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Heavy trucking unlikely to materially increase China's LNG imports

China's unique liquefied natural gas (LNG) trucking experience may be difficult to replicate in Asia

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Key Findings

China is experiencing a boom in liquefied natural gas (LNG)-fueled heavy-duty vehicles (HDVs) driven by its expansive gas infrastructure, increasing lower-cost gas supplies, and coordinated policy incentives. However, it faces challenges from LNG price volatility and increasingly competitive electric alternatives. LNG may play only a transitional role for heavy-duty vehicles.

China liquefies enough gas domestically to meet road transport demand, and local liquefaction capacity and cheaper feedstock supplies are growing. 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.

Other Asian countries do not share China's inherent qualities that enabled its LNG trucking surge. With costs declining, electric heavy-duty vehicles could emerge as Asia's main displacer of diesel in road transport.

Countries aiming to replicate China's diesel displacement should recognize the difficulty of recreating the enabling environment present there. They may be better served directing funds towards electrification rather than investing in an LNG-fueled HDV supply chain that could become stranded in the near future.

Executive Summary

The adoption of liquefied natural gas (LNG)-fueled heavy-duty vehicles (HDVs) has not achieved widespread momentum globally but is progressing successfully in China. Low prices over the past two years have encouraged switching from the incumbent diesel models. In 2024, the LNG segment comprised almost 30% of HDV purchases and set absolute sales records in the same period.

Implementing more stringent vehicle emission standards to improve air quality, increasing HDV manufacturing capacity, and using subsidies to replace aging, higher-emitting diesel models with LNG alternatives were instrumental to this success. However, the most integral part of this LNG trucking boom is China's expansive pipeline network, which can now provide lower-cost gas supplies from domestic production and pipeline imports to most of the country. The availability of these cheap gas feedstocks spurred the growth of liquefaction plants and the LNG refueling network necessary to catalyze LNG trucking sales. The government removed adoption barriers by promoting LNG refueling stations to displace oil and included transport as a priority sector for gas utilization. Without this infrastructure, the added cost of transporting LNG from coastal terminals would have curtailed the boom, as sales are strongly responsive to the relative price of LNG to diesel.

Proponents in the gas industry cite China's recent surge in LNG trucking as a strong signal for future LNG growth across emerging Asian markets. However, this ignores the current and evolving headwinds facing this heavy trucking segment in China. With LNG trucking adoption highly responsive to the LNG-diesel price ratio, LNG's inherent volatility and diesel's relative stability could dampen sales during tight supply periods within the country and around the world. Policies to accelerate replacing older diesel HDVs now provide preferential subsidies for electric alternatives. In the first quarter of 2025, the electric segment already captured almost 20% of HDV sales, up from 8.1% a year ago. LNG sales constituted 31% of the market, down from over 33% in 2024. Moreover, declining battery costs and support for the development of battery-swappable vehicles will improve the cost competitiveness of electric alternatives in heavy-duty applications.

China also liquefies enough natural gas domestically to meet road transport demand in aggregate, producing 25 million tonnes (Mt) in 2024, more than the 22Mt used by vehicles. This ability is increasing. Domestic liquefaction capacity rose by an estimated 41% in 2024, and the lower-cost feedstocks to supply these plants are growing. Domestic production doubled in the last decade to 246 billion cubic meters (bcm) and is expected to increase 5% this year. The capacity of import pipelines from Russia and Central Asia is rising, bringing more lower-cost gas into the country. Moreover, China's large base of independent, non-captive coke production units yields byproduct coke oven gas, which was traditionally wasted but is increasingly transformed into valuable commodities, including LNG. With LNG production already surpassing road transport demand, liquefaction capacity increasing, and feedstock supplies growing, road transport use of LNG may play a minimal role in driving imports into China.

Governments and proponents that view China as a blueprint for LNG-fueled HDV adoption should acknowledge the difficulty in replicating China's unique, enabling environment across Asia. Most

countries lack access to lower-cost gas sources and the expansive infrastructure to establish a liquefaction network. Such supplies are rising in China but falling in South and Southeast Asia. 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. Moreover, 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 these innate characteristics, the proliferation of refueling infrastructure necessary to catalyze LNG sales will be difficult to establish across Asia. While lower prices from an emerging LNG glut could spur adoption, cost parity from electric alternatives may begin to stall LNG truck sales as soon as this decade.

This report details the recent increase of LNG in fueling China's heavy-duty trucks and examines the key factors that could alter this trajectory going forward. Section II provides a brief overview of the policy and infrastructure developments that enabled LNG truck sales to boom in China, while Section III explores the challenges of sustaining this success. Section IV assesses the role of China's domestic liquefaction plants in the disposition of LNG supply fueling HDVs. Section V briefly discusses the potential for replicating the country's LNG trucking success across Asia.

I. Introduction

Liquefied natural gas (LNG) enables large volumes of methane to be transported over vast distances. Most uses require the regasification of LNG into its gaseous form at room temperature. This includes combustion for electricity generation at power plants, cooking, as a heat source for buildings and industrial processes, and as a feedstock in chemical production.

LNG can also be used without regasification as a liquid fuel. This makes it a potential substitute for other liquid fuels that dominate the transport sector. However, the difficulty in keeping the gas in its liquid form typically limits its usage to large-scale applications, like freight trucking, bus transport, and as a bunker fuel for marine shipping.

The relative price advantage of natural gas to oil-based liquid fuels in the last decade generated interest in LNG trucking in large, gas-producing countries.[1] However, LNG truck sales never materialized. Relative price volatility and a lack of refueling and liquefaction infrastructure made it difficult to justify paying a capital premium to switch from diesel engines.

However, LNG-fueled heavy-duty vehicle (HDV) sales are gaining traction in China.[2] While not a new phenomenon, sales have been accelerating. According to Commercial Vehicle World (CV World), a Beijing-based data provider that tracks China's trucking sector, procurement reached a record high

[1] Canadian Energy Regulator (CER). Energy Futures Supplement: Demand Sensitivities. Page 13.
[2] China classifies a vehicle as heavy-duty if its gross vehicle weight rating is 12 tonnes or more. This is equivalent to a Class 7 or Class 8 vehicle type in the U.S. and European markets. For a visual classification of heavy-duty vehicles, please see Appendix I. Forbes. China's Heavy-Duty Truck Market Shows No Signs of Stopping. 09 October 2018.

of 178,200 in 2024, a growth of 17% on 2023 sales, and a 383% increase on purchases a decade ago.[3, 4]

Proponents are using China's LNG trucking surge to rekindle confidence in the growth prospects for future LNG demand. Shell cites the growing use of gas in transport as a key driver of its bullish outlook for global demand.[5]

This report scrutinizes the claim that LNG trucking will drive more LNG to Asia. First, some headwinds could impede LNG trucking from sustaining its success in China, including the rise of electric alternatives. Second, China liquefies enough of its gas domestically from lower-cost feedstock sources, and its ability to do so is growing. Third, the rest of Asia does not share the inherent qualities China has that enabled the current LNG trucking boom.

II. Laying the Groundwork for China's LNG Trucking Boom

Several developments in the last decade helped pave the way for an LNG trucking boom in China. First, the effort to improve air quality led to more stringent emission standards for HDVs, a significant contributor to air pollution partly due to diesel fuel use.[6] This began with implementing the China V standards in sub-national regions between 2013 and 2017. These were followed by the enactment of the current China VI standards in 2019,[7] which applied to all HDV sales in 2023.[8]

Second, China's HDV manufacturers significantly increased production capacity in the mid-2010s to meet rising economic activity.[9] Manufacturers of lower-emitting alternatives emerged to meet the new emission standards. LNG HDVs benefited from these standards despite evidence that LNG trucks can emit higher pollutants than diesel under certain conditions.[10]

[3] Preliminary data from 2025 shows that the share of LNG-powered trucks is nearly 31%, up from almost over 26% this time last year. Sales statistics for January through February obtained from CV World. CV World. March 2025.
[4] MySteel. LNG heavy-duty truck market may weaken on policies in favor of alternative energy. 26 February 2025.
[5] Shell. Shell LNG Outlook 2025. 25 February 2025. Page 5.
[6] Ministry of Environmental Protection (MEP). MEP releases the 2015 Annual Report on Vehicle Exhaust Emission Control. 19 January 2016.
[7] TransportPolicy.net. China: Heavy-duty: Emissions. Accessed on: 01 April 2025.
[8] International Council on Clean Transportation (ICCT). China's Stage VI Emission Standard for Heavy-Duty Vehicles (Final Rule). July 2018. Page 1.
[9] ICCT. Total Cost of Ownership for Heavy Trucks in China: Battery-Electric, Fuel Cell Electric, and Diesel Trucks. November 2021. Page 1.
[10] Zheng et al. Evaluation of real-world emissions of China V heavy-duty vehicles fueled by diesel, CNG and LNG on various road types. Chemosphere. 02 September 2022.

Third, various levels of government subsidized the purchase of LNG trucks. During the mid-2010s, a combination of national, municipal, and district government subsidies reduced the LNG-diesel vehicle price differential by half, encouraging adoption.[11, 12]

Fourth, the government has been active in incentivizing the early retirement of older, more emission-intensive diesel vehicles since 2020.[13] Emission regulations that prohibit the sale, import, or manufacturing of diesel HDVs noncompliant with China's National VI standards came into effect in mid-2021.[14] Trade-in policies are providing payments to operators to scrap older diesel vehicles.[15]

Fifth, the government began tackling other adoption barriers. In 2022, China's National Energy Administration (NEA) and National Development and Reform Commission (NDRC) emphasized the role of promoting LNG refueling stations to displace oil use in the transport sector.[16] Last year, guidance for managing natural gas utilization greenlit the use of LNG in transport as a priority sector.[17]

Figure 1: Map of China's Natural Gas Pipeline Infrastructure

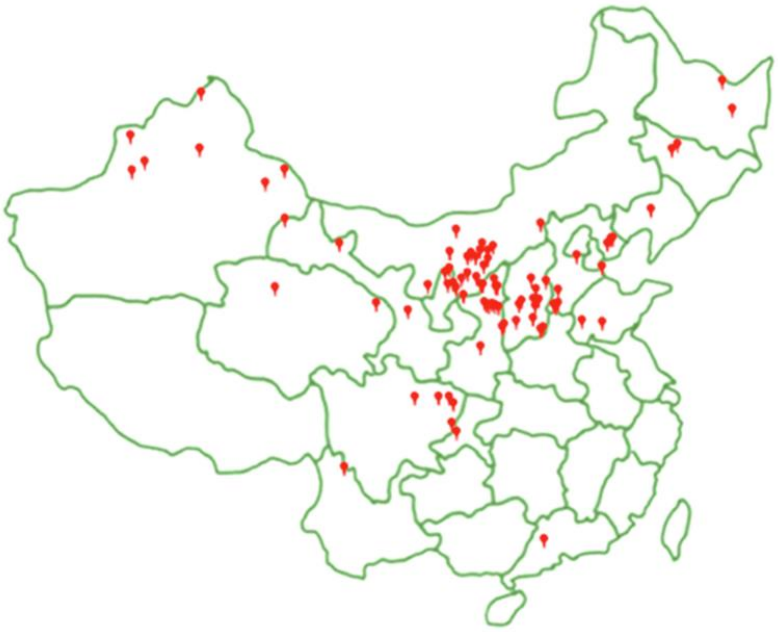
Note: This map includes all trunk and branch gas pipelines in China as of October 2024.[18]
Source: Baker Institute.

[11] Hu et al. The evaluation on liquefied natural gas truck promotion in Shenzhen freight. Advances in Mechanical Engineering. 29 June 2017.
[12] Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Analysis of the Chinese Truck Market and Assessment of Future Power Technologies. 2020. Page 16.
[13] CV World. 天然气重卡2020收官14.2万辆！重汽/解放/陕汽鼎立 乘龙/红岩/北奔崛起. 18 January 2021.
[14] ATIC. China-VI Emission to Heavy Duty Diesel Vehicles in Force from July 1. 06 May 2021.
[15] PRC Government. 交通运输部 财政部关于实施老旧营运货车报废更新的通知. 30 July 2024.
[16] NEA. 关于完善能源绿色低碳转型体制机制和政策措施的意见(发改能源〔2022〕206号). 10 February 2022.
[17] NDRC. 天然气利用管理办法. 03 June 2024.
[18] Baker Institute. Baker Institute China Energy Map. October 2024.

Lastly, years of investment in gas pipelines across the country were integral to establishing the necessary refueling network and supplying it with lower-cost pipeline feedstocks. China has the second-largest operating gas pipeline infrastructure[19], concentrated close to producing areas, like the central Sichuan and Ordos basins and the Northwestern Tarim basin. Gas from these basins typically flows out to municipal and coastal regions. However, import pipelines from Russia, Central Asia, and Myanmar also allow for more transmission flows into the North and Southwest regions of the country.

Along with an expansive network of pipelines, China also began to build liquefaction plants across the country to freeze gas for use in heavy-duty transportation and other sectors. While natural gas liquefaction facilities are most often referenced for their role in large-scale seaborne LNG trade, smaller-scale projects have become increasingly common for producing LNG fuel for transportation, industrial feedstocks, and remote power generation. In 2020, China had 86 liquefaction plants distributed across 17 provinces (Figure 2)[20], with a large concentration in the central producing regions that integrate effectively with the transmission infrastructure (Figure 1). Moreover, some plants span the import pipeline routes in the Northwest, Southwest, and North regions.

Figure 2: Distribution of Natural Gas Liquefaction Plants in China



Note: This maps out China's domestic liquefaction plants in 2020. While many plants have been added since, this helps illustrate how gas infrastructure is integral to the proliferation of liquefaction plants.
Source: Yuan et al.

[19] IEEFA calculations from Global Energy Monitor (GEM) dataset. GEM. Global Gas Infrastructure Tracker. December 2024.
[20] Yuan et al. Environmental Impact of the Natural Gas Liquefaction Process: An Example from China. Applied Sciences. March 2020.

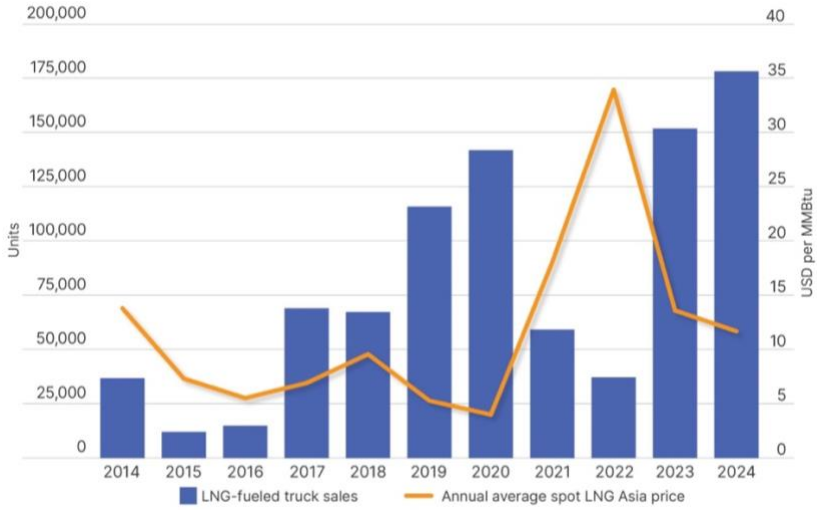
Pipelines laid the groundwork for the proliferation of liquefaction plants necessary to supply LNG refueling stations with competitively priced supplies. By late 2024, 8,000 LNG refueling stations were established in China.[21] Without this infrastructure, LNG would need to be transported in cryogenic intermodal containers from coastal terminals to prospective refueling stations. The added costs would harm LNG's competitiveness with diesel and undermine the business case for replacing diesel trucks with LNG-fueled models. [22]

III. Current and Emerging Headwinds to LNG Trucking

LNG Volatility Erodes Competitiveness with More Stable Diesel Pricing

Policy and infrastructure developments laid the foundation for LNG trucking. Low LNG prices emanating from oversupply and the COVID-19 pandemic may have catalyzed sales. Surging prices following a recovering global economy and Russia's invasion of Ukraine in 2022 coincided with a collapse in truck sales.[23]

Figure 3: LNG-fueled Truck Sales in China and Annual Average Spot LNG Prices in Asia



Source: CV World; ICIS; IEEFA calculations.

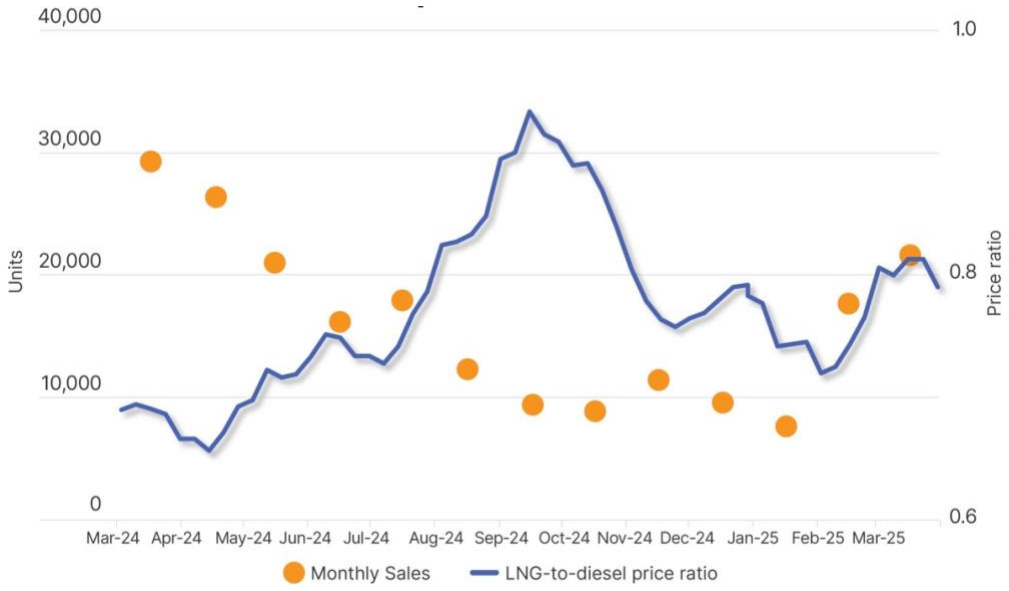
Historically, LNG truck sales are highly responsive to spot LNG prices. This can be problematic in growing the industry as LNG is an inherently volatile commodity.[24]

[21] Blue Energy Motors. LNG trucks in India: Pvt sector entry sparks change, but challenges remain. 12 November 2024.
[22] See Section IV.
[23] China's strict COVID-19 containment policy in these years relative to the rest of the world could also explain these lower numbers.
[24] IEEFA. Gas price volatility raises questions on its suitability as a bridging fuel. 23 October 2024.

However, the relative price of LNG to diesel is more important to HDV fleet operators than the absolute price of LNG. In China, this poses opportunities and limitations for LNG adoption due to the relative stability of diesel prices. While retail LNG prices are determined daily, diesel pricing is adjusted according to variations in international crude oil prices.[25] This revision generally occurs every ten working days but can take nearly twice as long during oil price stability or holiday periods.[26, 27]

Amid the current subsidy environment encouraging a rapid turnover of aging diesel HDVs, relative fuel price signals could tempt fleet operators into purchasing LNG-fueled trucks as replacements. With LNG trucks costing 18% more than diesel models in China[28], experts believe that LNG prices of 20% to 30% below diesel are required to economically compete on a cost of ownership basis.[29] At this differential, the incremental capital cost of LNG trucks can be recouped in almost half a year.[30]

Figure 4: China's Recent LNG-fueled Truck Sales and the Weekly LNG-Diesel Price Ratio in North China



Note: The relative price ratio of LNG to diesel is estimated from retail LNG and diesel price data, assuming an energy content rate of 11,000 kilocalories per kilogram for LNG and 9,181 kilocalories per liter for diesel. LNG retail prices for North China are obtained from SHPGX's North China Vehicle LNG Refueling Price data. Retail diesel prices are obtained by averaging the diesel prices in the North China region's provinces. While the prices may not reflect exactly what end-users are paying, the trends illustrate the correlation between sales and relative prices. Sales include terminal HDV sales in China's domestic market.
Source: North China Vehicle LNG Refueling Price (SHPGX); China's Oil Prices (East Money); CV World; MySteel; IEEFA calculations.

[25] NDRC. 关于进一步完善成品油价格形成机制有关问题的通知(发改价格〔2016〕64号). 13 January 2016.
[26] King Abdullah Petroleum Studies and Research Center (KAPSARC). Gasoline and Diesel Prices in the OECD, China, and India: How Do They Behave During Volatile Times? 22 November 2023. Page 17.
[27] East Money. Overview of economic data. Accessed on: 01 April 2024.
[28] Reuters. LNG-fuelled trucking accelerates in Asia, denting diesel demand. 23 October 2024.
[29] Bloomberg. China's LNG Thirst Slackens as Annual Imports Set for Rare Drop. 26 March 2025.
[30] Reuters. LNG-fuelled trucking accelerates in Asia, denting diesel demand. 23 October 2024.

An analysis of recent monthly sales and the relative price of retail LNG to diesel validates this view. Sales tend to accelerate when this price falls below 0.8 — indicating that LNG costs less than 80% of diesel — and slow down when it rises above that level.

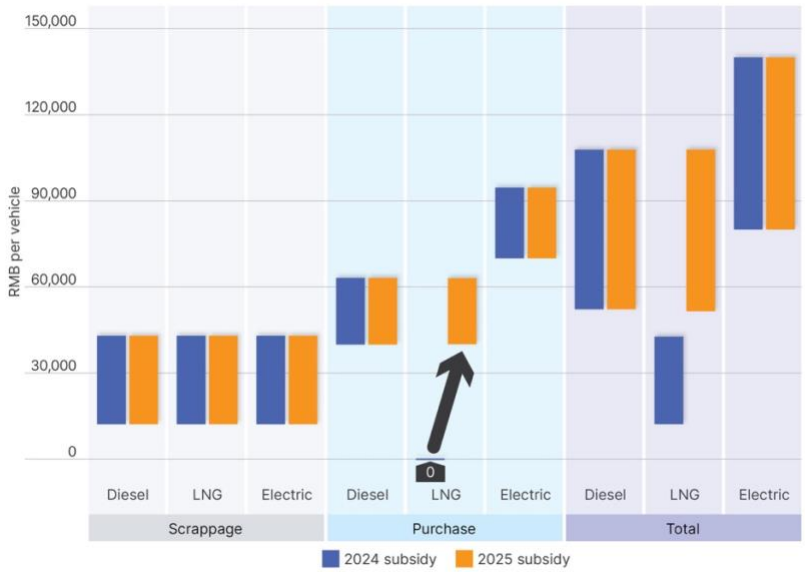
China's LNG-fueled truck sales soared 3.7-fold in 2023 after LNG prices eased from record highs in 2022. This momentum continued into early 2024, but a subsequent sales drop and resurgence in early 2025 coincided with the rise and fall of the relative price of LNG. While vehicle sales typically follow seasonal patterns, recently peaking in the first four months of the year, the instability of LNG prices brings uncertainty into the economics of diesel-to-LNG switching.

If fleet operators cannot ascertain an accurate timeframe for recovering their incremental investment in LNG vehicles, they may favor the cheaper diesel incumbent. Sustaining the recent displacement trend will likely require government support to overcome the inherent volatility of LNG's relative affordability to diesel.[31]

Trade-in Subsidies Favor Electric Models

Pricing may not completely explain recent sales trends. Recent trade-in subsidies that advantage electric and diesel HDVs could also be driving some monthly sales variation.

Figure 5: Subsidy Ranges for Replacing Aging Diesel HDVs, August to December 2024 and 2025

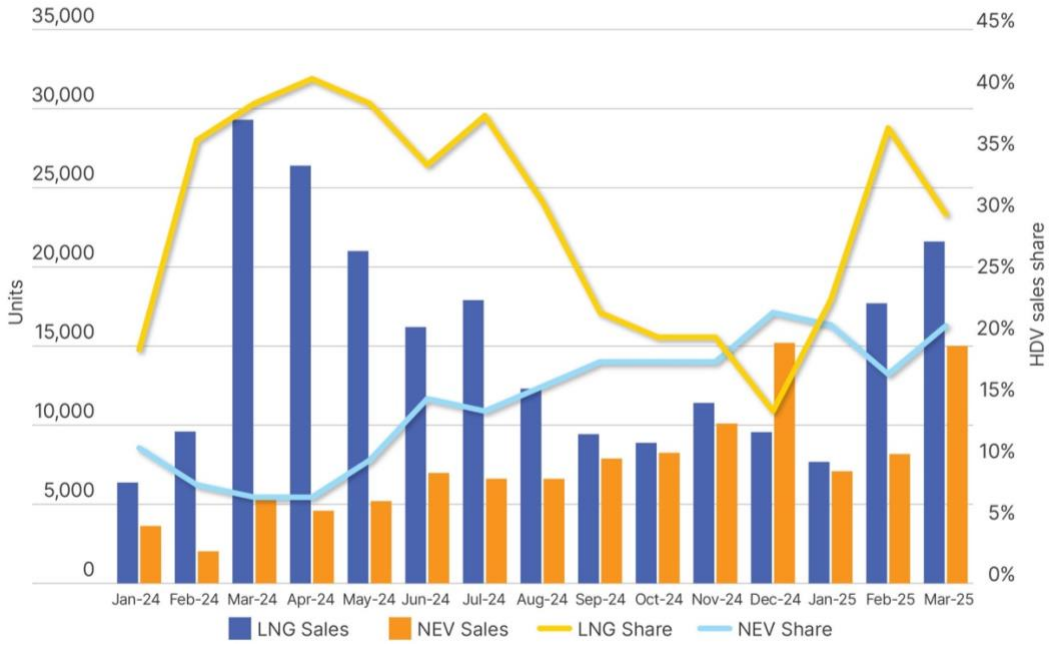


Note: This does not include subsidies for medium-duty vehicles. Scrappage subsidies vary based on vehicle age, while purchase subsidies vary based on vehicle size (measured in axles).
Source: Ministry of Transport (MOT) 2024, 2025.

[31] International Energy Agency (IEA). Gas Market Report, Q1-2025. January 2025. Page 20.

In August 2024, the government introduced subsidies to accelerate the scrappage of older diesel HDVs. These included allowances for scrappage and replacement, which only applied to diesel and electric HDV purchases.[32] While operators may opt to replace their aging diesel-fueled HDV with an LNG model, they would only receive a subsidy for scrapping the old vehicle.

Figure 6: China's Monthly Sales and Market Share for LNG and Electric HDVs since 2024



Note: NEVs are new energy vehicles, which consist of battery-electric, plug-in hybrid, and fuel cell electric vehicles. Sales include terminal HDV sales in China's domestic market.
Source: CV World; IEEFA calculations.

Recent sales data suggests that operators are responding to the subsidies. Following the implementation of the trade-in policy in August 2024, the market share of LNG sales in the HDV segment fell below 30% for five straight months.

Meanwhile, the sales and market share of electric or new-energy vehicles (NEVs) are accelerating. Sales rose 140% in 2024, achieving a market share of 13.6%, up from 5.6% in 2023.[33] Shares have risen above 15% since the announcement of the trade-in scheme in August 2024. Electric HDV sales surpassed LNG-fueled vehicles in December 2024 for the first time. Furthermore, in the first quarter of 2025, the electric segment comprised almost 20% of sales, up from 8.1% a year ago.

[32] This directive aims to accelerate the replacement of diesel vehicles compatible with China III emission standards. PRC Government. 交通运输部 财政部关于实施老旧营运货车报废更新的通知. 30 July 2024.

[33] CV World. 新能源重卡12月销1.5万，渗透率破20%！全年超8万辆，三一/徐工/解放谁第一？12 January 2025.

The NDRC is continuing these subsidies for the current calendar year and expanding the scope to include models that meet more modern emission standards.[34] However, a clarification from the government in March 2025 generalized the purchase subsidy[35], so it now applies to LNG-fueled vehicles.[36]

Before these updates, China Automotive News estimated that 760,000 operational HDVs were eligible for this trade-in subsidy at the end of 2024.[37] With potentially more vehicles now qualifying, these policies could further increase sales of diesel, LNG, and electric HDVs throughout 2025.

Notably, the trade-in policy still favors electric vehicles, offering fleet operators a 27-58% higher overall subsidy over diesel and LNG alternatives.

Currently, LNG-fueled vehicles remain ahead of their electric counterparts, capturing almost 31% of the HDV market in the first quarter of 2025.[38] However, sales are cooling from the surge seen last year, with CV World describing the peak sales season as "[failing] to arrive as scheduled" for gas-fired HDVs.[39] Market share, at 33% in the first quarter of 2024, has fallen. In March 2025, absolute sales were down over 26% year-on-year, far more than the 4% decline in heavy-duty sales. This could be partly due to excluding LNG-fueled vehicles from the purchase subsidies until mid-March. Conversely, with electric vehicles now capturing 20% of the market, alternatives may be emerging to challenge China's LNG trucking boom.

Electric Models are Becoming More Competitive

While the unit costs of electric HDVs in China exceed diesel and LNG models[40], their total cost of ownership (TCO) is 10% to 26% cheaper than diesel variants.[41] However, the TCO for electric vehicles is generally underestimated due to a disregard of the impacts of temperature variation on

[34] This directive expands the eligibility of diesel vehicle replacement to include vehicles compatible with China IV emission standards. NDRC. 关于2025年加力扩围实施大规模设备更新和消费品以旧换新政策的通知. 08 January 2025.

[35] MOT. 交通运输部 国家发展改革委 财政部关于实施老旧营运货车报废更新的通知. 18 March 2025.

[36] The updated policy also improves flexibility to reduce business disruptions for fleet operators that opt to trade-in their vehicles. First, it allows for scrapped trucks to remain in operation for less than a year. Second, it allows operators to use both the scrapped and replacement vehicles until the end of 2025. CV World. 天然气重卡纳入补贴！三部委发布2025中重卡以旧换新补贴标准. 18 March 2025.

[37] China Automotive News. 国四柴油货车被纳入补贴范畴 国内卡车市场看涨. 23 January 2025.

[38] IEEFA calculations based on monthly data from CV World articles. CV World.

[39] Translated from CV World. CV World. 燃气重卡一季度实销4.7万辆增4%，解放占比近3成，东风份额大增，谁领涨? 15 April 2025.

[40] Prices for diesel and electric heady-duty trucks vary based on various characteristics, including the size and purpose of the vehicle. Using Class 7 and Class 8 equivalent models, recent research finds that electric costs can be 62% to 255% higher than diesel models and 37% to 200% higher than LNG varieties. Prices here are meant to illustrate the average manufacturer's recommended price for Class 7 and 8 equivalent vehicles in China. This calculation uses Hu et al. unit cost estimates for diesel and electric HDVs and uses various manufacturing prices online to estimate a range for LNG HDVs. Hu et al. TCO analysis of commercial vehicles considering refined temperature impacts across various provinces in China. Energy for Sustainable Development. 2025. Page 16.

[41] Recent research found that TCO costs of diesel model HDVs range from RMB180 to 324 per 100 kilometers (km), while the range is between RMB163 to 240 per 100 km for electric powertrains. Hu et al. TCO analysis of commercial vehicles considering refined temperature impacts across various provinces in China. Energy for Sustainable Development. 2025. Page 18.

ownership economics.[42] There is likely room for unit costs, and in turn the TCO, of electric HDVs to fall before China's heavy trucking market hits a tipping point.

Nevertheless, fuel economics, a favorable trade-in policy, falling battery costs, and the emergence of battery swapping could see electric vehicles impede LNG-fueled vehicles from sustaining their recent success in China.

A recent pilot program demonstrated that the cost of operating electric HDVs can undercut diesel if the annual distance traveled exceeds 60,000 kilometers (km).[43] Goldman Sachs expects average battery pack costs to halve by 2026 and fall a further 20% by 2030, which will lower the distance threshold at which electric vehicles outperform diesel.[44] These cost reductions, together with China's trade-in subsidies, are likely to tilt the competitive advantage towards electric HDVs over diesel and LNG variants.

The emergence of battery swapping could further favor electric HDVs by reducing refueling times and capital costs. LNG and diesel-fueled trucks need five to ten minutes to refuel, while charging an electric vehicle (EV) requires between half an hour and eight hours.[45] However, battery swapping reduces the refueling time to minutes, allowing electric operators to exchange depleted batteries for charged ones at service stations.[46] Moreover, battery swapping allows adopters to purchase vehicles without batteries and lease them from third parties instead. This reduces the capital cost of electric HDVs and, in turn, the cost of ownership. Government subsidies and pilot programs are fostering significant growth in the battery-swapping EV segment. Sales of swap-capable vehicles almost doubled last year[47], and China is aiming to have over 16,000 battery swap stations in 2025.[48] Contemporary Amperex Technology Co. Limited (CATL) commissioned the world's first in-port HDV battery swapping station last year.[49]

LNG use by heavy trucks will continue to grow in the medium term. However, these favorable developments for electric vehicles could force LNG to play a transitional role in powering China's heavy trucks segment. Consultant Wood Mackenzie expects battery electric models to emerge as the main displacer of diesel use in trucking later this decade.[50]

[42] Electric TCO for HDVs in China varies regionally based on temperature extremes and the price of electricity. In some provinces, even a vehicle cost of zero is not enough to overcome this effect. Therefore, further reductions in the TCO and social acceptance of electric alternatives are required to catalyze a widespread adoption of electric HDVs. Hu et al. TCO analysis of commercial vehicles considering refined temperature impacts across various provinces in China. Energy for Sustainable Development. 2025. Page 10.
[43] South China Morning Post (SCMP). Electric trucks cheaper than diesel vehicles on long-haul routes in Shenzhen trial: expert. 04 February 2025.
[44] Goldman Sachs. Electric vehicle battery prices are expected to fall almost 50% by 2026. 07 October 2024.
[45] RMI India. Fast Tracking Freight in India: A Roadmap for Clean and Cost-Effective Goods Transport. June 2021. Page 99.
[46] JATO Dynamics. How China is driving battery swapping as a service in the EV market. 15 October 2024.
[47] ICCT. Zero-emission medium- and heavy-duty vehicle market in China, 2024. 25 March 2025.
[48] JATO Dynamics. How China is driving battery swapping as a service in the EV market. 15 October 2024.
[49] Contemporary Amperex Technology Co. Limited (CATL). World's First In-port Heavy-duty Truck Chassis Battery Swapping Station Officially Put into Operation. 27 November 2024.
[50] Wood Mackenzie. LNG truck sales impacting Chinese road diesel demand. 26 July 2024.

IV. China's LNG Output is Sufficient for Heavy Trucking Needs and is Rising

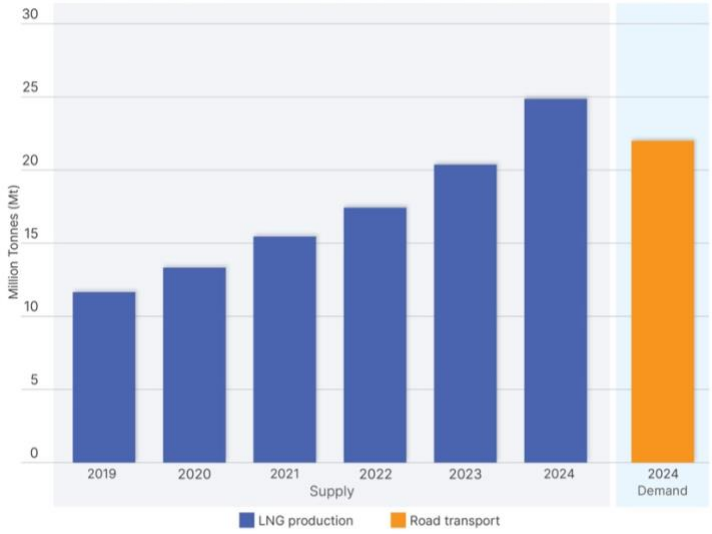
LNG proponents remain bullish in these headwinds, using China's LNG trucking surge to rekindle confidence in the growth prospects for future LNG demand.

While some believe China is rapidly approaching peak diesel use[51], Shell cites rising gas use in transport as a key driver of its bullish outlook for global LNG demand.[52] Shell's LNG Outlook 2025 explicitly interprets China's growing fleet of LNG-fueled HDVs as a signal for Asian LNG demand growth in the future. Specifically, the report asserts that China's LNG trucking fleet will be capable of consuming 30 million tonnes (Mt) per annum by 2030[53], which is 36% above current demand estimates of 22Mt.[54]

However, examining China's gas market suggests that a domestic liquefaction sector is emerging to meet this LNG trucking demand.

China's Liquefaction Plants Produce Enough LNG Domestically to Meet Transport Demand

Figure 7: China's LNG Production and Consumption by Road Transport



Source: China's National Bureau of Statistics (NBS); IEA; IEEFA calculations.

[51] Financial Times (FT). Rapid rise of LNG trucking pushes China to peak diesel. 14 October 2024.
[52] Shell. Shell LNG Outlook 2025. 25 February 2025. Page 5.
[53] Shell. Shell LNG Outlook 2025. 25 February 2025. Page 21.
[54] Greg Molnar of the IEA estimates that road transport use of LNG has grown from 20 billion cubic meters (bcm) 15Mt in 2019 to 30bcm (22Mt) in 2024. Greg Molnar via LinkedIn. truck me, I'm famous. November 2024.

According to China's National Bureau of Statistics (NBS), domestic LNG production has doubled since 2019 to nearly 25Mt in 2024. This outstrips the International Energy Agency's (IEA) road demand estimate of 22Mt in the same year.[55] While road transport currently dominates LNG end-use, China is self-sufficient in LNG to satisfy those requirements.

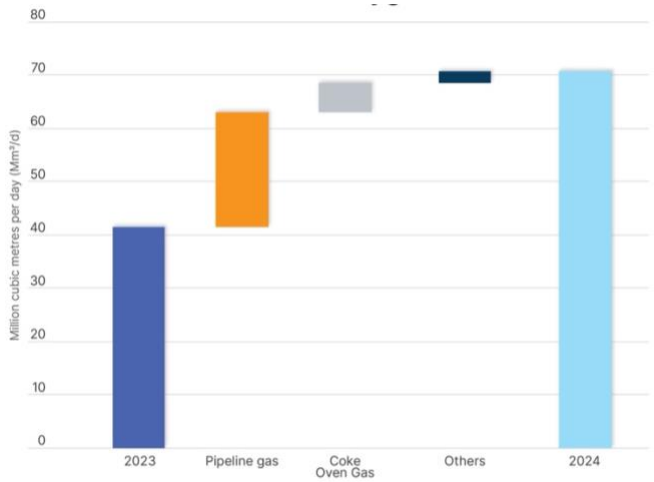
LNG imports are likely fueling some trucks in China.[56] The country imported 77Mt of LNG into coastal terminals in 2024.[57] Freight trucking routes cover the country's coastal eastern regions, particularly in ports close to Beijing and Shanghai, and most LNG import terminals are equipped with truck loading facilities.[58]

However, price data from the Shanghai Petroleum and Natural Gas Exchange (SHPGX) indicates that the price of LNG from coastal import terminals is equal to or slightly higher than LNG retail prices in Northern China.[59, 60] The Institute for Energy Economics and Financial Analysis (IEEFA) estimates that the cost of trucking LNG for 1,000km to supply retail LNG stations could increase the price around RMB500 to RMB800 per tonne.[61] Incorporating this transportation cost into the Northern LNG prices would raise the LNG-diesel price ratio over 0.80 for most weeks over the past year. This would likely weaken imported LNG's competitiveness with diesel for fueling trucks. Therefore, it is likely that domestic LNG plants are playing a significant role in refueling away from coastal regions.

China's domestic LNG production growth follows a proliferation of local liquefaction plants. Statistics released in July 2024 by OilChem, a data provider covering China's energy and chemical sector, found that liquefaction capacity was likely to grow 41% that year, from about 42 million cubic meters per day (Mm^3/d) to almost 71Mm^3/d.[62]

[55] Greg Molnar via LinkedIn. truck me, I'm famous. November 2024.
[56] Imported LNG is likely to be utilized near coastal import points by power generators, industrial activity, or undergoing regasification and being pumped into the pipeline network. However, LNG can also be trucked from liquefaction plants or import terminals to meet the demand for myriad uses, such as city gas networks, industrial users, and powerplant peakers that are disconnected from the pipeline and distribution networks.
[57] Asian Business Review. China's LNG imports near record high in 2024. 18 February 2025.
[58] International Group of Liquefied Natural Gas Importers (GIIGNL). GIIGNL Annual Report 2024 Edition. 03 June 2024. Page 48.
[59] LNG coastal outbound prices reflect the price paid for LNG at China's LNG import terminals. SHPGX. 出站价. Accessed on: 07 April 2025.
[60] SHPGX. 省价格. Accessed on: 07 April 2025.
[61] Intervenors, in a regulatory hearing a decade ago, calculated the cost of shipping containerized LNG to range between USD1.33 to USD2.16 per MMBtu. This converts to around RMB500 to RMB800 per tonne. Yukon Utilities Board. TEC-YEC-1-44 (a) Attachment 1. 27 February 2014.
[62] 2024 capacity additions were based at the time of analysis. Actual capacity added in 2024 may be different from this mid-year estimate. MySteel. China to see a boom in new LNG plants in 2024. 05 July 2024.

Figure 8: China's Planned Liquefaction Plant Capacity Additions in 2024 by Gas Source

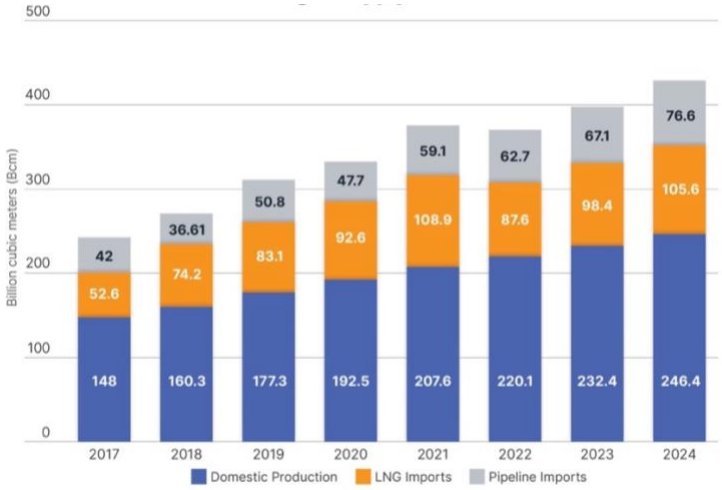


Source: OilChem via MySteel.

Recent plant additions are largely opting to source feedstock pipeline gas, with deployment concentrated in Northwest China to capitalize on cheap feedstocks from domestic gas fields and pipeline imports.[63] Another significant segment of on-site captive coke plants is emerging, using byproduct coke oven gas (COG) as a feedstock. A few plants also aim to locate on-site with various gas producers, using gas as a feedstock before it enters the pipeline grid.

Increasing Supply from Lower-cost Pipeline Feedstocks

Figure 9: China's Gas Supply Balances



Source: China National Energy Administration's China Natural Gas Development Reports (via Center on Global Energy Policy; CGEP); SHGPX (via Anadolu Ajansi).

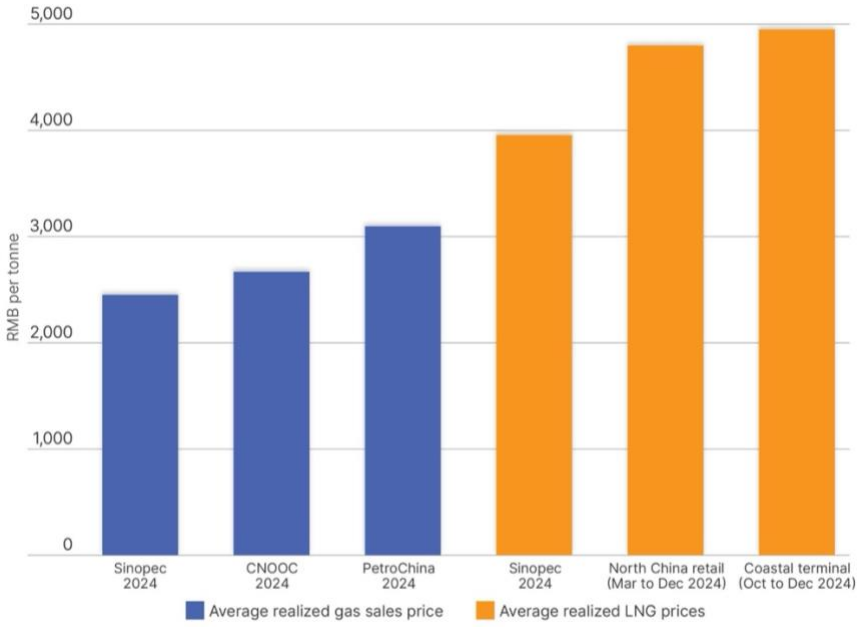
[63] MySteel. China to see a boom in new LNG plants in 2024. 05 July 2024.

China has a large base of gas supply to fuel liquefaction plants. The country is the fourth-largest gas producer in the world, with production doubling over the past decade to 246 billion cubic meters (bcm) in 2024.[64] Moreover, the IEA expects domestic output to increase by 5% to 258bcm this year.[65]

Total pipeline imports reached nearly 77bcm in 2024 and are still growing. The Power of Siberia-1 pipeline from Russia is expected to increase imports into China at its operational capacity of 38bcm in 2025[66], an increase from about 31bcm in 2024.[67]

Projects under construction, like the Far East pipeline from Russia and an expansion to increase supply from Kazakhstan,[68] could bring more supply into China by 2027. Several projects are also under consideration to increase pipeline supply from Russia and Central Asia, but ongoing negotiations could delay those to the next decade.[69, 70]

Figure 10: Average Gas and LNG Realized Sales Prices in China



Source: Sinopec; China National Offshore Oil Corporation (CNOOC); PetroChina; SHPGX (LNG coastal outbound prices and North China vehicle LNG refueling price).

[64] NBS. Monthly. Accessed on: 18 February 2025.
[65] IEA. Gas Market Report, Q2-2025. 11 April 2025. Page 55.
[66] Bloomberg. Russia's Daily Pipeline Gas Flows to China Set New Record. 21 December 2024.
[67] Interfax. Gazprom supplies 31 bcm of gas to China via Power of Siberia pipeline in 2024. 26 December 2024.
[68] The Astana Times. Where Does Kazakh Gas Flow Worldwide. 04 November 2024.
[69] CGEP. The Future of the Power of Siberia 2 Pipeline. 15 May 2024.
[70] S&P Global. PetroChina looking to resume Central Asia Gas Pipeline Line D construction in 2024: source. 21 December 2023.

Figure 10 uses a combination of market data and financial statements to illustrate how competitive these sources are with LNG imports.[71] Even if LNG trucking continues to grow this decade, domestic liquefaction sources will carry on meeting a significant part of incremental demand, reducing the need for LNG imports.

Moreover, current trade tensions could further diminish the role of coastal LNG imports relative to domestic LNG production. As of 10 April 2025, Chinese imports of U.S. LNG have fallen to zero following a 15% tariff on U.S. LNG imports in early February.[72] While the U.S. only provided 5.5% of China's LNG imports in 2024[73], escalating tensions, and rising supply from other energy and gas alternatives are prompting consultants to lower expectations for Chinese LNG demand this year.[74]

Through these domestic and imported pipeline sources, China has sufficient, cheap gas supply to feed pipeline-feed liquefaction plants that will continue to grow.

Valorizing Coke Oven Gas into LNG at Stand-Alone Coking Plants Has Room to Grow

COG is a byproduct of coke production from metallurgical coal. It is composed of hydrogen (55% to 60%), methane (23% to 27%), and carbon monoxide (5% to 8%), along with several other hydrocarbons and gases.[75]

Coke production is normally captive to steel production, where steel mills typically use byproduct COG as a heat source, a reducing agent in blast furnaces, and a power generation fuel. However, in China, 76.5% of coke is produced in independent facilities, which restricts steel mill usage.[76] Without an on-site transformation process, COG is typically flared or vented into the air.[77]

[71] Note that annual average prices do not reflect the granular producer margins that drive liquefaction plant operation on a day-to-day basis. Plants tend to operate when retail prices exceed feedstock costs, which are largely driven by the availability and prices determined at gas supply auctions. During high-demand periods, suppliers like PetroChina may offer less gas to liquefaction plants that rely on pipeline gas for feedstock in less populous regions, driving prices up and triggering a halt in production. Because of this, utilization rates tend to hover around the 40% to 60% range. MySteel. Production resumption promotes LNG plants' capacity utilization rates. 23 January 2024.
[72] An increase of the tariff to 49% could continue to weigh down LNG trade between the countries. Bloomberg. China Halts US LNG Imports for Longest Since Last Trade War. 06 April 2025.
[73] Kpler.
[74] Bloomberg. China's LNG Thirst Slackens as Annual Imports Set for Rare Drop. 26 March 2025.
[75] Moral et al. Hydrogen Recovery from Coke Oven Gas. Comparative Analysis of Technical Alternatives. Industrial & Engineering Chemistry Research. 17 February 2022.
[76] Di et al. Technical alternatives for coke oven gas utilization in China: A comparative analysis of environment-economic-strategic perspectives. Environmental Science and Ecotechnology. 26 January 2024.
[77] Qin et al. The catalytic methanation of coke oven gas over Ni-Ce/Al2O3 catalysts prepared by microwave heating: Effect of amorphous NiO formation. Applied Catalysis B: Environment and Energy. March 2015.

China has been developing technology to transform COG into valuable commodities for decades.[78, 79] Use is improving, growing from 20% of the 70bcm of COG byproduct in 2007 to almost 49% of 200bcm in 2022.[80, 81] However, half the COG is still wasted, and the value of its inherent commodities is lost through energy combustion at steel mills. Valorizing COG from non-captive coke-making facilities as a feedstock for value-added products is an opportunity to generate additional revenue for coke and steelmaking enterprises.[82]

Therefore, liquefaction plants are emerging at independent coking plants and integrated steel mills to transform COG into LNG for eventual sale in the domestic retail market.[83] Recent facilities are generally concentrated in China's Northern and Eastern provinces.

MySteel, a data provider focused on Chinese commodity markets, reports that COG liquefaction costs of producing a tonne of LNG range from RMB3,200 to RMB3,800[84], but some producers claim that by using an integrated processing unit, costs can be as low as RMB2,000 per tonne.[85] Since COG is a byproduct of the steelmaking process, these costs are independent of the domestic and global gas market dynamics that affect feedstock pricing for pipeline plants.

However, China's steel sector faces significant structural challenges that could limit LNG production from COG feedstocks in the future. Lower domestic demand and overcapacity are generating a mounting steel surplus, eroding profit margins for producers.[86] This is likely to result in lower production in 2025.[87, 88] The sector is also far behind the decarbonization rate required to achieve carbon neutrality by 2060.[89]

According to the Centre for Research on Energy and Clean Air (CREA), retiring 350Mt of blast-furnace capacity this decade would alleviate the surplus and put the sector back on a

[78] For example, Benxi Iron & Steel Group has been producing ammonia from COG since the 1960s. Di et al. Technical alternatives for coke oven gas utilization in China: A comparative analysis of environment-economic-strategic perspectives. Environmental Science and Ecotechnology. 26 January 2024.
[79] Several notable value chains that emanate from COG include ammonia, synthesis gas, methane gas, methanol, ethylene glycol, and LNG.
[80] Razzaq et al. Coke oven gas: Availability, properties, purification, and utilization in China. Fuel. November 2013.
[81] Di et al. Technical alternatives for coke oven gas utilization in China: A comparative analysis of environment-economic-strategic perspectives. 26 January 2024.
[82] For example, Jinnan Iron & Steel's transforms COG into various products, including LNG and hydrogen, which can be used on-site or sold to heavy-duty alternative vehicles through retail stations. KComber. Jinnan Iron & Steel: Create a precedent for "steel, coking, hydrogen and electricity" integrated coupling and carbon reduction. 2024.
[83] MySteel. China to see a boom in new LNG plants in 2024. 05 July 2024.
[84] MySteel. China to see a boom in new LNG plants in 2024. 05 July 2024.
[85] KComber. Jinnan Iron & Steel: Create a precedent for "steel, coking, hydrogen and electricity" integrated coupling and carbon reduction. 2024.
[86] Centre for Research on Energy and Clean Air (CREA). Urge for reform: Blast furnace glut in China erodes profitability and hinders green steel transition. 26 February 2025. Page 7.
[87] The export of surplus tonnage on the global market has sustained capacity but is likely to fall as countries enact trade restrictions to protect their steel industries. Also, the government halted the approval of new steel capacity. (CREA). Urge for reform: Blast furnace glut in China erodes profitability and hinders green steel transition. 26 February 2025. Pages 11 and 13.
[88] S&P Global. China's steel exports face rising trade barriers as antidumping cases surge. 25 February 2025.
[89] CREA. Urge for reform: Blast furnace glut in China erodes profitability and hinders green steel transition. 26 February 2025. Page 13.

decarbonization pathway.[90] Several policy developments could help accelerate this transition[91], prioritizing the deployment and utilization of electric-arc furnaces and hydrogen-based direct reduced ironmaking (DRI) over blast furnaces.

Still, the low utilization rate of COG suggests that China has ample room to grow its LNG production from those feedstocks, even if its coke production enters a stage of terminal decline.

LNG proponents are depending on China's LNG trucking boom to pull cargoes off the global market this decade. However, with LNG production currently surpassing road transport demand, LNG trucking is likely playing a marginal role in driving imports into the country. As China expands its liquefaction capacity and electric heavy-duty alternatives become more competitive, trucking may yield little to no opportunity for global LNG exporters.

V. Can China's Trucking Boom Spread Across Asia?

Some governments and industry proponents are relying on replicating China's LNG trucking boom across Asia. For example, India aims to replace a third of its diesel heavy trucking fleet with LNG by 2032.[92] Shell cites these ambitions as a signal for strong LNG demand in Asia in its recent outlook.[93]

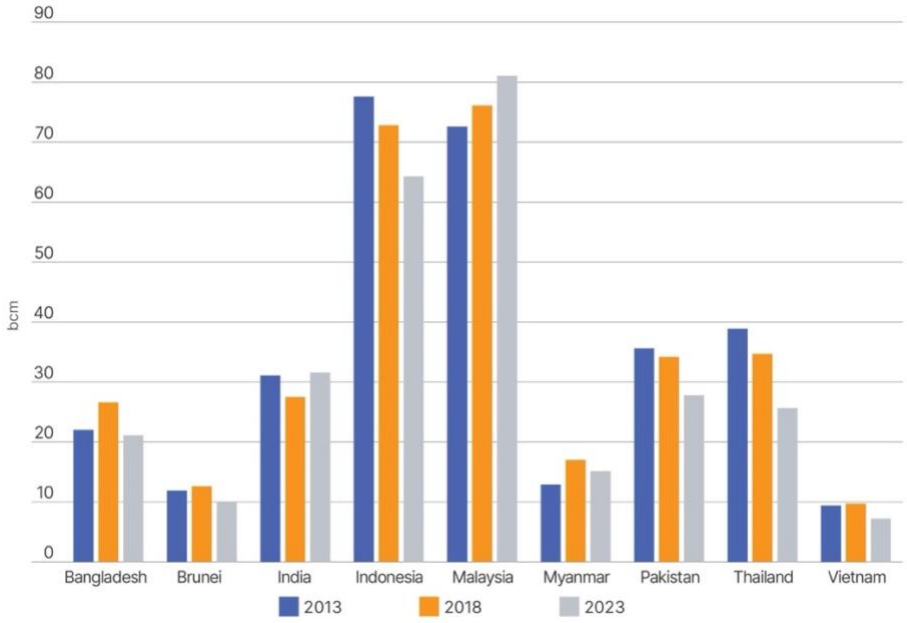
LNG trucking could emerge across South and Southeast Asia, particularly to fuel trucking activity from ports with access to LNG imports. However, several characteristics unique to China will make it difficult to duplicate the scale and speed of its LNG trucking success in other countries.

Asia Lacks China's Cheap, Abundant Gas Sources

First, few countries in the region have access to a growing supply of cheap gas sources, and most lack the gas infrastructure to set up domestic liquefaction plants for end-users.

[90] CREA. Urge for reform: Blast furnace glut in China erodes profitability and hinders green steel transition. 26 February 2025. Page 12.
[91] Policies include the Steel Industry Energy Conservation and Carbon Reduction Action Plan, the addition of the steel sector in China's national carbon market, and revised industry standards. CREA. Urge for reform: blast furnace glut in China erodes profitability and hinders green steel transition. 26 February 2025. Page 15.
[92] Manufacturing Today. Government aims to power 33% of trucks on LNG by 2030. 08 September 2024.
[93] Shell. Shell LNG Outlook 2025. 25 February 2025. Page 21.

Figure 11: Gas Production is Generally Falling Across Asia



Source: Energy Institute.

Apart from India and Malaysia, almost all significant gas producers in South and Southeast Asia are in a state of structural decline due to resource maturity. However, due to the high costs and volatility of imported LNG[94], many countries are renewing efforts to boost domestic output.[95, 96] Some expect a turnaround for regional gas exploration and development in the coming years.[97]

However, resource exploration efforts have had little commercial success so far. Proven reserves declined 28% over the last decade[98], with members of the Association of Southeast Asian Nations (ASEAN) experiencing a 20% reduction since 2018.[99] The IEA projects that Southeast Asia will become a net gas importer this decade, with Vietnam the only country where exploration efforts are successful in reversing production declines.[100]

Mature resources tend to experience cost increases, harming the competitiveness of LNG trucks over their diesel counterparts. For example, the decline of the mature Malampaya gas field in the Philippines has seen gas supply costs increase from around USD8 per million British thermal units (MMBtu) historically to over USD12 in 2024.[101] Adding liquefaction and transportation costs would

[94] Senate of the Philippines. Cayetano-Sponsored Natural Gas Industry Development Act Signed into Law. 15 January 2025.
[95] Petroleum Economist. Thailand and Cambodia eye oil and gas détente. 27 January 2025.
[96] Mitsui. Final Investment Decision for the Development of Vietnam Block B Gas Field. 29 March 2024.
[97] Rystad Energy. Offshore gas boom in Southeast Asia: $100 billion forecast by 2028. 09 July 2024.
[98] Energy Institute. Statistical Review of World Energy. 20 June 2024.
[99] ASEAN Centre for Energy (ACE). ASEAN Oil and Gas Updates 2024. December 2024. Page 6.
[100] IEA. Southeast Asia Energy Outlook 2024. 22 October 2024. Page 101.
[101] Freedom of Information, the Philippines. Department of Energy - Tracking 477510478214. 30 August 2024. Accessed on: 10 March 2025.

impair its ability to compete with diesel on cost. A similar situation could occur in other countries that rely on mature fields for gas supplies, such as Thailand.

Moreover, unlike China, few South and Southeast Asian countries have access to lower-cost pipeline imports from other states. Those that do are also experiencing the structural decline of gas supply emanating from their trading partners. For example, imports from Myanmar to Thailand fell almost 43% over the last decade[102], while diminishing resources in Indonesia are raising concerns about its ability to sustain pipeline exports to Singapore.[103]

Lack of Regional Infrastructure and Manufacturing Capacity

Much of the region also lacks the expansive gas infrastructure that enables LNG plants and retailers to flourish. For example, the limited existing gas infrastructure in the Philippines and Vietnam is designed primarily to bring offshore production directly to coastal power and industrial projects. Additionally, the archipelagic nature of countries like Indonesia and the Philippines could require smaller-scale logistics to deliver LNG across their many islands. This could add costs, either from the loss of economies of scale or by extending the logistical value chain.

Potential adopters like India are behind on the necessary refueling infrastructure to catalyze the LNG trucking sector. The country's LNG refueling stations are few and sparse, reportedly only 20 in 2024, compared to 8,000 in China.[104]

Lastly, few countries possess the in-house capacity to manufacture LNG trucks and their essential components domestically. Any LNG-fueled trucking boom will need to rely on China for imports. This could contribute to the capital cost disparity, requiring a steeper LNG discount than diesel to encourage adoption.

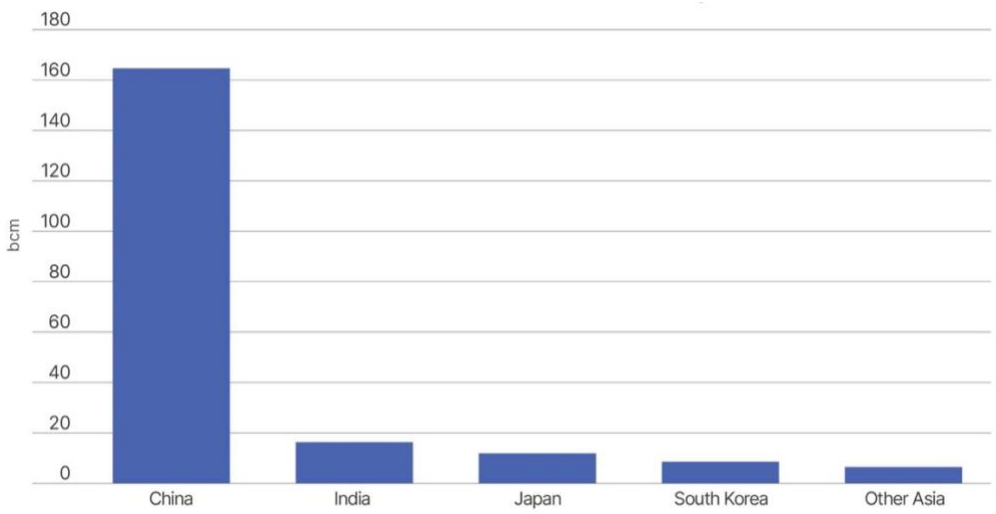
Coke Oven Gas is Likely a Limited LNG Supply Pathway

China's transformation of COG into LNG is a niche pathway that relies on its massive scale of coke production and the largely independent and non-captive nature of its coking facilities.

China's COG potential overshadows the rest of Asia (Figure 12). This overestimates the potential for LNG transformation across Asia, given that most of the country's coke production is captive in the steelmaking process.

[102] Thailand's Energy Policy and Planning Office (EPPO). Natural Gas Statistics. Accessed on: 09 April 2025.
[103] Reuters. Indonesia to divert LNG cargoes to local buyers in April-May, adjust Singapore exports. 09 April 2025.
[104] Blue Energy Motors. LNG trucks in India: Pvt sector entry sparks change, but challenges remain. 12 November 2024.

Figure 12: Coke Oven Gas Production from Coking Processes Related to Steel Production in Asia, 2023



Note: Estimation of COG potential assumes that it takes 0.45 tonnes of coke to produce 1 tonne of pig iron[105] and that 1 tonne of coke yields 420m^3 of COG.[106] Pig iron production from World Steel Association.

Source: World Steel Association: 2024 World Steel in Figures; IEEFA calculations.

Electric Vehicles are Shrinking the Opportunity for LNG Trucks

An upcoming flood of LNG export capacity this decade could provide an opportunity for LNG trucks across Asia by putting downward pressure on prices[107] and encouraging adoption. However, most countries are unlikely to have the infrastructure to capitalize on this oversupply window.

Notably, in two recently published Outlooks by the IEA, gas plays a negligible role in the future transport mix for India and Southeast Asia.[108, 109] Emerging electric alternatives could close the window of opportunity for LNG trucking. The electric heavy-duty truck trend that is gaining momentum in China could expand elsewhere.[110] Electric models are already cheaper than diesel for some applications, and falling battery costs will increase the advantage.[111] If cost parity and range anxiety are addressed, it would be more beneficial for governments to encourage the development

[105] World Steel Association. Raw materials. 2024.
[106] He et al. Assessment on the energy flow and carbon emissions of integrated steelmaking plants. Energy Reports. November 2017.
[107] IEEFA. Global LNG Outlook 2024-2028. 25 April 2024.
[108] LNG trucking in Southeast Asia is not covered in the report, but the IEA does show natural gas playing a barely discernible role in transport's fuel mix. IEA. Southeast Asia Energy Outlook 2024. 22 October 2024. Page 67.
[109] While India's LNG trucking ambitions are covered in a recent Gas Market report, the IEA still expects it to play a negligible role, contributing well under 1bcm to demand growth this decade. IEA. India Gas Market Report: Outlook to 2030. 12 February 2025. Page 31.
[110] SCMP. Electric trucks cheaper than diesel vehicles on long-haul routes in Shenzhen trial: expert. 04 February 2025.
[111] Goldman Sachs. Electric vehicle battery prices are expected to fall almost 50% by 2026. 07 October 2024.

of necessary refueling infrastructure to catalyze electric HDV adoption.[112] Investing in duplicative refueling infrastructure for an LNG trucking value chain makes little sense if it is only expected to play a minor, transitional role in heavy trucking.[113] Moreover, the responsiveness of vehicles sales to the volatile LNG-to-diesel price ratio could continue to stall uptake during this short timeframe.

VI. Conclusion

The gas industry is depending on China's LNG-fueled trucking boom to revitalize an increasingly fragile LNG demand outlook. Proponents anticipate that a sustained diesel-to-LNG displacement trend in China and replicating its success in other Asian countries can pull more LNG imports into Asia in the coming decades.

However, this ignores fundamental developments within China and undervalues some unique drivers contributing to this LNG trucking surge. Increasing lower-cost feedstock supplies and liquefaction capabilities will provide China with in-house LNG potential that is cost-competitive with coastal imports. Most Asian countries lack the infrastructure, manufacturing capability, and lower-cost feedstocks to emulate this in the short to medium term.

Meanwhile, emerging heavy-duty electric alternatives could start phasing out both diesel and LNG from road transport this decade. Countries aiming to replicate China's diesel displacement may be better served by directing funds towards electrification rather than investing in an LNG HDV supply chain that could become stranded in the near future.

[112] Carbon Tracker also believes that forging an electric HDV value chain presents a financial opportunity for both manufacturers and fleet operators. Carbon Tracker. Re-Fleeting Revolution: Delivering Financial Returns in the Electric Heavy Duty Vehicle Transition. 27 February 2025.
[113] Wood Mackenzie. LNG truck sales impacting Chinese road diesel demand. 26 July 2024.

Appendix I

Source: Third Way.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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