EV Demand to Moderate, CNG to Drive Sales of Dual-fuel Vehicles

August 17, 2022 | Ratings

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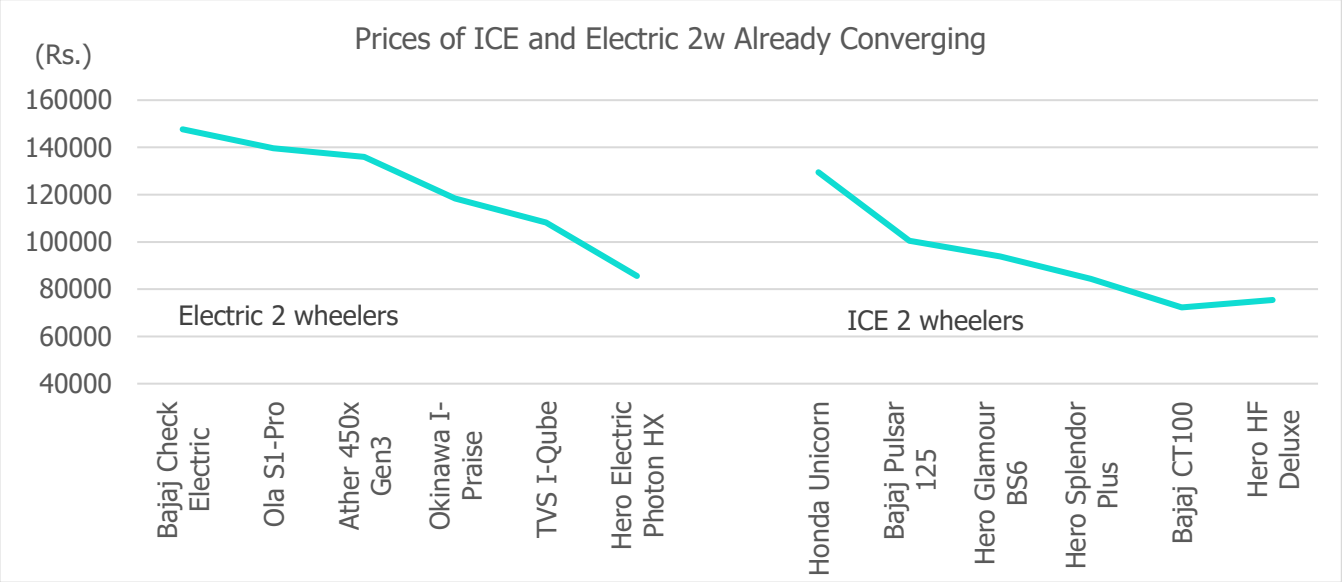
Synopsis

- Though electric vehicle (EV) sales volumes would display a strong growth over the next three years, the growth rate would be significantly lower than previous estimates.
- The key factor dragging down the growth rate is the sharp increase in prices of key raw materials including Nickel, Lithium and Cobalt.
- Increasing demand and geopolitical factors could lead to prices of EV batteries not falling at the pace previously envisaged.
- The cost savings offered by Compressed Natural Gas and Liquified Petroleum Gas (LPG, often referred to as Autogas) in comparison to petrol and diesel, supported by increasing infrastructure support for fuel stations, will lead to favourable demand for Internal Combustion Engine based automobiles. However, the demand would be tempered by a reduced differential between traditional fuels and gas prices.

Growth to be Slower than Earlier Expected

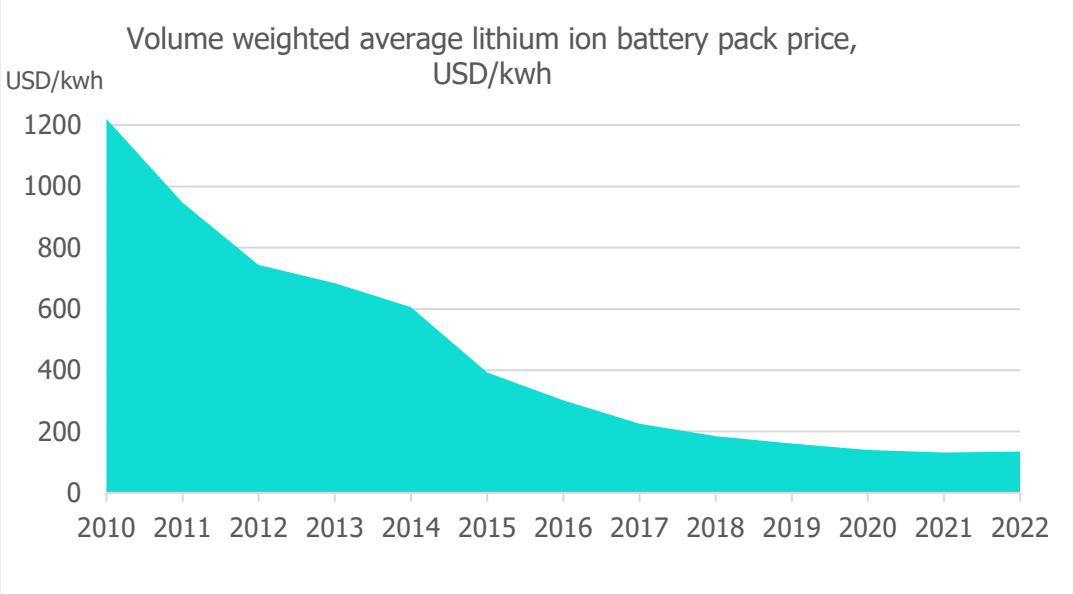
Electric vehicles have reported a CAGR of 205% in two-wheelers and 149% in four-wheelers in domestic sales volumes during FY20-FY22 on the back of low base effort and increasing demand and are expected to grow further at a rate of 75% over the next three years. The growth is likely to be highest in 2W segment due to relatively lower ticket sizes and the fact that prices of electric 2W and ICE-based 2W have started to converge.



On road prices, Mumbai. Source: bikewale.com

The steady decline in prices of electric 2Ws has been on account of a reduction in the cost of manufacturing Lithium-Ion batteries. Calendar years 2022 and 2023 were expected to be watershed years by when the battery manufacturing costs would decline to around USD100/kwh, which would then make EV vehicles comparable in price with ICE vehicles. Demand for EVs across various categories was therefore expected to rise steeply from 2023 onward. However, as per research conducted by Bloomberg NEF, the volume weighted per kwh production cost in CY2022 is likely to rise marginally to around USD135 after displaying a sharp reduction in the past decade from

over USD1000 to USD132 in 2021. Production costs for Lithium-Ion batteries are not likely to reduce from current levels for the next three years, thereby dampening demand for EVs to some extent.



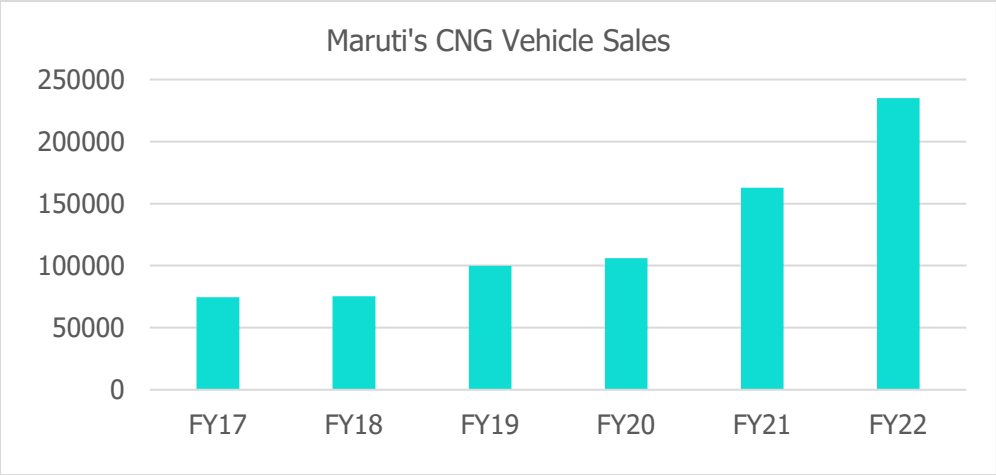
Source: Bloomberg NEF

Supply Constraints Driving Surge in Raw Material Prices

Lithium, Cobalt and Nickel are the three key raw materials that are required for manufacture of cathodes. The cost of manufacturing cathode contributes to a little over 50% of the overall battery manufacturing cost. The sudden increase in demand for these metals in the past five years has led to a demand supply mismatch with mining capacity having to ramp up significantly to match demand. The largest suppliers of Lithium in the world are Australia, Chile and China with Chile having the largest reserves. In the case of Cobalt, the top three producers are Democratic Republic of Congo (DRC), Russia and Australia, while for Nickel, the top producers are Indonesia, Philippines and Russia. Volatility in Cobalt and Nickel prices in recent months has been attributed to the on-going Russia Ukraine war. Mining of Lithium in Chile and Cobalt in DRC has come under criticism due to the adverse environmental impact of the same. Based on market data, CareEdge believes that increasing mining capacity for Lithium, Cobalt and Nickel in the mentioned regions would take at least three years and during the interim, battery prices would remain firm at around present levels.

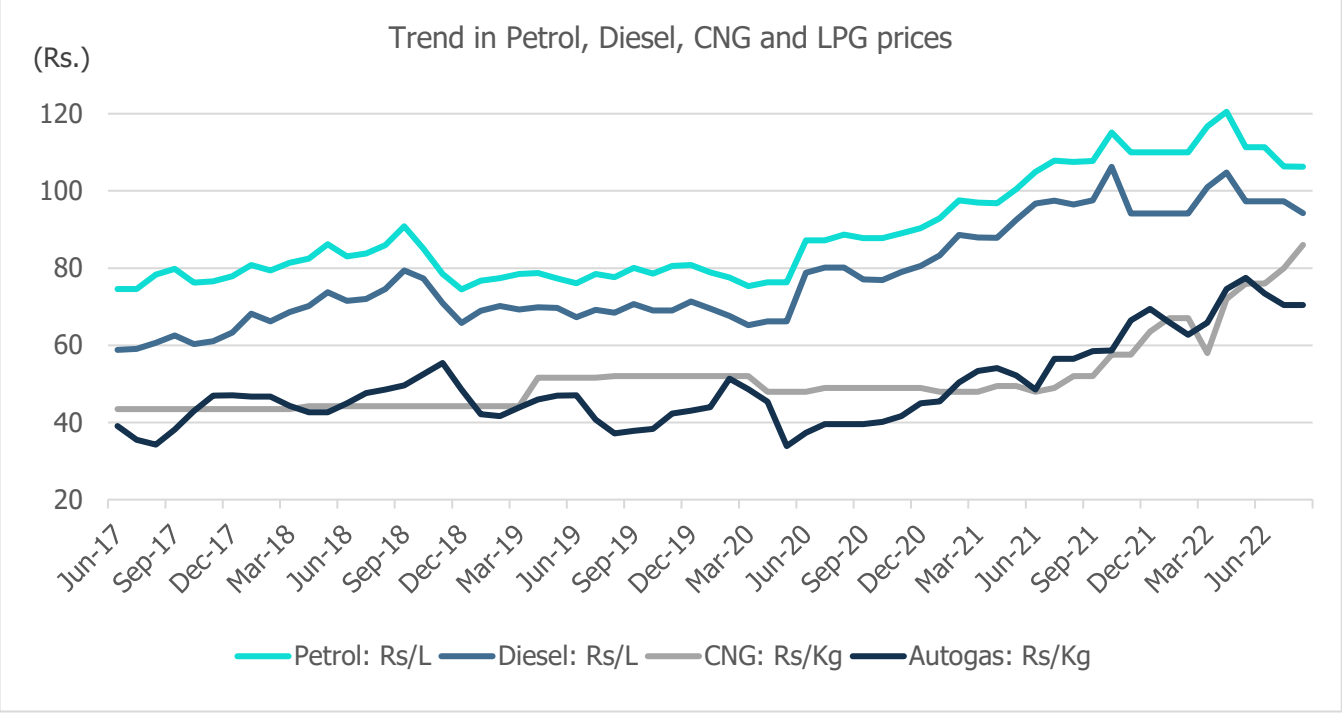
CNG/LPG Vehicles to Drive Volumes in ICE Autos, Albeit at Lower Clip

CareEdge expects that among the ICE auto categories, the CNG/LPG-based PVs and passenger carriers (whether buses or three-wheelers) will continue to display the highest growth rate over the next five years. Driving this demand is the lower cost of ownership of CNG/LPG vehicles, in turn, linked to the price differential between petrol/diesel and gas prices. The shift in buyer preferences towards CNG/LPG vehicles is clearly reflected not only in the 25.8% CAGR growth that market leader Maruti Suzuki India Ltd (MSIL) has displayed from FY17-FY22 (with 49% CAGR in the last three years), but also in the increasing proportion of CNG vehicles in MSIL's sales (16.8% in FY22 compared with 5.1% in FY17).



Source: ET Auto, 31 March 2022

The price differential has reduced in recent months due to the reduction in excise duty on petrol and diesel and the rise in CNG and LPG price which is linked to higher import costs. CareEdge believes that the demand would be tempered to some extent by the reduced price differential between traditional fuels and CNG/LPG, however, this category of ICE vehicles will continue to enjoy higher demand given the cost savings they will still continue to offer.



Source: Petrol Planning and Analysis Cell, mypetrolprice.com

Trend in Levy of Excise Duty on Petrol and Diesel

Month, Year	Excise Duty on Petrol	Excise Duty on Diesel
Nov-14	Rs 9.2 per Litre	Rs 3.46 per Litre
Dec-17	Rs 21.48 per Litre	Rs 17.33 per Litre
Jun-20	Rs 32.98 per Litre	Rs 31.83 per Litre
Nov-21	Rs 27.98 per Litre	Rs 21.8 per Litre
May-22	Rs 19.98 per Litre	Rs 15.8 per Litre

Source: News reports

Comparative Fuel Efficiency for Petrol and CNG Models

Model	Petrol Variant	CNG Variant
	Fuel Efficiency (km/litre)	Fuel Efficiency (km/kg)
Tata Tigor	19.20	26.49
Maruti Wagon R (998cc)	24.35	34.05
Maruti Swift Dzire	23.26	26.55
Hyundai i10	20.70	24.00
Hyundai Xcent	20.50	25.40

Source: autocarindia.com, cardekho.com; Fuel efficiency as determined by ARAI

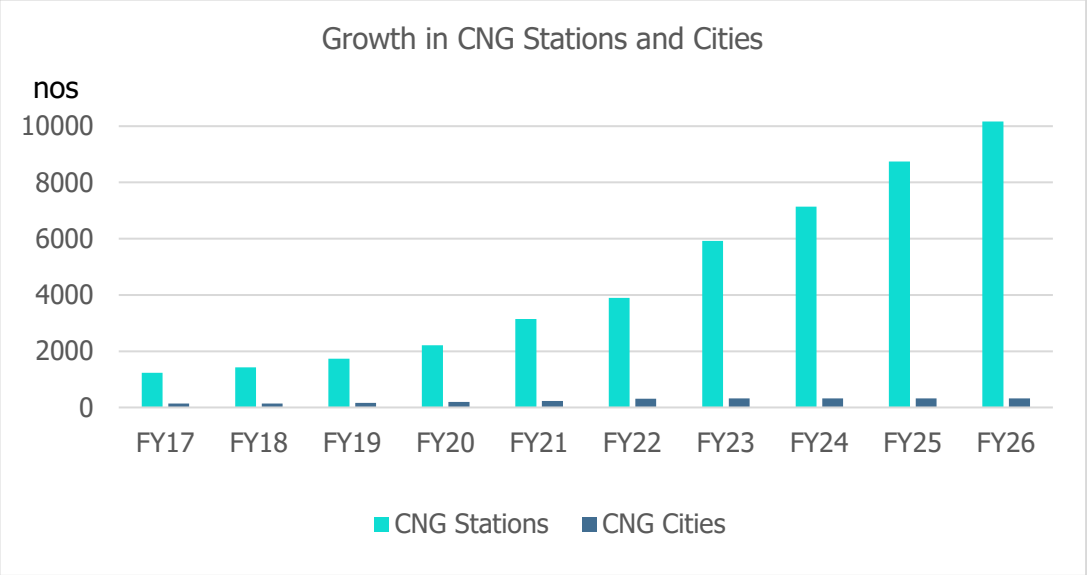
Reduction in Cost Savings in Use of CNG Vehicles over Past 1 Year

Model	Based on Fuel Prices as of Aug 2021			Based on Fuel Prices as of Aug 2022			Reduction in cost savings (Rs/km)
	Petrol variant	CNG variant	Cost Savings (Rs/km)	Petrol variant	CNG variant	Cost Savings (Rs/km)	
	Cost per km (Rs)	Cost per km (Rs)		Cost per km (Rs)	Cost per km (Rs)		
Tata Tigor	5.6	2.0	3.6	5.5	3.2	2.3	1.3
Maruti Wagon R (998cc)	4.4	1.5	2.9	4.4	2.5	1.8	1.0
Maruti Swift Dzire	4.6	2.0	2.7	4.6	3.2	1.3	1.3
Hyundai i10	5.2	2.2	3.0	5.1	3.6	1.6	1.5
Hyundai Xcent	5.2	2.0	3.2	5.2	3.4	1.8	1.4

Based on following fuel price trends:

Price of Fuel (Mumbai)	Aug-21	Aug-22
Petrol Price (Rs/litre)	107.52	106.29
CNG Price (Rs/kg)	51.98	86.00

Another factor driving the demand for CNG/LPG vehicles is the fast pace at which additional fuel stations at being set up. From around 3900 fuel stations for CNG set up across 236 cities in FY22, the number is expected to swell to 10,164 across 327 cities by FY26. Unlike in case of EVs where support infrastructure in terms of charging stations will take a long time to ramp up leading to continued 'range anxiety' among potential buyers, CNG/LPG vehicles are not expected to face much difficulty in terms of access to fuel.



Source: ETAuto.com

Conclusion:

The large-scale transition to EVs, which was earlier expected to happen post 2023, is likely to be delayed by at least three years, with two-wheeler EVs continuing to account for over 90% of demand in the interim. The switchover to EV in the car segment will continue to be hampered by relatively much higher car prices (as against comparable prices of EV and ICE vehicles in the two-wheeler segment), as well as the lack of charging infrastructure which is yet to be ramped up on a pan-India basis.

In the ICE segment, three and four-wheelers with CNG/LPG variants would continue to sell faster than conventional petrol or diesel engine vehicles given the lower running costs. However, as the price of CNG and Autogas has increased significantly in the past year the demand over the next three years in this case also would be lower than previous estimates. Adequate fuel infrastructure in this case will help drive volumes of three and four-wheeler CNG/LPG vehicles.

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