



Automotive Industry Weekly Digest

03 January – 07 January 2022





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[EV Highlights] Hongqi to introduce new MPV model in 2022

Hongqi, the premium brand of FAW Group, is expected to launch a new multi-purpose vehicle (MPV) in China in 2022. According to local media reports, the new model will be an E-segment MPV benchmarking the Toyota Alphard and Lexus LM. Road testing for the new model is expected to begin in the beginning of 2022 and the model's sales launch will begin in the same year.



Outlook and implications

Hongqi has made an ambitious target of selling 400,000 vehicles this year. However, owing to the impact of the coronavirus disease 2019 (COVID-19) virus and the ongoing semiconductor shortage, the automaker will certainly miss its sales target set for the year. However, Hongqi will continue to expand its product line to enter into a new segment. The new MPV will make an attractive offering to business-oriented MPV buyers and help lift Hongqi's brand image. Compared with models such as the Toyota Alphard and Lexus LM, this locally produced Hongqi MPV will be less expensive. IHS Markit expects Hongqi to begin production of the new model at the Changchun plant in 2022 and the sales volume of the model to reach 4,000 unit this year and further increase to around 12,000 units in 2023.

[EV Highlights] GM plans to sell electrification components for EV conversion projects and non-auto applications

General Motors (GM) has announced plans to supply electrification components for electric vehicle (EV) conversion projects, commercial equipment, and marine applications. Some of the elements of the announcement have been announced previously. The aim of the plans is to generate revenue beyond new vehicle sales, as well as to create new business models. In a company statement, GM's vice-president of EV growth operations said, "GM has an established strategy, network of integrators and co-development agreements to apply an extensive array of components and solutions to a broad range of customers and use cases. As companies across many industries look to reduce their environmental impact, GM is uniquely positioned to serve as a leader not only through exciting new EVs across our brands, but through additional technology applications, and we look forward to bringing customers – existing and new – along with us on our zero-emissions journey." In the statement, GM provided a series of examples of its expected efforts, rather than a definitive list of products. Among these are Electronic Connect and Cruise eCrate packages, the aim of which is to enable customers to work with qualified installers to replace a vehicle's ICE with a fully electric propulsion system. The installers will work through GM's electric specialty vehicle modifier (eSVM) programme. GM has been exploring this idea with



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previous proof-of-concepts including a Chevrolet S-10 pick-up conversion called E-10 Pickup, the K-5 Blazer-E, the eCOPO Camaro, and Project X. The most recent project is conversion of a 1972 El Camino SS, on which GM worked with Lingenfelter Performance Engineering. GM says the El Camino SS project is the first independent installation of the eCrate package, due to be launched in 2022. A group called GM Powered Solutions is to begin to offer tailored electric component sets and identify project opportunities “that could benefit from electrification and will work to strategically integrate the latest EV technology into custom applications”, said GM. The GM Powered Solutions projects are to include GM Maring, On-Highway, Off-Highway and Industrial segments. GM also announced a project with Textron Ground Support Equipment to provide EV components to electrify that company’s GSE TUG line of baggage tractors, cargo tractors, and belt loaders. GM’s Powertrain Control Solutions group is to integrate the components into lithium-ion electric powertrains for this equipment. GM’s announcement last month of an investment in electric boat startup Pure Watercraft is the first example of GM Marine’s efforts.



Outlook and implications

GM says that the new EV components business segment could create a total addressable market of USD20 billion by 2030, and the company looks to be part of that market. GM’s plans are aggressive and could have a substantial impact on its revenue, as well as possibly help provide scale for some components and engineering developments. In addition to creating the revenue stream, these projects create opportunities for GM’s engineering teams, including in integration, battery development, control units, and other areas, to expand their expertise and knowledge base. Launching the eCrate package builds on a long-standing tradition of GM offering crate versions of several engines over the years, for customers and racers to install independently. With the eCrate package, GM is taking a more hands-on approach to ensuring these systems are installed safely and efficiently, given the new technology. The proof-of-concept vehicles mentioned by GM previously were mostly revealed as part of the company’s presence at the SEMA show, where it was also able to gauge the interest of aftermarket and tuning fans in potential EV conversions.



[Partnership Highlights] Waymo, Zeekr announce EV ride-hailing vehicle collaboration

Waymo and Geely's Zeekr plan to deploy a new battery electric vehicle (BEV) for the Waymo One ride-hailing fleet in the US, announced in a press release issued by Zeekr as well as in a blog post by Waymo. The new purpose-built mobility vehicle is being designed and developed at Zeekr's research and development facility in Gothenburg (Sweden), the CEVT (China Europe Vehicle Technology Centre). Zeekr will design and develop the future vehicle on what it is calling a new proprietary and open-source mobility architecture. Waymo will then take delivery of the vehicles in the US and integrate its fully autonomous Waymo Driver into the vehicle platform. Zeekr says the vehicle has been designed for autonomous use-cases, including a fully configurable cabin ready to be produced with or without driver controls, and can be tailored to the rider requirements for Waymo One. Currently, the US does not allow vehicles to be sold in the US without driver controls unless an exemption is granted. There is no indication of whether Zeekr or Waymo have applied for an exemption as the vehicle has not been finalised, although Waymo's blog post about the new Zeekr relationship indicates the company does intend that "our Waymo One riders will one day experience and interior without steering wheel and pedals, and with plenty of headroom, leg room and reclining seats, screens and chargers within arm's reach, and an easy to configure and comfortable vehicle cabin." Although Zeekr and Waymo published illustrations of the vehicle with the announcement, it was noted the images were an illustration and that actual design would "reflect standards applicable to the vehicle at the time of manufacture."



Outlook and implications

Waymo has worked with several automakers in developing vehicles for its passenger ride-hailing fleets, as well as for its efforts in the medium-heavy commercial sector; working with Geely and Zeekr is consistent with Waymo's intent to build a fleet, but also not to directly participate in manufacturing. As with prior Waymo announcements, neither company provided indication of the cost of the deal. The deal is being called a collaboration, rather than a joint venture or deeper alliance. The announcement also does not confirm a targeted number of vehicles or specific timeline. Zeekr is an EV brand owned by Zhejiang Geely Holding Group, announced in March 2021. Among the questions not confirmed is where the Zeekr vehicle will be produced; Zeekr's first model is produced at the company's Ningbo, China, plant. Production in China could see the vehicles subject to import tariffs the US is imposing on vehicles from China for sale in the US. However, as Waymo does not intend to sell the vehicles to consumers, there remains the possibility that the cost to Waymo of acquiring the vehicles from Zeekr is low enough to make a tariff less onerous. Cost of ownership and ensuring ride-hailing profitability will be critical for Waymo as well. Zeekr introduced its first model in April 2021, called the 001, and went on sale in China in October 2021. The model is based on Geely's Sustainable Experience Architecture (SEA).



[Partnership Highlights] Daimler, BYD announce new agreement regarding Denza JV

Daimler and BYD have issued a statement regarding an equity transfer agreement for the longer-term set-up of their Denza new-energy vehicle (NEV) joint venture (JV; Shenzhen DENZA New Energy Automotive). Following the transfer, Daimler will hold 10% and BYD will hold a 90% equity. Although this does reduce Daimler's equity, the statement notes that both partners remain "dedicated to their successful long-term partnership". The equity transfer is set to occur in mid-2022, subject to regulatory approvals. According to the statement, "As a pioneer of new energy vehicles, DENZA made robust progress thanks to joint efforts from both shareholders. The strong support in operations by BYD will facilitate the future success of DENZA, while Daimler stays committed as a shareholder." Although the plans were not detailed in this statement, the two indicated that Denza is intending to launch new models in 2022 and seek "further growth opportunities".



Outlook and implications

The Daimler-BYD JV launched its first model in 2014, followed by further vehicle launches and a notable investment in 2018. The JV was formed in 2012. However, according to IHS Markit sales forecast data, the new brand sold about 4,175 units in 2020 and this is expected to slip to about 3,500 units by 2023. Although both partners remain committed, the change puts BYD in charge from an operational view and reduces Daimler's direct role. In the intervening years from when the JV launched its first vehicle, Daimler has rolled out a more aggressive direct electric vehicle (EV) strategy for the Mercedes-Benz brand, and BYD has expanded its efforts towards electrification, including plans for helping to electrify the entire public transportation system as well as launch uplevel EVs to compete with Tesla and NIO.



[MHCV Highlights] South Korea tests fuel-cell heavy duty trucks

A trial run of fuel-cell heavy-duty trucks has started in South Korea today (23 December) as part of the government's broader efforts for a shift to alternative-powertrain vehicles in line with the carbon emission cut initiative, reports the Yonhap News Agency. Five 11-tonne fuel-cell trucks, including Hyundai's Xcient, will run on roads in the Seoul metropolitan area and the southern region for the next 12 months. CJ Logistics and Hyundai Glovis, as well as e-commerce giant Coupang, will take part in the project to deliver international express cargo and steel plates. The South Korean government will provide them with subsidies and charging stations, as well as other support. The government will use the project to collect data needed to check and set up the overall hydrogen-based logistics system.



Outlook and implications

The latest development is in line with the South Korean government's aim to improve air quality in the country by bringing down particulate levels, increasing the adoption of alternative-powertrain vehicles, fostering hydrogen-related businesses as future growth drivers, and reducing the country's heavy reliance on imported oil. The deployment of fuel-cell heavy-duty vehicles for transportation in South Korea is still in its early stages. Only a small percentage of light trucks are electric, highlights the report. By 2030, the government aims to have 10,000 fuel-cell trucks on the road on the back of various initiatives, including the establishment of more charging stations and the provision of a purchasing subsidy. According to the South Korean Ministry of Land, Infrastructure and Transport, replacing one 10-tonne cargo truck with an alternative-powertrain vehicle has a similar effect on reducing greenhouse gas emissions as replacing 13 one-tonne cargo vehicles. According to the most recent government data, the estimated greenhouse gas emissions from cargo transportation by vehicles in South Korea reached about 28 million tonnes, accounting for roughly 30% of the total carbon emissions from the entire transportation sector.

[MHCV Highlights] Nikola receives new order for 100 zero-emission trucks



Nikola has announced receipt of a letter of intent (LOI) from Heniff Transportation to purchase 100 Nikola Tre battery-electric trucks, with the first deliveries due in the first half of 2022. According to a company statement, the purchase agreement is between Heniff Transportation and Thompson Truck Centers as part of a fleet-as-a-service business model. Thompson is to provide the sales, service, maintenance, and energy infrastructure for



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operating the Nikola Tre trucks. According to the statement, after initial deployment of 10 units of the zero-emission trucks in their bulk transportation operation, Heniff and Thompson agreed to “pursue the placement” of an additional 90 units in Heniff’s fleet. Heniff has a fleet of more than 2,000 vehicles and 100 sites connected nationwide. Heniff CEO Bob Heniff is quoted as saying, “After visiting with Nikola’s leadership team, touring the new Coolidge, Arizona manufacturing facility, and taking a test ride in the Nikola Tre BEV [battery electric vehicle], we were impressed by the power, performance, engineering, and quality of the truck. We see this partnership with Nikola and Thompson as a means to accelerate our strategy for electrification of our fleet and as a positive benefit for our customers, communities, employees, and stakeholders.” Nikola energy and commercial president Palo Koziner said, “The Nikola dealer network is a key component to delivering innovative zero-emission products to our customers. Thompson will provide the sales, parts, and service solutions for the Nikola trucks purchased by Heniff, and the related electric vehicle charging infrastructure. This agreement is intended to be a true turnkey solution, with the goal for Heniff Transportation to realize zero-emission transportation with first-class dealer support.”

Outlook and implications

The announcement of the deal with Heniff Transportation comes shortly after Nikola announced the delivery of its first battery-electric trucks to Total Transport Services and is separate from that earlier announcement. In working with Thompson on the support and maintenance of the vehicles, Nikola has access to a large network without the need for direct investment. The announcement does not give further details of the timeline for delivery of the trucks. IHS Markit’s October medium and heavy commercial vehicle forecast sees Nikola achieving sales of 183 units in 2022, more than 500 units in 2023, and over 2,000 units in 2024.



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[GSP] Middle East/Afric sales and Production Commentary - 2021.12

Middle East/Africa sales

November 2021: -8.9%; 0.243 million units vs. 0.267 million units

YTD 2021: +18.3%; 3.114 million units vs. 2.631 million units

Light vehicle demand in the Middle East and Africa region posted an expected decrease in November compared with the same month in 2020 at -8.9%, thus confirming the vehicle sales trend of a slowing pace of growth from the high rates registered in March–May. March 2020 marked the beginning of the COVID-19 pandemic, and vehicle sales sharply declined in the following months owing to severe lockdown measures. Therefore, the comparison for March–July 2021 versus the unusual circumstances for March–July 2020 should be noted. However, the following months of September 2021–December 2021, as expected, have failed to report high growth. In fact, the last three months of the year will all register a negative result. Both October and November decreased by more than 8%, and December should decline by 20% because of the global chip shortage, which has affected vehicle production and pressured showrooms with less new-car stock. The first quarter of 2021 registered 8.1% growth, and the second quarter soared to 65.0%, while the third quarter likely increased by 17.7%. The last quarter is forecast to decline by 13.3%. New-vehicle demand is slightly worse than expected when compared with the first three quarters of 2019 (pre-pandemic), thus signaling that a firm recovery has now been delayed, despite consumers beginning to look beyond quarantines and economic lockdowns. Overall, in the 12 months of the COVID-19 crisis from March 2020 to February 2021, demand collapsed 20.5%, with 740,000 fewer vehicles registered.

In recent years, regional economies were already very fragile, and the COVID-19 pandemic further deteriorated both business and consumer confidence levels. In addition, record-low crude oil prices in 2020 further depressed countries that heavily depend on oil export revenues, as global supply heavily overshadowed global demand. Key industry sectors in developed countries, such as airlines, cruises, cargo shipping, fuel stations, and manufacturing plants, significantly lowered their demand for oil, resulting from government-imposed lockdowns forcing consumers to stay at home. As a result, countries heavily dependent on either oil or tourism revenues crashed across the region. However, a more positive turnaround should gather pace in the first half of 2022, as the economic recoveries gain momentum at various speeds, depending on each region and country's specific core sectors. Robust demand for commodities has benefited specific countries; the return of tourism will also kickstart the revival of car rental companies representing an important market share in some countries, which have frozen new registrations since the start of the pandemic and decreased the size of their fleets to readjust to demand levels. Higher demand for new vehicles will face longer waiting times because of the global chip shortages that have forced carmakers to slow production rates. As a result, many registrations will be pushed out to the following year.

January–December 2020 estimated full year volumes were down 17.6%. The overall negative trend that has developed in the past few years will likely bottom out in the near term and rebound. However, the need for structural economic reforms to be implemented will continue to overshadow this recovery. The full-year 2021 forecast for the Middle East and Africa region is set at 3.345 million units (revised up 22,000 units versus last month), representing a 14.3% year-on-year (y/y) increase, which still holds total regional volumes back to levels reached 16 years ago (in 2005). Moreover, falling demand in six consecutive years highlights the economic instability across the region and consumers' cautiousness to commit to a new vehicle purchase.



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Vehicle sales in November 2021 were affected by the distinct performances across the region, with specific economic developments affecting various markets and subregions in different ways. Vehicle demand during November in the Middle East (excluding Iran) and the Gulf crashed 17.5% compared with the same month in 2020. In similar fashion, vehicle demand in Iran decreased 7.3%, and that in the African continent demand slipped by 1.7%.

As previously forecast, the slowing vehicle demand trend across the MEA region will be reported at different paces for each country that depends on the specific nation's economic recovery plans and execution. The stronger demand expected throughout the following year will continue to be disrupted owing to a certain degree of economic volatility from post-COVID-19 "softer" restrictions to several industries that will continue to linger. Over the next few months, the rising cases associated with the Omicron variant will bring new disruption to the travel industry and wider economies throughout the region. More importantly, the slow recovery pace of vehicle registrations will fail to match the higher demand from consumers for new vehicles resulting from the easing of economic restrictions—and especially due to the chip shortage affecting vehicle production globally.

Sales of new vehicles in 2021 should increase 15.6% across the Middle East (excluding Iran) and the Gulf subregion. There may be some volatility in specific months as consumers pull forward vehicle purchases to avoid higher value-added tax (VAT) rates to be introduced in some countries. Oman introduced a 5% VAT to become the fourth Gulf country to do so. Only Kuwait and Qatar are lagging with their implementation process. The Gulf nations of Bahrain, Saudi Arabia, and the United Arab Emirates (UAE) have already introduced a VAT. Recovery was strong and positive in the second and third quarters of 2021 compared with the dreadfully low result during the second quarter of 2020. The remaining fourth quarter of 2021 will be negative owing to the global chip shortage. The following year should trend cautiously with low growth, as the vaccine is further rolled out and the economies reopen with fewer restrictions, allowing consumer spending levels to rise, in line with more positive confidence indicators. Also, the rise of global oil prices will benefit the Gulf subregion's economic landscape.

Unfortunately, the African continent felt the full force of the COVID-19 pandemic in the second half of 2020; this struggle will continue throughout 2021 and 2022, as the global epicenter of the virus shifted onto the continent. Unfortunately, this expectation has been confirmed as African leaders struggle to contain the virus from further spreading, and South Africa in particular recorded a higher number of positive cases, thus registering a fourth wave brought on by the Omicron variant.

Demand for new vehicles in Africa decreased by an estimated 1.7% in November, yet remains positive at 22.7% in YTD 2021, signaling the green shoots of recovery, as substantial pent-up demand has significantly risen over the years. Since 2015, vehicle sales have considerably fallen from the highs of fewer than 2.0 million units to the current lows of fewer than 1.0 million units. The positive momentum during late 2018 and the first half of 2019 was short-lived, and the start of a turnaround is expected for mid-2021. Countries in North Africa, such as Algeria and Morocco, fell into negative territory in 2020, joining South Africa and hurting the region's overall demand



levels. As a result of much weaker consumer demand, vehicle demand across Africa likely decreased 26.7% in full-year 2020, despite some relative support from the rise in commodity prices. Vehicle demand will also continue to be heavily affected by slightly higher levels of global crude oil demand, as a trending recovery in prices has materialized in late 2021. Nevertheless, total African vehicle demand has fallen back to levels achieved 17 years ago, in 2003. This scenario will lead to more hardship across Sub-Saharan countries, while North African countries will also suffer from a slowdown in Western Europe. Sales of new vehicles in the African continent will increase an estimated 17.8% in 2021.



South Africa is the largest vehicle market in Africa, but the economic landscape has been extremely difficult during the past few years and was further depressed owing to COVID-19, despite recent strong demand for natural resources and precious metals. Demand for new vehicles continues to struggle owing to an outdated automotive policy and the political tension within the African National Congress (ANC), which in turn has led to economic policy stagnation. The ANC led by Cyril Ramaphosa won the general elections held in May 2019, and the party's main task has been to provide greater stability, which is critical and necessary to turn around low consumer confidence levels. Big-ticket purchases, such as new vehicles, have been largely postponed during the COVID-19 pandemic and should recover at a more solid pace well into the first half of 2022. As a result of the government lockdown measures, which restricted movement and closed businesses over several months in 2020, consumer spending sharply declined. At present, a recovery is slowly unraveling, and vehicle sales in the first eleven months of 2021 were up by 24.8%. However, the results continue to lag behind the pre-pandemic sales performance of 2019, which shows the underlining struggle to renew the vehicle fleet. Furthermore, political unrest has now intensified following the arrest of former president Jacob Zuma that led to chaos, with looting and violence in the Guateng and Kwa-Zulu Natal provinces. A peaceful solution to this social unrest will be key for supporting a dynamic economic landscape.

The Sub-Saharan region has also struggled in recent years owing to low global oil prices hurting oil revenues for exporting countries and low commodity prices hurting agricultural and mining revenues for other nations. Following the high volumes reached in 2014, vehicle demand has struggled to achieve any consistency trending downward in the past five years, and imports of used vehicles continue to flood the continent despite the government policy. Vehicle sales in 2021 are forecast to remain at the levels achieved 20 years ago. A stronger turnaround is projected beyond 2023, as more governments implement growth strategies for the automotive sector.

North African countries have also been struggling to put their economies on the right path to economic growth. Demand for new vehicles heavily fell in the three-year period (2015–17) owing to the economic collapse in Algeria, Egypt, and Tunisia. Overall, North African vehicle sales have fallen to levels registered 15 years ago. In 2018, Algeria implemented a vehicle import quota system, and it has since continued to tank, with sales developments destined to be drastically lower than the normal market demand. In fact, new-vehicle registrations



are estimated to have reached an all-time low in 2020 at 27,000 units, an abysmal gap from the highs of 500,000 in both 2012 and 2013 for Algeria. For 2021, the Algerian car market is forecast to further sink, at a new-low of 21,000 units. Egypt's vehicle market had been struggling in the recent past and should continue on the path of a smooth recovery throughout 2021. Full-year demand will likely reach 278,000 vehicles, up more than 20%. Finally, Morocco's vehicle market continues to develop in line with its economic growth, despite weaker sales resulting from effects of the COVID-19 virus outbreak on the economy and significant trading partners. New vehicle demand is rising by more than 30% and targets 175,000 units for 2021. The recovery in demand will likely be mild for new vehicles across North Africa in 2022, as more carmakers and many tier suppliers have delayed expanding their manufacturing footprint in the region.

Demand for new vehicles in the Middle East and Gulf region (excluding Iran) fell by an estimated 17.5% in November, slightly halting the recovery that has begun to form in the region. Across the region, many countries have lifted the economic restrictions, and business activity has returned. For 2021, the trend should remain slightly positive, and full-year vehicle sales will increase 15.6%. Further at the negative end of the scale, Iranian vehicle sales have collapsed to levels reached over 20 years ago, since the highs registered in 2017 at 1.6 million units, down to 0.8 million units in the present day. The stark double-digit declines are a direct result of the renewed economic sanctions imposed by the US under the Trump administration. The Iranian market in 2021 should post low growth as poor economic development concerns continue to affect the negative sentiments of Iranians. Across the Gulf region, higher taxation has slowed demand for high-priced goods. Iran and Saudi Arabia are the largest vehicle markets in the Middle East and Gulf region, and their performance will significantly affect overall demand. In recent years, Iran's vehicle demand registered one in every two vehicles sold in the region, thus highlighting the importance of the country.

The high volatility in demand for new vehicles will likely continue and lies in the political turmoil within the Gulf region, where countries have turned on Iran and previously Qatar, led by Saudi Arabia.

Oil prices have begun to slowly rise from late 2020, supported by a weak global recovery, owing to the varied global lockdowns, which have grounded industries, such as airlines, cruises, and road transportation, and led to significantly low oil demand in developed markets. As a result, oil-exporting nations have planned budgets with lower revenues. However, from the third quarter onwards, higher global prices are expected to take shape as global economies set to return at a faster pace, supported by consumer spending. The major difficulty now is the supply of chips to build new vehicles. For this reason, IHS Markit analysts expect vehicle demand in the fourth quarter of 2021 to decline in the Middle East and Gulf region. Vehicle demand in the region (including Iran) should begin a fuller recovery in the second half of 2022.



In the next few years, consumers will continue to be slightly affected by the VAT introduction in the Gulf countries, and the higher cost of goods will lower disposable income, thus hurting demand for new vehicles. The UAE and Bahrain have implemented the VAT since January 2018 and January 2019, respectively. Saudi Arabia tripled its VAT to 15% in July 2020. The three remaining Gulf countries of Kuwait, Oman, and Qatar have pledged to implement the 5% VAT by April 2021. Only Oman succeeded as both Qatar and Kuwait now target 2022 to



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introduce a VAT. Meanwhile, Gulf leaders will continue to implement projects that are necessary to become less dependent on oil revenues in the longer term. Finally, as a direct result of the COVID-19 pandemic and lower oil prices than the highs of recent past years, a very mild recovery in vehicle demand is expected over the next several quarters. On a positive note, crude oil prices are now rising and former US president Trump's historic peace deal among Israel, Bahrain, and the UAE shall bring much-needed stability across the region. From 2021 onward, President Joe Biden's administration will have high expectations from Gulf nation leaders to further support the region's peace and economic developments.

Iranian car owners will hold onto their vehicles for a longer period of time, thus driving up the age of the fleet of Iranian vehicles. In turn, this trend will lead to higher demand for new vehicles in the longer term.

Global crude oil outlook

About 4.4 MMb/d of global oil (crude and liquids) production will only show up in 2027, or later—and perhaps not at all. This is the volume of oil supply “lost” owing to the decline in upstream capex since 2019, which was brought about by the 2020 oil price collapse and energy transition-related investment decisions. The volume of lost supply is greater than the entire production from any single OPEC member, apart from Saudi Arabia and Iraq.

About 3.6 MMb/d of the lost supply is crude oil, with the balance consisting of natural gas liquids and biofuels. The United States accounts for 1.5 MMb/d of lost crude oil supply—the largest share, by far, of any country. The loss of US supply was a key factor, along with a big increase in demand, in OPEC+ enjoying strong oil market power in 2021. However, oil supply power is dynamic—not static. The degree to which US production growth returns—or does not—will play a major role, along with the pace of world oil demand growth, in determining the global balance of oil supply power in 2022 and beyond.

The loss of supply does not predetermine higher prices in the years ahead. Global oil demand was also reset at a lower level because of the COVID-19 outbreak, which is still a threat to demand as illustrated by the new Omicron variant. However, the quick reactivity of supply to market conditions, both from OPEC+ and the United States, means oil price cycles—of surplus and deficit—will be shorter than the 8–18-year cycles of the past.

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[Supplier Trends and Highlights] HUAWEI launches AITO M5 featuring HarmonyOS Smart Cockpit

The vehicle contains a 10.4-inch curved full-LCD dashboard



Source: Getty Images Plus/ metamorworks

HUAWEI has launched its intelligent luxury sport utility vehicle (SUV), the AITO M5 equipped with the HUAWEI DriveONE electrical system and the HarmonyOS Smart Cockpit, PanDaily reported on 23 December. The AITO M5 also features abundant vehicle applications, and HUAWEI SOUND.

“Focusing on the All-Scenario AI Life strategy, HUAWEI uses its ICT capabilities built within the last 30 years to empower the automotive industry with an unparalleled intelligent driving experience. It aims to bring digital application to every vehicle, helping OEMs further improve and sell more vehicles. AITO M5 will lead us to a new era of smart mobility,” said Richard Yu, executive director, CEO of the Consumer Business Group, and CEO of the Intelligent Automotive Solution BU, HUAWEI.

Outlook and implications

The vehicle contains a 10.4-inch curved full-LCD dashboard, a 15.6-inch 2K HDR intelligent central display, and a wireless charging area. HUAWEI SOUND is able to work with HUAWEI Music and HUAWEI Video to bring a better sound experience. HUAWEI AppGallery is also installed on AITO and is specifically made for intelligent vehicle applications.

[Supplier Trends and Highlights] TSMC to begin 3nm chip production in late 2022

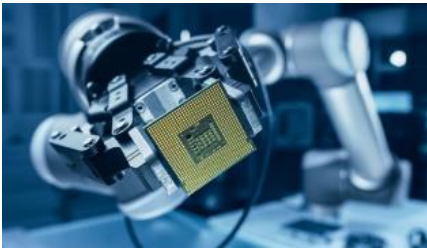
The new 3nm processors will feature enhanced performance capabilities and better battery life.



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Source: Getty image/ gorodenkoff

Taiwan Semiconductor Manufacturing Company (TSMC), according to a press release dated 24 December, is reportedly planning to begin production of chips built on its 3nm process in the fourth quarter of 2022. According to MacRumors, Apple will release its first devices with TSMC 3nm chips in 2023, including Macs with M3 chips and iPhone 15 models with A17 chips.

Outlook and implications

The factory, which is set to open in 2024, will produce semiconductors that use in-camera image sensors, as well as chips for automobiles and other products. Furthermore, amid a global chip shortage, TSMC and the Sony Group are reportedly considering a joint construction of a semiconductor factory in western Japan. The facility, which would be TSMC's first in Japan, is being planned at a time when the global tech industry is dealing with unprecedented semiconductor shortages and supply chain disruptions.



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[VIP ASSET] Semiconductor supply issue: Asia production tracker

Key findings

- After production shutdowns during the first half of 2020 as a result of the coronavirus disease 2019 (COVID-19) pandemic, vehicle output in Asia resumed slowly initially, affected by new safety protocols and training in those measures, as well as managing the supply chain.
- By the end of 2020, reports had begun to emerge of disruptions to the supply of semiconductor chips to the automotive sector.
- Light-vehicle manufacturers faced increased disruption to the supply of systems using semiconductors in the first three quarters of 2021.
- Our latest intelligence indicates that global vehicle production in the fourth quarter of 2021 will be exposed to ongoing disruption.
- Furthermore, new waves of COVID-19 infections have been hitting Asian countries since early April, which is also affecting vehicle production in the region.
- This report provides a current snapshot of the impact of these issues on light-vehicle production in Asia, comparing known impacts against our December 2020 forecast.

After production shutdowns during the first half of 2020 as a result of the COVID-19 pandemic, vehicle output in Asia resumed slowly initially, affected by new safety protocols and training in those measures, as well as managing the supply chain. By the beginning of the fourth quarter of 2020, production had largely normalised. However, by the end of 2020, reports had begun to emerge of disruptions to the supply of semiconductor chips to the automotive sector, as the needs of the recovering automotive industry clashed with those of the wider consumer electronics sector, which was itself recovering strongly and late in the year, building stocks for the holiday season. The situation was exacerbated by other factors, including a fire at Renesas's Naka (Japan) facility on 19 March and disruption following the severe weather that hit the southwest United States in February.

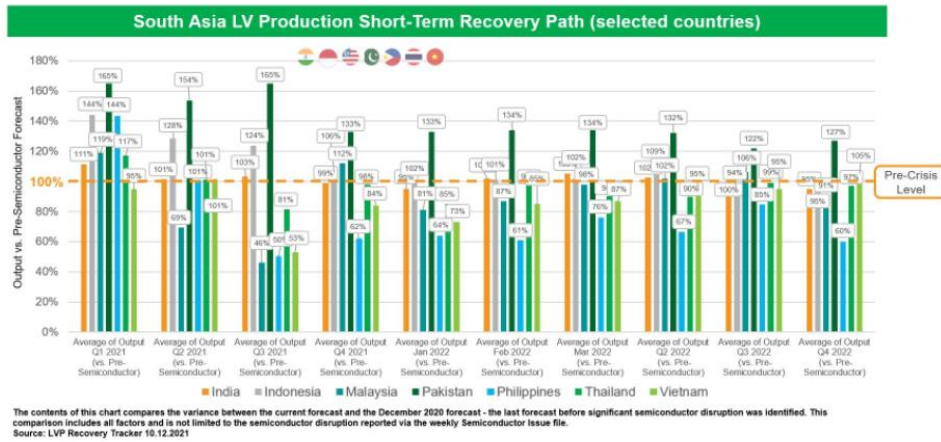
IHS Markit's latest assessment of the supply shortage indicates that global vehicle production in the fourth quarter of 2021 will be exposed to ongoing disruption. Globally, the outlook is dependent on Malaysia where many 'back-end' operations are performed, such as packaging and chip testing, but has felt the impact of the COVID-19 virus pandemic. A gradual improvement in operational capacity in Malaysia is the most obvious upside; 100% operational capacity is reported to have been available since late September, earlier than our previous estimates. Although this is a positive development, it remains the case that there is a backlog to be addressed, which has been compounded by demand from the non-automotive sector; this is increasingly the major constraint on satisfying automotive demand. Reports that Apple will cut production of mobile phones by up to 10 million units in the final quarter of 2021 and that lead times remain at more than 20 weeks underline the difficulties faced, even as Malaysia comes back online. We expect that vehicle production disruption will spill over into the first half of 2022. We also believe that the second half of 2022 may be the point at which supply stabilises, with lost production recovery efforts not starting until the first half of 2023. As of 10 December, we estimated a global production volume loss of about 1.44 million units in the first quarter, 2.60 million units in the second quarter, and 3.46 million units in the third quarter. Visible downtime in the fourth quarter has been increased by 53,500 units this week, with 4,700 units identified in Europe, 8,950 units in Japan, 17,300 units in North America, 21,240 units in South America, and 1,320 units in South Asia. This increases the running total for the fourth quarter to 1.96 million units.



Furthermore, new waves of COVID-19 infections have been hitting Asian countries since early April, which is also affecting vehicle production in the region.

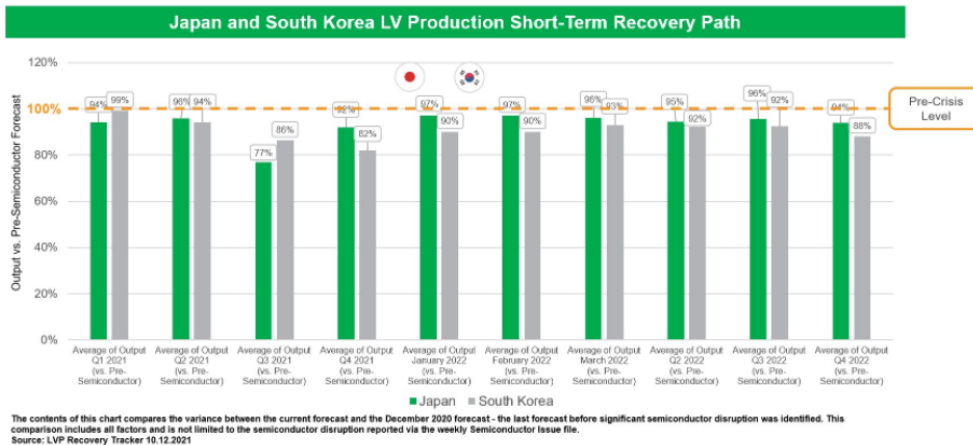
South Asian light-vehicle production impacts and recovery pattern

IHS Markit – South Asia LV Production Tracker (10.12.2021)



Japan and South Korea light-vehicle production impacts and recovery pattern

IHS Markit – Japan South Korea LV Production Tracker (10.12.2021)



In Japan, production operations have been hit at Honda’s Suzuka facility, affecting the Fit, which suffered several periods of downtime alongside a reduced line rate between January and May. Production of Kei cars and the Vezele was also affected at the plant in May. The plant was also hit by downtime from 2 to 6 August, and from 16 to 17 August. There are also some production cuts at the plant from late August to November. In addition, Honda’s Sayama site underwent a two-day reduction of holiday operations in April and also several periods of



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downtime and a reduced build rate in May. Operations at the plant were also affected from September to November because of a component shortage from Vietnam. Honda's Yachiyo and Yorii plants were also affected in May. Operations at the Yachiyo plant were affected in August, September, October, as well as November, while there has been reduced build-rate at the Yorii plant in August and November. Nissan reduced production of the Note at its Oppama plant during January and February. There was also a reduced line rate and a cut in shifts and overtime relating to production of the Note and Leaf until early August. There was some downtime in May as well as production adjustments from September to November. Furthermore, the automaker's Kyushu #1 and Kyushu #2 plants implemented reduced overtime, holiday operation cuts, and some downtime between April and July. The former stopped operations for several days in May, while production at the latter took place on a single shift during the month. The automaker further announced production adjustments at the Kyushu #1 plant from September to November and at the Kyushu #2 plant from September to December. Production at the Tochigi plant was affected by a reduced line rate during April, while output was affected for several days in May, June, July, September, and October. The automaker also suspended operations at its Nissan Shatai plant for one day in July, which affected production of the NV150 AD, NV200, and Safari. Production at the plant was also affected in September and October. Mitsubishi reduced overtime and cut holiday operations at its sites in Mizushima and Okazaki during March, April, June and July. It also reduced shifts at the Mizushima plant from May to September for Kei cars' assembly line and has cut one shift for assembly of such vehicles in November. Mitsubishi also reduced the line rate at the Okazaki plant in May, July, and September. The automaker reduced overtime and cut holiday operations at its Pajero plant in June. Mazda's production of small cars at its Ujina and Hofu facilities was affected during the first half of 2021. Overtime was also cancelled on 10 and 17 April relating to the Mazda3, CX-30, and CX-5. Output was reduced by 15% and 30% in April and May, respectively, and was cut by at least 15% in June. The Hofu #2 line was stopped from 7 to 31 August for re-tooling. Subaru undertook production adjustments at its Yajima and Ota facilities during the first half of 2021. It reduced production by 30,000 units in April and May and by 16,000 units in June. The automaker also suspended production on 16 July and from 7 to 17 September. Suzuki's production at its Sagara plant was affected during the first quarter, limited to a reduction in overtime. However, in the second quarter, the Sagara plant halted operations on 5 April, while the Kosai plant partially stopped production on 5 and 12 April. Operations at the Sagara plant were also affected in May, June, July, August, and September. The automaker also implemented some downtime at its Iwata and Kosai facilities in June, July, August, September, and October. Operations at the Sagara plant are also affected in November. Production at Isuzu's Fujisawa plant was affected in August. Toyota, which did not suffer any production losses in the first quarter, experienced some downtime and production adjustments during June at its Kanto Iwate, Motomachi, Sendai, and Yoshiwara plants. The automaker also suspended Corolla production at its Takaoka plant from 2 to 6 August. Toyota also suspended production in August and September, affecting 27 production lines in 14 plants in Japan for up to 22 days from 24 August to September, owing to the semiconductor supply issue and the shortage of certain parts caused by the resurgence of COVID-19 cases in Southeast Asia. It reduced production at its Japanese plants by 37,000 units in August and by 140,000 units in September. In addition to these production adjustments, it further reduced production at its plants in the country by 30,000 units in September. In October, Toyota reduced production by 150,000 units in Japan, while it estimates production adjustment of around 50,000 units in November. On 12 November, the automaker announced that all 14 of its factories and all 28 of its production lines would return to normal operations in December for the first time in seven months. The automaker also said that it would maintain its plan of producing 9 million units in 2021. Losses in Japan stood at 112,000 units in the first quarter, 331,000 units in the second, and 562,000 units in the third. In the fourth quarter there will be a 9,000-unit increase in disruption levels at Toyota, taking the quarterly total to 532,000 units. In addition to the direct risk caused by the semiconductor shortages, we also identify that another 35,000 units have been lost separately because of the earthquake that occurred recently near Fukushima. Considering prolonged supply disruption due to the continuous COVID-19 threat in Vietnam and Malaysia, as well as semiconductor shortages lasting until early 2023, full-year 2021 Japanese light-vehicle



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production is expected to decline by 4.0% y/y to around 7.436 million units. This will grow by 6.5% y/y in 2022 to about 7.9 million units.

OEMs in South Korea are also affected by the global semiconductor shortage. General Motors's (GM)'s site in Bupyeong cancelled overtime during January, involving the Buick Encore GX and Chevrolet Trailblazer. Production of these models was halved in July and there was downtime from 4 to 15 October. The automaker has also reduced production of the Encore GX and Trailblazer by 50% in November. Furthermore, the automaker's Assembly Line 2, which builds the Chevrolet Trax, Chevrolet Malibu, and Buick Encore, had its utilisation rates halved from 8 February to April, as well as in July. Production of these models was also halved in October. The site was hit by a stoppage to production of all models between 19 and 23 April, and output was reduced by 50% between 26 and 30 April. The automaker also reduced production of all models at the plant by 50% in August and September. Its Changwon site operated at 50% capacity between 1 and 15 May, and also operated at half capacity in July. Kia also did not undertake any weekend operations in March at its Hwasung plant in relation to the Sorento and Niro, and at the Kwangju plant in relation to the Bongo. There were also reduced operations at other sites during weekends in the first quarter. The automaker also did not undertake any weekend operations in April at its Hwasung plant for all models. Kia suspended production of its Stonic SUV at the Sohari plant on 17 and 18 May; and production of the Carnival, Stinger, and K9 at Sohari was also suspended on 16 and 17 September. Hyundai implemented reduced operations at its South Korean plants on weekends during the first quarter. It also temporarily suspended production at its No. 1 Ulsan plant in South Korea between 7 and 14 April owing to problems with parts supplies, which affected production of the Kona, Veloster, and IONIQ 5. Production losses for these vehicles due to this issue are estimated to be 12,500 units. Hyundai also cancelled overtime at the No.3 Ulsan plant on the first and second weekends of April, and there was downtime at the Ulsan plant in relation to the Porter on 6 and 7 May. The automaker also stopped production on 17 and 18 May at its No.5 Ulsan plant, which produces the Tucson and Nexo. Production was halted on 18 and 20 May at the No.3 Ulsan plant, which produces the Avante and Venue. It also reduced production of the Genesis models, Santa Fe, Tucson, and Nexo models at the Ulsan plant by 50% from 24 to 26 August. Production of the Staria, Palisade and Porter was also halted from 13 to 17 September. In addition, it suspended operations at its Asan facility from 7 to 13 April, and on 19 and 20 April. There was also some downtime at the plant in May and June. The automaker also halted operations at the plant on 9, 10, 15, 16, and 17 September. Renault Samsung reduced the production rate of the XM3, QM3, and Koleos at its Pusan facility during March. It also suspended operations at the plant on 19 and 20 July. SsangYong suspended production of all the vehicles built at its Pyongtaek facility between 8 and 16 April, and reduced production by 50% in October. Volume losses at South Korean OEMs due to the issue during the first quarter were estimated at around 17,900 units, 58,300 units in the second quarter, and 50,200 units in the third quarter. Another 35,000 units are now at risk in the fourth quarter of 2021, largely affecting GM Korea and SsangYong's operations. To boost the country's self-reliance in the automotive chip sector and its competitiveness in future vehicles, the South Korean government recently unveiled an ambitious plan to invest around USD450 billion over the next decade in its semiconductor manufacturing industry. It is seeking to build a "K-semiconductor belt" that will stretch over dozens of kilometres south of Seoul and bring together chip designers, manufacturers, and suppliers. Hyundai has also announced plans to develop its own semiconductors to reduce reliance on chipmakers. In addition to semiconductor-related shutdowns, Hyundai also suspended operations at its No.1, 2, 4, and 5 plants in Ulsan for half a day on 10 June owing to disruption to parts supply caused by COVID-19 cases at Hyundai Mobis. A rise in COVID-19 cases at Kia's Sohari plant also resulted in a production shutdown at the facility on 26 and 27 July. As the global semiconductor shortage has intensified owing to lockdown measures to prevent the spread of the COVID-19 virus in Southeast Asia, we expect vehicle production in South Korea to be significantly affected throughout the year. As a result, we now expect light-vehicle production in the country to decline by 2.4% y/y in 2021 to about 3.40 million units. This is expected to grow by 1.8% y/y in 2022 to around 3.4 million units.



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[VIP ASSET] Fuel for Thought: Auto demand levels remain depressed on chip famine alongside race between vaccine & variants; 2022 Light Vehicle demand set to post 82.4 million (+3.7%)



Semiconductor shortages and wider supply chain disruptions expected to linger until 2023

IHS Markit forecasts new light vehicle sales of nearly 82.4 million globally in 2022, up 3.7%. IHS Markit projects the industry will finish out 2021 with nearly 79.4 million light vehicles sold, and industry demand levels will continue to be restrained next year as the semiconductor supply chain remains challenged. Tentative demand recovery will continue across most regions, assuming the ongoing availability of effective vaccines and apart from any major impacts from the Omicron variant.

Full year 2021 sales are expected to be up just 2.9% from the levels achieved in 2020. IHS Markit remains cautious on recovery prospects, as the global auto industry grapples with this "perfect storm" of unprecedented circumstances. Depressed vehicle output levels are expected to impact vehicle lead times for some time, pressuring depleted inventories and delaying fulfillment of prevailing order levels.

"The path of the pandemic remains an important driver of the 2022 auto demand cycle, especially the "race" between vaccine and variants. Concerns remain as winter arrives for Northern Hemisphere nations, and the emergence of the Omicron variant represents a worrying development," said Colin Couchman, executive director, global light vehicle forecasting, IHS Markit.

Most regions face limited recovery prospects on supply chain challenges and potential further COVID-19 flare-ups

The European auto industry looks set for a bleak mid-winter as widening virus concerns combine with ongoing supply chain woes, with concerns for German-based production. The 2021 Western and Central European demand forecast foresees 13.9 million units, just scraping into growth territory, up 0.2% y/y. 2022 demand is set at 15.0m units (+7.8%), according to IHS Markit.





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"European car consumers are expected to hunker down for a second winter of COVID-19, but the new year might struggle to deliver meaningful improvement to new car sales levels," said Couchman.

Looking at 2022, US sales volumes are expected to reach nearly 15.5 million units, up an estimated 2.6% from the projected 2021 level of approximately 15.1 million units. "For 2022, the pace of sales is expected to quicken in the second half of the year. Given current inventory conditions, it's difficult to project significant demand recovery in the first half of 2022. But we expect to exit 2022 with a pace of sales more recognizable to pre-COVID levels, setting the stage for better volume outlooks into 2023 and 2024," according to Chris Hopson, manager, North American light vehicle sales forecast, IHS Markit.

In Mainland China—for 2021, IHS Markit analysts foresee the market down by 1% y/y, to 23.4 million units, as supply chain shortages choke off market growth. Near-term risks are balanced, and 2022 is currently set at 24.2 million (+3.3% y/y), with more meaningful recovery expected for 2023—back above pre-crisis levels to 26.9 million, up by 11.3% y/y.

Production expected to recover slowly through 2022

Global light vehicle production in 2021 is expected to finish at 75.5 million units, a paltry 1.2% improvement over 2020 levels.

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