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EU BEV Retail Prices Modestly Outpace Inflation as Battery Costs Rise; Local Production Growth Will Help Support Price Declines by 2030

Stratas Advisors

As global markets struggle to accommodate increasing electric vehicle (EV) demand and tightening supply chains, the historical drop in EV retail prices has come to a halt as automakers cite growing battery materials costs among the main reasons to justify the price spike. In fact, as demand for battery materials soars, the year 2021 saw lithium prices more than triple with respect to 2020, with cobalt and nickel prices increasing by 65% and 30% respectively. These price trends have persisted in 2022 as geopolitics exert strong pressure on global supply chains, which are expected to drive growing prices until the mid-2020s.

The full-year projection for 2022 shows lithium prices grow by a further 162% year-over-year, while cobalt prices are projected to register a 14% increase compared to 2021. With Russia as one of the top producers of battery-grade nickel, nickel prices will see a 12% increase in 2022 compared to the previous year, and will continue to grow until at least 2024. Even in a scenario where markets eventually re-stabilize, raw materials prices are not expected to decline in the short term, primarily because supply for key materials will remain tight in the absence of large-scale mining projects.

As raw material prices grow, Stratas Advisors estimates that materials present in the cathode could represent 56% of the total battery price in 2022, increasing to over 63% in 2023. With cobalt content declining over time, the impact of raw material prices in total battery costs is expected to fall throughout the coming decade. However, in the absence of a major decrease in commodity prices, in 2030 materials could still account for over one third of battery pack costs.

With raw material price dynamics driving higher battery costs, the lack of sufficient domestic battery and semiconductor manufacturing capacity in key demand markets is adding pressure to EV automakers in a majority of Western markets. In Europe only, the average retail price of a new light-duty battery-electric vehicle (BEV) has risen by 11% in 2022 compared to 2021, of which about two-thirds are estimated to stem from higher battery costs.

While battery material prices may account for the largest share of the price increase, battery material prices are not rising

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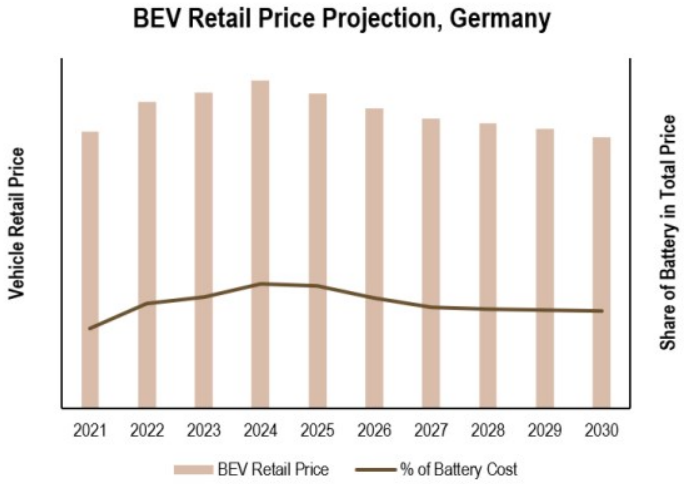
in isolation. In fact, automakers are also expected to be affected by the (more moderate) increase in the price of other metals needed in conventional internal combustion engine (ICE) vehicles too – including aluminum, copper, steel, platinum, and palladium. These factors, combined with the shortage of parts and chips, will likely constrain the profitability of automakers, however operating margins will probably stay solid as increased manufacturing costs are passed on to consumers.



Key takeaways:

- Despite remaining the least expensive chemistry currently available in the market, LFP batteries see the strongest price increase in 2022 due to doubling spot lithium prices.

- With tight supply compared to demand, high cobalt prices exacerbate the competitiveness of high cobalt content chemistries in favor of high-nickel and lithium-based cathodes. However, price dynamics of commodities will result in cathode materials accounting for over one-third of total battery costs in 2030.

- Domestic battery production capacity is set to increase more than four-fold in the next five years, partially alleviating the impact of high raw material prices.

- Tesla Model 3 Standard and Long Range register the strongest price increases among the top-selling models in Germany, though other full-electric models such as the Renault Zoe and the Kia Niro have also witnessed a significant price increase overall.

- The impact of higher battery costs will peak in 2024 to account for 35% of the average BEV price, however BEV

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prices will follow a more moderate upward trajectory than average battery costs.

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