

Automotive outlook 2023

Bright spots amid stalling growth



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Key forecasts

- The automotive industry will remain vulnerable to global headwinds in 2023 including the energy crisis, slower global demand and continued supply-chain problems.
- Global new-vehicles sales will remain flat in 2023: new-car sales will rise by 0.9% and new commercial vehicle (CV) sales will fall by 1.3%.
- Sales of electric vehicles (EVs) will be the only bright spot, growing by 25%, but governments will restructure their incentive schemes.
- Governments' focus will turn to charging networks, which are inadequate to meet the expanding EV fleet.
- Autonomous vehicles will take a leap forward, as UN regulators lift their speed limit.

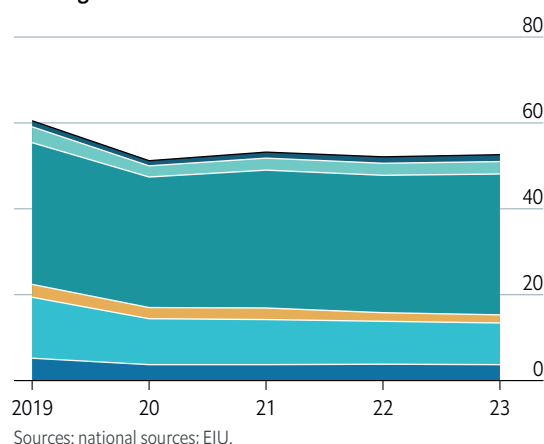
Automotive sales will remain muted

New-vehicle sales will stall in 2023, especially in Europe and the US. We expect global new-car sales to rise by just 0.9% globally, held back by squeezed consumer spending, high commodity prices and production shutdowns caused by supply-chain disruptions. New-car sales in western Europe will decline by about 3%, while they will fall by 2.4% in North America. Meanwhile, new CV sales will fall by 1.3% globally, amid an expected recession in the Euro zone and slower GDP growth in the US and China.

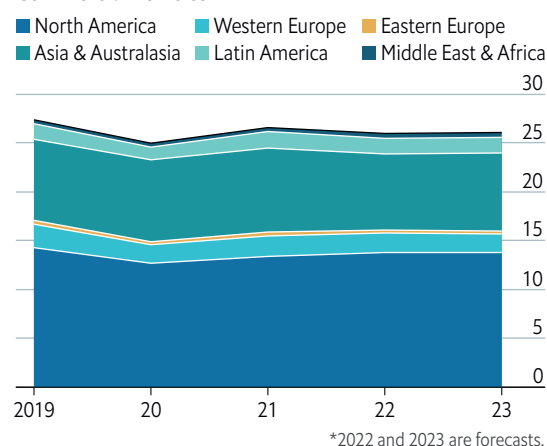
Overall, this means that, following a decline in 2022, new-vehicle sales will rise only marginally in 2023, led by growth in Asia, the Middle East, Africa and Latin America. As a result, global new-vehicle

Automotive sales in the slow lane (new-vehicle sales by region; m units)

Passenger cars



Commercial vehicles



sales in 2023, at 79m, will still fall short of pre-pandemic levels of 88m units. Our forecast will remain vulnerable to considerable risks, including an escalation of the Russia-Ukraine war, possible energy shortages in Europe and a chance that the global economy may slip into recession.

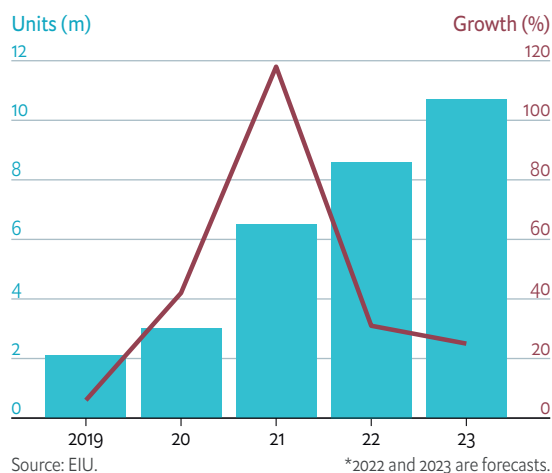
Incentives for electric vehicles will be restructured

Sales of EVs will be the only bright spot in 2023, growing by 25% year on year to 10.8m units.

Governments are getting innovative with their EV incentive policies, in order to encourage clean-vehicle sales without too much cost and without benefiting high-income households. The US will offer a US\$7,500 EV tax credit at the point of sale on clean-vehicle purchases from January 1st 2023, but only if the cars meet stringent eligibility criteria, including final assembly within North America. The US will also remove a 200,000 vehicle cap per manufacturer, allowing Tesla, General Motors, and Toyota (which manufactures locally) to benefit from the subsidies. The plan aims to encourage investment in local production and limit government expenditure.

Meanwhile, China has extended tax breaks and purchase subsidies available for buyers of new energy vehicles (NEVs) until the end of 2023. These breaks include exemptions from purchase taxes, annual vehicle taxes and consumption taxes. The French government is working on a subsidised EV-leasing plan, in a bid to make EVs more affordable for low-income households. However, from 2023 Germany will reduce EV incentives available for battery EVs (depending on the price range) and will remove subsidies for plug-in hybrid EVs. Norway will also phase out tax breaks for expensive EVs from the start of January 2023.

Electric vehicle sales continue to soar (sales of new plug-in EVs)



Battery swapping and charging stations will expand, especially in China

The exponential growth in EV sales has led to problems with recharging networks, which governments will need to address in 2023. In China, for example, the number of EVs on the road is set to double to nearly 20m by 2024, but long queues at charging points are becoming common. As part of its 14th Five-Year Plan (covering 2021-25), the Chinese government aims to deploy charging stations on all highways connecting provinces by the end of 2023.

Automakers are also investing in recharging solutions, including battery swapping. Nio, an EV start-up, is planning to upgrade its proprietary battery swap stations in 2023, enabling them to store more batteries to suit different vehicle brands and voltages. It remains unclear if Nio's stations will swap batteries for non-Nio cars as well. India is also planning to implement a battery swapping policy in the 2022/23 fiscal year (April-March), as part of its aim to electrify all new vehicles by 2030. The Indian government will also offer financial incentives to companies setting up swapping stations, as well as encouraging battery leasing.

Despite these incentives, charging will be a challenge in 2023. One problem is that regulators have yet to put in place uniform battery standards, which would make it easier to find appropriate charging points and swapping stations. End-of-life battery recycling is lagging too.

Automotive supply chains will remain a weak link

Although a slowdown in demand has made supply-chain blockages less acute, they will continue to hold back production in 2023. Semiconductors will remain in short supply, with new capacity not due to come into operation until 2024. Escalating tensions between Taiwan and China will pose another risk. Automakers will also face challenges in acquiring metals such as nickel, cobalt, steel and aluminium. A shortage of these metals will make it harder to assemble EV batteries. Even the supply of lithium, a vital battery metal, could be affected by zero-covid policies in China, the world's largest lithium refiner.

In order to cope with this challenge, governments are increasing local sourcing. The US will use the CHIPS Act, passed in 2022, to spur domestic semiconductor production and research. The US has also published a critical mining strategy to increase its local supply of rare earths and other minerals, thus reducing its reliance on China. Rare earths are vital to battery production. Meanwhile, India is seeking to change laws to allow private miners to extract lithium domestically, as well as seeking to acquire lithium and cobalt mines overseas.

Europe's biggest supply challenge will be the energy crisis. Some vehicle and parts makers are having to cut production to reduce energy costs. They may also have to prepare for power cuts. Given close-knit supply chains, this will have knock-on effects throughout the automotive sector.

Level 3 self-driving cars will hit the roads

The autonomous vehicle segment will take a leap in 2023, as level 3 cars hit the roads and level 4 vehicles undergo tests. Mercedes-Benz (Germany) will start offering its level 3 driving system, Drive Pilot, in California and Nevada in the US in 2023. BMW's long-awaited level 3 technology should be on sale in its Series 7 sedan. Three US carmakers—Tesla, General Motors and Lucid—as well as South Korea's Hyundai and Kia, and Sweden's Polestar, are also expected to launch level 3 vehicles in 2023.

With level 5 representing full autonomy, the jump to level 3 is a significant step. It will take cars from what is effectively driver-assisted technology (such as Tesla's Autopilot) to autonomy that does not require full-time driver attention. These developments will come as UN regulations are amended to extend the speed limit for level 3 vehicles from 60km/h to 130km/h from the beginning of 2023.

As for level 4, Germany is planning to start an autonomous driving project in 2023 using vehicles manufactured by two EV makers: Mobileye (Israel) and Nio (China). The expansion of level 4 robotaxis will also pick up pace in 2023. Motional (US) will launch robotaxis in the US, while Cruise (US) will expand its offering in Dubai, UAE. Tesla is also expected to unveil its own robotaxi in 2023. Even so, these level 4 cars will only operate in carefully controlled zones, with operators on standby to cope with emergencies. Full autonomy remains some way off.

Vehicle autonomy reaches the tipping point

(levels of driving automation)

		Automation	The system	The driver	Existing examples
Level 0	Driver support features	None	Provides momentary driving assistance	Must steer, brake and accelerate	Automatic emergency braking; lane departure or forward collision warnings
Level 1		None	Provides continuous assistance with either acceleration/braking OR steering	Must be fully engaged in driving; steer or brake	Adaptive cruise control; lane departure assistance
Level 2		Partial	Provides continuous assistance with both acceleration/braking AND steering	Must be engaged with driving; continually monitor the vehicle	Highway pilot; several Level 2 models sold commercially
Level 3	Automated driving features	Conditional	Handles all aspects of driving when engaged	Must be ready to drive as needed	Honda Legend Sedan; Mercedes Drive Pilot
Level 4		High	Drives under limited service areas	Is not needed in designated areas	Not yet available
Level 5		Full	Drives universally	Is not needed	Not yet available

Sources: SAE International; National Highway Traffic Safety Administration; EIU.

To watch

Union blues: Amid high inflation and a possible recession, the Detroit Three automakers—General Motors, Ford and Stellantis North America (formerly Fiat Chrysler Automobiles)—will need to negotiate a four-year contract for 150,000 blue-collar workers represented by United Auto Workers (UAW), a trade union. This will not be easy at a time when US workers are restive about the cost of living. General Motors will be hoping to avoid a strike similar to the one in 2019 that cost it about US\$3bn in lost earnings.

Agency models: Premium German carmaker Mercedes Benz plans to move away from franchise-operated dealerships and introduce an agency model in its home market and the UK. The move will turn its dealers into agents, who will offer a physical touchpoint for motorists. This will also allow the carmaker to become the retailer and to enter into sales contracts with customers, giving it direct access to data on consumer preferences and driving habits. The carmaker will also gain more control over the final retail price, as well as flexibility to bundle online sales and physical sales.

Battery tech: QuantumScape, a US-based EV battery maker and supplier of solid-state batteries to Volkswagen (Germany), will start testing 24-layer battery cells in 2023 - instead of the 16-layer cells currently in use. A solid-state battery has several advantages over a lithium-ion polymer battery, including higher energy density, which allows a battery EV to have a higher range. Rimac, a Croatian EV start-up, is also working towards improving the energy density of its vehicles through a new battery module that will use larger 46mm diameter cylindrical cells.

Key risk scenario: Geopolitical tensions, climate change and public protests will cause more supply-chain blockages

Persistent inflationary pressures, caused by supply-chain disruptions and Russia's invasion of Ukraine, are pushing up global inflation, which is at its highest level since the 1990s. This could fuel social unrest if inflation rises much higher than wage increases. In an extreme scenario, protests could push workers in major economies and employed by large manufacturers to co-ordinate large-scale

strikes demanding higher salaries that match inflation. Such movements could paralyse ports, freight services and railways, exacerbating supply-chain problems.

Supply chains are also vulnerable to increased geopolitical tensions and climate threats. Further deterioration in China's ties with the West—especially over Taiwan—could threaten the flow of semiconductors out of Taiwan, or of key battery elements and metals from China. Meanwhile, a particularly cold winter could cause energy shortages in Europe, where some vehicle and parts makers are already facing a need to cut production.

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