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Master's Thesis of International Studies

**Russia and China Energy Cooperation:
Why Russia is still important to today's
China?**

**An Analysis on Sino-Russia Energy
-Cooperation in Cured Oil and Natural Gas-**

러시아와 중국의 에너지 협력: 왜 러시아가 오늘날의
중국에 여전히 중요한 역할자인가?
중·러 에너지 경화유와 천연가스 협력을 분석을
중심으로

February 2020

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**Russia and China Energy
Cooperation: Why Russia is still
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-Cooperation in Cured Oil and Natural Gas-**

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Abstract

2019 is the 70th anniversary of the founding of China. The history of China and Russia relationship has had longer history with not only period of rivalry but also close partnership. Since 2001, when the Treaty of Good-Neighborliness and Friendly Cooperation Between the People's Republic of China and the Russian Federation (FCT) successfully signed, China and Russia strategic partnership has deepened into various field with fruitful achievements. Energy cooperation is a significant part of it. This study will focus on China and Russia energy cooperation to understand the current development of Sino-Russia relations. Under current political environment, Sino-Russian energy cooperation has been given many new connotations because the influence from Chinese Belt and Road Initiative on the ice and Russia Development of the Far East. Although many scholars are optimistic with the current energy cooperation, there are still problems and challenges. China and Russia should have better communication and adhere to the concept of interaction for a win-win consequence.

This paper aims to summarize the factors affecting of Sino-Russian energy cooperation after the year of FCT. At the same time, this study attempts to analyze whether the pressure from Western world is one of the main motivations for Sino-Russia energy cooperation. This research found that in Sino-Russia energy cooperation, the inner factor in the cooperation is more important than the factor from West powers, especially EU. For example, the reason that Russia energy strategy coincides with China's strategy to reduce coal consumption explains why China is welcoming natural gas projects in northeast China. Rather than proposing further suggestions for deepen Sino-Russia cooperation, this paper will focus on the energy cooperation comparison between Sino-Russia and Sino-Middle East situation. For China and Russia, energy cooperation is a typical area that reflects common interests of great powers. But the Middle East is an important strategic pivot of China outside of Asia. Accordingly, this paper argues that Russia will less likely to replace Middle East countries to become China's largest energy exporter.

Key Words: China, Russia, energy cooperation, energy security, regional cooperation

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Chapter I. Introduction

1. Background

1.1 China and Russia Partnership and the FCT agreement

After the ending of Cold War, China and Russian have had great achievement in security cooperation with their relationship development. The security cooperation not only refer to those in the traditional security domain, including military security and political security, but also in non-traditional domain such as striking splittism, terrorism and ultraism, energy resource security and environment security. Besides, Sino-Russia security cooperation also developed from bilateral cooperation to multilateral cooperation, which will impel security cooperation between the two countries to East Asia regional and world-wide range. China and Russia security cooperation is on the base of similar national interests, which is reflected from same strategic and security interests. Strengthening security cooperation and reducing obstacles result from different national interest is of great importance for China and Russia future relations. In 2001, the *Treaty of Good-Neighborliness and Friendly Cooperation Between the People's Republic of China and the Russian Federation* (FCT) was signed by leaders of two country, Jiang Zemin and Vladimir Putin. The main content of the treaty can be outlined as "...to consolidate the friendly and good neighborly ties and mutual cooperation in all fields between the two countries is in conformity with the

fundamental interests of the peoples of the two countries and conducive to the maintenance of peace, security and stability in Asia and the world,...”¹.

Sino-Russia cooperation begins with mutual recognition of each other's sovereignty and completeness. This is the primary factor for both sides to ensure political security and national sovereignty. Since the establishment of Chinese and Russian diplomatic relations, both countries have always paid attention to the recognition and respect of the other. Especially after the signing of the Sino-Russia FCT, the political security cooperation has been improved significantly based upon the solid foundation. Boundary problem has always been one of the major international conflicts. This is why FCT has been significant for China and Russia border and promoted further bilateral cooperation. After 4 rounds negotiation of demarcation, measures 4,209.3 kilometers ranked as the world's sixth-longest international border².

China-Russia good-neighborly relations is a good demonstration of “New-type of great power relations”. “Non-alignment, non-confrontation, and non-targeting of any third country” are important conceptual foundations and the basic principles for Sino-Russian relations under current era. In the “Joint Statement on Sino-Russian Relations at the Turn of the Century” 《关于世纪之交的中俄关系的联合声明》³ published on November 23,

¹ Fmprc.gov.cn. (2001). Treaty of Good-Neighborliness and Friendly Cooperation Between the People's Republic of China and the Russian Federation. [online] Available at: https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/t15771.html.

² 英文版中俄睦邻友好条约 (2001)

https://www.fmprc.gov.cn/mfa_eng/wjtb_663304/zzjg_663340/dozys_664276/gjlb_664280/3220_664352/3221_664354/t16730.shtml

³ 《关于世纪之交的中俄关系的联合声明》 (1998) https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/t15793.shtml

1998, it clearly stated that: “The establishment of strategic cooperative relations between China and Russia is not an alliance, nor is it aimed at any third country. In the relationship, we abandon confrontation and create conditions for the broadest equality and mutually beneficial cooperation between the two countries in various fields.” This principle was legally determined in the FCT signed in 2001. As a programmatic document guiding the development of Sino-Russian relations in the new century, the Treaty confirms that “the friendly relations between the two countries are based on new-type national relations based on non-alignment, non-confrontation, and non-targeting to any third countries.” This principle is the basic principle of the development of Sino-Russian relations in the new era. It abandons traditional diplomatic thinking and elite group politics and develops the comprehensive strategic cooperative partnership between China and Russia in the new era which is of great significance to world peace and stability.

1.2 Current situation of Sino-Russia Energy Cooperation in Crude oil and Natural gas

China and Russia are important energy partners. Deepening Sino-Russian cooperation in the energy field will become a significant support for the development of Sino-Russian economic relations to strength their strategic partnership in the Northeast Asia region.

On December 25, 1991, the Soviet Union collapsed, and Russia became officially independent. Russia is rich in natural resources, especially in oil and gas reserves.

According to the BP Statistical Review of World Energy⁴, Russian oil accounted for 6.1% of the world's total oil reserves in 2018 and rank the sixth in the world, and the natural gas accounting for 19.8%, surpassing Iran and become the top natural gas reserve country. As a major resource country in the world, Russia's economy is highly dependent on energy exports. According to the US Energy Information Administration's (EIA) "Report Country Analysis Brief: Russia"⁵, oil and natural gas revenues accounted for 36% of Russia's federal budget revenues in 2016. Russia's economic production value is closely related to changes in international oil prices. In other words, the impact of international oil price changes on Russia's economic production will bring higher risks to Russia's economic development.

China is one of the world's largest energy consumer markets. For the past few decades, China economic growth is tightly related to the huge consumption of coal. The total consumption of coal increased from 1.05 billion tons in 1990 to 3.97 billion tons in 2015. According to the statistics from CSIS (2018)⁶, 62% of energy power fueled by coal consumption. The high consumption of coal is result from the fact that China is a country with more coal and less oil, with proven coal reserves accounting for 33.8% of the world's coal reserves. China's coal output has ranked first in the world for many years, and coal has dominated China energy structure. At the same time, because of the cheaper price and better quality of foreign coal, China also imports coal from Australia, Russia, Indonesia and other

⁴ BP Statistic Review of World Energy (2019) <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2019-full-report.pdf>

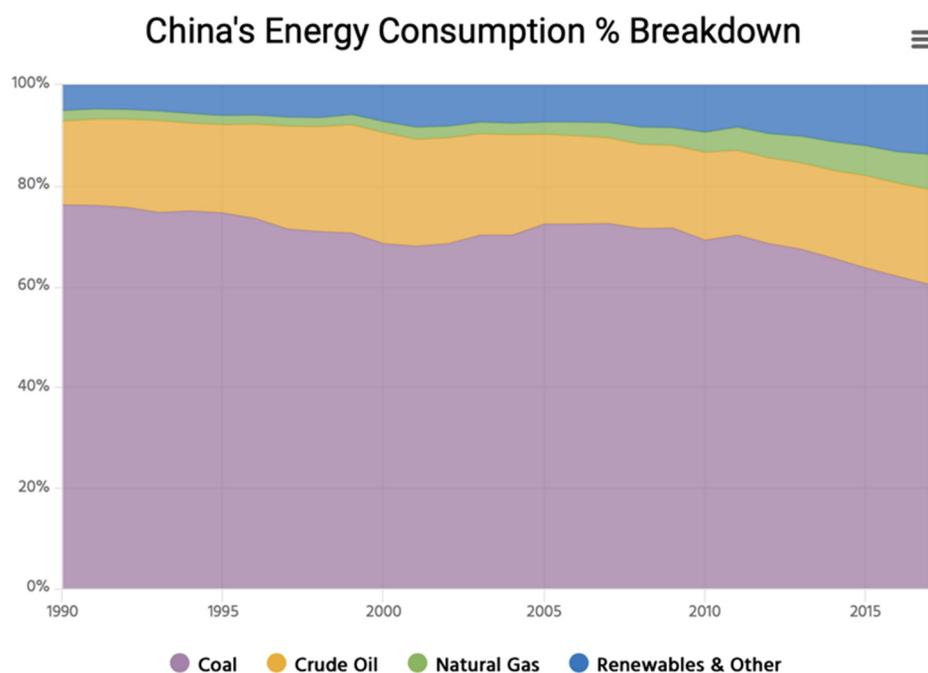
⁵ Country Analysis Brief: Russia (2017)

https://www.eia.gov/beta/international/analysis_includes/countries_long/Russia/russia.pdf

⁶ CSIS (2018) China Power Team. "How is China's energy footprint changing?" China Power. Updated August 13, 2018. <https://chinapower.csis.org/energy-footprint/>

countries to increase domestic coal reserves. However, in recent years, China has actively responded to climate change and promised to reduce carbon dioxide emissions (Renmin 2019)⁷. Constrained by economic transformation and environmental protection, coal consumption growth has slowed down significantly. This figure shows the trend of Chinese energy consumption by different resources categories.

Figure 1. China's Energy Consumption Breakdown



Source from CSIS (2018)⁸

⁷ 人民网(2019) <http://energy.people.com.cn/n1/2019/0121/c71661-30582608.html>

⁸ CSIS (2018) China Power Team. "How is China's energy footprint changing?" China Power. Updated August 13, 2018. <https://chinapower.csis.org/energy-footprint/>

China's energy consumption accounts for 13% of the world's energy consumption. As shown from the figure above, Chinese consumption of crude oil, natural gas and renewables is increasing. In 2018, China imported 462 million tons of crude oil and 126.2 billion cubic meters of natural gas. So, the huge demand in those resources required energy imports from other countries, BP statistic (2019) predict that Chinese cured oil import dependence will rise from 67% in 2017 to 76% in 2040 and the for the same time, natural gas import dependence will rise from 38% to 43%⁹

In recent years, China and Russia have expanded their trade cooperation in oil and natural gas. Under current global political and economic environment, Sino-Russia energy cooperation is believed to have huge space for potential development. On February 17, 2009, China National Petroleum Corporation signed an agreement on long-term crude oil trade with Rosneft, Russian largest oil company. From January 1, 2011, Russia officially supplied oil to China through the oil pipeline from Skolodino to Daqing. This project supply 15 million tons of crude oil per year. In 2018, the double-track pipeline of Sino-Russian crude oil pipelines was also completed. Russia's oil exports to China through oil pipelines increased to 30 million tons per year.

China and Russia are also actively engaged in cooperation in the field of natural gas. On May 12, 2014, Chinese and Russian governments signed the Memorandum of Sino-Russian

⁹ BP Energy Outlook Country insight – China (2019) <https://www.bp.com/en/global/corporate/energy-economics/energy-outlook/country-and-regional-insights/china-insights.html>

Eastern Gas Natural Gas Cooperation Project. China National Petroleum Corporation and Gazprom Neft signed the Sino-Russian Eastern Gas Supply Contract 《中俄东线供气购销合同》 which supply natural gas to China through the Siberian Power pipeline built by Gazprom, with an annual gas supply of 38 billion cubic meters(Liu and Wang 2019)¹⁰.

1.3 Purpose of this study

Energy is an important foundation for the development of a country's industry. In recent years, with the rapid economic development of countries around the world, resources such as oil and gas have become an important part of competition between countries. With the development of economic globalization and the integration of regional economies, the energy crisis will not only affect a single country, but also will spread to all countries and regions in the world. Therefore, energy cooperation between countries has become an inevitable choice for national security purpose.

For China, this topic is even more important. Russia is a great power neighbor with the north China with the longest borderline. However, before the FCT was signed, Russia was once the country with the greatest threat to China's security. The current relationship between China and Russia is at a good stage because the interests of the two countries are relatively consistent, especially Russia's demand for China is growing. Many scholars

¹⁰ 刘清才,王迪(2019).新时代中俄关系的战略定位与发展[J].东北亚论坛, 28(06): 49-62, 124-125

believe that the current energy cooperation between China and Russia has made positive progress.

However, Russia has not completely abandoned its defense against China especially when saying of "China threat" till has a large market in Russia. In addition, the bilateral cooperation is lack of stability because China and Russia have different demands on energy cooperation. Some of Sino-Russia cooperation projects turn out to be a plan more than a practical project in landing. This gap between ideal and reality also reflects the great potential of energy cooperation. How to seek new developments and breakthroughs Based on this background, this paper selects the current status of Sino-Russian energy cooperation as the research topic.

2. Literature Review

Numerous studies have been conducted on Russia energy strategies and framing of the Russia energy diplomacy from various aspects. In the article "Russia: Oil and Politics",¹¹ Gidadhubli analyzed Russia's energy policy during the Putin period and the process of using oil exports as a weapon to benefit from interactions with European countries. It is believed that Russia has become a major player in the world's energy sector and has achieved its external goals through energy channels. Gustafson Thane¹² listed the industrialization process of Russia's oil industry after the collapse of the Soviet Union. He

¹¹ Gidadhubli, R. G (2003). "Russia: Oil and Politics." *Economic and Political Weekly* 38.21 (2003): 2025-2030.

¹² Gustafson, T. (2012). *Wheel of fortune*. 6th ed. Harvard University Press, pp.237-259.

argued that the Russian oil industry has problem of low efficiency and severe corruption. These problems make Russia's economy turns to be unsustainable if it only depends on the energy export. Kropatcheva¹³ discussed the impact of shale revolution on Russia's energy policy. It also discussed how the Russian politicians and elites react to such developments, so they end up with what policies to deal with the shale revolution. This article concluded that the shale revolution seemed to have weakened Russia's energy advantage.

Chinese scholar research on Russian energy policy is mainly based on the Russia's Asia-Pacific policy under the framework of global energy security. For example, Liu Qingcai.¹⁴ took the current international situation and international relations in the Asia-Pacific region as background to discuss Russia's Asia-Pacific energy strategy in the early 21st century as a great power in this region. The study also focus on the development and evolution of Russia's relations with major countries and international organizations for energy security. It is believed that under the context of international relations and Western sanctions, Russia's "resource nationalism" policy has become unsustainable. Promoting energy cooperation between Russia and Northeast Asian countries requires Russia to adopt a more inclusive and open energy policy. According to Liu Qian¹⁵, with the major changes in the global natural gas market due to the shale gas revolution, the Russian natural gas industry is facing with inevitable adjustments. The Russian natural gas industry will be more widely

¹³ Kropatcheva, Elena (2011). "Playing Both Ends Against the Middle: Russia's Geopolitical Energy Games with the EU and Ukraine." *Geopolitics* 16.3: 553-573

¹⁴ 刘清才. (2013). *Research on Russia's Asia-Pacific Policy in the Early 21st Century* 21世纪初俄罗斯亚太政策研究. Beijing: 社会科学文献出版社.

¹⁵ 刘乾 and任晓航, (2015). "俄罗斯天然气：内部管理体制改革与对外合作战略转型." *俄罗斯研究* 05: pp.40-74.

integrated into the global natural gas market system and their monopoly in the market will become smaller and smaller.

In terms of Sino-Russia energy cooperation, there are a number of academic researches analyzing China and the Russia significance of previous projects in cooperation and negotiation. Kanet and Sussex¹⁶ pointed out the importance of Northeast Asia in Russia's current and future energy strategy. Russia will gradually increase the oil and gas exports to promote multilateral cooperation among Northeast Asian countries and also for Russian enterprises. Russia will also promote the long-term sustainable and stable development of China-Russia-Japan-Korea energy cooperation relations. In Choi Hyunjin's article "Fueling Crisis or Cooperation? The Geopolitics of Energy Security in Northeast Asia"¹⁷. He analyzed Sino-Russian energy cooperation in the framework of geopolitics in Northeast Asia. He believed that China, Japan, and South Korea compete and cooperate on energy security. He made the suggestion the three countries should strengthen cooperation on the issue of energy cooperation with Russia. American scholar Richard Weitz analyzed the reasons for the signing of the historic natural gas contract between China and Russia in 2014 in the article "THE RUSSIA-CHINA GAS DEAL: Implications and Ramifications."¹⁸. Based on the analysis, he concluded that China and Russia still have a

¹⁶ Kanet, Roger E and Sussex Matthew (2015). *Russia, Eurasia and the New Geopolitics of Energy : Confrontation and Consolidation*. University of Miami, USA.

¹⁷ Choi, Hyun Jin (2009). "Fueling Crisis or Cooperation? The Geopolitics of Energy Security in Northeast Asia." *Asian Affairs: An American Review* 36.1: 3-28

¹⁸ Weitz, Richard (2014). "THE RUSSIA-CHINA GAS DEAL: Implications and Ramifications." *World Affairs* 177.3: 80-86

relatively large energy cooperation space. Peter Ferdinand analyzed the issue of Sino-Russian energy cooperation from the perspective of Sino-Russian relations in the article "Sunset, Sunrise: China and Russia Construct a New Relationship"¹⁹, with the argument that the biggest obstacle to this cooperation lies in the increasing gap, especially economic gap between China and Russia, and this obstacle resulted in a dilemma in Russia's cooperation with China. Fu and Zhang²⁰ analyzed Sino-Russian energy cooperation relation from the perspective of Russia structural power in the world structural system. They argued that, nowadays, Russia power has obvious imbalances in economy verses military development. In terms of the energy field, although Russia is important in the geopolitics of production systems, it is not a dominant force in the international energy market. Under a series of pressures such as falling oil prices, the U.S. shale gas revolution, and Western sanctions against Russia, Russia's structural power has been greatly weakened. Russia's willingness to cooperate with China is actually beyond China's willingness to cooperate with Russia. Sino-Russian energy cooperation is of great significance for China to expand energy cooperation with other Central Asian countries and accordingly to improve China's right of speak in the world's energy system. However, Wang²¹ studied the relation of Russia's perception of its status in the international system and Russia government

¹⁹ Ferdinand, Peter (2007). "Sunset, Sunrise: China and Russia Construct a New Relationship." *International Affairs* 83.5 (2007): 841-867

²⁰ 富景筠, 张中元(2016). "世界能源体系中俄罗斯的结构权力与中俄能源合作." *俄罗斯东欧中亚研究* 02: 50-62

²¹ 王铁军. (2015)"体系认知、政府权力与中俄能源合作——来自新古典现实主义的视角." *当代亚太* 02 : pp.111-129

willingness to cooperate with China from the perspective of neo realism. When Russia is satisfied with its international status, regardless of government power, its willingness to cooperate with China is not that strong. However, when Russia is dissatisfied with the international status and the government power is weak, even if it has a strong willingness to cooperate, China-Russia energy cooperation is difficult to achieve due to the obstruction in the industry itself. If government power increases at this time, its willingness to cooperate with China's energy will strengthen.

To sum up, these researches lay a solid foundation for this study that Russia's foreign policy has distinctive characteristics in energy, but its ability to dominate the international energy market is insufficient due to influence and sanctions from western world. The cooperation with Northeast Asian countries, especially China, turns out to be a win-win scenario for Russia. But there still many uncertainties in Sino-Russia energy cooperation.

3. Research Design

3.1 Research question

Many scholars believe that the current energy cooperation between China and Russia has made positive progress which shows good development momentum. However, the bilateral cooperation is lack of stability based on previous studies. Because China and Russia have different demands on energy cooperation, those projects between the two countries tend to have more intentions but fewer achievement in practice. But this also could reflects the great potential of energy cooperation between the two countries. Based on the background

and previous literatures, this paper selects the current status of Sino-Russian energy cooperation as the research topic attempt to answer the research question of what are the driving factors for existing energy cooperation projects? In order to analyze how to seek the breakthroughs to strengthen Sino-Russia energy cooperation, this paper will address the following two sub-research questions: Whether Sino-Russia energy cooperation is a reaction to Europe and US foreign polices? And How likely for Russia to replace the Middle East to be China's largest energy exporter.

3.2 Methodology

The analysis of this research can be based on the collation and analysis of collective literature. Therefore, the qualitative research method of literature analysis, induction and deduction and case study will be the basic research method to use in the process to complete this thesis. Main sources of this research are from academic articles, annual reports from international organizations, government announcement, and online news.

For the first research question, this paper will choose several representative cases of Sino-Russia energy cooperation after the FCT to 2017 and conduct a thorough analysis. For the second research question, the analysis will be based on a brief review of Russia energy diplomatic polices and problems in Chinese energy security problems. For the third research question, this paper will focus on the strength and challenges in Sino-Russia cooperation and compare with the patter of Chinese energy cooperation with Middle East.

Chapter II. Factors affecting Sino-Russia Energy Cooperation

Existing research has identified and analyzed various factors affecting energy cooperation from different perspectives for specific research objects. For example, in the research on the cooperation between the EU and their energy supplier, Bilgin Mert²² discussed the geopolitical relationship between the supplier countries as well as the incentives and obstacles come from energy supplier's capacity. Cobanli Onur²³ analyzed the production capacity of Central Asia, the strategic interaction between the West and China, the political interaction between countries, the pipeline cooperation between China and Central Asia, and the economic comparison of different lines when studying the cooperation between Europe and Central Asia. In studying the credible commitment problem in Eurasian energy transit, Stulberg Adam N²⁴ analyzed the influence of factors such as political interests, economic interests, and transparency of national regulatory agencies on pipeline cooperation. When Chinese scholars²⁵ analyze the energy cooperation between China and other countries, they mainly consider the impact of economic foundation, political interests, and national development strategy on energy cooperation policies.

²² Bilgin M. (2009). Geopolitics of European natural gas demand: Supplies from Russia, Caspian and the Middle East, *Energy Policy*: pp.4482-4492

²³ Cobanli O.(2014). Central Asian gas in Eurasian power game. *Energy Policy*: pp.348-370

²⁴ Stulberg Adam N. (2012) Strategic bargaining and pipeline politics: Confronting the credible commitment problem in Eurasian energy transit, *Review of International Political Economy*, 19:5, pp.808-836, DOI: 10.1080/09692290.2011.603662

²⁵ 方婷婷 (2012) 俄罗斯对外能源战略和中俄能源博弈东北亚论坛 *Northeast Asia Forum*, Issue 03, pp.36-43

Accordingly, this study attempted to generate these affecting factors into four categories which are factors in: Domestic Markets, International Markets and factors for: National Security and International Relations.

Table 1. Analytical framework

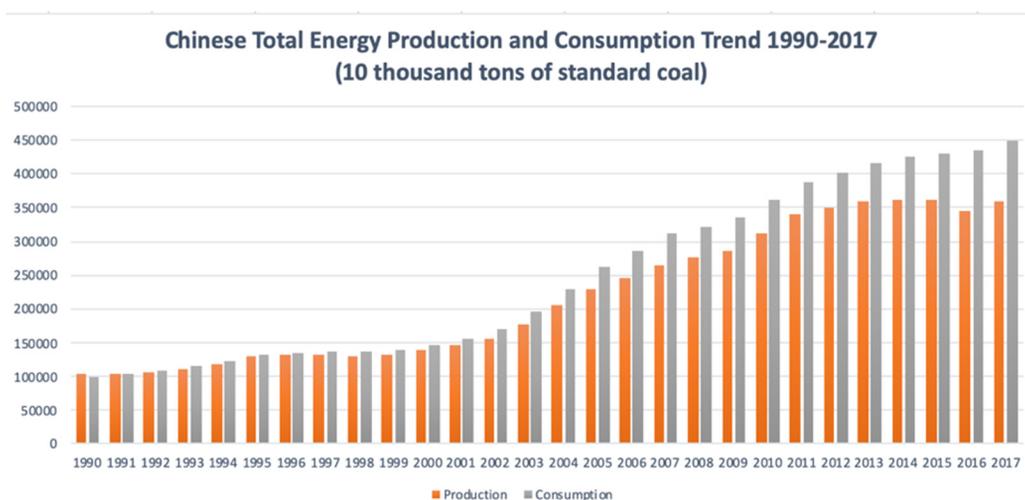
	<i>Domestically</i>	<i>Internationally</i>
<i>Energy Market</i>	1. Domestic Market	3. International Market
<i>Politics</i>	2. National Security	4. Interantional Relations

1. Domestic Market Factors

For countries where energy consumption is highly dependent on imports, domestic supply and demand is a determine factor for the energy cooperation with foreign countries. When the domestic energy supplies and demands are under tension, a relatively stable energy supply at an acceptable price obtain from energy cooperation can alleviate the contradiction between supply and demand. The tighter the domestic situation is, the greater the pressure there is for energy consuming countries to seek international cooperation to ensure their energy supply. But energy cooperation initiative is believed to have high expected benefits for the certain countries under supply and demand tension. Since the 1980s, China's economy has begun to develop, with GDP ranging from 458.8 billion yuan in 1980 to 82.08 trillion yuan in 2017 which increased by more than 200 times. Such rapid economic growth brings along the dramatic increase in energy demand, which has led to an increasing pressure on domestic energy supply. This is reflected in the fact that the gap between

China's total energy production and consumption has increased year by year. Refer to the Figure 1 below, China's total energy consumption in 1990 was 0.987 billion tons of standard coal (the total production was 1.039 billion tons of standard coal). By 2017, it expanded to 4.49 billion tons of standard coal (the total production was 3.59 billion tons of Standard coal)²⁶. During the past 30 years, China's total energy consumption has quadrupled, while production has only increased by three times.

Figure 2. Chinese Energy Production and Consumption Trend from 1990 to2017



Source from: BP Statistical Review of World Energy 2018

In the Asia-Pacific energy market, not only does China's economic growth result in supply and demand issues, the changes in Japan's energy structure have also caused

²⁶ 中国统计年鉴 2017 数据统计 <http://www.stats.gov.cn/tjsj/ndsj/2018/indexch.htm>

changes in domestic supply and demand and additionally make Japan's participation in the Russian gas pipeline project more feasible. For Japanese case, it mainly due to the reduction in nuclear energy available to Japan after the Fukushima nuclear power plant leak, so natural gas for power generation is more in need to replace nuclear power²⁷

The level of domestic energy technology can also influence the country's rights in world energy cooperation and its status in world rank. When the country has similar energy technologies, it means that the country hopes to achieve more economical applications of the technology they have through international cooperation, or to obtain higher level technology at a reasonable price. Therefore, the higher the domestic technology level in related fields, the more bargaining power they have in energy cooperation. The negotiate process for Tianwan Nuclear Power Plant, for example, can demonstrate the importance of technology improvement. Started from 2000, China and Russia agreed on the construction of the 1st set (phase 1) including 2 units (Tianwan-1 and Tianwan-2) of power plants²⁸. Followed by May 2006, Tianwan-1 was connected to grid and officially begin to operate that year. Before long, Tianwan-2 started operating in 2007. The investment cost of the 1st set of the Tianwan nuclear power plants is less than 1,600 US dollars per kilowatt-hour and both reactors generate about 1050 MW. Russian Atom Story Export and Chinese Jiangsu Nuclear Power Corporation signed the contract for the construction of 2nd set (phase 2) of

²⁷ Vivoda, V. (2014). *Energy Security in Japan : Challenges After Fukushima*. Surrey, England: Routledge. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=679691&site=ehost-live> pp.63-70

²⁸ Reed, C. (2010). Russia to Begin Tianwan Nuclear Power Reactors Construction Next Year. Nuclearstreet.com. Available at: http://nuclearstreet.com/nuclear_power_industry_news/b/nuclear_power_news/archive/2010/09/27/Russia-to-Begin-Tianwan-Nuclear-Power-Reactors-Construction-Next-Year-092703#.XfnVXS2B1QI

nuclear power plants in March 2010. However, when it went into the 2nd set, the only improvement related to core technology in the nuclear reactor provided by Russia, resulted in a doubled cost in budget²⁹. The technology of the same level in China with independent property rights was more economical. After negotiations, the 2nd set plants would cost above US\$3.6 bn, according to report, China should contribute nearly half of the budget which about 1.8 US dollars.

2. National Security Factors

The government influence on the implementation of energy cooperation reflects the country's full requirements for strategic resources. Energy has already become the basic material resource for the development of modern industrialized society, and it is a strategic resource related to national development and social stability. Because of the scarcity and non-renewability of fossil energy as well as the uneven distribution, governments in each country should understand, acquire and manage their own energy resources from a strategic level contribute to national security and national interests. In the energy transnational cooperation projects, when the national assessment sectors believe that national security and national interest exist certain risks, the government should take actions to intervene into it.

Governments can intervene directly or indirectly to maintain the security goals of energy resources. Direct intervention is reflected in administrative intervention. Eastern Siberia–Pacific Ocean (EXPO) oil pipeline can be the example reflect government's direct

²⁹“Contractual Details Finalised for Tianwan Phase II,” (2011) World Nuclear News, www.world-nuclear-news.org

intervention into energy projects³⁰. Yukos, the Russian oil company proposed the original version of the project involving the pipeline to build destined to Daqing, northern part of China. This proposal also mentioned the pipeline would start from Angarsk where Yukos operated the refinery. The contract was signed in March 2003 but changed to Japanese proposal Nakhodka. Russian Ministry of Natural Resources rejects construction plan for ecological reasons.

In this case, China's position is largely defined by domestic policy related to the rising consumption and energy inefficiency. The policy also targeting to become world's top oil importer showing its dynamic domestic economic growth. Similarly, Japan's motivation to compete for this project is also driven from its domestic policy related to energy insecurity and worsening relations with China. It is also under the governmental anticipation to be a leading role in East Asia through establishing a cooperation with Russia. Whereas from the exporter side, Russia interest is dominated by its position as the world's second largest oil producer in short to medium term³¹.

The way of indirect intervention is to control and manipulate into the market through the formulation of relevant policies to be beneficial for domestic companies. Such as the case that Russian policies to the China and Russia joint venture company Oriental Energy Company(东方能源公司) limited the company's competitiveness in local market. Two oil

³⁰ Gulakova, O., Ershov, Y., Ibragimov, N. and Novikova, T. (2018). Evaluation of the Public Efficiency of an Infrastructure Project: a Case Study of the Eastern Siberia–Pacific Ocean-2 Oil Pipeline. *Regional Research of Russia*, 8(2), pp.193-203.

³¹ Giragosian, R. (2006). Sino-Japanese competition for Russia's far east oil pipeline project. [online] *Iags.org*. Available at: <http://www.iags.org/n0119063.htm>.

fields under this company suffered losses in exploration due to the impact of the Russian tax system.

3. International Market Factors

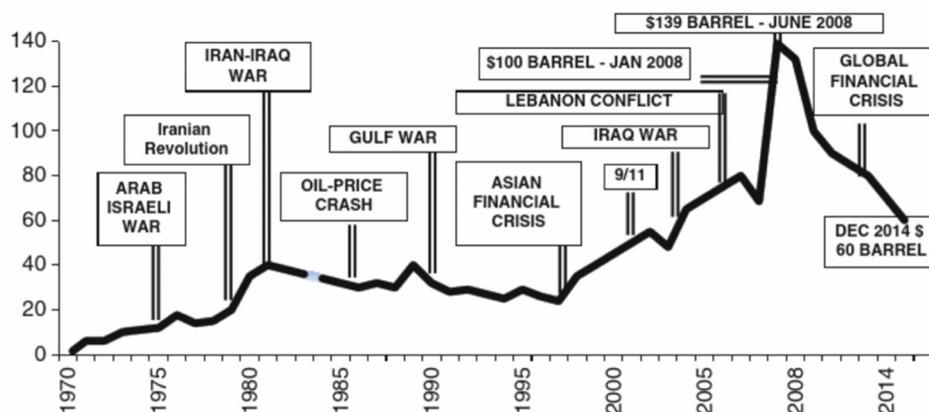
From an international perspective, the international market factors include the 1> international energy prices, 2> influence from international originations and innovation in energy cooperation model, and 3> innovations in energy technology. Changes in these factors will influence the economic conditions for energy cooperation and have an impact on country's energy cooperation behavior.

Firstly, global economic environment is correlated with international oil price. In Ratti and Vespignani's study³², they examined and confirmed the relationships between oil prices, global interest rate, global monetary aggregates and global industrial production. Based on the factor-augmented error correction model they constructed, their study concluded with the following statements: 1) at global level, money, industrial production and prices are cointegrated; 2) positive innovation in global oil price is connected with global interest rate tightening; 3) positive innovation in global money, price level and industrial production is connected with an increase in oil prices.

³² Ratti, R. and Vespignani, J. (2016). Oil prices and global factor macroeconomic variables. *Energy Economics*, 59, pp.198-212.

Although the factors mentioned the previous studies contribute to the fluctuation of oil price, due to the uncertainties in world economy, it is difficult to predict the long-term trend of oil prices.

Figure 3. Crude Oil Price and international issues 1970-2014 (US\$ per Barrel)



Source: BP (2014)

As a country that energy as the pillar industry, Russia is committed to obtaining the right for crude oil price maker³³. Frequent cooperation with China is widely regarded as an important effort for Russia to compete for the role in deciding crude oil price because of Chinese wide demand market. In order to do so, the key for Russia is to set a strategic crude oil supply contract with China to guarantee their continuous purchase and supply of crude oil within the agreed time.

³³ 许勤华 (2018). 俄罗斯在国际能源格局中的地位变化及未来趋势. 欧亚经济, 2018 (03) :12-16

OPEC was established in September 1960. It is an international organization established by oil producers in Asia, Africa, and Latin America to coordinate the oil policies of their member states and oppose the development and control of Western oil monopoly capital³⁴. There are 14 OPEC member states, including Iraq, Iran, Kuwait, Saudi Arabia, Venezuela, Algeria, Ecuador, Gabon, Indonesia, Libya, Nigeria, Qatar, United Arab Emirates, Tunisia, Congo. However, from the current market situation, OPEC's importance role in the oil market is gradually weakening, and the way dividing oil producing countries into "OPEC" and "non-OPEC" is no longer that feasible especially to analyze resource contribution. OPEC countries, the US and non-OPEC countries like Russia, Kazakhstan and Azerbaijan are three main categories of contributors for global cured oil resources.

In terms of production capacity, the three major oil producers in the United States, Russia, and Saudi Arabia produced 36 million barrels per day of crude oil and condensate in 2017, accounting for 39% of the total global output. Saudi Arabia and Russia have been the core member of a three-year oil producers alliance known as OPEC Plus. The alliance currently includes 11 OPEC members and 10 non-OPEC countries, and its purpose is to support oil prices by reducing production. The constancy of OPEC plus and non-OPEC agreements is the very important factor affecting the international crude oil market.

³⁴ https://www.opec.org/opec_web/en/

Table 2. Details of oil production share from non-OPEC producers.

Production (mbd)	Category I Above 2	Category II 0.3–1	Category III 0.1–0.3
<i>Share of</i>			
Non-OPEC			
Reserves	About 70 %	Nearly 25 %	About 5 %
Production	About 60 %	Above 20 %	Above 5 %
Countries	Canada, UK, Norway, USA, Mexico, China, Russia, Brazil	India, Oman, Egypt, Argentine, Angola, Malaysia, Syria, Colombia, Australia, Vietnam, Kazakhstan, Yemen, Gabon	Congo, Denmark, Vietnam, Peru, Italy, Azerbaijan, Brunei, Romania, Trinidad and Tobago, Sudan(s), Turkmenistan, Cameroon, Chad

*Sorce: Ramady and Mahdi (2016)*³⁵

In terms of innovation in oil explore technology, the most significant case is the US shale revolution. Since OPEC joined forces with Russia and other major oil-producing countries to reduce oil production, international oil prices have continued to rise up and stimulate the US shale oil innovation. The United States has strong growth in oil production and will become an exporter from an oil importer. The IEA³⁶ estimates that U.S. crude oil production will continue to climb in the next four to five years, with the peak production period after 2020.

The fact that U.S. shale oil production and exports have been rising, and net imports of crude oil declining would change the global oil supply and demand pattern³⁷. In the year of 2017, the average daily crude oil extraction was 9.3 million barrels, an increase of 0.5

³⁵ Ramady, M. and Mahdi, W. (2016). OPEC IN A SHALE OIL WORLD: Where to Next?. SPRINGER INTERNATIONAL PU.

³⁶ IEA report (2018) Oil 2018 Analysis and forecasts to 2023.

³⁷ Ansari, D. (2017). OPEC, Saudi Arabia, and the shale revolution: Insights from equilibrium modelling and oil politics. Energy Policy, 111, pp.166-178.

million barrels. Crude oil exports from US ports increased from 0.1 million barrels per day in 2013 to 1.53 million barrels in 2017. The export destinations are mainly Canada, China, the United Kingdom, the Netherlands, India, and even including the Middle East, which is a traditional oil-producing region. In the Asian market, US has also seized a lot of shares originally owned by OPEC and Russia. China is the second largest oil export destination of the US, with an average daily export volume of 220,000 barrels, accounting for 20% of total US exports. It is also predicted that the US will become a net oil exporter in 2029.

4. International Relations Factors

The international relations factors are the factors that influence energy cooperation through the role of government. Including the impact on conflicts between related countries or regions and the impact of inter-governmental cooperation mechanisms. From the late 20th century, the influence of geopolitical factors on global energy and energy markets has become increasingly apparent. Because China and Russia are geographically close to each other, energy cooperation undoubtedly enjoys the geographical advantages and both countries regard each other as important energy partners. At the same time, regard energy as the bridge to promote cooperation between China and Russia can also potentially contribute to the establishment of an energy security system in East Asia.

The following chapters will focus more on international relation factors and to answer the research second question “whether the aim of China and Russia deepen their energy cooperation is to check Western regional influence”

Chapter III. China and Russia get along better in energy cooperation to against Western World

1. Russia Energy Diplomacy

Energy diplomacy is a vital part of Russia's overall diplomatic strategy, it is important for Russia to achieve its national foreign strategic goals. Although energy diplomacy contains economic behavior and has certain attribution to the market, the more significant target is to realize the country's diplomatic-security strategy through energy diplomacy. For Russia, therefore, the core of energy diplomacy lies in the diplomatic attributes rather than economics³⁸. This feature is particularly evident in Russia's foreign energy policy: for ages, Russia has provided energy products to the CIS countries at a preferential price lower than the price in global energy market. The reason for that is to maintain Russia's leading position geopolitically in the post-Soviet era. Similarly, Russia regard the energy cooperation as an essential part of their diplomatic policy towards China which will contribute for consolidating their strategic partnership.

1.1 Russia ideology for energy diplomacy: a political idea

Russia diplomatic strategic vision is the cornerstone and guiding principle of all Russian foreign related policy, including energy policy. The evolution of the strategic vision directly reflects Russia's perception of their role and function in the world. Since the

³⁸ German, Tracey (2016). "Russia, Eurasia and the New Geopolitics of Energy: Confrontation and Consolidation. Edited by Matthew Sussex and Roger E. Kanet." *International Affairs* 92.5: 1278-279

dissolution of the Soviet Union, the main concept of Russia's diplomatic strategic has gradually undergone a process of changing from a comprehensive "pro-Western" idealism in early years to a Pragmatism with "Eurasian" color. Especially since 2012 when Putin re-elected as Russian President, Russia foreign policy has become more and more obvious to maintain Russia voice and position in the international system so that they can respond to security challenges from the West. Also, this policy target at strengthen cooperation with countries in the Asia-Pacific region. This cognitive shift can be regarded as the fundamental of Russia's energy diplomacy decisions.

Firstly, Russia clearly define in their foreign policy that maintaining its status and prestige within international system as the basic goal. In the two editions of the *俄联邦对外政治构想* *Concept of the Foreign Policy of the Russian Federation*³⁹ issued by the Russian Ministry of Foreign Affairs in 2012 and 2016, this goal was listed as an important task as the “fundamental clause” of its foreign policy. In the 2012 edition, the Putin government clearly stated that Russia’s focus in the current international system is to “improve Russia’s prestige in the international community and build Russia into an influential and competitive force in the contemporary world.”⁴⁰ This is considered as the concentrated expression of Putin’s “Great Power Politics” philosophy in the diplomatic policy. Since Putin first served as the Russian president in 2000, reviving Russia's status as a great power and reinforce

³⁹ 2016 年俄罗斯联邦对外政策构想(2016) Available at:http://cn.mid.ru/foreign_policy/founding_document/302.

⁴⁰ 俄罗斯制定新的外交政策构想. (2012). Available at: <http://tsrus.cn/guojiji/2012/12/27/19921.html>

Russia's international influence have always been the top mission of the Russian government. Energy, as the tool for Russia to carry out foreign cooperation, undoubtedly plays an extremely important role under this concept.

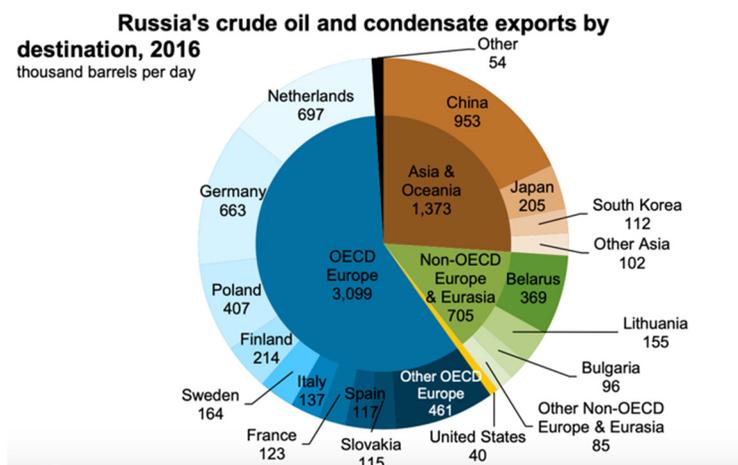
Secondly, related to the theory of Neo-Eurasianism, Russia is striving to establish a leading role position in Asia-Pacific aiming to strengthen cooperation with other countries in this region. In 2012, the Putin government clearly stated that the center of world politics and economy will continue to shift to the Asia-Pacific region. Russia should commit to participating in the integration process in the Asia-Pacific region and thus taking advantage of the opportunities. In 2016, Russia further clarified its status as an Asia-Pacific country. The fundamental reason for Russia emphasis on its position in the Asia-Pacific region is because Russia itself belong to this fast-growing geopolitical region. In the context of the deterioration of relations with the West, Russia's recognition as a member of the Asia-Pacific region is important to deal with external security challenges that it may encounter, and it is also a necessary option for expanding Russian diplomatic opportunities.

In addition, the evolution of Russia's external energy strategy is also shaping Russia's role in this field. From the perspective of Russian goal for energy strategy in the 21st century, the strategy focus region constantly switching to Asia-Pacific. In the "*Draft Energy Strategy of the Russian Federation until 2035*"(2035年前俄罗斯能源战略草案)⁴¹, the Russian government believes that the energy consumption in Europe will have much space

⁴¹ 国家能源局(2014). Available at: http://www.nea.gov.cn/2014-02/19/c_133126038.htm

to grow in the future. Thus, the focus of its energy cooperation should shift to the Asia-Pacific region, increasing the proportion of petroleum products exports from 12% to 23% to this region. The proportion of natural gas products exports increased from 6% to 31%. At the same time, it will carry out the dialogue mechanisms with energy partners in Asia-Pacific countries, especially China in order to build a national image as a “reliable supplier” in the energy market to show Asia Pacific region and the world. Compared with the previous energy strategy concept, Russia's strategic decision has made its own role orientation change from the previous passive participants to active participants. The transformation of this role orientation has promoted Russia to be more rational and practical in terms of economic development and energy supply in the Asia-Pacific region, especially China.

Figure 4. Asia is the second largest export destination of Russia crude oil and condensate in 2016



Source: EIA Country Analysis Brief: Russia 2017⁴²

⁴² EIA Country Analysis Brief: Russia 2017

In general, the evolution of Russia's diplomatic strategy and the energy strategy has shaped Russian diplomatic vision for energy diplomacy. This cognition can be concluded as three elements after Putin's third Russian presidency in 2012, which are the status in the international system, the Eurasian tendency in the diplomatic strategy, and the energy field role identity (as a reliable supplier in the Asia Pacific region). These three elements, as fundamental factors, interact with domestic politics and international politics, would also influence Russian government's decision-making for energy diplomacy.

1.2 Changes in Russian-Western Energy Relations: before and after the Ukrainian crisis

Due to historical reasons, the focus of Russia's national economy development and energy cooperation partner is mainly on the European countries, and its focus on Asian part is comparatively weak with lagged developed infrastructure based. The focus of foreign economic cooperation is also mainly in Europe and the Western world. In fact, Russia really put energy cooperation with the East in an important position only after Putin came to power in the 21st century. It can be said that cooperation started late and the basic conditions were poor, but the potential for cooperation was a prominent feature of Russia's opening up of the eastern energy market. Putin attaches great importance to the Asia-Pacific energy market. In addition to expanding the share of Russian oil and natural gas in this emerging market in a timely manner, Putin also wants to use this to accelerate the development of Russia's eastern region and allow Eastern Siberia and the Far East to become the "fast train" of Asia-Pacific economic development that energy cooperation as an opportunity to change

the region's long-term slow economic development after the collapse of the Soviet Union, and to promote its overall economic development.

From 2006 to 2014, three natural gas disputes occurred between Russia and Ukraine, leading to the disruption of natural gas supply in Europe. In 2013, the Ukrainian crisis began when President Viktor Yanukovich rejected a deal for greater integration with the European Union. After the crisis in Ukraine, the United States and the European Union successively introduced sanctions to restrict or prohibit capital and technological investment in Russian oil and gas, which affected the development and investment of natural gas in Russia's Eastern Siberia, the Far East, and the Arctic. Since then, Europe has accelerated their pace of building LNG import terminals in Poland, Lithuania and other Central and Eastern European regions (Bordof 2014)⁴³. The European Commission has increased investment in cross-border natural gas pipeline projects and increased the backflow capability of pipeline connections and the ability to respond to disruption risks. The overall deterioration of Russian-Western relations caused by the Ukrainian crisis has forced Russia to shift its role in foreign policy from West-oriented balance between East and West to East orientated Stern (2014)⁴⁴. The strategy that strengthening energy cooperation with China can not only consolidate Russia's strategic environment, but also

⁴³ Jason Bordoff, (2014) American Gas to the Rescue? The Impact of US LNG Exports on European Security and Russian Foreign Policy, Columbia SIPA: Center on Global Energy Policy. p. 42.

⁴⁴ Jonathan Stern(2014), Russian Response to Commercial Change in European Gas Markets, in James Henderson and Simon Pirani (Edited), The Russian Gas Matrix: How Markets are Driving Change, Oxford University Press, p. 59.

improve the energy economy that is facing shocks due to its misconduct with the Western world.

After influence of Ukrainian crisis, Russia pays more and more attention in the market in East Asia. Firstly, changes in the European energy demand structure have promoted the rationalization of Russian energy diplomacy. The stable demand of the European market and the developed pipeline system in the European region have made energy cooperation as the main source of energy revenue for the Russian government for long time. However, result from the slowdown of European economic development and the saturation of energy demand in recent years, the growth rate of European energy demand for Russia has begun to show a significant downward trend. This undoubtedly poses a challenge to the security of Russian energy exports. Therefore, in the strategic plan of the Russian Ministry of Energy, Russia's energy exports to East Asia, especially China, are increasing. By 2035, Russia plans to sell 32% of oil exports and 31% of natural gas exports to Asia, which will account for 28% of total energy exports to Russia⁴⁵.

Moreover, the approaching US-Europe energy relationship has also challenged Russia's role as a major provider of energy in Europe. With the success of the US shale gas revolution and the relaxation of energy export controls, many European energy companies have signed shale gas purchase and sales contracts with US energy companies. Although

⁴⁵ "Russia: Russia Plans to Increase LNG Output to 120 Mln Tons by 2035."(2019) Asia News Monitor [Bangkok] 2019: Asia News Monitor, 2019.

due to geography and cost, it is difficult for the US LNG to affect the European market on a large scale in the short term, but Europe's efforts to diversify energy import channels will undoubtedly have an adverse impact on Russia's energy security (Lin and Li, 2015)⁴⁶. So, Russia needs to strengthen its relationship with China Energy cooperation to highlight its role as a reliable energy provider. On this basis, Russia also hopes to further expand its energy market in East Asia through cooperation with China and consolidate Russia's status as a superpower in the world's energy sector.

1.3 Russia's perception of Northeast Asia's energy structure

Compared with European countries, the energy diplomacy environment in Northeast Asia is more complicated. First of all, Northeast Asia lacks a multilateral framework that can coordinate national energy policies like the EU, making energy diplomacy in this region mainly at the bilateral level (Pami 2014)⁴⁷. Therefore, countries in Northeast Asia, including Russia and China, hope to use their geopolitical advantages to gain a favorable position in energy negotiations. At the beginning of the 21st century, Russia had hoped to benefit more from energy diplomacy by strengthening the competition between China, Japan and South Korea for Russian energy.

⁴⁶ Lin, Boqiang, and Jianglong Li (2015) "The Spillover Effects across Natural Gas and Oil Markets: Based on the VEC-MGARCH Framework." *Applied Energy* 155 :229-41.

⁴⁷ Aalto, Pami.(2014) "Energy Market Integration and Regional Institutions in East Asia." *Energy Policy* 74.C: 91-100.

The first fact in Northeast market is that Japan's domestic energy demand is not stable. Japan's oil consumption has fallen by 22% since 2000 (Gulakova 2014)⁴⁸. Although its consumption of natural gas has been increasing, Russia accounts for only about 10% of Japan's imports of LNG⁴⁹. Different from the case of China and Russia cooperation, the territorial dispute between Russia and Japan in the South Kuril Islands is still a major obstacle to the further development of energy cooperation between Russia and Japan⁵⁰. In the absence of a settlement of territorial disputes, it is difficult for Russia to make a major breakthrough in its energy cooperation with Japan.

Secondly, although South Korea's energy demand has grown significantly, geopolitical factors have seriously affected South Korea's energy needs for Russia. Russia accounts for only 4% of South Korea's crude oil imports and 5% of LNG imports in 2010⁵¹. The unstable situation on the peninsula caused by the North Korean nuclear issue has made it difficult for Russia-ROK energy cooperation to be launched on a large scale. Although Russia has proposed to build natural gas pipelines through the Russian-North Korean-Korean, the realization of this proposal is still far away from anticipation due to the need of long-term improvement of the security environment on the Korean Peninsula.

⁴⁸ O. I. Gulakova. (2014) "ANALYSIS, EVALUATION STRUCTURE AND SIMULATION OF OIL CONSUMPTION IN JAPAN FROM THE POSITION OF INTERESTS OF RUSSIA." *Nauka Krasnoar'sk* 2: 101-18.

⁴⁹ IEA 2015. *International energy data and analysis: Japan*

⁵⁰ "CAN JAPAN TAKE THE SOUTH KURIL ISLANDS FROM RUSSIA?" 2018 *Defense & Security* 49 (2008): *Defense & Security*, Issue 49.

⁵¹ Ahn, Se Hyun (2010). "Framing Energy Security Between Russia and South Korea?: Progress, Problems, and Prospects." *Asian Survey* 50.3 591-614.

2. The Evolution and Trend of China's Energy Policy

As a large energy producing and consuming country, maintaining sustainable development of energy, economy and environment is a major strategic issue facing China. In the early years of the New China, in order to rebuild the domestic economy and resist Western sanctions, China implemented its own self-sufficient energy development strategy and initially established a relatively complete energy industry system. After the reform and opening up, in order to increasing domestic energy demand, China has built an energy structure based on coal and supplemented by petroleum and electricity based on national conditions. It has also resolved the contradiction between the domestic oil supply and demand gap through international energy trade and maintained the national economy. However, due to extensive economic growth and other reasons, China's energy efficiency has been a low for a long time. Ensuring energy supply and improving the ecological environment have become bottlenecks that must be resolved for China's rapid economic development. At the meeting of leaders of energy security and climate change in a major economic country in Hokkaido, Japan 2008, Hu Jintao pointed out "China has determined the construction of an ecological civilization as a strategic task, emphasizing the need to adhere to the basic national policy of resource conservation and environmental protection, and strive to form Industrial structure, growth mode, and consumption pattern that save energy resources and protect the ecological environment."⁵²

⁵² 胡锦涛 (2008). 在经济大国能源安全和气候变化领导人会议上的讲话 http://news.xinhuanet.com/news-center/2008-07/10/content_8519929.htm.

2.1 Chinese energy cooperation strategies

The structural changes in the global energy supply and demand market are becoming increasingly apparent, and the geopolitical situation of energy is further highlighted. The technological innovation of the energy industry has led to the rapid development of clean energy, and the correlation between energy security and the global economy, climate, and climate security has become increasingly deeper. In the next five to ten years, China will enter the middle and late stages of industrialization. Energy security is one of the key factors for ensuring peaceful future development. Against the background of a major energy structure adjustment, China is facing the problems of excessive foreign dependence and excessive import concentration. It also faces multiple challenges such as increased geopolitical risks, increased risks in energy transportation channels, and energy financial capacity building. Accordingly, Chinese energy cooperation strategy should be based on following the three concepts⁵³:

Firstly, the strategy should be implementable to promote China's status as an energy powerhouse and unify the maintenance of energy geo-security and the balanced energy system. As a fast-growing rising power, China needs to contribute for the regional security and stability through a series of geopolitical strategies. Together with international

⁵³ 人民网(2019): <http://world.people.com.cn/n1/2018/0911/c1002-30284830.htm>

community, they should work together to create a good environment for the affordability, sustainability and availability of energy. While significantly contributing to global economic growth, China is also the world's largest energy consumer. China has played an important role in the debate on reducing geopolitical emergencies, transport line instability, and environmental and climate risks. China is a major member of the developing world, with strong political, economic, and diplomatic influence, and can contribute to global energy security (Wu 2007)⁵⁴. In the new era, China is becoming more active on the international stage and participating in more and more global affairs. In the process of promoting the Belt and Road initiative, China's ability to participate in the governance of the global energy system has been improved, laying a good foundation for maintaining the balance of the global energy system (Liu and Liang, 2015)⁵⁵.

There is no doubt that the stable foundation of the energy security system highly depends on the relations between the great powers, and in particular the construction of new-type energy relations between China and the US. In fact, the energy relationship between China and the US is repositioning. With the focus of global energy production shifting to North America, US may become the world's largest energy producer in the future (Gold 2014)⁵⁶. At the same time, based on the remarkable growth rate of China's energy consumption, China will continue to become the world's major energy demander. Theoretically, it can be

⁵⁴ WU Lei. (2007): "关于中国-中东能源关系发展的若干思考 - On the Development of Sino-Middle East Energy Relations." *阿拉伯世界研究*: 29-35

⁵⁵ Liu Jianguo, and Liang Qi (2015) . "“一带一路”能源合作问题研究." *中国能源* 37.07 (2015): 17-20

⁵⁶ Gold Russell (2014). "U.S. Energy Boom Has Room to Run." *Wall Street Journal*, New York,: B.1

assumed that the supply and demand needs can actively promote Sino-US energy cooperation, solve the problem caused by the mismatch between the rapid economic development of the Asia-Pacific region and the lack of energy reserves, ease the tension of geo-security, resolve regional geo-instability factors, and maintain the stability in entire Asia-Pacific region. US energy demand will fall by 2020 and their production will increase. At the same time China's energy demand will keep increase, and energy production will decrease. Under such circumstances, China-US cooperation in the energy field is anticipated to shift from competitors to mutually beneficial partners (Yu 2019)⁵⁷. Yu also analyzed that China can continue to use the Sino-US trade negotiations as an opportunity to expand Sino-US energy trade relations to promote energy benefits and sustainable development for both sides. US crude oil production has reached the highest level in years since shale oil extraction, and the United States is already the world's largest natural gas producer. In 2017, the US share of global natural gas production was approximately 21%⁵⁸. In addition to reforming domestic energy policies and markets, the US government has also brought new changes to the global energy geopolitical system. Under President Trump Administration, it is actually the first time in decades that US set a goal as 'energy dominance' where US should be a leading producer, consumer, and innovator (Eule 2018)⁵⁹.

⁵⁷ 于宏源 Yu Hongyuan 2019.地缘安全中的体系均衡:新时期中国能源安全的挑战与应对.西亚非洲, (04):143-160.

⁵⁸ BP Statistical Review of World Energy 2018, http://www.bp.com/liveassets/bp_internet/china/bpchina_chinese/STAGING/local_assets/downloads_pdfs

⁵⁹ Eule, S. (2018). *Energy a Key Part of New National Security Strategy*. [online] Global Energy Institute. Available at: <https://www.globalenergyinstitute.org/energy-key-part-new-national-security-strategy>

China and the United States can cooperate in the fields of energy, economy and trade to promote the stability and development of the global energy market. The Middle East is currently the top priority for China's energy imports. China and the United States should have common interests in the region, including maintaining the safety and stability of oil production and transportation, guiding and stabilizing oil prices through cooperation, and ensuring the orderly operation of the international energy market.

China is experiencing a rapid growth in energy consumption, so China needs to strengthen its ability to maintain and participate involving balance the global energy system. The international energy system is an economic framework that takes the market as the basic platform and the contractual spirit as the basic principle. In this framework, political actors can distort the international energy market to some extent by adopting economic or trade measures under the pretext of political or diplomatic reasons, but they cannot take coercive measures against other political actors that violate their sovereignty. Short-term fluctuations in energy prices and supply may trigger short-term economic lose and imbalances in the energy system (Ju 2017)⁶⁰. However, from a long-term perspective, the rebound of other political or economic actors in the system may be offset by their response measures to reduce their own losses, and it will eventually promote the rebalancing of the energy system. The results of the two oil crises confirm this.

⁶⁰ Ju, Keyi, Bin Su, Dequn Zhou, and Junmin Wu (2017). "Does Energy-price Regulation Benefit China's Economy and Environment? Evidence from Energy-price Distortions." *Energy Policy* 105:108-19. Web.

2.2 Challenges to Chinese Energy Security

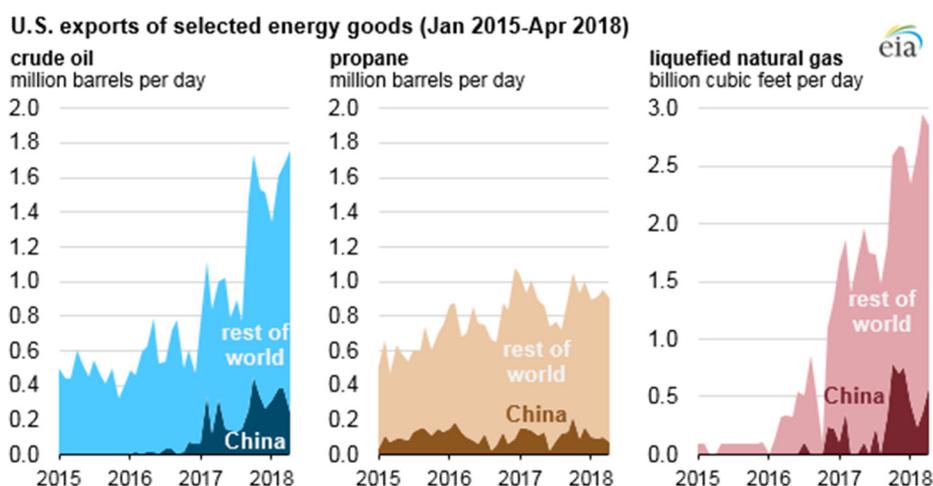
For China, the main to China's energy system are as the following: First of all, China's external dependence on energy security is too high. Since the 21st century, the energy demand of emerging economies such as China has been rising. From the perspective of China's energy consumption composition, raw coal still occupies a major position in primary energy production and consumption, but the proportion of oil and gas consumption has risen faster than the proportion of production. As a result, China's oil and gas consumption and production gap has continued to increase. China has been an oil importer since 1993. In recent years, with the increase in the demand for oil from national production and living, consumption increased by 1.65 times and imports increased by 5 times between 2000 and 2017. In 2017, China's oil import dependence was close to 70%, and the net import volume of natural gas was 40 times that of 2007, with an average annual growth rate of 59%⁶¹.

The Sino-US trade war has a negative impact on the economies of the two countries, which is also reflected in the energy cooperation between the two countries. But overall the impact is small. This can be reflected from the Figure 5 that all sorts of energy import from US kept as a high amount in 2018. On May 19, 2018, China and the United States issued a joint statement on bilateral economic and trade negotiations in Washington, and the two sides agreed to meaningfully increase US exports of agricultural products and energy. Taking oil and gas trade as a bridge to ease trade friction between the two countries is of

⁶¹ 国家能源局 national energy administration

great strategic significance⁶². However, with the start of the Sino-U.S. Trade war, oil and gas trade negotiations have also stalled. If the United States persists in fighting a trade war with the goal of curbing and blocking China's development and touching the core interests of China's development, it will not be possible for China-US oil and gas cooperation to develop in a big way, and the already negotiated cooperation will be abolished.

Figure 5 . US energy exports to China in different sort of resources



Source from EIA 2018⁶³

In May 2017, the US government announced its withdrawal from the Iran nuclear agreement and resumed sanctions on Iran. Relevant media said that the United States is pushing countries around the world to reduce the amount of crude oil they import from Iran to zero before November 4, 2018, or they will face severe U.S. sanctions. In 2017, China

⁶² 李富兵,白羽,王或嫣,王建忠 2018.中美贸易战对我国油气行业的影响分析[J].中国国土资源经济,31(10):26-28+48

⁶³ Eia.gov. (2018). China is a key destination for increasing U.S. energy exports Available at: <https://www.eia.gov/todayinenergy/detail.php?id=36632>

imported 420 million tons of crude oil, of which 31.15 million tons of crude oil came from Iran. 84% of China's imported crude oil is transported by sea, of which 43% crosses the Strait of Hormuz and 81% crosses the Strait of Malacca. In the context of the Sino-US trade war, the Iranian issue will be magnified, and the United States may use its controlled maritime passages to conduct inspections and blockades⁶⁴.

Since the implementation of the “Going Global” strategy by China National Petroleum Corporation in 1993, the scale and strength of its overseas business have continued to increase. At present, Chinese oil companies have more than 200 oil and gas cooperation projects in more than 50 countries in the Middle East, Central Asia-Russia, America, Africa, and Asia-Pacific. In 2017, PetroChina's overseas exploration and development investment was 61.4 billion yuan, overseas equity oil production was 138 million tons, and equity gas was 32.8 billion cubic meters⁶⁵.

⁶⁴ Shao, Yanmin, Han Qiao, and Shouyang Wang (2017). "What Determines China's Crude Oil Importing Trade Patterns? Empirical Evidences from 55 Countries between 1992 and 2015." *Energy Policy* 109: 854-862

⁶⁵ PetroChina:2018 Annual Report

Chapter IV. How likely for Russia to replace the Middle East to be China's largest energy exporter?

1. Analysis to Sino-Russian energy cooperation

Since the establishment of the China-Russia strategic partnership in 1996, the contents of each regular senior leadership meeting and joint statement of the two countries will change as the domestic and international situations change. But how to develop and deepen Sino-Russian energy cooperation is always the same theme. Years of cooperation have led the leaders of the two countries to reach a consensus that comprehensively deepening Sino-Russian trade cooperation, including energy and investment cooperation, is an important factor in consolidating and developing China-Russia strategic cooperative partnership. The expansion of Sino-Russian economic and trade cooperation, mainly energy cooperation, is inseparable from the strengthening and improvement of China-Russia comprehensive strategic cooperative partnership. In this study, the author summarizes the main events of Sino-Russian energy cooperation from 1996 to 2014 in the table below⁶⁶.

Table 3. significant events for Sino-Russia Energy Cooperation	
year	significant events for Sino-Russia Energy Cooperation
1996	Premier Li Peng visits Russia. The two sides decided to establish a regular meeting committee of heads of government.
1999	The construction of the Tianwan Nuclear Power Plant officially started. In (December 2012, the construction of the second phase of Tianwan Nuclear Power Station started.)

⁶⁶ *Xinhua News Agency*

2001	China and Russia signed the (FCT). And the border issues are settled.
2008	Wang Qishan and Igor Sechin co-chaired a meeting between Chinese and Russian energy negotiators in Moscow.
2009	Wang Qishan held the fourth meeting of Sino-Russian energy negotiators with Igor Sechin in Beijing, and signed the "Intergovernmental Agreement on Sino-Russian Cooperation in the Oil Field".
2010	Wang Qishan held the sixth meeting of Sino-Russian energy negotiators with Igor Sechin in Tianjin.
2011.01	The Sino-Russian crude oil pipeline is put into operation, and 15 million tons of crude oil will be transferred from Russia to China through for 20 years.
2011.05	Wang Qishan and Igor Sechin held the seventh meeting of Sino-Russian energy negotiators in Moscow.
2012.04	Russia-China 500 kV transmission line is put into operation.
2012.12	Wang Qishan and Igor Sechin held the ninth meeting in Moscow of Sino-Russian energy negotiators. Two parties signed four documents on energy cooperation.
2013.02	Wang Qishan and Russian Vice Prime Minister Dvorkovic held a meeting with chairman of the Sino-Russian Energy Cooperation Committee in Beijing. The two countries agreed to to expand crude oil trade and and confirmed that China-Russia natural gas pipeline will annually supply 38 billion cubic meters of gas to China.
2013.1	Vice Premier Zhang Gaoli and Dvorkovic held the tenth meeting of the China-Russia Energy Cooperation Committee in Beijing.
2014	Sign the Sino-Russian Eastern Gas Cooperation Project Memorandum. The two sides agreed that starting from 2018, the eastern line will be used for Russia to provide natural gas to China. The transmission volume will increase every year, until to reach a planned 30 years total amount of 38 billion cubic meters.

1.1 Current cooperation in main energy field: oil, natural gas and coal

Russia and China have not been closely linked on the issue of oil over the past years. China's dependence on Middle East oil is much greater than the cooperation with Russia⁶⁷. However, face to the international environment of the world today, and in order to reduce the risk of China's maritime oil transportation and the downward pressure of the Russian economy, China and Russia opened the construction of the East Siberian-Pacific oil pipeline in 2004, and the Daqing pipeline branch of China⁶⁸. Due to international oil prices have fallen, China and Russia have increased their cooperation. Due to the impact of the financial crisis, the Russian oil industry was hit hard. In this case, China and Russia reached a cooperation project on oil loans. Through the development of these projects, the cooperation between China and Russia has expanded from oil import and export trade to oil extraction and oil refining.

Natural gas cooperation between China and Russia provides a certain level of protection for China's energy security. In 2014, China has become Russia's number one natural gas partner. China-Russia bilateral natural gas cooperation funds have reached US \$ 90 billion, and China-Russia plans to reach US \$ 200 billion by 2025⁶⁹. At that time, Russia provides the supply natural gas to China through the Sino-Russian natural gas pipeline. This achievement enables China and Russia to complement supply and demand, which not only

⁶⁷ Andrews-Speed, C. P., Xuanli Liao, and Roland Dannreuther. (2009) *The Strategic Implications of China's Energy Needs / Adelphi Papers* pp.. 346

⁶⁸ "THE 11TH MEETING OF THE CHINA-RUSSIA ENERGY COOPERATION COMMITTEE HELD IN MOSCOW." (2014) *States News Service* 2014: States News Service

⁶⁹ 万泽琦 (2016) . 俄罗斯与中国天然气合作研究[D].北京交通大学

meets China's need for energy alleviates the problem of insufficient natural gas reserves, but also promotes the Russian economic recovery. Chen (2017)⁷⁰ concluded from his study that China-Russia gas agreement will also indirectly improve the employment problem of the Russian population.

Russia is a country with large consumption in coal energy and extremely rich coal reserves and is at the forefront of world coal reserves. There are various types of coal, ranging from coking coal to thermal coal. With the growth and expansion of China's domestic coal demand, there has also been a rising situation of Russian coal transportation to China, and the Chinese and Russian governments have also discussed coal cooperation methods. In the 2009 Sino-Russian regular meeting⁷¹ The two prime ministers agreed to reach consensus on bilateral cooperation that: "China and Russia will develop cooperation in the field of coal, support the development and processing of enterprise resources in the coal field, support the mining of coal and coal in the two countries, and The cooperation and development of the coal industry."

1.2 Strength in Sino-Russia Energy Cooperation

As mentioned in previous chapters, China and Russia are highly complementary in energy demand and supply market. Energy has a huge impact on the economic development of both China and Russia. For Russia, as an important energy producer and exporter of the

⁷⁰ 陈宪良 (2017).中国能源安全与中俄能源合作[J].东北亚论坛,26(03):59-71, 127-128

⁷¹FMPRC (2009)

https://www.fmprc.gov.cn/mfa_eng/wjlb_663304/zzjg_663340/dozys_664276/gjlb_664280/3220_664352/3222_664356/t620532.shtml

world, energy industry development and energy export are of great important to Russia's economic growth. As China external dependence on energy continues to increase, it is necessary to ensure a stable and safe market supply, and it is urgent to expand new energy import channels to change the situation that energy imports are over-reliant on the Middle East. Russia also has an excessive concentration of energy exports in European countries, and a stable and reliable energy market is also needed in the future energy trade.

China and Russia maintained relatively good political relations, are the neighbor countries with the longest shared border. Especially after Putin became president, Sino-Russian relations have developed steadily. At present, the two countries are important strategic cooperative partners of each other. High-level exchanges are frequent and political mutual trust is continuously strengthened. On the basis of strengthening political ties, China and Russia have also launched a “government-oriented” economic and trade cooperation model, which provides a good institutional basis for Sino-Russian energy cooperation. In terms of energy cooperation, China and Russia have established a vice-prime-level energy negotiation mechanism (refer table 1?) to promote further cooperation between the two sides in the energy sector. For trade, China and Russia have also actively resolved the disputes and frictions between the two sides through diplomatic channels and bilateral consultations. The scale of bilateral trade between China and Russia has continued to expand. In addition to the high-level dialogue mechanism, China and Russia have continuously established a multi-faceted cooperation mechanism to provide institutional guarantees for energy cooperation between the two sides. It can be said that Sino-Russian

energy cooperation is a concrete manifestation of strategic cooperation between the two sides in the energy field, reflecting the sound political foundation of Sino-Russian energy cooperation.

Compared with the energy imports from the Middle East and other regions, China's energy imports from Russia have obvious location advantages. China and Russia are geographically adjacent and have more than 4,300 kilometers of land boundary lines. The energy cooperation between China and Russia can effectively reduce transportation risks, reduce transportation costs, and avoid excessive dependence on China's energy imports. Russia's Far East region is rich in resources. With the development of energy in the region and the construction of the Far East Port, it can significantly shorten the energy transportation distance, with cost and safety advantages. Due to its geographical advantages, China can more easily join the projects for Russian Far East Development to promote cooperation in energy and other fields.

1.3 Future Sino-Russian Energy cooperation prospects

Russia scientific and technology in energy research and development is strong, and China and Russia vigorous development for scientific and technological cooperation in the energy sector is of great significance to deepen cooperation in traditional energy fields such as oil

and natural gas, as well as exploring new energy fields (Makarov 2009)⁷². The structure of Sino-Russian economic and trade cooperation, which is dominated by energy such as oil and gas, will be maintained and deepened in the short term. Both sides need to continue to strengthen cooperation in the field of new energy.

For Sino-Russian future interaction, the following factors are very important: The "gas shortage" that emerges after 2020 will be unevenly represented across China⁷³. According to the direction of China's natural gas transportation system, the construction of a large number of liquefied gas terminal receiving equipment, and the natural gas consumption potential of various provinces, it can be determined that the main consumers of Russian pipeline natural gas will be Northeast China and some central regions, of which Northeast China will implement The base plan requires a lot of natural gas. According to calculations by analysts, natural gas consumption in the Northeast of China will increase rapidly from 6.2 billion cubic meters in 2009 to 50 billion to 70 billion cubic meters in 2020⁷⁴. Obviously, China's domestic natural gas reserves are not enough, so the demand for imported natural gas will further increase, and Russian natural gas is the most competitive.

China and Russia need to strengthen communication and establish a cross-border investment mechanism that is beneficial to both sides. Although Russia has huge oil and

72 Makarov, A (2009). "Science and Technology Forecasts and Problems of Russia's Energy Development up to 2030." *Herald of the Russian Academy of Sciences* 79.2 : 99-108

73 <http://pandia.ru/text/78/162/67985-3.php>

74 安兆祯,张梅 (2018). 深化中俄能源合作的路径研究[J]. *西伯利亚研究*, 2018, 45: 5-8.

gas reserves, its development is not difficult. Especially in the development of new oil and gas production areas in remote areas of Russia, the risks are huge and large amounts of funds are required. It is very difficult for Russia to complete such a large-scale development on its own. Therefore, China and Russia must proceed from a strategic perspective, carry out commercial mechanism to expand energy cooperation and take active actions to remove obstacles to Sino-Russia energy development. Strengthening the dialogue mechanism is very important (Rogerson 2010)⁷⁵. At the same time, China and Russia should increase mutual trust through dialogue, remove obstacles, strengthen contacts, and exaggerate the scale of cooperation while preserving the interests of both parties.

2. Challenges in Sino-Russian energy cooperation

2.1 Controversy in Energy Price

Energy price is a broad concept, including oil, natural gas, coal and other sort of energy. If the energy price policy can be adjusted at a certain level to promote economic development, the country tends to negotiate with partners under this condition⁷⁶. Energy price is affected by factors such as supply and demand and the global financial crisis, and sometimes rise and fall. International oil prices are mainly affected by major oil producers and international financial markets. The developed economies led by the United States have greatly make it difficult for China. Although China's oil production ranks the top ten in the world, they had no influence in the world crude oil market. accordingly, China is less likely to have the

⁷⁵ Rogerson, David J (2010.). *China and Russia: Competition and Partnership* / Editor, David J. Rogerson. Global Political Studies Hauppauge, New York : Nova Science Publishers

⁷⁶ Taylor, M (2014). *The Chinese State, Oil and Energy Security* 6th edition / Monique Taylor. Houndmills, Basingstoke, Hampshire Palgrave Macmillan

rights of dominance over international oil prices. This situation brings a consequence in negotiation with Russia that China may not easy to convince Russia for a favorable deal price (Eder 2014)⁷⁷.

Price fluctuations is unfavorable for both countries. Therefore, energy price is a difficult point in Sino-Russian energy trade negotiations because of series of barriers. Russia already managed to keep it equal at the price of oil to China and to Europe (Fang 2011)⁷⁸. In 2013, Russia promised China to provide natural gas in the Siberian region of the country, but there was no agreement on energy prices. Russia advocates exporting natural gas at a price of about US\$300 per thousand cubic meters, while China expects to control the price at the price lower than\$200 (Zhang 2013)⁷⁹. In order to pursue a reasonable energy price and obtain the natural gas supply from Russia to replace the ecological pollution caused by coal, China has to evaluate the opportunity cost for making concession in price. In terms of energy prices, there are contradictions in certain aspects between China and Russia.

2.2 China-Russia lack of in-depth cooperation in practice

Sino-Russian energy cooperation is still in the early stage of development. Due to its limited scale, it has restricted the in-depth development of energy trade between the two

⁷⁷ Eder, Thomas Stephan (2014). China-Russia Relations in Central Asia [electronic Resource] : Energy Policy, Beijing's New Assertiveness and 21st Century Geopolitics. Chapter 1

⁷⁸ 方婷婷 (2011). 中俄能源合作: 影响因素与现实选择 [J]. 当代世界与社会主义:pp. 89-96

⁷⁹ 张学昆 (2013). 中俄能源合作的现状、影响因素及意义分析 [J]. 和平与发展, 2013 (4): 77.

countries. On the market side, Russia's energy Accordingly to Wang and Zheng (2015)⁸⁰, 76% of Russia energy exports are destined to Western Europe, mainly in Germany, Italy, France and the UK, with China accounting for only a small portion. In the past, before the collapse of the Soviet Union, China mainly set its source seeking in the Middle East. Because these regions are rich in oil resources, it is easier to establish a diplomatic cooperative relation with the certain countries in these regions. Back in that stage, the expansion of energy trade with those countries restrain the cooperation between China and Russia. For the Chinese and Russian governments, how to deepen the energy trade between the two countries is a strategic issue. Another problem result from the late development in energy cooperation is the transportation problem for energy. Generally speaking, energy transportation is mainly based on pipelines. It is a unified system of transportation channel and transportation means. The feature of this system is with high transportation efficiency and little impact from climate conditions. However, China's pipeline transportation facilities are generally backward in technology compare to those existing transportation systems in western world, and this situation is improving.

2.3 Infrastructure construction in Russian Far East needs to be strengthened

The western region is the center of Russian industrial development, and the supporting infrastructure used for energy development is also widely distributed in the western region

⁸⁰王楠, 郑立新 (2015). 新时期中俄两国能源合作的趋势及战略意义研究 [J]. 经济研究导刊 (9): 254.

of Russia. However, in recent years, the production of Russian traditional oil and gas fields has declined. The Far East, Eastern Siberia, and the Arctic Continental Shelf will become the main regions of Russian oil and gas production in the future. However, the Far East has a sparse population with only 6.3 million inhabitants, accounting for only 36% of the territory of the Far Eastern Federal District (Kalashnikov et.al)⁸¹. In addition, the economic development of the Far East is lagging behind, and the supporting infrastructure is not perfect. The existing production and transportation capacity of the Far East cannot meet China's needs. Nor can it meet a series of energy activities such as developing new oil fields, laying supporting pipeline facilities, and constructing oil and gas field processing bases. The cost of new energy development and utilization is very high. In order to implement project cooperation, new energy infrastructure needs to be constructed. This increases the risk of corporate investment especially puts Chinese companies at risk and profit considerations and abandons the Far East energy development plan, hindering the energy of the two countries.

2.4 the Rising China is a threat for some Russia domestic elites

In the face of China's continuous growth and becoming the world's second largest economy, some scholars in Russia agree with Chinese Threats⁸². They are worried that with the rise of China, the gap between Russia and China is growing. China-Russia relations, China will

⁸¹ Kalashnikov Victor, Ruslan Gulidov, and Alexander Ognev (2011). "Energy Sector of the Russian Far East: Current Status and Scenarios for the Future." *Energy Policy* 39.11: 6760-6780.

⁸² Solomentseva, A. (2014). The "Rise" of China in the Eyes of Russia: A Source of Threats or New Opportunities? *Connections*, 14(1), 3-40

Occupy a stronger and more proactive position. Russia crosses Eurasia, the main population lives in Europe, and only 25% of the Asian population. Therefore, Russia's energy cooperation with China is often in a dilemma. Following the need for Chinese investment and labor, and fearing that China will take this opportunity to encroach on Russia's energy resources, it is worried that Sino-Russian energy cooperation will threaten Russia's economy and further widen the gap between China and Russia. All sectors of Russia are worried about China's investment page, thinking that Chinese capital seems to have played a large role in the Russian economy, and some even worry that Chinese companies will buy Russian companies. In addition, Russia is concerned about China's penetration in the Far East. With the deepening of Sino-Russian cooperation in the Far East, a large amount of Chinese investment and immigration has flowed into the Far East. Some elites in Russia believe that the Far East will be attached to China in energy materials. The government has also taken measures based on these concerns. The Putin government has strengthened control over the Far East and established the Ministry of Far East Affairs. The control of foreign cooperation in the Far East is in the hands of the central government, weakening local autonomy and flexibility.

3. A brief analysis on China and Middle East energy cooperation

Energy cooperation is an important basis for cooperation between China and the Middle East countries. At the same time, the Middle East is an important strategic location for China's Belt and Road Initiative outside of Asia. However, due to its unique geographical

location and strategic position as the main energy supply region, the Middle East has frequently intervened in the political disagreements.

3.1 Infrastructure and transportation channel

First of all, the oil and gas pipelines in the Middle East are not well developed, and the scale of compressed natural gas exports is limited, which also limits its oil and gas export capacity. Therefore, China-Middle East has the shared interest in construction of oil and gas pipelines. For example, due to the positive impact of China-Pakistan friendly relations, the most widely discussed is the construction of the China-Pakistan oil and gas pipeline, that is, the oil and gas imported from the Persian Gulf reaches the Gwadar port of Pakistan, bypasses the Malacca Strait, and directly passes through the China-Pakistan oil and gas pipeline to Xinjian⁸³. Another option is to build an oil and gas pipeline from the Gulf to the Indian Ocean to bypass the Strait of Hormuz. However, this approach requires that oil and gas pipelines has to extended to Middle Eastern countries that can enter the high seas from the Gulf of Pers⁸⁴. With regard to the choice of the estuary, the relatively stable East China Sea Bay is China's first choice compared with the West Bay where the political battle is severe. The volume of oil and gas trade between China and the West Gulf countries is very considerable. In 2017, China's total crude oil imports were 420 million tons, with the import from Oman accounting for nearly 10%, and the UAE accounting for more than 4% (cited

⁸³ Shaikh, Faheemullah, Qiang Ji, and Ying Fan (2016). "Prospects of Pakistan–China Energy and Economic Corridor." *Renewable and Sustainable Energy Reviews* 59: pp.253-263.

⁸⁴ Piri D., Mehdi, and Faure, Michael G (2014). "The Effectiveness of Cross-border Pipeline Safety and Environmental Regulations (under International Law)." *North Carolina Journal of International Law and Commercial Regulation* 40.1: pp55-134

from Shi)⁸⁵. Qatar is China's second largest natural gas importer. In terms of oil and gas reserves, the United Arab Emirates and Qatar are the countries with the most abundant oil reserves and the most abundant natural gas reserves among the three countries. All three countries are candidates for cooperation in China. However, construction of oil and gas pipelines has very high requirements for bilateral relations between China and the countries where the pipelines are located. The UAE, Oman, and Qatar belong to the Gulf Cooperation Council (GCC). Considering the collective actions within the GCC and the Middle East, China needs to consider seeking cooperation within the GCC framework.

Railway is an important method of energy transportation. For the Middle East countries, promoting the construction of railway connection will greatly improve the efficiency of the energy transportation. Except for the relatively developed railway transportation in Turkey, railway construction in other Middle Eastern countries is generally backward⁸⁶. By the year of 2016, Kuwait, Oman, Qatar, Yemen, UAE, Bahrain, Cyprus and other countries have not yet started railway construction. Although Saudi Arabia, Iran, Egypt, Israel and other countries have a certain railway foundation, their development has basically stagnated over the years. some railways was suffering from the damage in conflicts⁸⁷.Therefore, Middle Eastern countries have relatively strong demand for railway construction. In Iran, for

⁸⁵ Shi Bao-ming (2018). "我国石油市场特点及未来展望 - The Characteristics and Outlook of Oil Market." 化学工业 35.03: pp. 1-7

⁸⁶ Dayal, Raghu(2016). "Building an Interconnected Belt: The Development of Eurasian Rail Links to Create a Modern Silk Road Is Expected to Improve Regional Connectivity, as Well as Supporting the Chinese Railway Construction Sector." Railway Gazette International 172.5: pp.4

⁸⁷ Redfern, Bernadette (2010). "Measuring up the Middle East: Metro Schemes, Roads and Sewer Projects Are Expected to Boost to the Tunnelling Sector in the Middle East and North Africa with Egypt and the UAE Leading the Way.(SPECIAL REPORT: MIDDLE EAST & AFRICA)." Tunnels & Tunnelling International:

example, Iran's transportation system is very old due to prolonged sanctions⁸⁸. After Western countries relieved sanctions on Iran, many high-speed rail, electrified railway, and subway projects of Chinese companies in Iran began to develop rapidly. Currently, Iran 's only high-speed rail project, the Isfahan-Tehran line, was constructed by China Railway International Group (CREC). Once the construction of the railway is completed, this railway will become a steel version of the Silk Road. Under the background of economic development and rapid population growth, the transportation systems of GCC countries are also under increasing pressure. At present, the GCC has officially adopted a plan to build a multi-national railway system for the six Gulf countries⁸⁹. The six Gulf countries will invest \$15.4 billion to build a 2117-kilometre Persian-Gulf Railway. In addition to GCC railways, GCC countries have also launched their own national railway network construction plans.

Ports are the most important infrastructure for Middle Eastern countries they are also a key freight hub in the Middle East. UAE, Bahrain, Qatar and Oman have the relatively highest port infrastructure quality and operating efficiency among Middle East countries. Port facilities in Iran, Kuwait, Israel, Yemen and other countries are relatively backward and their development level is lower than the global average⁹⁰.The Middle East countries have always put great importance to the port expansion plan and actively improved the port

⁸⁸ "Uzbekistan Joins China-Kazakhstan-Turkmenistan-Iran Railway Corridor." Financial Services Monitor Worldwide 2019: Financial Services Monitor Worldwide, April 5, 2019.

⁸⁹ Foreman, Colin(2014). "Rail Boom Dominates GCC Construction Spending." MEED Middle East Economic Digest 58.41: 3.

⁹⁰ Thomas, Karen (2011). "Pace of New Projects Ease: Port Development in the Middle East Has Slowed as Operators Put Schemes on Hold and Focus on the Projects That Are the Most Economically Viable.(PORTS)." MEED Middle East Economic Digest 55.12

handling capacity. As one of the world's largest natural gas exporters, Qatar, needs to build more ports to further increase its carrying capacity in order to realize its "go global" strategy. The key point for Kuwait is to establish a maritime port that integrates finance and entertainment, thereby connecting Asia and Europe⁹¹. In the construction projects of ports in the Middle East, Chinese companies also provides sufficient support because the demand for port business in the Middle East is predicted to grow rapidly in the next 20 years⁹².

3.2 Oil and natural gas cooperation

In terms of oil trade, China 's imports from the Middle East increased steadily from 2011 to 2017⁹³. The annual increase in the number of oil imports to the Middle East before 2016 was about 1 million tons⁹⁴. The scale of oil import demand has stabilized due to the increase in oil imports from Russia since 2016. But the total imports in 2016 and 2017 were around 182 million tons. Accordingly, it can be assert that China and the Middle East still have considerable potential for oil trade even if the volume of Sino-Russian oil trade will keep increases in the future.

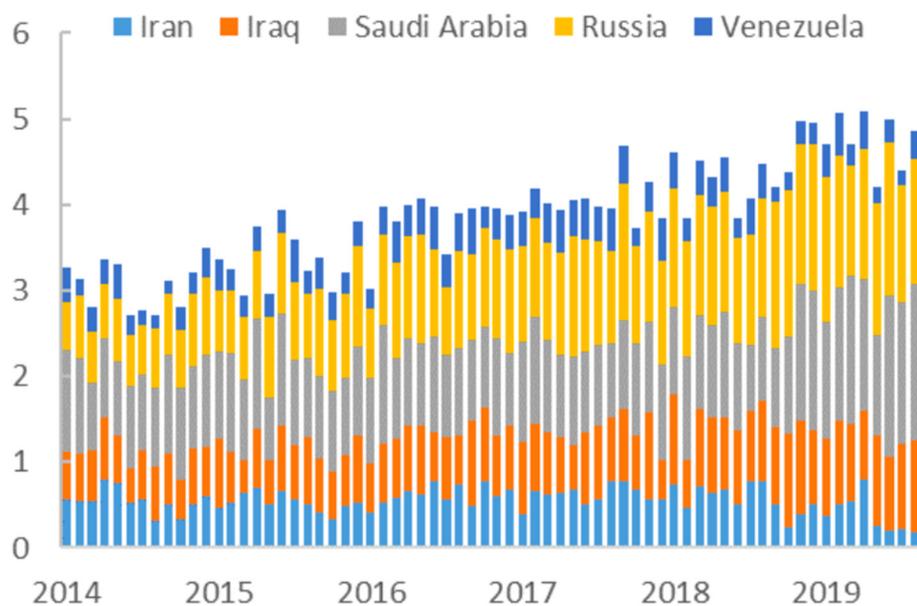
⁹¹ Akhavan, Mina. "Development Dynamics of Port-cities Interface in the Arab Middle Eastern World - The Case of Dubai Global Hub Port-city." *Cities* 60 (2017): 343-52. Web.

⁹² Chinagoabroad.com. (2019). "一带一路"战略背后 中国参与了 10 多个海外港口项目. [online] Available at: <http://www.chinagoabroad.com/zh/article/18003>

⁹³ 胡国松,王淳.中东与中国石油安全新思考[J].经济体制改革,2014(06):183-187

⁹⁴ 孙玉琴,姜慧,孙倩.中国与中东地区油气合作的现状及前景[J].国际经济合作,2015(09):64-69

Figure 6. Crude imports, select countries, mb/d



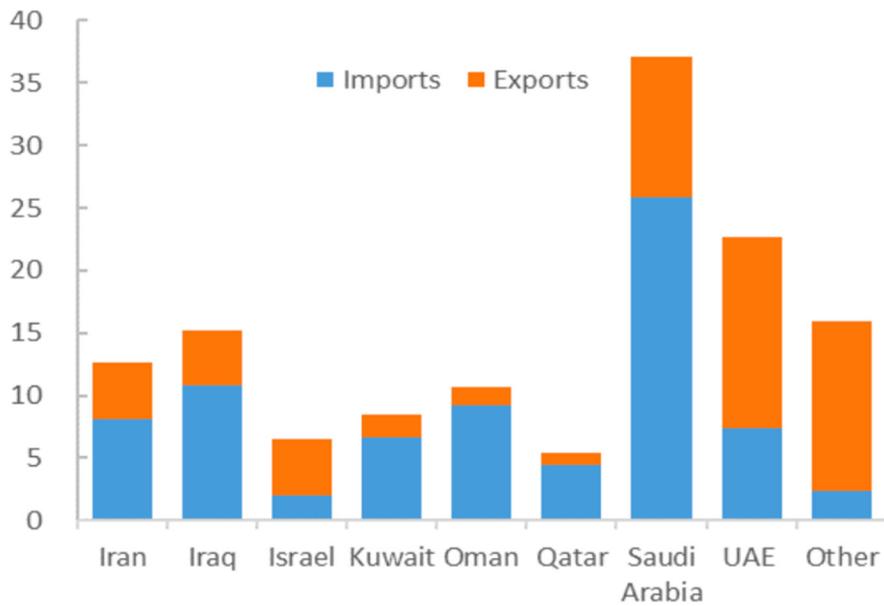
Source from Oxford Institute for Energy Studies (2019)⁹⁵

In 2017, there were 5 Middle Eastern countries in China's top 11 sources of crude oil imports, which together accounted for 40.38% of total crude oil imports in 2017. Among them, Saudi Arabia is China's largest importer of crude oil, accounting for 12.44%, followed by Iraq and Iran accounting for 8.77%, 7.43% of total imports⁹⁶.

⁹⁵ Meidan, M. (2019). China's Energy Security at 70. the Oxford Institute for EnergyStudies. pp.3-6.

⁹⁶ IEA: OIL MARKET REPORT 2018: Analysis and Forecasts to 2023.

Figure 7. Chinese imports and exports from the H1 19, US\$ billion 2017



Source from Oxford Institute for Energy Studies (2019)

In terms of natural gas trade, although China's natural gas import in 2017 was 38.43%, the proportion of the Middle East region was not that significant. Qatar, Iran, and Saudi Arabia are the three largest natural gas producers in the Middle East. With the exploration and development of natural gas resources and the increase of natural gas production capacity, the potential for expanding natural gas trade with China in the future is huge.

3.3 Obstacles in Cooperation

The situation in the Middle East is complex and changeable. The relations between countries are complicated and ethnic, religious, and political disputes are emerging endlessly. The intervention of major powers has also made the situation in the Middle East turbulent and plunged into disputes. Moreover, the volatile situation has made the Middle East a breeding ground for terrorism. In particular, centered on Syria and Iraq the rise of the ISIS has set off a new wave of terrorism in the Middle East making it difficult to achieve regional stability. Numerous uncertainties pose numerous security risks in the Middle East, and these uncertainties have not end up with a good solution for long term. Conflicts and riots that may occur at any time have a huge a impact on the energy supply. Accordingly, the unstable international energy prices seriously threatening China's energy interests and causing distress to Chinese companies entering the Middle East market.

Despite from the regional conflicts, the involvement of major foreign countries such as the United States and Russia and their frictions with regional interests have led to frequent hot issues in the Middle East. Although the United States is achieving energy independence because of the development of shale gas, it will not abandon control of oil and gas resources in the Middle East and continue to maintain a natural gas dollar settlement system. In addition, the United States will intervene in the Syrian war in the name of fighting terrorist organizations for safeguarding its hegemonic interests. In addition, Russia, Iran, Turkey, Syria will also have a significant impact on the geopolitical situation and energy supply in the Middle East. On May 9, 2018, the United States announced its withdrawal from the

Iran nuclear agreement and imposed sanctions on Iran⁹⁷. After the United States imposed sanctions on Iran, Iran launched a blockade exercise on the Strait of Hormuz. The tension between the United States and Iran escalated and tensions in the Middle East increased. Beyond this geopolitical game of energy, the remnants of the extremist organization ISIS together with other religious extremist, they will also disrupt the political ecology of the Middle East.

Oil and gas are key global strategic resources. In addition to the United States, economies such as the European Union, India, Russia, and Japan have paid close attention to the Middle East. China and these countries have competitive relations in the Middle East. The EU-GCC Cooperation Council has a natural geographical advantage and is a significant trade partner of the GCC. The GCC has signed the Free Trade Agreement with the European. In recent years, the EU diplomatic relations with the Middle East have been very active. Due to historical and geographical reasons and high energy demand, India also has close relations with Middle Eastern countries and has established a number of oil and gas pipelines. The continued warming of China's relations with the Middle East and high-profile energy cooperation can easily cause anxiety among these major powers, and thus hinder the development of in-depth cooperation between China and the Middle East.

⁹⁷ Sipri.org. (2019). *The US withdrawal from the Iran deal: One year on* | SIPRI. [online] Available at: <https://www.sipri.org/commentary/expert-comment/2019/us-withdrawal-iran-deal-one-year>

Chapter V. Conclusion

In terms of the polarity of the world, there is no fundamental change in the geopolitical and economic structure, but with the emergence of more superpowers, the strength of traditional US unipolarity and western powers has generally declined, and the power of emerging economies has gradually become stronger. Under this circumstance, new changes have also taken place in the international energy market, and in particular the energy security situation has become increasingly complex. Countries, especially developing countries with large energy consumption needs are pursuing the comprehensive international energy cooperation for national security purpose. However, those countries also face with increasingly severe environmental and ecological challenges. Under this background, the Sino-Russia energy cooperation is vital for both countries to achieve their domestic goal and show their promise to the world at the same time. Through analysis, the factors affecting Sino-Russian energy cooperation are under the categories of domestic market factors, international market factors, national security factors and international relations factors. In reality, these four factors interact with each other and become the theoretical background for China and Russia to formulate energy cooperation strategies.

In terms of the second research question, based on the current friendly relationship between China and Russia, western countries, especially the European Union, are worried about Russia is shifting its strategy focus to the Northeastern market. more specifically, they afraid that China and Russia strengthen cooperation in energy is aiming to establish a so-called 'anti-Western alliance'. To some extent it is true that Sino-Russia cooperation in

response to the current politics given by Western countries challenge. Sino-Russian energy cooperation is the meeting point of the development strategies of the two countries. Due to the changes in the international political situation, shale gas development and changes in the world energy market, China and Russia have proposed their own development strategies. Energy cooperation is the intersection of the two country strategies. Russia's diversified energy export strategy coincides with China's strategy to reduce coal consumption and its strategy to import diversified energy. Under the good strategic partnership, the Chinese and Russian governments have vigorously promoted large-scale energy cooperation projects, and they have increasingly supported private enterprises to participate in energy cooperation projects between the two countries.

In response to the third research question, Although the prospect for Sino-Russian cooperation is good, there are still voices in Russia domestically questioning the rising China. Due to the unstable situation in the Middle East, China's energy dependence on Russia will relatively increase, but from an economic and political perspective, China will not give up oil cooperation with the Middle East. Especially in recent years, in areas other than energy cooperation, Russia has introduced a series of policies restricting Sino-Russian trade, such as raising the tariff rate and strengthening inspection. Russia has adjusted its own tariff policy so that when the declared price of goods imported into Russia is lower than the minimum customs price, the importer needs to pay additional VAT and customs duties before entering the customs, so that both parties The delivery process has become more complicated, and the price of goods has increased a lot. Therefore, China-Russia

energy cooperation is only an important part of the strategic partnership between the two countries, but China will not shift its focus in energy cooperation to the Russian market.

With regard to the suggestion to China-Russia energy cooperation, the two countries can strengthen cooperation in the development of equipment and technology. For the current situation, Russia's oil and gas industry is highly dependent on western oil and gas exploration technologies and equipment. Most of the oil and gas development software, turbines and boilers are highly rely on US imports. But for political reasons, the US announced to ban on the supply of oil and gas-related equipment to Russia. Under this circumstance Russia has shown great interest in equipment made in China. However, China and Russia still face inconsistent technical standards in the process of energy technology cooperation. In order to strengthen cooperation, China and Russia can construct common laws and regulations to support the aspects in technology development, investment and other fields. In practice, Russia still has advantage over China in the fields of new energy technologies, but due to the specialty and limitation of energy technology such as the long distance, a simple trade and transfer may not be sufficient to sustain the cooperation. Furthermore, Russia has huge capital gap in the field for research development and infrastructure construction. China can use its financial advantages to strengthen cooperation and invest into Russian energy companies to deepen cooperation and transfer energy technologies. Especially under the premise of China's commitment to the world to reduce coal carbon consumption and carbon dioxide emissions, China-Russia energy cooperation can go deeper into energy technology cooperation.

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Abstract in Korean 국문초록

2019년에 중화인민공화국은 창립 70주년을 맞이했다. 중국과 러시아의 관계는 경쟁관계뿐만 아니라 긴밀한 협력관계의 시기를 아우르는 긴 역사적 관계를 가진다. 2001년 중국인민공화국과 러시아연방이 성공적으로 선린우호협력조약이 체결한 이후, 중국과 러시아는 전략적 파트너십을 다양한 산업 영역으로까지 확대했다. 이로 인한 에너지 협력은 상당히 중요한 부분이다. 본 논문은 현재의 중·러 관계 발전의 이해를 위해 중국과 러시아의 에너지 협력을 중점적으로 다루고자 한다. 중국의 일대일로 전략과 러시아의 극동개발 정책과 같은 정치적 환경 하에서, 중·러 에너지 협력은 많은 함축성이 있다. 비록 많은 학자들이 현재의 에너지 협력에 대해 낙관적이지만, 여전히 문제와 도전과제들이 있다. 중국과 러시아는 윈-윈 할 수 있는 결과를 위해 원활한 의사소통과 상호작용의 개념을 고수해야 한다.

본 논문은 선린우호협력조약 체결 이후 중·러 에너지 협력에 영향을 미치는 요소들을 밝히고자 한다. 동시에 서양 세력의 압력이 중·러 에너지 협력의 주된 동기요인에 해당하는지의 여부를 분석하고자 한다. 본 논문은 중·러 에너지 협력에서 내부요인이 서양 세력, 특히 유럽연합으로부터의 압력보다 더 중요함을 밝혔다. 예를 들어, 러시아가 석탄 소비량을 감소시키기 위해 중국의 에너지 전략에 준한 점은 중국이 북동부 중국의 천연가스 프로젝트를 환영하는 이유를 설명해준다. 중·러 협력을 위한 정책적 제안을 하기보다 본 논문은 중·러 에너지 협력과 중·중동의 상황 비교에 초점을 맞추어 분석하고자 한다. 중국과 러시아의 경우, 에너지 협력은 강국의 공통된 이익을 반영하는 전형적인 사례이다. 반면 중동은 아시아 바깥 지역으로서 중국의 전략적인 중심지이다. 따라서 본 논문은 러시아가 중동의 국가들이 중국의 가장 큰 에너지 수출업자로 대체되는 것을 따를 가능성이 적음을 시사한다.

키워드: 중국, 러시아, 에너지 협력