Institute for Energy Economics and Financial Analysis

Fact Sheet

Insights from China's Current LNG Trucking Boom

LNG can be used directly as a liquid, competing with oil-based fuels.

LNG trucks are booming in China.

China's LNG output can satisfy trucking demand, and its capacity is growing.

Electric heavy-duty alternatives are emerging.

Emulating China's favorable environment for LNG trucking across Asia will prove challenging.

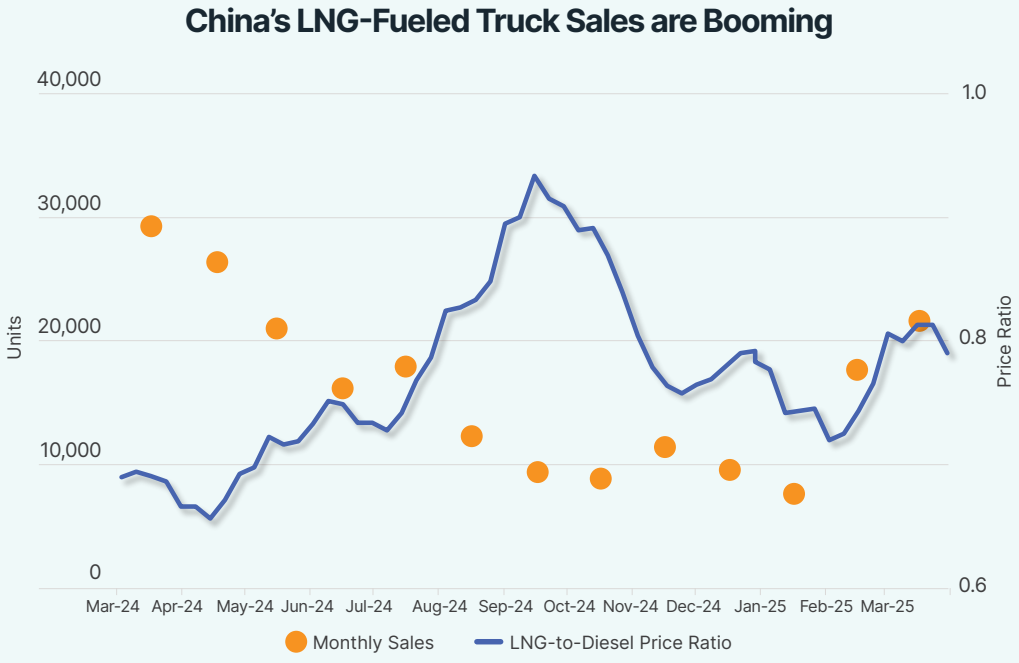
LNG is a Liquid Fuel

Liquefied natural gas (LNG) is well recognized as a means of shipping large volumes of methane, which is eventually regasified into its gaseous form for use via combustion by power plants and various end-uses or as a feedstock for chemicals.

However, LNG can also be used directly as fuel in its liquid form, making it a potential substitute for other liquid fuels that dominate the transport sector. Technical difficulties in keeping LNG in its liquid form typically limit its usage to large-scale applications, like freight trucking, bus transport, and as a bunker fuel for marine shipping.

Sales of LNG-Fueled Heavy-Duty Vehicles Soar in China

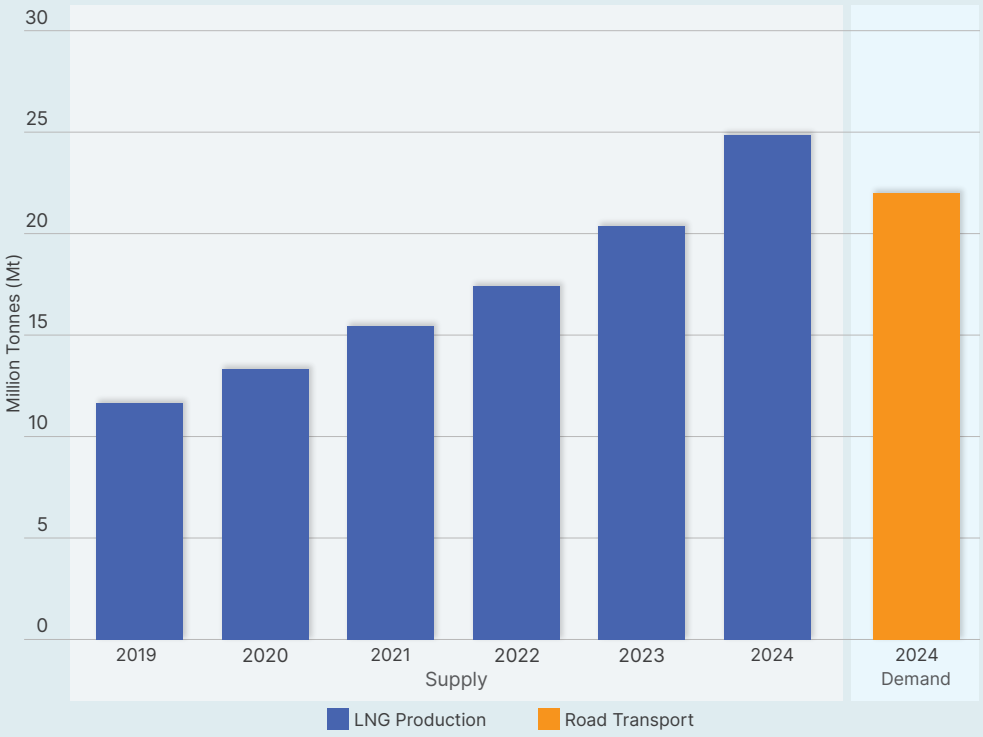
- China is experiencing a boom in LNG-fueled heavy-duty vehicles (HDVs) driven by its expansive gas infrastructure, increasing lower-cost gas supplies, and coordinated policy incentives. Procurement reached a record high of 178,200 in 2024, a 17% increase on 2023 sales, and up 383% from a decade earlier. LNG captured 33% of HDV market sales in 2024.
- The availability of cheap gas feedstocks spurred the growth of liquefaction plants and the LNG refueling network necessary to catalyze LNG trucking sales.
- The government's promotion of LNG refueling stations to displace oil and including transport as a priority sector for gas utilization were integral to establishing the refueling network.
- However, sales are very responsive to the relative price of LNG to diesel, which can vary due to LNG's volatility and diesel's comparative stability.



China's Growing LNG Output can Currently Meet Road Transport Demand

- Domestic liquefaction output reached 25 million tonnes (Mt) in 2024, outstripping road transport use (22Mt).
- Lower-cost feedstocks from domestic production, pipeline imports, and byproduct coke oven gas at independent coke production units are increasing the country's domestic liquefaction capacity.
- Since China is potentially self-sufficient in LNG for road transport, the LNG trucking boom may play a minimal role in driving imports to the country.

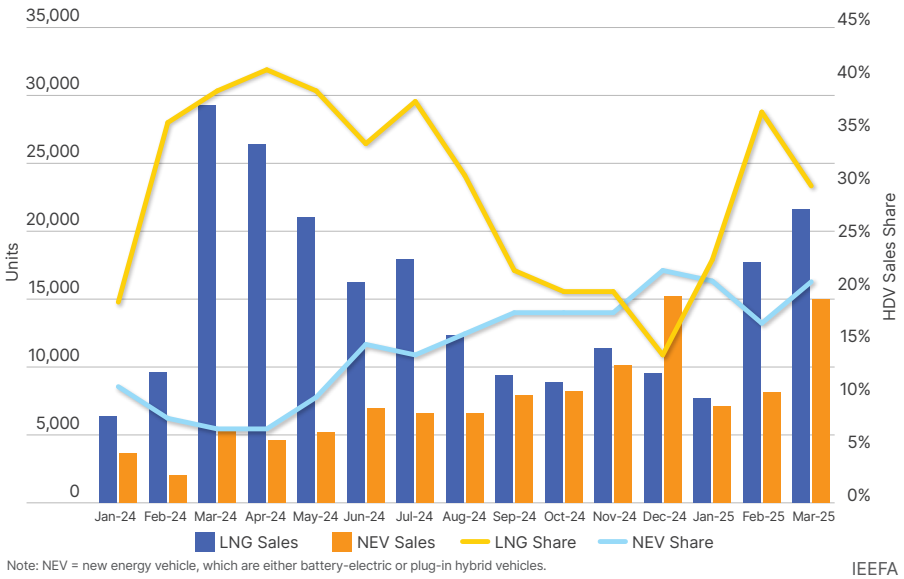
China's LNG Production and Consumption by Road Transport



Electric HDV Models are Emerging

- China's trade-in policies to replace older diesel models currently favor electric alternatives.
- In the first quarter of 2025, the electric segment captured almost 20% of HDV sales, up from 8.1% a year ago.
- Increasingly competitive electric alternatives due to declining battery costs and battery swapping may see LNG only play a transitional role for heavy-duty trucking.

China's Monthly Sales and Market Share for LNG and Electric HDVs



Note: NEV = new energy vehicle, which are either battery-electric or plug-in hybrid vehicles.
Source: CV World, IEEFA calculations.

IEEFA

Emulating China's LNG Trucking Success may Prove Challenging

- Most countries lack access to lower-cost gas sources and the expansive infrastructure to establish a liquefaction network. Production is declining due to resource maturity, and exploration efforts to reverse this have yet to yield results. Pipeline trade is scarce, and those relying on it for imports also see decreasing supplies due to resource maturity.
- Due to the lower coke production capacity and its tendency to be captive to the steelmaking process, the transformation of coke oven gas has limited potential in other countries.
- Without China's innate characteristics, the proliferation of refueling infrastructure necessary to catalyze LNG sales will be challenging to establish across Asia.