

# Research on China's Pure Electric Vehicle Market under the Background of RCEP

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**Abstract:** With the signing of the Regional Comprehensive Economic Partnership Agreement, trade relations between China and RCEP member countries have become increasingly close. In this context, international trade has ushered in greater opportunities. Recently, with the intensification of environmental problems, pure electric vehicles have become a hot spot in the emerging industry. The trade prospects of pure electric vehicles have aroused widespread concern. This paper takes pure electric vehicles as the research object, focusing on the current situation of China's pure electric vehicle market under the background of RCEP. The market attraction of RCEP countries to China's pure electric vehicle market is studied by using market attraction analysis method, and the optimal market for China's pure electric vehicle export is selected. This paper draws a conclusion that Japan is the potential market for China's pure electric vehicle export and puts forward countermeasures and suggestions for auto companies.

**Keywords:** RCEP; Battery Electric Vehicles; New Energy Automobile; Market Attractiveness; Target Market

## 1. Introduction

On November 15, 2020, 15 countries, including China, Japan, the Republic of Korea, Australia, New Zealand and the ten ASEAN countries, signed the Regional Comprehensive Economic Partnership (RCEP), which officially gave birth to the world's largest free trade area and became an important milestone in the development process of regional economic integration in East Asia. In recent years, China and RCEP member states have enjoyed friendly trade exchanges, and both sides have always adhered to the trade principle of mutual benefit and common

development.

In recent years, in the new era of sustainable development and rapid development of science and technology around the world, how to achieve harmonious progress between environmental protection and economic development has become an important common issue in global governance. Compared with traditional fuel vehicles, pure electric vehicles achieve zero or low emissions, greatly reduce greenhouse gas emissions, improve engine efficiency, is an effective way for countries to reduce carbon emissions and energy replacement. Governments around the world are actively introducing a series of policies to promote the use of new energy vehicles and support the development of the new energy vehicle industry. Therefore, in terms of transportation, electric vehicles instead of fuel vehicles have become the future development trend of the global automotive industry, and the development and trade of the electric vehicle industry has become an inevitable trend in the future.

This paper uses the market attractiveness analysis method to study the market attractiveness of 14 RCEP countries. Based on the actual situation, this paper studies the market development strategy of electric vehicles and provides a new idea for the trade theory research of electric vehicles in China. At the same time, it has certain practical significance for solving the related problems of China's electric vehicle trade market expansion under the new background, promoting the sustainable and healthy development of China's electric vehicle industry, consolidating and improving the competitiveness and status of China's new energy vehicles in international trade, and promoting the sustainable and healthy development of China's new energy vehicle export trade.

## 2. Literature Review

In the context of RCEP, many scholars have

conducted research on China's electric vehicle market, and the results are summarized below. Fan [1] pointed out that RCEP has the characteristics of covering the largest number of people, the largest economic scale, strong economic projection, diversified composition of member states, and the overall level of development is highly differentiated and inclusive. Wang and Yu [2] pointed out that the signing of RCEP will help deepen economic cooperation among member states and bring new opportunities for regional economic development. Zhang and Chen [3] believe that regional integration is conducive to reducing trade barriers between countries and realizing efficient, free and convenient international trade. Zhang [4] believes that China's factor endowment and economic development stage are different from other RCEP members, and the competitive advantages of the advantageous industrial chain in labor-intensive and capital-intensive industries reflect the basis of regional division of labor between China and East Asian countries. Jin [5] believes that in the face of trade deficit in the context of RCEP, tariff reduction, looser rules of origin and high-level trade facilitation arrangements brought by RCEP should be taken as an opportunity to further optimize trade structure and improve the current situation of trade imbalance.

With the promotion of carbon emission reduction in various countries, the demand for new energy vehicles in the international market continues to increase, and a large number of traditional automobile enterprises in China are transforming and upgrading to the new energy automobile industry. Domestic scholars have conducted multidimensional and multi-level research on the export trade of new energy vehicles in China. Sun [6] believes that we should strengthen diversified market development to reduce market risks. Zhang [7] believes that improving the independent innovation ability of core technologies of new energy vehicles and expanding overseas markets should continue to consolidate the Asian market. Gao and Jin [8] believe that China should promote the domestic replacement of key technologies of new energy vehicles and build a full set of new energy vehicle industry chain system. Huang [9] and Cong et al [10] believe that when China's new energy automobile enterprises export new

energy automobile products, they should accurately match the differentiated needs of market countries, enhance brand effect and upgrade high-end manufacturing.

The above research mainly focuses on the export trade of China's new energy vehicles under the background of RCEP. However, there are few research literatures on the overseas market expansion of electric vehicles under the background of RCEP, and the research are not detailed and in-depth enough, or the literatures are relatively old. This paper is mainly to explore how Chinese electric vehicle enterprises can promote the diversification and expansion of overseas markets under the background of RCEP, so as to consolidate and enhance their position in international trade.

### **3. Overview of China's Electric Vehicle Export Trade to RCEP Countries**

#### **3.1 General Overview of Production, Sales and Export Trade**

China's new energy vehicles have developed rapidly in the past two years, with annual sales ranking first in the world for eight consecutive years. According to the industry report of the China Association of Automobile Manufacturers, under the dual role of policies and markets, China's new energy vehicles will continue to grow explosively in 2022, with the production and sales of 7.058 million and 6.887 million, respectively, up 96.9% and 93.4% year-on-year, and their market share in the domestic market reaching 25.6%. It was 12.1 percentage points higher than the previous year, and the sales volume of pure electric vehicles was 5.365 million, an increase of 81.6%. Plug-in hybrid vehicles sold 1.518 million units, up 1.5 times year-on-year. It will gradually enter a period of comprehensive market-oriented expansion and usher in a new stage of development and growth.

As shown in the Table 1, the world's top five new energy vehicle exporters in 2023 are: Germany, Japan, China, Belgium, and South Korea. Germany is the world's largest exporter of new energy vehicles, accounting for 28.79% of the world export market for new energy vehicles. As the world's third largest exporter of new energy automobile industry, China occupies 9.49% of the world's total export share of new energy vehicles, indicating that

China has a profound international industrial foundation and development potential in the world's new energy export market.

**Table 1. World Market Share of Major Exporting Countries of Electric Vehicles in 2023**

Exporter of pure electric vehicles	Exports (thousands of US dollars)	Share of world exports
Germany	69534454.00	28.79%
Japan	23971299.00	9.93%
China	22906919.00	9.49%
Belgium	19868335.00	8.23%
Korea	16082281.00	6.66%
America	13665877.00	5.66%
United Kingdom	12843252.00	5.32%
Slovak Republic	12071841.00	5.00%
Spain	9131549.00	3.78%
Czech Republic	8866070.00	3.67%

As shown in the Table 2, in 2023, China's overseas electric vehicle market is mainly concentrated in European and American countries. Among them, Belgium, the United Kingdom, and Germany from European countries respectively account for 29.81%, 17.42%, and 11.09% of China's pure electric vehicle export market, ranking among the top three in China's electric vehicle export market.

**Table 2. Distribution of China's Electric Vehicle Export Trading Partners**

	China's pure electric vehicle export trading partner countries	Accounting for China's pure electric vehicle export market share in the world
1	Belgium	29.81%
2	United Kingdom	17.42%
3	Germany	11.09%
4	Republic of Slovenia	4.89%
5	Norway	4.72%
6	Australia	4.51%

### 3.2 Distribution of China's Electric Vehicle Export Trading Partners

In the past five years, with the maturity of the electric vehicle industry, the total trade volume of China's pure electric vehicle export RCEP national market has shown an upward trend, gradually increasing from \$2,982.2 billion in 2018 to \$2,6711.18 billion in 2022, with a trade volume increase of nearly 90 times. In 2022, among RCEP member states, the total export trade of Chinese electric vehicles to RCEP countries reached \$1,020332 million.

Australia and Japan occupy 44.355% and 18.132% of the RCEP market share of China's pure electric vehicle exports, ranking first and second in the RCEP market of China's pure electric vehicles, with exports of \$452.67 million and \$185.06 million, respectively.

In 2023, among RCEP member states, the total export trade of China's pure electric vehicles to RCEP countries will reach \$2,6711.18 billion. Australia and Thailand occupy 46.772% and 19.690% of the RCEP market share of China's pure electric vehicle export, ranking first and second in China's pure electric vehicle RCEP export market, with exports of \$1,252.134 million and \$5271.18 million, respectively.

## 4. Target Market Screening

### 4.1 Market Appeal and Evaluation

In a broad sense, market attraction is the result of market size, market growth rate, historical gross margin, competitive intensity, technical requirements, inflation and other factors. SPAN analysis method believes that the market size, market growth rate, profit potential and strategic value of market segments should be evaluated from four dimensions, to determine the market segment appeal. In this paper, the market factors, competition factors, business environment factors, market access factors and geographical location factors of the potential target market are taken as the evaluation indicators of market attractiveness when screening the target market of China's new energy vehicles in RCEP countries.

### 4.2 RCEP National Electric Vehicle Market Attractiveness Factors Analysis

#### 4.2.1 Market factors

Market size: As shown in the Table 3, in 2022, the market size of pure electric vehicles in RCEP countries shows that South Korea occupies the first place in the 14 RCEP countries with \$1.94135 billion in pure electric vehicle imports, Australia occupies the second place with \$1.501139 billion, Japan, Thailand, New Zealand, and other countries. They are the third, fourth and fifth largest importers of pure electric vehicles in 14 RCEP countries.

Market growth rate: As shown in the Table 3, in this paper, the growth rate of the trade volume of RCEP countries in 2022-2023 is taken as the reference value of the market

growth rate. The higher the market growth rate of a country for pure electric vehicles, the faster the country's demand for pure electric vehicles, and the easier it is for China's pure electric vehicles to enter the national market. Among the indicators of the market growth rate of RCEP countries in 2022-2023, Laos, Indonesia, Malaysia, Cambodia, and the Philippines also rank among the top five with a high annual growth rate, among which Laos ranks first with an annual growth rate of 884%. Market potential: As shown in the table, according to the ITC database: in 2023, the export potential value of Chinese automobiles in RCEP countries is multiplied by the export potential coefficient of Chinese pure electric vehicles in RCEP countries, and the export potential value of Chinese pure electric vehicles in RCEP countries is obtained in 2023. According to the export potential value of the 14 RCEP countries ranked from high to low, Australia, Japan, New Zealand, Thailand, and

Singapore became the top five export potential indicators of China's pure electric vehicles in RCEP countries in 2023.

#### 4.2.2 Business environment factor

In order to screen out the best RCEP national target market for China's new energy vehicles, according to the "Ease of Doing Business in Global Economies 2023" released by the World Bank, this paper takes the ease of doing business scores of 14 RCEP countries as an indicator to analyze market attractiveness and makes a ranking according to the advantages and disadvantages of the business environment of each country.

As shown in the Table 4, New Zealand, Singapore, South Korea, Malaysia and Australia rank the top 5 among the 14 RCEP countries, among which New Zealand ranks first with a business environment score of 86.8, indicating that New Zealand has a very significant advantage in the factor of business environment.

**Table 3. Market Situation of Pure Electric Vehicles in Each RCEP Country by 2023**

RCEP countries	Korea	Australia	Japan	Thailand	New Zealand	Indonesia	Malaysia
Market Growth Rate (%)	62	94	-13	254	117	562	339
Market Potential	97.18	436.23	145.22	95.71	133.51	9.45	3.4

**Table 4. RCEP National Pure Electric Vehicle Business Environment Score**

Countries	Korea	Australia	Japan	Thailand	New Zealand	Indonesia	Malaysia
Business Environment Core	84	81.2	78	80.1	86.8	69.6	81.5

#### 4.2.3 Competitive factors

Market concentration. The market concentration is based on the Herfindahl index, which is internationally considered to be between 0.1 and 0.18, indicating that the country's market is moderately concentrated, and above 0.18 is highly concentrated. For China's pure electric vehicles, if a country's market concentration is very high, it means that there is a monopoly risk in the country's market, and it is difficult for China's pure electric vehicles to enter the country's market. When a country's market concentration is lower, indicating that the country's pure electric vehicle market has a number of different suppliers, the easier it is for Chinese pure electric vehicles to enter the national market.

China's market share. As shown in the Table 5, at the same time, the RCEP national market

share of China's pure electric vehicles can explain whether China's pure electric vehicles have advantages in the competition in various target markets. The higher the market share of China, the higher the recognition degree of consumers in the country's market for China's pure electric vehicles, the more willing to buy Chinese brands of pure electric vehicles.

#### 4.2.4 Market access factor

As shown in the Table 6, this paper takes the tariff level of China's pure electric vehicles in RCEP countries as the index of market access factors, and sorts and explains the market access factors of pure electric vehicles in each RCEP country.

Import tariff is the tariff imposed by a country's customs on imported goods and articles, which is generally divided into AD valorem tariff, value-added tariff and so on.

**Table 5. Market Competition of Pure Electric Vehicles in RCEP Countries in 2023**

RCEP Countries	Korea	Australia	Japan	Thailand	New Zealand	Indonesia	Malaysia
Market Concentration	0.38	0.63	0.26	0.78	0.38	0.41	0.42
China's Market Share	8.5%	78.4%	28.9%	87.8%	58.2%	37%	9.4%

Different countries may have different tariffs on the same goods, and the same country may have different rates on the same goods from different countries. The signing and entry into force of RCEP has brought unprecedented opportunities for the trade development of

China's new energy automobile industry, and member states have minimized the trade costs within the RCEP region through the implementation of tariff concessions and other measures.

**Table 6. Market Access for Pure Electric vehicles in Each RCEP Country by 2023**

RCEP countries	Korea	Australia	Japan	Thailand	New Zealand	Indonesia	Malaysia	Singapore	Laos	Cambodia	The Philippine	Vietnam	Brunei	Burma
Level of tariffs on China	8%	0	0	0	0	33.3%	2.8%	0	2.22%	0	28.4%	70%	0	14%

However, different RCEP countries have different degrees of import tariff concessions for Chinese new energy vehicles. The higher the degree of tariff concessions, the more advantages the country has in the measurement of market access factors. Australia, Japan, Thailand, New Zealand, Singapore, Cambodia and Brunei all have zero import tariff rates for Chinese pure electric vehicles. And become the first index of market access factors.

**4.2.5 Geographical location factors**

In the process of determining the target market, the consideration of geographical location factors is also of great significance. The distance between the importing country and the exporting country affects the mode of commodity transportation, transportation cost, transportation time, etc. The closer the

geographical distance between the two trading countries, the more absolute advantages the two countries occupy in the consideration of geographical location factors. In this paper, the linear distance between the capital of 14 RCEP countries and China is used as a measure of geographical location factors.

In this paper, CEPII statistical data on the geographical distance between the two countries are used. As shown in the table 7, South Korea, Japan, Vietnam, Laos and the Philippines occupy the advantage of geographical location factors, ranking the top five in the distance ranking from China. However, Australia and New Zealand, which dominate in many other factors, are ranked 13th and 14th, respectively, due to their geographical distance from China.

**Table 7. Geographic Location of Each RCEP Country**

Countries	Korea	Australia	Japan	Thailand	New Zealand	Indonesia	Malaysia	Singapore	Laos	Cambodia	The Philippine	Vietnam	Brunei	Burma
Distance from China	955	9018	2098	3303	1104	5221	4355	4485	2779	3351	2850	2331	3896	3234

**4.3 Determine the Target Market**

As shown in the Table 8, the rankings of the market attractiveness indicators of the above 14 RCEP countries are added together to obtain a comprehensive score of the pure electric vehicle market attractiveness of each RCEP country in 2023, and the comprehensive ranking is conducted from low to high according to the comprehensive scores of the 14 RCEP countries. The lower the overall score, we believe that this country has more advantages than other countries in becoming China's pure electric vehicle export target market when considering market attractiveness indicators. In this paper, 14 countries are divided into four types of target markets according to the comprehensive score: the most attractive market, the relatively attractive market, the average attractive market and the unattractive market.

Japan, South Korea and New Zealand are the

most attractive markets. China's pure electric vehicles have a significant competitive advantage in these markets, and should quickly focus on the expansion of the best attractive market, actively design and develop electric vehicle products for the most attractive markets, and increase product publicity to obtain maximum benefits; Thailand, Singapore, Australia, as more attractive markets; China's new energy vehicles have a certain competitiveness in these countries, but Thailand's market concentration is high, Singapore and Australia are geographically far away, Chinese electric vehicle companies should take active market measures in these attractive market countries, improve the market share of China's pure electric vehicles in these countries, expand the competitive advantage in these markets. Laos, Malaysia and Cambodia are generally attractive markets. At this stage, the market share of Chinese new

energy vehicle companies in Malaysia is low, while the business environment in Laos and Cambodia is poor and the market size is low, Chinese electric vehicle companies should pay close attention to the trend of these markets, and strive to maintain the existing market share, and expand in time. Indonesia, the Philippines, Vietnam, Brunei and Myanmar are considered to be unattractive markets. Indonesia has a long geographical distance from China, while the Philippines, Brunei, Vietnam and Myanmar

have a smaller market capacity, do not have an advantage in business environment and geographical location, and the market potential of these countries is also low. Chinese new energy vehicle companies do not need to tilt their resources to these markets, and at the same time, they should take advantage of the trade facilitation brought by the RCEP agreement to avoid withdrawing from such markets.

**Table 8. Comprehensive Market Attractiveness Scores and Rankings of Pure Electric Vehicles in RCEP Countries in 2023**

RCEP countries	Factor weight	Korea	Australia	Japan	Thailand	New Zealand	Indonesia	Malaysia
Market size	10%	1	2	3	4	5	6	7
Market Growth Rate	10%	12	10	13	6	9	2	4
Market Potential	10%	5	1	2	4	3	10	13
Market Concentration	10%	4	7	1	8	4	5	6
China's market share	10%	12	4	9	3	5	6	11
Business Environment	20%	3	5	7	6	1	10	4
Level of tariffs in China	15%	4	1	1	1	1	7	3
Distance from China	15%	1	13	2	7	14	12	10
Synthesis Score		4.75	5.5	4.65	5	4.95	7.75	6.85
Comprehensive Ranking		2	6	1	4	3	11	8

### 5. Target Market

After the investigation and screening of multiple indicators in multiple dimensions, Japan has become the first among the comprehensive market attraction indicators of 14 RCEP countries. With the official birth of RCEP, the pure electric vehicle trade between China and Japan, as a member of RCEP, has developed rapidly, and China's export value of pure electric vehicles to Japan has jumped from \$0.0229.6 million in 2018 to \$1758.82 million in 2021. And then to \$2449.37 million in 2022, an increase of nearly 9,700%.

As shown in the Table 9, in 2020-2021, the import trade of pure electric vehicles between the three major suppliers of Japan's pure electric vehicle market and Japan has shown a positive growth rate. The growth rate of Japan's import trade of pure electric vehicles from China is as high as 4198%, far exceeding the growth rate of Japan's import trade of pure electric vehicles from Thailand by 39%. And Japan's trade in pure electric vehicles imported from Germany increased by 283%.

In 2021-2022, Japan's trade volume of pure electric vehicles imported from Germany will increase by 93%; Japan's import of pure electric vehicles from China increased by 49%; The trade volume of pure electric vehicles

imported from Thailand in Japan showed a negative growth of -72%, which undoubtedly confirms the huge potential of China's pure electric vehicles exported to the Japanese market.

**Table 9. Growth Rate of Pure Electric Vehicle Trade in Japan**

Exporter	Growth rate of trade volume of pure electric vehicles in Japan in 2020-2021	Growth rate of trade volume of pure electric vehicles in Japan in 2021-2022
Thailand	39%	-72%
China	4186%	49%
Germany	283%	93%

### 6. Conclusions and Recommendations

China's pure electric vehicle enterprises should refer to the market attractiveness data, target the target market, increase investment in scientific research, and continue to strengthen the breakthrough of key core technologies of new energy vehicles. New energy vehicle enterprises should continue to increase investment in scientific research. At the same time, communication and cooperation with universities and other scientific research institutes will transfer scientific research results to productivity as soon as possible, accelerate energy transformation and

upgrading, improve production efficiency, reduce production costs, and maximize benefits.

From the demand side, develop new products that satisfy consumers; Pure electric vehicle enterprises should adapt to local conditions when developing automotive products, respect the consumption habits of consumers in different regions of RCEP, and customize personalized new energy vehicle products to satisfy consumers in a targeted manner. According to the theory of market demand orientation, in order to better understand the details of market sales and the needs of consumers, questionnaires can be placed on the market in various regions, RCEP market segmentation can be conducted according to market demand, and different products can be invested respectively.

Pay attention to after-sales service, and make Chinese brands well recognized in the RCEP market; Whether you can enjoy high-quality after-sales service is also an important factor affecting consumer happiness, therefore, new energy vehicle companies should pay more attention to after-sales service and enhance the recognition of Chinese brands in the RCEP market.

For the new energy vehicle charging pile frequently reflected by consumers, shabby facilities, electric meters and other problems, new energy vehicles should be timely rectification; Improve the charging technology and solve the problem of slow charging of customers, so as to improve the satisfaction of consumers in the RCEP market on Chinese new energy vehicle brands, so that consumers can form a dependence on the brand and a high degree of loyalty to the purchase habit.

### Acknowledgments

The authors acknowledge the supporting of Beijing Innovation and Entrepreneurship Training program for University Students.

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