

Automotive Industry Weekly Digest

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Contents

[OEM Highlights] NIO to reveal ES7 electric SUV in April	3
[OEM Highlights] Geely introduces first electric sedan with swappable battery in China	3
[OEM Highlights] VW in talks with Huawei on autonomous vehicle unit – report.....	4
[Technology & Mobility Highlights] Hyundai Mobis plans to invest up to KRW8 tril. in vehicle chips, future mobility.....	6
[Technology & Mobility Highlights] Chinese battery-maker CATL mulls expansion overseas with US unit.....	6
[EV & Energy Efficiency Highlights] Hongqi to deepen collaboration with Aulton to expand battery-swapping network in Changchun .	8
[EV & Energy Efficiency Highlights] Selling credits is a lucrative revenue stream for EV makers	8
[GSP] Greater Chinac sales and Production Commentary -2022.02	10
[Supplier Highlights] SingleStore partners with Directed Technologies for connected vehicle services	13
[Supplier Highlights] MWC Barcelona 2022: Rohde & Schwarz to showcase range of automotive 5G and C-V2X test solutions	14
[Special Sharing] Automakers consider the impact of Russia sanctions	15



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[OEM Highlights] NIO to reveal ES7 electric SUV in April

Electric vehicle (EV) startup NIO says it plans to reveal its all-new sport utility vehicle (SUV), the ES7, in April. The company does not give further details of the ES7. However, previous reports by local media indicate that the ES7 will be a five-seat mid-size SUV, positioned between the ES6 and the ES8 in the automaker's line-up.



Outlook and implications

The complete line-up of NIO's new models slated for market launch this year is to be made public with the ES7's unveiling in April. The model will join the ET5 and ET7 electric sedans as one of NIO's new offerings on its NT2.0 platform. According to NIO, new models coming from this new platform will boast improved performance, new exterior and interior designs, as well as enhanced hardware and software capabilities to deliver better automated driving experiences to customer. Local media reports indicate one of the main competitors of the ES7 will be the BMW X5 L. BMW currently sells the X5 as an import in China. Local production of the X5 L is expected to begin this year, which will lower the model's selling price noticeably in China.

[OEM Highlights] Geely introduces first electric sedan with swappable battery in China

Ruilan Auto, Geely Auto's joint venture (JV) with Chongqing Lifan Technology, has announced the pricing for the Maple S60, the company's first electric sedan featuring a swappable battery. The electric sedan, with a starting price of CNY139,800 (USD22,141), will provide two range options in the Chinese market, a 415-km range version with lithium-ion battery and a 407-km range version with lithium iron phosphate (LFP) battery. The Maple S60 will mainly target the rental and ride-hailing market. The S60 has a maximum output of 100kW and a peak torque of 230N.m. According to previous announcements made by Ruilan, the company will introduce five models with swappable batteries by 2025.



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Outlook and implications

The Maple S60 features a fast battery-swapping system that allows it to complete a swap in just 60 seconds. The automaker intends to leverage the Maple S60 to expand its presence in the swappable-battery electric vehicle (EV) market. The S60, which is a compact sedan, is also ideal for the car rental and shared vehicle market. As a newcomer to the EV battery-swapping sector, Geely has announced ambitious plans to expand its battery-swapping network. The automaker aims to build 5,000 battery-swapping stations in China by 2025, covering 100 major Chinese cities.

[OEM Highlights] VW in talks with Huawei on autonomous vehicle unit – report

Volkswagen (VW) is in talks with Chinese tech giant Huawei about acquiring an autonomous vehicle unit, reports Reuters citing German business magazine Manager Magazin. The automaker is said to have been negotiating the deal for several months, according to Manager Magazin citing inside sources. The automaker declined to comment when approached by Reuters on the matter.



Outlook and implications

VW Group CEO Herbert Diess said on 16 February that the company was pursuing more partnerships to increase its self-sufficiency in software. Diess also said he expects widespread adoption of vehicle automation technologies in cars within 25 years. VW has been expanding its software development unit since 2019, with the aim for all of the group's new models to run on its own operating system from 2025 onwards. It is still too soon to tell if VW could reach a deal with Huawei on the development of automated technologies. A possible tie-up with the Chinese tech giant by either partnerships or acquisitions would strengthen VW's capacity to introduce competitive smart electric vehicles (EVs) to its key markets, especially China. Huawei already introduced its



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smart cabin and automated driving systems to several new models on sale in China. The Arcfox Alpha-S, an electric sedan introduced by Arcfox, is equipped with Huawei's automated operation systems, while the AITO M5, a new model introduced by Seres, also features Huawei's smart cabin systems



[Technology & Mobility Highlights] Hyundai Mobis plans to invest up to KRW8 tril. in vehicle chips, future mobility

Hyundai Mobis plans to invest up to KRW8 trillion (USD6.7 billion) over the next three years in its future growth drivers such as automotive chips, robotics, and urban air mobility (UAM), reports the Yonhap News Agency. Of this total, the company will invest between KRW3 trillion and KRW4 trillion to boost its competitiveness in automotive chips, software, and its autonomous vehicle business, as well as new areas, such as UAM and robotics, according to the company's regulatory filing. The remaining amount will be used for capital expenditures to ensure stable supply of core parts, including components for electric vehicles (EVs). Furthermore, Hyundai Mobis will also enhance shareholder returns through an interim dividend payout, share buyback, and cancellations. The company will maintain the dividend payout ratio at 20–30% for the 2022 fiscal year. It will also spend around KRW330 billion to buy back its own shares, of which KRW62.5 billion-worth of shares will be cancelled.



Outlook and implications

Hyundai Mobis has been strengthening its technological capabilities in the field of vehicle electrification, autonomous vehicles, and connected vehicle segments, while also looking into the UAM and robotics sectors. At the CES 2022, the company unveiled the M.Vision POP, an EV-based micro-mobility concept, and the M.Vision 2GO, an eco-friendly city delivery mobility vehicle. The South Korean component manufacturer's efforts are in line with the aim of its parent company, Hyundai Motor Group, to transform into a smart mobility solutions provider. Hyundai Mobis said earlier this year that it had completed its three-year share buyback and cancellation plans announced in February 2019 to enhance its shareholder value. Since 2019, the company has completed KRW1 trillion-worth of buybacks and the cancellation of KRW188 billion-worth of purchased shares, as well as the cancellation of KRW460 billion-worth of existing treasury stock. It also paid out KRW1.1 trillion in dividends. Hyundai Mobis will hold an annual general meeting on 23 March to approve its shareholder-boosting measures.

[Technology & Mobility Highlights] Chinese battery-maker CATL mulls expansion overseas with US unit

Chinese electric vehicle (EV) battery-maker Contemporary Amperex Technology Ltd (CATL) is considering building a factory in the United States, reports the China Daily. Reportedly, the minutes of a company meeting provided to the China Daily showed that CATL chairman Zeng Yuqun told a group of investors, including Hillhouse Group, Sequoia Capital, Tencent Holdings, and Temasek Holdings, that the company is “exploring the feasibility of localizing in the US”. No timeframe has been given on the US project.



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Outlook and implications

Zeng held the meeting with key stakeholders after CATL filed a complaint on 12 February with Chinese authorities regarding malicious rumours about its businesses, reports the China Daily. These include allegations that it was seeking professional advice to deal with US sanctions and had recently lost a deal with US EV manufacturer Tesla. CATL's major investments made in the past two years were primarily in China. The battery-maker's focus on its home market has raised concerns that it may lose market share to its main rival, LG Energy Solutions, as it has a more-balanced global production network with factories in China and the US. LG Energy Solutions is constructing new production plants with General Motors through their joint venture, Ultium LLC, in the US. The South Korean battery-maker also has indicated plans to invest USD4.5 billion in new battery manufacturing in the US, which reportedly is to include investment not involving Ultium LLC.



[EV & Energy Efficiency Highlights] Hongqi to deepen collaboration with Aulton to expand battery-swapping network in Changchun

Hongqi, the premium brand under FAW Group, intends to deepen its collaboration with Chinese battery-swapping station operator Aulton to expand the battery-swapping network in Changchun. The two teamed up last year when Hongqi rolled out its first model with swappable batteries, the E-QM5, in Changchun. Under the partnership, Aulton provides swappable batteries to the E-QM5 vehicles at its battery-swapping station in the city. The two companies are said to work together to wider the application of battery swap technologies in electric vehicles in Changchun and other cities. According to Gasgoo, Aulton plans to build 120 battery-swapping stations in Changchun in three phases, accommodating the needs of 8,000 new energy vehicles (NEVs). The Changchun network will then become the largest battery-swapping network in the severe cold weather area in China.



Outlook and implications

According to the China Electric Vehicle Charging Infrastructure Promotion Alliance (EVCIPA), there are 1,386 battery-swapping stations in China as of the end of January. NIO is the largest operator of such facilities, with more than 860 battery-swapping stations in operation across the country, while Aulton has the second largest battery-swapping network thanks to the company's co-operation with BAIC Motor Group and FAW Group. Both Chinese automakers have a sizeable taxi and ride-hailing fleet of EVs featuring swappable batteries. The partnership with FAW Group will enable Aulton to expand its battery-swapping network in Changchun where Hongqi is headquartered, as well as speeding up the adoption of EVs featuring swappable batteries in northern China. Data from CEVCIPA suggests that EV chargers are not evenly distributed in China. Most EV charging facilities are located in warmer cities in eastern coastal areas and central China while northern cities, which are subject to cold weather in winter, are lagging behind in the deployment of EV chargers, which in turn impeded the adoption of EVs among private vehicle buyers. In Changchun, where FAW is headquartered, 2,000 units of the Hongqi E-QM5 electric sedan featuring swappable batteries were added to the city's ride-hailing and taxi fleets during 2021.

[EV & Energy Efficiency Highlights] Selling credits is a lucrative revenue stream for EV makers



Over the last decade, Tesla and other automotive manufacturers have successfully harnessed the opportunity to convert overperformance of existing CO2 emissions and fuel consumption regulatory standards to valuable revenue streams. Future opportunities to monetize overperformance to vehicle regulatory standards hinge both on emissions performance of the future vehicle fleet as well as the stringency of future standards. In late December 2021, the US Environmental Protection Agency (EPA) finalized tightening of the US greenhouse gas (GHG) standards for light-duty vehicles, representing a cumulative 28% increase in stringency over the 2023-26 model year period. These new standards in the United States, along with the July 2021 EU proposal for a 55% decrease in allowable passenger car CO2 emissions by 2030, have reshaped the outlook for regulatory credit trading over the next 5-10 years in these two markets. Meanwhile, mainland China is midway through its fifth phase of reducing allowable fuel consumption and the fifth year of mandatory growth in sales of so-called New Energy Vehicles (NEVs). The dynamic regulatory environments in these regions prompt a current look at where the credit market opportunities may be found.

This article examines the forecast of future standards and manufacturer compliance performance to identify where ongoing opportunities for revenue from regulatory credit trading will continue. The opportunities for existing manufacturers and EV-focused new entrants to generate revenue through credit trading or pooling vary by market because of their distinct regulatory standards.



Key implications

Mainland China emerges as the market with the most vibrant opportunity for regulatory credit trading in the next decade owing to the structure of its regulatory programs. The regulatory design and stringency create a relative balance between credit supply and demand, with a sustainable trading market in the foreseeable future. While the United States has been at the forefront of automotive regulatory credit trading, this market may have matured and is not expected to grow significantly.

- In the United States, new GHG standards extend opportunities for GHG credit trading through at least model year 2026. New entrants may find some potential, although it will be limited by strong competition from some legacy manufacturers able to offer credits at a larger scale. Credit trading opportunities within the Corporate Average Fuel Economy (CAFE) program hinge upon the outcome of the Biden Administration's upcoming revised CAFE standards for model years 2024-26; assuming the more stringent option (requiring 10% per year increases in fuel efficiency) in the recent CAFE proposal, a viable credit trading environment would exist through at least model year 2026.



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- In the European Union, pooling opportunities will be strongest in the next few years, with diminishing opportunity after 2025. Pooling agreements between manufacturers can allow new EV-focused market entrants to monetize their strong compliance position. However, with most manufacturers planning a significant shift toward electrified products, most of the pooling market is expected to be captured by legacy manufacturers. The market for pooling is destined to gradually disappear if the European Commission proposal for zero tailpipe emissions by 2035 is enacted, putting an end to any overcompliance that could be monetized.
- In mainland China, a dual credit system encompassing simultaneous required reductions of average fuel consumption and mandatory increasing sales of NEVs creates an active market for tradeable credits. Credits generated by exceeding the NEV sales mandate can be used to satisfy either of the dual program requirements, making these credits particularly valuable and stimulating surplus NEV sales beyond the minimum requirements. The government's transparency in publishing official credit transaction and pricing data confirm a vibrant and buoyant credit market with historically high transaction volumes and credit prices in recent years.



[GSP] Greater China sales and Production Commentary -2022.02

Greater China sales

January 2022: +2.2%; 2.4 million units vs. 2.35 million units

In January 2022, 2.4 million light vehicles were sold in Greater China, up by 2.2% compared with the same month of 2021. Specifically, light vehicle sales in mainland China increased by 2.2%, from 2.30 million units in January 2021 to 2.35 million units. Passenger vehicles recorded sales of 2.07 million units, increasing by 2.2% year on year (y/y), while light commercial vehicle (LCV) sales went up by 2.3% y/y to 0.28 million units. Segment wise, sedan sales rose by 0.5% y/y to 1 million units and the sport utility vehicle (SUV) segment increased by 4.1% y/y, from 0.95 million units to 0.99 million units. As for multipurpose vehicles (MPVs), sales decreased by 3.5% y/y to 0.07 million units.

Recent outbreaks of the Omicron variant of COVID-19 in Tianjin city have led to plant shutdowns from 10 January, which lasted for nearly two weeks. The Volkswagen and Toyota production sites in Tianjin have been impacted, leading to a market share loss of German OEMs and Japanese OEMs. Market share of Chinese local OEMs grew substantially in January 2022, from 38.3% in January 2021 to 42.6%. BYD is gaining shares in the New Energy Vehicle (NEV) market and leading its rivals thanks to the DM-i plug-in hybrid technology and the launch of the new Ocean series.



In terms of economy, both monetary and fiscal policies will turn stimulative in the near-term, helping economic growth to gradually rebound in 2022. Meanwhile, the government will stand much firmer on its zero-COVID policy, owing to the more contagious Omicron variant and uncertainty regarding mainland China's domestically developed COVID-19 vaccines against new variants. Consequently, the pickup in economic activities induced by monetary and fiscal stimuli will be constrained by stringent pandemic containment measures.

Looking ahead, we expect mainland China's auto market will continue to play a central role in accelerating the global auto industry's transition to electrification over the next few years. Chinese OEMs have outperformed their JV counterparts to lead sales growth in the NEV segment and might keep the competitive advantage in 2022. This is in part thanks to Chinese OEMs' early involvement in the NEV sector, and their ability to respond quickly to consumer demand changes.

Greater China production

January 2022: +0.6%; 2.23 million units vs. 2.21 million units



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Greater China's light vehicle production in January recorded 2.23 million units, a slight increase of 0.6% year on year (y/y). In mainland China, light vehicle production increased 1% y/y, to 2.21 million units. Mainland China's automotive production outperformed our initial estimation again in December 2021, achieving 2.85 million units with a year-on-year rebound of 6.6%. Without the pressure to complete the yearly target, January outcome was back to normal.



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[Supplier Highlights] SingleStore partners with Directed Technologies for connected vehicle services

Directed Technologies will be able to produce a solution for market needs of vehicles manufactured in Europe, North America, and Asia Pacific



Source: Getty image/ metamorworks

SingleStore has announced a partnership with Directed Technologies, it said in a press release on 22 February. Directed Technologies will be able to produce a solution for market needs of vehicles manufactured in Europe, North America, and Asia Pacific, enable reduced driver violations, fuel consumption, and maintenance costs for OEM and fleet vehicle operators, address the growth in its business and expansion of connected vehicle data, and build a new revenue stream by launching its data-analytics-as-a-service offering.

Outlook and implications

Directed Technologies has deployed millions of OEM-branded vehicle multimedia units, telematics solutions, and accessories for manufacturers. Over 1,800 fleets use the company's telematics devices. SingleStore allows Directed Technologies to manage high data volumes on a real-time basis. With SingleStore and Sisense, Directed Technologies will be able to handle large data volumes on a real-time basis.

“Staying at the forefront of connected vehicle technology to digitally enable mission-critical businesses globally requires a robust, secure, and highly scalable solution. Generating automated actionable insights from the huge volumes of data being generated by every vehicle each day can result in profound organizational and societal benefits. We're thrilled to be part of this strategic partnership with SingleStore and Sisense, which provides us with such a solution. As three industry innovators, we are individually and collectively on a high-growth trajectory, and we look forward to what we will achieve together,” said Brent Stafford, executive director of Directed Technologies.



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[Supplier Highlights] MWC Barcelona 2022: Rohde & Schwarz to showcase range of automotive 5G and C-V2X test solutions

Further focus applications include UWB test solutions for R&D, certification, and production as well as GNSS simulation



Source: Getty Images/4X-image

Rohde & Schwarz will be showcasing its range of automotive 5G and cellular vehicle-to-everything (C-V2X) test solutions at the MWC Barcelona 2022, the company said in a press release on 21 February. Further focus applications are UWB test solutions for research and development (R&D), certification, and production as well as GNSS simulation.

Rohde & Schwarz will also showcase high-performance 5G automotive measurements with comprehensive test coverage including radio frequency (RF), protocol and application testing using R&S CMX500 one-box tester covering the entire development cycle from chipsets to TCUs and entire vehicles.

Outlook and implications

Rohde & Schwarz will showcase a C-V2X test solution that allows traffic scenarios involving multiple simulated vehicles and the communications to be tested in the laboratory and on the proving ground. This allows for optimization of applications such as Emergency Brake Warning (EBW) in realistic and demanding traffic scenarios. The company's GNSS simulators can generate signals for all operational satellite-based navigation systems, including GPS, GLONASS, Galileo, BeiDou, SBAS, and QZSS in the frequency bands L1, L2, and L5.



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[Special Sharing] Automakers consider the impact of Russia sanctions

IHS Markit is now part of S&P Global perspective

Implications Automakers with exposure to the Russian market are considering their next steps following recent events in Ukraine and the sanctions that have been applied against Russia.

Outlook Following the introduction of sanctions relating to financial institutions and certain individuals after Russia's early moves in Ukraine, IHS Markit is now part of S&P Global has started taking a view on how a second phase of yet-to-be-determined sanctions could affect the global automotive industry. Most notable could be the impact the conflict might have on semiconductor supplies, which may cause a further drag on vehicle production. We will continue to watch the situation in Ukraine and will provide further updates to our forecast as deemed necessary.

Automakers with exposure to the Russian market are considering their next steps following recent events in Ukraine and the sanctions that have been applied against Russia.

Earlier this week, prior to Russia entering the rebel-held regions of Donetsk and Luhansk on 22 February in what it referred to as a "peacekeeping" role after recognising the Donetsk and Luhansk People's Republics (DPR and LPR) as independent states, Renault Group CEO Luca de Meo said that the automaker was monitoring the situation "carefully". Automotive News Europe (ANE) quoted the senior executive as stating that 90% of the Lada brand's sales were in Russia and that parts sourcing was highly localised, with a spokesperson telling Reuters that this stood at around 80%.

However, the chief executive of AvtoVAZ, Nicolas Maure, was quoted by Reuters as saying that his company was looking at how to source components that are localised, such as semiconductors. He told journalists earlier this week, "Of course we are also investigating possibilities to find alternatives in the case of sanctions."



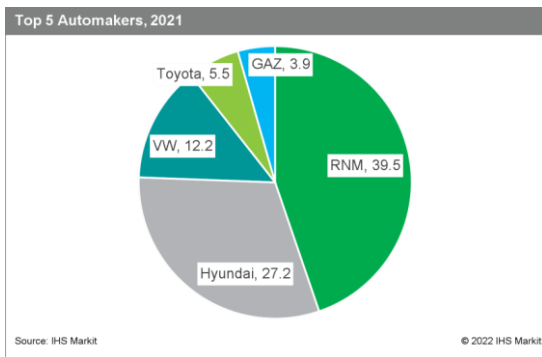
In addition, Renault chief financial officer Clotilde Delbos indicated that AvtoVAZ's debt and financing was held locally, without support from the Renault Group, further insulating the organisation and containing risk exposure to the country as much as possible.

Also prior to Russia's move into Ukraine, Stellantis, which has a joint-venture (JV) plant in Kaluga with Mitsubishi, told Automotive News, "We are monitoring the situation closely and have no further comment at this stage." However, during a conference call yesterday (23 February) discussing the company's 2021 financial results, CEO Carlos Tavares said, "If we cannot supply the plant, if that is the reality, we have either to transfer that production



to other plants, or just limit ourselves.” He noted that the vehicles built at the site, some of which are being shipped to Western and Central Europe, are also built in France and the United Kingdom.

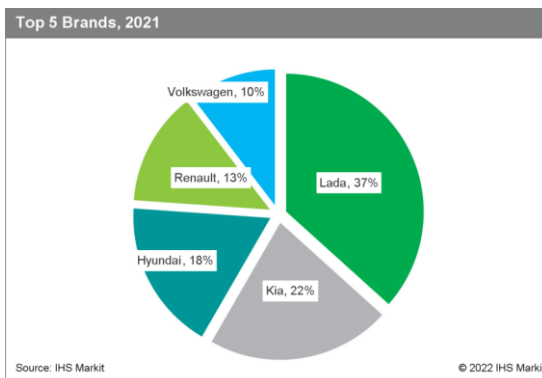
Outlook and implications



These comments are likely to offer just a glimpse into the considerations currently being discussed at automakers with exposure to Russia as they watch the situation develop in Ukraine and await the response from other nations. According to IHS Markit is now part of S&P Global light-vehicle production data, the Renault-Nissan-Mitsubishi Alliance has the greatest exposure to Russia through Renault Group’s stake in AvtoVAZ, and it is forecast that its production in this market reached around 573,100 units last year. Other key producers include Hyundai, which is estimated to have built 394,400 units during 2021, while Volkswagen (VW) Group’s estimated output that year was 176,900 units.

Furthermore, the majority of light vehicles sold in Russia are locally sourced: of the 1.66 million vehicles that we forecast were sold in this market in 2021, around 81.7% were manufactured or assembled locally.

Following the introduction of sanctions relating to financial institutions and certain individuals after Russia’s early moves in Ukraine, we have started taking a view on how a second phase of yet-to-be-determined sanctions could affect the global automotive industry. Such a scenario is now more likely given the escalation in Ukraine as conflict spreads into non-DPR- and LPR-controlled zones.



Among the factors that would come into play in a ‘Level 2’ sanction scenario is a rise in the cost of crude oil. In this situation, we would envisage an increase to around USD116 per barrel as concerns would grow over supply, although we do not expect that sanctions would directly affect physical flows of oil supplied from Russia. This



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would put further pressure on consumer budgets and reduce the affordability of new car purchases in many markets globally on top of already rising inflation. Most notable among these are Europe and the United States. However, we also anticipate that some markets are likely to be insulated from this, such as China thanks to its relationship with Russia, while others – such as markets in the Middle East – could benefit from better terms of trade for energy products.

The cost of natural gas would also be likely to rise in this scenario. Europe would be on the frontline of this increase, given its dependency on Russia for its supplies, and there would be a direct hit on affordability for households directly through its use in homes and the generation of electricity. However, a further rise in the cost of natural gas would also hit industry in the region, especially those relying on energy-sensitive materials such as the automotive sector, which would pass this additional cost onto customers through higher prices, lowering potential vehicle demand.

Another direct factor that could come into play is the cost of palladium, which is a key material in the manufacture of catalytic converters. The global supply of this metal is heavily concentrated in Russia, with around half of all palladium being sourced from the country. A further rise in the price of this commodity would eventually trickle through to making internal combustion engine (ICE) vehicles more expensive. Furthermore, although we do not envisage sanctions to be placed directly on this material in this 'Level 2' scenario, there could be consequences if an individual or company involved in its trade were named in new sanction restrictions.

A further tightening of sanctions against Russia is also expected to have a detrimental effect on light-vehicle demand in its domestic market. This would be caused by a weakening of the Russian rouble, leading to a jump in the cost of not only imported cars but also components of vehicles built in the country that are not sourced locally. However, past experience of sanctions against the country has shown that consumers in this market may initially rush to purchase cars before any price increases are passed on. There will also inevitably be a significant impact on Ukrainian light-vehicle sales volumes in the current situation.

We estimate that, under normal conditions, the combination of these factors in a second phase of sanctions would cause global light-vehicle sales to drop by between 1.8 million and 3.1 million units per annum over the next two years, assuming that this level of sanctions is maintained.

However, today's market reality is one where "notional vehicle demand" is substantially higher than realised sales and possible production levels due to the ongoing semiconductor shortage. Indeed, we currently forecast that production in 2022 will be 6.5 million units below potential demand. As a result of the semiconductor-limited production ceiling being so far below potential demand, the size of the impact from the next level of sanctions we have modelled is not likely to require any significant additional reduction in actual global sales or production forecasts from current levels as a result of the factors outlined above.

Any physical or legal effects from the crisis on the semiconductor supply chain could have a more direct impact. Specifically, this relates to the availability of neon gas, particularly highly purified types. These are used by lasers that etch circuit designs into silicon wafers as part of the semiconductor production process. Both Ukraine and Russia are key producers of these gases, with Ukrainian producers reportedly using gases that are in part a by-product of Russian steel production. Although the semiconductor industry has sought to diversify its supply in recent years following a price surge in 2014 when Russia annexed Crimea, it remains hugely reliant on Ukraine as a source. Even if semiconductor suppliers can source the gas from elsewhere, this could lead to downtime as the lasers would potentially need to be recalibrated to use a gas from a new source, as well as a period of ramp-up to follow. Given how stretched semiconductor capacity is currently, any production lost to undertake these



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steps would not be able to be recovered, resulting in production and sales being lost by any vehicle manufacturer affected. We are currently investigating how great the risk of disruption is from this factor, and how much this could affect our forecast.

We will continue to watch the situation in Ukraine and the responses to developments, and will provide further updates to our forecast as deemed necessary.

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