

China Heavy Duty Truck

Is the growth of natural gas truck sales sustainable?

Driven by the expanding price spread between LNG and diesel, industry sales volume of natural gas heavy-duty trucks (HDT) surged 5.6x / 7.4x YoY in Aug/Sep, taking the percentage of total HDT sales to 27%/31%. Now the key question is whether the momentum is sustainable or not. Our case studies suggest that truck buyers will continue to prefer gas trucks unless the LNG price gains >45% from the current level (or diesel price declines >23%) which will take the payback period same as that of diesel trucks. From a longer-term perspective, with the continuous increase in the supply of LNG driven by North America and Qatar, according to IEA, the LNG supply will likely stay abundant between 2024E and 2026E. On the contrary, diesel price will be subject to the crude oil supply constraint due to OPEC+ production cut policy, repurchase for Strategic Petroleum Reserve (SPR) by the US and limited capex from global oil companies. All these will likely support a relatively large LNG/diesel price spread and boost the demand for gas trucks.

- Natural gas HDTs accounted for 31% of total HDT sales in Sep.** The latest LNG price declined 40%+ from the peak in late 2022, while the diesel price dropped only ~15% during the same period. Sales of natural gas HDT therefore has had a strong run since early this year, given the lower operating costs to the truck buyers. The percentage of total HDT sales increased from 7% in Dec 2022 to 17% in Jun 2023, and further to 31% in Sep 2023.
- Payback period for gas HDT is 2.8 years; versus 4.4 years for diesel HDT.** We conduct a detailed analysis on the return comparison between LNG truck and diesel truck (Figure 1). Our key assumptions include: (1) Purchase price (VAT-included) of RMB468k for LNG HDT and RMB374k for diesel HDT; (2) average daily transportation distance of 500km. For truck buyers, based on the current price of LNG (RMB4.9/kg) and diesel (RMB8/litre), the annual net profit of RMB167k (payback: 2.8 years) generated from LNG truck is significantly better than that of diesel truck (RMB85k, payback: 4.4 years).
- Abundant supply of LNG over the coming years.** According to IEA, global gas demand growth rate in 2022-26E is expected to slow to 1.6% p.a. from 2.5% p.a. in 2017-21. The future demand growth is expected to be driven by Asia Pacific and the Middle East, which offset the weakness in other regions. On the supply side, global gas supply will be driven by LNG. The global LNG supply is expected to expand by 25% between 2022 and 2026, with 70% of the new supply concentrated in 2025E-26E. This is expected to drive an increasingly interconnected and globalized gas market.

Key beneficiaries:

- Our top pick is **Weichai Power (2338 HK, 000338 CH, BUY)**, given its >60% market share in HDT gas engine (related report: [3Q23 earnings surged 120-200% YoY; Strong gas trucks sales continue to be key driver](#)).
- Natural gas HDT: FAW Jiefang (000800 CH, NR)** is the largest gas HDT manufacturer with 35% market share (in Sep).
- LNG on-vehicle cylinder manufacturers: CIMC Enric (3899 HK, NR), Furui Special Equipment (300228 CH, NR) and Zhiyuan New Energy Equipment (300985 CH, NR)** are beneficiaries of strong orders.

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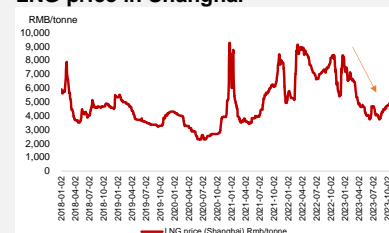
China Capital Goods

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LNG price in Shanghai



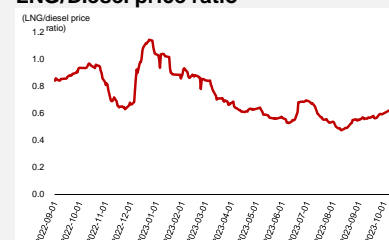
Source: Wind, CMBIGM

Diesel price in Shandong



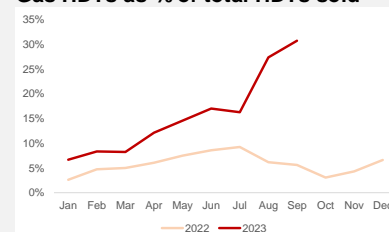
Source: Wind, CMBIGM

LNG/Diesel price ratio



Source: Bloomberg, CMBIGM estimates

Gas HDTs as % of total HDTs sold



Source: Cvworl, CMBIGM

Figure 1: Comparison of investment return between Diesel and LNG truck

Diesel		LNG	
Operating assumptions			
Transport service income (RMB / tonne km)	0.27	Transport service income (RMB / tonne km)	0.27
Capacity (tonne)	30	Capacity (tonne)	30
Operating days / month	20	Operating days / month	20
Daily transportation distance (km)	500	Daily transportation distance (km)	500
Diesel consumption (litre / 100 km)	30	Gas consumption (kg / 100 km)	30
Diesel price (RMB /litre)	8.0	Gas price (RMB/kg)	4.9
Urea expense (RMB / 100 km)	11.25	Urea expense (RMB / 100 km)	0
Maintenance expense (RMB / 100 km)	60	Maintenance expense (RMB / 100 km)	60
Toll fee per vehicle (RMB/km)	2.2	Toll fee per vehicle (RMB/km)	2.2
Monthly wage of a driver (RMB)	9,000	Monthly wage of a driver (RMB)	9,000
Tax rate (%)	25%	Tax rate (%)	25%
Capex			
Truck purchase price (RMB)	320,000	Truck purchase price (RMB)	400,000
Years of depreciation	5	Years of depreciation	5
VAT rate	17%	VAT rate	17%
VAT (RMB)	54,400	VAT (RMB)	68,000
Total purchase price (RMB)	374,400	Total purchase price (RMB)	468,000
Profitability			
	(RMB)		(RMB)
Revenue (annual)	931,500	Revenue (annual)	931,500
Expense:		Expense:	
Diesel	(288,000)	Natural gas	(176,400)
Urea	(13,500)	Urea	0
Depreciation	(64,000)	Depreciation	(80,000)
Maintenance	(72,000)	Maintenance	(72,000)
Toll fee	(253,000)	Toll fee	(253,000)
Driver wage	(108,000)	Driver wage	(108,000)
Insurance and others	(20,000)	Insurance and others	(20,000)
Pre-tax profit	113,000	Pre-tax profit	222,100
Tax	(28,250)	Tax	(55,525)
Net profit	84,750	Net profit	166,575
Payback period (year)	4.4	Payback period (year)	2.8

Source: CMBIGM estimates

Figure 2: Sensitivity of payback period to diesel price

		Transport service income (RMB / tonne km)				
		0.243	0.2565	0.27	0.2835	0.297
	6.4	6.4	4.0	2.9	2.3	1.9
	7.2	10.3	5.2	3.5	2.7	2.1
Diesel price	8.0	25.1	7.5	4.4	3.1	2.4
(RMB/litre)	8.8	n/a	13.3	5.9	3.8	2.8
	9.6	n/a	56.6	9.0	4.9	3.4

Source: CMBIGM estimates

Note: For diesel truck

Figure 3: Sensitivity of payback period to LNG price

		Transport service income (RMB / tonne km)				
		0.243	0.2565	0.27	0.2835	0.297
	3.9	3.8	3.0	2.4	2.1	1.8
	4.4	4.3	3.2	2.6	2.2	1.9
LNG price	4.9	4.8	3.6	2.8	2.3	2.0
(RMB/kg)	5.4	5.6	4.0	3.1	2.5	2.1
	5.9	6.7	4.4	3.3	2.7	2.2

Source: CMBIGM estimates

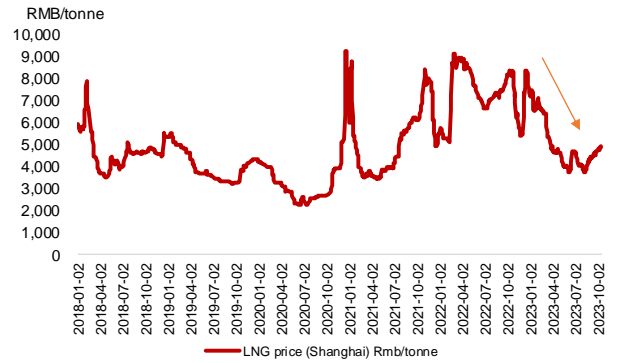
Note: For LNG truck

Figure 4: Diesel price in Shandong



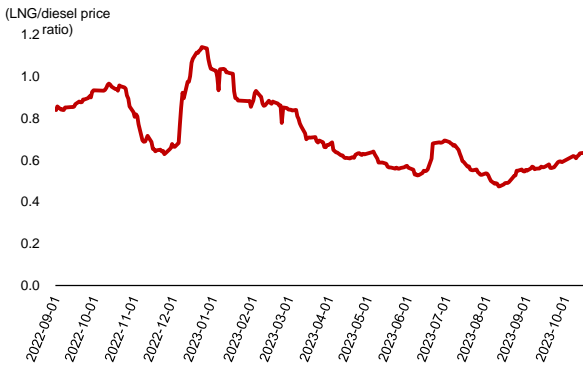
Source: Wind, CMBIGM

Figure 5: LNG price in Shanghai



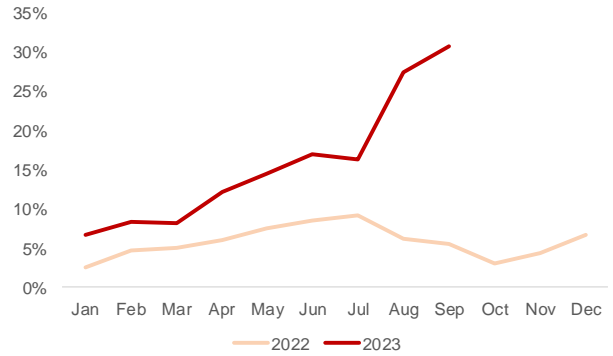
Source: Wind, CMBIGM

Figure 6: LNG/Diesel price ratio



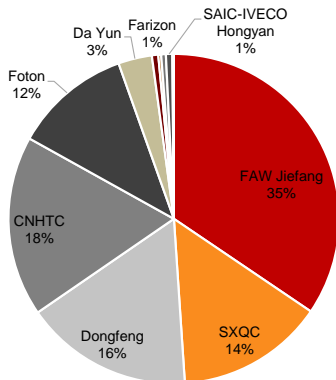
Source: Bloomberg, CMBIGM estimates

Figure 7: Natural gas HDTs as % of total HDTs sold



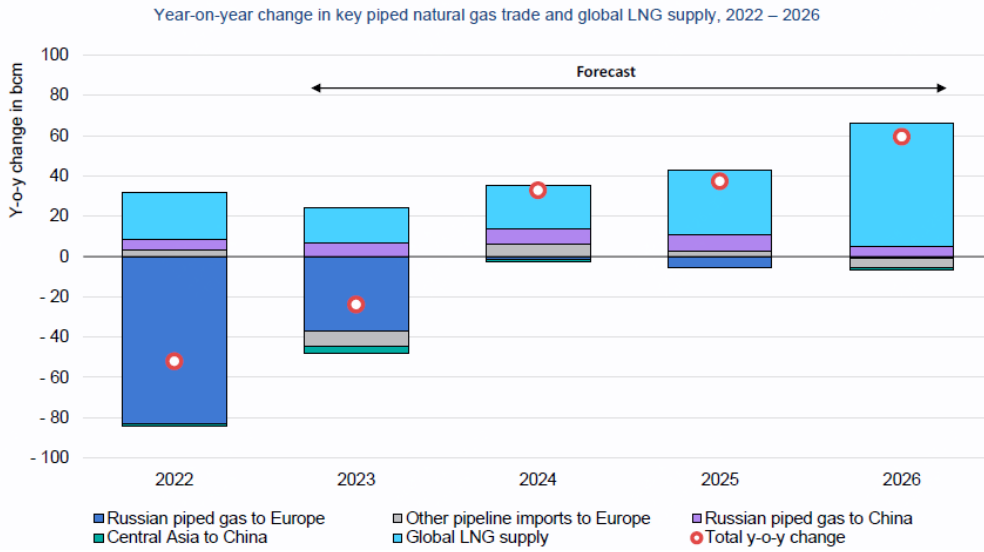
Source: Wind, Cvworl, CMBIGM

Figure 8: Market share of natural gas HDT in China



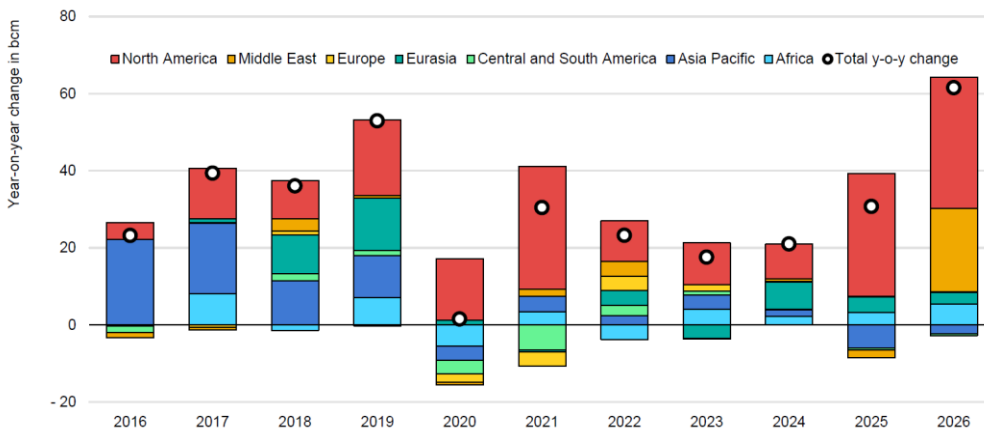
Source: Cvworl, CMBIGM

Figure 9: Global LNG supply to see continuous growth by 2026



Source: Medium-Term Gas Report 2023 by IEA, CMBIGM

Figure 10: YoY change in global LNG supply (North America and Qatar to account for 80% of incremental supply in 2023E-26E)



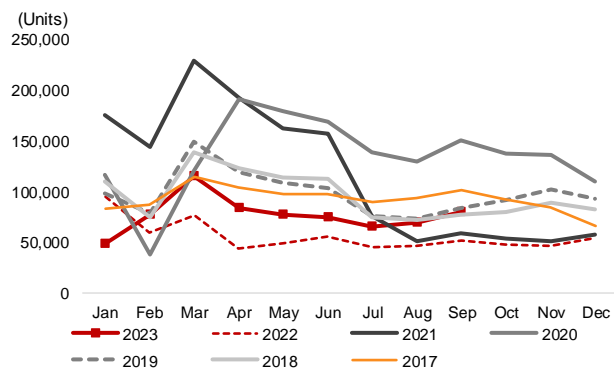
Source: Medium-Term Gas Report 2023 by IEA, CMBIGM

Figure 11: Global natural gas demand growth by 2026



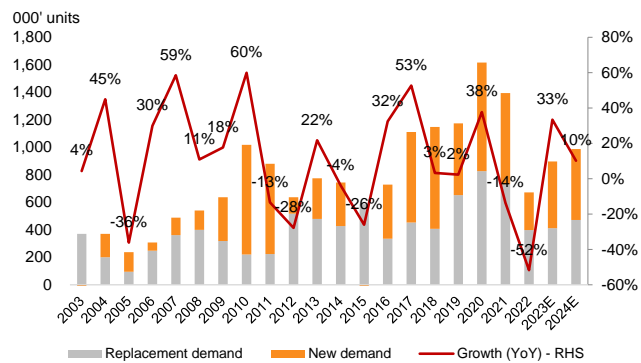
Source: Medium-Term Gas Report 2023 by IEA, CMBIGM

Figure 12: China HDT monthly sales



Source: Cvworld, CMBIGM
Note: China domestic sales + export

Figure 13: CMBIGM HDT sales projection



Source: Cvworld, Wind, CMBIGM estimates
Note: China domestic sales + export

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