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The Analysis of Russian Industrial Situation and Strategic Direction of Sino-Russian Cooperation

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Abstract

Since 2020, Russia had implemented an active import substitution policy in the industrial sector, and industrial development had gradually shown a recovery in the process of anti-crisis. In 2021, the instability of Russia's industrial development would increase due to factors such as the international COVID-19 epidemic. In order to achieve stable industrial growth and reduce the impact of uncertain factors, Russia had taken various measures, including financial support, to create favorable conditions for industrial development. In the new situations of military conflict and stalemate between Russia and Ukraine. It can be predicted that China on one hand will adheres to a neutral stance and advocates promoting negotiations through peace, actively developing normal international economic and trade relations. On the other hand, fully leverages the advantages of China and Russia to accelerate industrial chain cooperation, cooperation in industrial parks, the transformation of energy cooperation, and the promotion of industrial high-tech cooperation with Russia, to promote industrial cooperation between China and Russia towards broader fields, higher levels, and higher levels in the future.

Key words: Russia; Industry; Situation; Sino-Russia; Cooperation

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Since 2020, the international economic and trade environment had undergone major changes due to the impact of the global COVID-19. Not only the world economy had been seriously impacted, but Sina-Russia industrial cooperation is also facing increasingly complex and severe challenges. In the face of the new international situation and new challenges brought about by the Russia-Ukraine conflict, China believes that the significance and impact of China Russia relations go far beyond the bilateral scope and are vital to the world pattern and the future and destiny of mankind. Russia needs a prosperous and stable China, and China needs a strong and successful Russia. China advocates promoting cooperation with Russia based on the principles of good neighborliness, friendship, and win-win cooperation, and deepening the comprehensive strategic partnership of cooperation with Russia in the new era. This article combines the current situation of industrial development in Russia, analyzes the current situation and problems of industrial cooperation between China and Russia, and provides a trend analysis of the strategic direction of industrial cooperation between China and Russia in the future.

1. THE SITUATION OF INDUSTRIAL DEVELOPMENT IN RUSSIA

1.1 In 2020, Industrial Production and Demand in Russia Showed a Synchronous Decline Trends

In 2020, the Russian industrial production index decreased by 4.1% compared to 2019, and the industrial demand index decreased by 5.9% compared to 2019. In December 2020, these two indicators decreased by 0.5% and 6.2% respectively. In 2020, the demand for extractive industrial products in Russia decreased by 7.0%, marking the largest decline since 2007. Even during the 2008 international financial crisis, its decline was only 2.3%. Among them, in 2020, Russia's oil production reached 512.7 million tons, a decrease of 8.5%; Oil exports reached 232.3 million

tons, a decrease of 12.7%. The OPEC agreement is the main constraint, but the decline in domestic consumption also has a significant impact. In 2020, Russia's coal production reached 401.2 million tons, a decrease of 8.2%; Coal exports reached 192.8 million tons, an increase of 1.6% (in December 2020, Russia's coal production was 16.7 million tons, an increase of 21.5%).

Russian industry can be divided into low tech industry, medium tech industry, and high tech industry based on its technological level. In 2020, the demand for low-tech industrial products in Russia increased by 3.9%, but demand had already decreased in November, with a decrease of 5.4% in December. In 2020, the demand for medium tech industrial products in Russia decreased by 6.5% (down 4.8% in December), especially in the domestic market of Russia (down 4.4% for the whole year, down 17.6% in December) and the foreign market (down 15.6% for the whole year, down 11.0% in December). The demand for fertilizer products has increased in both the domestic market in Russia (with a growth rate of 6.7% for the year and 9.7% in December) and the external market (with a growth rate of 1.6% for the year and 8.5% in December). The demand for high-tech industrial products in Russia has been declining since December 2019. In 2020, the demand for products in this field decreased by 20.4% (down 20.5% in December).

In the third quarter of 2020, the mining industry experienced nears zero growth, while some manufacturing industries showed slight growth. The main reason for the increase in industrial production indicators in the fourth quarter of 2020 was the mining industry, including the export of coal supply to China and Europe. In the manufacturing industry, the production of medical devices, food industry, textile and clothing production, and furniture production had achieved growth due to import substitution. In the chemical industry, low-end products are replaced by imports. Some chemical enterprises had switched to producing medical products, while large chemical enterprises had achieved continuous production operations by implementing modernization plans and improving production capacity.[1]

In December 2020, Russian industrial enterprises generally expected a decrease in demand for industrial products in the context of the worsening epidemic, and were prepared to sacrifice prices to maintain sales. However, in January 2021, despite deteriorating demand indicators, the decline in sales of Russian industrial products was much lower than previously expected. Therefore, Russian industrial enterprises had abandoned the policy of minimizing product inventory: after reaching a historical low of 5% since March 1992 in December 2020, industrial product inventory "abnormally" rebounded to 8%, which proved the confidence of enterprises in inventory control and also demonstrated the comprehensive recovery of Russian industrial production confidence.[2]

2020 had become a severe test for Russian industry, once again proving that state supported anti crisis measures are necessary for the survival of certain industries, especially the machinery manufacturing industry. However, this could only alleviate the depth of decline, but could not lay the foundation for further growth. On the other hand, in some industries, systematic industrial policies and import substitution policies had begun to take effect, such as most sub industries of the chemical industry and many sectors of the food industry becoming the locomotive of industrial production in Russia in 2020.

1.2 The Industrial Situation in Russia had Improved in 2021, but Growth Remained Unstable

Since 2021, the industrial situation in Russia had improved, but its industrial growth remained unstable. According to data from the Russian Federal Bureau of Statistics, Russian industry grew by 3.2% year-on-year from January to May 2021. In May, Russian industrial production grew by 11.8%, higher than the growth rates in March (2.3%) and April (7.6%). The Russian manufacturing industry grew by 14.9% and 11.4% in April and May, respectively, while oil production in May experienced a significant increase of 11.6% for the first time in a long period of time. In May, the production of the Russian pharmaceutical industry showed positive but unstable growth.

In June 2021, industrial production in Russia increased by 16.2% (from January to June 2021 to 7.9%), further optimizing the industrial production structure. In June 2021, oil production was 42.6 million tons (an increase of 11.6%), and oil exports were 18.9 million tons (an increase of 3.5%); The supply of natural gas exports continued to grow in June (up 21.7% compared to June 2020). From January to June 2021, the natural gas supply to Germany increased by 43.4%, Italy by 14.1%, France by 15.1%, Poland by 18.6%, Romania by 264.0%, Serbia by 103.0% and Türkey by 209.3%.[3]

In July 2021, Russian industrial production increased by 6.8% compared to June 2020 and 0.7% compared to June 2019. According to data from the Russian Ministry of Economic Development, industrial output was 0.2%

[1] *Каукин А. С., Миллер Е. М. Динамика промышленного производства в четвертом квартале 2020 г*, https://www.iep.ru/ru/doc/35989/dinamika-promyshlennogo-proizvodstva-v-iv-kvartale-2020-goda.pdf

[2] *Цухло С. В. Российская промышленность в январе 2021 г.:восстановление прогнозов спроса*. https://www.ranepa.ru/sobytiya/novosti/rossiyskaya-promyshlennost-v-yanvare-2021-goda-vosstanovlenie-prognozov-sprosa/

[3] *ПРОМЫШЛЕННОСТЬ РОССИИ: ИТОГИ ИЮНЯ 2021 ГОДА*. https://timox.ru/index.php/nhf/316-promyshlennost-rossii-itogi-iyunya-2021-goda

higher than before the epidemic (excluding seasonal factors). Among them, the level of manufacturing industry in July 2021 was 3.5% higher than that before the outbreak of COVID-19 (3.4% in July 2020). The food industry (7.7% higher than July 2019 in July 2021), the chemical industry (13.8%), the timber industry (9.4%), and the production of non-metallic mineral products (3%) contributed the most to the output rate of the manufacturing industry.

In 2021, mineral mining in Russia continued to have a negative impact on industrial production dynamics. In July 2021, the mining output of the Russian energy industry decreased by 3.9% compared with that in July 2019, and by 3.2% compared with the outbreak of the COVID-19. The main factor was still the restrictions on the oil industry under the OPEC agreement. Coal mining (2.3%), metal ore (3.0%), and service provision in the mining sector (10.6%) had made positive contributions to the overall indicators of the mining industry compared to July 2019.

In August 2021, Russia's oil production reached 44.1 million tons, an increase of 5.6%; Oil exports reached 17.6 million tons, an increase of 4.4%. Supported by the continuous rise in prices, black metal exports increased by 4.9%; The demand for fertilizers and mineral fertilizers had increased both domestically and internationally; Cement exports increased by 23.9%, while domestic cement demand increased by 3.0%; Due to a shortage of microcircuit components, car sales decreased by 17%; Semiconductor components had been in short supply for several consecutive months, limiting semiconductor production; The decline in reserves of European gas storage facilities had provided support for Russia's export of natural gas to Europe.[4]

In September 2021, industrial production in Russia increased by 6.8%, while from January to September it increased by 4.7%. However, so far, it was significantly lower than the growth rate from April to July 2021, which was partly due to the base effect. Excluding seasonal factors, the accelerated growth in September partly reflected the increase in energy demand under the energy crisis and severe weather. According to our prediction, the most important constraints on industrial growth in 2021 wouldl still be insufficient domestic demand and uncertainty. At present, the utilization rate of production capacity in various sectors of Russian industry had decreased, and the growth of industrial investment was also hindered and uncertain. Although there had been a slight increase in external demand for industrial products, it had not yet reached pre crisis levels.

In 2021, Russia's industrial domestic demand showed an overall downward trend, but still exceeded pre crisis levels; The export order index slightly decreased; The external demand level for manufactured goods was lower than before the crisis, while it exceeded the pre crisis level in the mining and energy sectors; The external demand for fuel and energy raw materials was roughly at the level of the first half of 2019. The decline in Russian industry was relatively small, possibly due to the following reasons: firstly, large enterprises with strategic significance were directly connected to the state through the national order system, and their consumption demand decline was not as serious as small and medium-sized enterprises; Secondly, during the global economic recession, Russian industry had insufficient participation in the global value-added chain (excluding the extraction of fuel and energy minerals); Third, in Russia's economic structure, industry accounts for a large share, and large industrial enterprises had strong continuity of operation. Even if COVID-19 restrictions were imposed on other (small and medium-sized) enterprises, production will not stop.

1.3 In 2022, Russian Industry Showed a Slight Increase Followed by a Slowdown Due to Western Sanctions

According to data from the Russian Bureau of Statistics, Russia's industrial production increased by 5.9% year-on-year in the first quarter of 2022, and the Russian industrial production index increased by 3% year-on-year in March 2022. In March 2022, the producer price index of Russian industrial products increased by 5.9% compared to February and by 10% compared to December 2021. The industrial indicators of the mining industry had shown significant growth - an 8.5% increase compared to the same period in 2021, while the manufacturing industry had grown by 5.1%.[5] With Western sanctions and the withdrawal of a large number of foreign companies from the Russian market, Russian industrial production had only decreased by 0.6%, far below the predicted 1.8%. However, the sanctions had a negative impact on the production of aircraft, ships, vehicles, and various equipment.

Benefiting from the growth of domestic market demand, Russia's light industry, radio electronics industry, and pharmaceutical industry had achieved positive development, mainly due to their involvement in the production of many workwear, pharmaceuticals, dual use, and special purpose products. The demand for defense products had increased, for example, the Tula region was one of the most important regions for Russian military enterprises. Some civilian companies had decided to join in the production of necessary goods to meet the special needs of combat personnel and work for the interests of the Russian military industrial complex. Many companies were adjusting their business direction. For example, the

[4] *Промышленность России: итоги августа 2021 года*. http://ipem.ru/news/ipem/2180.html

[5] Промышленное производство в России выросло почти на 6% в I квартале 2022 года
https://journal.open-broker.ru/research/promyshlennoe-proizvodstvo-v-rossii-vyroslo/

company that produces printers had begun to produce medical tourniquet, and the company that produces tents and tarpaulins had provided the military with a special cloak to help them avoid the thermal imager. Approximately 500 companies across Russia participate in defense orders.[6]

1.4 Uneven Industrial Growth in Russia in 2023, With Huge Production Pressure in the Fuel and Energy Industries

In January 2023, the Russian industrial production index increased by 0.2% compared to December 2022. Among them, the manufacturing industry grew by 0.8% compared to December 2022. At the same time, the production of computers, electronics, optics, and electrical equipment has grown well. The production growth of coke and petroleum industries was close to the same period in 2022. The uneven performance of export-oriented industries had a restraining effect on industrial growth. In January 2023, the production of metallurgical complexes decreased by 2% month on month, and the production of metal products increased by 3.6% year-on-year, while the mining industry experienced a decline.7 In March 2023, industrial production in Russia increased significantly compared to the same period in 2022, marking the first time in a year. Its main driving force was the production of metallurgical and petroleum products, and in the context of high export profit margins, refineries have even postponed planned repairs.[8]

In the first quarter of 2023, the Russian industrial production index increased by 0.3% compared to the same period in 2022. Due to foreign policy factors, the production dynamics of the fuel and energy industries continue to be under pressure. In order to restore oil prices in the world market, Russia had announced a voluntary 5% reduction in oil production, effective from March 2023. In March 2023, Russia began building large-scale production facilities: investing 1 billion rubles to open a knitting production plant in Rostov Oblast, 1 billion rubles to produce tubular radiators in the Orenburg region, 1.4 billion dollars in the Liangzan region to produce building films, 1.2 billion rubles in the Kemerovo region to establish a large tire processing plant, and 2.3 billion rubles in the city of St. Petersburg to produce intelligent monitoring and remote control systems, Invest 5.4 billion rubles in Moscow to produce drone systems.[9]

2. CURRENT SITUATION OF INDUSTRIAL COOPERATION BETWEEN CHINA AND RUSSIA

2.1 The Scale of Industrial Trade Continues to Expand

In 1992, the trade volume between China and Russia was only 5.86 billion US dollars. By 2018, the bilateral trade volume between China and Russia was 107.06 billion US dollars, surpassing 100 billion US dollars for the first time. From 2001 to 2019, Russia's trade exports to China increased from 5.6 billion US dollars to 57.3 billion US dollars, and the export volume increased 9-fold; From 2001 to 2019, Russia's trade imports from China increased from 1.6 billion US dollars to 54.1 billion US dollars, and the import volume increased by 32.8 times. In 2019, Russia accounted for 2.4% of China's export trade and 2.9% of China's import trade; In 2019, China accounted for 13.4% of Russia's export trade and 22.2% of Russia's import trade. In 2020, the bilateral trade volume between China and Russia was 107.76 billion US dollars, a year-on-year decrease of 2.9%. Among them, China's exports to Russia reached 50.58 billion US dollars, an increase of 1.7%; China imported $57.18 billion from Russia, a year-on-year decrease of 6.6%. [10]In the first three quarters of 2021, the trade volume between Russia and China increased by 29.8% year-on-year, reaching $102.529 billion. During the reporting period, China's exports to Russia increased by 32.4% year-on-year to $47.401 billion, while Russia's exports to China increased by 27.6% to $55.128 billion.[11]

From the perspective of the bilateral trade structure between China and Russia, the proportion of industrial product trade was relatively large. From 2004 to 2019, Russia's exports of mineral products to China increased from 3.087 billion US dollars to 42.055 billion US dollars, an increase of 12.6 times, accounting for 75.1% of Russia's total exports to China from 36.1%; The export of chemical products to China increased from 1.268 billion US dollars to 1.93 billion US dollars, an increase of 52.2%, and its proportion in Russia's total export to China decreased from 14.8% to 3.4%; The export of wood and paper products to China increased from 1.408 billion US dollars to 4.345 billion US dollars, an increase of two times, and the proportion of Russia's total export to China decreased from 16.5% to 7.8%; The export of metals and metal products to China increased from 1.622 billion US dollars to 1.668 billion US dollars, an increase of

[6] Как развивается промышленность России. Итоги 2022 года и реальность 2023 года. https://dzen.ru/a/ZFArKCg_tHJZEFQ2

[7] О ДИНАМИКЕ ПРОМЫШЛЕННОГО ПРОИЗВОДСТВА. https://www.economy.gov.ru/material/file/1d61a99ed739c5f7c538d4eee289ce14/2023_02_22.pdf

[8] Динамика российской промышленности. https://www.kommersant.ru/theme/215

[9] Итоги развития промышленности в марте 2023 года. https://www.ruscable.ru/other/20230426_ipem.pdf

[10] Якушев Н.О. Внешняя торговля России и Китая: особенности территориальной специфики. и перспективы развития // ЭКОНОМИЧЕСКИЕ ОТНОШЕНИЯ, 2020.№ 4.https://1economic.ru/lib/111232

[11] Товарооборот между Россией и Китаем вырос в 2021 году на 29,8 процента. https://ria.ru/20211013/tovarooborot-1754306494.html?in=t

2.9%, and its proportion in Russia's total export to China decreased from 19.0% to 3.0%; The export of mechanical equipment and transportation to China increased from 1.030 billion US dollars to 2.697 billion US dollars, an increase of 61.8%, and its proportion in Russia's total export to China decreased from 12.1% to 4.8%.

From 2004 to 2019, Russia's imports of mineral products from China increased from 87.2 million US dollars to 269.3 million US dollars, a doubling of the total, and its proportion in the total imports from China decreased from 1.9% to 0.5%; The import of chemical products from China increased from 365.3 million US dollars to 5.4953 billion US dollars, an increase of 14 times, and its proportion in Russia's total import from China increased from 7.8% to 10.2%; The import of wood and paper products from China increased by 4.5 times from 88.5 million US dollars to 487.7 million US dollars, and its proportion in Russia's total import from China decreased from 1.9% to 0.9%; The import of textiles and footwear from China increased from 745 million US dollars to 5.8545 billion US dollars, an increase of 6.8 times, and its proportion in Russia's total import from China decreased from 15.9% to 10.8%; The import of metals and metal products from China increased from 276.3 million US dollars to 4.4506 billion US dollars, an increase of 15 times, and its proportion in Russia's total import from China increased from 5.9% to 8.2%; The import of mechanical equipment and transportation from China increased from $2.0162 billion to $30.875.3 billion, a fourfold increase, and its proportion in Russia's total import from China increased from 42.9% to 57%.

In 2020, the trade volume between China and Russia reached 107.77 billion US dollars, surpassing 100 billion US dollars for three consecutive years. From January to April 2021, the bilateral trade volume between China and Russia reached 40.21 billion US dollars, an increase of 19.8% year-on-year. For the first time in history, it exceeded 40 billion US dollars in the first four months, an increase of 21.2% compared to the same period in 2019.[12] From January to August 2021, the total trade volume between Russia and China was 85.854 billion US dollars, a year-on-year increase of 30.3%. Among them, the total exports and imports from Russia to China were 42.304 billion US dollars and 43.55 billion US dollars, respectively, with both increasing by over 27%. Under the COVID-19, China Russia trade had achieved rapid development, bilateral trade has seen rapid growth, China Russia trade was increasingly closely linked, China needs Russian resources such as oil, natural gas, coal, wheat, beef, etc., Russian energy could effectively replace some of Australia's exports.

In 2022, the bilateral trade volume between China and Russia reached a record high of 190.271 billion US dollars, an increase of 29.3% year-on-year. China has remained Russia's largest trading partner for 13 consecutive years. China Russia economic and trade cooperation was steadily advancing, and new achievements have been made in cooperation in areas such as energy, investment, and connectivity. New growth points such as China Russia information technology, cross-border e-commerce, digital economy, and biopharmaceuticals are constantly emerging. The vitality of cooperation platforms such as the China Russia Expo and the China Russia Local Cooperation Park is highlighted. More and more Chinese companies are entering Russia, and the market share of Chinese products is constantly increasing. The number of Chinese brand cars purchased by the Russian people has set a record in 2022.

2.2 Rapid Development of Industrial Investment Cooperation

Industrial investment cooperation is an important component of investment cooperation between China and Russia, and also a crucial link in industrial cooperation between China and Russia. In the 1990s, the scale of investment cooperation between China and Russia was very small. But with the development of the most stable and reliable trade and economic partnership between China and Russia, there was a significant increase in industrial investment cooperation between the two countries in 2000. To strengthen bilateral investment cooperation, the China Russia Intergovernmental Investment Cooperation Committee was established in 2014. According to data from the Ministry of Commerce of China, in 2018, the Chinese economy received $56.6 million in direct investment from Russia, an increase of 137.4% compared to the previous year.

The two heads of state have officially established the goal of China's direct investment in Russia reaching 12 billion US dollars by 2020. The most active areas for bilateral industrial investment cooperation and development are forestry, automobile manufacturing, and mineral development.

As of the beginning of 2018, China's cumulative direct investment in Russia was 4.198 billion US dollars, while Russia's direct investment in China was 255 million US dollars. China's industrial investment in Russia mainly includes fuel energy, wood industry, light industry, home appliance production, etc. Russia's investment in China is mainly used for the development of manufacturing, construction, and transportation services. Since 2019, bilateral investment between China and Russia has continued to maintain a good momentum, implementing a number of strategically significant projects in the fields of energy, aerospace, aviation, and transportation connectivity. Among them, the East China Russia natural gas pipeline, the Tongjiang Zhanyingsi railway bridge, and the Heihe Blagovyshensk highway bridge have all

[12] *It is expected that the scale of trade between China and Russia will reach a new high in 2021*. http://www.capwhale.com/newsfile/details/20210513/a6d64709fc8143c78624fd6ff69f4a69.shtml

entered the final construction stage.

During the 24th Regular Meeting of Heads of Government of Russia and China held in St. Petersburg in September 2019, Russian Prime Minister Dmitry Medvedev and Chinese Prime Minister Li Keqiang attended the meeting and signed multiple bilateral investment cooperation agreements.[13] The China Russia Intergovernmental Investment Cooperation Committee has approved a list of over 70 investment projects, including large-scale projects in the Far East Federal District, including the development of the Bestlinsky gold and iron deposits with an investment amount of over 50 billion rubles, and the construction of the Bestlinsky mining area in the Baikal Lake Border Region. Russia has participated in investing in the nitrile rubber project (50000 tons/year) in China, as well as the $3.4 billion aluminum deep processing enterprise technology complex project.

The 7th meeting of the China Russia Investment Cooperation Committee held in November 2020 approved a list of 70 major projects; Previously, in October 2020, the committee secretariat approved 22 projects. These 92 projects have declared investment amounts exceeding 151 billion US dollars, covering multiple regions and involving large-scale joint investment projects in fields such as mineral mining and processing, construction and facility construction, and manufacturing. Chinese enterprises have signed thermal power projects in the Leningrad and Tula prefectures of Russia, with unit capacities of 168MW and 270MW, respectively. In June 2020, the Kalugar government of Russia signed an agreement of intent with Harbin Electric Group Co., Ltd. of China, which plans to build a plant in Kalugar to produce thermal power station power equipment, with a total investment of 10 billion rubles (equivalent to 1.034 billion yuan).

In 2021, China invested in the largest single unit thermal power project in Russia, with a total contract amount of up to 660 million US dollars.[14] In November 2021, the 16th meeting of the Secretary General of the China Russia Investment Cooperation Committee was held, and the two sides exchanged views on the overall situation of China Russia investment cooperation in 2021, the progress of cooperation in key areas and major projects, and key work for the year.15 The Havel Automobile Factory in Tula Oblast, the Haier Refrigerator Factory in Tatarstan Republic, the Kamaz Weichai Engine Factory in Yaroslavl Oblast, the Bestlinsky Deposit in the Later Baikal Border Region, and the development project of the Kizil Tastyk Deposit in Tuva Republic are all examples of such large-scale projects.

In April 2022, the first cross-border railway bridge jointly invested by China and Russia - the Ningskoye Tongjiang Railway Bridge - was officially opened. In June 2022, the first cross Heilongjiang highway bridge between China and Russia, the Black River Blagovyshensk Highway Bridge, was officially opened to traffic, opening up a new international transportation channel between Northeast China and the Far East of Russia. In December 2022, the "Siberian Power" natural gas pipeline of the China Russia East Line natural gas pipeline project in Russia was fully connected. In 2023, the digital economy, green development, and biopharmaceuticals between China and Russia will become priority directions for investment cooperation, injecting new impetus into the economic development of China and Russia. Chinese and Russian enterprises will further carry out investment cooperation in low-carbon energy and green infrastructure, actively promote green technology innovation, and work together to create new growth points for China Russia economic and trade cooperation.

2.3 Industrial Technology Cooperation Shows Good Trends

In June 2019, the heads of state of China and Russia jointly announced the holding of the Sino Russian Year of Science and Technology Innovation in 2020 and 2021, providing new impetus for industrial and technological cooperation between China and Russia. In order to implement the consensus of the two heads of state, in September 2019, the China Association for Science and Technology and the Russian Federation of Science and Technology signed a memorandum of understanding during the 24th regular meeting between the Chinese and Russian Prime Ministers. The information technology special session of the "2021 China Russia Digital Economy Demonstration Project" in July 2021 was hosted by the China Association for Science and Technology and the Federation of Russian Association for Science and Engineering. The new generation position tracking system developed by Russian technology enterprises will be widely applied in various industries such as AR/VR/XR, drones, future SLAM, aerospace, and robotics technology.

The "Optical Waveguide" AR glasses are a new type of AR equipment developed by Beijing Lingxi Micro Light Technology Co., Ltd. This technology focuses on the bottleneck technology of AR equipment - optical display, and mainly focuses on the core component optical engine in AR products. Dezhi Hangchuang Technology Co., Ltd. is a global innovative enterprise that integrates drone research and development, production, sales, service, and training. Its business categories cover product research and development, production, and system integration in

[13] *Инвестиционное сотрудничество России и Китая успешно развивается.* https://rg.ru/2019/11/04/voprosy-sotrudnichestva-rf-i-knr-stali-ostree-v-svete-novyh-vyzovov.html

[14] *Trade volume exceeds 250 billion! China-Russia cooperation accelerates again: Russia hands over a 42 billion infrastructure contract to China.* https://cj.sina.com.cn/articles/view/2622472937/9c4fc2e902001mnr9

[15] *Russian officials: 92 projects, over 151 billion US dollars, the achievements of the China-Russia Investment Cooperation Committee are remarkable*? https://www.sohu.com/a/480559464_731021

the fields of civil and military drones, covering the entire industry chain of drone product applications.

In June 2022, the 13th meeting of the China Russia High Technology and Innovation Working Group under the framework of the Science and Technology Cooperation Subcommittee of the China Russia Prime Ministers' Regular Meeting Committee was held through a Beijing Moscow video link. Both sides exchanged in-depth views and reached broad consensus on topics such as cooperation between China and Russia under the framework of large-scale scientific installations, collection of Sino Russian joint scientific and technological research and development projects, Sino Russian joint scientific and technological exhibition activities, and suggestions for deepening Sino Russian scientific and technological cooperation. Both sides agreed to expand mutually beneficial cooperation in areas such as carbon balance monitoring, biotechnology, scientific and technological information exchange, and Arctic scientific research.

In April 2023, Babonov, the head of the China direction of the "Russia Home International Science and Technology Cooperation" association, stated that a science and technology cooperation platform would be established by mid-2023. This is a platform for technological and technological cooperation and innovation between Russia and China, and one of the project tasks is to develop regional cooperation between Russia and China. This will be a multilingual platform responsible for providing information on support measures, subsidies, and funds. Russian and Chinese researchers can showcase and promote projects on this platform. In September 2022, the "Russia House International Science and Technology Cooperation" association signed a strategic cooperation agreement with the Russian Research Institute of Tsinghua University, with the aim of creating a unified environment conducive to efficient interaction between Russia and China in the fields of science, technology, and innovation.

3. PROBLEMS IN SINO- RUSSIAN INDUSTRIAL COOPERATION

3.1 Incomplete Strategic Layout Made It Difficult to Grasp Future Initiative

In recent years, there has been a new trend in international industrial cooperation, which places greater emphasis on industrial chain cooperation. At the same time, green industry cooperation has become a new strategic task. At present, the strategic layout of China Russia industrial cooperation has not included industrial chain cooperation and green industry cooperation in a more prominent position for comprehensive strategic planning. In particular, the international economic and trade environment has undergone major changes in 2021 due to the impact of the global COVID-19. Western countries have started joint actions to impose economic sanctions on China and Russia in multiple fields and rounds, resulting in a clear unfavorable situation for China and Russia to engage in international economic and trade cooperation.

The "common concern" should encourage China and Russia to unite and warm up, accelerate the planning of forward-looking and complete strategic cooperation layout, only in this way can we grasp the initiative of future cooperation development. Since the 1990s, global value chains have shaped the global economy. More than two-thirds of world trade occurs annually through the global value chain, representing a shift in trade and business practices, as trade in intermediate goods and services exceeds trade in goods and manufactured goods. Therefore, both China and Russia should comply with the trend of global value chain growth, establish effective measures such as signing free trade agreements and reducing trade barriers, promote seamless connection between China and Russia's industries, and enhance their comparative advantages and competitiveness in the international market, creating favorable conditions for the joint development of China and Russia's industries in the international market.

3.2 Energy Cooperation Was the Leading Force, but Insufficient Expansion in Other Fields

Russia is a major producer and exporter of oil and gas in the world, and holds a crucial strategic position in China's diversified energy import layout. In recent years, China Russia energy cooperation has achieved fruitful results. The cooperation between the two countries in the energy field has shifted from a single oil trade to a multi energy trade cooperation in oil, natural gas, coal, electricity, and nuclear energy. On January 1, 2011, the first line project of the China Russia crude oil pipeline was officially put into operation, with an annual import of 15 million tons of crude oil; On January 1, 2018, the second line project of the China Russia crude oil pipeline was completed and put into operation, and the total annual imported crude oil of the China Russia crude oil pipeline increased to 30 million tons.

As of the end of 2020, China had imported nearly 200 million tons of crude oil from Russia through the China Russia crude oil pipeline. In December 2019, Gazprom Russia launched the "Siberian Power" pipeline for gas transmission to China. In 2020, 2021, and 2022, Gazprom plans to transport 5 billion, 10 billion, and 15 billion cubic meters of natural gas to China through the "Siberian Power" pipeline. It is expected that the "Siberian Power" pipeline will reach a designed annual gas transmission capacity of 38 billion cubic meters by 2025.[16] However, from the past development process of China Russia

[16] *Russian media: In 2021, the supply of natural gas to China through the "Power of Siberia" pipeline is expected to double.* https://www.jiemian.com/article/5440403.html

energy cooperation, although energy cooperation has always maintained a good momentum of advancing and accelerating development, there are various complex cooperation constraints at each stage, and China Russia energy cooperation still faces the problem of insufficient deepening of industrial cooperation in related fields.

3.3 The Scale of Sino Russian Industrial High-Tech Cooperation Was Relatively Small

Russia has a strong technological foundation and strength, and its key technologies in industrial fields such as laser technology, aviation materials, ocean engineering, and artificial intelligence are at the world's leading level. China's industrial technology has price advantages, scale advantages, and innovation advantages. Machinery, communication equipment, electrical equipment, drones, processing machine tools, etc. play an important role in the global industrial chain. In recent years, cooperation between China and Russia in the field of industrial high-tech has been continuously advancing, and a series of gratifying cooperation results have been achieved.

China and Russia are actively cooperating in the aviation industry, with the CR929 long-range wide body aircraft becoming a landmark cooperation project. In May 2021, the heads of China and Russia jointly witnessed the commencement ceremony of Tianwan Nuclear Power Plant and Xudabao Nuclear Power Station. This project is an important part of the package of cooperation agreements signed in 2018 in the field of nuclear energy between the two sides. It is the largest project in China Russia nuclear energy cooperation to date and has become another significant landmark achievement in China Russia nuclear energy cooperation. Huawei signed a 5G cooperation agreement with Russian communication operators and also invested in the artificial intelligence field in Russia. However, compared to industrial high-tech cooperation between developed Western countries, the scale of industrial high-tech cooperation between China and Russia is relatively small, and the potential for driving force support for economic and trade cooperation between China and Russia needs to be further explored.

3.4 Relatively Insufficient Mutual Investment in Industries Between China and Russia

In 2015, China and Russia agreed to establish a mechanism for industrial cooperation between the two countries based on government departments, expanding the existing civil aviation mechanism to the entire industrial field, and encouraging enterprises from both sides to invest and establish factories in each other's territory. At the fourth meeting of the China Russia Intergovernmental Investment Cooperation Committee in 2017, China and Russia planned to invest 73 priority development projects with an investment amount of 10 billion US dollars. As of October 2019, China's total investment in Russia was $50 billion, with 80% being in the energy and chemical industries. In December 2020, the China Russia Intergovernmental Investment Cooperation Committee approved a list of 70 major projects, with a total investment of $112 billion in the non energy sector. Out of the 65 projects being implemented by Russia, only 5 are in China, and the investment of 106.2 billion US dollars in China is only 5.8 billion US dollars. In 2020, China invested in 15 projects in Russia, with the most being in the electronics sector, while in 2019, it was in the software and IT service industries. The second largest Chinese investment in Russia is in manufacturing projects. In 2021, the number of major investment projects in Russia by China reached 65, with a total amount of $128.38 billion, mainly concentrated in the manufacturing industry.[17]

4. STRATEGIC DIRECTION FOR PROMOTING INDUSTRIAL COOPERATION BETWEEN CHINA AND RUSSIA

In 2023, industrial cooperation between China and Russia faces both the challenges posed by the Russo Ukrainian War and the many risks posed by the uncertainty of the international security environment. Faced with the new situation, China advocates resolving the Russia Ukraine crisis through peaceful negotiations on one hand, and continues to develop normal economic and trade cooperation with Western countries and Russia Ukraine while maintaining neutrality on the other hand. It is expected that under the framework of accelerating the docking of the "the Belt and Road" initiative with the Eurasian economic union, China will accelerate the strategic layout of China Russia industrial chain, accelerate the cooperation between China and Russia industrial parks, accelerate the transformation of China Russia energy cooperation, accelerate the promotion of high-tech industrial cooperation with Russia, and make every effort to promote China Russia industrial cooperation to a broader field, a higher level and a higher level.

4.1 Accelerate the Cooperation of Sino- Russian Industrial Chains

Building a strategic layout for Sino Russian industrial chain cooperation is a strategic choice to enhance the level of Sino Russian economic and trade cooperation in the new era. It is also a basic requirement for effectively responding to the difficult period of Sino US economic relations and stabilizing the opening up to the outside world. It is conducive to achieving safe and controllable key areas such as important industries, infrastructure,

[17] *КИТАЙСКИЕ ИНВЕСТИЦИОННЫЕ ПРОЕКТЫ В РОССИИ.* https://cyberleninka.ru/article/n/kitayskie-investitsionnye-proekty-v-rossii.

strategic resources, and major technologies. Since 2020, global economic and trade frictions have shown an overall upward trend of fluctuations, and competition conflicts among major powers have shown an expanding trend.

It is expected that under the background of the comprehensive strategic competition between China and the United States in the future, accelerating the strategic layout of Sino Russian industrial chain cooperation to effectively respond to the economic sanctions of western countries will become a key point in the development of China's open economy. To this end, the following areas of work should be emphasized: firstly, to strengthen the strategic plan for Sino Russian industrial chain cooperation, that is, under the framework of the meeting between the Chinese and Russian Prime Ministers, led by the National Development and Reform Commission of China, the Ministry of Industry and Information Technology of China, and the Ministry of Industry and Trade of the Russian Federation, to study and formulate a medium - and long-term strategic plan for the next decade's Sino Russian industrial chain.

The second is to extend the length and correlation of the Sino Russian industrial chain, that is, to address the current issue of low correlation between large industrial projects at the national level and small and medium-sized industrial projects at the local level in Sino Russian industrial cooperation projects, improve the supporting mechanism for industrial cooperation projects, and further expand the length and mutual correlation of industrial project chains; The third is to build an innovative and efficient Sino Russian industrial chain cooperation platform, which involves innovative collaborative integration of the docking platform for Sino Russian industrial cooperation projects, the Sino Russian industrial cooperation park cooperation platform, and the Sino Russian industrial innovation technology exchange and cooperation platform, in order to achieve the efficient operation of various Sino Russian industrial cooperation platforms.

4.2 Accelerate the Cooperation of Sino- Russian Industrial Parks

President Putin of the Russian Federation proposed the establishment of advanced development zones in December 2014. As of September 2021, there are a total of 39 special economic zones and 116 advanced development zones in the Russian Federation. Among them, 23 advanced development zones are located in the Far East, and 1 advanced development zone is located in the Arctic. Six years ago, the first batch of advanced development zones emerged in the Far East region of Russia - two in the Khabarovsk border region and one in the coastal border region.

As of November 2020, there were 85 advanced development zones in a single city in Russia, creating over 30000 new jobs. The company's non-budget fund insurance premiums have been reduced to 7.6%, and the federal income tax, land tax, and corporate property tax rates have been reduced to zero. Income tax has been reduced from 18% in the first to fifth years to 5%. Advance development zones can create attractive conditions for investors, help diversify the urban economy of a single industry, and improve its stability.

As of 2020, there are a total of 36 special economic zones in Russia. Among them, there are 17 industrial special economic zones, 7 technological innovation special economic zones, 10 tourism and entertainment special economic zones, and 2 port special economic zones, mostly distributed in the European part of Russia. In the new situation, accelerating the promotion of cooperation in industrial parks with Russia is an important growth point for enhancing Sino Russian industrial cooperation and is expected to become a new engine for the development of Sino Russian industrial cooperation.

In the future, the following work should be focused on: firstly, drawing on advanced park operation experience to continue promoting the construction of overseas parks with Russia, and striving to build a new highland of national industrial cooperation with Russia; Secondly, pay attention to the new trend of Russia's advanced development zones and encourage domestic industrial enterprises to register and operate in Russia's advanced development zones as needed; The third is to seize the opportunity of Russia's upcoming construction of three industrial new economic zones in the Orenburg, Smolensk, and Ivanovo regions, and actively seek opportunities for bilateral cooperation and development under the preferential system.

4.3 Accelerate the Transformation of Sino-Russian Energy Cooperation

Russia is a major energy exporter in the world and holds a crucial strategic position in China's global energy import layout. In recent years, China and Russia have achieved fruitful results in energy cooperation in fields such as oil, natural gas, coal, electricity, and nuclear energy, laying a solid foundation for the comprehensive strategic partnership of cooperation between China and Russia. The 2021 International Energy Outlook report points out that renewable energy will become the main source of global energy consumption. With the emergence of a low-carbon and green new pattern in the international energy strategy, accelerating the transformation of Sino Russian energy industry cooperation has become a strategic issue that urgently needs to be solved.

From the perspective of Russia's energy composition, natural gas dominates with 47% of energy consumption, while coal, despite its low demand, still holds a 16% share. According to BP's forecast, Russia's energy production and consumption will increase by 21% and 7% respectively from 2017 to 2040. The consumption of coal will decrease by 36%, while the consumption of

nuclear energy will increase (35%), hydropower (12%), and natural gas (9%) will also increase. To accelerate the transition to clean energy, Russian energy companies promote natural gas and nuclear energy as directions for energy conversion. Russia hopes to promote liquefied natural gas as a fuel on the northern sea route, cooperate with foreign companies to promote natural gas for transportation, and develop refueling stations both domestically and internationally. Russian nuclear power is one of the "key components" of green energy, and plans to build small nuclear reactors in remote areas.

There are also ambitious plans in the fields of hydrogen, wind energy, solar energy, and hydropower. In the future, the following areas of work should be emphasized: firstly, to consolidate the traditional advantages of China Russia energy cooperation, continuously strengthen cooperation in the new energy field, and focus on enhancing cooperation in the natural gas and nuclear energy fields; The second is to innovate the local energy industry cooperation model between China and Russia, with a focus on promoting regional cooperation in the fields of hydrogen, wind energy, and solar energy between China and Russia; The third is to strengthen cooperation in the research and development of new energy technologies between China and Russia during their transition to clean energy, and jointly promote the coordinated development of traditional energy cooperation and new energy cooperation.

4.4 Accelerate the Promotion of Sino- Russian Industrial High Tech Cooperation

Russia has strong technological capabilities and is at an international advanced level in fields such as aerospace, shipbuilding, nuclear energy, military, laser, electronics, etc. It is currently the most important partner for China's industrial high-tech cooperation. In June 2021, the 6th Russia Industrial Digital Industry Exhibition showcased Russia's latest 5G base station prototype, new generation traffic lights, multi-objective video analysis platform, and solutions for industrial enterprises to resist network attacks.

In October 2021, Russia held the second Russian Industrial Week, showcasing equipment and technology for processing structural materials, welding and cutting process equipment and technology, non-destructive testing and technical diagnosis technology, integration of audio-visual information and communication technology systems, complex systems for high-tech equipment in the processing industry, machine tool systems for metal processing, robots, and production automation. With the rapid development of the digital economy in today's world, blockchain technology, 3D printing, the Internet of Things, 5G mobile broadband, cloud computing, automation and robotics, artificial intelligence, and data analysis are receiving more attention.

The nine most promising technologies listed in the National Project of Russian Digital Economy are: big data, neural technology and artificial intelligence, distributed ledger system (blockchain), quantum technology, new production technology, Industrial Internet, robot and sensor components, wireless communication technology (especially 5G), virtual and augmented reality technology. It is expected that the potential economic impact of introducing blockchain technology in Russia by 2024 may exceed 1.5 trillion rubles. Russian experts "cut" artificial intelligence technology into: computer vision, natural language processing, speech recognition and synthesis, neural prosthesis and neural interface, neural stimulation and neural sensing.

In the future, the following tasks should be focused on: firstly, focusing on the development direction of the world's digital economy and accelerating cooperation in the digital economy between China and Russia in the industrial field; The second is to track the progress of industrial high-tech in Russia and vigorously promote cooperation in industrial high-tech with Russia; The third is to firmly grasp the key engine of industrial technology and accelerate the construction of a Sino Russian industrial technology cooperation platform.

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