



Fact Sheet

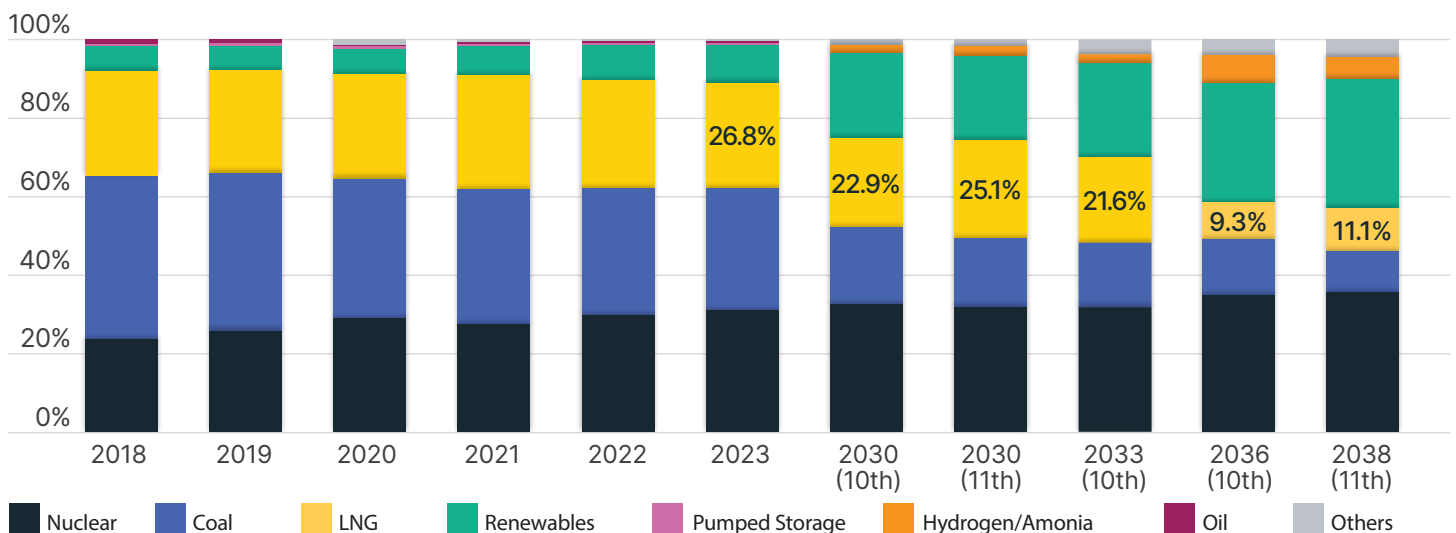
Accelerating South Korea's Energy Transition: Addressing the LNG Overbuild Investment Risks



Overview of the Energy Sector

- **Fossil fuels dominate** South Korea's power generation mix
- **The overreliance on fossil fuels**, especially liquefied natural gas (LNG), and overinvestment in LNG infrastructure have contributed to rising electricity tariffs in 2022-2023
- LNG share in the power mix will **decline to 11.1% by 2038**, a sizable drop from 26.8% in 2023

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



Source: MOTIE; KEPCO.

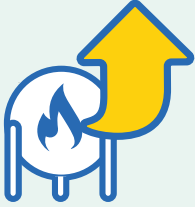
IEEFA

LNG Overbuild



Current LNG Infrastructure

- As of 2024, South Korea has seven LNG import terminals with a combined regasification capacity of around 153 million tonnes per annum (MTPA)
- The country also has about 6.3 million tonnes (mt) of LNG storage capacity



Reasons for LNG Growth

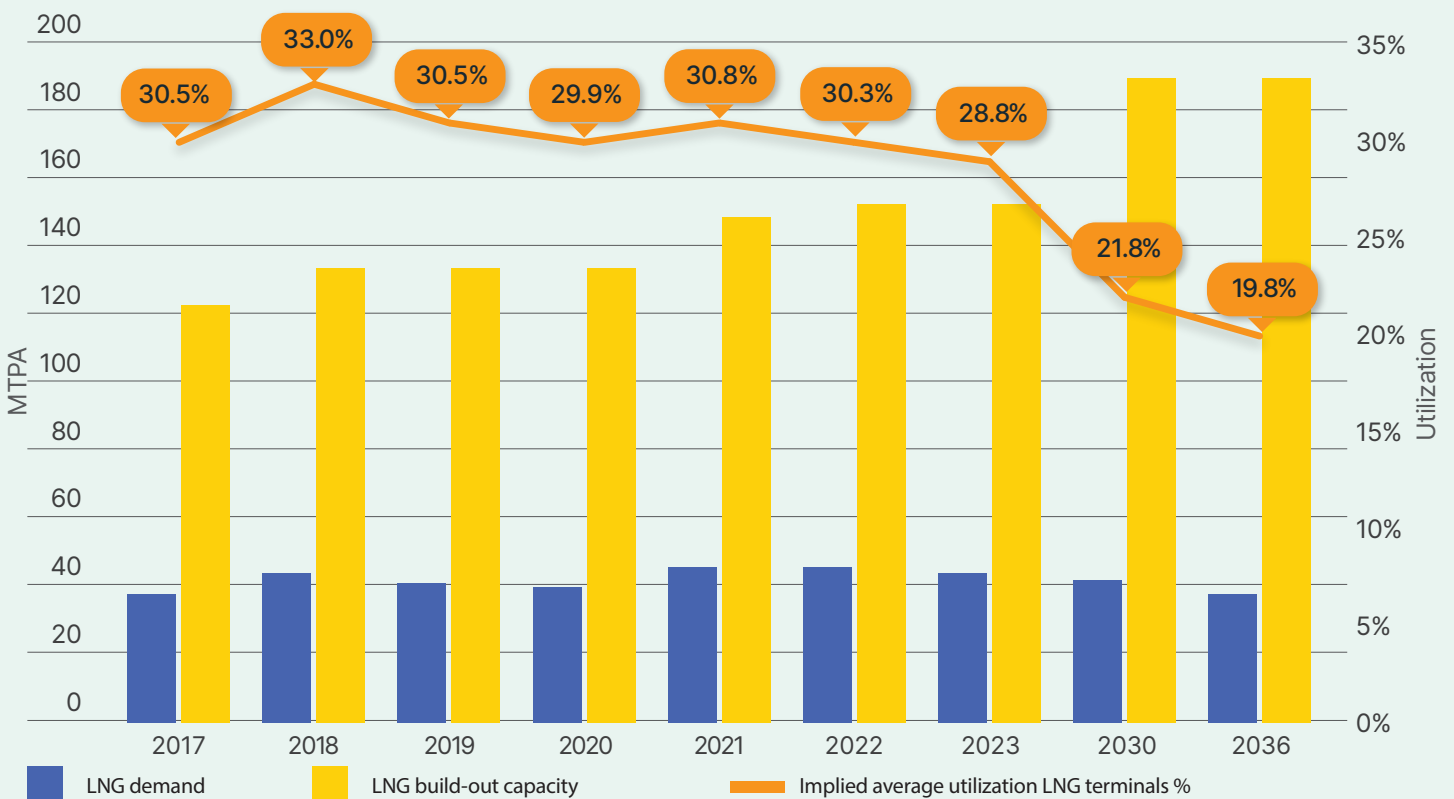
- A perceived need to boost energy security post-Ukraine invasion
- Growing competition in the domestic gas market
- Development of new LNG applications (blue hydrogen, bunkering services, and hydrogen blending in power generation)



Increasing LNG Investments Despite Declining Demand

- South Korea's plans envision around **20% reduction in LNG demand by 2036**
- **Long-term climate and energy plans could cause LNG demand to decline rapidly** as the country increases generation from nuclear, renewables, and other energy sources
- Despite the negative outlook for LNG demand, 37 MTPA of new regasification capacity has been planned, with five private-sector companies and six state-owned entities either constructing or proposing new LNG terminal projects as of 2023
- Assuming the projects are completed, and climate and energy targets are met, fleetwide utilization of import terminals could fall from roughly 29% in 2023 to 20% in 2036

Utilization of South Korea's LNG Receiving Terminals (%)



Source: IEEFA calculation based on MOTIE, KEPCO.

LNG Overinvestment Risks



Decreasing Demand Amid the Country's Transition to Net Zero

- South Korea's 11th Basic Plan for Long-Term Electricity Supply and Demand (BPLE) suggests that **the share of LNG-fired power generation will fall to 11.1% by 2038, from 26.8% in 2023**
- At COP28, South Korea **pledged to triple global renewable energy capacity by 2030**, and triple nuclear energy capacity by 2050
- The **underutilization of LNG receiving terminals will worsen** if the energy transition is further accelerated



Inefficient Asset Allocation and Stranded Asset Risks

- Fierce competition is causing developers to propose large LNG infrastructure projects near one another, raising risks related to inefficient asset allocation and stranded assets
- It should be noted that several delays and cancellations to LNG projects have occurred in 2024
- In April 2024, Korea Southern Power (KOSPO) canceled its Hadong 180,000mt LNG terminal storage tank buildout project, while in July 2024, Korea Midland Power (KOMIPO) scrapped its Boryeong LNG terminal buildout plan

Company	Terminal	No. of Storage Tanks	Tank Storage (Million Metric tonnes)	Regasification (Million tonnes per annum)	Target in Service	Investment (W 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	7349.60	KOGAS will lease LNG terminal space to private sector
POSCO International/ LX International	Dangjin LNG Terminal	2	0.24	3.5	2027	760	Groundbreaking delayed
Hanyang	Yeouu Northeast Asia LNG Hub Terminal	4	0.36	7.53	2024-2025	1200	Start-up delayed to 2027

Source: IEEFA.



Volatile LNG Market Outlooks

- Unpredictable global commodity markets resulted in higher, more **volatile LNG prices** which coupled with South Korea's **declining natural gas demand**
- An **overbuild of new gas import infrastructure** will hinder the energy transition to cheaper, domestically sourced renewable energy which would also bolster energy security



Limited Role for New LNG Applications

- New LNG technologies and services such as LNG bunkering, blue hydrogen, and hydrogen-LNG mixed power, are **incompatible with the country's net-zero targets**
- There are doubts about the financial and environmental sustainability of such technologies

IEEFA Recommendations



Reevaluating Energy Strategy & Accelerating Renewable Energy Solutions

- Reduce reliance on expensive fossil fuels in the power mix and enhance energy security
- Accelerate the transition to renewable energy with investment and policymaking
- Reform power pricing to reflect actual costs and avoid politically motivated electricity tariffs
- Mitigate the overinvestment risks in the country's LNG import sector:
 - Align the build-out of LNG import and storage infrastructure with LNG demand based on climate targets
 - Strengthen public-private collaboration to achieve efficient use of new and existing LNG receiving terminal capacity
 - Avoid promoting unproven technologies and services that would prolong the use of LNG



The future of renewable energy promises to be a new geopolitical battleground, impacting energy security, industrial leadership, access to capital, and public well-being. While South Korea lags in its transition to renewables, competitor nations like China, the U.S., and European countries are gaining advantages with proactive and holistic approaches.

Michelle (Chaewon) Kim, Energy Finance Specialist, South Korea

References

IEEFA. [South Korea's Economy Risks Missing Out on Global Transition to Renewables](#). 14 August 2024.

IEEFA. [South Korea scrapping mega-scale LNG terminal projects amid weakening demand, overinvestment risks](#). 01 August 2024.

IEEFA. [South Korea's East Sea gas development will not strengthen the country's energy security](#). 19 June 2024.

IEEFA. [South Korea needs to address its vicious cycle of power trilemma](#). 29 April 2024.

IEEFA. [Global LNG Outlook 2024-2028](#). 25 April 2024.

IEEFA. [South Korea's power trilemma](#). 21 March 2024.

IEEFA. [South Korea's LNG overbuild](#). 29 November 2023.

