THE SOCIOECONOMIC SITUATION SURROUNDING THE AUTOMOBILE INDUSTRY

1 Introduction

Following on from the previous year, the COVID-19 pandemic continued to cause upheavals throughout 2021. As the disease spread across the world, the UK was the first country to begin vaccinations in December 2020. This vaccination drive then progressed led by developed countries. Despite hopes that this would bring infections under control, the emergence of new variants resulted in sporadic flare ups, illustrated by the spread of the infectious Omicron variant at the end of 2021. Aiming to fight infection while maintaining social and economic activity, many countries spent the year looking for ways to revitalize their economies from the effects of the pandemic as quickly as possible. Despite higher demand in regions that were able to re-open their economies, the automotive industry was forced to reduce production due to supply chain issues caused by the spread of COVID-19 in Southeast Asia and a global shortage of semiconductors. As a result, the pace of recovery in the industry was slow.

In December 2021, the 26th United Nations Climate Change conference (COP26) was held in Glasgow in the UK. The participating countries signed a pact targeting efforts to limit temperature rise to 1.5℃ . This pact calls for measures to address climate change with the aim of achieving carbon neutrality by mid-century, and was followed by the announcement of various milestones and target timings for achieving carbon neutrality.

A major tide of electrification is now spreading throughout the automotive industry as a practical means of decarbonization. A succession of countries and regions have set or raised targets for electrification. The introduction of electric vehicle (EVs) is accelerating, particularly in Europe, China, and the U.S. Competition is becoming more intense as new releases from legacy automakers are joined by emerging manufacturers of EVs and companies from other industries.

This article summarizes the political, economic, and automotive industry situation in 2021, and discusses the issues of the future.

2 Political and Economic Situation

2. 1. The Global Economy (Table 1)

According to the International Monetary Fund (IMF), the 2021 global economy rebounded to realize a real GDP growth rate of 5.9%. However, despite hopes for recovery following the re-opening of global economies as rates of vaccination progressed, this year remained beset by the expanding pandemic and rates of economic activity have yet to return to pre-pandemic levels.

Crude oil prices in 2021 increased in pace with demand as economic activity re-started. In October, the West Texas Intermediate (WTI) futures price rose temporarily to 85.41 dollars per barrel, the highest level since 2014. With the supply/demand balance breaking down, investment into the development of crude oil resources

Table 1 Real GDP Growth Rates in Major Countries (%)

	2019	2020	2021 estimate	2022 forecast
World	2.8	− 3.1	5.9	4.4
Major developed nations	1.6	− 4.5	5.0	3.9
U.S.	2.2	− 3.4	5.6	4.0
Eurozone	1.3	− 6.3	5.2	3.9
Germany	0.6	− 4.6	2.7	3.8
France	1.5	− 8.0	6.7	3.5
Italy	0.3	− 8.9	6.2	3.8
Spain	2.0	− 10.8	4.9	5.8
UK	1.4	− 9.8	7.2	4.7
Japan	0.3	− 4.6	1.6	3.3
Emerging markets	3.6	− 2.1	6.5	4.8
Mexico	− 0.2	− 8.2	5.3	2.8
Russia	1.3	− 3.0	4.5	2.8
China	6.0	2.3	8.1	4.8
Thailand	2.4	− 6.1	1.3	4.1
Indonesia	5.0	− 2.1	3.3	5.6
India	4.2	− 7.3	9.0	9.0
Brazil	1.4	− 4.1	4.7	0.3
Saudi Arabia	0.3	− 4.1	2.9	4.8

Source: IMF World Economic Outlook, revised forecast, January 2022

is being throttled by the rising tide of decarbonization. As a result, supply from the OPEC Plus group of major oil producers only rose by a small amount. The high price of natural gas is also putting upward pressure on crude oil demand. Although the price of crude oil was expected to fall in response to the gradual expansion of supply, the situation in Ukraine further destabilized the market at the beginning of 2022, pushing the price even higher.

The price of steel, aluminum, rare metals, and other resources also increased throughout 2021. The main factors for this were the increase in demand for durable consumer goods due to the post-COVID-19 pandemic rebound, higher production of electrified vehicles, and concerns over supply restrictions from China. While demand for semiconductors rose due to factors such as the spread of teleworking, production slowdowns caused by the ongoing pandemic and supply chain issues due to natural disasters led to a global shortage. Restrictions caused by dramatic recoveries in demand and further expansion of the pandemic led to disruptions in international transportation, greatly increasing logistics costs. As a result, this year saw structural changes to the supply chain that underpins the automotive industry.

(1) The U.S.

The U.S. achieved a real GDP growth rate of 5.6%. Although high economic growth continued from early spring, the effects of the further expansion of the pandemic and supply chain restrictions, particularly of vehicles, affected both personal consumption and capital investment from the summer months, resulting in slower economic recovery in the second half of the year. The reopening of the economy further exacerbated the labor shortage. Although wages rose, prices rose even faster, creating an inflationary cycle. In November 2021, the Federal Reserve Bank (FRB) started tapering off its policy of quantitative easing.

Joe Biden took office as the new President on January 20, 2021. Immediately after doing so, the U.S. rejoined the Paris Agreement and underlined measures to combat climate change as a key policy of the government. President Biden also pledged to achieve carbon neutrality by 2050 and set a greenhouse gas emissions reduction target of 50 to 52% by 2030 compared to 2005. In October 2021, the 1.75-trillion dollar Build Back Better Act was unveiled, which included the largest ever investment of 550 billion dollars in the U.S. green energy and climate change fields. Although the bill passed the House of Representatives, opposition from some Democrats and the Republican Party means that discussions were still ongoing in the Senate. Antagonism between the U.S. and China, which grew more intense under former President Trump, continued and punitive measures were enacted in various fields, including trade, security, and human rights.

(2) Europe

In 2021, the COVID-19 pandemic in Europe slowed between April and September as national vaccination drives progressed, leading to a recovery in economic activity. However, the highly infectious new Omicron variant emerged at the end of November. Stronger limitations at borders and on people's movements failed to halt the spread of infection and some countries were forced to reapply restrictions on daily lives. In addition to the impact of COVID-19, rising energy prices and supply chain issues applied the brakes to recovery. Consequently, economic activity in the European Union (EU) as a whole did not return to pre-pandemic levels in 2021, especially in its main constituent countries.

In July 2021, the European Recovery Fund was established with plans to issue the EU's first joint bonds up to a value of 750 billion euros. The EU is aiming to spread the recovery from the COVID-19 pandemic across the whole of the bloc through large-scale green investment.

The UK achieved a real GDP growth rate of 7.2% in 2021. However, since its 2020 drop in GDP was higher than most countries in the EU, economic activity has yet to recover to pre-pandemic levels. The impact of the pandemic was probably compounded by the effects of completely leaving the EU in December 2020. The UK and EU have still failed to reach an agreement about trade between the EU and Northern Ireland.

Germany achieved a real GDP growth rate of 2.7%. Restrictions to help combat the pandemic and issues with material supply chains impacted the manufacturing industry. After serving as Chancellor for sixteen years, Angela Merkel was replaced by Olaf Scholz, who formed a so-called "traffic light coalition" consisting of the Social Democratic Party of Germany (SPD), the Free Democratic Party (FDP), and the Greens. This coalition has demonstrated an active approach to policies related to climate change and energy, bringing forward the gradual scrapping of coal-fired power plants to 2030 and introducing a policy to realize a target of 80% renewable energy power

generation. Despite these ambitious targets, the situation was destabilized by the events in Ukraine at the beginning of 2022, and the possibility of changes in policy have been raised.

France and Italy showed evidence of economic recovery by achieving a real GDP growth rate of between 6 and 7%. In contrast, Spain's real GDP only increased by 4.9%, slower than many other countries in the EU. This was due to factors such as low household spending, the effects of rising energy prices, and delays in using EU recovery bonds.

(3) China

China achieved a real GDP growth rate of 8.1% in 2021. Lockdowns and other strict measures to counter the pandemic via a so-called "zero-COVID" policy that aimed to suppress infections in urban areas managed to minimize the impact of the virus. Despite global economic demand bottoming out and signs of recovery emerging, the second half of the year was market by a wave of real-estate issues. The resulting aversion to financial risk had a negative impact on personal consumption.

At a meeting of the General Assembly of the United Nations in 2020, China declared that it is aiming to have CO_2 emissions peak before 2030 and achieve carbon neutrality before 2060, the first public announcement of its so-called "3060" policy. In October 2021, this declaration was followed by an action plan for achieving this CO_2 emissions peak before 2030.

In August 2021, President Xi Jinping unveiled a slogan called "common prosperity." This slogan aims to redress the income gap created by the pursuit of economic growth under the policy introduced in the 1980s that allowed some people to become prosperous before others, and to spread wealth to every member of society. Policies pursued under this slogan include the adjustment of incomes and the return of wealth from high earning individuals and companies to society. Coupled with the idea of common prosperity, China also tightened real-estate financing regulations to suppress soaring real-estate prices. This has caused some major Chinese real-estate firms to default on bond repayments. Stronger regulations have also been applied to the computer gaming, learning, and entertainment industries, creating stricter social restrictions in an attempt to return to the guiding values of socialism.

(4) Emerging Markets

Mexico achieved a real GDP growth rate of 5.3%. President Lopez, who took office in December 2018, is a strong proponent of social spending policies and the country had experienced successive years of negative growth. This was then compounded by the COVID-19 pandemic. In July 2020, the United States-Mexico-Canada Agreement (USMCA) came into effect, replacing the North American Free Trade Agreement (NAFTA). Automakers have been working to strengthen their supply chains within the whole region, including Mexico.

Thailand achieved a real GDP growth rate of 1.3%, one of the slowest rates of recovery among the emerging markets. This was partially caused by the national lockdown that was enacted from the middle of July to the end of August to counter the spread of the pandemic, which had a major negative impact on consumer sentiment. Border controls also paralyzed tourism, the country's main industry. The economy was also hit by a shortage of foreign workers.

In India, GDP decreased significantly in 2020 due to the effects of strict national lockdowns. However, in 2021, real GDP grew by 9.0%. Partial slowdowns in economic activity were caused by measures in some states to combat the spread of the pandemic that occurred between April and June. Exports led the economic recovery, with flows of people recovering to 98% of pre-pandemic levels by the end of the year. Domestic demand is in the process of recovery.

Brazil achieved a real GDP growth rate of 1.6%. In addition to the impact of the COVID-19 pandemic, economic recovery was delayed by the country's worst drought in a century that hindered the re-opening of the economy.

2. 2. The Japanese Economy

In 2021, the Japanese economy achieved a real GDP growth rate of 1.6%. Following on from the previous year, sporadic outbreaks of the COVID-19 pandemic resulted in a second State of Emergency being declared between January and March, which was subsequently renewed twice, between April and June, and between July and September. Despite restrictions placed on social and economic activity, such as requests to refrain from inessential travel and shorter opening hours or closures being forced on the food and beverage industry, the second and successive States of Emergency were applied on a prefectural and city level rather than as a uniform national measure. As a result, the target of restrictions was limited to bars and restaurants, which allowed small retailers and entertainment business such as movie the-

Table 2 Sales Trends in the Japanese Automobile Market

Unit: 1,000 vehicles

	2016		2017		2018		2019		2020		2021	
	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year
Total	4,970	98.5%	5,234	105.3%	5,272	100.7%	5,195	98.5%	4,599	88.5%	4,448	96.7%
Vehicle registrations	3,245	103.0%	3,391	104.5%	3,348	98.7%	3,285	98.1%	2,881	87.7%	2,796	97.1%
Passenger vehicles	2,801	103.6%	2,943	105.1%	2,895	98.4%	2,822	97.5%	2,479	87.8%	2,400	96.8%
Ordinary trucks	1,490	110.0%	1,548	103.9%	1,583	102.2%	1,586	100.2%	1,371	86.4%	1,447	105.5%
Light-duty trucks	1,311	97.1%	1,395	106.4%	1,313	94.1%	1,236	94.1%	1,108	89.7%	953	86.0%
Trucks	428	98.9%	432	101.0%	439	101.5%	449	102.4%	392	87.3%	389	99.2%
Ordinary trucks	173	100.4%	176	101.8%	180	102.2%	182	101.2%	161	88.1%	158	98.2%
Light-duty trucks	255	97.9%	256	100.5%	259	101.0%	267	103.2%	232	86.8%	231	99.8%
Buses	15	115.8%	16	100.6%	14	87.9%	14	99.2%	9	68.7%	7	73.7%
Mini-vehicles	1,725	91.0%	1,843	106.8%	1,924	104.4%	1,910	99.3%	1,718	89.9%	1,653	96.2%
Passenger vehicles	1,345	89.0%	1,443	107.3%	1,496	103.6%	1,479	98.9%	1,331	90.0%	1,276	95.8%
Trucks	380	98.9%	400	105.1%	428	107.1%	431	100.6%	387	89.7%	377	97.4%

Sources: Japan Automobile Manufacturers Association(JAMA), Japan Automobile Dealers Association (JADA), Japan Light Motor Vehicle and Motorcycle Association

Table 3 Sales Trends in the Overseas Automobile Market

Unit: 1,000 vehicles

	2016		2017		2018		2019		2020		2021	
	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year
China	28,037	112.5%	28,421	101.4%	27,533	96.9%	25,277	91.8%	24,138	95.5%	24,235	100.4%
North America	21,089	101.8%	20,805	98.7%	20,723	99.6%	20,315	98.0%	17,094	84.1%	17,746	103.8%
Europe	19,886	104.6%	20,643	103.8%	20,704	100.3%	20,847	100.7%	16,737	80.3%	16,725	99.9%
Asia & Oceania	9,741	103.4%	10,217	104.9%	10,723	105.0%	10,057	93.8%	8,305	82.6%	9,357	112.7%
Middle East & Africa	4,770	95.8%	4,769	100.0%	4,334	90.9%	3,873	89.4%	3,173	81.9%	3,723	117.3%
Central and South America	3,913	89.1%	4,411	112.7%	4,682	106.1%	4,465	95.4%	3,223	72.2%	3,708	115.0%

Source: S&P Global Mobility Light Vehicle* Sales

* Light vehicle: Includes passenger vehicles, commercial trucks, and trucks with a gross vehicle weight (GVW) of 6 tons or less. Does not include medium or heavy-duty buses and trucks.

aters and professional sports to maintain a certain level of consumption. The Olympic and Paralympic Games, which had been delayed for a year, were held in 2021. The Tokyo 2020 Games took place in empty venues without spectators and with all athletes, coaches, and staff isolated from the population in bubbles. On October 4, 2021, Fumio Kishida was confirmed as the new Prime Minister.

The consumer price index (excluding fresh foods) for 2021 fell by 0.2% compared to 2020. Lower communication fees caused by a drop in mobile phone prices was offset by higher energy prices that pushed up the cost of gasoline, kerosene, and the like. Although the economy re-opened after the pandemic, individual consumer sentiment remains depressed. In contrast, the producer price index rose dramatically due to the effects of higher prices for energy and resources. There is the concern that this will translate into higher prices for consumer goods, dragging down any recovery in individual spending.

From the April-to-June period, capital investment started to increase in comparison to the previous year. In the October-to-December period, this increase was 3.8%. In the manufacturing industry, there was growing investment in vehicle manufacturing processes. Non-manufacturing service industries such as the food, beverage, and accommodation sectors rebounded and grew compared to the previous year. Despite signs of an economic rebound, future trends must be carefully monitored, factoring in the reoccurrence of COVID-19 and the impact of the situation in Ukraine.

3 Current State of the Automotive Industry

3. 1. Inside Japan (Table 2)

Vehicle sales in Japan in 2021 (January to December, including mini-vehicles) dropped 3.3% compared to 2020 to 4.45 million units. This was the result of a fall in production due to the global semiconductor shortage and

supply chain issues caused by the COVID-19 pandemic in Southeast Asia, and the temporary shuttering of several manufacturing plants from June onward. The number of vehicle registrations fell by 2.9% to 2.8 million, the fourth consecutive decrease over the previous year. Mini-vehicle registrations fell by 3.8% to 1.65 million, the third consecutive decrease over the previous year.

Passenger vehicle sales were boosted by incentives to purchase clean energy vehicles (CEVs). Sales of electric and plug-in hybrid vehicles both exceeded 20,000 units. Although these vehicles still only make up less than 1% of sales, the number is steadily increasing. However, vehicle electrification is progressing strongly, with 43% of sales being hybrid vehicles (12% higher than the previous year).

In June 2021, the government issued a revised and more specific version of the Green Growth Strategy toward achieving a carbon-neutral society. This strategy includes targets for electrified vehicles (including hybrid vehicles), which are expected to make up all new passenger vehicle sales by 2035 and 20 to 30% of new light-duty commercial vehicles by 2030, with 100% of new vehicle sales to be either electrified or run on decarbonized fuels by 2040, and describes comprehensive measures to realize these targets. Under the supplemental budget of 2021, the upper limit of SEV incentives was set to a maximum of 800,000 yen per electric vehicle and 500,000 yen per plug-in hybrid vehicle. Such subsidies will continue to encourage the wider adoption of electrified vehicles.

3. 2. Outside Japan (Table 3)

(1) The U.S.

In 2021, new vehicle sales in the U.S. increased by 5.5% to 11.86 million units. Demand was boosted by higher family savings, which reflected a rebound from lower consumption due to the restrictions enforced during the COVID-19 pandemic and economic measures from the government that included cash handouts, as well as low interest rates and relaxed credit conditions that boosted consumer confidence. The seasonally adjusted annual rate (SAAR) of vehicle sales started to exceed the level before the COVID-19 pandemic in some months starting in early spring, demonstrating the robust outlook. After that point, production adjustments caused by the semiconductor shortage depleted inventories and restricted the supply of new vehicles, which had a negative impact on sales. Although the number of factories returning to normal production had increased by December 2021, low inventory levels have yet to be resolved. Automakers also reduced their sales incentives, which increased the actual selling price of vehicles.

Sales of zero-emission passenger vehicles (ZEVs: electric vehicles, plug-in hybrid vehicles, and fuel cell vehicles) increased by 98% to 610,000 units. The market for these vehicles is expanding and large numbers of new models and brands are being launched. President Biden returned the State of California's right to adopt separate fuel economy regulations, which had been suspended under President Trump. Additionally, the Regulations for Greenhouse Gas (GHG) Emissions that were finalized in December 2021 included more stringent standards for model years 2023 to 2026. The standards for 2026 are even stricter than those introduced by President Obama. Congress passed the Bipartisan Infrastructure Investment and Jobs Act, which includes 75 billion dollars for EV charging infrastructure in 500,000 locations and at least 7 billion dollars to help build up the battery supply chain, indicating that policy has swung heavily toward the adoption of ZEVs.

(2) Europe

In 2021, new vehicle sales in Europe fell by 0.1% to 16.73 million units. Although sales trended upward after restrictions due to the COVID-19 pandemic were lifted, reduced production due to the semiconductor shortage impacted sales. Sales of hybrid passenger vehicles overtook those of diesel vehicles for the first time.

In July 2021, the European Commission (EC) announced the Fit for 55 policy package that aims to lower greenhouse gas emissions by 55% compared to 1990 levels. This package targets a 55% reduction in emissions from passenger vehicles by 2030 (compared to 2021) and a 100% reduction by 2035. In effect, this means that sales of ICE vehicles will be prohibited. Reacting to these policies, several automakers announced business plans to entirely replace their new vehicle lineup in Europe with electric vehicles before 2035.

New vehicle sales in the UK increased by 1.3% in 2021 to 1.63 million units, the second lowest level after 2020. Compared to the previous year, sales of electric vehicles and plug-in hybrid vehicles increased substantially by 76% and 71%, respectively, representing 12% and 7% of sales. The incentive scheme for plug-in vehicles (battery electric and plug-in hybrid vehicles) was revised in March and December 2021, lowering the upper limit of the incentives and tightening the definition of applicable

Table 4 Trends in the Number of Automobiles Produced in Japan

Unit: 1,000 vehicles

	2016		2017		2018		2019		2020		2021	
	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year	Volume	Compared to previous year
Total	9,205	99.2%	9,691	105.3%	9,730	100.4%	9,684	99.5%	8,068	83.3%	7,847	97.3%
Vehicle registrations	7,563	102.8%	7,795	103.1%	7,798	100.0%	7,778	99.7%	6,332	81.4%	6,187	97.7%
Passenger vehicles	6,610	104.9%	6,863	103.8%	6,861	100.0%	6,856	99.9%	5,603	81.7%	5,335	95.2%
Ordinary trucks	5,000	105.4%	5,147	103.0%	5,256	102.1%	5,317	101.2%	4,193	78.9%	4,166	99.4%
Light-duty trucks	1,610	103.5%	1,716	106.5%	1,605	93.5%	1,538	95.8%	1,410	91.7%	1,169	82.9%
Trucks	823	89.7%	808	98.2%	824	101.9%	799	97.0%	660	82.5%	779	118.0%
Ordinary trucks	506	86.2%	516	101.9%	518	100.4%	506	97.8%	405	80.1%	517	127.5%
Light-duty trucks	317	95.9%	293	92.3%	306	104.6%	293	95.7%	254	86.8%	262	102.9%
Buses	130	94.1%	123	94.9%	113	92.0%	123	108.3%	70	56.9%	74	105.5%
Mini-vehicles	1,642	85.4%	1,896	115.5%	1,931	101.9%	1,907	98.7%	1,736	91.0%	1,660	95.6%
Passenger vehicles	1,264	82.6%	1,485	117.5%	1,498	100.9%	1,473	98.4%	1,358	92.2%	1,284	94.6%
Trucks	378	96.3%	411	108.8%	433	105.3%	434	100.1%	378	87.2%	375	99.3%

Source: Japan Automobile Manufacturers Association (JAMA)

Table 5 Trends in Domestic and Overseas Production by Japanese Automobile Manufacturers

Unit: 1,000 vehicles

	2000		2005		2010		2015		2019		2020		2021	
	Volume	Proportion	Volume	Proportion	Volume	Proportion	Volume	Proportion	Volume	Proportion	Volume	Proportion	Volume	Proportion
Domestic production	10,141	61.7%	10,800	50.5%	9,629	42.2%	9,278	33.9%	9,684	33.9%	8,068	34.4%	7,847	32.3%
Overseas production	6,288	38.3%	10,606	49.5%	13,182	57.8%	18,095	66.1%	18,853	66.1%	15,376	65.6%	16,462	67.7%
Total	16,429	100.0%	21,406	100.0%	22,811	100.0%	27,373	100.0%	28,537	100.0%	23,444	100.0%	24,309	100.0%

Source: Japan Automobile Manufacturers Association (JAMA)

vehicles. The UK government has prohibited the sale of new gasoline vehicles by 2030 and is aiming to have zero-emission vehicles make up 100% of new vehicle sales in 2035. However, there are concerns that the pace of market expansion will slow down.

New vehicle sales in Germany fell by 9.9% in 2021 to 2.42 million units. Sales of electric vehicles and plug-in hybrid vehicles increased substantially by 83% and 62%, respectively, representing 14% and 12% of sales. Although incentives for plug-in vehicles were returned to their previous level in January 2021 after being increased in 2020, sales continued to increase robustly.

New vehicle sales in France rose by 1.7% to 1.7 million units. In Italy, sales rose by 6.1% to 1.47 million units, supported by an incentive scheme encouraging users to scrap older models. New vehicle sales in Spain rose by 0.9% to 860,000 units.

(3) China

In 2021, new vehicle sales in China were 24.24 million units, an increase of 0.4% that represented the first rise after three straight years of falling sales. Sales of new energy vehicles (NEVs: battery electric vehicles, plug-in hybrid vehicles, and fuel cell vehicles) increased substantially to more than 3.5 million units, which represents 13% of the overall market. According to the New Energy Vehicle Industrial Development Plan for 2021 to 2035 that was announced in November 2020, the government is aiming to increase the rate of NEV sales to 20% of the overall new vehicle market in 2025. Although the central government planned to end incentives for NEVs at the end of December 2020, concerns over falling demand due to the COVID-19 pandemic resulted in the scheme being extended to the end of 2022. The electric vehicle market is steadily expanding, supported by incentives and number plate restrictions introduced by local governments. In 2021, Chinese manufacturers of compact electric vehicles expanded sales thanks to lineups of affordable vehicles.

Demonstrations of automated driving services are also making rapid progress. Major Chinese IT firms and startups have obtained permission to carry out automated driving demonstrations on public roads in various cities. Fee-based automated taxi services have begun in places such as Beijing, Shanghai, Shenzhen, Guangzhou,

and elsewhere. In preparation for the advent of smart cities, the central government is taking an integrated approach to the preparation of infrastructure alongside intelligent, connected, and automotive technologies such as automated and connected vehicles.

(4) Emerging Markets

In 2021, new vehicle sales in Mexico increased by 7.1% to 830,000 units. The effects of the COVID-19 pandemic and semiconductor shortage caused production to fall below pre-pandemic levels.

New vehicle sales in Brazil fell by 3.7% in 2021 to 1.55 million units, the same level as the previous year when the COVID-19 pandemic resulted in a rapid deceleration in the market.

New vehicle sales in Thailand fell by 3.3% in 2021 to 380,000 units. This figure was affected by a lockdown in Bangkok between July and August, the resulting negative impact on consumer sentiment, and subsequent stoppages in production caused by the supply chain issues.

New vehicle sales in Indonesia increased by 61% in 2021 to 610,000 units. Sales rebounded from historically low levels in 2020 with a major recovery in demand encouraged by a lower tax rate on luxury goods that was introduced in March 2021.

New vehicle sales in Malaysia fell by 7.2% in 2021 to 450,000 units. The nationwide lockdown that was enforced from June to July was a major factor contributing to this large decrease. Economic activity steadily picked up after the lifting of the lockdown, and the recovery in vehicle sales was supported by the extension of lower sales taxes.

New vehicle sales in India increased by 26% in 2021 to 3.01 million units, recovering from the major downturn in 2020 that was caused by the nationwide lockdown. In March 2021, the government announced a vehicle scrapping scheme to help reduce air pollution and to create demand for new vehicles and employment. This scheme encourages drivers to replace older models by lifting vehicle taxes on trade-ins of 20-year old passenger vehicles and 15-year old commercial vehicles.

3. 3. Vehicle Production (Tables 4 and 5)

In 2021, vehicle production in Japan decreased by 2.7% to 7.85 million units. Overseas production by Japanese automakers picked up slightly, with higher production in India and Southeast Asia compared to 2020 after the easing of COVID-19 restrictions. The effects of the global semiconductor shortage gradually became apparent from the start of the year. This shortage means that vehicle production has yet to return to pre-pandemic 2019 levels. The impact of the semiconductor shortage is likely to continue into 2022.

4 Issues of the Automotive Industry in Japan

The COVID-19 pandemic continued to cause upheavals throughout the world in 2021. Despite hopes that vaccinations would bring infections under control, the emergence of new variants resulted in repeated flare ups of the disease. Factoring in the characteristics of these new variants and the preventative effects of vaccinations, many countries began to gradually relax restrictions and look for ways to address the pandemic while encouraging social and economic activity.

While governments wrestled with the pressing issue of recovery from dramatic economic downturns, attention also focused on the issue of climate change. The participants of COP26 agreed to pursue efforts to limit the increase in average global temperatures to 1.5℃ above pre-industrial levels. Signatories of the pact are also required to realize carbon neutrality by mid-century and to implement ambitious measures against climate change by 2030. To realize these targets, all countries must implement a so-called green transformation (GX) to help realize decarbonization. Each country has begun to create new rules with the aim of securing short-term economic recovery and the future supremacy of major industries. Based on the pact made at COP26, a succession of participants announced milestones for realizing decarbonization and declarations about target timings. At the end of COP26, 154 countries and regions making up approximately 90% of the world's GDP had announced deadlines for achieving carbon neutrality. Financial institutions around the world have rapidly increased investment in the environment, demonstrating real progress toward the realization of GX.

The automotive industry accounts for a certain proportion of CO_2 emissions in the transportation sector. It is also a wide-reaching industry with direct links to employment and the economy. As such, it is regarded as a major industry for promoting GX. At COP26, a coalition of willing participants declared their intention to achieve new vehicle sales consisting 100% of zero-emission vehicles by 2035 in mature markets and 2040 globally (Japan,

the U.S., China, Germany, and other countries did not participate in this declaration), highlighting the rising tide of electrification as a means to achieve carbon neutrality. As part of measures to lift the economy from the COVID-19 pandemic, Europe is supplying substantial financial assistance for research and development to enable battery production within the region. The U.S. is currently debating a preferential tax system for domestically produced battery electric vehicles (BEVs). Many countries have also continued or introduced incentives for purchases of electrified vehicles. As a result, BEV sales jumped particularly in China, Europe, and the U.S. These countries have seized the global issue of decarbonization as an opportunity to develop their own industrial base, leading to increasing strategic technological competition within the BEV industry coordinated between the public and private sectors. The trend toward electrification has become more apparent against this background of geopolitical competition.

Reflecting this trend, automakers have begun to announce large-scale BEV production plans and target years for moving away from internal combustion engine (ICE) production in an attempt to change the competitive environment and their profit structures. With ICEs being replaced by motors and batteries and the increasing introduction of communication and automated driving technologies, the wellspring of competitiveness is gradually shifting from hardware to software. In addition, it is thought that the profitability of vehicle sales will come under pressure due to the battery costs of BEVs as well as the spread and obligation to adopt advanced safety systems, prompting automakers to look for new sources of income.

This period of transformation of the automotive industry is seeing a succession of new entrants from other industries. Tech giants from the U.S. and China, electronics firms, emerging BEV startups, and others are leveraging their own strengths, such as AI and other software and technological skills, and service ecosystems. Joint ventures and tie-ups between automakers and with companies in other industries are becoming more prevalent as a means of strengthening competitiveness, and the battle for the latest technologies is already under way. Looking inward, the re-training of human resources is also likely to become a major issue.

The automotive industry is facing this period of transformation under the severe conditions of falling sales during the COVID-19 pandemic, supply system disruption, and rising resource costs. The industry must address the new issue of building a new business model that creates a connection with customers and takes advantage of digitalization while developing technologies to meet the political needs of GX and nurturing supply chains. The automotive industry in Japan must take on this challenge so that it can continue contributing to customers, society, and the planet.

References

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