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ТЕНДЕНЦИЯ РАЗВИТИЯ КИТАЙСКО-РОССИЙСКОГО ЭНЕРГЕТИЧЕСКОГО СОТРУДНИЧЕСТВА НА УСЛОВИЯХ КОРОНАВИРУСА COVID-19

Аннотация. Цель. В статье рассматривается тенденция развития китайско-российского энергетического сотрудничества на новой ситуации. **Метод.** В работе Проведены статистический анализ и сравнительное исследование изменений, происшедших в китайско-российском энергетическом сотрудничестве. **Результаты.** В последние годы, китайско-российское всестороннее стратегическое партнерское сотрудничество углубляется, отношение между двумя странами является лучшими в истории. Обе страны поддерживают друг друга на важном политическом вопросе и сотрудничают на экономической сфере друг с другом. В 2019 году объем торговли обеих стран достигнул 110,7 млрд долларов США, что является самым высоким уровнем в истории. Китай является крупнейшим торговым партнером России в течение 12 лет, а Россия является одним из основных источников импорта энергии Китай. В начале года коронавирус COVID-19 распространился по всему миру, что оказывает большое влияние на мировую экономику и китайско-российское энергетическое сотрудничество. **Область применения результатов.** Результаты проведенного исследования могут быть использованы при анализе и прогнозировании китайско-российского сотрудничества в энергетической сфере. **Выводы.** Сделан вывод о том, что дальнейшее китайско-российское сотрудничество энергетической сферы определит три направления: укрепление политического взаимного доверия и углубление энергетического сотрудничества, Создание механизма среднесрочного и долгосрочного энергоснабжения и спроса, новаторство модели сотрудничества и углубление двусторонних и многосторонних механизмов сотрудничества.

Ключевые слова: Китай Россия Нефть Газ Сотрудничество.

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DEVELOPMENT TREND OF SINO-RUSSIAN ENERGY COOPERATION UNDER THE BACKGROUND OF COVID-19 EPIDEMIC

Abstract. Objective. Development Trend of Sino-Russian Energy Cooperation Under the Background of COVID-19 Epidemic. **Method.** This paper uses statistical analysis and comparative research method methods. **Results.** In recent years, the comprehensive strategic cooperative partnership between China and Russia has been deepening, and the relationship between the two countries is at its best in history. The two countries support each other politically and cooperate with each other economically. In 2019, the trade volume between China and Russia exceeded US\$ 110 billion, reaching US\$ 110.7 billion, the highest level in history. China has been Russia's largest trading partner for 12 consecutive years, and Russia is one of the major energy import sources of China. Sino-Russian cooperation in the upper, middle and lower reaches of energy is in full swing, the scope of cooperation are constantly expanding. At the beginning of the year,

*the novel coronavirus epidemic has spread all over the world, which has a great impact on the world economy and the energy cooperation between China and Russia. **Application results.** The results of the study can be used in the analysis and forecasting of the Sino-Russian Energy Cooperation areas for cooperation. **Conclusions.** It is concluded that further development of the industry will define three trends: Strengthen Political Mutual Trust and Deepen Energy Cooperation; Formulate Medium and Long-Term Energy Supply and Demand Mechanism, Innovate Cooperation Models and Deepen Bilateral and Multilateral Cooperation Mechanisms.*

Keywords: China; Russia; Oil; Gas; Cooperation

Introduction. In the past 40 years of reform and opening up, China's economy has developed rapidly and made great achievements. In 2009, China's GDP surpassed Japan to become the world's second largest economy; In 2010, China surpassed Germany to become the world's largest exporter; In 2013, the total import and export volume of China's goods trade surpassed that of the United States to become the world's largest trading country. In 2019, China's per capita GDP exceed US\$ 10,000, and it has entered the ranks of middle-income countries. As the second largest economy in the world, with the rapid economic development, energy consumption is also growing rapidly. At present, Sinopec's energy can no longer meet the needs of its own economic development, especially the external dependence on oil and natural gas is increasing year by year. In 2019, China's dependence on foreign oil reached 70.9%, and that on natural gas reached 43.4%. For a long time in the future, China's economy will maintain a rapid development momentum, and the energy demand will become larger and larger, and the energy dependence on foreign countries will become higher and higher. Therefore, this paper analyzes the existing problems and future development trends of Sino-Russian energy cooperation from the perspective of national energy security.

Background of Sino-Russian Energy Cooperation

The Increasing Demand of China's Energy Consumption. With the rapid development of China's economy, China's energy consumption has increased dramatically. Until 1992, China was still a net exporter of oil. After 1993, this situation began to change and became a pure importer of oil. In 2002, China surpassed Japan to become the second largest oil consumer, and in 2013, it surpassed the United States to become the largest oil consumer. China's oil supply is mainly domestic and imported. Domestic supply is about 200 million tons per year, and the growth is relatively stable. Imports grew rapidly, with oil imports exceeding 100 million tons in 2004, 2009, 300 million tons in 2014, 400 million tons in 2017 and 505 million tons for the first time in 2019. It took 5 years to import oil from 100 million tons to 200 million tons, 4 years from 200 million tons to 300 million tons, 3 years from 300 million tons to 400 million tons, and 2 years from 400 million tons to 500 million tons. With the increase of oil imports, China's dependence on foreign oil is also rising. The dependence on foreign oil was 55.1% in 2011, 69.8% in 2018 and 70.9% in 2019.

Table 1

China's oil consumption and imports from 2011 to 2019 (Unit: million tons)

Year	Consumption	Import	External dependence(%)
2011	461	254	55.1
2012	492	285	57.9
2013	498	288	57.8
2014	518	308	59.5
2015	543	328	60.4
2016	565	356	63.0
2017	578	381	65.9
2018	625	436	69.8
2019	712	505	70.9

Source: National Bureau of Statistics, P. R. China (<http://www.stats.gov.cn/>);
General Administration of Customs, P. R. China (<http://www.customs.gov.cn/>)

In recent years, China's natural gas consumption has increased rapidly. In 2011, China's natural gas consumption was 130 billion cubic meters, and in 2018, it reached 276.6 billion cubic meters, which doubled in seven years. In 2011, China imported 31 billion cubic meters of natural gas, and in 2018, it reached 125.4 billion cubic meters, which increased four times in seven years. The growth rate of imports is much higher than that of consumption, and China's dependence on foreign natural gas is also rising, from 24.1% in 2011 to 45.3% in 2018. In 2019, due to the rapid growth of domestic natural gas production, the dependence on foreign countries decreased, but the total import volume increased by 6.9% compared with the previous year.

Table 2

China's natural gas consumption and imports from 2011 to 2019 (Unit: billion cubic meters)

Year	Consumption	Import	External dependence(%)
2011	130.7	31.4	24.0
2012	147.1	42.5	28.9
2013	167.6	53.40	31.6
2014	183.1	59.3	32.2
2015	191.1	64.2	33.5
2016	208.7	69.2	33.1
2017	237.3	92.1	38.8
2018	276.6	125.4	45.3
2019	311.7	134.2	43.4

*Source: National Bureau of Statistics, P. R. China (<http://www.stats.gov.cn/>);
General Administration of Customs, P. R. China(<http://www.customs.gov.cn/>)*

Compared with oil and natural gas, coal reserves are better. China's coal reserves rank third in the world and its output ranks first in the world. In 2019, China's coal output was about 3.7 billion tons, accounting for more than half of the world's total coal output. .

Since the 13th Five-Year Plan, China has continuously strengthened environmental protection. With the implementation of the policy of reducing production capacity and limiting production capacity, China's dependence on foreign coal is also rising, and the dependence on foreign coal is about 7.5% in 2019.

Table 3

China's coal consumption and imports from 2011 to 2019 (Unit: 1 million tons)

Year	Total imports	Imports from Russia	Proportion of Russia
2011	3430	180	5.2
2012	3530	290	8.2
2013	4240	330	7.8
2014	4210	290	6.9
2015	3960	210	5.3
2016	3780	270	7.1
2017	3860	270	7.0
2018	3780	270	7.1
2019	4010	300	7.5
2011	3430	180	5.2
2012	3530	290	8.2

*Source: National Bureau of Statistics, P. R. China (<http://www.stats.gov.cn/>);
General Administration of Customs, P. R. China(<http://www.customs.gov.cn/>)*

China's National Energy Security Needs. National energy security includes supply security and transportation security. From the perspective of supply security, China's oil and natural gas imports are mainly concentrated in the Middle East and North Africa. The political situation in this region is unstable and easy to be manipulated by countries outside the region, which brings great challenges to China's energy security[1]. From the perspective of transportation safety, both petroleum and liquefied gas must be transported to China through the Straits of Malacca. Once an extraordinary situation occurs, it will have a great impact on the safety of China's energy channel. Therefore, in recent years, China has continuously optimized its energy import sources, and has opened up four major transportation channels. First, the northwest oil and gas transportation corridor is mainly from Central Asian countries, Kazakhstan, Turkmenistan, Tajikistan and other countries to Xinjiang. Second, the northeast oil and gas transportation corridor transports Russian oil and gas through oil and gas pipelines and railways. The third is the southwest oil and gas transportation corridor, which is transported to China via Myanmar oil and gas pipelines. The fourth is the southeast oil and gas transportation channel, mainly shipping[2]. China and Russia are adjacent to each other on land, and the energy trade is mainly transported by pipelines and railways, which greatly avoids the challenges brought by transportation safety.

Russia's Energy Export Diversification and Transformation Needs. Russia is rich in oil and gas resources. The proven oil reserves are 11 billion tons, ranking seventh in the world, mainly distributed in Yamal-Nenets Autonomous Region in northern Siberia, Arctic continental shelf and Far East sakhalin island continental shelf[3]. The proven natural gas reserves are 47.8 trillion cubic meters, ranking first in the world, mainly distributed in the northern part of Novosibirsk, the Arctic coastal areas and the surrounding areas of sakhalin island[4]. The proven coal reserves are 157 billion tons, ranking the third in the world, mainly distributed in the southeast of Novosibirsk and the Cherski Mountains in the Far East[[5].

Russia is a big energy producer and exporter. From 2015 to 2018, Russia's oil output has been maintained between 530 million and 550 million tons, and its export volume is between 230 million and 260 million tons. In recent years, Russia's natural gas output has increased year by year, reaching a record high of 635.5 billion cubic meters in 2015, 640 billion cubic meters in 2016, 690 billion cubic meters in 2017 and 773 billion cubic meters in 2018[6].

Since Russia's economic transformation, its economic development is closely related to the oil industry. Russian customs statistics show that among Russian exports, the export volume of oil and natural gas accounts for more than 70% of the total export volume, which is the main source of trade surplus. From 2002 to 2013, except for 2009, the export price of Russian oil increased year by year. The price of oil increased from USD 23/barrel in 2002 to USD 110/barrel in 2013, which increased about five times in ten years. This period was also the period of the fastest economic growth in Russia. From 2002 to 2013, the average growth rate of Russian economy reached more than 7%, which is directly related to the high oil price. High oil prices bring high returns, and Russia has further increased its investment in the energy industry. Before the Ukrainian crisis, more than 100 billion US dollars of foreign capital poured into Russia every year, but more than 90% of these funds were invested in the energy industry or energy-related securities sector[7]. After the Ukraine crisis broke out in 2014, the United States and the European Union imposed economic sanctions on Russia. Since then, the United States and Europe have continuously increased their economic sanctions against Russia. Energy sanctions are mainly manifested in two aspects: First, in the financial field, Russian energy companies are prohibited from issuing bonds in the United States and financing in the EU capital market, with the aim of blocking Russia's financing channels; Second, in the field of energy, it is forbidden to provide advanced technologies and equipment for oil and gas exploitation to Russian energy enterprises, with the purpose of blocking Russia's deep-water oil development, Arctic oil exploration and shale oil development[8]. The United States and Europe imposed sanctions on Russia, which made Russia's economic situation worse. Russia's economy continued to show negative growth in 2015 and 2016. Although it rebounded in 2017, it also operated at a low level.

The need of Russia's Energy Strategy Adjustment. In 2003, the Russian government promulgated Russia's Energy Strategy Before 2020, proposed to increase energy exports to Asia-Pacific countries, and the scale of natural gas exports increased from 3% in 2003 to 27%. After the outbreak of the financial crisis in 2008, the Russian government accelerated energy cooperation with Asia-Pacific

countries, and signed an agreement with China on "Energy Replacement" in the same year. Since then, China and Russia have signed a package of cooperation agreements on oil and natural gas. After the outbreak of the Ukrainian crisis in 2014, the Russian government promulgated Russian Energy Strategy Before 2035, emphasizing that the Asia-Pacific region is the most promising energy export market[9].

Progress Made in Sino-Russian Energy Cooperation

Trade Cooperation. Sino-Russian oil trade is a one-way trade, which mainly involves China's oil imports from Russia. The rapid development of Sino-Russian oil trade began in 2004, before which the oil trade between the two countries was very small. As shown in Table 1, it exceeded 10 million tons in 2004, 20 million tons in 2011, 30 million tons in 2014, 40 million tons in 2015, 50 million tons in 2017, 70 million tons in 2018, in 2019. In addition to crude oil, China imports petroleum products such as gasoline and diesel from Russia every year. According to rough statistics, China imports about 4-8 million tons of petroleum products from Russia every year. According to this calculation, China may import more than 80 million tons of Russian petroleum and petroleum products in 2018. Before 2015, Saudi Arabia was China's largest source of oil imports, and Russia replaced Saudi Arabia as China's largest oil trading partner for three consecutive years from 2016 to 2018. With the increase of import volume, the proportion of Russian oil in China's imported oil also increased greatly. In 2011, Russian oil accounted for 7.8% of China's total imported oil, and then it continued to rise, increasing to 16.1% in 2018. In 2019, China imported about 77 million tons of oil from Russia, accounting for 15.2% of China's total imports, which declined compared with the previous year and was surpassed by Saudi Arabia as the second largest source of oil imports in China.

Table 4

Sino-Russian oil trade status from 2012 to 2019 (Unit: 1 million tons)

Year	Total imports	Imports from Russia	Proportion of Russia(%)
2011	254	20	7.8
2012	285	22	8.3
2013	288	24	8.7
2014	308	33	10.6
2015	328	41	12.3
2016	356	52	14.6
2017	381	58	15.2
2018	440	71	16.1
2019	505	77	15.2
2011	254	20	7.8
2012	285	22	8.3

Source: General Administration of Customs, P. R. China (<http://www.customs.gov.cn/>)

Investment Cooperation. Energy cooperation is not only an important achievement of China-Russia national strategic integration, but also a common practice of a brand-new "geostrategic" operation mode. In 2009, China and Russia reached a 20-year long-term crude oil pipeline trade contract with an annual supply of 15 million tons of crude oil under a loan of US\$ 25 billion, marking that Sino-Russian energy cooperation has entered a substantive cooperation stage. In April 2009, the construction of the Russian section of the Sino-Russian crude oil pipeline started. On January 1, 2011, it was officially put into production, and the design quantity of the first-line project (Moda Line) was 15 million tons[10] per year. With the continuous growth of China's domestic crude oil demand, the scale of Sino-Russian crude oil trade has been continuously upgraded, and bilateral energy cooperation has been further deepened. The two countries agreed to increase the supply of crude oil to China-Russia crude oil pipeline, reaching 30 million tons per year. At the beginning of 2018, the second-line project of Sino-Russian crude oil pipeline was officially put into commercial operation. Since

then, the scale of importing Russian crude oil through the pipeline has expanded to 30 million tons per year[11].

With the construction and operation of oil pipelines and the steady improvement of bilateral trade, Sino-Russian gas cooperation has also achieved positive results. In May 2014, witnessed by the heads of state of China and Russia, Petro China and Gazprom signed the Sino-Russian East Line Gas Supply Purchase and Sale Contract, which marked a historic breakthrough in natural gas cooperation between the two sides. According to the agreement of both parties, from 2018, Russia will start to supply gas to China through the east route of Sino-Russian natural gas pipeline, and the gas transmission volume will increase year by year, reaching 38 billion cubic meters per year, with a total contract value of 400 billion US dollars for 30 Years[12]. In 2018, the National Energy Administration of China gave a detailed introduction to the Sino-Russian natural gas cooperation: First, the Sino-Russian East Line natural gas pipeline is expected to achieve gas supply by the end of 2019, of which the gas volume in the first five years is 5 billion cubic meters to 30 billion cubic meters per year. By 2024, the gas supply will reach 38 billion cubic meters per year; Second, according to the long-term trade agreement signed between CNPC and Novatec, an independent Russian natural gas producer, after the second and third LNG production lines of Yamal Project in the Arctic Circle of Russia are put into operation, Yamal Project will supply 4 million tons of LNG to the Chinese market every year from 2019, equivalent to about 5 billion cubic meters of natural gas. The Yamal project and the Sino-Russian East Line project add up to a total of more than 43 billion cubic meters, accounting for about a quarter of China's natural gas production in 2018; Third, China and Russia are discussing the cooperation of the West Line natural gas pipeline. If the West Line project can finally reach an agreement and be put into production on schedule, the natural gas trade volume between China and Russia will exceed 70 billion cubic meters in the next ten years[13]. Fifth, the Yamal LNG2 project has completed the equity division, with Chinese enterprises accounting for about 20% of the shares. The project plans to build three production lines, all of which will have an annual production capacity of 19.8 million tons, which will be put into use in 2023[14], when Sino-Russian LNG trade will be further expanded.

Conclusions. Deepen Sino-Russian Energy Cooperation. Strengthen Political Mutual Trust and Deepen Energy Cooperation.

Although China and Russia have mutual needs and complementary advantages in energy cooperation, there are differences in ways of thinking, cultural characteristics and development concepts, which restrict the development process of energy cooperation between the two countries to a certain extent. Therefore, the two countries should further deepen exchanges, strengthen communication, promote common development and create a good atmosphere for energy cooperation between the two countries.

From the perspective of their respective resource endowments, the two countries have great advantages in energy cooperation. Russia's energy production and export are increasing year by year, while China's energy consumption is expanding. Coupled with geopolitical reasons, the cooperation between the two countries in various fields including energy has been deepening.

Since 2008, the energy cooperation mechanism between the two countries has been continuously improved and a series of energy cooperation agreements have been signed. Some cooperation agreements have been implemented, while others are progressing in an orderly manner. If Sino-Russian East Line Natural Gas Supply Agreement Was Signed in 2014 Pipeline ventilation has been realized in 2019, and it is estimated that the natural gas pipeline will run at full capacity in 2021, delivering 38 billion cubic meters of natural gas to China every year[15]. Yamal LNG project is the first development project between China and Russia in the Arctic region, with a total investment of 27 billion US dollars, of which financing from China reaches 15 billion US dollars, accounting for 60% of the total investment[16]. During Putin's visit to China in 2018, Sino-Russian Joint Statement Was Signed, which pointed out that the cooperation between the two countries in oil, natural gas, electricity, nuclear energy and other energy fields would be further deepened[17].

Formulate Medium and Long-Term Energy Supply and Demand Mechanism. At present, China is the world's largest importer of oil and natural gas, and its import volume has a tendency to expand continuously. With the rising dependence of China's energy on foreign countries, the problem of energy supply security is becoming increasingly serious. Compared with China, Russia's situation

is just the opposite. How does Russia need to ensure the safety of energy export. More than 60% of Russia's oil production and more than 30% of its natural gas production are used for export, and it is a key supplier of the world's energy industry chain[18]. Facing the complicated international situation, the perspective of energy supply and demand, and the good geographical relationship between China and Russia, it is in the common interests of both countries to build a medium-and long-term cooperation mechanism of energy supply and demand.

Innovate Cooperation Models and Deepen Bilateral and Multilateral Cooperation Mechanisms. Russia, as a big exporter of energy, and China, as a big consumer of energy, have the same strategic goal of realizing the sustainable development of national economy. The White Paper on China's Energy Policy in 2018 pointed out that we should deepen energy cooperation with major countries and regions and promote the interconnection of national oil and gas pipeline network facilities along the "the belt and road initiative"[19]. Advance the preliminary exploration of natural gas pipeline on the west line of China and Russia to ensure the orderly progress of pipeline construction. Actively participate in the construction of international energy refining facilities, and realize diversified energy imports and transportation.

China should strengthen communication and cooperation with major energy countries in the world, actively participate in global energy governance, and maintain the stability of the international energy market in order to cope with the emerging new problems. In recent years, disputes over energy trade, energy transit passage and energy investment often occur[20]. Therefore, it is increasingly important to create new energy cooperation models and deepen bilateral and multilateral energy cooperation mechanisms.

2020 is a special year, and the novel coronavirus epidemic has swept the world, which has a great impact on global trade. In the first quarter of 2020, China's foreign trade declined by 6.4%, but Sino-Russian trade rose against the trend, with a year-on-year increase of 3.4%[21]. At present, the epidemic situation has been effectively controlled, but there is a trend of further spread in Russia, which is bound to have a huge impact on the Russian economy.

In April 2020, China imported 7.2 million tons of crude oil from Russia, surpassing Saudi Arabia as the largest source of oil imports. China is resuming production in an all-round and orderly way, and the demand for oil is gradually returning to normal level. From the economic development trend in the second half of the year, the Chinese government may promote large-scale investment in infrastructure, railways and other commodity-intensive industries in order to expand employment and develop the economy, which also means that China's demand for oil will be greater. In addition, at present, the international oil price is running at a rare low level, and China may import a large amount of oil to increase its strategic oil reserves. On the other hand, Europe is Russia's major oil exporter. Although the epidemic situation in Europe has slowed down, large-scale economic activities have not yet fully started, and it will take time to restore the economy, which will lead Europe to reduce its energy imports to Russia.

China and Russia are comprehensive strategic partnerships, and need to help and support each other when encountering major events. There is reason to believe that in the second half of 2020, China will expand its energy imports to Russia to help Russia recover its economy as soon as possible.

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