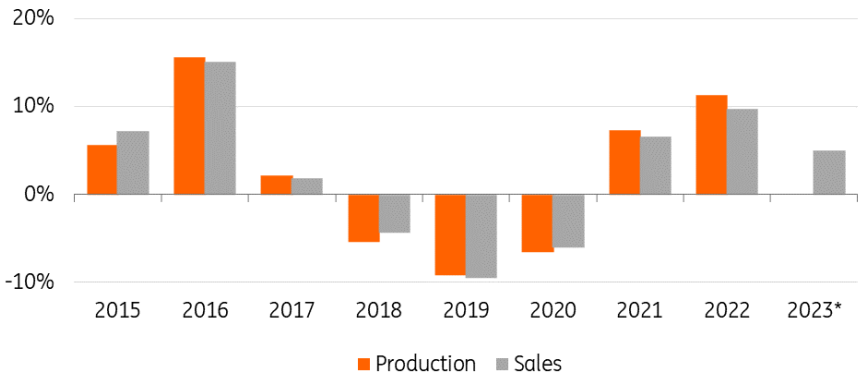
The dominant Chinese electric car market is slowing

After strong electric vehicle (EV) sales in 2022, the Chinese car market is facing a setback in growth in 2023. But this doesn't mean an end to the green transition. We expect the number of zero-emission cars to surpass conventional internal combustion engine cars by 2030

Charging infrastructure continues to be a barrier to EV growth

Car sales expected to continue on a moderate growh path in 2023

Annual growth of passenger car sales and production in China % year-on-year



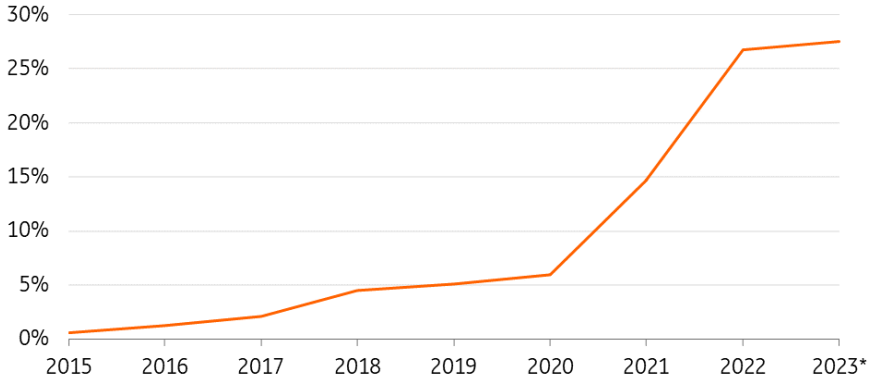
Source: CEIC
*ING Research

Passenger car sales growth to slow in 2023 after EV driven expansion in 2022

Last year, 23.5 million new passenger cars were sold in China, a 10% increase from 2021, according to data from CEIC and the China Association of Automobile Manufacturers (CAAM). Electric vehicles (battery electric [BEV] and plug-in hybrid electric [PHEV]) represented a share of around 26%, in units almost double the 2021 number. This strongly contributed to the general car sales growth figures, especially in the final four months of last year. Fully electric cars (BEV) sales represented almost three-quarters of total Chinese EV sales.

On a global scale, we expect new car sales to grow just over 4% in 2023. We believe the Chinese market will slightly surpass this figure with full-year sales growth of around 5%, despite the slow start to the year. The lifting of China's zero-Covid restrictions should provide a boost to car sales, as will the economic rebound.

Share of electric vehicles (BEV + PHEV) in total new car registrations in China stagnates in 2023 after surging between 2020-22



Source: BNEF, ING Research
*Forecast

EV share of Chinese new car sales has soared in recent years

The shift from conventional cars, also known as internal combustion engines (ICE), to electric cars started more than a decade ago in China and has accelerated strongly over the past two years, from 6% to 26%, on the back of government subsidies offered to consumers and corporate drivers. This marked a turning point in car sales after a five-year low in 2020.

Subsidies and their reduction scheme (specified below) were the main driving force behind the strong growth of EVs in China in 2022 and the two years prior. EVs still need support to match the average mileage costs of conventional cars for car drivers. Prices of EVs have been trending down for years, but battery prices increased for the first time in 2022, according to BloombergNEF. Together with the general inflationary pressure, this has led to higher prices instead. Although the downward trend in battery prices is expected to pick up from next year and economies of scale will bring gains once the market matures, the cost of owning an EV is expected to match the cost of owning a traditional vehicle around 2026.

Government subsidies for EVs that boosted demand in 2020-22

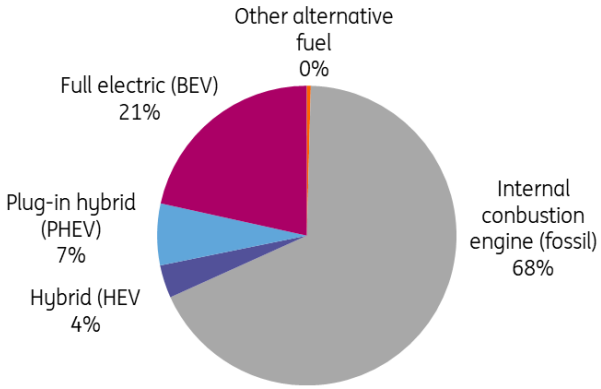
Between 2020 and 2022, around two million vehicles were eligible for subsidies each year.

Subsidies were cut by 10%, 20% and 30% from 2019 levels year in 2020, 2021 and 2022 respectively. For 2023, no new budget has been allocated.

To enjoy the subsidy, EV passenger car prices were capped at CNY300,000 (around $44,000) but there is no price restriction to enjoy subsidies for EVs using a battery swap model.

Alternative fuels made up almost a third of Chinese car production in 2022

Production of passenger cars by fuel type in China in 2022



Source: CEIC, ING Research

EV sales increase will slow in 2023, unless subsidies continue

New EVs will be less supportive of sales growth this year. Apart from the announced renewal of the vehicle purchase tax exemption policy for new energy vehicles (5% tax exemption is around CNY10000) there has been no indication that there will be a renewal of the cash subsidies on EVs. The fiscal burden has risen and the government may not want to spend on subsidies to boost consumption when the economy is recovering.

After the fiscal-driven spike over the past few years, EV sales will slow. Expectations for FY 2023 are tempered which also seems to be reflected in somewhat easing lithium prices. However, without further cash subsidies from the government, EV producers are expected to offer discounts, which could sustain sales in 2023. Globally, we have seen Tesla cutting prices at the start of this year, followed by Ford and Xpeng for specific BEV models. This might trigger extra demand, but the higher cost of batteries will probably not yet lead to an immediate return of the downward trend.

All in all – assuming new government subsidies end – we expect the share of EV cars to grow just slightly from 26% of all passenger cars in 2022 to 27.5% in 2023. With this market penetration, China still leads the global electrification trend, followed by Europe. If a new government stimulus for EVs is introduced in China, the EV share could exceed 30% this year.

BYD still dominates the Chinese EV market

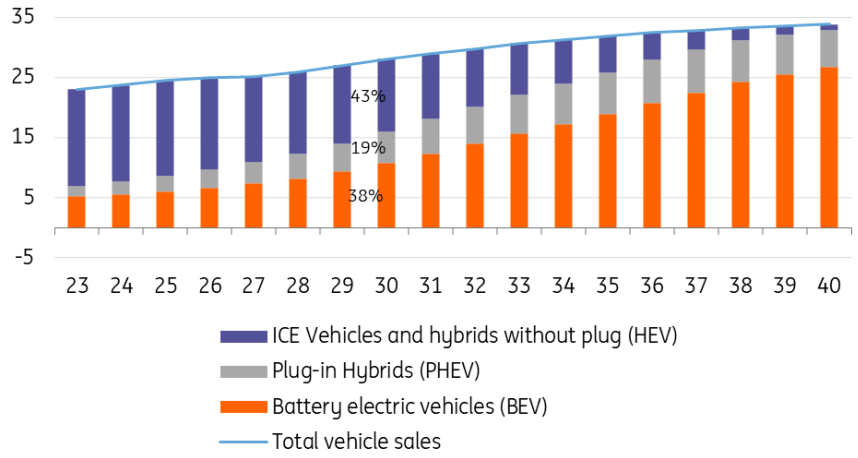
When we look at the composition of the Chinese EV market, car maker BYD overwhelmingly leads in its home country, followed by SAIC-GM-Wuling and Tesla. BYD had a market share of more than 30% for BEVs in 2022 and around 27% when including PHEVs. In total, Chinese brands account for just over 50% of home market sales, followed by German, Japanese and US brands. Volkswagen Group had a stake of 9% in BEVs in 2021, but with the growth of the market and the introduction of a range of new models, this stake was eroded in 2022.

The future is electric: Chinese EV share in new sales will takeover ICE before 2030

China's aim to achieve carbon neutrality by 2060 and to significantly reduce particle emissions will keep the car market on the electrification track. An additional policy step could be to impose maximum emissions profiles for manufacturers. China previously committed to a target of 50% EVs (PHEV + BEV) by 2035, but this ambition already seems obsolete, as we project that the share of EVs in the passenger car market will exceed 50% and surpass traditional energy cars before 2030. After general price parity is reached after 2025, the economics will also support EV sales.

Chinese EV sales will surpass conventional car sales by 2030

China long-term passenger car retail sales composition forecast in million units per year



Source: Bloomberg, ING Research

PHEVs enjoy momentum

Following the reduction in EV subsidies, we expect plug-in hybrid cars to deliver a stronger relative contribution to electrification over the next few years. The number of PHEV sales as a proportion of total car sales is expected to increase from around 5.5% last year to around 10.5% in 2025. However, it remains an intermediate solution, evidence from leading countries in electrification like Norway and Sweden also suggests that this could end up being an accelerator to full electric growth.

Charging infrastructure is a key challenge to enable further adoption of electrification

One of the biggest issues when it comes to electrification is the charging infrastructure. This could also push more car drivers toward plug-in hybrids in order to remain flexible. A large share of Chinese car-driving households live in densely populated urban areas where there is no home charging. By the end of 2021, China had one million public chargers installed – more than anywhere else in the world – with most of them located around the cities of Shenzhen, Shanghai, Guangzhou, Wuhan and Beijing. But, relative to the burgeoning number of EVs, there are still issues with the number of available chargers. This could slow electrification, particularly in less-equipped regions.

Battery swapping: a full EV solution without charger and charging time

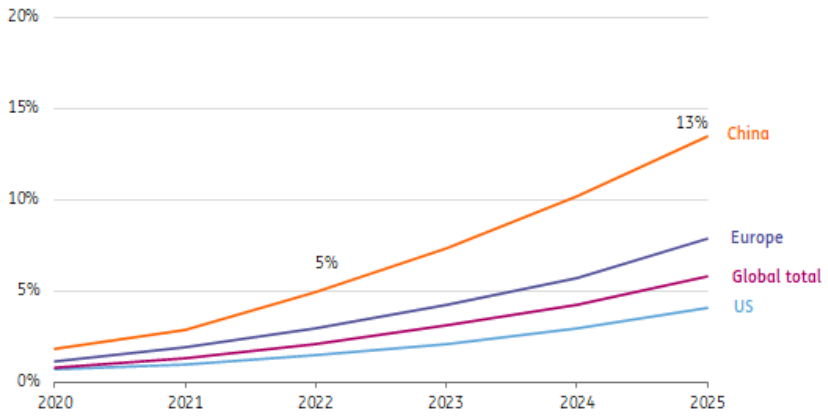
A practical solution to dealing with charging infrastructure constraints could be battery swapping. A subsidy for producers would be an option if the government wants to encourage battery swap model EV production. For consumers, this may also be attractive because they can avoid detours and waiting for their EV to be charged. They only need to drive to a swap point, similar to a trip to the petrol station, then a fully charged battery can be swapped into the EV. The China EV market is evolving in this battery swap model. The perfect outcome of this process would be a standard battery for all brands. Then it would be just like going into the petrol station for EV users. Government incentives for Chinese car producers to develop their EVs in such a direction are an option. A downside of this scheme may be the compatibility of battery packs. And in other countries, battery storage capacity plugged cars are also increasingly assigned a role in balancing the grid.

Electrification of the full fleet is slower, but China expected to beat the rest of the world

An advantage of the Chinese car market compared to Western car markets is that car sales are still trending up on a structural basis, with increasing car ridership among middle-class households. The market is not yet saturated, although car sharing will also have a future impact in China. The fleet is expected to top around 340 million within the next 10-15 years compared to 265 million now. This means the renewal rate of the fleet is relatively high. As a result, the EV fraction in the fleet is growing faster than in Europe or the US, hovering around 5% in 2022 and expected to reach just over 13% by 2025 (compared to 6% of the global fleet).

Electrification of the Chinese car fleet to proceed relatively fast as the fleet still expands

Share of electric vehicles (BEV + PHEV) in the total passenger car market fleet



Source: BNEF, ING Research

Competitive edge in batteries could provide extra traction for EVs in China

One final important point on electrification is that China has a dominant and developed position in the mining and refining of metals and the production of batteries. The rest of the world is rushing to build local supply chains but still heavily relies on sourcing from China. The Chinese battery ecosystem also explains why several Chinese upcoming brands are battery-only and set to go global. With strong demand growth and lagging investment in mining, battery supply might end up seeing limits in the coming years. This puts the strongly-developed Chinese supply chains in a beneficial position, also in terms of costs.

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