



**Institute for Energy Economics
and Financial Analysis**

Role of South Korea in Asia's Energy Transition

IEEFA Energy Finance 2024

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Role of South Korea in Asia's Energy Transition



4th largest economy in Asia



A member of **G20** and **OECD**



Global leader in **Semiconductors**
(2nd largest producer, 17.7% M/S in 2022)



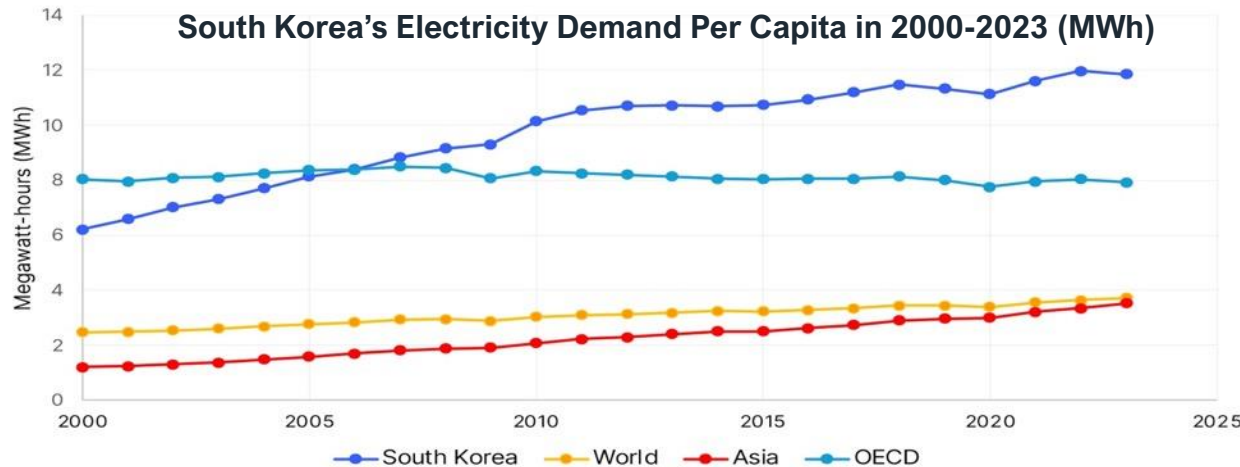
Shipbuilding Powerhouse
(62% of global orders in 2023)



4th largest R&D giant in the world
(4.8% of GDP)

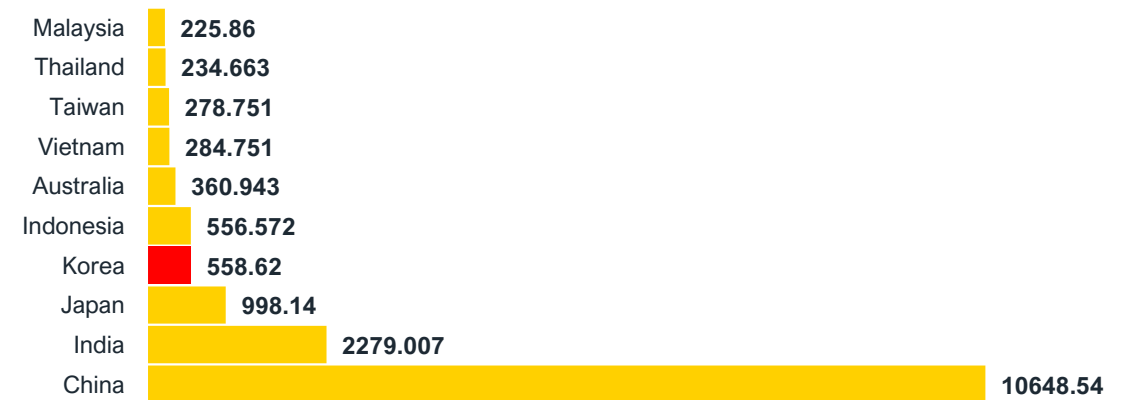


4th largest CO2 emitter in Asia



Source: Ember, IEA

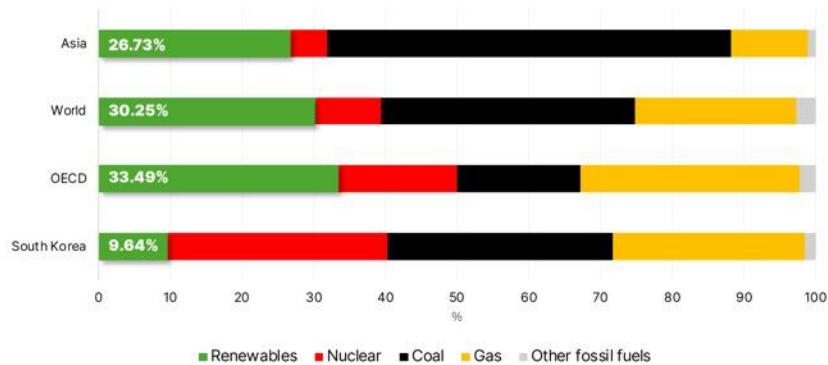
CO2 Emissions from fuel combustion in 2021 (Mt CO2)



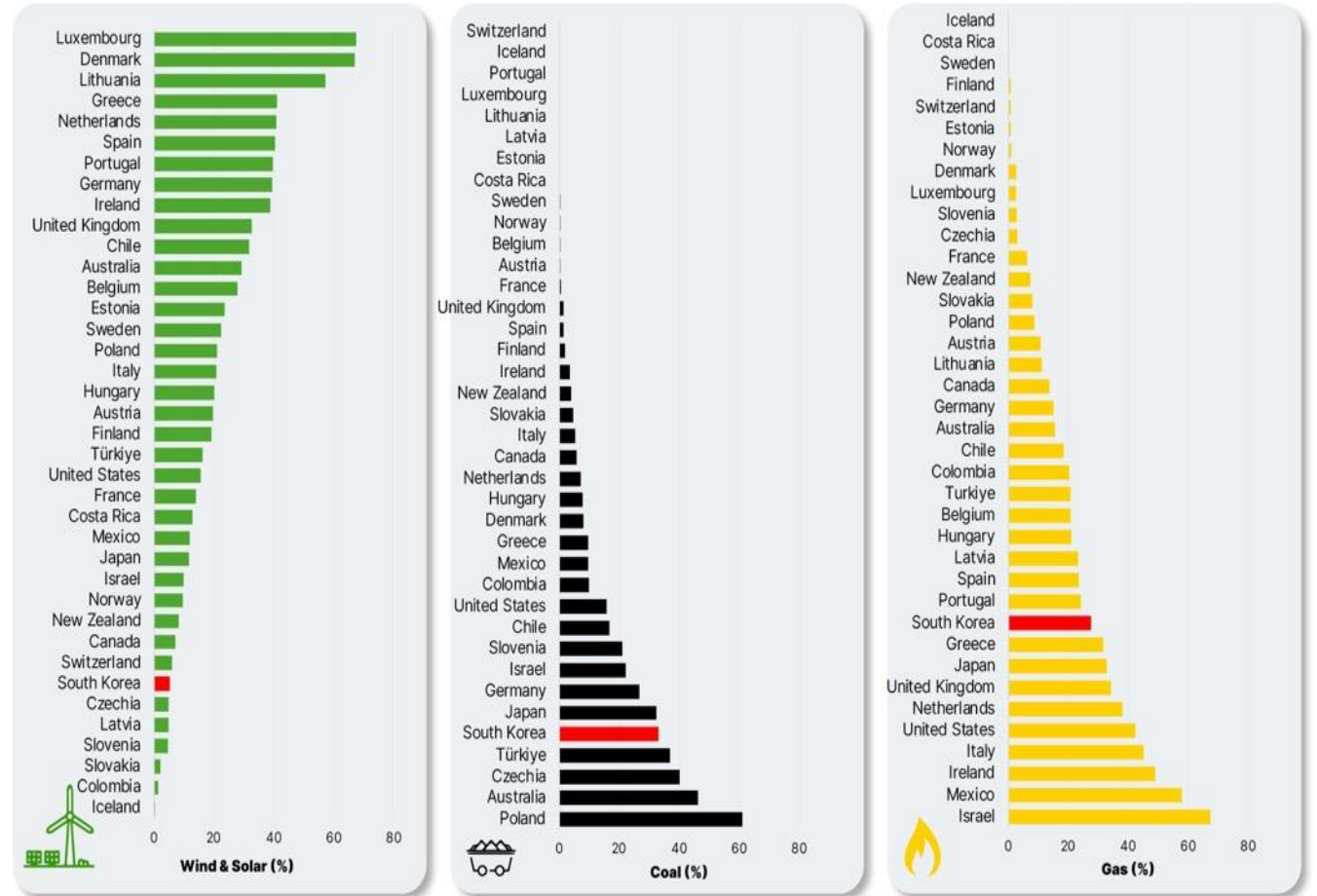
South Korea's Lagging RE Deployment



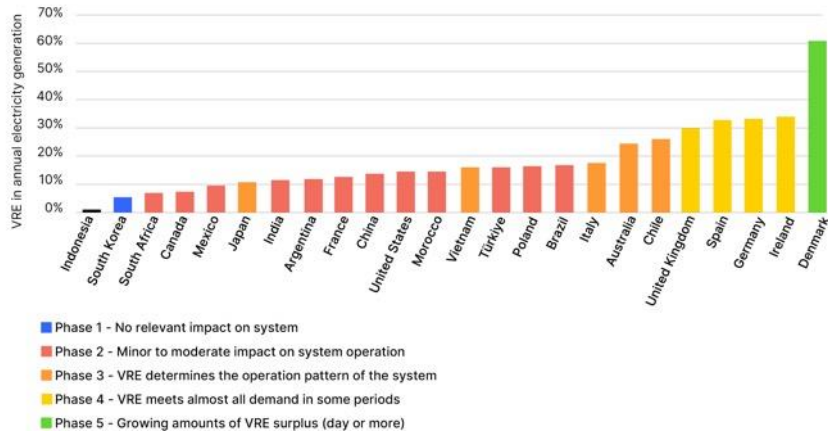
South Korea's Renewable Electricity in Power Mix in 2023 (%)



South Korea's Wind/Solar, Coal and Gas Power Rankings in OECD in 2023 (%)

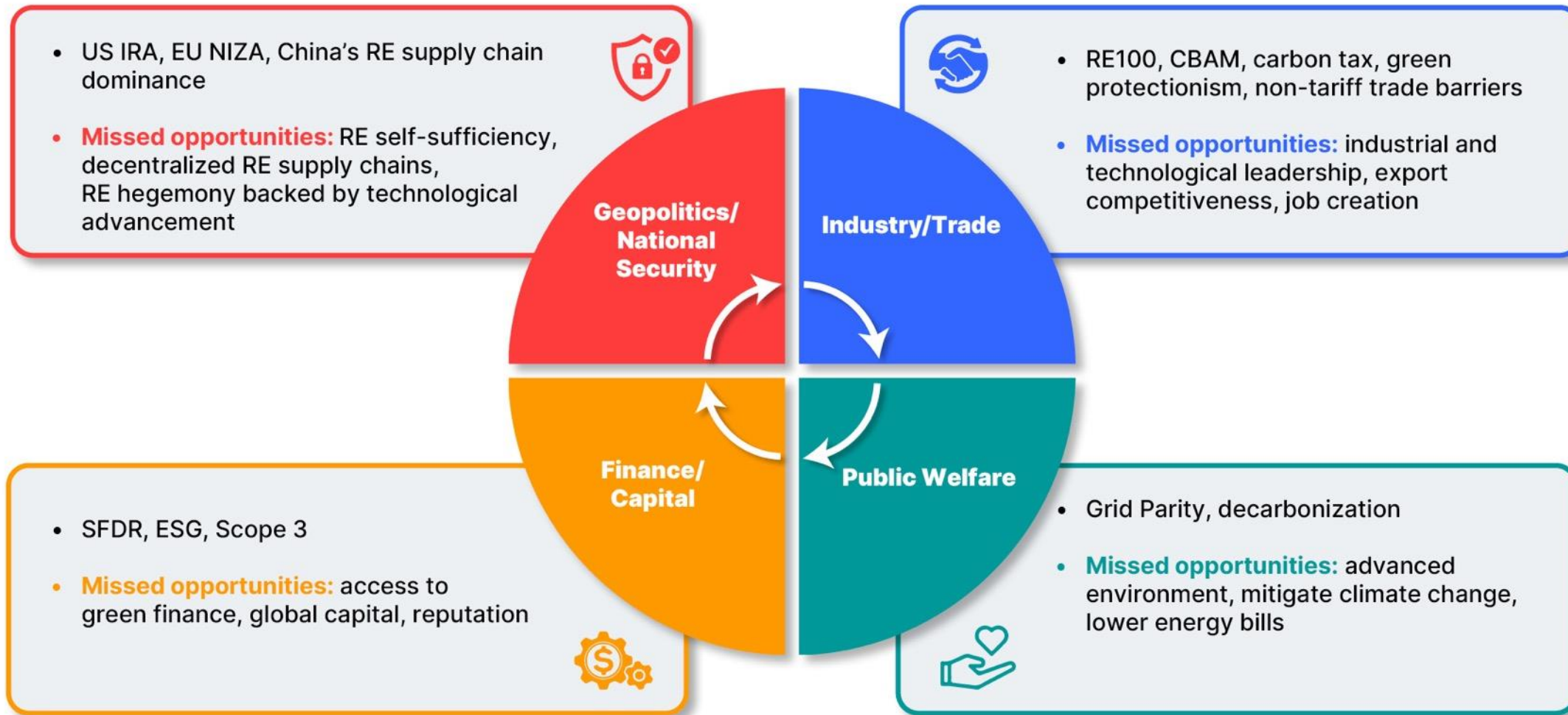


IRE VRE Phase Comparison by Country



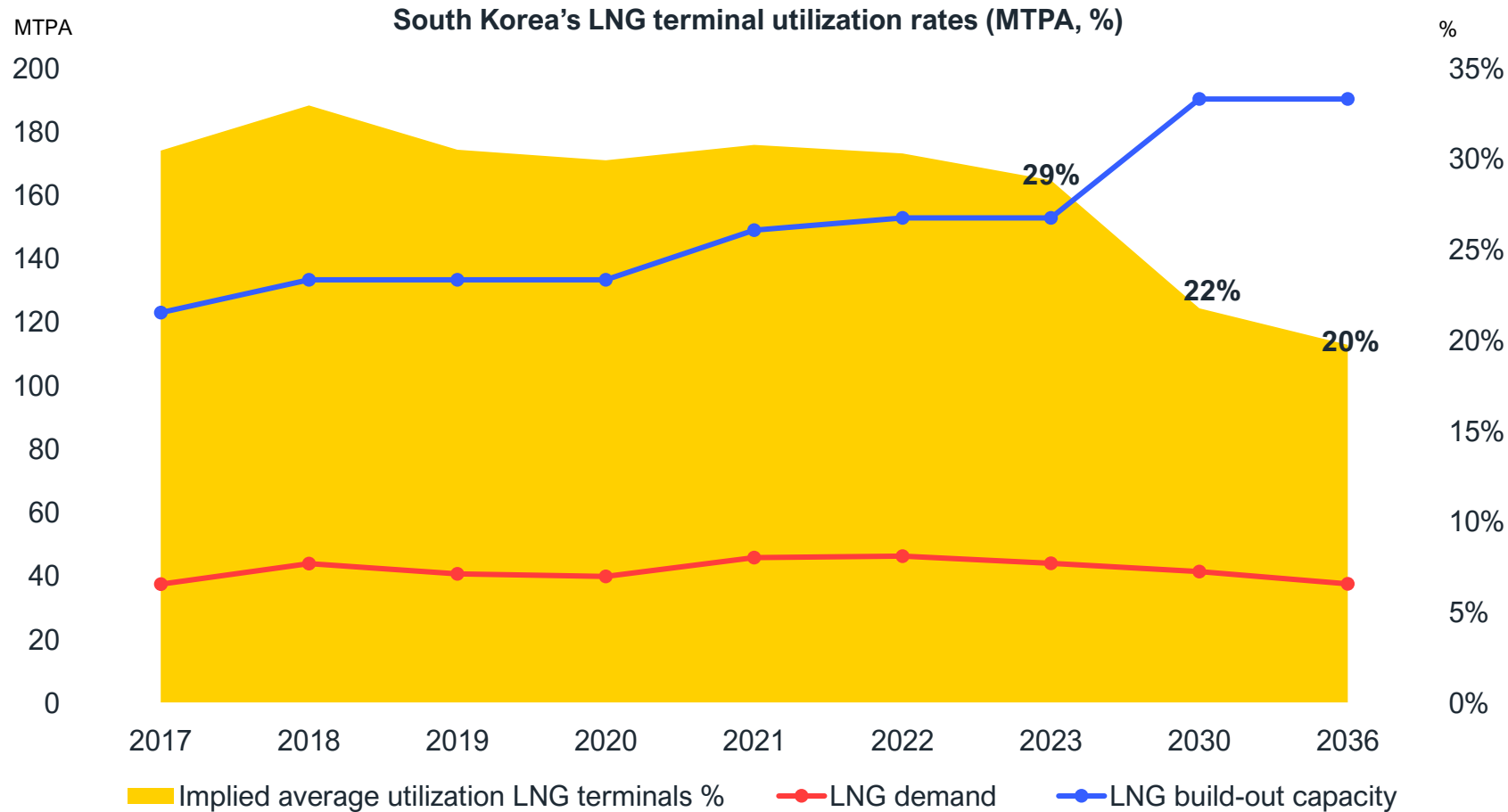
Source: IEEFA, KEPCO, Ember, IEA Renewables 2023 – Analysis and forecasts to 2028. January 2023 p77. Note Data of South Korea excludes hydro pumping based on KEPCO's data.

Growing Missed Opportunities in Renewables



Source: IEEFA.

False Solution 1: LNG Terminal Overinvestment



Source: IEEFA, MOTIE, KITA



Updates on LNG Terminals Projects



Company	Terminal	No. of Storage Tanks	Tank Storage (Metric tonnes)	Regasification (Million tonnes per annum)	Target in Service	Investment (₩ billion)	Status
KOMIPO	Boryeong LNG Terminal	2	0.18	0	Dec 2027	732.10	Scrapped in July 2024
KOSPO	Hadong LNG Terminal	2	0.18	0	Dec 2028	885.62	Scrapped in April 2024
KOGAS	Dangjin LNG Terminal	10	1.2	13.67	Dec 2025-2030	2349.6	KOGAS will lease LNG terminal space to private sector
POSCO International/LX International	Dangjin LNG Terminal	2	0.24	3.5	2027	760	Groundbreaking being delayed
Hanyang	Yeosu Northeast Asia LNG Hub Terminal	4	0.36	7.53	2024-2025	1200	Start-up being delayed to 2027

Source: IEEFA

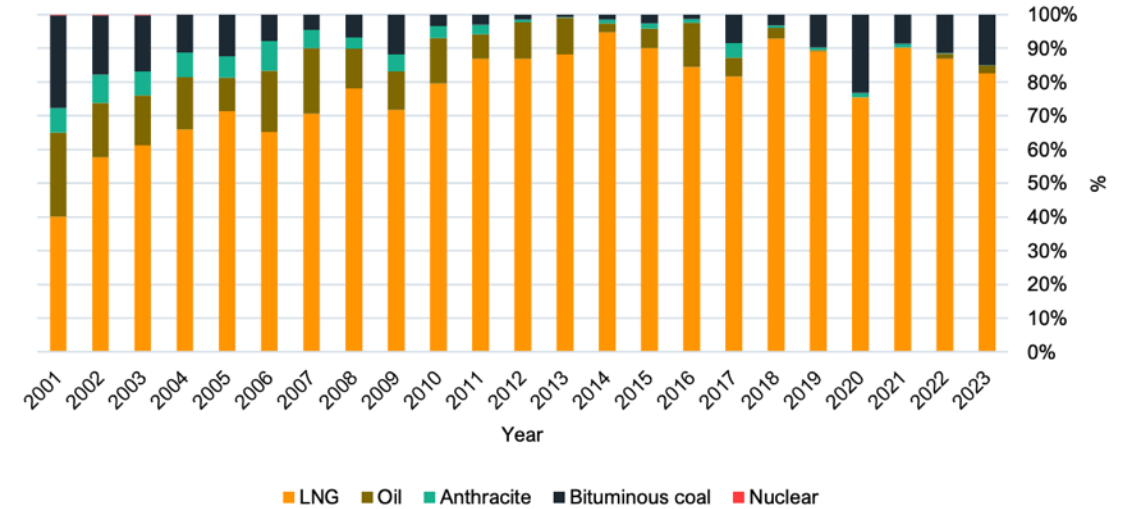
False Solution 2: Heavy reliance on fossil fuel-based power increases electricity bills



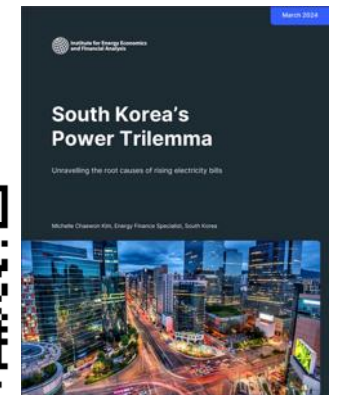
Monthly System Marginal Price in South Korea (KRW/kWh)



SMP Determinations by Fuel (2001-2023)



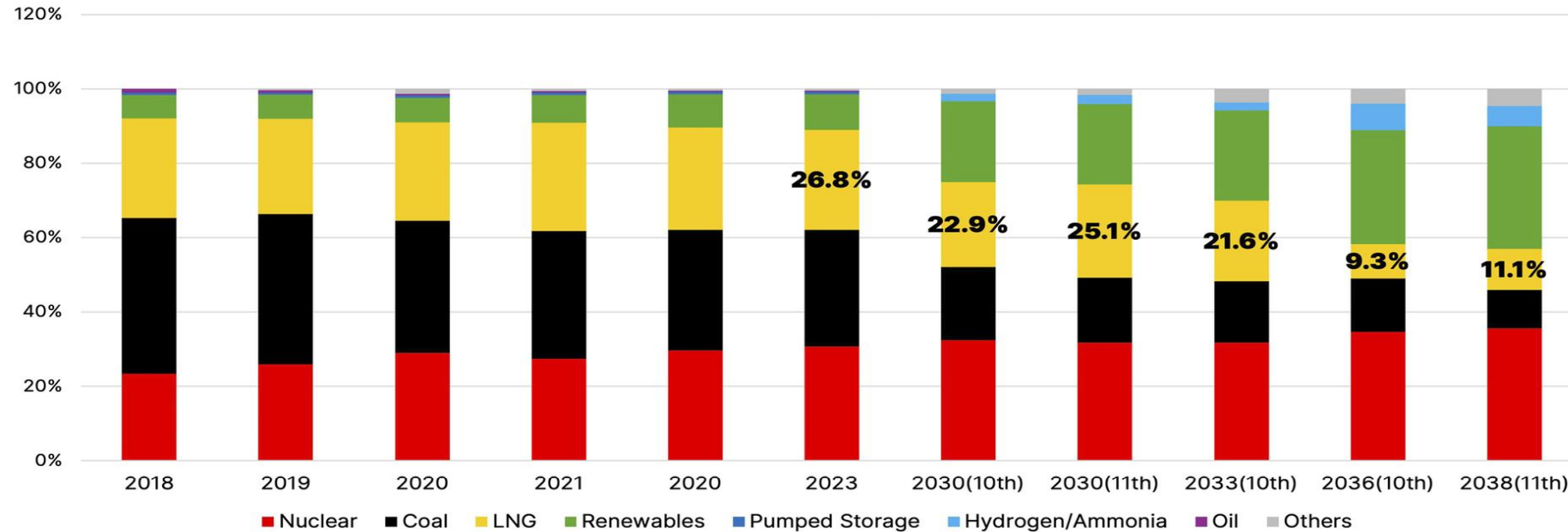
Source: KPX.



False Solution 3: Semiconductor Clusters & AI-Data Centers powered by fossil fuels



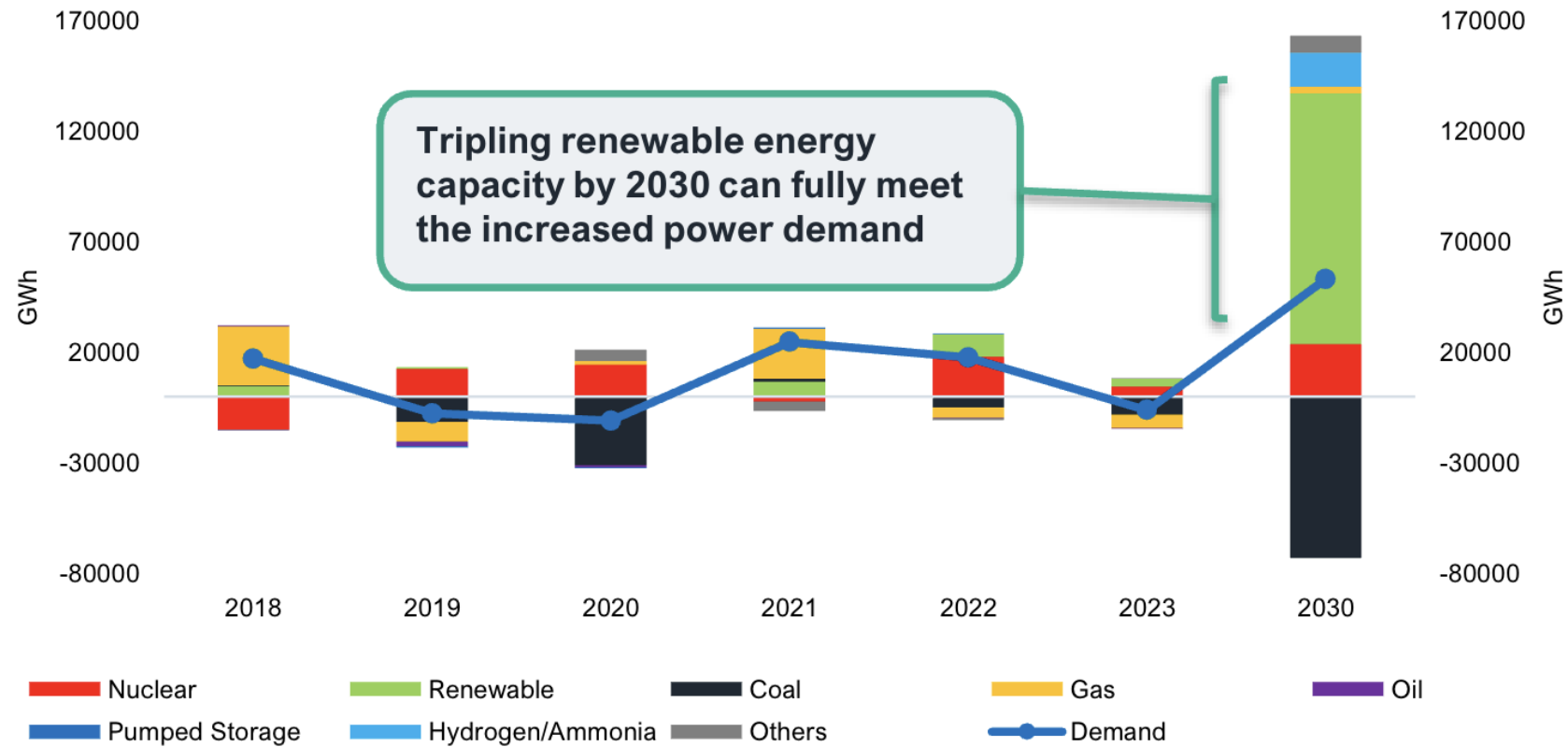
South Korea's Current and Projected Power Mix (%)



Source: MOTIE, KEPCO.



A net change of power generation by energy sources (GWh)



Source: IEEFA calculations; MOTIE; KEPCO; KEEI.



Thank you!

More details of the presentation can be found in IEEFA's South Korea report series.

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