Energy Intelligence

Energy Intelligence Premium Weekly

Thursday, July 21, 2022

EV Outlook Strengthens Despite Challenges

A critical shift in consumer sentiment in key markets is propelling electric vehicle (EV) uptake higher despite pandemic -related pressures, Energy Intelligence analysis suggests. Cost parity with conventional cars may be delayed, but EV adoption will still drive oil demand declines post-2030.

- **Consumer preferences are shifting toward mass EV adoption.** EV uptake is now a question of when, not if, it will happen — and how swiftly. Consumer sentiment in key markets has reached a tipping point, evidenced by soaring sales and wider interest. Supports include: (1) policies to limit/reduce internal combustion engine (ICE) vehicle sales and boost EV adoption; (2) automaker investment in new EV models, including SUVs and pickups; and (3) falling battery costs. High fuel prices provide important new psychological and economic incentives. Plug-in sales in China, Europe and the US surged to 6.2 million in 2021, exceeding the higher end of our 2018 forecast (5 million). China has surpassed its mid-decade goal of 20% of new sales, while the EU hit 20.5% in Q1'22. EVs rose to 6.7 % of US auto sales in May, and are growing fast.

- **Supply-chain issues may moderate, but not halt, EV growth.** Availability and cost pressures could constrain near-term EV growth, but we see limited long-term effects. Higher metals costs and battery and semiconductor production disruptions will potentially delay EV-ICE cost parity by two years, to 2027. Our calculations show EV metals input costs up 60% since January 2019, with lithium up fivefold and cobalt up over 50%. But we see large investments in battery and semiconductor capacity and revived post-pandemic supply keeping supply-chain issues relatively short-lived. Improved metals efficiency and battery chemistries, and cheaper alternative materials, are likely to minimize supply-side disruptions by the mid-2020s and help cut levelized lithium-ion battery costs to $87/kWh by 2030 — below the ICE vehicle parity level of $100/kWh, and almost half 2022 levels.

- **EV sales should gain extra momentum after 2025.** Higher production costs and a weak macroeconomic backdrop moderate our Core scenario EV sales projections through mid-decade, but we see headwinds then easing. EV sales in Europe, the US, China, Japan and South Korea reach 30 million by 2030 in this scenario, or nearly 45% of total auto sales (vs. 12% in 2021). Europe leads at over 55% of sales by 2030, with China at 45%. Uneven political backing and lack of public charging limits US sales to one-third by 2030. Our High case sees higher fuel prices, faster battery cost declines and tougher ICE phaseout policies expediting EV adoption to nearly 60% of sales in key markets this decade. In our Low case, persistent supply chain and charging network limitations cap EVs at 27% of 2030 sales.

- **EVs will constrain global oil demand growth from 2025 and drive declines from 2030.** All three scenarios show passenger light-duty vehicle (LDV) oil demand in these five key markets peaking in the mid-2020s and slowing global oil demand growth by 2030. EVs become the central driver of declining global oil use post-2030. In our Core case, passenger LDV fuel demand in these markets peaks around 16 million b/d in 2025-26, before slowly easing to 2019 levels of 15 million b/d by 2030. Accelerated EV uptake post-2030 pushes demand 4 million b/d below 2019 levels by 2040, or 7.4 million b/d in our High case. Diesel demand will decline sooner than gasoline.

- **EV adoption is more likely to exceed than undershoot our expectations.** The supply chain, cost and macroeconomic challenges are real, and grid access and reliability may compound these obstacles. The US market is vulnerable to political shifts, and other countries will have to shift carefully from subsidizing to taxing EVs. These considerations keep our Core case relatively cautious, especially to the mid-2020s. Still, we see the shift in consumer sentiment — especially in China and Europe — supporting our High case should these issues resolve more quickly, potentially mirroring the rapid adoption of disruptive consumer technologies such as mobile phones. Prospects for our Low case are weaker given fewer plausible pathways to a dramatic slowdown or reversal in EV development and sales. Key to watch over the next 12-18 months are (1) lingering supply-chain issues; (2) automakers' ability to deliver new models; (3) the pace of charging infrastructure additions; and (4) continuation of EV policy incentives/ICE restrictions.

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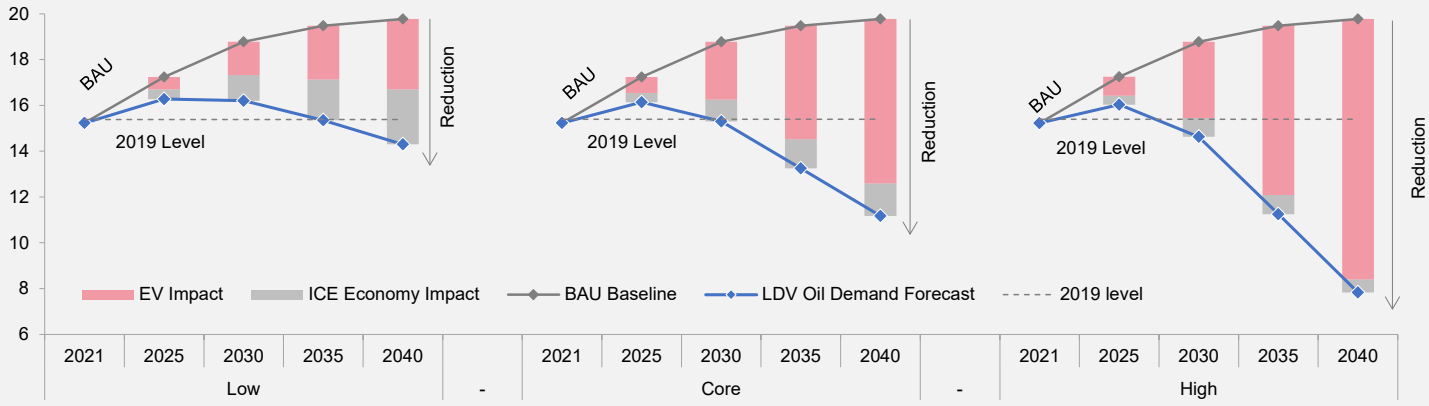
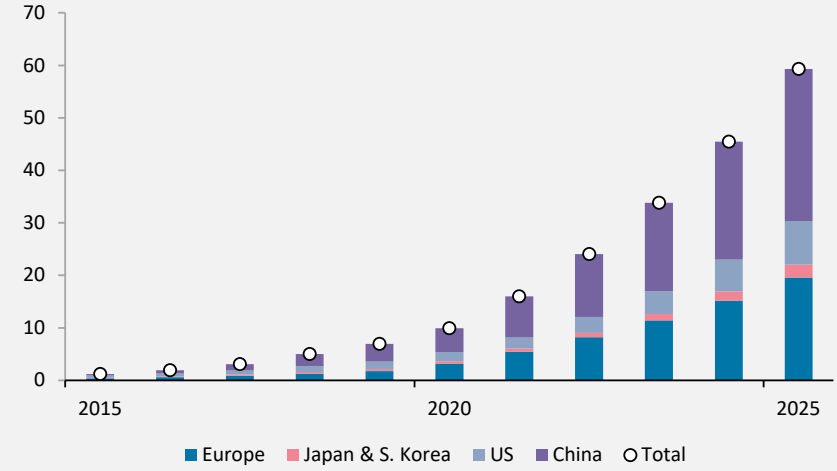
Reduction in Passenger Light-Duty Vehicle (LDV) Fuel Demand by Scenario (US, Europe, China, Japan & S. Korea, mmb/d)



EV Fleet (Million Vehicles)



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