

Refurbishment Project in Romania

Dukovany NPP in Czech Republic

- Czech New Build: Final contract signed (June 2025)
- 2 units APR1000 (2029 construction starts)

Reaffirming Korea's nuclear edge: 16 years post-UAE win

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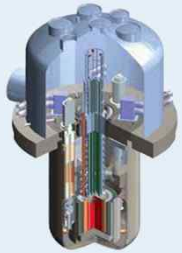
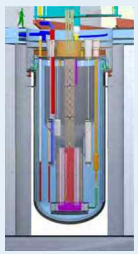
SMRs are emerging as Game Changer

Gen 3.5 Developing **Gen 4 Partnership & Parallel R&D (Target: 2040)**

	Integral PWR	SFR (Low fuel consumption)			MSR	HTGR
						
	i-SMR	Natrium	ARC-100	Aurora	CMSR	Xe-100
Scale	170MW x 4	345MW	100MW	15-100MW	100MW x 2~8	80MW x 4
FOAK	Early 2030	2030	2030	2031	2033	2028
Outlet Temp	~300℃		500~550℃		600~700℃	700℃ ~

Power generation(hydrogen electrolysis) + heat/desalination

+ Oil refining/ Petrochemicals/ Steel (SMR-base hydrogen)/ Ammonia production

+Ship

+ Cement/ Glass/ Steel

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Built on proven technology

innovative SMR (i-SMR)

SMRs in a Market of Opportunity without Standards

Over 127 SMRs in Global Development Race

Development Status of i-SMR

- Target Goal : SDA approval by 2028, FOAK operation in early 2030s

- Proprietary SMR Development & Accelerating Business Partnerships

* 출처 : The NEA Small Modular Reactor DASHBOARD (2025), Advanced in Small Modular Reactor Technology Development(2022), IAEA

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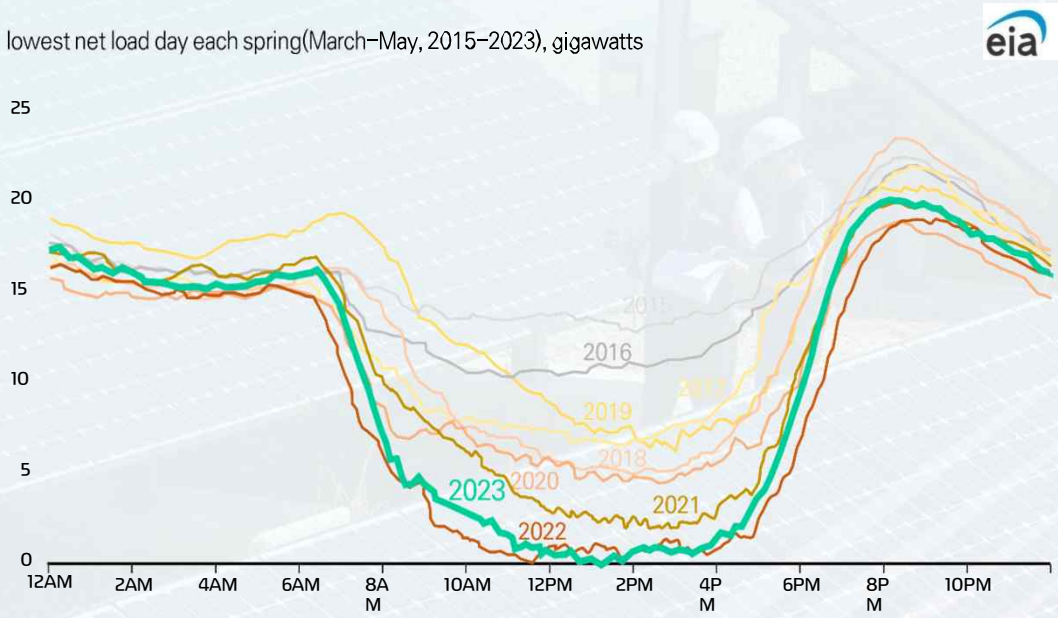
Renewable alone?

Renewable need partners!

Flexible power control

Coexisting power: SMRs & Renewable Energy

Volatile renewable energy



* CAISO statistics(2024), GridStatus(2024), California Energy Commission, energy news platform(2021.3), California Gov(2024), eia.org(2024)

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SMRs replace large, centralized plants with scalable, flexible and locally deployable solutions

A New Nuclear Business Model

Large-scale NPP	SMR
Large-scale capital investment	Smaller capital investment
Limited revenue source	Diverse revenue models (e.g. district heating, hydrogen production)
Long construction period	Reduced construction period
Limited public acceptance	Enhanced safety & public acceptance
Limited ownership	Diverse ownership

From traditional state-led model → Hybrid PPP & Private-led investment model

KHNP – And Beyond