



IEEFA: LNG is Not Displacing Coal in China's Transition to Renewable Power

Imported LNG is not a "bridge fuel" in the world's largest coal-consuming country

June 25, 2024 (IEEFA Asia): Liquefied natural gas (LNG) is often pitched as a transition fuel that can help countries reduce coal usage amid the switch to renewable energy. However, evidence from China, the world's largest coal consumer, shows that LNG is unlikely to materially displace coal-fired power generation, according to the latest report from the Institute for Energy Economics and Financial Analysis (IEEFA).

"Policymakers in both LNG exporting and importing countries should approach claims about the necessity of LNG as a 'bridge fuel' with a high degree of skepticism," says Sam Reynolds, the report's co-author and LNG/Gas Research Lead for IEEFA Asia. "The case of China clearly shows that LNG has played a minimal role in displacing coal in the country's largest coal-consuming sectors."

The Big Picture

Arguments that LNG has supported China's clean energy transition ignore fundamental trends in the country's energy sector development. China has prioritized domestic energy resources over imported LNG due to energy security and cost incentives.

China's growing LNG imports have not reduced or slowed the growth of its coal consumption. Since 2017, coal demand has increased more than LNG imports every year.

In the power sector, which accounts for 60% of China's total coal usage, the share of natural gas generation has remained at just 3% since 2015. Meanwhile, the share of wind and solar generation has quadrupled to 16%. Although coal-fired power generation has increased during this time, its relative market share in the power mix has fallen from 70% to 61%.

"While coal has not been displaced in absolute terms, wind and solar have contributed more than gas to reducing coal's share in the generation mix," says Christopher Doleman, report co-author and an LNG/Gas Specialist for IEEFA. "Looking ahead, annual capacity additions of coal, wind, and solar will continue to exceed new gas-fired power capacity."

A Matter of Energy Security and Cost

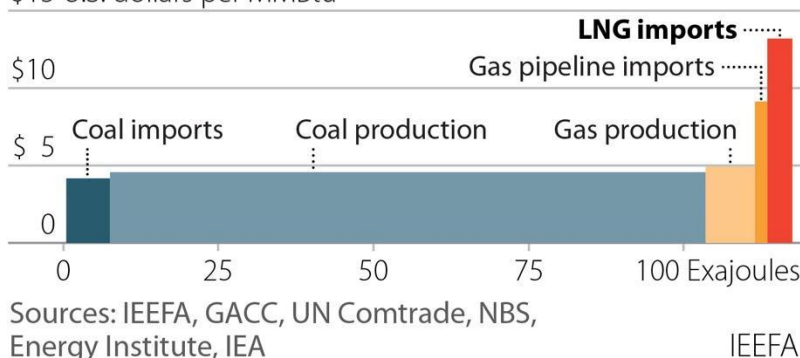
Chinese government policies strongly favor domestic energy sources, including coal, renewables, and indigenous natural gas, over imported fuels such as LNG. Recent policies aim to "strictly control" coal-to-gas switching and position coal, rather than gas, as the cornerstone of electrical reliability.

For example, recent Chinese energy plans aim to retrofit 200 gigawatts of existing coal capacity to support the integration of variable solar and wind generation. Meanwhile, the country's natural gas strategy ensures that imports do not rise above 50% of total gas consumption.

LNG Is Too Expensive to Displace Coal in China

LNG prices were three times higher than coal in 2023

\$15 U.S. dollars per MMBtu



LNG is also too expensive to materially displace coal. Chinese customs data shows that the average cost of imported LNG is nearly three times that of domestically produced coal and gas. It is also between 37% and 61% more expensive than pipeline gas imports from Russia and other Asian countries.

As a result, coal generation is typically US\$30-40 per megawatt-hour cheaper than natural gas-fired power generation. Meanwhile, onshore wind and utility-scale solar are the cheapest power sources, costing roughly half as much as gas-fired power generation.

Although LNG prices are expected to fall in the coming years, IEEFA's report finds they are unlikely to drop to levels that are competitive with coal or renewables.

Non-Power Sectors

China's industrial sectors, primarily iron, steelmaking, and cement, account for 33% of the country's coal consumption.

"However, Chinese investments in coal-based iron and steelmaking capacity still far exceed those in natural gas-based processes, and full decarbonization will require non-fossil fuel alternatives rather than a shift from coal to gas," according to Ghee Peh, report co-author and an Energy Finance Specialist for IEEFA.

Efforts to replace coal-fired stoves with gas heaters in urban areas have run their course and extending them into rural areas will prove challenging. Other factors, including energy security and cost incentives, also weigh heavily against coal-to-gas switching.

In the long term, China's non-fossil infrastructure investments will dwarf fossil energy investments. Replacing coal with clean renewable energy, rather than imported LNG, will likely enable China to peak its carbon dioxide emissions by 2030 and achieve carbon neutrality by 2060.

Read the report: High Coal Prices Could Boost Indonesia's Energy Transition

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Sam Reynolds, a Research Lead with the Institute for Energy Economics and Financial Analysis (IEEFA), focuses on the economic, financial, and climate risks associated with natural gas and liquefied natural gas (LNG) infrastructure developments in emerging Asia. He is the author of several studies concerning the region's transition to renewable energy, stranded asset risk in the natural gas sector, and the macroeconomic risks associated with a greater regional dependence on imported LNG.

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Christopher Doleman

Christopher Doleman is an LNG/Gas Specialist, Asia, focusing on the economic, financial, and climate implications of developing the natural gas value chain throughout Asia. Christopher previously spent five years at the Asia Pacific Energy Research Centre (APERC) in Japan, identifying collaborative opportunities across Asia Pacific Economic Cooperative (APEC) members to achieve common energy goals. As a former market analyst and energy modeler, he analyzed how developments in policy, energy markets, and technology shape energy systems and affect energy security.

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Ghee Peh

Ghee Peh is an Energy Finance Specialist with a focus on the Asian coal industry and Southeast Asia. Ghee has worked on major mining IPOs in Hong Kong and Indonesia, including coal, copper, and gold companies, and has a deep interest in commodity markets. Prior to IEEFA, Ghee had a 25-year career as a sell-side analyst with different investment banks, most recently with Jefferies, BNP Paribas, and UBS. Ghee has relationships and contacts among different stakeholders including investors and companies in the commodity sector. He takes a consensus-building and analytical approach to his research.

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