

Automotive



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2021 review

2021 was a frustrating year for the automotive industry. Global light-vehicle sales were essentially flat year-on-year, at 74.9 million, despite strong demand as production was severely hampered by supply-chain constraints, particularly for semiconductors. Car manufacturers cancelled orders during the initial stages of the pandemic, only to find capacity had shifted to other industries (mostly consumer electronics) when they were surprised by the V-shaped recovery in demand. This was compounded by a series of supply chain problems, including a number of fires at plants in Taiwan and Japan (including one at a Renesas plant that produces 30% of automotive microcontrollers), power outages in Texas caused by winter storms, stringent COVID-19 lockdown measures in Malaysia and Vietnam, and power outages in Europe and China. Researchers from IHS Markit estimate around 10 million cars were not built as a result.

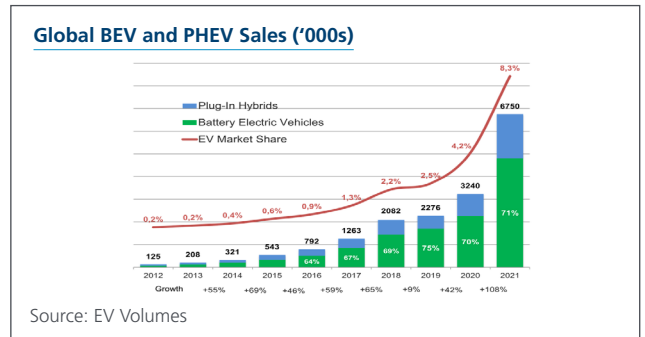
Meanwhile, demand was still strong, supported by a combination of deferred purchases and market share gains from public transport due to social distancing and people escaping to less densely populated areas. While volume was limited, original equipment manufacturers (OEMs) benefitted from the supply/demand imbalance and were able to build large backlogs while focusing on producing high-end models (with higher margins) and enjoying an exceptional pricing environment. While the top-end manufacturers also benefited from a better mix – greater content on high end models and electric vehicles (EVs) – they were less able to increase pricing to offset production cuts and input cost inflation.

We continue to believe the megatrends of **electrification**, **autonomy** and **connectivity** represent the biggest revolution in the automotive industry since Henry Ford unveiled the Model T in 1908.

Electrification

Despite the semiconductor shortage, global plug-in electric vehicle sales growth accelerated to 108% year on year (y/y) – from 43% in 2020, 10% in 2019 and 65% in 2018 – as automakers prioritised EV production to meet consumer demand and avoid emissions penalties. Global EV sales reached 6.8 million (8.3% penetration) with China reclaiming its place from Europe as the largest EV market, growing 155% y/y to 3.4 million (13.3% penetration). The downside risk to EV demand in China, however, is the subsidy program for passenger EVs was cut by 30% at the start of 2022 and will be terminated completely by 2023.

Growth was strong across regions, with Europe growing 66% y/y to 2.3 million units (17% penetration) and North America by 96% to 0.7 million (4.4% penetration, benefiting from the rollout of attractive, new offerings by nearly all the manufacturers, and better availability of Tesla Model 3 and Model Y.



Market Growth Forecasts

EV sales are forecast to grow 41% to 9.5 million units this year, by more if remaining supply chain issues are resolved, while longer-term penetration expectations have materially accelerated.

Underpinning these forecasts are a range of factors, including improving battery technology and costs, the faster rollout of a charging infrastructure, the wider range of models being made available and longer range and faster charging speeds available on the newest vehicles. The regulatory environment continues to be extremely supportive, with numerous countries banning internal combustion engines outright between 2030-40.

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The main limit on EV growth at this stage is supply. Beyond the near-term shortages affecting the industry (semiconductors and other components), battery raw material bottlenecks will likely come to the fore in 2022. In 2021, most raw materials essential for battery cathodes and anodes saw significant price increases. Lithium hit an all-time high and cobalt, nickel and graphite also spiked. As things stand, with demand outpacing supply for most key metals, (which make up 60% of total battery cost), prices will likely continue to put pressure on overall battery costs. The supply shortage can be mitigated to a degree by increased mining capex, alternative battery chemistries (LFP – lithium iron phosphate – and potentially sodium ion chemistries), battery recycling, more efficient production and the use of smaller battery packs, while the retail cost could be lowered by additional government incentives.

For now, backlogs are so large and pricing so strong that there will be limited impact on OEM margins, but in the longer term prices will need to come down to encourage buyers of lower-cost vehicles to make the transition from the combustion engine to EV offerings.

Autonomy and connectivity

Meaningful volumes of fully autonomous vehicles (AV) are likely several years away bearing in mind technical, testing/validation, financial, legal, regulatory and societal hurdles so most OEMs are focused on delivering lower level advanced driver assistance systems (ADAS) to meet regulatory requirements (automatic emergency braking, driver monitoring etc) and systems which augment the driver rather than replace them. According to Semicast, infrared driver monitoring systems might reduce fatalities by 90-95%, at a fraction of the cost of full autonomy. That said, AVs are operating at a limited scale in geofenced areas today such as robo-taxis, trucking and last-mile logistics.

Our view remains that autos are at the leading edge of the Internet of Things. By 2023, IDC expects worldwide shipments of connected vehicles to reach 76.3 million units, approaching 70% penetration of light vehicles driven by consumers, automakers and governments. For passenger cars, connectivity enables over the air (OTA) software updates, in-vehicle entertainment and a range of revenue-generating services such as emergency breakdown assistance (eCall is mandatory in all new cars in the EU from April 2018). It will also be a crucial component of higher-level autonomy systems such as vehicle-to-vehicle/infrastructure communication.

ESG

The historical home of dirty diesel and gas guzzlers may not be the natural hunting ground for the ESG-focused investor. Yet with a rapid decarbonisation of the sector underway, auto stocks may find a new role in investors' ESG portfolios – especially those seeking alignment with EU taxonomy (companies/investors will be required to disclose the percentage of revenue that meets EU criteria for green economic activities). Key ESG issues for the auto sector are: (1) climate change (emissions regulations); (2) labour relations (challenges around restructuring during the EV transition as well as labour cost inflation with unionised workforces); (3) circular economy (recycling), and (4) corporate governance.

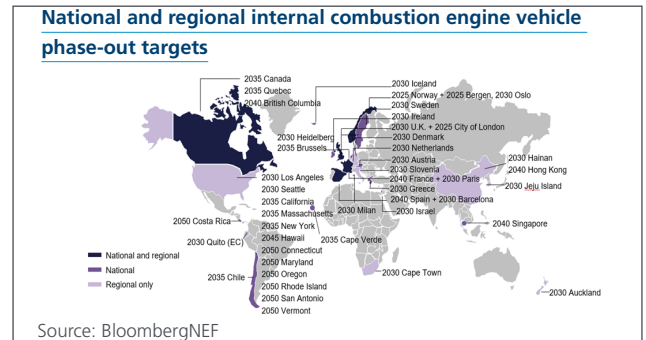
2022 positioning

Due to the semiconductor shortage, automotive production is only just accelerating from trough levels. Global light-vehicle production bottomed in Q3 2021 at 16.6 million units, increasing to 19.5 million in Q4. Wolfe Research expect production to increase to 82.3 million units (+10%) during 2022. We believe there is significant pent-up demand given global production has been 15 million units below the trend line of around 90 million, while in the US the divergence between light-vehicle sales and scrappage plus new licensed driver growth indicates the market has been under-supplied by more than 10 million vehicles over the past two years. Inventory is at historic lows in most major auto regions, particularly in the US where dealer inventory is down to just 23 days of supply. Even this does not illustrate the magnitude of the shortage given the selling rate on which this is based which is itself depressed by constrained supply.

Absent a severe recession, the pace of growth will be entirely dependent on supply. In March, Ford cut its production of highly profitable trucks and SUVs but we expect the situation to gradually improve, with OEMs and suppliers' OEMs committing to long-term 'take or pay' contracts, and additional semiconductor capacity coming online in H2 2022 and 2023. The recovery remains susceptible to further external shocks, such as the war in Ukraine (Russia and Ukraine are major suppliers of gases used in chip-making). While supply is the near-term driver, we continue to believe electrification, autonomy and connectivity are megatrends that will prove great investment opportunities over the coming decade.

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