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# Japan's automotive industry in 2024

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## Abstract

Automotive industry has been established in Japan more than a century ago. Particularly after WWII, the Japanese government quickly tried to reduce the negative effects of the war in order to support the development of its auto industry. This enabled the Japanese automotive industry (JAI) to achieve a strong international competitiveness and even become emblematic of the Japanese economy, playing a critical role in the recovery and rapid growth of the Japanese economy. At the [Japan Mobility Show](#) held in the Tokyo Big Sight in October 2023, Japanese automotive enterprises showed to be in the vanguard in the development of electric vehicles. This analysis looks at the historical development of the JAI, even including recent developments related to the production of electric cars.

**Keywords:** Japan; automobile industry; policy support; technical path; economic growth

## Basic Formation Stage (1904-1945)

The Japan's automobile industry emerged [in the early 20th century](#). In 1904, Yamagata Hufu and Yoshida Shintaro cooperated to establish the Tokyo Auto Works. In 1907, the first car in Japan was made. After 1911, Hashimoto Shinjiro set up the Kwaishisha Moter Car Works bought the chassis from Swift and Company to produce Swift Automobile. In 1923, when the Kantō Great Earthquake took place, it resulted in a full paralysis of the Tokyo traffic. Therefore, the Tokyo government imported 1,000 cars from the United States for disaster relief. By then, Japanese had fully recognized the importance of cars. Ford from the United States availed took this chance to set up an assembly plant in Japan. Similarly, General Motors Company founded

an assembly plant in Osaka. In 1931, Ford and General Motors assembled 20,000 cars in Japan, which dwarfed the domestic car productions of the country, by then 400 annually. To prevent foreign-invested companies from monopolizing the Japanese automobile market, the Japanese government drafted the Automobile Industry Law to restrict the import of foreign vehicles and parts and promote the domestic automobile industry. In 1937, the Japanese government passed the Temporary Processing of Imports and Exports Act to further restrict the import of foreign vehicles and parts. Under the government's protection, the Japanese national automobile industry gradually took shape. Toyota and Nissan noticed this development trend and began producing automobiles in 1933 and 1934 respectively. The Second Sino-Japanese War and the Pacific War brought these two companies a large number of orders for military trucks for the Japanese army. Although the Japanese automobile industry, which focused on military trucks and lacked international competitiveness, was still at an early stage of development and had not yet expanded, these orders had laid a solid foundation for the development of the clusters of the Japanese automobile industry.

### **Recovery phase after the war (1945 – 1959)**

During the Second World War, the JAI was severely affected. You could say that the Japanese car industry started from scratch. Before 1949, the US Joint Forces Demand banned the use of Japanese cars. But in 1949, the ban was lifted, allowing Japan to rebuild its domestic automobile production through imported assembly. In 1950, the Korean War broke out. Thanks to the special needs of North Korea, the Japanese automobile industry experienced a real revival, and the development of the cluster began. Later, the JAI continued to import advanced production equipment to gradually implement modernization. Thanks to the introduction of American quality control methods and scientific management methods, the Japanese automobile industry also achieved a qualitative improvement. In 1952, the Japanese Ministry of International Trade and Industry decided to import leading automobile production technologies from Europe. Hino Motors and Renault from France entered into a partnership; Isuzu Motors cooperated with Berliet from the UK; Nissan Motors and Austin from the UK cooperated with each other. Through all these partnerships, Japan became acquainted with the most advanced automobile

production technology from Europe. in 1955, the Japanese government launched the “[Five-Year Plan for Economic Independence](#)”, which encouraged the masses to buy their own cars. This enabled Japanese car companies to realize the dream of producing national cars. in 1959, the city of Jumoku in Aichi Prefecture was renamed Toyota City, symbolizing the formation of automotive industry clusters in central Japan and Kanto.

Japanese car production in 1950 and 1955

Year	Units
1950	31 597
1955	68 962

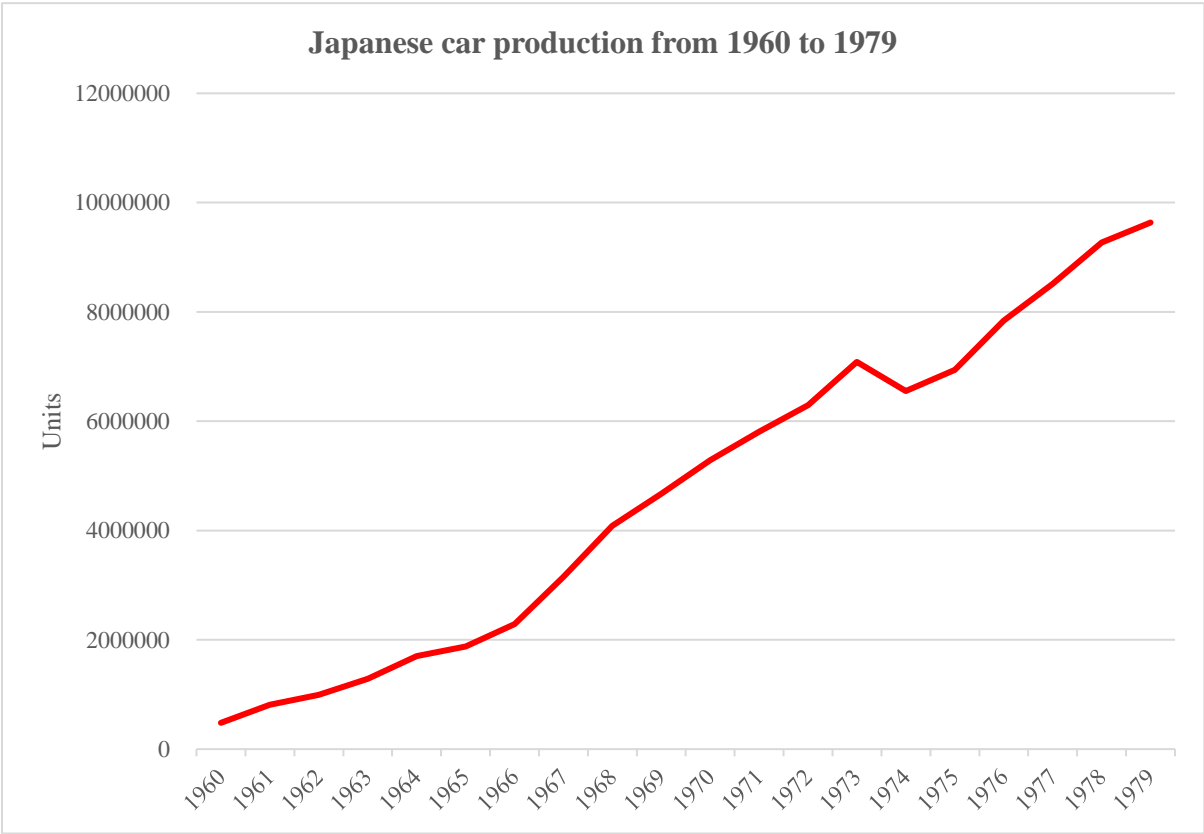
Source: own compilation based on data from the Wind Information

**Fast-growing period (1960 – 1979)**

From 1960 to 1965, driven and encouraged by the “[National Income Doubling Program](#)”, Japanese automobile companies accelerated their pace towards large-scale development. Their technological facilities and the level of management achieved were further improved. In 1966, Japan's GDP per capita reached USD 1,000. Thanks to Japan’s economic development, the country's standard of living improved considerably. This in turn promoted the development of the Japanese car industry. In this context, Toyota built a plant for the production of passenger cars in Motomachi in 1960. Two years later, Nissan built a specialized plant for the production of passenger cars in Oppama. Later, the Japanese government took a series of measures to promote clustering capability in the automobile industry. in 1966, Nissan merged with Prince Motor Company, and Toyota began a business cooperation with Hino Motors. The year 1967 marked the beginning of cooperation between Toyota and Daihatsu. In 1968, Nissan and Fuji Heavy Industries began their partnership. The concentrated development of Japanese industry accelerated.

In 1970, taking advantage of the “Muskie Act” enacted by the United States and the global oil crisis, Japan accelerated the nationalization and technical improvement of automobiles. At that

time, European and American automobile companies were eager to produce cars with high emissions. The occurrence of the oil crisis led to a sharp intensification of the international oil crisis. People’s demand for low-emission and fuel-efficient vehicles continued to rise, dealing a heavy blow to European and American automobile companies and rapidly improving the international competitiveness of Japanese industrial clusters. This created an unprecedented development opportunity for the JAI. In this context, Japan immediately changed the direction of development and set the international development path. With the American market as a breakthrough, Japan began exporting a large quantity of economical cars to the overseas market. In 1974, Japan surpassed European and American countries for the first time and became the largest automobile exporter in the world. In 1976, Japan's automobile exports reached 2.5 million units, surpassing total domestic automobile sales for the first time. in 1978, Japan changed the regulations for exhaust and noise emissions and implemented the strictest standards. This forced Japanese companies to further improve car manufacturing technology to consolidate Japan’s position as a manufacturing superpower.



Source: own compilation based on data from the Wind Information

## **International competitiveness and the stage of new energy vehicles (1980 – today)**

in 1980, Japan's annual economic output reached 11.04 million vehicles, [surpassing the United States for the first time](#) and becoming the world's largest automobile manufacturer. In 1985, Japan's annual automobile production of 12.27 million vehicles surpassed the total annual production of European countries. The production output reached 31.5213 trillion yen, which accounted for 11.9% of the domestic manufacturing industry and ranked among the top 10% of the Japanese economy.

In 1990, annual Japanese car production amounted to 13.48 million, surpassing all historical records. In the 1990s, Japanese automobile clusters began to change their export strategy and gradually shifted their export territories from the industrialized countries in Europe and the United States to the developing countries in Asia and South America. As Japanese companies vigorously expanded their market share in emerging markets, they also accelerated their investments in plants in China, India, Brazil, Mexico, Thailand, Vietnam, etc. This further strengthened the international competitiveness and internationalization of Japanese automotive companies. However, in the late 1990s, as the global economy adjusted and changed and the Japanese bubble economy was disenchanted, the development of Japanese automobile clusters went into a slump.

At the beginning of the 21st century, the automotive industry was dominated by the United States, Japan and Europe. The concentrated development of the JAI also began with the maturity phase. As international crude oil prices continued to rise and people's awareness of environmental protection increased, the JAI continued to reduce costs by vigorously promoting the standardization and integration of spare parts and accessories. At the same time, Japanese automobile companies devoted themselves to the development of environmentally friendly and energy-saving vehicles in an attempt to consolidate and improve their international competitiveness. As the price-performance ratio of Japanese cars became more and more recognized, Japanese automobile companies focusing on the production of low-emission cars became more competitive than ever before. In 2006, local Japanese car production once again



surpassed that of its American counterpart, regaining its dominant place in the global automotive industry.

At the end of 2014, the output of Japanese automobiles reached 53.3 trillion yen, accounting for about 20% of Japan's manufacturing industry, which was far more than the 4.4 trillion yen (15%) output of the electrical appliances and machinery industry, 31 trillion yen (11%) of the ordinary machinery industry, 26 trillion yen (9%) of the technological industry, 1,800 million yen (6%) of the steel industry, 12 trillion yen (4%) of the metal products industry and 3 trillion yen (3%) of the non-ferrous metals industry.

In 2016, Toyota, Honda, Mazda and Suzuki were among the 20 largest car manufacturers in the world. In particular, Toyota 'achieved an operating profit of USD 236.5916 billion, making it the second largest car manufacturer in the world.

In 2016, there were a total of 10 major vehicle manufacturers in Japan, about 800 first-tier component manufacturers, about 4,000 second-tier component manufacturers and about 20,000 third-tier component manufacturers. In total, there were more than 25,000 companies related to the automotive industry in Japan. The JAI employed a total of 5.34 million people, accounting for 8.3% of total employment in Japan and 49.6% of employment in the manufacturing sector. The JAI has thus become an indispensable pillar of the Japanese economy.

In 2021, total sales (for domestic sales and exports) of the JAI, including parts of engines and busses, reached 56.4 trillion yen, recording a year-on-year increase of 5.5%, with the manufacturing industry accounting for 17.1% and the machinery industry for 38.4%. The total equipment output of this industry reached 1.4 trillion yen in the same year, and R&D costs amounted to 3.6 trillion-yen, accounting for 20% and 30% of the total investment of Japan's manufacturing industry, respectively. In 2022, automotive exports totaled 17.3 trillion yen. Around 5.54 million people worked in the automotive industry, proving that the automotive industry is the heart of the Japanese economy. At the same time, automobile production declined slightly, totaling 7.84 million cars, while only 4.2 million cars were sold, indicating a decline

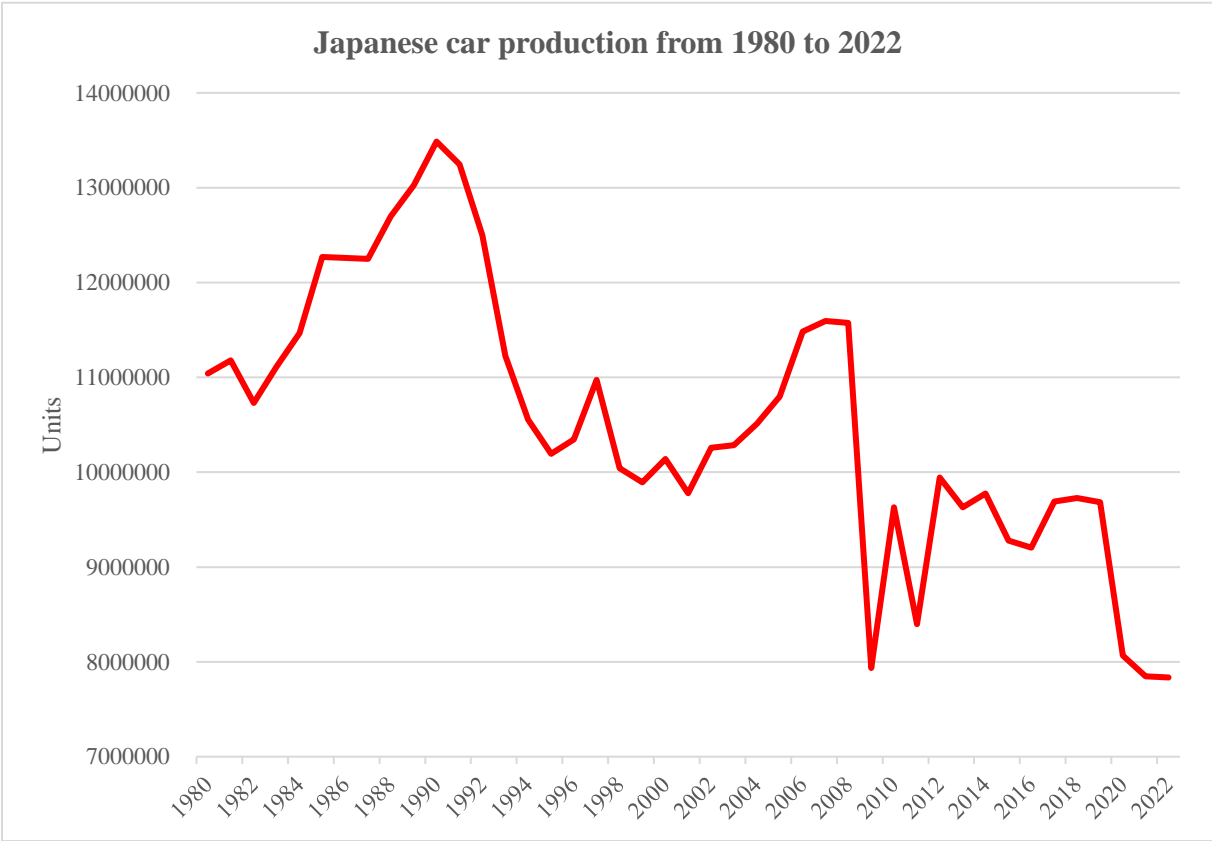
in market demand. In addition, around 310,000 new cars were imported. Sales of used cars reached 6.3 million, showing the activity of the used car market. At the end of 2022, a total of 78.52 million motor vehicles were in use in Japan.

At present, hybrid electric vehicles are enjoying the best development and greatest popularity in Japan's new energy vehicle industry. Japan was the first country to attempt to incorporate an electric system into cars. As early as 1997, hybrid electric vehicles were introduced to the market, with sales figures leading the way to this day. But Japan did not continue to promote pure electric vehicles. There were two reasons why Japan did not launch pure electric vehicles. First, Japan did not believe that pure electric vehicles would not harm the environment, as the current power generation technology is mainly based on fossil fuels. Thermal power generation contributes to more than 80% of Japan's total power generation. This cannot prevent serious pollution of the environment. Secondly, the development of pure electric vehicles requires resources such as coal, petroleum and rare earths and cannot alleviate the energy shortage faced by the Japanese government. On the contrary, this could lead to dependence on overseas resources and even pose significant risks to national energy security. According to an analysis of its own national conditions, Japan has used its technological advantages in engines and gasoline engines in the traditional automobile sector to vigorously develop hybrid electric vehicles. As a result, hybrid electric vehicles are still the most common type of vehicle in Japan today.

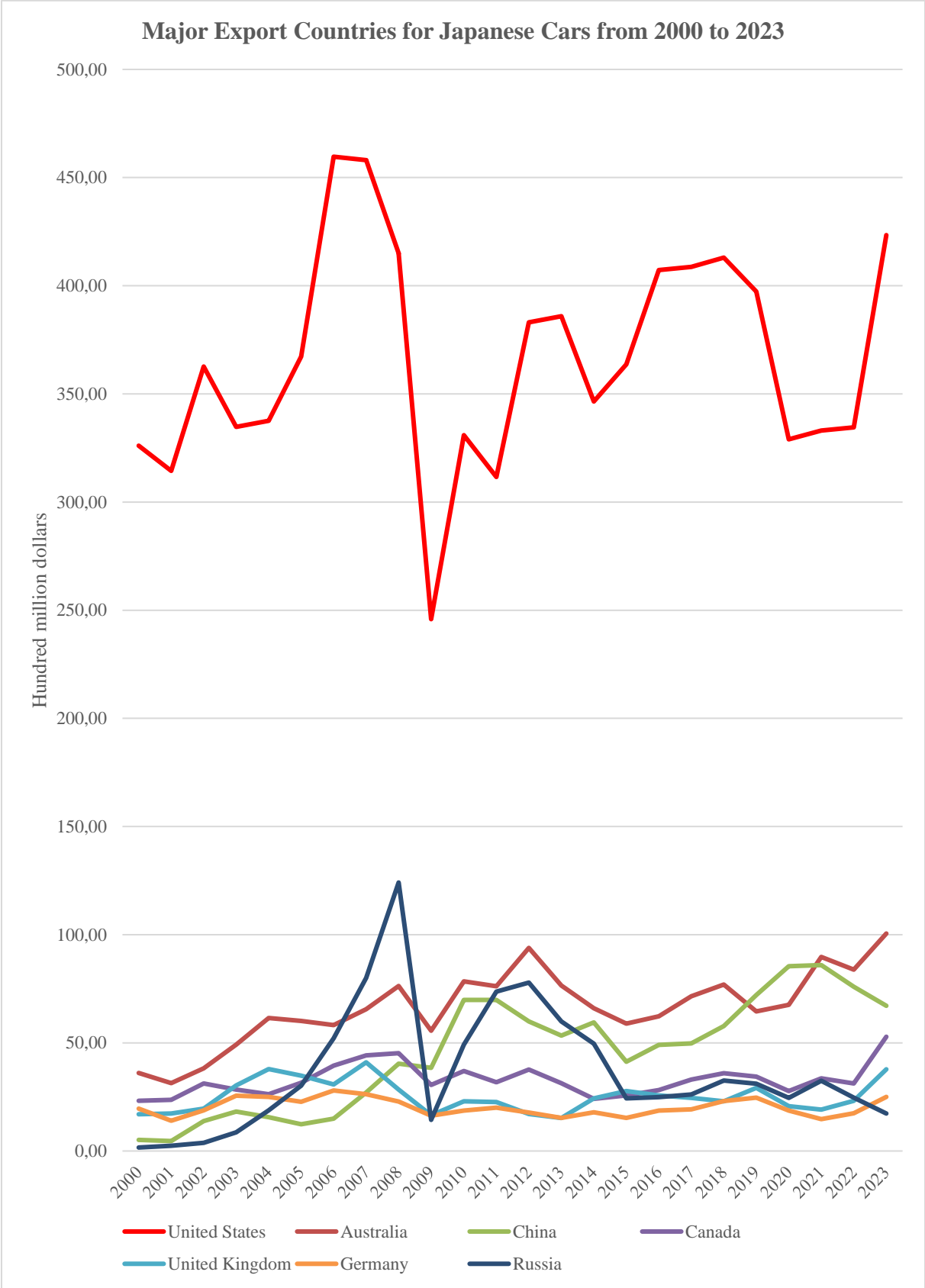
In terms of sales and ownership of Japanese new energy vehicles, Japan has unique technical advantages in the development of hybrid electric vehicles, particularly due to its world-leading engine technology. In 2015, 5.5 million hybrid electric vehicles were sold in Japan, accounting for about 14% of the total number of passenger cars in Japan. In 2018, the penetration rate of hybrid electric vehicles there was over 25%, with sales reaching 1.43 million. In China, on the other hand, the penetration rate was less than 1%. In terms of other technology types, sales of plug-in electric vehicles (PHEVs) in Japan have not increased significantly apart from 2017. In 2014, sales of pure electric vehicles (EVs) in Japan were 16,257 units and increased to 23,648 units in 2019. But since 2017, sales of new energy vehicles in Japan have steadily declined. A

major driving force has been the subsidy policy and the goal of popularizing new energy vehicles that Japan introduced in March 2016. However, due to the conditional restrictions on vehicle cost, range, charging infrastructure and time, pure electric vehicles have yet to gain much popularity.

The “New Energy Automobile Global Patent Observation” data released in 2019 shows that Japan ranks first in the world in three types of new energy automobiles and general technologies, including hybrid electric vehicles, fuel cell vehicles and pure electric vehicles. Its leading position in technology is undisputed. In particular, Japan holds more than half of the world's patents in hybrid electric vehicles and fuel cell vehicles, with 52 and 54 respectively. China and Japan are also on a par in the field of pure electric vehicles, followed by South Korea. In addition to Japan, the United States, Germany, and South Korea are the world leaders in the field of fuel cell and hybrid electric vehicles.



Source: own compilation based on data from the Wind Information



Source: own compilation based on data from the United Nations Commodity Trade Statistics Database

## Summary

The timetable for the development of the Japanese automobile cluster shows that each phase cannot be separated from the political support. In the basic establishment phase, the “[Automobile Industry Law](#)” was introduced in 1936 and the “Law on Temporary Treatment of Import and Export Goods” in 1937, which restricted investment by European and American automobile companies in Japan. This effectively protected local automobile companies in Japan and created a solid foundation for future development. In the post-war recovery period, thanks to the introduction of the “Five-Year Plan for Economic Self-Reliance” in 1955 and the government's support and encouragement, citizens began to buy affordable and practical micro cars, which led to an increase in sales and enabled Japanese car manufacturers to further expand their production scale. After the internationalization phase, the Japanese government developed policies and prompted companies to deepen their operations on a large scale to improve the development of the automotive industry and international competitiveness. All this has resulted in Japanese automotive companies playing a prominent role in the international market.

Macroscopically, if Japan focuses too much on the automobile industry, it will face the problem of industrial structural imbalance and economic unsustainability. On the other hand, this problem may lead to an increase in the percentage share of the automotive industry in economic output, which means that Japan's economic growth will increasingly depend on the development of the automotive industry. A negative effect of this development model is that fluctuations in economic growth are inevitable if there is a bottleneck in the JAI or if the international automotive market collapses. For example, Japan has entered the aging society. A sharp decline in population may significantly weaken the purchasing power of the Japanese automobile market, which will inevitably deal a severe blow to Japanese economic growth. On the other hand, this problem may lead to a structural imbalance in the industry, hindering the orderly development of other industries such as the new generation information and technology industry and the quantum information industry. The negative consequences can easily weaken the international competitiveness of other industries. As a result, the industry structure cannot be effectively rationalized and modernized.



Japan has embarked on a technical path that differs from that of other major countries developing new energy vehicles. The countries represented by the United States and China have moved from fuel-powered vehicles to electric vehicles with lithium batteries and hydrogen cells. In contrast, Japan has moved directly to hydrogen-powered vehicles after leading the world in hybrid electric vehicles. This phenomenon can be explained as follows. Firstly, pure electric vehicles are mainly powered by lithium batteries for the time being. 74% of the lithium resources already discovered are distributed in South America. 10% are in China and the United States. Japan's lithium resources are almost zero. Due to the scarcity of resources, Japan's development of pure electric vehicles can easily be slowed down by other countries. Secondly, after the Fukushima nuclear accident in 2011, Japan scaled back the development of domestic nuclear power and instead focused its efforts on developing new energy nationwide. In 2018, Japan published the "Basic Energy Plan", which clearly aims to reduce dependence on nuclear power as much as possible and actively promote the development of a hydrogen society. Therefore, Japan is advocating the use of hydrogen in all industries, not just new energy automobiles.

Hydrogen and oxygen are two important sources for generating electricity for motor vehicles. They are two new energy sources in the true sense of the word that do not harm the environment. In addition, the time required to refuel a hydrogen-powered vehicle is like that of a gasoline-powered vehicle, both taking a few minutes. In addition, hydrogen batteries can easily guarantee a range of more than 500 km thanks to their high energy storage density. The range is several hundred kilometers greater than that of typical pure electric vehicles. This is also an important reason for Japan's vigorous development of hydrogen-powered vehicles and is fully in line with Japan's energy course. However, after a period of research and development, Japan realized that the technological requirements and cost of producing hydrogen were too high. Given the current level of technology and inefficient hydrogen processing, hydrogen storage can be a major challenge. Due to all these limitations, Japan has focused on the application of hydrogen technology for commercial vehicles. As for the development of passenger vehicles, Japan has set some strategic priorities, focusing on the research, development, and promotion of battery-powered electric vehicles.