



Automotive Industry Weekly Digest

25October – 29October 2021





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[OEM Highlights] Xiaomi to begin mass production of own cars in 2024

Chinese tech giant Xiaomi has announced plans to begin mass production of its own cars in the first half of 2024, reports Reuters citing comments from the company's chief executive officer (CEO), Lei Jun.



Outlook and implications

Xiaomi recently completed the official registration of its electric vehicle (EV) business. The new unit, called Xiaomi EV Inc., has registered capital of CNY10 billion (USD1.56 billion) and already has a staff of around 300. The company had earlier said that it plans to invest CNY10 billion in the initial phase of the development and plans a total investment of USD10 billion over the next 10 years to support its EV business. The company hopes to launch its first EV equipped with Level 3 autonomous technology; its upcoming models are likely to be built by a partner engaged in contracting manufacturing and are likely to be positioned in the entry and standard price segment to appeal to first-time EV buyers. IHS Markit expects Xiaomi's first model to be a sport utility vehicle, codenamed Xiaomi01.

[OEM Highlights] GAC puts first FCEV model on mobility platform 'ON TIME'

GAC has put its Aion LX fuel-cell vehicle (FCV) on a mobility platform for trial operation. According to Gasgoo, the vehicle has been put on the mobility service platform, "ON TIME", in which GAC is a stakeholder. ON TIME is said to be the first mobility service platform in the Guangdong-Hong Kong-Macao Greater Bay Area to launch a trial operation of FCVs.





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Outlook and implications

GAC's Aion LX FCV is a D-segment sport utility vehicle based on the GEP platform and is being produced at the company's Panyu plant in China. IHS Markit forecasts that total production volumes of the model will be below 10 units in 2021 and around 30 units next year. According to reports, the model consumes only 0.77 kg of hydrogen per 100 km and offers a New European Driving Cycle (NEDC)-rated range of over 650 km. China is focused on promoting the use of hydrogen fuel-cell technology, given that the emissions from this technology are not harmful and hydrogen is abundantly available. Specifically, China aims to increase the pace towards commercialisation of FCV technology and invest in the relevant infrastructure. China expects to increase the number of FCVs on its roads to 100,000 units by 2025, with passenger FCVs entering the picture.



[Semiconductor Highlights] TSMC plans to build semiconductor plant in Japan in 2022

Taiwan Semiconductor Manufacturing Co. (TSMC) has announced plans to build a new chip manufacturing plant in Japan in 2022, reports Kyodo News, citing the company's CEO C. C. Wei. TSMC will invest around JPY1 trillion (USD8.8 billion) in the new plant, which will produce 22-nanometer and 28-nanometer chips, and will also receive financial aid from the Japanese government. "Facilitating the domestic production of semiconductors is extremely important," said Japanese industry minister Koichi Hagiuda. The plant is expected to begin operations from the end of 2024 and will be jointly run with Sony Group Corporation. According to sources familiar with the matter, Denso Corporation is also considering joining the project. The latest plan by TSMC is pending approval from its board. The company has not yet disclosed the location of the plant and other details such as capacity.



Outlook and implications

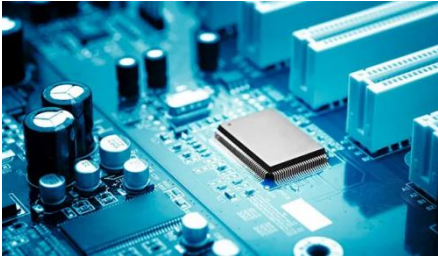
The new plant will focus on the production of chips that are currently having the biggest supply issues because of high demand from automakers and technology companies. The move will help to ease the supply shortage that has forced several automakers to cut production globally. TSMC is also building a USD12-billion chip factory in Arizona and expanding production capacity in Nanjing (China). Earlier this year, TSMC announced that it will establish a subsidiary for semiconductor research and development in Tsukuba, Ibaraki Prefecture, near Tokyo. TSMC is currently the world's largest contract chip manufacturer, accounting for a massive 52.9% market share, followed by Samsung with 17.3% of the market share.

[Semiconductor Highlights] Hyundai plans to develop its own semiconductors

Hyundai plans to develop its own semiconductors to reduce reliance on chipmakers, reports Reuters, citing Hyundai's global chief operating officer José Muñoz. It is working on developing its own chips, an effort which he said "takes a lot of investment and time". The automaker's parts affiliate Hyundai Mobis would play a key role in the in-house development plan. Muñoz noted the worst has passed for the industry chip shortage, adding Hyundai had the "toughest months" in August and September. "The [chip] industry is reacting very, very fast," he said, adding that Intel is investing a lot of money to expand capacity. "But also in our case, we want to be able to develop our own chips within the group, so we are a little bit less dependent in a potential situation like this". He also said that Hyundai aims to deliver vehicles at the level of its original business plan in the fourth quarter, and



offset some of its production losses next year. It is also on track to produce electric vehicles (EVs) in the US in 2022, and is looking into both enhancing its existing factory in Alabama and increasing its production capacity.



Outlook and implications

Hyundai has been forced to disrupt production at a number of its South Korean and overseas facilities since January in relation to the ongoing semiconductor shortage, which is hitting OEMs around the world. IHS Markit's latest impact assessment of the supply shortage indicates that the third quarter was severely affected and levels of disruption surpassed those in the second quarter. As of 11 October, 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 3.41 million units in the third quarter. We also estimate that another 849,000 units are at risk in the fourth quarter of 2021. Globally, the outlook is dominated by the situation in Malaysia where many 'back-end' operations are performed, such as packaging and chip testing. As this is more labour-intensive than the wafer fabrication processes, activity is more easily affected by measures that affect workforce participation. A gradual improvement in operational capacity in Malaysia is the most obvious upside. Indeed, 100% operational capacity is being reported as being available since late September, earlier than our previous estimates. If confirmed, this is a positive development, but there is still a substantial 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. IHS Markit expects that vehicle production disruption will spill over into the first half of 2022. We also assess that the second half of 2022 may be the point at which we look for stabilisation of supply, with lost production recovery efforts now starting only in the first half of 2023.



[EV Highlights] Honda announces electrification strategy in China, plans to introduce 10 EV models in next five years

IHS Markit perspective

Implications Honda has confirmed that all new models it will launch in the Chinese market after 2030 will be electrified including HEVs and EVs. It plans to introduce the first 10 Honda-branded EVs in China under the e:N series in the next five years. In order to ensure adequate production capacity to support its EV plans in China, it is increasing its NEV production capabilities with its JV partners and has also strengthened its relationship with CATL on the supply of batteries.

Outlook Currently, IHS Markit forecasts Honda will be producing five BEVs in China by 2025, with total production volume of around 135,000 units in 2025.

Honda has announced its comprehensive strategy for electrified vehicle business in China and has also unveiled several electric vehicle (EV) models and concepts.

The automaker has confirmed that all new models it will launch in the Chinese market after 2030 will be electrified, including hybrid electric vehicles (HEVs) and EVs. It plans to introduce the first 10 Honda-branded EV models in China under the e:N series in the next five years starting with the e:NS1 and e:NP1, which will go on sale in early 2022. The NS1 model will be built by the Dongfeng Honda joint-venture (JV), while the NP1 will be manufactured by the GAC-Honda JV.



e:NS1 Honda



e:NP1 Honda

Honda is also currently developing three concept models for Chinese consumers – the e:N COUPE Concept, e:N SUV Concept and e:N GT Concept – with a goal to begin sales within the next five years. It also plans to export these models under the e:N series developed and produced in China to global markets. Honda also announced that application of its advanced driver-assistance system (ADAS), Honda Sensing 360, will begin in China in 2022 and that it is aiming to integrate this technology into all models sold in major markets including China by 2030.



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In the area of sales, Honda plans to introduce an area dedicated to the e:N Series at approximately 1,200 existing Honda dealership locations around China. It also plans to launch dedicated e:N dealerships in major Chinese cities, which will specialise in sales of e:N Series models.

Outlook and implications



e: n Concept vehicles Honda

Honda announced its electrification plans in April this year, which included aggressive targets to increase its sales of BEVs and fuel-cell electric vehicles (FCEVs) to 100% by 2040. The target is a gradual one; Honda is looking for 40% of its total global sales volume to be EVs and FCEVs in 2030, then 80% by 2035, and 100% in 2040.

In order to ensure adequate production capacity to support its EV plans in China, GAC Honda plans to build a manufacturing facility dedicated to new energy vehicle (NEV) production with annual capacity of 120,000 units. The construction of the facility is scheduled to begin in October this year and will be completed by 2024. The project will involve investment of CNY2.99 billion and will include a car test track, a battery workshop, and workshops for stamping, welding, painting, and assembly. Honda has also strengthened its relationship with Chinese battery manufacturer Contemporary Amperex Technology Co Ltd (CATL) on the supply of batteries, as well as pursue further local-market use of resources.

Although Honda is a bit late in rolling out EVs, it is performing well in the ICE vehicle category globally. The automaker sold 1.633 million vehicles in China last year, up 5.3% from 2019 despite the impact of Covid-19 pandemic, according to IHS Markit's light-vehicle sales data. Honda's plans to introduce 10 EV models specially in China stems from the fact that it is one of the largest and fastest growing markets for NEVs globally and everyone wants a share of it. It would be interesting to see how the Chinese consumers would respond to Honda's planned models in the next few years. Currently, IHS Markit forecasts Honda will be producing five BEV models in China by 2025 with total production volume of around 135,000 units in 2025.

[EV Highlights] BMW to offer bold new BEV alongside next-generation 3-Series

IHS Markit perspective

Implications BMW will launch a parallel car to the next-generation 3-Series, which will be the first car to be built on the company's Neue Klasse architecture and will provide a step change in the company's mainstream BEV technology.



Outlook

As well as being based on BMW's first bespoke BEV architecture, the new model will also use the brand-new, unified cell design that the company is developing, which is likely to be the final iteration of lithium-ion battery chemistry BMW will use before moving to solid state batteries.



BEV charging IHS Markit

BMW is planning to build a new D-segment electric sedan that will showcase the company's third-generation battery electric vehicle (BEV) technology and shadow the next-generation 3-Series in the company's range, according to an Autocar report. The car will feature the sixth generation of BMW's electric powertrain, which will have a long range capability and fast charging. It will also use new lightweight materials and construction techniques and a brand new digital operating system. According to Autocar, the new car has the internal project code 'NK1' and it is likely to be positioned as the full BEV alternative to the next-generation 3-Series, effectively following the pattern that BMW has established with the newly launched second-generation 4-Series GC and the i4, which is effectively that car's BEV equivalent. The Neue Klasse architecture, which NK1 will be the first model to use, represented something of a sea change in philosophy as it will be BMW's first pure electrified platform architecture, having previously stated it would focus on flexible architectures that could host ICE powertrain formats as well as electrified powertrains. The new architecture will be able to host a wide variety of vehicle sizes and types, including front-wheel drive, rear-wheel drive and four-wheel drive models, with significantly differing sizes of battery packs too. Commenting on the project, BMW's board member for research Frank Weber said, "The Neue Klasse represents the beginning of a new phase of operations for BMW. It's scaled to allow us to build electric cars from a 2 Series-sized saloon up to an X7-sized SUV." It will also be able to support plug-in hybrid (PHEV) models with a front-mounted ICE.

The platform will eventually consolidate the vast majority of BMW's models into one main architecture, although lower-volume projects, like any potential successor to the i8 plug-in hybrid electric vehicle (PHEV) sports car could still be built on bespoke architectures. This will consolidate the current two-platform strategy that combines the CLAR architecture, for larger rear- and four-wheel drive models, including SUVs, and the FAAR architecture that underpins the company's sub D-segment compact and front-wheel drive cars. According to Weber, this move will accelerate cost savings and synergies. Weber added, "We won't be building separate structures. The Neue Klasse will see a big ramp-up in volume potential. We've learned a lot in scaling over the past two generations of platform development."

Outlook and implications



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While the UK1 project will be an important model, it is interesting to note that even in the middle of the decade it will shadow another generation of conventionally powered 3-Series, which will have a combination of hybrid gasoline (petrol) and diesel powertrains. This is arguably quite a conservative strategy, given the likely ban on the sale of ICE vehicles in Europe from 2035 and the acceleration of electrification in China and North America too. But the special place the 3-Series has in BMW's range and history and automotive pantheon also needs to be considered. It is a true automotive icon and the world's best-selling premium D-segment, executive saloon. It is also renowned for its driving dynamics and sporty nature, so if BMW is taking a slightly conservative strategy by building another generation of conventionally powered 3-Series alongside the car that UK1 will become, there is a sound rationale behind it.

BMW is internally forecasting that BEV models based on the Neue Klasse platform will account for at least 50% of its global sales by 2030, by which time it plans to offer at least one electric model across each of its 15 model lines. The naming convention for the production variant of the UK1 project will be interesting as well, as if it follows the naming convention established by the new i4/4-Series Gran Coupé, it would logically be called the i3. However, the nameplate was taken by BMW's first EV, which was launched in 2013 and as a unconventional city car design, is a long way in concept from what the production UK1 will look like, or indeed where it will be positioned in the market. According to IHS Markit's powertrain installation forecast, BMW's own projections for the Neue Klasse architecture supporting 50% of sales by 2030 appear accurate. BMW's production mix is forecast to be 54% BEV by 2030, according to our latest forecast.



[GSP] ASEAN Sales and Production Commentary -2021.09

ASEAN sales

August 2021: -20.2%; 163,251 units vs. 204,494 units

YTD 2021: +19.3%; 1,633,254 units vs. 1,368,570 units

Light vehicle sales in the Association of Southeast Asian Nations (ASEAN) recorded about 163,000 units in August 2021, marking a decrease of 20.0% compared with August 2020. In January–August 2021, the market increased 19.0%, to about 1.63 million units. The ASEAN market will likely increase 3.5%, to about 2.56 million units, in 2021.

Thai light vehicle sales in August 2021 decreased 36.9% year on year (y/y) and decreased 17.3% month on month (m/m), to 42,400 units. In August 2021, the Thai consumer confidence index continued to reach a new low to 39.6 points—the lowest since October 1998, when the survey started, largely owing to the heavily hit of devastated Delta variant, a month of strict restrictions in August, and low vaccination rate. New daily COVID-19 infection cases were only around 5,000 cases per day since the beginning of July. During mid-August, infection cases rose rapidly to almost 24,000 per day and gradually decrease to around 15,000 cases per day at the end of August. The August containment measures for high-risk provinces and Bangkok—including business operation restrictions, a nighttime curfew, and limited intercity travelling—covers 29 maximum-risk provinces, which account for almost 80% of the country's GDP. The vaccination rate (at least one dose) was only around 39.2% of the total population, or 40.3 million doses, out of almost 70 million population as of 13 September 2021. According to the COVID-19 Taskforce (the Center for COVID-19 Situation Administration; CCSA), without further lockdown, new infections will jump up to 30,000 cases in the fourth quarter. Therefore, the confidence index is unlikely to improve in the coming months, and the Motor Expo in December should be held postponed or cancelled. The economic outlooks for 2021 remain sluggish; therefore, the Bank of Thailand (BOT) downgraded Thailand's 2021 GDP forecast from 1.8% to 0.7% and the 2022 GDP expectation from 3.9% to 3.7%.



Vehicle sales during January–August hit 460,200 units, which marked a 3.4% y/y increase. Sales in the first half were boosted by strong momentum from pent-up demand since late in the fourth quarter 2020; the motor show in March, which could draw some demand; and the low base in 2020 due to strict lockdown measures. In the second half of 2021, steep negative year-on-year growth is expected through the end of the year because of the fourth wave of the pandemic with the more contagious Delta variant, overwhelming hospital utilization, the cloudy economic outlook, the higher base in the second half of 2020 when the market had quickly recovered, and a worsening global chip shortage problem. Challenging issues on the demand side include the question of how long the government can contain the spread of the COVID-19 virus; can it timely manage the vaccine rollout to the target of 100 million doses within this year; provide aid to consumers, small and medium-sized enterprises



(SMEs), the unemployed, and tourism businesses that have suffered high costs and lost tremendous income? The crucial obstacle is now more likely on the supply side, with the semiconductor shortage issue causing huge automotive production slowdowns/downtime in Thailand and worldwide from the third quarter through the end of the year.

On the positive side, global trade will push exports to again become one of the key contributors to the Thai economy in 2021 with growth of 6.4–8.6% in 2021. Exporters are concerned about their prospects following the spread of COVID-19 infections to at least 1,500 factories, and shipping container shortages could pose a threat to the product delivery performance. Therefore, the 2021 sales forecast is now downgraded to 0.72 million units, marking a 7.1% y/y decrease, reflecting the intensity of the COVID-19 pandemic waves, slumping consumer confidence and spending, the slowdown of the economy, and the severe shortage in automotive supply. The main driver of the automotive segment in 2021 should be the country's product champion—the pickup truck segment. The high recovery momentum of pickup trucks since 2020 will continue, along with new product updates from OEMs that could attract more consumers. Unemployment in big cities has forced people to return home to small towns to start small local businesses using pickups for operation. The fast-growing e-commerce business and in-home delivery services have also supported pickup demand. xEVs continue to interest consumers, in line with the global trend of electric car popularity during the COVID-19 outbreak. Concerns over PM2.5 pollution problems in Thailand also contribute to their popularity. New launches of battery-electric vehicles (BEVs) from the ORA brand under Great Wall Motors (Thailand) with an affordable price range in 2021–22 could attract more target customers, including middle-income customer groups, and increase more BEV-segment sales.

In the short term, the COVID-19 pandemic will continue pressuring the economy, businesses, and consumer behaviors. In addition, the ongoing semiconductor issue will also hinder automotive production and sales growth. Sales recovery is expected to be further delayed, and sales will return to pre-pandemic levels after 2023. Sales should also be supported by the new elections in 2023, urban expansion after the completion of the megaproject on public transportation, and substantial overseas investments to join the Eastern Economic Corridor (EEC)—Thailand's new flagship economic zone. Urban expansion will continue, with many companies allowing more remote working from home, the relocation away from large, crowded cities, and bordering provinces that have gained free-trade and labor opportunities according to the creation of the ASEAN Economic Community. The government's electric vehicle (EV) scheme will contribute to Thai market demand in the mid-to-long terms. To reach the bold government EV target, the government will likely offer additional policies to attract investments. IHS Markit analysts also expect consumer privileges to be imposed including for example, lower excise tax, cash subsidy, and personal tax exemption. The new players, i.e., mainland Chinese OEMs and global battery price declines, will lead to more affordable and wider target consumers in the future. In the longer term, IHS Markit analysts forecast the automotive industry will grow at a slower pace as penetration levels and public transportation—especially the Skytrain in Bangkok—expand. In addition, there are more concerns about limited roads, and high traffic congestion in big cities will be threats in the future.





Indonesia's light vehicle market increased to around 78,000 units in August 2021, up by 25.0% from a month earlier. The easing of the lockdown from level 4 (strictest) to level 3 (lighter) in Jakarta and some areas of Java islands owing to decreasing daily new COVID-19 infection cases has supported sales demand. At the end of August, around 50% of total decreasing cases were coming from the better situation in Jakarta, where more than 54% of residents are fully vaccinated and almost 100% had received one shot. Moreover, the demands had increased as many consumers made their purchases to take advantage of the last month of 0% excise tax benefit on eligible vehicle categories. For the year-on-year comparison, a rise of 124.0% was recorded because of the low base of comparison in August 2020 when there was no direct government support. Sales mainly increased because of the tax discount incentive, especially for 0% luxury sales tax on sedans and two-wheel-drive cars with engines less than 1,500 cc. during March–August 2021, and 50% and 25% luxury sales tax reductions, respectively, for two-wheel vehicles and four-wheel cars with engines between 1,501 cc. and 2,500 cc. during August. Moreover, people's confidence had started to improve from better economic performance. Indonesia's economy grew 7.07% y/y in the second quarter owing to surging exports—including impressive growth in commodity shipments—a rebound in consumption and investment, and bigger government spending. For year-to-date (YTD) performance, the Indonesia market increased 68.0% y/y to around 506,000 units. In the last forecast, IHS Markit analysts downgraded the 2021 Indonesian forecast because of the massive surge of semiconductor demand across several industries, including automotive; the chip supply chain was unable to cover the huge numbers and production will be challenging during Q4 2021 in the near term. The market will likely close with 0.67 million units, or a 36.0% y/y increase. The main factors influencing the 2021 performance are government stimulus packages to counter further effects of the pandemic, especially for the automotive sector; more crucial model launches in popular segments to attract consumers' interest; the vaccination program against COVID-19 to boost consumer confidence and spur the economy (the country started mass vaccinations during the third week of January 2021, and the two-dose vaccine will be free for all Indonesian citizens); and the corporate income tax cut since 2020 to attract investment and create more jobs. In addition, the president has issued the Presidential Decree on the Task Force for Investment Acceleration, aiming to improve the country's ease of doing business in order to encourage economic growth and provide employment opportunities. However, the efficiency of some vaccines against more virulent strains as well as the low vaccination rate among ASEAN countries are still concerns. In the short-to-medium term, Indonesian car sales should continue to rise owing to robust demand, product refreshments, expectations of a further corporate tax cut, and public infrastructure improvement. The chip shortage should impact car supplies and sales in the short term, but demand could rebound in the midterm after the situation starts to recover. For the longer term, the market should grow from a rising middle class. Considering the penetration rate is still low in the country, there remain plenty of opportunities for further growth in the years ahead. However, mass rapid transit (MRT) programs may result in consumers prolonging the decision to buy a new car, since MRT can accommodate many people at the same time through business areas that currently face severe traffic jams.

ASEAN production

August 2021: -6.1%; 199,416 units vs. 212,276 units

YTD 2021: +33.0%; 2,136,547 units vs. 1,605,856 units

The Association of Southeast Asian Nations (ASEAN) region's light vehicle production in August 2021 contracted 6.1% year on year (y/y), with 199,416 units. Year-to-date (YTD) production during the first eight months of 2021 recorded 2.1 million units, up 33% y/y owing to the low base of comparison versus the same period in August



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2020. In the September forecast update, the ASEAN production forecast was significantly downgraded by 0.24 million units largely owing to the worsened outlook of the shortage in semiconductor supply through 2021. This is expected to extend into the second quarter of 2022, with recovery to gradually start from the second half of 2022. Despite Malaysia having resumed production from the lockdown, a further production loss of 77,000 units is expected for 2021 owing to the shortage in semiconductor supply and the fact that only 80% of production capacity is allowed, given the social distancing measures and workforce constraints. Malaysia's semiconductor and microcontroller output accounts for 13% of global supply for the automotive industry. The supply chain disruptions in Malaysia have significantly caused OEM production cuts across Asia, Europe, and North America since third quarter 2021. For Thailand, a further production loss of 97,000 units is anticipated, given the sluggish domestic outlook for the remainder of 2021 amid the deteriorating concern on the build-back efforts for semiconductor supply in the region. Major OEMs in Thailand, including Honda, Isuzu, and Nissan, have revised down their production outputs during the third quarter amid the shortage. ASEAN's 2021 light vehicle production is now anticipated to reach nearly 3.1 million units, up 8.5% y/y.



[VIP ASSET] Semiconductor supply issue: 19 October Asia production tracker

IHS Markit perspective

Implications 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 half of 2021. Furthermore, new waves of COVID-19 infections are hitting across Asian countries since early April, which is also affecting vehicle production in the region.

Outlook Our latest intelligence indicates that the third quarter of 2021 has been severely affected and levels of disruption have surpassed those seen in the second quarter. The level of visible downtime is also growing in the fourth quarter. 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 the third quarter of 2021 has been severely affected and levels of disruption have surpassed those seen in the second quarter. The level of visible downtime is also growing in the fourth quarter. Globally, the outlook is dominated by the situation in Malaysia where many 'back-end' operations are performed, such as packaging and chip testing. As this is more labour-intensive than the wafer fabrication processes, activity is more easily affected by measures that affect workforce participation. A gradual improvement in operational capacity in Malaysia is the most obvious upside. Indeed, 100% operational capacity is being reported as being available since late September, earlier than our previous estimates. If confirmed, this is a positive development, but there is still a substantial 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. 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 we look for stabilisation of supply, with lost production recovery efforts now starting only in the first half of 2023. As of 18 October, 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 3.45 million units in the third quarter. Another 1.44 million units are at risk in the fourth quarter of the year.

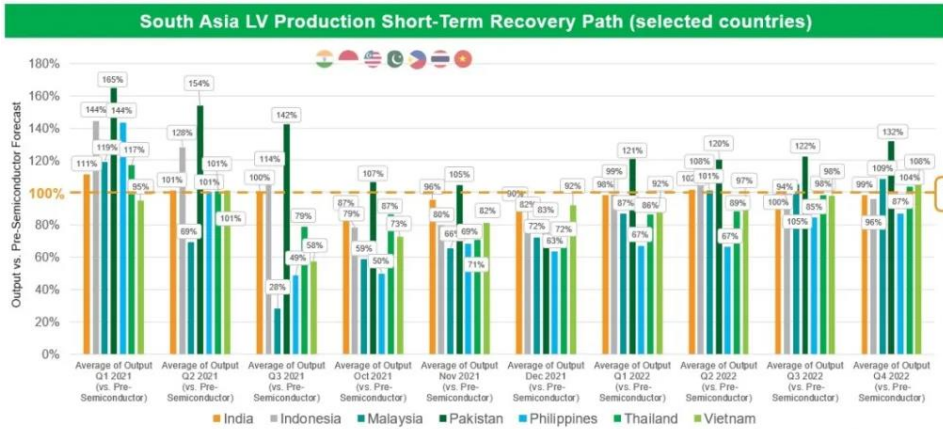
South Asian light-vehicle production impacts and recovery pattern



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The contents of this chart compares the variance between the current forecast and the December 2020 forecast - the last forecast before significant semiconductor disruption was identified. This comparison includes all factors and is not limited to the semiconductor disruption reported via the weekly Semiconductor Issue file.
Source: LVP Recovery Tracker 15.10.2021

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