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„Sino-Russian and South Korean-Russian Energy  
Relations and their evolution in terms of  
“The Crimean Crisis“

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### **List of acronyms:**

ASEAN – Association of Southeast Asian Nations  
 APEC – Asia-Pacific Economic Cooperation  
 Bbbl – Billion barrels  
 Bbl – Barrels  
 Bbl/d – Barrels per day  
 Bcf – Billion cubic feet  
 BP – British Petroleum  
 Btu – British thermal unit  
 CAGP – Central Asian Gas Pipeline  
 CPC – Communist Party of China  
 DPRK – Democratic People’s Republic of Korea  
 EIA – Energy Information Administration  
 FDI – Foreign Direct Investment  
 FTZ – Free Trade Area  
 GDP – Gross Domestic Product  
 IEA – International Energy Agency  
 IMF – International Monetary Fund  
 KEEI – Korea Energy Economic Institute  
 KESIS – Korea Energy Statistic Information Service  
 KW – Kilowatt  
 LNG –Liquefied natural gas  
 Mmbbl – Million Barrels  
 MW – Megawatt

NATO – North Atlantic Treaty Organization

NDRC – National Development and Reform Commission

NOC – National Oil Corporations

NPP – Nuclear Power Plant

OECD – Organization for Economic Co-operation and Development

OPEC – Organization of Petroleum Exporting Countries

PRC – People's Republic of China

SCO – Shanghai Cooperation Organization

SRF – Silk Road Foundation

USA/ US – United States of America

USSR – The Union of Soviet Socialist Republics

WTO – World Trade Organization



**List of companies:**

BP – BP plc  
DOPCO – Daehan Oil Pipeline Corporation  
GS Caltex – GS Caltex Corporation  
CIC – China Investment Corporation  
CNPC – China National Petroleum Corporation  
COONC – China National Offshore Oil Corporation  
Gazprom – OJSC Gazprom  
Gazpromneft – OJSC Gazpromneft  
Inter RAO UES– JSC Inter RAO UES  
KEPCO – Korea Electric Power Corporation  
KNOC – Korea National Oil Corporation  
KOCOAL – Korea Coal Corporation  
KOGAS – Korea Gas Corporation  
KORES – Korea Resources Corporation  
KPDC – Korea Petroleum Development Corporation  
KRU – UK Kuzbassrazrezugol  
KVSU – VostSibUgol  
Mitsubishi – Mitsubishi Group  
NOVATEK – OJSC NOVATEK  
PetroChina – PetroChina Company Limited  
Rosneft – OJSC Rosneft  
RusHydro – OJSC RusHydro  
Rusia Petroleum – JSC Rusia Petroleum  
Russian Railways – JSC Russian Railways

Sberbank – OJSC Sberbank Rossii

SDS Ugol – Sibirskiy Delovoy Soyuz Ugol

Shell – Royal Dutch Shell plc

SUEK – Siberian Coal Energy Company

Sinopec – China Petroleum & Chemical Corporation

Sinosure – China Export and Credit Insurance Corporation

SIDANKO – OJSC Sibirsko-Dalnevostochnaya-Neftegasovoaya-Kompaniya

SK Energy – SK Energy Co., Ltd.

TNK BP – OJSC Tyumenskaya Neftyanaya Kompaniya BP

Total – Total S.A.

Transneft – OJSC Transneft

Yukos – OJSC Yukos Oil Company

## **Chapter 1: Introduction: Methodological basics for energy relations analysis**

*“We are living in a new age of energy supply anxiety”*

*(D. Yergin, 2006, The War over Resources)*

### **1.1. Introduction**

The issue of energy security has been one of the most disputed topics in the last few years.<sup>1</sup> With the rapid growth of population and in the light of expanding mechanisation, urbanisation and industrialization, the problem of energy security is becoming especially vexed. The world's fossil fuels resources are not unlimited. Development and implementation of renewable energy is taking a lot of time and investment. Natural resources are spread unevenly on the world's map. That fact divides the countries of the world into three groups: countries that import resources, countries that export resources and countries that act as transit countries. As a result energy resources are one of the most important factors in international relations. They also play a strategic role in the implementation of the state policy of any country.

The struggle for resources is sometimes the cause of not only political but also military conflicts. In light of such events, governments that implemented wise and strong energy policy will be at an advantage in the foreseeable future. Oil prices, for example have a direct influence not only on currency rates, but on the whole economic situation in exporting countries. Therefore, energy security and energy relations are attracting more and more attention of the researchers.

The last two years brought a lot of changes not only to the map of the world, but also to the international relations. Political analysts and journalists describe the “Crimean Crisis” as “the

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<sup>1</sup> Stelner.J. Nishida.Y. Focus on Energy Security Costs, Benefits and Financing of Holding Emergency Oil Stocks. International Energy Agency Insight Series. Accessed on the 15<sup>th</sup> of August 2015.  
[https://www.iea.org/publications/insights/insightpublications/FocusOnEnergySecurity\\_FINAL.pdf](https://www.iea.org/publications/insights/insightpublications/FocusOnEnergySecurity_FINAL.pdf). P.5.

political crisis surrounding the annexation of the island of Crimea”. This term was used by the media all over the world to describe the line of events that led to the implementation of sanctions against the Russian Federation. After the annexation of Crimea by the Russian Federation; European Union, the U.S., Canada, Australia, Japan introduced the sanctions against Russia, which caused damage to the Russian economy as a whole. “Some of the sanctions strategically target important areas of promise for Russia's energy industry, like arctic exploration and deep-water and unconventional drilling.”<sup>2</sup> As a result, the sanctions have caused some significant damage to the Russian financial and energy sector. It is predicted, that the Russian oil production will have to face a rapid slowdown in the nearest couple of years. Rosneft, the largest state owned company, has some real difficulties dealing with the existing debts and getting new credits. The LNG Yamal Project requires another US\$50 billion to continue the construction and it will require more investment in the future. Last, but not least, the economists predict a financial crisis, which Sberbank, as the largest state-owned bank might face in the nearest future.

All the factors we mentioned above, are influencing the investment climate in the country, and do not provide foreign investments with the reassurance needed. It also concerns the international banks that provided the loans of about US\$700 billion to Russia's corporate sector.<sup>3</sup> Seeking for an alternative to the European energy market and in order to diversify its importers Russia has turned to the East, mainly towards China, Japan and South Korea. It happened long before sanctions, but they have been always facing some obstacles. First it was the question of price, than an unexpected change of providers, questionable acquisitions of Yukos actives - all this led to the formation of unreliable image of Russian energy companies and unreliability of the legal framework within Russia.<sup>4</sup>

“China is reach in natural resources, but its consumption exceeds production, and, according to forecasts, consumption is going to grow.”<sup>5</sup> Because of the misuse and inaccurate extraction of energy resources the majority of reserves are on the edge of reaching their limits. China's main energy supplier is the Middle East. Because of the current unstable situation in the region, China

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<sup>2</sup> Domm.P.(2014): How Sanctions are hurting Russian Energy Sector *CNBC*  
<http://www.cnn.com/2015/04/24/how-sanctions-are-hurting-russias-energy-sector.html>.

<sup>3</sup> Belyi.A.(2015b): The new geopolitics of Russian energy diplomacy *Friends of Europe* p.1.

<sup>4</sup> Speed. A. (2014). Long Road to the China Russian Gas Pipeline Deal. The End of The Beginning Accessed on the 17 of May 2014 <http://www.andrewsspeed.com/long-road-china-russian-gas-pipeline-deal-end-beginning/>.

<sup>5</sup> Bin. Y.(2014): China-Russia Relations : Geo-economics for geo Politics. *Comparative Connections* vol. 6, No 2. 145-154.

is looking forward to diversify their energy suppliers; it's a logical measure of energy security policy. It is worth noting that much of the oil delivered to China by sea. "Most of the oil imports from the Middle East and Africa are transported by tankers through the Strait of Malacca, linking the Indian Ocean and South China Sea, which has the highest piracy rates and the concentration of naval forces of the USA and its allies."<sup>6</sup> China is taking attempts to establish energy relationships with Myanmar, invests in energy projects in South America<sup>7</sup> and has a handful of other energy projects in the Asian Region.<sup>8</sup> Unfortunately the majority of them stay on the paper and the question of price and delivery stays opened. The other problem is uneven distribution of resources and underdeveloped infrastructure. In case of countries with such vast territories as China, it is sometimes cheaper to import resources from the neighbor countries, than to deliver them from the other side of the country. With regard to everything we mentioned above Russia seems to be a very promising ally in terms of energy cooperation. Great number of bilateral documents on the subject of energy, signed by the parties during the last decade indicates mutual interest in that kind of collaboration. The only stumbling block on the way to actual implementation of these agreements has always been the price. China didn't want to pay the European prices, and Russia didn't want to settle for the price offered by the Chinese side. "The Crimean Crisis" has switched the balance of power in this issue towards the Chinese side.

Under the burden of sanctions for Russia, Asian energy market seems to be not only the political tool to demonstrate to Europe its non-isolation, but the only feasible alternative to the European Energy Market. In this case, we can observe the development of Sino-Russian energy relations on the example of the pipeline "Power of Siberia." We could also witness some progress in the field of electricity supply from Russia to China, coal and oil supplies, technology exchange and investment. "Since 2010, China firmly holds the position of the main trading partner of Russia by the end of 2014, despite the unfavourable trends in the global economy, we were able to prevent a decline in turnover, which amounted to about \$ 88.4 billion.", - said the President Vladimir Putin during his official visit to China in 2015.<sup>9</sup> "The first and second power units of

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<sup>6</sup> Dows.E.S. (2013): China-Middle East Energy Relations *Brookings* From the 6<sup>th</sup> of June 2013 Accessed on the 1<sup>st</sup> of March 2015 p.1 <http://www.brookings.edu/research/testimony/2013/06/06-china-middle-east-energy-downs>.

<sup>7</sup> Opsal.R.(2015): The Growing Sino-Latin Energy Relationship *Oil Price Magazine* Accessed on the 1<sup>st</sup> of September 2015 p.12 <http://oilprice.com/Energy/Energy-General/The-Growing-Sino-Latin-Energy-Relationship.html>.

<sup>8</sup> Zhao. H. (2011): China-Myanmar Energy Cooperation and Its Regional Implications *Journal of Current Southeast Asian Affairs*. p.89-109.

<sup>9</sup> Vladimir Putin's interview with Chinese media in 2015, on the eve of his visit to China for the 70<sup>th</sup> Anniversary of Victory in World War II Accessed on the 15<sup>th</sup> of April 2015 <http://kremlin.ru/events/president/news/46972>.

the Tianwan NPP, built by Rosatom, demonstrate the best performance on the efficacy and safety of all nuclear power plants in China. Currently, with our participation the construction of the third and fourth power units, is taking place, which will start operating in 2018. There is tangible progress in other segments of the energy cooperation. The oil pipeline from Russia to China is built and operates, a list of agreements to increase oil supplies are enclosed, a joint venture for the exploration and production of oil in our country is established. Chinese companies are investing in gas projects in the Russian Arctic shelf and on the Sakhalin shelf. There are good prospects for the joint development of coal deposits in the Far Eastern regions. In short, the potential of Russian-Chinese energy cooperation is very great" - explained Putin.<sup>10</sup>

South Korea has always been of great interest to the Russian energy sector. The lack of direct border between the two states is undoubtedly hampered the development of relations in that area. Besides the issue of diversification of resources (Korea also imports most of the resources from the unstable Middle East) South Korea has a very weak resource base. In light of the crisis it should be noted that the South Korean government is also interested in obtaining Russian energy resources at a desirable price. Both sides are actively discussing the possibility of supply of gas through the territory of China or North Korea. However, analyzing the long history of bilateral agreements, it can be concluded that, despite the demonstration of high interest from both sides, energy projects rarely reach the implementation stage. Sanctions against Russian Federation spread on import of technologies to develop oilfield in remote places. In that regard, there have been some substantial changes in the aspect of technology imports from South Korea to Russia.

Study of international energy relations and its evolution is not only relevant for the determination of countries energy security, but also a basis for predicting the global role of these countries in the XXI century. Consideration of the energy cooperation between China and Russia, and South Korea, and Russia has a great interest in the aspect of the study of modern geopolitical situation in the world.

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<sup>10</sup> Vladimir Putin's interview with Chinese media in 2015, on the eve of his visit to China for the 70<sup>th</sup> Anniversary of Victory in World War II Accessed on the 15<sup>th</sup> of April 2015 <http://kremlin.ru/events/president/news/46972>.

### *State of Art*

The question of reorientation of Russian Energy on the Asian market, in light of recent political events is quite a hot topic for discussion in both the scientific and the journalistic spheres. Of course, the question of diversification of Russian energy exports was raised many times over the last decade,<sup>11</sup> but it has become particularly acute since the cooling of relations with the European Union and the imposition of sanctions against Russia.

In the period from February 27 - March 16, 2014 in the course of Russia's military intervention on the territory of the peninsula of Crimea, Russian authorities held a referendum, which led into subsequent annexation of the Crimea by the Russian Federation.<sup>12</sup>

A special feature of this study is the fact that the events described in this study at the time of writing it had no logical ending. Also, the author's task is complicated by the fact that a deep scientific research of the subject, at the time of writing was yet conducted. This work is an attempt to conduct such a study, by systematization of events, analysis of documents through the prism of energy relations between Russia, China and South Korea.

Still, we can identify a number of experts in the field of power relations, which regularly cover the issue. It is worth noting that US experts often predict global Russian-Chinese energy projects to be unsuccessful and irrational. Dr. Philip Andrews-Speed, a Principal Fellow at the Energy Studies Institute of the National University of Singapore in his book "China-Russia Energy Relation: Which Party Holds the Stronger Hand?" written in 2011 raised questions about the conditions for further energy cooperation between Russia and China, described the obstacles to this cooperation, and the conditions under which such cooperation possible. However, the factor of complication of relations with Europe, it was not included, which leaves the niche for our study. In his article "Long Road to the China Russian Gas Pipeline Deal. The End of The

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<sup>11</sup> This Assumption is made on the basis of the headlines of the archive of the Centre of Energy and Security of the Russian Federation. Accessed on the 14<sup>th</sup> of September 2015 <http://ceness-russia.org/archive/press>.

<sup>12</sup> Wikipedia Annexation of Crimea by the Russian Federation Accessed on the 14<sup>th</sup> of September [https://en.wikipedia.org/wiki/Annexation\\_of\\_Crimea\\_by\\_the\\_Russian\\_Federation](https://en.wikipedia.org/wiki/Annexation_of_Crimea_by_the_Russian_Federation).

Beginning” he predicts that Russia's efforts fail due to the negative investment climate in Russia and the unreliability of the existing political and legal system.<sup>13</sup>

On the other hand Andrew Belyi, professor of Tallinn University, in his numerous articles on the subject, adheres to a neutral point of view, although he does not turn a blind eye on the factors described by Speed, he still predicts the success of this cooperation, in the light of the lack of alternatives for Russian Energy exports and China, having an upper hand.<sup>14</sup>

Russian authors such as Chuck<sup>15</sup>, Kozhubaev<sup>16</sup> and Marsh<sup>17</sup>, take a more optimistic point of view, focusing on geographical proximity, the possibility of the implementation of infrastructure and long and fruitful economic relationship.

Among Chinese scholars can distinguish Bin<sup>18</sup>, who takes geo-economics and geo politics as the base for his research, and Zhao<sup>19</sup>, his approach is fundamentally different because the issue is viewed through the prism of the SCO and cooperation at the level of national companies.

In the area of energy relations between Russia and South Korea, there is very little scientific literature. The main experts in this area are Younkyoo Kim, (the author of "Russia-South Korea-North Korea Trilateral Cooperation" The US Shale Revolution and Russia (2015), Putin and Korea`s Silk Road Express: Russia`s Game on the Korean Peninsula (2014), "The New Great Game in Central Asia Post 2014: The US New Silk Road Strategy and Sino-Russian Rivalry" (2013) from the South Korean part and Mikail Svetlov (the author of "Problems Energy Complex of South Korea and Russia, as the decision (2009), "Russian energy as a mean of reconciliation of two Koreas" (2013), "Perspectives of Russian-Korean Cooperation" (2015) from the Russian

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<sup>13</sup> Speed. A. (2014). Long Road to the China Russian Gas Pipeline Deal. The End of The Beginning Accessed on the 17 of May 2014 <http://www.andrewsspeed.com/long-road-china-russian-gas-pipeline-deal-end-beginning/>.

<sup>14</sup> Speed. A. (2014): Long Road to the China Russian Gas Pipeline Deal: The End of The Beginning. Accessed on the 17<sup>th</sup> of May 2014 <http://www.andrewsspeed.com/long-road-china-russian-gas-pipeline-deal-end-beginning/>.

<sup>15</sup> Luzianin. S. (2015). Report. Russian-Chinese dialogue Model 2015 . *The Russian Council for International Affairs* №18 2015. p.3.

<sup>16</sup> Kozhubaev. A. (2015): Cooperation Between Russia and China in the Energy Sector. Interests Problem and Prospects. *Oil and Gas Eurasia*, no 2. P/23-34.

<sup>17</sup> Marsh, C.(2014): Russia plays the CHona Card. *The National Interest*, no 92. PFC Global.p.12-23.

<sup>18</sup> Bin. Y.(2014): China-Russia Relations : Geo-economics for geo Politics. *Comparative Connections* vol. 6, No 2. 145-154.

<sup>19</sup> Zhao.S.(2014): China`s Global Search for Energy Security cooperation in Asia-Pasific. *SCO. Journal of Contemporary China*, vol 17. p207-227.



Part. Both scientists see Russian energy exports as a mean to soften the conflict on the Korean Peninsula.

As we can see the “Crimean Crisis” will allow to look on the energy relations between Russia from another angle and establish whether it had a direct influence on their development or not.

## **1.2. Research Objectives**

The main goal of this thesis is to investigate the energy relationships of two Asian countries with Russia and see whether “the Crimean Crisis” truly triggered its development. In this paper we will try to give a detailed analysis of the energy relationships of both countries before the sanctions and how these political events reshaped these relations and even introduced a new paradigm. We will conduct analysis by identifying the main areas of cooperation and we will observe their evolution after the crisis. Moreover, this thesis will explore the competitive position of Russia on the Asian energy market and will try to give a forecast on the subject of the future of Russian energy exports.

## **1.3. Problem Statement**

This point brings us to the main subject of our research: Sino-Russian and South-Korean-Russian Energy cooperation and their evolution in terms of Crimean Crisis. “The Crimean crisis” of March 2014 accelerated a mutual avoidance between Russia and Europe in their energy interdependence. In particular, European states declared their wish to decrease Russia's share of natural gas imports. At the same time, a number of voices emerged in Russia itself about a necessary diversification to Asia. This trend of mutual avoidance means a culmination of mutual political distrust, which certainly has a long-term effect on the markets.”<sup>20</sup>

The history of Sino-Russian energy relations dates back to the Soviet Union times, but the political discrepancies and different points of view to the issue price were a stumbling block on

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<sup>20</sup> Belyi. A. (2015a): Russia's gas export reorientation from West to East: economic and political considerations. *Journal of World Energy Law and Business* Vol. 71 p.5.

the way to the implementation of numerous projects. Finally, under the pressure of sanctions and the pressure from the political elites on “21<sup>st</sup> May 2014 CNPC and Gazprom signed worth US\$ 400 billion gas-deal, for the supplies of 38 billion cubic metres of gas per year for 30 years. The estimated value price is about US\$ 10 per million British thermal units.”<sup>21</sup>

South Korea has always been a desirable energy market for the Russian national energy companies that are one of the reasons it has been included in final feasibility report of the project previous to the “North Stream”. Both Asian countries are seeking to diversify their energy supplies and having leverage over suppliers in order to negotiate the price in their favour is a very attractive advantage. On the other hand Russian energy companies have to struggle in order to get an access to the rapidly boosting energy market and the “LNG” threat is not yet real, but very feasible.

Taking into consideration all the information mentioned above it is reasonable to assume that Sino-Russian and South-Korean-Russian energy relationships can be of interest for in-depth case study of energy security and energy cooperation. Therefore, in this thesis will address the following research question:

*“How did “the Crimean Crisis” influence the development of the Energy Relations (ER) of China and South Korea with the Russian federation?”*

In order to be able to give a profound and well-balanced answer to this question we will have to answer on the following sub-questions:

- *What is the current energy situation in South Korea and China?*
- *What are the main areas of cooperation between Russia and China, South Korea and Russia?*
- *What is the current state of energy cooperation between the two countries and Russia?*

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<sup>21</sup> Speed, A. (2014): Long Road to the China Russian Gas Pipeline Deal: The End of The Beginning. Accessed on the 17<sup>th</sup> of May 2014 <http://www.andrewsspeed.com/long-road-china-russian-gas-pipeline-deal-end-beginning/>.

It is assumed that the geopolitical changes precipitated the Russian refocus to the Asian market will strengthen its rapprochement with China and South Korea, and will provide the basis for further strengthening the geo-Eurasian energy cooperation. However, further positive progress on the issue lies in the hands of the management of the country, the political elites and the heads of energy companies.

#### **1.4. Thesis Structure**

This thesis consists of five chapters, the first of which is a general introduction to the research and a theoretical overview relevant to the research. In the second chapter we will take a closer look on the energy balance and energy policies of the countries. We will also provide an analysis of the energy issues of the countries' energy security. Chapter three is dedicated to the in-depth analysis of energy relations of both countries with Russia: main areas of cooperation and main bilateral agreements. In the last chapter we will examine the evolution of the relations after the implementation of sanctions against Russia, followed by conclusions.

## **Chapter 2: Methodological basics for energy relations analysis**

In order to conduct a profound research we will be using theoretical and empirical approaches. Our theoretical approach is based on a theory of neoclassical realism. Examining the shift in power between the actors in the current geopolitical situation will provide us with a better understanding of Russian-Chinese and South Korean-Russian cooperation in the current geopolitical system. The analysis of the current energy security issues of South Korea and China will allow us to assume how they can benefit from the cooperation with Russia.

The in-depth examination of all areas of current energy cooperation such as energy supply, technology exchange, investment and participation in extraction and mining will provide us with deeper understanding of these relations. Investigation of pre-sanctions relations and their development after will allow us to assess the impact of the crisis on the shifting of power between consumers and suppliers and on the reshaping of Russian external and internal energy policy. We also assume, that the restructuring of energy export, de-monopolisation of gas exports and will allow for the consideration of the geopolitical impact of sanctions on the energy cooperation in the region.

In order to analyse the legal base of cooperation between Russia and China, and South Korean and Russia official documents of all the three governments will be considered, such as memorandums of understanding, agreements, contracts, and speeches, available as primary and secondary sources.

Official bilateral documents:

- “Joint Statement of the Russian Federation and the People's Republic of China on the new stage of relations of comprehensive strategic partnership of cooperation” in Shanghai (spring 2014)
- “Statement of the Russian Federation and the People's Republic of China on the new stage of comprehensive relations of partnership and strategic interaction” signed during the official visit of Russian President Vladimir Putin to China (May 20, 2014)
- The documents of the Summit Conference on Interaction and Confidence Building Measures in Asia (May 21, 2014)

- Joint Statement of the Russian Federation and People's Republic of China on the deepening of the comprehensive strategic partnership of cooperation and promotion of mutual beneficial cooperation (May 8, 2015)

Speeches of the Government Leaders to the media:

- Russian President Vladimir Putin's Interview with leading Chinese media in 2014, on the eve of his visit to the APEC forum in China (May 2, 2014)
- Russian President Vladimir Putin's Interview with leading Chinese media, on the subject of his visit to Shanghai (May 2014)
- Statements to the press by the leaders of Russia and China on the basis of Russian-Chinese talks (spring of 2014)
- Russian President Vladimir Putin's speech to the leading Russian and Chinese media on the visit to take part in celebrations dedicated to the 70th anniversary of the victory in the World War II (August 2015)
- Official statements by the President of the Russian Federation Vladimir Putin and the leader of the Republic of Korea Park Geun-hye during the climate conference in Paris and the official statement of the Presidential Administration of the Republic of Korea on the results of the meeting of two heads of states. (December 2015)

Documents of various Forums and Committees:

- Documents of the Forum "Dialogue between Russia and the Republic of Korea" (April 2015)
- Documents of the Russian East Economic Forum to strengthen cooperation with South Korea (April 2015)
- Documents of the 14th session of Sino-Russian Cooperation Committee on Energy and Natural Resources (April 2015)
- Documents of the Russian-Korean Economic Cooperation Forum (spring of 2015)

Also the author used the basic state acts in the field of energy, such as - "Energy Strategy of Russia for the period till 2020" and different reviews of the Energy Strategies in China<sup>22</sup> and South Korea.<sup>23</sup>

The methodology used to answer our main research question is based on a review of current analytical articles and other academic publications. Due to the fact that the events covered by this investigation are still being developed, this research is of analytical and descriptive nature.

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<sup>22</sup> Jian.Z. (2011): China's Energy Security: Prospects, Challenges, and Opportunities. Brookings. P.14.

<sup>23</sup> Kent E. C. (2015): Korea's Energy Insecurities Comparative and Regional Perspectives. Korea Economic Institute of America. P.10.

In order to represent the full scope of the issue under consideration, both qualitative and quantitative methods will be applied.<sup>24</sup>

The main Russian-Chinese and Russian-South Korean energy projects will be researched on the web-sites of the companies and on the websites of the official government press. Energy balance data and energy statistics of the country will be mainly taken from the national statistical websites and BP, International Energy Agency, U.S. Energy Information Administration, IRENA, REEGLE, World Nuclear Association, Energy Research Store, World Energy Council reports. Other consulted online resources include Interfax, China daily, The Wall Street Journal, Bloomberg, RIA Novosti and InoSmi .

## **2.1. Theoretical Base**

*“We have to understand the ubiquity of energy in everything we do. Energy is core to our economy .... and it’s core to our security challenges.”*

Ernest Moniz, secretary of the US Department of Energy

The issue of energy security has been one of the most disputed topics in the last few years. With the rapid growth of population and in the light of expanding mechanisation, urbanisation and industrialization, the problem of energy security is becoming especially vexed. The world’s fossil fuels resources are not unlimited. Development and implementation of renewable energy is taking a lot of time and investment. Natural resources are spread unevenly on the world’s map. That fact divides the countries of the world into three groups: countries that import resources, countries that export resources and countries that act as transit countries.<sup>25</sup> As a result energy resources are one of the most important factors in international relations. They also play a strategic role in the implementation of the state policy of any country.

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<sup>24</sup> The academic literature selection will include the following Journals: Energy Policy, Oil and Gas Journal, Friends of Europe, Applied Energy.

<sup>25</sup> Yergin.D.(2008): The Prize: The Epic Quest for Oil, Money, and Power *Simon & Schuster* p.8.

The struggle for resources is sometimes the cause of not only political but also military conflicts. In light of such events, governments that implemented wise and strong energy policy will be at an advantage in the foreseeable future. Oil prices, for example have a direct influence not only on currency rates, but on the whole economic situation in exporting countries. Therefore, energy security and energy relations are attracting more and more attention of the researchers.

Criteria for the analysis of energy relations between the two countries vary depending on the type of approach and the country type. However, based on the theory of energy security and on scientific works of the leading researchers in this field, we can form a clear framework suitable for the assessment of our case countries. We have already mentioned earlier, that the countries can be divided into energy producers, consumers and transit countries. In this case, Russia is the producer, while South Korea and China act as consumers. This research is conducted within the theoretical approach of neoclassical realism. Neoclassical realism, in our opinion, gives the best overview of the energy problematic, as it takes into consideration several aspects of energy security that were not included by other theories.

Therefore at first we will give the definition to the energy security and look on factors that ensure it and then we will present a relevant overview of the role energy resources through the prism of neoclassical realism.

### **2.1.1. Definitions of Energy Security**

Balanced and uniform supply of energy – this is without a doubt one of the factors of global security. After the first “oil shock” in 1973 – 1974, energy factor has come to play an important role in international relations, no less important than the military. Energy policy and diplomacy were among the integral elements of the foreign policy strategy of the leading states, and energy security – a central component of international security.

The concept of "energy security" was first introduced by industrialized countries with a market economy in 1947, when a legislative document regulating the actions of the state in the sphere of national security was adopted in the United States.<sup>26</sup>

According to Walter Leal Filho, Vlasios Voudouris there are several definitions of energy security, "for instance it can be a capacity of a country to meet all its energy needs with the energy it produces itself or with the energy it can reliably obtain from partners."<sup>27</sup> A common feature of all the definitions include that "they all warn against the risks of discontinuity in energy supply, which characterizes a scenario where energy provision is insecure."<sup>28</sup>

From the perspective of Chinese scholar Pan Zhongqi, energy security is not only China's economic development, but also political security and international status of China. Energy Security Strategy of China consists of safety of consumption, security of supply and transport safety.<sup>29</sup> Dr. Zhang Jian in his working paper "China's Energy Security: Prospects, Challenges, and Opportunities" comes up with four-dimensional definition of energy security. "(4D): (1) quantitative volume, (2) proved reserves, (3) fuel variety, and (4) time span. These imply constraints that equilibrium across each energy sector and region must be achieved in the long run, as imports and exports (energy commodity trading) can solve energy shortages in the short run but not the long run. Dimensions 1, 2, and 3 can be categorized as either supply side or demand side, depending on whether the country in question is energy importer or energy exporter. Quantitative volume, proved reserves, and fuel variety form the fixed stock at any given time."<sup>30</sup>

Among the Russian scientists definition of "energy security", proposed by scientists of the Institute of Energy Systems of energy security was the most widespread, "energy security is a state of security of citizens, society, state, and economy from deficit threats and interruptions, through the provision of economically accessible energy resources of acceptable quality."<sup>31</sup>

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<sup>26</sup> Bogatyrev. L.L., Belov. A.V., Voropai. N.I. (2003): The reliability of fuel and energy supply systems and survivability of energy of the Russian regions. Publishing House of the Ural University, P.392.

<sup>27</sup> Filho.W.L. Voudouris.V. (2013): Global Energy Policy and Security. *Springer* p.13.

<sup>28</sup> Filho.W.L. Voudouris.V. (2013): Global Energy Policy and Security. *Springer* p.13.

<sup>29</sup> Zhongqi.P. (2004): China's energy security in geopolitics. *Routledge* p.34-39.

<sup>30</sup> Jian.Z. (2011): China's Energy Security: Prospects, Challenges, and Opportunities. Brookings. P.14.

<sup>31</sup> Yazev.V.A. (2009): Power safety of Russia: national and international aspects. Security



Such definitions imply a focus on security threats from the object, and not on their prevention or reduction, and do not associate energy security with the objectives of long-term development of the economy. Also, the definitions emphasize the pricing of energy resources. However, it should be understood that in the case of exporting and importing countries and the concept of energy security of may vary.

In practice, the term “energy security” has not yet received an unambiguous interpretation. Differences in the interpretation of energy security based on the fact that, the country with surplus of natural resources acts as an exporter, and the other – as an importer. Exporter is interested in the high and the importer – in low prices for the resources, and both – in security of supply.<sup>32</sup>

Energy-exporting countries make the main emphasis on maintaining “stability of demand” for their exports, which, in the end, provides a major share of government revenues. Energy-importing countries pay more attention to sustainable energy supply for the needs of their economies and the diversification of energy sources.<sup>33</sup>

According to the Ji Lin Chinese university scholar “energy security goes beyond the provision and consumption of energy. Energy security has a direct impact on the international status, the status of the economy and social security, and as a consequence of national security”.<sup>34</sup>

In this regard, Zykov.S. focuses on the economic component of energy security, "Russian energy security is a state of society and the economy, which allows, on the basis of effective use of fuel and energy potential, to fulfil the needs for socio-economic development of the country's energy consumption, with the economically appropriate level of exports to world energy markets."<sup>35</sup>

However, this definition does not include the prevention of threats to ensure the energy security. The definition of South Korean scientists reflects energy issues and the relationship with

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Eurasia, number 2, P.667-681.

<sup>32</sup> Belyi.A. (2004): Energy security in International Relations (IR) theories. *Higher School of Economics*. p.10.

<sup>33</sup> Winzer.C. (2011): Conceptualizing Energy Security. *University of Cambridge* Accessed on the 8th of May 2015. p.12. <http://www.econ.cam.ac.uk/dae/repec/cam/pdf/cwpe1151.pdf>.

<sup>34</sup> ° Rui. G Shengli. L. (2011): Conceptual System of Sino-Russian Energy Security Cooperation. Logical Dilemma with the Current Issues Jilin University Administration College *Statistics and Policy Decision Journal*. p.3.

<sup>35</sup> Zykov.S. (2009): The economic security as the basis for ensuring Russia's national security. *Problems of Economics*, number 8, P.73-80.

economic security. On the other hand, this definition does not cover all aspects of the mutual influence of economic and energy security of the country's development prospects. "Energy security of market economy - is the provision of the economy with energy resources at a cost at which, on the one hand it is possible to fuel the energy sector, and on the other hand, to bring the profit to the key sectors of the national economy."<sup>36</sup>

In developed countries, the definition of "energy security" is simply the supply of the amount of energy resources needed, at a reasonable price. In Europe, the main discussion focused on how best to organize the diversification of imported natural gas and oil. The main concern of developing countries is the matter of price, and how price fluctuations can affect their financial balance. "The National Security Strategy of the Russian Federation up to 2020" represents fairly volumetric determination of national energy security, which states that "Energy security is determined by the resource adequacy, economical availability, environmental and technological affordability. Resource adequacy determines the physical capabilities of the sufficient energy supply to the national economy and the population, affordability ensures the profitability of such security at the appropriate market conditions prices, environmental and technological affordability ensures the possibility of extraction, production and consumption of energy resources in the framework of existing technology and environmental constraints that determine the operational safety of energy facilities."<sup>37</sup> However, this definition did not take into account the factor of foreign trade, which is the key factor for exporting countries. The definition of energy security that is given in the document "Energy Strategy of Russia until 2020" is as follows : "energy security – a state of security of the country, its citizens, society, economy –from threats to reliable fuel and energy supply. These threats are defined by both external (geopolitical, macroeconomic, conjuncture) factors and the condition and operation of the energy sector of the country"<sup>38</sup> This approach to the interpretation of the concept includes not only the ability to provide reliable fuel and energy of acceptable quality and at an economical price, but also the ability of consumers to get access to effective use of energy resources. However this definition is quite general and do not take into account the nuances of the country belonging to the group of

<sup>36</sup> Kent E. C. (2015): Korea's Energy Insecurities Comparative and Regional Perspectives. Korea Economic Institute of America. P.10.

<sup>37</sup> National Security Strategy of the Russian Federation up to 2020 Accessed on the 5<sup>th</sup> of March 2015 <http://www.scrf.gov.ru/documents/99.html>.

<sup>38</sup> International Business Publications (2014): Russia Oil Refining and Gas Processing Industry Handbook. Volume 1 Strategic Information and Contacts. *Global Investment Centre*. p.5.

importers or exporters and does not fully reflect the importance of the external economic relations. Based on this analysis, we can determine the energy security, as the ability of the energy complex of the country to ensure stability of the country's economic development, reliable power supply to business entities and the population now and in the future, as well as the ability to implement its strategy in the global market, through the effective use of internal and external resources. In the case of exporting countries, an additional factor is the ability to export resources for the desired price and security of supply. In the case of importing countries, an additional factor is the stability of supply at a reasonable price.

### **2.1.2. The framework for energy relations analysis**

Without a clear understanding of the current energy situation inside the country we cannot evaluate the nature and the theoretical development of its energy relations with other countries. Once we have that picture we can analyse the benefits and the shortcomings of the cooperation with their current/theoretical suppliers. To do so we will establish a set of criteria by which we will analyse the areas of interaction.

The first one is the **energy supply**.

In the context of this study, we can trace what kind of energy resources the producer can provide for the consumer. We can do so by looking at the energy mix of the case country. The level of cooperation can be accessed through the volume of share of importer in consumer's energy mix. The evolution can be tracked through the comparison of the volumes of imports of that resource in a given period of time. It should be noted that, the very existence of supply of resources from one country to another is determined by geopolitical factors, supply roots and price.

This brings us to **our second criterion - transportation routes**. Supply roots ultimately determine the final price of energy, and their reliability guarantee energy security. In such a case, the assessment of channels of transportation resources will enable us to assess the potential of cooperation between the two countries. The geographical proximity and the presence of natural boundaries, a priori favour the establishment of energy relations. In other cases, we will try to evaluate all existing supply routes and projected ones.

**The third criterion** we will be looking at - is **price**. A producing country does reliance on consumption and energy tariffs of the consumer. The disadvantage of this criterion is that the price of certain types of energy depends on oil prices, and the picture described by us today can change dramatically in a few years. It is also quite difficult to find information on the actual prices provided in the contract, since it is a commercial secret.

**Investment** is our **fourth criteria**.

For lack of own resources inside the country consumer countries are actively investing money in the energy projects in other countries. Investment projects play an important role in relations between the two countries. Significant money injections or big government loans can be interpreted as a sign of commitment to these relations. However, it must be remembered that not all countries are opening their energy sector to foreign capital.

**Legal base** will serve as the **fifth criterion**. Undoubtedly formal agreements and documents represent not only the legal basis for cooperation between the two countries, but also give a certain signal of mutual understanding, to the other players on the market. But we have to bear in mind that, many agreements remain on paper, without getting further implementation.

Based on the theoretical framework we have described above, we can formulate a clear structure for analysis of power relations. First of all, we will take a closer look at the *energy situation* in the countries. Second of all we will investigate the history of *bilateral agreements* and *joint organization*, built to fulfill these agreements. Third we will see how the Crisis and the Sanction influenced the development of energy relations between the countries.

### 2.1.3. Theoretical Approach: Neoclassical Realism

“Although energy has been the core subject of International Relations for a long time now, it is striking that there has been limited direct application of International Relations theories to understanding energy – and mineral-related conflicts and modes of collaboration and competition. Nevertheless, most of the IR literature on energy issues, particularly is explaining the potential for conflict and cooperation, mainly it is implicitly theoretical, with the main arguments and policy prescriptions underpinned by certain fundamental theoretical assumptions.”<sup>39</sup>

Neoclassical realism (NR) can be described as syntheses of neorealism and classical realism. The main difference is that neorealism includes domestic variables. NR served as basic theory for many authors, who analysed energy driven cooperation or conflicts. For instance Klare,<sup>40</sup> Yergin,<sup>41</sup> Solovyov, Mikheyev.<sup>42</sup> NR suggests that the states are largely dependent on domestically derived preferences.<sup>43</sup> According to F. Zakaria, the state foreign policy can be influenced by a number of actors or factors, both international and domestic.<sup>44</sup> Neoclassical realism gives the following definition to the state – “the state is a complex organization, managed by the statesmen, that has a power to implement rules for the population and have this way on the international arena by exercising the power.”<sup>45</sup> This leads us to another characteristic of neoclassical realism – it is the “power” transformation. “Power” according to NR can be transformed from military, economic, and even resource power, it is essential to add, “that not all economic power of a nation could be transferred to military power, and never can all national economic power be utilised for the purpose of achieving state’s goals, as well as energy power or

<sup>39</sup> Dannreuther, R. (2010): IR Theories: Energy Minerals and Conflicts. Framework for understanding the sources of conflict and tension p.7.

<sup>40</sup> Klare, M.T. (2005): Blood and Oil: The Dangers and Consequences of America’s Growing Petroleum Dependency. *Penguin*. p.23.

<sup>41</sup> Yergin, D. (2008): The Prize. The Epic Quest for Oil, Money, and Power. *Simon & Schuster* p.8.

<sup>42</sup> Mikheyev V.V. (2005): China: Threats, Risks, Challenges to the Development. *Carnegie Endowment for International Peace*. p.5.

<sup>43</sup> Elman, C. (2007). Realism: 11-20. In: Martin Griffiths, ed. *International Relations Theory for the Twenty-First Century. An Introduction*. *Routledge* p.12.

<sup>44</sup> Zakaria, F. (1998). From Wealth to Power: The Unusual Origins of America’s World Role. *Princeton University Press*. p.5.

<sup>45</sup> Česnakas, G. (2010): Energy resources in foreign policy: a theoretical approach. *Baltic journal of law & politics* volume 3, number 1. p.45.

any other type of power.”<sup>46</sup> This paradigm can be accessed on the example of the cooling in the relations between Russia and Europe and Russia’s reorientation to Asia. NR (neoclassical realism) also gives a certain role to the state leaders. With that regard it corresponds with Vladimir Putin’s domestic economic policies that will be depicted in the second chapter. “Energy resources are not part of foreign policy until it is possible to extract them for states purposes.”<sup>47</sup> NR fits perfectly for the analysis of energy resources in foreign policy, because this theory “concentrates on material power, and marks the value of inner-state structure, as well as statesmen attitude to the geopolitical issues.”<sup>48</sup> This explains the role of energy resources in different countries, and how it changed with the reorientation of the governmental preferences. NR for instance explains the monopolization of exports, which happened after Vladimir Putin came to power.

NR also does not suggest giving a deep analysis of domestic policies. As soon as you depict a change in the decision making group it can serve as a basis to explain the broader layers of geopolitics, such as the changes in foreign policy. That is why in this paper we are not focusing deeply on the domestic policies. In terms of methodology, NR researchers are mainly using the methods of comprehensive analysis of I.R. The method of content analysis is also widely used.

Another important variable, according to NR, is the state investment into the economy of partnering country. “The level of investment of the state companies or government loans to another country, determines the level of commitment and interest demonstrated by the investing part.”<sup>49</sup> In the context of our research we will also take a closer look on the participation of China and South Korea in the Russian energy projects.

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<sup>46</sup> Česnakas. G. (2010): Energy resources in foreign policy: a theoretical approach. *Baltic journal of law & politics* volume 3, number 1. p.44.

<sup>47</sup> Heinrich A. Pleines.A.(2014): Russian Foreign Energy Policy under Vladimir Putin. *Ibidem Press Stuttgart* P.79.

<sup>48</sup> Česnakas. G. (2010): Energy resources in foreign policy: a theoretical approach. *Baltic journal of law & politics* volume 3, number 1. p.45.

<sup>49</sup> Česnakas. G. (2010): Energy resources in foreign policy: a theoretical approach. *Baltic journal of law & politics* volume 3, number 1. p.46.

NR also explains the shift from national power to state power in order to exercise their power abroad.<sup>50</sup> This is especially important for the analysis of countries diversification according to their group (exporters, importers, transit countries). NR explains why energy resources are so often used by or against the countries, where energy sector is so closed to the government, in order to expand state's interests on an international level (sanctions against Russia, sanctions against Iran, Russia against the Ukraine). Again these factors determine the course of cooperation between China and Russia and South Korea and Russia. Energy in all the cases is used as leverage. First in order to influence Russian state (sanctions), than by Russia as a counter-measure and in order to restore their position on an international level (cooperation with China) and in order to balance the relations with China (cooperation with South Korea).

NR also explains why it is easier to transfer energy resources from national power to state power in the nondemocratic countries. In democratic states decision making is decentralized and with an eye to follow the democratic principles a number of procedures have to be carried out. In brief neoclassical realism is a theory where domestic factors interact with systemic forces and are closely interconnected.<sup>51</sup>

NR also takes into account the geographical and geopolitical factor of interaction between the two countries. Neoclassical Realism also gives a certain role to the channels of communication; in the context of power relations they are the energy supply channels. Voznesenski wrote: "it is not surprising that the energy producing countries are trying to expand their influence in the region, by establishing economic and energy relations with the neighboring countries, with an emphasis on the factor of cheapness and security of supply." Proponents of the theory of neoclassical realism also predicted shift in the balance of power between producers and buyers in the market of energy resources.

All this indicates the NP as a theory best suited for the explanation of the current geopolitical phenomena: the shift in power between the consumers and producers.

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<sup>50</sup> Česnakas. G. (2010): Energy resources in foreign policy: a theoretical approach. *Baltic journal of law & politics* volume 3, number 1.P.45.

<sup>51</sup> Česnakas. G. (2010): Energy resources in foreign policy: a theoretical approach. *Baltic journal of law & politics* volume 3, number 1. P.45.

#### 2.1.4. Factors Ensuring Energy Security

In order to sustain the energy security there should be several measures and precautions taken by the state. Various researchers emphasize various measures to ensure energy security in the country.

- ***Supply***

Winzer<sup>52</sup> analysed more than 30 definitions of energy security, and he came to a conclusion, that it stands aside from economically and politically related aspects of national security, arguing that the concept could be narrowed down to one single variable – supply. Thus, according to his definition, a secure supply is an essential characteristic of national energy security. There are two major types of energy supplies, the supply within the country and the supply from other countries. In case of the countries can that partially or fully cover their needs with their own energy supply we can talk about the factor of the primary energy supply. In order to ensure the fulfilment of the citizens need in energy it is essential to have a widespread net of supply chains. In case of energy importing countries we need to mention the factor of reliable supply and transit routes.

- ***Secure Transportation Routes and Reasonable Supply Costs***

Usually high production costs are not included in the list of issues of energy security. Nevertheless, the cost of production and resources itself can change rapidly, and this factor must be taken into account. With the technological progress renewable energy sources can at some point in the future compete with the fossil fuels.<sup>53</sup> Another issue is transportation costs. In such countries like China, supply costs can be diminished by the import of energy from the neighbour countries, rather than supplying energy from one part of the country to another.

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<sup>52</sup> Winzer.C.(2011): Conceptualizing Energy Security. *University of Cambridge Press* p.13.

<sup>53</sup> Månssona.A. Johansson.B. Lars J. (2014): Assessing energy security: An overview of commonly used methodologies. *Exergy an International Journal* p.5.



- ***Developed domestic market and developed infrastructure***

We have already mentioned before, the developed network of supply of energy to consumers not only guarantees the energy supply of the population, but steady demand. Timely repair of outdated equipment, proper management, proper regulation, taking all the measures to provide energy to the remote areas of the country – all of this has a direct impact on national energy security.

- ***Diversification of suppliers and fuels***

According to the chairman of Cambridge Energy Research – CERA Daniel Yergin<sup>54</sup> diversification of suppliers and fuels is the first and most famous guideline in order to maintain energy security. “Multiplying one's supply sources reduces the impact of a disruption in supply from one source by providing alternatives, serving the interests of both consumers and producers, for whom stable markets are a prime concern. But diversification is not enough.”<sup>55</sup> Over-reliance on a single source of fuel is a direct threat to the energy and economic security in the event of shortages or supply disruptions, even if this source of renewable energy, or domestic production. Also, the lack of infrastructure to process alternative fuels is a threat to energy security.

- ***“Safety Margin”***

Another principle, according to Yergin<sup>56</sup> - is stability, the “safety margin” in the power supply system, which mitigates the impact of shocks and facilitates the process of recovery. Such flexibility may be characterized by many factors, such as for instance, storage capacity required for backup power equipment along the entire supply chain, the accumulation of important components for the production and distribution of electricity, as well as elaborate plans rapid response to the failures of which can suffer large regions.

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<sup>54</sup> Yergin.D. (2006): Ensuring Energy Security Foreign Affairs Thomson Gale. *University of Michigan* . p.10

<sup>55</sup> Yergin.D. (2011): The Quest: Energy, Security, and the Remaking of the Modern World. *Penguin Press* p.11.

<sup>56</sup> Yergin.D. (2006): Ensuring Energy Security Foreign Affairs Thomson Gale. *University of Michigan*.p.12

- ***Integration and Information***

Yergin argues, that there is only one oil market. Most researchers in this regard, have a similar opinion.<sup>57</sup> For all consumers worldwide safety lies in the stability of that market. Isolation is completely excluded. The following principle is the importance of information. At the international level, the IEA has led the effort to establish the flow of information on world markets and energy prospects.<sup>58</sup> The participation in the international energy projects as well as giving an access to them to international companies can not only serve as a guarantee of further supply and economic benefits, but can also have a positive effect on the development of the region of the project.

- ***State and Market Regulation***

The Russian scientist V.Micheev also distinguishes two main factors that can ensure energy stability, such as state regulation (tax optimization, sustainable and alternative energy promotion, legal framework regulation) and market regulation (price regulation, investment promotion, optimization of consumption structure.)<sup>59</sup>

This brings us to the framework that will provide a deep understanding of the current energy situation and energy security issues within the country:

## **1. Energy Sector Outlook**

In this part we will talk about existing energy resources, mainly **oil**, **gas** and **coal**, since they make up the largest share of the country's energy balance. At the same time we will look at the trends in consumption, by examining the energy mix. In the case of South Korea and China,

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<sup>57</sup> Månssona.A. Johansson.B. Lars J. (2014): Assessing energy security: An overview of commonly used methodologies. *Exergy an International Journal* p.5.

<sup>58</sup> Yergin.D. (2006): Ensuring Energy Security. Foreign Affairs. Thomson Gale. *University of Michigan* p.76.

<sup>59</sup> 23 Mikheyev V.V.(2005): China: Threats, Risks, Challenges to the Development. *Carnegie Endowment for International Peace*. p.7.

the consumption exceeds production, so in that regard we will analyze the energy imports and the volume of Russian energy imports. We also consider the channels through which energy resources are coming into the country and we will examine the existing infrastructure. We also consider the question of existing energy prices in the country, and the prices, the Russian side is offering, including the costs of transportation.

## **2. Exciting Energy Issues**

Energy security forms the basis for the economy, and to a large extent influence the foreign policy. We will look on the exciting security issues, which the countries are facing, in order to see whether the cooperation can bring any solutions. We will use the criteria mentioned in the paragraph 2.1.4.

## **3. Energy Policy**

Energy diplomacy and energy policy is a key instrument of Russian foreign policy. Diversification of energy imports is one of the main priorities for both China and South Korea. The priority of South Korean energy policy is also the mediation of the conflict on the Korean Peninsula. A more detailed examination of the energy policies of these countries will give us a base for argumentation whether the common interest in cooperation is expressed through the energy strategy or not.

Our main goal is to evaluate **Energy Cooperation**.

In that regard we will look at the **areas of cooperation** (Oil Sector, Gas Sector, LNG, Coal etc.) **joint energy project**, the **level of investment** and the **state of these projects**.

As a legal base we will analyse official statements, made by CEOs and country leaders.

## Chapter 3: Russia, China and South Korea Energy Outlook

### 3.1. Russian Energy Sector

Energy is the driving force of the Russian economy. The energy potential of Russia is one of the largest in the world. Energy largely determines the competitiveness and growth of the Russian economy.<sup>60</sup> “In a country with less than 3% of the world population is concentrated about 13% of the worlds proven oil reserves and 34% of natural gas reserves.”<sup>61</sup>

The contribution of oil and gas in Russia's GDP is around 30%, in revenues - about 50%.<sup>62</sup> The share of Russia in the total annual world production of primary energy resources is more than 12%. Energy sector revenues accounts for about a quarter of gross domestic product and make about half of federal budget revenues. Thus, the importance of energy, and especially energy export cannot be overstated.<sup>63</sup>

#### 3.1.1. Oil and Gas

##### *Oil reserves*

According to the Ministry of Natural Resources Russian oil reserves in 2015 amounted to 18 billion tons. The areas where the presence of oil is not confirmed by drilling but by scientific calculations can produce nearly 11 billion tons.<sup>64</sup> According to the British Petroleum estimated the proven oil reserves in Russia are 12.7 billion tons.<sup>65</sup>

<sup>60</sup> Bakatina.D. (2009): Effective Russia: performance, as the foundation of growth. McKinsey Global Institute p.12.

<sup>61</sup> Bakatina.D. (2009): Effective Russia: performance, as the foundation of growth. McKinsey Global Institute p.12.

<sup>62</sup> Ministry of Energy of The Russian Federation. (2015): Statistics Accessed the 8<sup>th</sup> of February 2016

<http://minenergo.gov.ru/activity/statistic>.

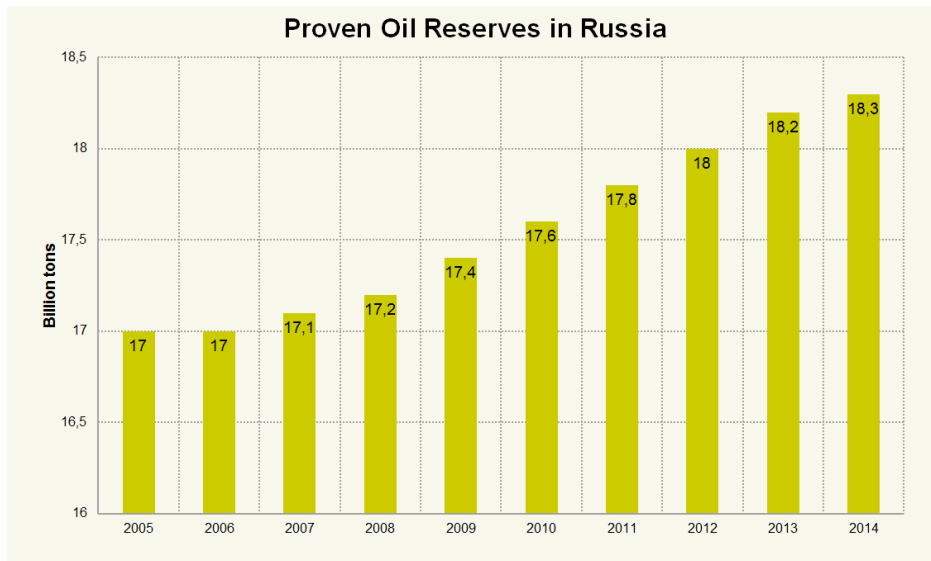
<sup>63</sup> Ministry of Energy of The Russian Federation. (2015): Statistics Accessed the 8<sup>th</sup> of February 2016

<http://minenergo.gov.ru/activity/statistic>.

<sup>64</sup> Ministry of Natural Resources and Environment of the Russian Federation. (2015): Statistics Accessed the 8<sup>th</sup> of February 2016. <https://www.mnr.gov.ru/activities/list.php?part=1879>.

<sup>65</sup> BP(2015): Statistical Review of World Energy 2015 Accessed the 8<sup>th</sup> of February 2016

<http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>.

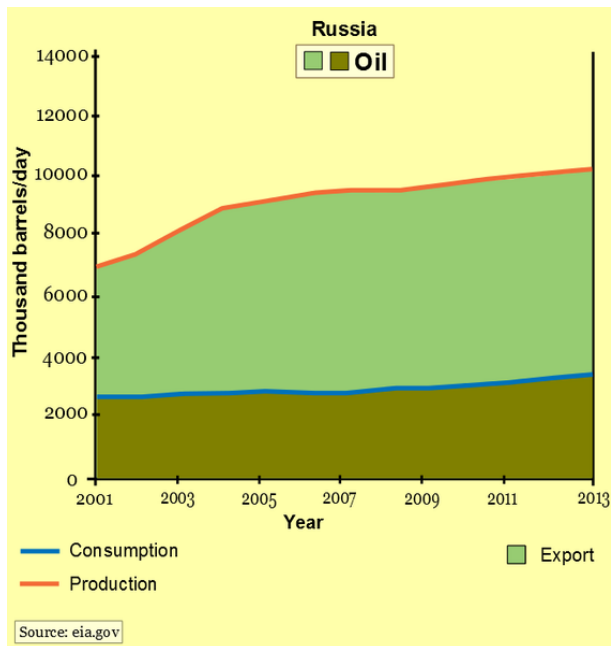
**Figure 1.**

Source - Ministry of Natural Resources and Environment of the Russian Federation.  
<https://www.mnr.gov.ru/activities/list.php?part=1879>.

“To date, Russia discovered and explored more than three thousands of hydrocarbon fields, and developed about only 50%. Most of these resources are located on the land, more than half of Russian oil production and 90% of gas production is concentrated in the Urals and Western Siberia. In the long term, priority regions for oil and gas production are Eastern Siberia and the Far East.”<sup>66</sup> Their development seems particularly important as the socio-economic point of view, and based on the strategic interests of Russia in the Asia-Pacific region. “Of great importance is the development of oil and gas centres, as the Sakhalin shelf, Barents, Baltic and Caspian Seas.”<sup>67</sup>

<sup>66</sup> Ministry of Energy of The Russian Federation. (2015): Statistics Accessed the 8<sup>th</sup> of February 2016  
<http://minenergo.gov.ru/activity/statistic>.

<sup>67</sup> BP(2015): Statistical Review of World Energy 2015 Accessed the 8<sup>th</sup> of February 2016  
<http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>.

**Figure 2. Russian Oil export, consumption-production**

Source - Aenert.com Russia Profile <http://rabcom.advailo.com/countries/europe/russia.html>.

### ***Sector Organization***

Currently, oil production in Russia is carried out by circa 320 organizations, including 140 companies within the structure vertically integrated oil companies (VICs), 180 organizations refer to the number of independent production companies, and three companies are working on the terms of production sharing agreements.

About 90% of the total oil and condensate production in Russia accounted for eight vertically integrated oil companies: "Rosneft", "Lukoil", "TNK-BP", "Surgutneftegas", "Gazprom Group" (including "Gazprom Neft"), "Tatneft" "Bashneft", "RussNeft".

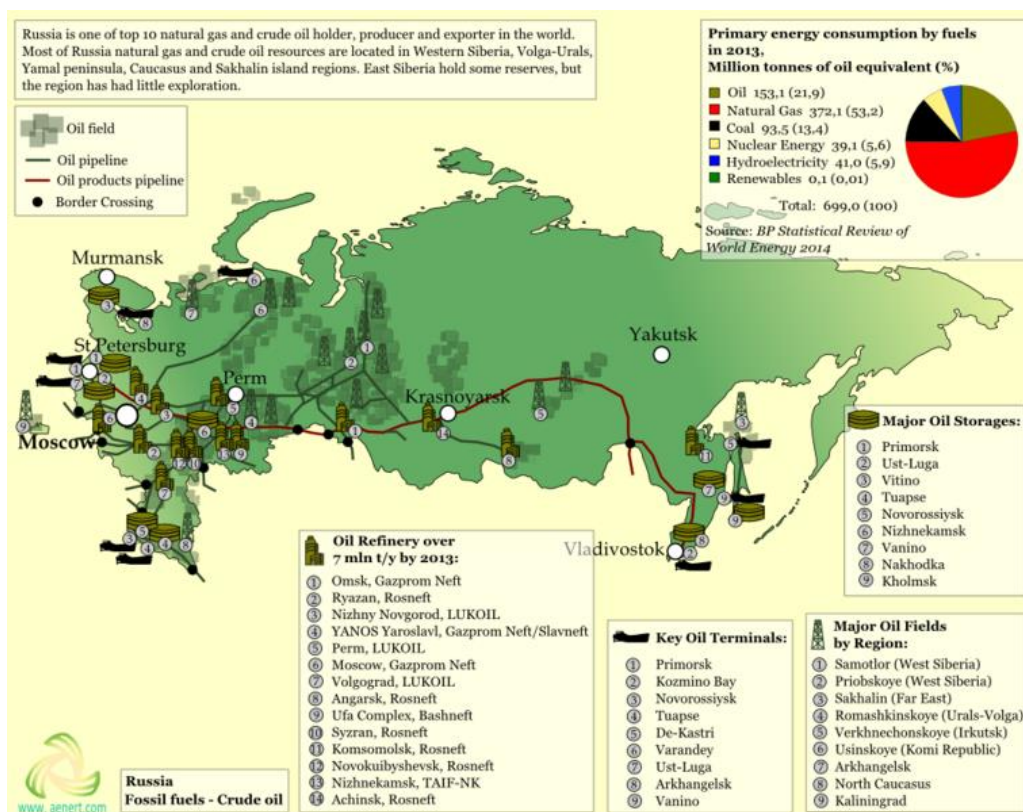
In 2015, "Rosneft" (69.5% state-owned company) confirmed its status as the leader in oil production in Russia for the eighth time in the row. The company has acquired a number of assets of other companies, including the majority of the assets of Yukos. Rosneft, in addition to assets, also took over the interest of expansion to the east. In March 2013, "Rosneft" has closed its acquisition of TNK-BP, as the result, the company has become the world's largest oil producer, which controls about 37% of oil production in Russia, and the annual extraction of subsurface liquid hydrocarbons amounts to about 195 million tonnes. Rosneft also performs

as a domestic developer. The company is engaged in the development of such regions as Kamchatka and the Far East of Russia.<sup>68</sup> "LUKOIL" is the second largest oil producer VICs.<sup>69</sup>

### Oil refining

There are 32 large refineries and more than 200 small refineries in Russia. A number of Russian companies - "Lukoil", "TNK-BP", "Gazprom Neft", "Rosneft" - owns refineries, or planning a purchase and construction of refineries abroad - in Ukraine, Romania, Bulgaria, Serbia, China, etc.<sup>70</sup>

**Map 1. Russian Oil Resources and Oil Infrastructure**



Source - Aenert.com Russia Profile <http://rabcom.advailo.com/countries/europe/russia.html>.

<sup>68</sup> Rosneft. Overview. Accessed on the 5<sup>th</sup> of April 2015. <http://www.rosneft.com/Upstream/Overview>.

<sup>69</sup> Ministry of Energy of the Russian Federation. (2015): Oil Industry Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/node/910>.

<sup>70</sup> Ministry of Energy of the Russian Federation. (2015): Oil Industry Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/node/910>.

### *Oil exports*

The main market for Russian oil exports, despite the difficult political situation, remains Europe. In 2015, oil exports from Russia amounted to 244 million tons worth \$ 89.6 billion. The share of Europe - 74% (\$ 132 billion) is still the highest, but still lower than in 2012 (93%); Asia - 24% (\$ 42.5 billion); North America - 1.3% (\$ 2.36 billion).<sup>71</sup> The organizational structure of exports of crude oil by pipeline is dominated by the company "Rosneft", whose share amounted in 2012 34.2% of the total volume of oil exports (60.9 million tons); "TNK-BP" - 16.9% (30.1 million tons); "Surgutneftegaz" - 15% (26.7 million tons); "LUKOIL" - 13.8% (24.6 million tons). These four companies are providing 80% of total crude oil exports from Russia.<sup>72</sup> With 200.000 kilometres of oil and gas pipelines combined, the Russian pipeline system is the largest in the world. The whole oil pipeline system is under the control of state-owned company "Transneft", which inevitably provides the government with certain leverage and an upper hand in the foreign policy dispute.<sup>73</sup> On the other hand, the developed system of pipelines, in case of lack of feasible alternative ways of supply, establishes certain limits and imposes non-market nature of the relationship between suppliers and consumers.<sup>74</sup>

The main destination of oil exports, because of the existing pipeline network, is Europe and it accounts for 72%. Asia, in turn, accounts for 24% of Russian crude exports, with China and South Korea on the 1<sup>st</sup> and the 3<sup>rd</sup> place respectively. (See Figure 3) There are a number of pipeline projects, connecting the Asian market with Russian gas resources. We will take a closer look on them in the later chapters.

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<sup>71</sup> Central Bank of the Russian Federation. (2015): Exports of crude oil of the Russian Federation for the period 2000-2015 (According to the Federal Customs Service of Russia and Rosstat) Accessed the 9<sup>th</sup> of February 2016 [http://www.cbr.ru/statistics/print.aspx?file=credit\\_statistics/crude\\_oil.htm](http://www.cbr.ru/statistics/print.aspx?file=credit_statistics/crude_oil.htm).

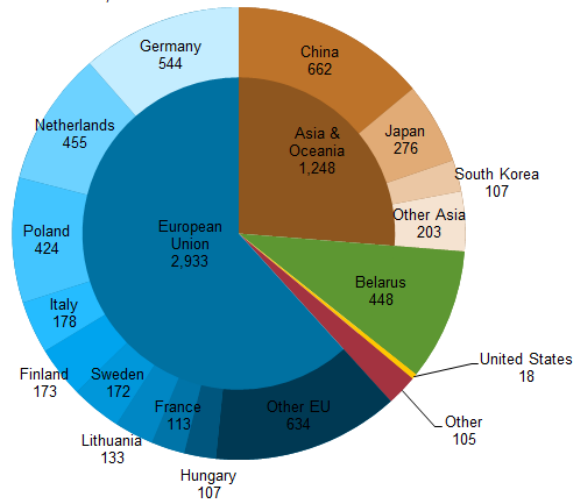
<sup>72</sup> Central Bank of the Russian Federation. (2015): Exports of crude oil of the Russian Federation for the period 2000-2015 (According to the Federal Customs Service of Russia and Rosstat) Accessed the 9<sup>th</sup> of February 2016 [http://www.cbr.ru/statistics/print.aspx?file=credit\\_statistics/crude\\_oil.htm](http://www.cbr.ru/statistics/print.aspx?file=credit_statistics/crude_oil.htm).

<sup>73</sup> Larsson, R.L. (2006). Russia's Energy Policy: Security Dimensions and Russia's reliability as an Energy Supplier. Stockholm: FOI, Swedish Defence Research Agency. R-1934-SE. 1- 362.

<sup>74</sup> Ericsson, R.E. (2009). Eurasian Natural Gas Pipelines: The Political Economy of Network Interdependence. Eurasian Geography and Economics, vol. 50, no. 1, 28-57.



Figure 3. Russia's crude oil and condensate exports by destination, 2014



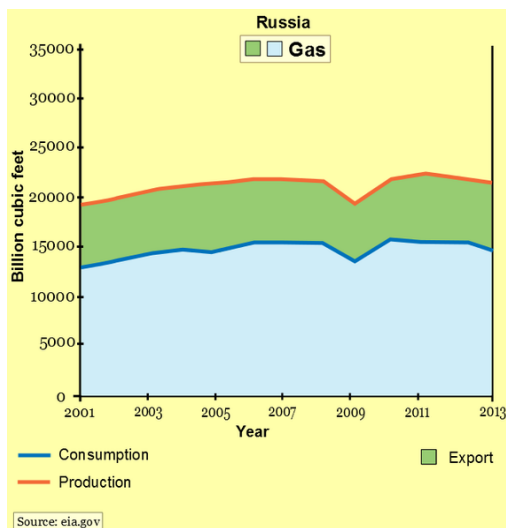
Source: U.S. Energy Information Administration based on Federal Customs Service of Russia and reporting countries' import statistics, Global Trade Information Service

Source U.S. Energy Information Administration (2015). Report on Russia 2015 p. 4 Accessed on the 11th of May 2015 <https://www.eia.gov/beta/international/analysis.cfm?iso=RUS>.

### Gas Resources

“Russia holds the world's largest natural gas reserves and it accounts for about a quarter of the world's total proved reserves.”<sup>75</sup>

Figure 4. Russian Gas export, consumption-production



Source - Aenert.com Russia Profile <http://rabcom.advaillo.com/countries/europe/russia.html>.

<sup>75</sup> U.S. Energy Information Administration (2015). Report on Russia 2015 p. 4 Accessed on the 1<sup>st</sup> of May 2015 <https://www.eia.gov/beta/international/analysis.cfm?iso=RUS>.

Russian potential gas reserves are estimated at 160 trillion m<sup>3</sup>, of which the European part accounts for 11.6%, while the eastern regions - 84.4%, the shelf inland seas - 0,5%. More than 90% of natural gas is produced in West Siberia, including 87% - in the Yamalo-Nenets and 4% - in the Khanty-Mansiysk Autonomous Okrug. These are the largest gas fields: Urengoy, Yamburg, Zapolyarnoe, and Medvezhye. Industrial reserves of natural gas in the region account for over 60% of all the country's resources.<sup>76</sup> Other gas-producing areas are allocated in the Urals (Orenburg gas condensate field - more than 3% of production), Northern region (Vuktylskoe deposit). There are resources of natural gas in the Lower Volga (Astrakhan gas condensate field), in the North Caucasus (North Stavropol, Kuban-Azov deposit), the Far East (Ust-Vilyui, Tungor on about. Sakhalin). Promising areas of gas production are considered offshore waters of the Arctic and the Sea of Okhotsk. In the Barents and Kara seas there are - Leningradskoye, Rusanovskoye, the Shtokman field.<sup>77</sup>

Gas is transported via the Unified Gas Supply System, which includes developed deposits, pipeline network, compressor stations, underground storage facilities and other installations.

### ***Sector organization***

The Russian gas industry is dominated by "Gazprom" - the world's largest gas producer structure, one of the most important natural monopolies of the country, providing 94% of Russian gas production. Its share in global reserves is 17%, in Russian - 72%.<sup>78</sup>

The leading position of "Gazprom" is legally secured by monopoly on pipelines exports.

“Despite the fact that companies such as, "Novotek" and "Lukoil" acquired a certain “weight” in the gas industry; Gazprom monopoly prevents the further development of independent companies.”<sup>79</sup>

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<sup>76</sup> Ministry of Energy of the Russian Federation. (2015): Gas Industry Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/activity/statistic>.

<sup>77</sup> Ministry of Energy of the Russian Federation. (2015): Gas Industry Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/activity/statistic>.

<sup>78</sup> Gazprom (2015): Statistics Accessed the 9<sup>th</sup> of February 2016 <http://www.gazprom.ru/statistics/>

<sup>79</sup> U.S. Energy Information Administration (2015). Report on Russia 2015 p. 4 Accessed on the 1<sup>st</sup> of May 2015 <https://www.eia.gov/beta/international/analysis.cfm?iso=RUS>.

## ***Exports***

In 2015, "Gazprom export" has provided European countries with 158,56 billion cubic meters of gas. Approximately 82% of supplies from Russia account for Western Europe; 18% goes to the central European states. In 2015, "Gazprom export" put on the Eastern and Central European markets of 130,05 billion cubic meters natural gas, this region is particularly important due to its geographical proximity to Russia.<sup>80</sup>

## ***Gas Infrastructure***

Gas transportation to Europe is carried out through several main pipelines connecting the fields in the North with the European countries through the Unified Gas Supply System. Gazprom is the only operator of all Russian natural gas pipelines.

The gas pipeline "Brotherhood" (Urengoy-Uzhgorod Pomar) is the largest gas transportation corridor. Every year more than 100 billion m<sup>3</sup> can be supplied through the Ukrainian gas transportation system in the direction of Slovakia, Czech Republic, Germany, France and Switzerland, the other branch goes to Austria, Hungary and some countries of former Yugoslavia.<sup>81</sup>

The gas pipeline "Yamal-Europe" is located on the territory of Russia, Belarus and Poland and goes straight to Germany. The total length of the pipeline is more than 2 thousand km. There are 14 compressor stations. The total capacity if the pipeline is 33 billion cubic meter per year. Gas transportation corridor through Romania enables the transport of Russian gas transit through Ukraine and Moldova to consumers in this country, as well as to the Balkan countries and Turkey. Construction of the pipeline began in 1986 and in 2002 - was built the second line. The gas pipeline "Blue Stream" is dedicated to directly supply of Russian gas to Turkey, bypassing transit countries. The total length of the land and sea areas of the pipeline is 1,213 km - from the district Izobilnoye in the Stavropol Territory to Ankara. The length of the underwater section is 393 km. Construction of the pipeline was completed in December 2002,

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<sup>80</sup> Gazprom (2015): Export Statistics Accessed the 9<sup>th</sup> of February 2016 <http://www.gazprom.ru/statistics/>

<sup>81</sup> Ministry of Energy of the Russian Federation. (2015): Gas Industry Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/activity/statistic>.

and industrial gas deliveries began in February 2003. By July 2010, the "Blue Stream" transported around 50 billion cubic meters of gas.<sup>82</sup>

For consumers in Finland gas is exported through the gas transportation system of the Leningrad region.

### ***LNG***

There is one plant for LNG production on the territory of Russia - "Sakhalin - 2". In 2015, the plant produced 10.8 million tonnes (equivalent to 14.9 billion cubic meters of natural gas) LNG, which was then transported to Japan, Korea, China, Taiwan, Thailand. The project operator is the company Sakhalin Energy Investment Company Ltd. (Sakhalin Energy).

The shareholders of Sakhalin Energy:

- Gazprom Sakhalin Holdings B.V. (A subsidiary of PJSC "Gazprom", 50% plus one share);
- Shell Sakhalin Holdings B. V. (a subsidiary of Royal Dutch Shell plc, 27,5% minus one share.);
- Mitsui Sakhalin Holdings B. V. (a subsidiary of Mitsui & Co. Ltd., 12,5% of shares);
- Diamond Gas Sakhalin B. V. (a subsidiary of Mitsubishi Corporation, 10% of the shares)<sup>83</sup>

### ***Key LNG – Projects***

"Vladivostok-LNG" is in the investment stage from February 2013. The design capacity is 10 million tons per year with the possibility of further expansion.

"Yamal LNG" - a project on the base of South Tambeykoye field (its reserves are estimated at 926 billion cubic meters, design production level - about 27 billion cubic meters per year). The designed power of "Yamal LNG" is 16.5 million tons of liquefied gas, this project involves the construction of three lines, 5.5 million tonnes each. According to NOVATEK's website, the project "is under active construction", the start of production is planned for 2017. The shareholders are - "Silk Road" owns 10% of the project, NOVATEK - 50.1%, the French

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<sup>82</sup> Ministry of Energy of the Russian Federation. (2015): Gas Industry Accessed the 9<sup>th</sup> of February 2016  
<http://minenergo.gov.ru/activity/statistic>.

<sup>83</sup> Gazprom (2014): Gazprom in Eastern Russia, Entry into Asia-Pacific Markets. Accessed the 9<sup>th</sup> of March 2016  
<http://www.gazprom.com/f/posts/10/492625/presentation-press-conf-2014-06-18-en.pdf>.

Total - 20%, and 20% - Chinese CNPC. The main export destination of this project is the Asian market.<sup>84</sup>

### **3.1.2. Coal**

“At the end of 2014, 358.2 million tons of coal was produced in the Russian Federation, with a 1.7% increase compared to 2013.”<sup>85</sup> “The production index in 2014 set a record for Russia, for the first time since the collapse of the Soviet Union. Russia ranks the 6th among the leaders in coal production.”<sup>86</sup> To date, 121 coal pits and 85 mines are operating in the Russian Federation. The main centers of the coal industry are Siberia, with the Kuznetsk coal basin. Other major coal basins of the country are - Kansk-Achinsk, Pechora, Irkutsk, Ulug-Khem, East Donbass. Tunguska and Lena coal basins are also very promising areas. In 2014, 252.9 mln tons of coal were mined by open way that the percentage ratio was 70% of the total. In comparison with 2013 year, this figure increased by 0.8%. And if you compare with 2000, the figure increased by 34%. Coal distribution in the domestic market is as follows<sup>87</sup>:

- Power plants - 55.1%
- Production of coke - 19.3%
- Households, consumers and the population needs - 13.3%
- Other needs - 12.3%

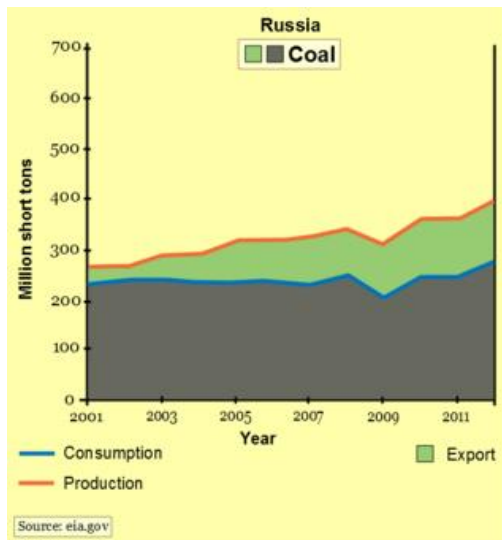
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<sup>84</sup>Novatek(2015):Yamal Energy Project Accessed the 9<sup>th</sup> of March 2016 <http://www.novatek.ru/en/business/yamal-ing/>.

<sup>85</sup> U.S. Energy Information Administration (2015). Report on Russia 2015 p. 4 Accessed on the 11th of May 2015 <https://www.eia.gov/beta/international/analysis.cfm?iso=RUS>.

<sup>86</sup> Ministry of Energy of the Russian Federation. (2015): Coal Industry Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/activity/statistic>.

<sup>87</sup> Ministry of Energy of the Russian Federation. (2015): Coal Industry Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/activity/statistic>.

**Figure 5. Russian Coal export, consumption-production**

Source - Aenert.com Russia Profile <http://rabcom.advailo.com/countries/europe/russia.html>.

### *Sector Organization*

The leader of the Russian coal industry is the "Siberian Coal Energy Company". At the end of 2014 the enterprises belonging to the structure of the company extracted 96.5 million tons of coal, accounting for 27.4% of the total coal produced in Russia. The company has the largest proven coal reserves in Russia - 5.6 billion tons. It rates the fifth among all coal companies in the world. The company comprises 17 coal pits and twelve mines.<sup>88</sup>

The second-largest coal company of Russia is OJSC "KRU". The company specializes in the extraction of coal by open way and is working in six coal pits. At the end of 2015 sections belonging "KRU" it produced 43.9 million tons of coal.<sup>89</sup>

The company "SDS-Ugol" is a subsidiary of the holding company "Siberian Business Union". The structure of the "SDS-Ugol" is four coal pits and more than ten mines. About 88% of the products were exported. The main importing countries of "SDS-Ugol": Germany, UK, Turkey, Italy, Switzerland.<sup>90</sup>

<sup>88</sup> Siberian Coal Energy Company.(2014): Annual Company Report. Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/activity/statistic>. [http://www.suek.com/files/pdf/en/SUEK\\_Annual-Report-2014\\_eng.pdf](http://www.suek.com/files/pdf/en/SUEK_Annual-Report-2014_eng.pdf).

<sup>89</sup> KRU(2015): Main factors Accessed the 9<sup>th</sup> of February 2016 <http://www.kru.ru/ru/about/indices/>.

<sup>90</sup> SDS-Ugol(2015): Main factors Accessed the 9<sup>th</sup> of February 2016 <http://sds-ugol.ru/about-the-company/>.

"KVSU" is the largest coal company in Eastern Siberia and the fourth largest producer in Russia. Coal mining by the end of 2015 amounted to - 15.7 million tons.<sup>91</sup>

### **3.1.3. Power Sector**

Unified Energy System of Russia (UES of Russia) consists of 69 regional utilities, which, in turn, form 7 integrated energy systems: East, Siberia, the Urals and Middle Volga, South, Central and North-West. The electric power complex UES of Russia includes about 700 power plants of over 5 MW. At the end of 2014 the total installed capacity of power plants UES of Russia was 223 MW.<sup>92</sup>

#### ***Thermal power***

Surgut GRES-2 operating on natural gas, with the total capacity of 5600 MW is biggest thermal power plant in the territory of Russia is the largest in Eurasia. The largest coal fired power station is Reftinskaya TPP (3800 MW), followed by Surgut GRES-1 and GRES Kostroma with 3000MW each. In the process of reform of the electricity sector Russia's largest thermal power plants were merged into wholesale generating companies (WGCs) and territorial generating companies (TGK).<sup>93</sup>

At the moment, the main task of the development of thermal power generation is to ensure the modernization and reconstruction of existing power plants, as well as the commissioning of new generating capacity using advanced technology in the production of electricity.

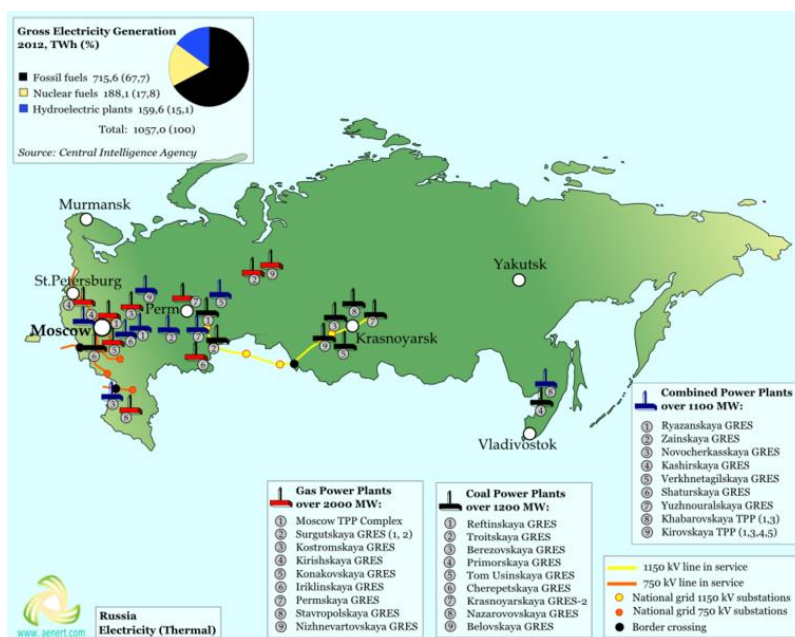
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<sup>91</sup> KVSU(2015): Main factors Accessed the 9<sup>th</sup> of February 2016 <http://www.kvsu.ru/company/>.

<sup>92</sup> Ministry of Energy of the Russian Federation. (2015): Electricity Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/activity/statistic>.

<sup>93</sup> Ministry of Energy of the Russian Federation. (2015): Electricity Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/activity/statistic>.

## Map 2. Russian Thermal Power plants



Source - Aenert.com Russia Profile <http://rabcom.advallo.com/countries/europe/russia.html>.

### Hydropower

Russia has a large hydropower potential, which implies significant opportunities for the development of domestic hydropower. “Russian Federation holds about 9% of world reserves of water resources. Russia ranks second in the world in terms of hydropower potential, ahead of the United States, Brazil, Canada.”<sup>94</sup>

To date, the total theoretical hydropower potential Russia is amounted at 2900 KWh annually. Now, however, the country uses only 20% of this potential. One of the obstacles to the development of hydropower is the remoteness of the main part of the potential, concentrated in the central and eastern Siberia and the Far East, which is far away from major consumers of electricity.<sup>95</sup>

<sup>94</sup> Ministry of Natural Resources and Environment of the Russian Federation. Statistics Accessed the 8<sup>th</sup> of February 2016. <https://www.mnr.gov.ru/activities/list.php?part=1879>.

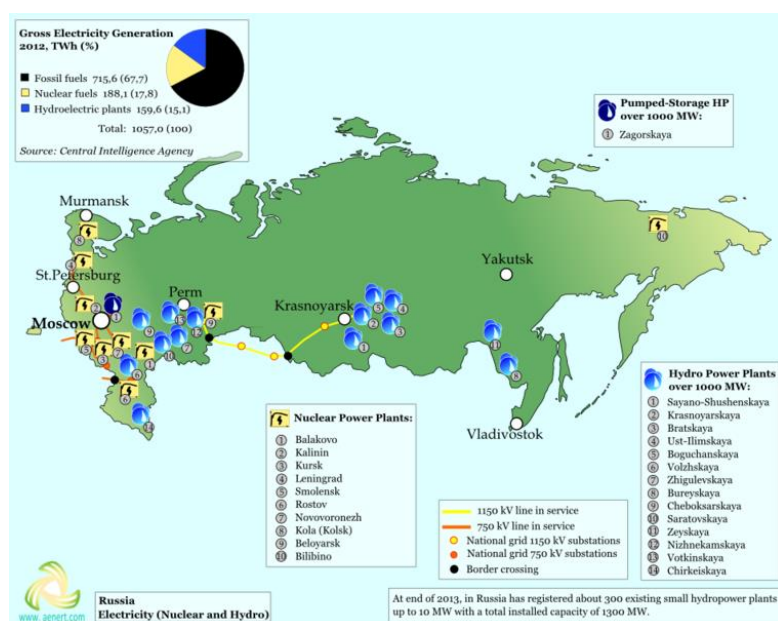
<sup>95</sup> Ministry of Energy of the Russian Federation. (2015): Electricity Accessed the 9<sup>th</sup> of February 2016 <http://minenergo.gov.ru/activity/statistic>.



Russian Power Generation HPP provides annual savings of 50 million tons of standard coal, the savings potential is 250 million tons; it helps to reduce CO<sub>2</sub> emissions by up to 60 million tons per year, which provides an almost unlimited potential of Russian energy capacity growth in the conditions of strict requirements for limiting greenhouse gas emissions.

Currently 102 hydropower plants of over 100 MW operate in Russia. The total installed capacity of hydropower units at the hydropower plants in Russia is approximately 46,000 MW (5th in the world). In 2015, Russia's hydropower plants generated 153.3 billion kWh of electricity. The total volume of electricity production in Russia the share of hydropower plants was 15.2% in 2015.<sup>96</sup>

### Map 3. Russian Hydro and Nuclear Power plants



Source - Aenert.com Russia Profile <http://rabcom.advailo.com/countries/europe/russia.html>.

<sup>96</sup> Ministry of Natural Resources and Environment of the Russian Federation. Statistics Accessed the 8<sup>th</sup> of February 2016. <https://www.mnr.gov.ru/activities/list.php?part=1879>.

### ***Nuclear power***

“Russia is the third largest generator of nuclear power in the world and the fourth largest in terms of installed nuclear capacity.”<sup>97</sup> Russia has the technology of nuclear power full cycle from uranium mining to electricity generation. Russia operates 10 nuclear power plants (NPP) - a total of 33 power installed capacity of 23.2 GW, which generate about 17% of the total electricity produced, 9 more nuclear power plants are under construction.<sup>98</sup>

## **3.2. Russian Energy Challenges and Energy Policy**

### ***Russian Energy Policy in the Southeast Asia***

For the last decades, energy resources and energy diplomacy was used by the Russian Government as a tool of foreign policy with regard to both Europe and Southeast Asia.

Russia demonstrated the interest in economic and political cooperation with China and South Korea before the collapse of the Soviet Union. Gorbachev's visit to Beijing in 1989 and the establishment of official diplomatic relation between Moscow and Seoul in 1990 “laid the groundwork for Russian strategy” towards China and South Korea.<sup>99</sup>

In the last two years we could witness the return to the paradigm of "East vs. West" in the Russian Foreign energy policy.<sup>100</sup> Some time ago, Russia showed clear futures of Europeanism, but the rapidly growing Asian region brought changes to the energy resources export mix of the Russian Federation.<sup>101</sup> There was a certain dilemma in the Russian energy policy in the

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<sup>97</sup> BP(2015): Statistical Review of World Energy 2015 Accessed the 8<sup>th</sup> of February 2016

<http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>.

<sup>98</sup> Ministry of Energy of the Russian Federation. (2015): Nuclear Industry Accessed the 9<sup>th</sup> of February 2016

<http://minenergo.gov.ru/activity/statistic>.

<sup>99</sup> Charap.S. The US and Russia in Asia-Pacific. The International Institute for Strategic Studies. 2016. P.8.

<sup>100</sup> Kozhubaev. A. (2015): Cooperation Between Russia and China in the Energy Sector. Interests Problem and Prospects. Oil and Gas Eurasia, no 2. P.23-34.

<sup>101</sup> Luzianin. S. (2015). Report. Russian-Chinese dialogue Model 2015 . *The Russian Council for International Affairs* №18 2015. p.3.

South East Asian region. Political goals demanded costs. Achieving the goal of increasing regional influence Russia demanded economic concessions to the Asian countries in the energy sector or the infrastructure costs caused by the purely political motives.

In turn, if Russia has sought to extract the maximum possible profit from the region and minimizing its costs, its effect would be reduced.

Mixing motifs leads to the fact that the Russian energy policy was sometimes dominated by the goal to maximize economic profit and sometimes by the goal of increasing regional influence. As the result of this political "zigzags" none of the goals were achieved.

### ***Russian Energy Challenges.***

The number of energy issues in Russian Federation is diverse<sup>102</sup> :

- high degree of depreciation of the fuel and energy complex (in the electricity and gas industry - almost 60 per cent in the petroleum industry - 80 per cent);
- low level of investment (in the last 5 years the volume of investments in Russian energy was only 60 per cent of the volume, calculated in the Russian Energy Strategy for the period up to 2020);
- very high degree of dependence of the Russian economy and energy on natural gas, share of natural gas in the structure of domestic consumption is about 53 percent;
- low level of the productive capacity of energy in comparison with the world's scientific and technical level, especially low level of environmental standards;

In the concept of the study we would like to focus on the following energy challenges.

### ***The “cooling” of relations with the West***

Ukrainian crisis of 2014 became a major international event, which had a very significant impact on the relations of the countries. This event radically changed the international political

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<sup>102</sup> National Energy Strategy of the Russian Federation up to 2020 Accessed on the 5<sup>th</sup> of March 2015  
<http://www.scrf.gov.ru/documents/99.html>.

situation and the attitude of major world powers, causing the most serious clashes and fuse since the Cold War.<sup>103</sup> Russian plans to build a unified political and economic space with the West were destroyed. In the economic sphere the degree of interdependence of the EU and Russian markets weakened. After the Russian economy felt the pressure of anti-Russian sanctions, it started to seek partners among the Eastern neighbours' countries to strengthen the international status and compensate the damage caused by Western economic sanctions.<sup>104</sup> "Some of the sanctions strategically target important areas of promise for Russia's energy industry, like arctic exploration and deep-water and unconventional drilling."<sup>105</sup> As a result, the sanctions have caused some significant damage to the Russian financial and energy sector. It is predicted, that the Russian oil production will have to face a rapid slowdown in the nearest couple of years. Rosneft, the largest state owned company, has some real difficulties dealing with the existing debts and getting new credits. The LNG Yamal Project requires another US\$50 billion to continue the construction and it will require more investment in the future. Last, but not least, the economists predict a financial crisis, which Sberbank, as the largest state-owned bank might face in the nearest future. In that case the reorientation to the East became not only a part of energy security plan, but a priority. The Russian leadership realises that the subsequent changes of the role of Russian energy export requires "new approach, comprehensive plan and long-term commitment".<sup>106</sup>

### ***Underdevelopment of Energy Sector in the West Siberian Region***

Another issue is the development of West Siberian Region. Oil production from the West Siberian oil fields decreases rapidly. Russian politicians claim that the compensation of the drop-down Russian exports to Europe is being added to the eastern stock, and sent to China.<sup>107</sup> However, we must add some emphasis.

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<sup>103</sup> Kozhubaev. A. (2015): Russian-Chinese relations on the background of the Ukrainian crisis. *Oil and Gas Eurasia*, no 2. P.23-34.

<sup>104</sup> Kozhubaev. A. (2015): Russian-Chinese relations on the background of the Ukrainian crisis. *Oil and Gas Eurasia*, no 2. P.23-34.

<sup>105</sup> Domm.P.(2014): How Sanctions are hurting Russian Energy Sector *CNBC*  
<http://www.cnbc.com/2015/04/24/how-sanctions-are-hurting-russias-energy-sector.html>.

<sup>106</sup> Charap.S. The US and Russia in Asia-Pacific. The International Institute for Strategic Studies. 2016. P.14.

<sup>107</sup> Luzianin. S. (2015). Report. Russian-Chinese dialogue Model 2015. *The Russian Council for International Affairs* №18 2015. p.3.

Despite all the efforts for the development of the eastern regions, the population density is very low. The volume of energy available is disproportionate to economic activity, even if we imagine that its development will occur in the most positive way. In other words, it is impossible to “spend it on a place” in the next decade. Of course, Russia can transfer some of these stocks to the European part. But with increasing distance at some point transport costs become obscenely high and absorb most of the energy.<sup>108</sup>

In addition, the development of energy fields in the east of high cost, and in addition often exempt from some taxes. This means that if Russia set the task to fix the volume of export revenues, the increase in exports to the east on a certain amount will be accompanied by fewer retractions from the west. In that regard cooperation with the Asian countries seems like the only feasible alternative.

### ***The inability to utilize a surplus of electricity in the Far East***

The problem is that the energy of the Far East is set up in the way that it produces surplus of electricity. The volume of electricity produced is disproportional to consumption. The only option is to sell this surplus, or do so-called "idle discharge" to the hydro power plant, which will have a damaging effect on the ecology of the region.<sup>109</sup>

The main external challenge these days is the need to overcome the risks associated with the instability of world energy markets and the volatility of world prices for energy resources, and to ensure the country's energy sector's contribution to improving the effectiveness of its foreign trade and strengthening of Russia's position in the world economic system. This means that the main priorities of Russian energy policy are<sup>110</sup>:

- reaching sustainable results of foreign economic activity in the sphere of fuel and energy complex in the face of increasing global competition for resources and markets;

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<sup>108</sup> Kozhubaev. A. (2015): Cooperation Between Russia and China in the Energy Sector. Interests Problem and Prospects. Oil and Gas Eurasia, no 2. P.23-34.

<sup>109</sup> Marsh, C.(2014): Russia plays the China Card. The National Interest, no 92. PFC Global.p.12-23.

<sup>110</sup> National Energy Strategy of the Russian Federation up to 2020 Accessed on the 5<sup>th</sup> of March 2015 <http://www.scrf.gov.ru/documents/99.html>.

- geographic and product diversification of Russian energy exports in terms of stable energy supply and expanding the world's largest consumers;
- the development of major components of the international energy infrastructure in Russia, carried out with the use of new energy technologies;
- formation of a stable institutional environment favourable to the energy sector;
- improvement of energy and environmental efficiency of the Russian economy and energy, through structural changes and intensification of the process of energy saving;
- strengthening the position of the leading Russian energy companies abroad;
- ensuring effective international cooperation on risk and complex projects in Russia (including offshore projects in the Arctic) ;
- further integration of Russian energy in the global energy system.

To draw a small conclusion we can say that there are four main directions of Russian Energy Policy in the region. First is to establish strong economic ties with the promising countries of the region and “push” the idea of Eurasian European Union, to balance the relation with West. Second is to cement relations with Southeast Asian countries, like Vietnam, South Korea to ensure that the turn to the East is not unidirectional. Thirdly Russia is interested in ASEAN’s central position as “diplomatic broker” in the region.<sup>111</sup> Fourthly Russian interest is dictated by its desire to develop the Far East and the West Siberian Region.

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<sup>111</sup> Charap.S. The US and Russia in Asia-Pacific. The International Institute for Strategic Studies. 2016. P.14.

### 3.3. Chinese Energy Sector

"Chinese economic miracle" could not be realized without a ceaseless supply of energy resources. The energy complex cannot keep up with the pace of industrial growth, urbanization and motorization.

The People's Republic of China (PRC) was founded in 1949 and during an extremely short period of time transformed from an agrarian country into the leaders of the world economic rankings.<sup>112</sup> "The Gross Domestic Product (GDP) in China was worth 10360.10 billion US dollars in 2014. The GDP value of China represents approximately 1/6 of the world economy."

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The introduction of market reforms and the policy of "opening-up" caused not only an unprecedented growth of GDP, but the economy as a whole. It is worth noting that the "Chinese economic miracle" could not be realized without a ceaseless supply of energy resources. The energy complex cannot keep up with the pace of industrial growth, urbanization and motorization. The lack of own resources, poor infrastructure and a number of factors threaten the energy security of the country. That is why in this chapter we will take a closer look at a current energy situation in China and the main challenges the country is facing today.

Before World War II, China was among the countries with the average reserves of mineral fuels. Coal reserves are estimated at 930 billion tons, production was 28 million tons per year. The current state of Chinese Energy, namely production and consumption patterns, location and size of enterprises, was ordained during the industrialization of the second half of the XX century. In the first years after the founding of the PRC fuel production grew rapidly. In 1953, coal production was - 70 million tons, oil production - 0.6 million tons, electricity - 9.2 billion kW / h. Already in 1959 it 369 million tons of coal was produced, 3.7 million tons of oil (due to the discovery of the Daqing oil field) produced 42.3 billion kW / h of electricity. China now is one of the world's largest consumers of energy resources. According to the National Bureau of

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<sup>112</sup> International Monetary Found (2014): World Economic Outlook. Accessed on 12<sup>th</sup> of April 2015

<http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/index.aspx> .

<sup>113</sup> Trading Economics China Profile. Accessed on 12<sup>th</sup> of April 2015 <http://www.tradingeconomics.com/china/gdp> .

Statistics of China, in 2013 the total production of all types of energy in China was 3.4 billion tons of coal equivalent,<sup>114</sup> while consumption - 3.75 billion tonnes of coal equivalent<sup>115</sup> and according to the Energy Information Administration (EIA) of the United States, in 2014 the total primary energy consumption in the US is 98 billion British thermal units (2.45 billion tons of oil equivalent).<sup>116</sup> For this indicator, China is the 2nd largest in the world after the United States. However, according to BP, in 2013, the total primary energy consumption in China is 2.265 billion tons of oil equivalent. For this indicator, China overtook the United States (2.862 billion tons of oil equivalent) as the largest energy consumer in the world.<sup>117</sup>

### **3.3.1. Oil and Gas**

After the founding of the PRC oil and gas industry began to develop rapidly, and became the main branch of the national economy. Further development of the economy and industrial modernization of the country is heavily dependent on the state and prospects of development of the oil and gas industry. According to BP, in 2014 China consumed more than 10% of the world's oil, being at the second place after the United States on this indicator. In addition, since 2009 China has moved to 2nd place in the world for oil imports, ahead of Japan.

According to BP report in 2013<sup>51</sup>, oil production in China reached 4.1 million b/d, and oil imports amounted to 6.3 million b/d. In other words, China imported more than half of total oil. According to the forecast of Chinese scientists, in 2020 China's dependence on imported oil will approach 65%. However, the rate of production of refined petroleum products in China are low and lags well behind the need for them. The gap between the needs for petroleum products and their production capacity is increasing every year. Up to 2020, it is planned doubling of economic potential, but further growth will largely depend on the condition of the fuel and

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<sup>114</sup> National Bureau of Statistics of China (2014): China Statistical Yearbook 2014. Accessed on 12<sup>th</sup> of April 2015 <http://www.stats.gov.cn/tjsj/ndsj/2014/indexeh.htm>.

<sup>115</sup> National Bureau of Statistics of China (2014): China Statistical Yearbook 2014. Accessed on 12<sup>th</sup> of April 2015 <http://www.stats.gov.cn/tjsj/ndsj/2014/indexeh.htm>.

<sup>116</sup> Energy Information Administration Total energy Consumption. Accessed on 12<sup>th</sup> of April 2015 <http://www.eia.gov/totalenergy/>.

<sup>117</sup> BP (2014): BP Statistical Review. Accessed on the 4<sup>th</sup> of May 2014 BP, 2011. p. 32,33. <http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2014-full-report.pdf>.



energy complex of the country, which, despite the efforts of the Chinese authorities, remains a "bottleneck" in its national economy.<sup>118</sup>

### ***Oil and gas resources in China***

According to the Review of World Energy prepared in 2011 by BP<sup>119</sup>, China has only 1.1% of the world's proven oil reserves. Largest reserves of China ranked 13th in the world. Undiscovered recoverable oil reserves are estimated at tens of billions of tons. According to Chinese experts, the estimated oil reserves comprise 24.8 billion tons, the total amount of geological reserves of oil in China - 94 billion tons.<sup>120</sup> A total proven recoverable gas reserves amount to 2.5 trillion cubic meters, remaining proven recoverable reserves amounted to 2.12 trillion cubic meters (1.5% of the world's remaining gas reserves) and ranked 14th in the world.

Chinese experts divide a common oil and gas area into four parts: the eastern, western, central, and continental shelf. (See Map 1) The eastern zone is now a major area for the production of oil. Here are the major oil fields - Daqing, Jilin, Laohe, Shengli, Dagang, Chzhunyuan, which account for about 75% of the oil produced in the country. Proved reserves are 80% of the reserves of the country. In the western zone of the oil fields are located Xinjiang, TACE, Tarim, etc. In the central zone of the deposit is Changqing, Xinan, Yanchan, etc.

Currently, the major Chinese oil fields are Daqing, Shengli and Changqing, but their reserves almost exhausted themselves, the majority of the new oil fields are located in the western regions, and their development requires significant investments. (See Map 1) Another region is considered to be the most promising area is the continental shelf. According to Chinese experts, closer to the land in the area of the Yellow Sea, the East China Sea and the South China Sea lie considerable oil and gas resources.

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<sup>118</sup> Ostrovsky A.B.(2012) : Energy market in China: the interests and capabilities of Russia. M.: IFES p.36.

<sup>119</sup> BP (2011): BP Statistical Review of world energy 2011. London 2011 p. 9.

<http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2011-full-report.pdf>.

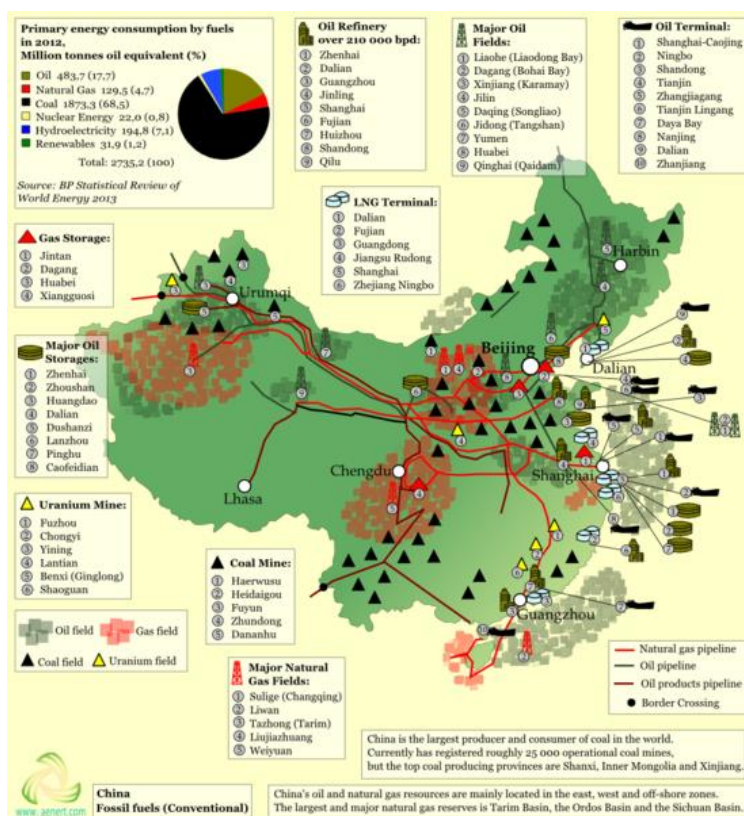
<sup>120</sup> BP (2011): BP Statistical Review of world energy 2011. London 2011 p. 9.

<http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2011-full-report.pdf>.

### Chinese oil and gas sector infrastructure

At the present stage, the solution of the transport problem of the oil industry – is one of the most important tasks to complete in order to reduce the gap between supply and demand for oil and petroleum products. In China, there is no uniform system of oil main pipelines. For example, the western region of the country used to be not connected to the main oil-consuming regions of the east and center. ( See Map 4.)

**Map 4. Chinese Oil and Gas Sector Infrastructure**



Source - Aenert.com China Profile <http://rabcom.advailo.com/countries/asia/china.html>

The first major oil pipeline in the country was the Karamay - Dushanzi pipeline built in the late 1950. The first major oil pipelines in eastern China have appeared only in 1970, Daqing - Tsinhuando and Daqing - Dalian. In 1975, the Qinhuangdao - Beijing pipeline was completed, that gave the industry in the capital energy it needed. In the mid-1970s, oil pipelines tied consumers to Shengli oil field, where the oil went to refineries in Ji'an, the capital city of

Schandun province and to Nanjing City in Jiangsu province.<sup>121</sup> (See Map 4) A major tool in the implementation of regional programs, primarily the so-called "movement in the West" is the accelerated development of the western regions. The importance of these projects is often compared with the new Silk Road. Indeed, pipelines to transport oil and gas from Xinjiang and Central Asian countries to the central and eastern parts of China is built along the ancient Silk Road. Pipeline "Kazakhstan - China" became the first in China oil pipeline, through which the country receives foreign oil. The total length of the pipeline exceeds 3,000 km (from Atyrau on the Caspian Sea to Dushanzi), the length of the Kazakh section is more than 2,800 km, and the Chinese - 240 km. Construction of sections of the pipeline "Russia - China" in Russia and China respectively began in April and May 2009. In 2010, the entire length of its construction work was completed. This pipeline starts in the Amur region Skorovodino crosses then goes through the Sino-Russian border area of Heilongjiang Province and the Inner Mongolia Autonomous Region, and ends in the city of Daqing. Its total length is close to 1000 km. In particular, 65.5 km passes through the territory of Russia, the boundary segment on the river Heilongjiang - 1.1 km, the length of the pipeline on the Chinese territory is 933 km. Starting the 1st of January 2011, this pipeline was officially put into commercial operation.<sup>122</sup>

The same thing happens with gas, the main gas producing areas are not geographically connected with the most industrially developed regions of the country. Therefore, the delivery of gas to consumers, the central and eastern parts of the country requires the construction of capital-intensive gas transportation systems. Until 2001, China had no major gas transportation systems and transportation of gas from the producing fields to nearby consumers was provided by the regional gas pipelines. And until now, national gas transmission and distribution network is not yet established. Nevertheless, the commissioning of new large trunk pipelines is happening rapidly. During the period from 1990 to 2008, the length of gas pipelines in China increased in 4.5 times (from 6.7 to 30 thousand km) and continues to grow rapidly. The largest transcontinental gas transmission pipeline system is the "East - West" (Lunnan - Shanghai). On the 10th of September 2010 in Anqing, Anhui Province began the construction of the Chinese section of Sino-Burma oil and gas pipeline. Oil and gas pipeline "China-Myanmar" originates in Kyaukphyu (Myanmar) and goes to Kunming (China) via Ruili city of Yunnan Province. The

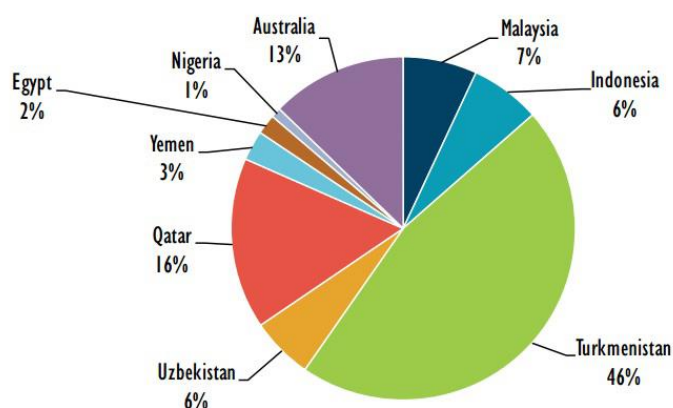
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<sup>121</sup> Ostrovsky A.B.(2012) : Energy market in China: the interests and capabilities of Russia. M.: IFES p.38.

<sup>122</sup> Ostrovsky A.B.(2012) : Energy market in China: the interests and capabilities of Russia. M.: IFES p.39.

length of the Chinese section of the oil pipeline is 1631 km length of the Chinese section of the gas pipeline is 1727 km. (See Map 4) The length of the oil pipeline and the gas pipeline of Myanmar, comprises 771 km and 793 km respectively. “The Myanmar section of the gas pipeline was completed on 12 June 2013 and gas started to flow to China on 21 October 2013. The oil pipeline was completed in Aug, 2014. “<sup>123</sup> The main gas flows come to China from Central Asia.

**Figure 5. China’s gas imports by source, 2014**



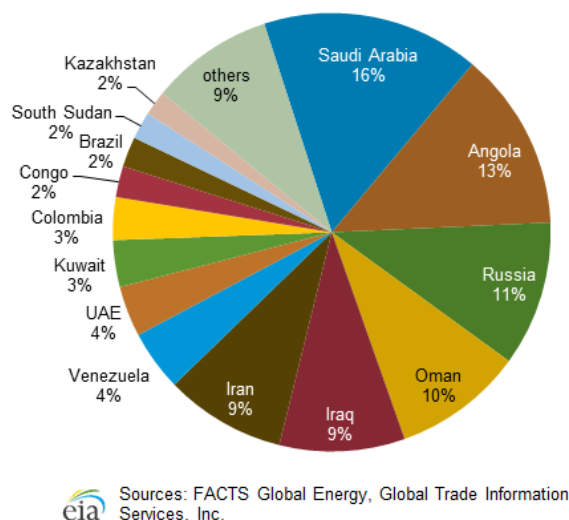
Source IEA China Profile <https://www.iea.org/newsroomandevents/graphics/>

It should be noted that in June 2008, the Chinese company CNPC has started the construction of a gas pipeline "China - Central Asia". This pipeline originates in Turkmenistan, passing through Uzbekistan and Kazakhstan, and goes to the central, eastern and southern regions of China. The total length of the pipeline is about 10,000 km. Upon completion of laying Turkmenistan for 30 years, will supply China with the natural gas volume of 30 billion cubic meters per year. This facility consists of three sections - "China-Turkmenistan", "China-Uzbekistan" and "China-Kazakhstan". The main suppliers of oil are Russia, Saudi Arabia and Angola. (See Figure 5) In November 2015 Russia overtook Saudi Arabia to become the largest supplier of oil to China.

<sup>123</sup> Wikipedia Sino-Burma Pipeline [https://en.wikipedia.org/wiki/Sino-Myanmar\\_pipelines](https://en.wikipedia.org/wiki/Sino-Myanmar_pipelines).

**Figure 6.**

China's crude oil imports by source, 2014



Source U.S. Energy Information Administration China <https://www.eia.gov/beta/international/analysis.cfm?iso=CHN>.

### 3.3.2. Coal. The driver of Chinese Energy Sector

China is rich in fossil coal. China is also a major producer and consumer of coal in the world. The share of coal in the energy balance of China after the reform in 1978 was consistently more than 70% and not only did not decrease, but since 2002 has grown considerably, which was caused by the sharp rise in oil prices in the world. The share of coal consumption is gradually reduced, but still occupies more than 2/3 of the energy balance which is due to an increased share of oil consumption (due to the growth of exports) and hydropower.<sup>124</sup>

The structure of energy consumption in China is different from both the global and Asian due to a significant share of coal (China - 70.9%, in the world - 29.6% in the Asia-Pacific region - 52.1%>). Oil occupies the second place (China - 16.5%, in the world - 33.5% in the Asia-Pacific region - 27.7). Gas has a low share of the energy mix (China - 4.3%, in the world - 23.8% in the Asia-Pacific region - 11.2%).<sup>125</sup>

<sup>124</sup> BP (2011): BP Statistical Review of world energy 2011. London 2011 p. 9.

<http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2011-full-report.pdf>.

<sup>125</sup> National Bureau of Statistics of China(2011): Summary of the Statistical Yearbook of China for 2011. Accessed on the 4<sup>th</sup> of May 2014 p.12. <http://www.stats.gov.cn/tjsj/ndsj/2011/indexeh.htm>.

### ***The development of China's coal sector***

For 50 years after the founding of the PRC, especially after the reforms in 1978, China's coal industry began to develop rapidly and comprehensively. According to the BP report<sup>126</sup>, in 2010, coal production reached a level of 1.8004 billion tons of oil equivalent and 48.3% of the total world production, the need for coal (including Hong Kong) was 1,719,800,000 tons of oil equivalent, assuming 48.2% of global consumption and 72.1% of the total demand in Asia Pacific.<sup>127</sup> Clearly, China is the absolute leader in the production and consumption of coal in the world.

According to the Ministry of Land and Resources of China, proven recoverable coal reserves amount to 326 billion tons, remaining recoverable coal reserves - 176.8 billion tons, accounting for 13.3% of world reserves and puts China coal reserves, the third largest in the world after the United States and Russia. Large amounts of coal ensure the development of the national economy and the needs of the population; moreover, additional volume is exported to the international coal market, where China plays a significant role.

### ***The structure of the distribution of coal reserves***

Coal reserves are located almost throughout China. Map (see Map 5.) shows that coal reserves are more concentrated in northern and north-western China. In terms of reserves and production of coal Chinese provinces can be divided into 3 groups: first, the provinces-exporting coal mined in other provinces or abroad (regions - suppliers of coal): Shanxi, Shaanxi, Ningxia Hui Autonomous Republic and the Inner Mongolia Autonomous Republic; second, the provinces self-sufficient in coal (self-sufficient in coal regions): Southwest China, Gansu Province and Qinghai, Xinjiang Uygur Autonomous Republic; third, the provinces of importing coal to meet their business and consumer needs (regions - importers of coal): Beijing, Tianjin and the province Hubei; Northeast China; East China and Central South China. Thus, in contrast to the oil and gas industry, coal industry is more widespread across the country.

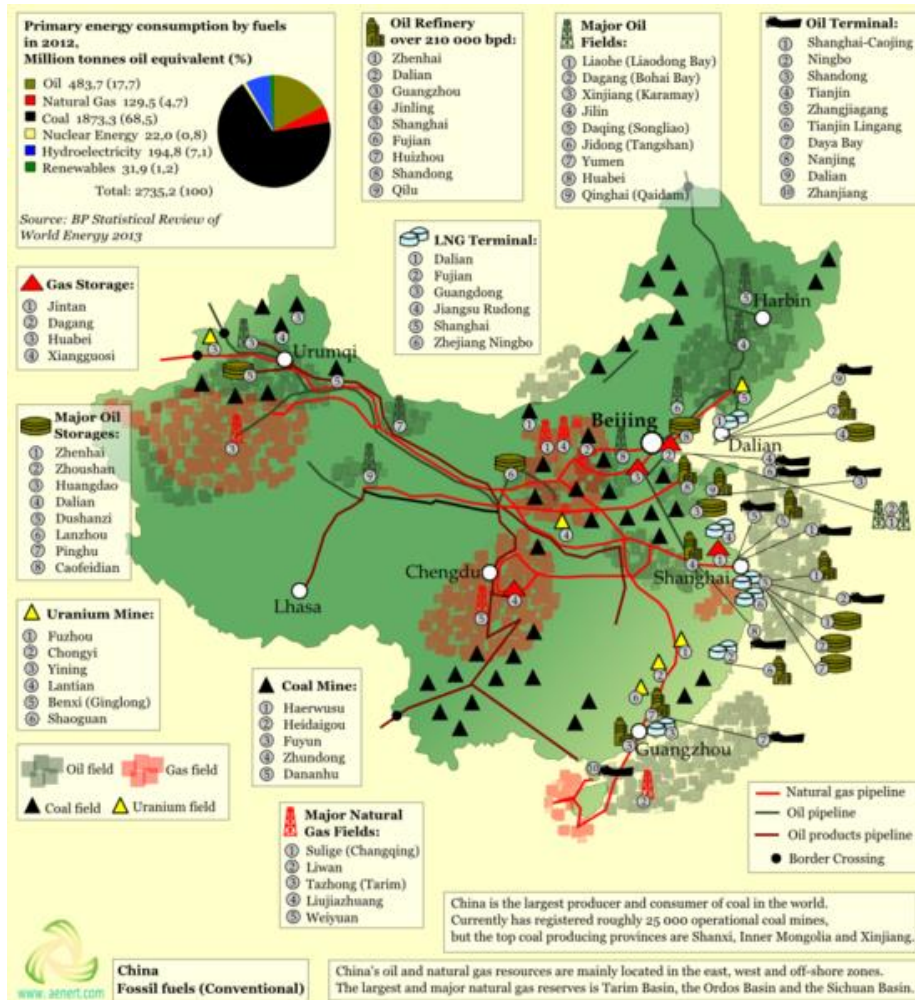
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<sup>126</sup> BP(2011): BP statistical review of world energy. Accessed on the 4<sup>th</sup> of May 2014: BP, 2011. p. 32, 33. <http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2014-full-report.pdf>.

<sup>127</sup> National Bureau of Statistics of China(2011): Summary of the Statistical Yearbook of China for 2011. Beijing. Accessed on the 4<sup>th</sup> of May 2014 p.12. <http://www.stats.gov.cn/tjsj/ndsj/2011/indexeh.htm>.



Map 5. Energy Facilities and Resources Distribution in China



Source – Aenert.com Profile - China <http://rabcom.advailo.com/countries/asia/china.html>

### Coal production and consumption in China

Coal occupies 70.9% of the primary energy supply in China, which is higher than the world level two times. In modern conditions of economic transformation of China's coal industry is developing rapidly. Before 2008 China was able to export coal, but in order to cope with the vast industrial growth China became a coal importer. (see Figure 1.) Domestic coal production is able to provide the energy requirements for the development of the national economy and to improve living standards.

According to the association of the coal industry in China in 2010, the structure of coal production by type of business was as follows: first, the state mines - mostly considered to be sufficiently safe and provide 51.1% of the total production of the country. Secondly, the local mine - owned by the regional government, their share of coal was 12.5%. Third, private mines - smaller in size, but bigger in terms of production, they make 38.2% of the total coal production in the country.<sup>128</sup>

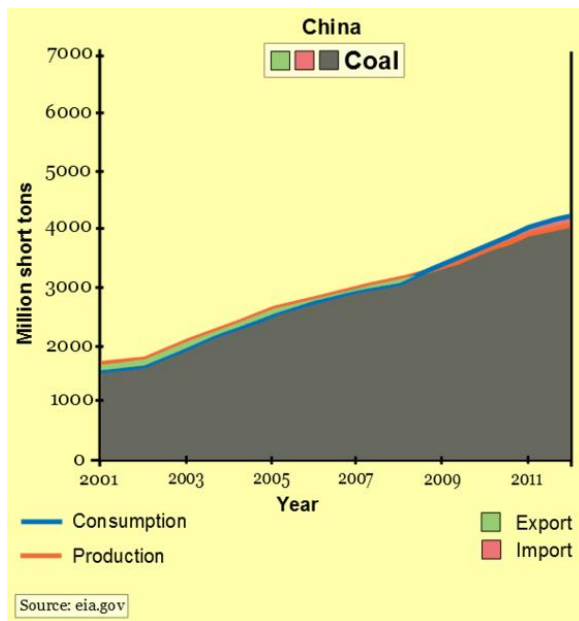
The structure of coal consumption for quite a long time was as follows: 60% was used in industry, 10% was consumed by power stations, 5% - transport, and only 25% was spent on household needs. Until now, for most rural houses in the villages and small towns, coal is still the main source of heat. Not to mention the low efficiency of the use of coal, emissions into the atmosphere of huge amounts of combustion products is having a destructive impact on the state of the air basin, degrading the environment. However, since the mid-1990s, this situation is beginning to change for the better, and the structure of coal consumption is gradually acquiring modern form. A significant decline in the share of transport in coal consumption has attracted particular attention. This fact can be explained in two ways: firstly, the transportation costs may be included in industrial use; secondly, rail transport, a former main consumer of coal, almost all switched to electric traction. The proportion of coal consumption in key areas is fairly stable, but there is an increase tendency of the share of coal directed to the production of electricity, with 65 to 70%, and a decrease in the share of coal intended for coking from 26% to 21%. The share of coal for heating is relatively stable, ranging 7-10%.<sup>129</sup>

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<sup>128</sup> National Bureau of Statistics of China (2014): China Statistical Yearbook 2014 Accessed on 12th of April 2015 <http://www.stats.gov.cn/tjsj/ndsj/2014/indexeh.htm>.

<sup>129</sup> China Coal Resource (2015): Coal Consumption. Accessed on the 15<sup>th</sup> of June 2015 <http://en.sxcoal.com/341/119055/DataShow.html>.

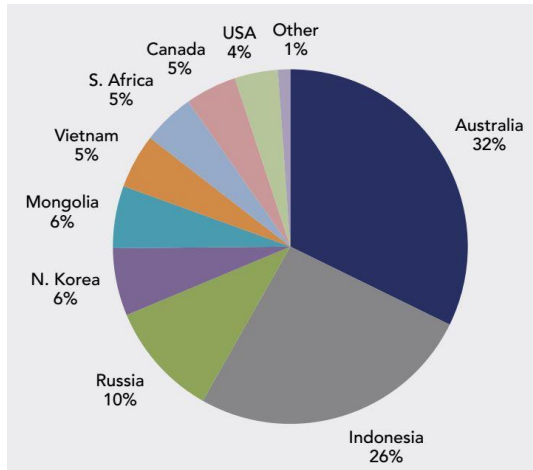


**Figure 7. Chinese Coal import-export, consumption-production**

Source - Aenert.com China Profile <http://rabcom.advailo.com/countries/asia/china.html>

In recent years, China has begun to carry out a series of measures to limit the production of coal in the preparation of future development plans for the coal industry. These plans include improving the efficiency of coal utilization, reducing energy and water during its production, the strict limitation of high-quality coking coal to power rural small mines. However, direct closure of small mines can be difficult because of two reasons, on the one hand, it causes a lack of supply of coal in the country (especially in the field and for the consumption of the population), and on the other - the problems of employing the miners. Therefore, in 1996 - 1999 a third of small and rural mines were closed, and in 2002 - 2005 they resumed their activities. The Chinese leadership has developed a number of legal actions, based on environmental protection and safety for restructuring and consolidation of small mines.

The structure of coal imports is as follows: Australia is the biggest exporter, followed by Indonesia and Russia. (See Figure 7)

**Figure 8. China's coal imports by source 2014**

Source – Energy without Carbon. <http://www.energy-without-carbon.org/StrandedAssets>.

### *Problems of development of China's coal sector*

If China continues to further expand domestic coal consumption, the government needs to address the following issues.

The first problem is the insufficient volume of proven reserves of coal. During the reduction in demand for coal (the second half of the 1990s) geological exploration of new fields and proved reserves were held in insufficient scale. After 2003, with the growth in global demand for coal, many mines have significantly increased coal production without taking into account the technical possibilities and geological potential, which reduced the remaining reserves of coal.

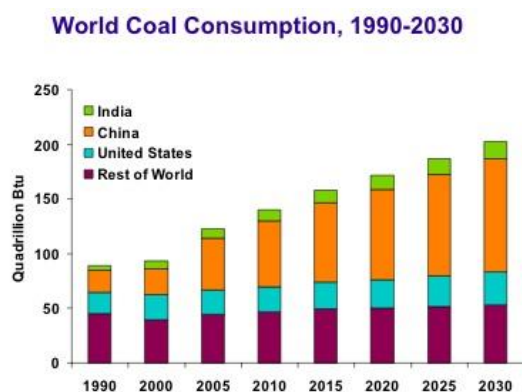
The second issue is the traditional structure of coal production. The share of coal mined in small rural mines, characterized by a low level of security and efficiency remains very high in the structure of production. However, the sharp decline in the number of small mines and their production volumes leads to the employment surplus of rural labor force.

Thirdly issue is the security level of the mines. The number of deaths per 1 million tons of coal mined though reduced, but still continues to remain on a fairly high level - 2.81, i.e., the highest death toll in the world.<sup>130</sup> Chinese mines are in need of a significant increase in the level of mechanization, the number of fire-fighting equipment and the educational level of the miners.

Fourthly, there is a problem of pricing. Most of the coal enterprises dramatically increased sales prices after the corporatization and exit to the market. Also, the production cost of coal has increased significantly due to increased mechanization, safety and workers' wages. The reduction in coal prices or keeping them at an acceptable level is impossible without a significant increase in the level of efficiency in the industry.

Fifth - transportation of coal. More than 50% of coal is transported by rail, its main fields far removed from the places of consumption. It is needed to build thermal power plants in the mining areas and connect them to users via the system of energy grid, it is also essential to establish alternative supply coal, southern and south-western parts of the country.<sup>131</sup> Although China is trying to reduce consumption, the specialists predict it to be stable for the next 15 years. (See Figure 9.)

**Figure 9. World Coal Consumption 1990-2030**



Source: EIA, IEO2008



Source – Larry Miles Reports <http://www.larrymilesreports.com/realitycoal.htm>

<sup>130</sup> Jianjun.T. (2007): Coal Mining Safety: China's Achilles'Heel. *China Security Vol 3 No 2 Spring*. p.20.

<sup>131</sup> Ostrovsky A.B.(2012) : Energy market in China: the interests and capabilities of Russia.IFES p.32.

### **3.3.3. Power Sector**

After the reform of 1978, the electricity sector in China began its dynamic and stable development. In 1987, China's installed capacity of electric power for the first time exceeded 100 million kW. 8 years later, in 1995, it has doubled and exceeded 200 million kW. Since 1996, the installed capacity and electricity production exceeded that of Japan and ranks second in the world, second only to the United States. In the past decade, China's power industry is the most dynamic in the global electricity sector. In the structure of installed capacity and electricity production share of thermal power plants (thermal power) dominates the other, followed by hydro power plants, and in third place - NPP (nuclear power plants). (See Map 3) It is worth noting a large decrease in growth in 2008 and 2009. This decrease happened due to the global financial crisis in 2008. However, in 2010, the volume of electricity production in China amounted to 4.1413 trillion kW (with 11.5% increase over the year). From 2000 to 2009, electricity consumption growth has reached 10.8%, electricity consumption exceeded 2.356 trillion kW/h. The largest consumer of electricity is the industrial sector.

In 2009, the share of industrial electricity consumption in total consumption was 72.5%, and consumption in the home - 13.2%. Due to a sharp increase in electricity consumption in the summer of 2003 revealed a shortage in electricity supply. Electricity shortages exist in such coastal industrialized regions like Shanghai, Zhejiang, Shandong, Jiangsu, Guangdong, Fujian. To mitigate the problem of the State Committee for Control of electricity in accordance with the request of the State Council has developed and is implementing a temporary program enabling interregional and interprovincial transfer of electricity for optimum control prices, loading grid, providing a possible balance of consumption. In addition, in the recent years China has increased significantly the consumption of new types of energy such as nuclear power, renewable energy hydropower, as well as wind energy and solar energy, tidal energy and others. Of course China seeks to find the alternatives to fossil fuels energy, but its share in primary consumption is only 9%, and 8% of it is delivered by hydropower.<sup>132</sup>

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<sup>132</sup> U.S. Energy Information Administration Report on China 2014 p. 8. Accessed on the 11th of May 2015 <http://www.eia.gov/beta/international/analysis.cfm?iso=CNA>. .

### ***Hydropower***

Hydropower resources in China are the largest in the world, but very unevenly distributed: 93.2% are situated in the North-West, South-Western and Southern China. (See Map 6) Topographical and geographical conditions for the development of many rivers are rather favorable (the large number of gorges, the large difference between the levels in small areas, etc.), allowing building a hydro power units with a relatively small investment and the small volume of construction works.<sup>133</sup>

In 2010, China's annual hydropower production amounted to 721.02 billion kWh, and ranks first in the world. In recent years, the share of hydropower plants accounted for 15 - 17% of electricity production in China. In the next 5 years, rapid growth of constructions of HPP is expected. At present, China has 20 hydroelectric power plants with capacity of over 1 million kW. The largest one in action is the "Three Gorges Dam", consisting of 26 individual oscillators, 700 thousand watts each, with the total capacity of 18.2 million kilowatts.

In addition, China has continued to pay attention to the construction of small hydropower plants. Currently, small hydro is used in more than 1,500 counties. Most of the small hydro power plants are located in poor and mountainous areas of central and southern provinces of China, where there are a lot of mountain rivers. The share of total power turbines of small hydropower plants was 31% of hydroelectric power in China, and the share of electricity produced by them - 36%. The energy of small hydropower plants covers about 40% of the territory of the PRC and provides 300 million people with electricity.<sup>134</sup>

### ***Atomic Energy***

Development of nuclear power in China began in 1982, when it was decided to build the country's first nuclear power plant in Qinshan (Zhejiang). The first unit of Qinshan nuclear

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<sup>133</sup> International Hydropower Association (2015): China Profile. Accessed on the 10<sup>th</sup> of July 2015 <https://www.hydropower.org/country-profiles/china>.

<sup>134</sup> International Hydropower Association (2015): China Profile. Accessed on the 10<sup>th</sup> of July 2015 <https://www.hydropower.org/country-profiles/china>.

power plant with 300 megawatts began producing electricity in December 1991 and currently power amounts to more than 2.8 gigawatts.<sup>135</sup> (See Map 6)

In 2002-2003 two nuclear power plant near Linao (Guangdong) were put into operation , with the aggregate capacity of about 1.9 gigawatts. In 2007, the Tianwan nuclear power plant was built in Lianyungang (Jiangsu) and put into operation. In 2009, as part of a plan to increase domestic demand and allocation of stimulus package funds for a total of 4 trillion yuan construction of the first nuclear power giant object Fuqing third generation started in the province of Fujian. Map 3 shows currently operating nuclear power plants in China.<sup>136</sup>

**Map 6. Location of Major Power Plants and Energy Grid in China**



Source – Aenert.com Profile China

<http://rabcom.advailo.com/countries/asia/china.html>

Total installed nuclear power capacity reached 9078 MW (in late 2009), representing 1.1% of the total installed capacity of power plants, nuclear power is 1.6% of power of the country. The share of nuclear power in the balance of power in China is much lower than the world average (17% of total electricity production). By 2020, China plans to build 32 nuclear power plants.

<sup>135</sup> World Nuclear Association (2015): Nuclear Power in China. Accessed on the 15<sup>th</sup> of November 2015 <http://www.world-nuclear.org/info/country-profiles/countries-a-f/china--nuclear-power/>.

<sup>136</sup> World Nuclear Association (2015): Nuclear Power in China. Accessed on the 15<sup>th</sup> of November 2015 <http://www.world-nuclear.org/info/country-profiles/countries-a-f/china--nuclear-power/>.

### ***Renewable Energy***

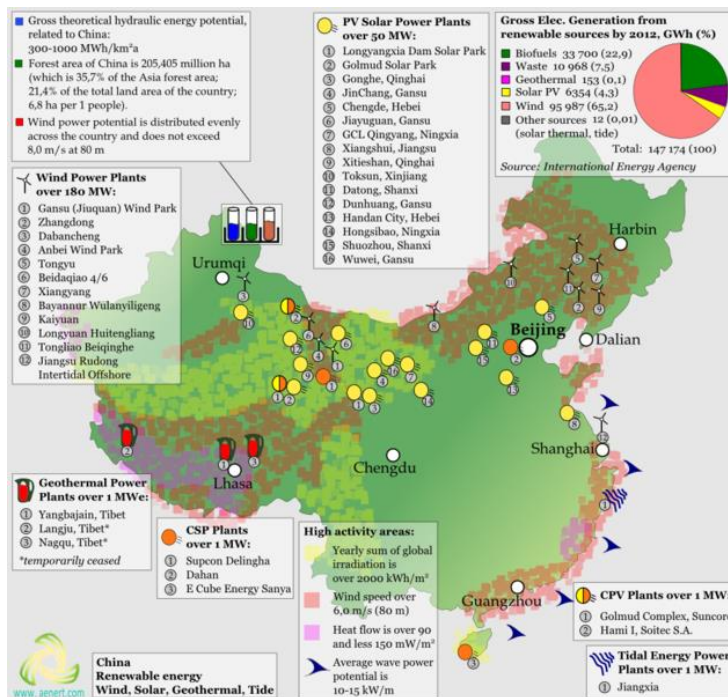
China has a vast surface areas with a large number of sunny days. China annually receives solar radiation at the rate of 586 thousand joules per 1 sq cm. Especially a lot of solar radiation falls on Tibet, Qinghai, Xinjiang, the northern part of Inner Mongolia province. Shanxi, north-western part of the province of Shaanxi, Hebei, Shandong, Liaoning, Jilin Province, western, central and south-western part of Yunnan Province, south-eastern part of Guangdong Province, south-eastern part of Fujian province, eastern and western part of the province of Fujian , eastern and western part of Hainan. Especially a large amount of solar radiation falls on the highlands of Tibet - Qinghai at an altitude of 4000 m above sea level.

In the "Medium-term and long-term program for the development of renewable energy", which was published in 2008, it is planned to increase the installed capacity of solar power units to 1800 megawatts by 2020. However, in 2010 the plan was amended. In the "Recommendations of the CPC Central Committee on the development of the 12th Five-Year Plan (2011 - 2015) of the national economic and social development", this figure had increased to 20,000 megawatts, i.e. ten times. Apparently, solar energy will be one of the most important energy resources in China in the future, as evidenced by the commissioning of the country's first building using solar energy utilization systems in 2008.<sup>137</sup> (See Map 7) According to the Australian Institute for Climate Change Research in 2009, China has invested 35 billion US dollars in the development of clean energy, or \$ 18 billion more than the US.

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<sup>137</sup> Stelner.J. Nishida.Y. (2011): Focus on Energy Security Costs, Benefits and Financing of Holding Emergency Oil Stocks. International Energy Agency Insight Series. P.5.



**Map 7. Renewable Energy Facilities in China**

Source – Aenert.com Profile China <http://rabcom.advailo.com/countries/asia/china.html>

According to the China Association of renewable energy, currently China is implementing 207 projects in the field of renewable energy with a total investment of 15.6 billion dollars. Chinese experts believe that the increase in the production of clean energy can provide a high rate of economic growth without a significant increase in the consumption of hydrocarbons. The aim is to bring the share of renewable and nuclear energy in primary energy consumption to 15% in 2020 and by 2050 - up to 30%. However, the possibility of using renewable energy in the future is largely associated with the development of innovative economy and scientific and technological progress in the country, the creation of zones of new and high technologies and the increase in government spending on R&D.



### **3.4 Chinese Energy Challenges**

#### ***Rapidly Growing Energy Consumption***

Over the past twenty years, the rate of annual economic growth in China comprised about 10%. During the crisis years (2008 and 2009), the growth rate of China's economy reached, respectively, 9.6% and 8.7%. China's GDP in 2014 reached almost \$ 10360.10 billion.<sup>138</sup>

In 2014, according to<sup>139</sup> International Monetary Found Data China has overtaken the US to become the first largest economy in the world. High GDP growth in China is based on the rapid development of secondary sectors of the economy: industry, transport and construction, accounts for 50% of GDP. Their development encourages a dynamic increase in costs of raw materials. When GDP per capita reached \$ 1,000 a series of power failures happened across the country. It is projected that in 2020 when the Chinese economy will reach \$ 3,000 per capita, energy consumption will double as well.<sup>140</sup>

#### ***Growing Motorization***

The second premise is a growing motorization. Particularly serious issue is the growth of car ownership in the country. In 2009, China overtook the United States and reached the 1st place in terms of car production. In 2014, the country registered 15.2 million new cars, and according to forecasts of the Ministry of Industry and Information Technology of China in 2020 their number will reach 200 million.<sup>141</sup> Accordingly, in this period the demand for gasoline and diesel fuel will increase dramatically.

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<sup>138</sup> Trading Economics China profile. Accessed on the 1<sup>st</sup> of May 2015  
<http://www.tradingeconomics.com/china/gdp>

<sup>139</sup> International Monetary Found Data. World Economic Outlook Database . China Profile. Accessed on the 1<sup>st</sup> of May 2015 <http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/index.aspx>.

<sup>140</sup> BP(2014): BP energy outlook 2014. Accessed on the 1<sup>st</sup> of May 2015  
[http://www.bp.com/content/dam/bp/pdf/Energy-economics/Energy-Outlook/Energy\\_Outlook\\_2035\\_booklet.pdf](http://www.bp.com/content/dam/bp/pdf/Energy-economics/Energy-Outlook/Energy_Outlook_2035_booklet.pdf).

<sup>141</sup> China Fact file Ministry of Information Industry Data [http://www.gov.cn/english/2005-10/02/content\\_74175.htm](http://www.gov.cn/english/2005-10/02/content_74175.htm).

### ***Urbanization***

The third premise is the urbanization of the country. Another serious problem that has a direct impact on the growth of energy consumption is rapid urbanization. Currently, every year more than 18 million people, which makes about 60% of the total population of the villages, are leaving the country to move to the city. By 2020, the proportion of the total energy demand for industries will decrease to 56,7-58,7% of total demand, and for the transport and construction will rise to 16,3-17,1% and 25,0-26,7%) respectively.<sup>142</sup>

### ***Low level of energy Consumption per capita***

Another upcoming problem of Chinese Energy Sector is the low level of energy consumption per capita. Although the country has rich and diverse energy resources, from the point of view of energy consumption per capita, China stays far behind other countries. In particular, explored reserves of coal in China accounts for 147 tones per capita, which is only an average of 41.4%, oil reserves - 2.9 m (only 11% average), natural gas reserves accounts for only 4%.<sup>143</sup>

### ***Low Quality of Energy Resources***

More than 95% of oil containing a high percentage of paraffin oil, therefore easily hardens at low temperatures, which complicates its handling and processing. Most of the coal is virtually impossible to process into coke because it contains high methane in more than 40% of the coal mines, which puts the health of miners in great danger.<sup>144</sup>

### ***Low Energy Efficiency***

In recent years, the construction of energy units is continuously growing, but China's energy efficiency is very low. The overall efficiency of energy use in China is lower than in developed countries by 60%. In 2010, energy costs accounted for 19.5% of the world, but the size of China's GDP accounted for only 9.5% of the world. Moreover, as shown by calculations of Chinese scientists, if the consumption of energy in the country will be just as wasteful, the

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<sup>142</sup> Ministry of Information Industry of the Republic of China. China Fact file data. Accessed on the 2<sup>nd</sup> of September [http://www.gov.cn/english/2005-10/02/content\\_74175.htm](http://www.gov.cn/english/2005-10/02/content_74175.htm).

<sup>143</sup> China Coal Resource Coal Consumption. Accessed on the 15th of June 2015. <http://en.sxcoal.com/587/0/datalist.html>.

<sup>144</sup> China Coal Resource Coal Consumption. Accessed on the 15th of June 2015. <http://en.sxcoal.com/587/0/datalist.html>.

remaining coal reserves will last for 114.5 years, oil - only 20.1 years, and natural gas - 49.3 years.<sup>145</sup>

### ***Uneven distribution of Resources***

Energy resources in China are placed unevenly coal - in the north, electricity - in the south, oil - in the east, gas - in the west. If China will distribute the available energy reserves in six major economic regions - North, Northeast, East, Central-South, South-West and North-West China, the most energy will be provided by the North China - 43% of all stocks, Southwest - 28.6% and the North-West - 12.1%. The largest coal reserves are concentrated in North China (64%), hydro - in the South-West (70%), and oil and natural gas - in the Northeast (48.3%).<sup>146</sup> In turn, almost all the natural gas produced in the western areas away from the main sources of consumption, which is very difficult to use it as one of the main energy sources. (see. Map 1, 2)

### ***Unbalanced structure of energy supply and use***

The fifth problem is the unbalanced structure of energy supply and use. As we have noted above, China has developed the dominance of coal in the energy supply and demand. Major coal production and a sharp increase in consumption causes a number of social and economic problems: high frequency of accidents in the mines due to an overload of production capacity; big load on trucks from the need to long-distance transport of coal; pollution in the regions of coal mines (wide failures, large remnants of dust and stone, the disappearance of underground water sources, etc.). In the structure of energy consumption leading position is occupied by industry and construction - 73%, followed by domestic consumption - 11%, transport - 7.7%), agriculture - 2%.<sup>147</sup> Compared to industrialized countries, the share of industry in energy consumption in China is greater, but the share of transport and household energy use is less. Such a structure of energy consumption shows that the industrial equipment in China is largely out of date, and that energy management method in use is extensive.

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<sup>145</sup> Kahr.F. Roland-Holst.D.(2013): Growth and structural change in China's energy economy. *Department of Agricultural and Resource Economics, University of California, Berkeley, CA, USA* p.7.

<sup>146</sup> China Coal Resource Coal Consumption Accessed on the 15th of June 2015.  
<http://en.sxcoal.com/587/0/datalist.html>.

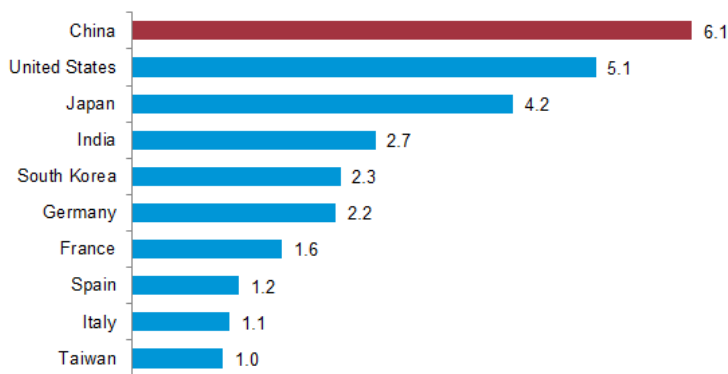
<sup>147</sup> Kahr.F. Roland-Holst.D.(2013): Growth and structural change in China's energy economy. *Department of Agricultural and Resource Economics, University of California, Berkeley, CA, USA* p.7.

### *High Dependence on Oil*

The seventh problem is the high dependence on oil imports, especially from politically unstable countries in the Middle East and North Africa. Since the mid-1960s until the mid-1990s, China has performed on the world market as a net oil exporter. However, since 1993 the situation has radically changed. From the largest exporter of oil in the region, China has become a net importer of oil. Dependence on foreign oil has increased from 7.6% in 1995 to 56% in 2011, and is estimated to grow to 60% in 2020. The high dependence on oil imports significantly weakens the energy security of China.

**Figure 10.**

Top ten annual net oil importers, 2014  
million barrels per day



Note: Estimates of total production less consumption. Does not account for stock build.  
Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, May 2015

Source U.S. Energy Information Administration <https://www.eia.gov/beta/international/analysis.cfm?iso=CHN>.

Currently, more than 40% of oil imports are provided by supplies from the Middle East. Such major oil-exporting countries such as Saudi Arabia, which has close ties with the United States can create disruptions in energy supplies to China for political reasons. Moreover, the intensification of terrorist activities in the Middle East threatens the stability of oil supplies from the region to China. It is worth noting that much of the oil delivered to China by sea. “Most of the oil imports from the Middle East and Africa are transported by tankers through the Strait of Malacca, linking the Indian Ocean and South China Sea, which has the highest piracy rates and the concentration of naval forces of the USA and its allies. But the ability of the Chinese navy to provide transportation of energy resources to date is limited.”<sup>148</sup>

<sup>148</sup> Novikov, Yu.N. (2013): Dynamics of changes and current state of the world's reserves, oil production and consumption. Petroleum geology. Theory and practice. *TU Delft Press*. p.5.

### ***Environmental Pollution***

Another major problem is the pollution of the environment. Chinese industry pollutes ten times more than the developed countries at comparable output. The huge damage to the environment and public health causes the use of coal as a fuel. Burning coal emissions provides 70% of black, 60% of sulfur dioxide, 60% of nitrogen oxides, and 85% of carbon dioxide. The last two types of air pollution are the main cause of "acid rain", which take place not only in China. About 70% of sulfur dioxide - a result of the activities of such industries as power industry, ferrous and nonferrous metallurgy, building materials industry, oil refining, chemical industry.<sup>149</sup> All this has a negative impact on the development of the environmental situation in China in three main areas: water, air, earth. Progressive environmental degradation can be seen as the beginning of a systemic crisis in the relationship between man, the environment and natural resources, which will lead to large losses in the economy. However, China has developed and operates a number of mid-term and long-term programs in the field of energy. In this regard, based on the consideration of official documents will be disclosed the main features of policy of China in the field of energy security. At the end of June 2004, the State Council adopted a document called "Medium- and long-term program of energy development in China (2004 - 2020)." (Draft resolution). The document notes that the development of energy, China adheres to the principle of "economical, clean and safe development", trying to solve problems on the way forward through development and reform.<sup>150</sup>

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<sup>149</sup> Li Xing, Wang Hensin (2013): Energy Strategy Security of China and Central Asia. *Journal of Comparative Politics* p.33.

<sup>150</sup> Mikheyev. V. V. (2005) : China. Threats, Risks, Challenges to the Development Carnegie Endowment for International Peace p.4-13.

### **3. 5. Chinese Energy Policy – Focus on Diversification**

The main content of energy policy include:<sup>151</sup> 1) introduction of power saving mode; 2) better management and optimization of the structure of production and consumption of energy; 3) improvement of energy distribution; 4) reasonable use of internal and external resources, as well as domestic and foreign energy market; 5) Improving governance reform in the energy sector; 6) protection of the environment. In June 2010, Beijing hosted a Chinese forum "on energy policies and energy development during the 12th Five-Year Plan." Deputy Head of the National Energy Administration of China Wu Yin spoke at the forum. He said that China has developed a three-tier government energy strategy, which includes: 1) the general framework and the concept of energy development in China up to 2050; 2) medium and long-term energy development program, which focuses on the distribution of the energy industry in 2030; 3) Energy Program of the 12th Five-Year Plan, which is aimed at important projects for energy development in the next five years. The three main components of the energy strategy developed at the same time.

Thus, the policy of China in the field of energy security includes the following areas.

Firstly, energy efficiency and reduced energy consumption. Energy conservation is becoming a major aspect of China's energy policy. Due to the implementation of the course "pay equal attention to the development and economy, while putting savings in the first place," at the end of the XX century the country has achieved quadruple size of the economy by doubling energy consumption. In 2005, was designed and implemented "Medium- and long-term program to save energy (2005 to 2020)", were the government established indicators to reduce energy consumption and specific targets for energy saving were set to be implemented in all provinces, autonomous regions and municipalities under the central government.

China aims to improve energy efficiency and accelerate technological progress, form a resource-saving and energy-efficient production structure, encourage the development of energy-saving technologies and products, to deepen the reform of the energy system, improve the pricing mechanism, to identify the driving role of the financial and fiscal policy in compliance with

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<sup>151</sup> Jian.Z. (2014): China's Energy Security: Prospects, Challenges, and Opportunities. Brookings. P.14

saving mode. For the implementation of energy conservation, China must first adjust its production structure. In recent years, China is focusing on changing the way of development, the restructuring of production and regulation of the industry, achieving the "small investment, low cost of limiting emissions and high efficiency." In addition, China is a major consumer of energy production, so the country accelerates the development of high-tech industries based on new and high technology revolutionizes the traditional production by increasing the level of the whole industry.

It should be noted that on 1 June 2008 in the supermarkets, shops and markets in China it became forbidden to give out free plastic bags to customers. According to the State Committee for reform and development, thanks to a ban on free plastic bags, China has saved nearly 3 million tons of oil a year. As a result, the consumption of plastic bags in the shops of the country has decreased by 60%, which resulted in a decrease in demand for plastics and as a result - and the decline in the use of oil for its production. Energy conservation yields tangible results in the Chinese economy. According to the National Development and Reform Commission of China<sup>152</sup>, during the years of the 11th Five-Year Plan (2006 - 2010) average annual growth of China's GDP reached 11.2%, while the average annual increase in energy consumption was only 6.6%. For five years, China has reduced the energy cost per unit of GDP to 19.1%.<sup>153</sup> In accordance with the above-mentioned three-level energy strategy, the government has defined common goals for the control of energy consumption: in 2020 the total energy consumption will reach 4 billion tons of standard coal in 2030 - 4.5 billion Tons of standard coal in 2050 - 5.5 billion tons of standard coal.<sup>154</sup>

Second is the strengthening of geological exploration and development of domestic energy resources. Focusing on itself has been the hallmark of the Chinese energy strategy for quite some time. With the constant increase in energy imports, China is making every effort to minimize dependence on the import of foreign raw materials and ensure the country's needs with their own resources.

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<sup>152</sup> National Development and Reform Commission (NDRC), People's Republic of China. China's Energy Conditions and Policies p.13.

<sup>153</sup> Li Xing, Wang Hensin (2013): Energy Strategy Security of China and Central Asia. *Journal of Comparative Politics* p.33.

<sup>154</sup> Li Xing, Wang Hensin (2013): Energy Strategy Security of China and Central Asia. *Journal of Comparative Politics* p.38.

China has a great potential of development of energy resources. Proven coal reserves account for only 13% of its total resource stocks. Hydropower resources developed and are used by only 20%. Oil reserves are experiencing an average period of exploration; there is great potential for further detection. Natural gas reserves are also on the early period of exploration.

According to the "program of energy development for the period of 11th Five-Year Plan" for capacity building of energy supply, China has actively improved in the following areas<sup>155</sup>:

- 1) The planned development of the coal industry. Including the increase in the degree of exploration of coal reserves, construction of large coal bases, by consolidation and restructuring of enterprises, the establishment of several large corporations with a capacity of hundreds of million tons, raising the level of mechanization in the mines, to encourage the development and dissemination of technologies for the production of purified coal, coal transportation system improvement and an increase in its capacity.
- 2) Development of an accelerated pace of oil and gas. Increase in exploration and development of oil and gas reserves, particularly in the western part of the country. At the same time an accelerated pace, construction of oil and gas pipeline networks and components of objects gradually improved network-China oil and gas pipelines. In the period 2005 - 2015 years in China, it plans to build the gas pipeline network totaling more than 13,900 km.
- 3) Active development of the electricity industry. Given the state of resources, the technical level, the requirements for environmental protection and the market situation, the country favors the development of power plants based on coal, to build large power plants. Hydroelectric and nuclear power plants are under construction and are actively developing.

In November 2007, the National Development and Reform Commission promulgated the "Medium-term and long-term program for the development of nuclear electricity (2005 to 2020)." The document notes that the active promotion of the construction of nuclear power plants is one of the most important components of the energy strategy of the country. The

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<sup>155</sup> Jian.Z. (2011): China's Energy Security: Prospects, Challenges, and Opportunities. Brookings. P.14



construction of nuclear power plants is important to meet the growing needs of the socio-economic development, economy and environmental protection, increase the aggregate economic power and industrial-technological level of China.<sup>156</sup>

Currently, in addition to energy efficiency and reduce energy consumption, China is facing the problem of ensuring stable energy imports, and this problem is one of the most important foreign policy and security concept. This is evident not only to China but also to India, to the USA, Japan and to other countries. Many experts point out that both China and India are seeking to ensure its national interests, to maintain high rates of economic growth, pursuing a policy of diversification of energy sources and increase investment flows to foreign sources of energy. Therefore, between them, competition for access to sources of energy will increase dramatically. According to some source,s China is more successful than India in foreign energy investment projects, and uses its ongoing political and economic assistance to maintain their energy companies.<sup>157</sup> The Chinese side even offers a higher price development of the same fields than the most powerful Western multinationals. In fact, back in 2004, the governments of China and India have already discovered the energy dialogue and energy cooperation. In April 2005, Chinese Premier Wen Jiabao during his visit to India issued a joint declaration. According to the ninth article of the Declaration, the parties agreed to conduct cooperation in the field of energy security and energy efficiency, in particular, to encourage relevant departments and agencies of the two countries on joint exploration and production of oil and gas resources in a third country. Consequently, the Sino-Indian energy cooperation is actively developing.

### **3.6. Conclusion**

"Chinese economic miracle" could not be realized without a ceaseless supply of energy resources. The energy complex cannot keep up with the pace of industrial growth, urbanization and motorization. The lack of own resources, poor infrastructure and high reliance on the resources from the Middle East threaten the energy security of the country. The ecological situation in the country is deteriorating rapidly; the share of renewable energy in the balance of the country is

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<sup>156</sup> National Development and Reform Commission (NDRC), People's Republic of China. China's Energy Conditions and Policies p.15.

<sup>157</sup> Bajpae C. (2005): India, China locked in energy game .Asia Times from the 17 May 2005.

very small. Coal occupies 70.9% of the primary energy supply in China, which is higher than the world level two times. China is trying to reduce consumption of coal, but has to face the problem of the mass dismissal of miners. In the oil and gas sector the main issue is problem of transportation. The lack of extensive gas pipeline system adversely affects the energy supply in remote regions of the country. The same problem is dominating the power sector. Although China has a rich and diverse energy resources system, from the point of view of energy consumption per capita, China stays far behind other countries. More than 95% of oil containing a high percentage of paraffin oil, therefore easily hardens at low temperatures, which complicates its handling and processing. Most of the coal is virtually impossible to process into coke because it contains high methane in more than 40% of the coal mines, which puts the health of miners in great danger. These factors indicate low quality of energy resources. In recent years, the construction of energy units is continuously growing, but China's energy efficiency is very low. The overall efficiency of energy use in China is lower than in developed countries by 60%. Rapidly Growing energy consumption, caused by the growing motorization and urbanization is putting the issues of energy security at the forefronts of domestic and external policies.

### **3.7. South Korea Energy Sector**

“Currently, the most promising markets for Russian energy exports to the Asian region are considered China and Japan. However, in the near future, South Korea (Republic of Korea – ROK) may become the third largest importer of Russian energy resources.”<sup>158</sup>

South Korea is poor in energy resources and as a result is one of the major energy importers worldwide and almost 97% of the energy demand is fulfilled at the account of import. “In 2013, the country was the second-largest importer of liquefied natural gas (LNG), the fourth-largest importer of coal, and the fifth- largest net importer of total petroleum and other liquids, the cost of imports of hydrocarbons close to \$ 70 billion; in terms of strategic oil reserves of South Korea is second only to Japan”.<sup>159</sup>

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<sup>158</sup> Gazprom Export Strategy. Accessed on the 31st of May 2015 <http://www.gazpromexport.ru/strategy/markets/>.

<sup>159</sup> Encyclopaedia of Earth. Energy Profile of South Korea. Accessed on the 1<sup>st</sup> of December 2015 <http://www.eoearth.org/view/article/152530/>.

In the first stage of industrialization in South Korea energy deficit problem was solved by maximizing the use of internal resources and a gradual build-up of oil imports at the expense of an increase in earnings from exports. The share of oil in the structure of primary energy consumption rose from 26.8% in 1967 to 47.2% in 1970, while the share of coal in the same period decreased from 40.0% to 29.6%. The stimulated development of energy-intensive industries led to a further increase in demand for oil. In 1978, the country's energy oil comprised 63.3%.<sup>160</sup> A stable and favourable situation on the world oil market has made it no alternative energy basis for economic growth of the Republic of Korea, which explains the increased dependence on this fuel.

The recession, which took place in the South Korean economy after the two world oil crises showed that the increase in the share of oil in the energy balance of the country in an increasingly unstable world oil market is dangerous. In order to reduce dependence on oil in the 80s in the Republic of Korea has taken steps to diversify the energy mix. Since 1986, the country started to import liquefied natural gas (LNG), whose share in the energy balance in 1987 increased to 3.1%. Electricity generation on nuclear power plants (NPP) in 1987 provided 14.5% of primary energy consumption compared to 2.1% in 1982. The volumes of coal consumption increased as well. In 1985, the share of coal in the energy balance reached the highest limit - 39.1%.<sup>161</sup> Exploration of their own hydrocarbon reserves was initiated on the continental shelf.

The exceptional importance of the fuel and energy sector for the economic development of the Republic of Korea, its need for large investments and long-term planning dictated the need to maintain the state monopoly in this sector. Despite the fact that the new strategic direction of the economy was the liberalization and reduction of government interference in business activities, the energy sector continued to be under governmental control. For this purpose were created large specialized energy companies in which the state had the controlling share ("Korea Petroleum Development Corporation" (KPDC), later transformed into "Korea National Oil Corporation" (KNOC) "Korea Gas Corporation" (KOGAS). Established in 1961, "Korea Electric

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<sup>160</sup> Korea Statistic Information Service. Accessed on the 31st of May 2015 [http://kosis.nso.go.kr/cgi-bin/html\\_out.cgi?F=X3d332\\_r1d2ba.html](http://kosis.nso.go.kr/cgi-bin/html_out.cgi?F=X3d332_r1d2ba.html).

<sup>161</sup> Korea Statistic Information Service. Accessed on the 21st of May 2015 [http://kosis.nso.go.kr/cgi-bin/html\\_out.cgi?F=X3d332\\_r1d2ba.html](http://kosis.nso.go.kr/cgi-bin/html_out.cgi?F=X3d332_r1d2ba.html).

Corporation" transformed into "Korea Electric Power Corporation" (KEPCO) in 1982 with 100 percent state-owned.

However, maintaining a state monopoly in the energy sectors had a negative impact on their performance. The Government's differentiated pricing for different groups of energy consumers contributed to the further growth of energy-intensive industries. Peak energy consumption growth came in the first half of the 90s, when the average annual growth rate of primary energy consumption accounted for 10.1%.<sup>162</sup>

In the context of reaching global energy processes of liberalization, privatization and the strengthening of market mechanisms such increase in energy consumption led to a significant increase in the cost of energy imports and reduced the competitiveness of South Korean products in the world markets. After the monetary crisis affected the Republic of Korea at the end of 1997, further growth of budget expenditures for the development of fuel and energy becomes burdensome. At the forefront of energy policy comes the improving of energy efficiency by reducing the energy intensity of production and energy conservation. These tasks required reforms and further liberalization of the energy sector.

The first aim of reform was the oil refining sector. The domestic market of petroleum products has been fully open to private enterprise and foreign investors. By 2003 in the refining industry of the Republic of Korea's only three areas were state-controlled: oil and gas projects abroad, the formation of strategic reserve and management, quality control of petroleum products.

In the coal industry, the government has gone the way of consistent closure of unprofitable mines. In power industry, there has been a transition from a regulated monopoly to a competitive market. In December 2000, the Law on the restructuring of the electricity industry was adopted, allowing private enterprises to enter the generation sector. It resulted into the appearance of the first independent power producers. In the gas sector privatization was completed in 2003 through dividing KOGAS into three subsidiaries. Two of them were subject to privatization, and one supposed to be left under the control of KOGAS to implement previously signed contracts for

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<sup>162</sup> ROK Ministry of Commerce, Industry and Energy . Accessed on the 10<sup>th</sup> of May 2015  
<http://www.mocie.go.kr/eng/policies/energy/energy.asp>.

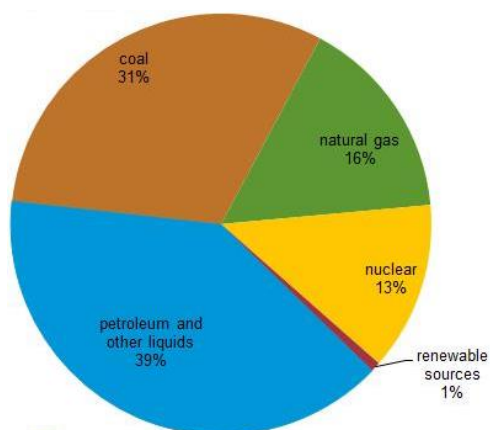
the supply of LNG. KOGAS could also keep the management of the national gas network and management of major projects related to the supply of natural gas pipeline.

### 3.7.1. Oil and Gas Sector

#### *Oil. Sitting on an Oil Needle*

In 2013 South Korea became the ninth-largest oil consumer in the world, by consuming more than 2.3 million barrels (bbl/d) of petroleum and other liquids per day.<sup>163</sup> For the last decade oil dominates in the energy mix followed by coal and gas. (See Figure 11) South Korea, with an extremely small amount of domestic resources, has to rely on crude oil imports to meet its demand. According to International Energy Agency 60,000 bbl/d is a result of refining process, with a small portion of the biofuels. The imported oil consumption balance in the country is dominated by the industrial sector - 42%, followed by transport and transformation sectors with 31% and 18% respectively. The American energy analysts also predict that Korea's total oil demand will stay relatively flat in the nearest years.<sup>164</sup>

**Figure 11. Energy Consumption in South Korea by Source 2014**



Source IEA [https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014\\_TheRepublicofKorea.pdf](https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_TheRepublicofKorea.pdf).

<sup>163</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 8. Accessed on the 11th of May 2015 <http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

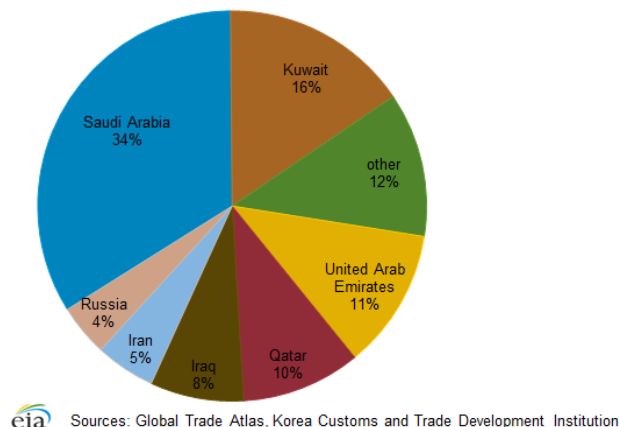
<sup>164</sup> U.S. Energy Information Administration. Report on South Korea 2014 p. 5. Accessed on the 11th of May 2015 <http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

Korea is poor in oil, although there are some proven oil reserves, they cannot provide the country with enough oil. According to the International Energy Agency Report, “Korea’s crude oil production in 2012 averaged only 21kb/d, which covered less than 1% of the total demand.”<sup>165</sup>

Imports of Crude Oil in South Korea averaged 72814.43 barrel from 2002 until 2015, which makes it the fifth-largest importer in the world.<sup>166</sup>

It is very interesting to examine major oil importers. We have already mentioned above, that South Korea is highly dependent on oil, but the major part of its oil imports South Korea gets from the Middle East. U.S. Energy Information Administration Report states, that 87% of South Korea's 2013 crude oil imports came from the Middle East. The oil-import is dominated by Saudi Arabia making over a third of total oil imports, followed by Kuwait, meeting 16% of total crude oil imports.<sup>167</sup> Russia provides 4% of the whole volume of oil needed. (See figure 12)

**Figure 12. South Korea’s oil imports by source**

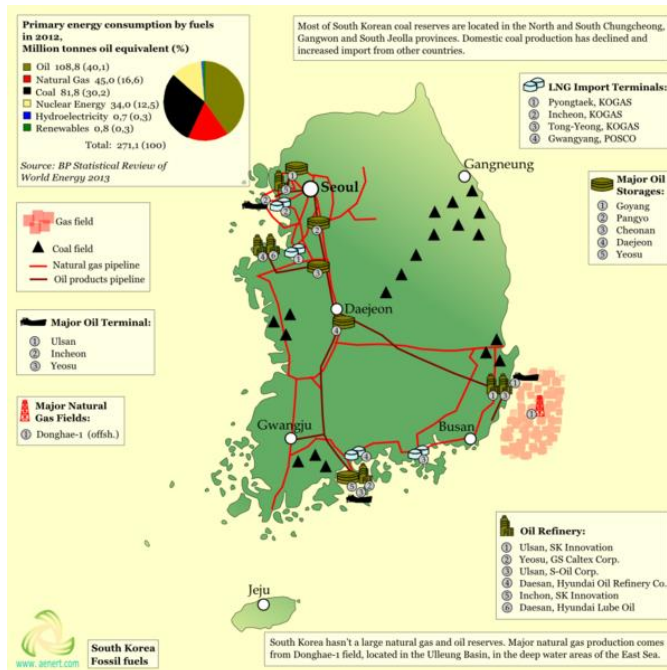


Source U.S. Energy Information Administration. Report on South Korea 2014 p. 5. Accessed on the 11th of May 2015  
<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>165</sup> U.S. Energy Information Administration. Report on South Korea 2014 p. 5. Accessed on the 11th of May 2015  
<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>166</sup> Korea National Oil Corporation [www.knoc.co.kr/ENG/main.jsp](http://www.knoc.co.kr/ENG/main.jsp).

<sup>167</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 4. Accessed on the 11th of May 2015  
<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

**Map 8. Resources and Main Energy Facilities in South Korea**

Source – Aenert.com South Korea Profile <http://rabcom.advailo.com/countries/asia/south-korea.html>

### Refining

According to the Korea Petroleum Association, South Korea exported about 1.2 million bbl/d of refined oil products in 2013 and takes the position of one of the biggest oil refinery products exporters in Asia.<sup>168</sup> Petroleum and petroleum products come into the country through five oil transshipment ports, which have the largest refinery of the country: Ulsan, Incheon – owned by SK innovations and Onsan, Daesan, and Yeosu, held by GS Caltex. (See Map 5)

In total there are six refineries refinery in Ulsan is the second largest in the world. “In 2012, the five refineries processed around 993 mb of crude oil (including NGL and feedstocks), which

<sup>168</sup> Korea Petroleum Association Accessed on the 15 of May 2015 <http://eng.petroleum.or.kr/statistics>.

indicates that the overall capacity utilisation rate was about 89%. In 2012, the refined product output totalled 2.8mb/d.”<sup>169</sup>

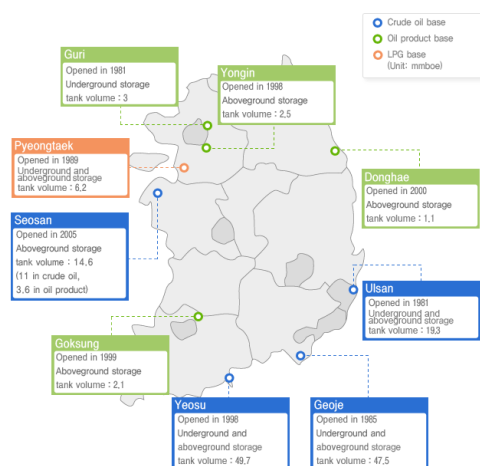
### *Pipeline Infrastructure*

In Korea, there is no cross-border system of oil pipelines for exports and imports, because all the refineries close to the offshore oil terminals. At the same time there is an extensive and well-organized system of oil product pipelines, with a total length of 1104 km, which delivers fuel to the interior of the country, areas of mass consumption and storage bases. The largest operator and owner of the transport system is Daehan Oil Pipeline Corporation (DOPCO) that was privatized in 2001.<sup>170</sup> (See Map 8)

### *Strategic Oil Reserves*

In order to strengthen the energy security of the country, in 2010, there has been formed a strategic oil reserve, which is operated and managed by KNOC. There are nine storages across the country with a total capacity of 146 million barrels of oil. There are 4 crude oil bases, 4 product oil bases and 1 LPG base.<sup>171</sup> (See Map 9)

**MAP 9. Strategic Reserves Map of KNOC**



Source – KNOC [http://www.knoc.co.kr/ENG/sub03/sub03\\_3\\_3.jsp](http://www.knoc.co.kr/ENG/sub03/sub03_3_3.jsp).

<sup>169</sup> IEA Energy Supply Security South Korea Report. Accessed on the 15 of May 2015 p.2.

[https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014\\_TheRepublicofKorea.pdf](https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_TheRepublicofKorea.pdf).

<sup>170</sup> Daehan Oil Pipeline Corporation (DOPCO). Accessed on the 15 of May 2015 <http://www.dopco.co.kr/main.jsp>.

<sup>171</sup> KNOC .Accessed on the 18<sup>th</sup> of May 2015 [http://www.knoc.co.kr/ENG/sub03/sub03\\_3\\_3.jsp](http://www.knoc.co.kr/ENG/sub03/sub03_3_3.jsp).



### ***Gas KOGAS Dominance***

Korea's domestic gas production is very low. The only natural gas field is Donghae-1 with proved reserves of 7 billion cubic meters. "In 2012 it produced about 0.4 billion cubic metres (bcm), which covered less than 1%<sup>172</sup> of its total domestic consumption, that is why 99 percent is covered by import. The Korean government predicts overall natural gas demand to grow about 1.7% annually until 2035 according to its proposed long-term energy plan."<sup>173</sup>

"Gas demand has steadily increased from 19 bcm in 2000 to 50 bcm (137 million cubic metres per day) in 2012. In 2011, the transformation sector represented about 48% of the total gas consumption, with the residential sector representing 21% and industry sectors 20%."<sup>174</sup>

### ***Structure Organization and Import Dependency***

Because of the geographical position, and the fact that there is no cross border gas pipeline, the only way to import gas is in form of LNG. "There are 4 LNG terminals which have a total send-out capacity of 118 bcm per year (324mcm/d). About 90% of the LNG imported by KOGAS according to long-term contracts, but in the meantime, the share of single spot deliveries increases."<sup>175</sup> (See Map 5)

KOGAS is the leading company in the gas sector, 27% of the shares owned by the government, 25% controlled by Korea Electric Power Corporation, has monopoly on the import and supply of natural gas, the company operates four terminals with the capability to handle and supply about 128 bcm per year (350mcm/d) and a 3 588 km pipeline system, with an enlargement perspective up to 4928 km by 2027. KOGAS owns almost all of the country's total storage capacity. "The majority of them are in the form of LNG storage tanks and their ancillary facilities. At the end of December 2014, Korea had 64 tanks at 4 LNG terminals."<sup>176</sup>

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<sup>172</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 6. Accessed on the 18<sup>th</sup> of May 2015 <http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>173</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 7. Accessed on the 18<sup>th</sup> of May 2015 <http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>174</sup> IEA Energy Supply Security South Korea Report p. 6. [https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014\\_TheRepublicofKorea.pdf](https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_TheRepublicofKorea.pdf).

<sup>175</sup> Kogas <http://www.kogas.or.kr/en/what/pipeline/pipeline.action>.

<sup>176</sup> Energy Supply Security South Korea Report p. 6. [https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014\\_TheRepublicofKorea.pdf](https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_TheRepublicofKorea.pdf).

KOGAS actively invests capital in the development of the gas sector outside the country, (Mozambique, East Timor, Uzbekistan, Cyprus) involved in production gas projects (in Canada, Myanmar, Indonesia etc) and has stakes in several foreign projects for the implementation of LNG supply to South Korea (Oman LNG, Qatar's Ras Laffan LNG Co. Ltd , Yemen LNG)<sup>177</sup>

“In 2012 Qatar was the largest natural gas supplier (30%), followed by Indonesia (18%), Oman (12%), Malaysia (12%) and Yemen (7%). According to Shell Russia, the LNG from Sakhalin-2 comprises 4% of total demand.”<sup>178</sup>

### **3.7.2. Coal**

According to the Encyclopaedia of Earth, South Korea possesses only 149 million short tons (MMst) of recoverable coal reserves.<sup>179</sup> The country's coal production of 2.3 MMst meets less than 2% of the total consumption shows the 2012 data.<sup>180</sup> Coal production in the country is high and tends to decrease, because of the high cost, low accessibility and low labor productivity. The government strongly supports domestic producers. “It Introduces subsidies, low interest loans to coal producers, tariffs on coal imports of 1 and 5 percent, and a 10 per cent value added the tax on imported coal and price ceilings. These subsidies have been on the rise, effecting high production costs for the government.”<sup>181</sup>

It is reflected in the fact that South Korea, after China, Japan and India is the fourth- largest importer of coal in the world. Major coal suppliers are Australia and Indonesia, with Russia being a significant source as well. As the power sector continued to grow, it contributed to the coal consumption growth, for the last decade it grew for more than 50%.<sup>182</sup> (See Figure 13)

<sup>177</sup> Kogas <http://www.kogas.or.kr/en/what/pipeline/pipeline.action>.

<sup>178</sup> IEA Energy Supply Security South Korea Report p. 4.

[https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014\\_TheRepublicofKorea.pdf](https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_TheRepublicofKorea.pdf).

<sup>179</sup> Encyclopaedia of Earth Energy Profile of South Korea Accessed on the 1<sup>st</sup> of December 2015

<http://www.eoearth.org/view/article/152530/>.

<sup>180</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 4.

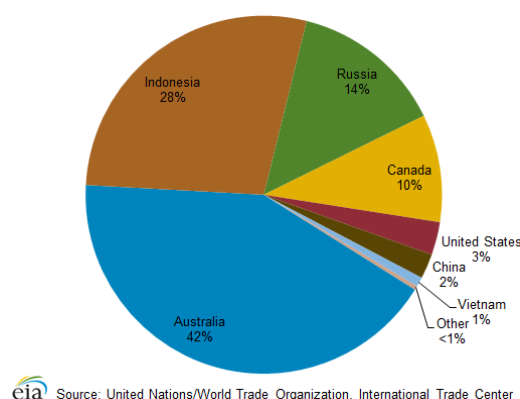
<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>181</sup> Global Methane Initiative (2014) South Korea Country Profile p.3 Accessed on the 14<sup>th</sup> Of April 2015

[https://www.globalmethane.org/documents/toolsres\\_coal\\_overview\\_ch28.pdf](https://www.globalmethane.org/documents/toolsres_coal_overview_ch28.pdf).

<sup>182</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 8

<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

**Figure 13. South Korea's coal imports by source**

Source U.S. Energy Information Administration Report on South Korea 2014 p. 4.

<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

“The Korean government is encouraging investments in foreign coal mining ventures as a measure to secure its future energy needs.”<sup>183</sup> Major player on a Korean coal domestic market is the state-owned Korea Coal Corporation (KOCOAL) runs three operational coal mines. KOCOAL actively invests in coal mines abroad, “including \$18 million investment for a 50% stake in Mongolia in 2010, and \$534 million in overseas mining, with a focus on coal projects in Indonesia and North America in 2012.”<sup>184</sup>

### 3.7.3. Power Sector

According to Korea Energy Statistics Information System, South Korea generated about 517 billion kilowatt/hours (kWh) of net electricity in 2014.<sup>185</sup> Power generation in ROK has increased by almost 45% for the last decade, and according to KEEI predictions will continue to grow by 3.7% annually through 2017, primarily driven by industrial use.<sup>186</sup>

Fossil fuels dominates the South Korean energy mix and makes about 70% of total 2013 generation, 27% is nuclear power (coal – 39%, LNG – 24%, heavy oil - 3%) and nearly 2% came from alternative sources, nearly 2% from hydroelectricity.<sup>187</sup> At the same time the share of

<sup>183</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 4.

<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>184</sup> Makhijani.S.(2012): Fossil fuel exploration subsidies: Republic of Korea. *Oil Change International*. P.3.

<sup>185</sup> KESIS <http://www.kesis.net/flexapp/KesisFlexApp.jsp?menuId=Q0109&reportId=&chk=Y>.

<sup>186</sup> KEEI <http://www.keei.re.kr/main>.

<sup>187</sup> KESIS <http://www.kesis.net/flexapp/KesisFlexApp.jsp?menuId=Q0109&reportId=&chk=Y>.

nuclear power in total generation is growing steadily in the last 20 years - currently there are 4 nuclear power plants with combined capacity of 20 units of 17,720,000. kW. ( See Map 9)

The main consumer of energy are industries(53%), than come commercial and service enterprises(25%), followed by residential sector (14%), another 8% come from transportation and agriculture.<sup>188</sup> In order to minimize the reliance on the imports with regard to fossil fuels, the government actively promotes renewable energy projects, such as hydro energy power plants and PV power plants. “Overall, the government plans to increase generation from renewable energy sources from the current 2% to 12% of total consumption by 2027”.<sup>189</sup>

**Map 10. Major Power Plants and Electricity Grid of South Korea**



Source – Aenert.com South Korea Profile <http://rabcom.advailo.com/countries/asia/south-korea.html>

<sup>188</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 8 <http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>189</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 4 <http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

### **3.8. Energy Security Policy – Diversification and FDI**

The main areas of Korea's energy security policy are<sup>190</sup>:

- diversification of energy fuel sources
- diversification of energy suppliers, mainly sources of crude oil and liquefied natural gas
- enlargement of government stocks and expansion of storage capacity
- promotion of domestic and overseas mining activities

Currently, the Republic of Korea dependence on energy imports is more than 97% comparing to 76.2% in 1975. Therefore, the increase in oil import from the politically unstable Middle East (in 1999 - 72.3%, in 2001 - 77%, in 2003 - 79.5%)<sup>191</sup> and increased competition between Asia-Pacific countries for energy resources has become a serious threat for the Republic of Korea.

Taking these circumstances into account, the country adopted a policy to increase the share energy resources not related to the Middle East - coal, nuclear power and hydropower.

There has been a downward trend in petroleum consumption in South Korea, (from 66% in 1990 to 39 in 2014), but it still dominates the energy mix.<sup>192</sup> This happens because of the increase in consumption of other fossil fuels and alternative energy resources. In 2005, nuclear power plants, coal-fired power plants and hydropower plants accounted for 65.4% of total generated power. With the decline of the local mining of anthracite demand for imported coal has increased, from 1990 to 2001 it has increased annually by an average of 10.2%. It is expected that by 2020 the volume of imports of bituminous coal will increase by an average of 1.9% per year. The weakening of the dependence on oil is also carried out by increasing the share of imported gas in the energy mix. From 1991 to 2001, the consumption of LNG per year increased by 19.1%, and its share of energy imports rose from 4.1 to 12.0%.<sup>193</sup>

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<sup>190</sup> IEA Energy Supply Security South Korea Report p. 9 .

[https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014\\_TheRepublicofKorea.pdf](https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_TheRepublicofKorea.pdf).

<sup>191</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 6.

<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>192</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 4

<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>193</sup> KEEI Korean Energy Policy Report <http://www.keei.re.kr> .

Renewable energy sources cannot yet compete with conventional sources of fossil fuels, and their share in the country's energy balance is negligible. The Korean government plays the essential role in the price-setting process, and as far as current energy policy is aimed at promoting sustainable energy in the country, the government strongly encourages the development of renewable energy sources.

Direct participation of South Korean companies in overseas projects is also important to ensure stable supply of energy. By 2017, the proportion of deliveries with projects involving South Korean companies in the total oil imports to increase from 2 to 10%, while natural gas and coal - up to 30%. “Korea National Oil Company (KNOC) together with Korea Gas spent \$306 million on exploration in 2013. “<sup>194</sup> Inside the country, KNOC operates in three basins Ulleung, the Yellow Sea, and Jeju. Overseas, KNOC conducts exploration in Vietnam, Uzbekistan, Kazakhstan, Malaysia, Canada, Peru, the USA, Venezuela, Lybia, Nigeria, UK, Iraq, Yemen, U.A.E. <sup>195</sup> ( See Map 10)

#### **Map 11. KNOC Operations Areas**



**Source – KNOC** [http://www.knoc.co.kr/ENG/sub03/sub03\\_3\\_3.jsp](http://www.knoc.co.kr/ENG/sub03/sub03_3_3.jsp) .

KOGAS actively invests capital in the development of the gas sector outside the country, (Mozambique, East Timor, Uzbekistan, Cyprus) involved in production gas projects (in Canada, Myanmar, Indonesia etc) and has stakes in several foreign projects for the implementation of LNG supply to South Korea (Oman LNG, Qatar's Ras Laffan LNG Co. Ltd , Yemen LNG).<sup>196</sup>

<sup>194</sup> Makhijani .S. (2014) Fossil Fuel Exploration Subsidies Oil Change International p.11.

<sup>195</sup> KNOC Operations [http://www.knoc.co.kr/ENG/sub03/sub03\\_1\\_5\\_1.jsp](http://www.knoc.co.kr/ENG/sub03/sub03_1_5_1.jsp).

<sup>196</sup> Kogas <http://www.kogas.or.kr/en/what/pipeline/pipeline.action>.

“The state-owned Korea Resources Corporation (KORES) has coal exploration and mining operations in New South Wales and Queensland in Australia, Panama City, Tucson in Arizona, Rapu Rapu islands on the Philippines and has a flagship project in Mexico.”<sup>197</sup>

### **3.9. South Korean Energy Security Issues**

#### ***High dependency on Imports from the Middle East***

Despite the fact that Korea is trying to diversify its energy suppliers and its dependence on the unstable Middle East region is extremely high. U.S. Energy Information Administration Report states, that 87% of South Korea's 2013 crude oil imports came from the Middle East. The oil-import is dominated by Saudi Arabia making over a third of total oil imports, followed by Kuwait, meeting 16% of total crude oil imports. More than 50% of LNG South Korea also receives from the unstable Middle East.<sup>198</sup>

#### ***Energy Intensive Industry Dominance***

It should be noted that energy-intensive industries such as metallurgy, oil refining, machine building, and shipbuilding are essential for the further economic development of the South Korea. According to the Korean Statistical Office (KOSTAT)<sup>199</sup> level of industrial production in 2014 kept charted in 2013, the growth trend and reached a figure of 2.5% year by year. Gross national product (GNP) for 2013 increased by 3%, which surpassed analysts' expectations and was the best result since 2011. The dependence of the industrial production of the Republic of Korea on five major sectors (steel, motor vehicles, engines, spare parts and semiconductors) in the last five years has doubled. It should be noted that the decline in the competitiveness of even any one of these five industries of the Republic of Korea can significantly affect the overall on total industrial production of the country. Thus it is possible to reduce energy consumption.

#### ***Short-term capacities of strategic oil reserves***

Strategic oil reserves while increase annually, are mainly designed for short-term effect in the periods of exacerbation of the situation in the oil markets. In South Korea, stocks processors,

<sup>197</sup> Makhijani.S.(2012): Fossil fuel exploration subsidies: Republic of Korea *Oil Change International*.p.3.

<sup>198</sup> U.S. Energy Information Administration Report on South Korea 2014 p. 4.

<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>199</sup> Korean Statistical Office. Accessed on the 4th of September 2015 <http://kostat.go.kr/portal/english/index.action>.



according to the Korea National Oil Corp. (KNOC)<sup>200</sup>, at the end of February 2015 amounted to a total of 82,150,000 barrels. This includes 27.36 million barrels of oil reserves which increased by 8% in recent years. According to the company, the volume of storage refineries account for about 145 million barrels, and about 63 million barrels theoretically free. Based on the fact that every day, South Korea consumes about 2.4 million barrels of oil, by means of simple mathematical operations can be concluded that the provisions are designed for an extremely short period of time.

### ***Geographical Isolation***

Because of the geographical position, and the fact that there is no cross border pipeline, the only way to import gas is in the form of LNG, oil in tankers and coal transport is only possible by rail or ship. All this has a direct effect on the price of energy resources. Despite the fact that the government has decided to provide incentives to processors to help reduce transportation costs when they import oil from more remote areas than the Middle East, the price of energy resources from the Middle East continues to be more attractive for consumers and processors.

### ***Relations with North Korea***

Despite the fact that relations between North and South Korea there has been some progress, North Korea still poses a threat to national security. Due to instability in the region, South Korea misses an opportunity of transportation of energy resources across the territory of North Korea, although it would solve a number of energy issues in both countries.

## **3.10. Conclusion**

Due to an acute shortage of domestic energy resources, about 90% of the needs should be provided at the expense of imports from producing countries. High dependence on external energy sources dictates the need for measures to ensure energy security of the country, prompting South Korea to move in parallel in four areas: to reduce the energy intensity of the economy, diversify the energy mix and geography of energy imports, to build strategic oil reserves. However, it should be borne in mind that the current to date the structure of the

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<sup>200</sup> Korea National Oil Corporation . Accessed on the 18<sup>th</sup> of May 2015 [www.knoc.co.kr/ENG/main.jsp](http://www.knoc.co.kr/ENG/main.jsp).



industry in which significant place energy-intensive industries (metallurgy, oil refining, machine building, shipbuilding, construction materials) does not allow to reduce energy consumption. The restructuring of the energy mix largely completed (by 2020 the combined share of gas and nuclear power in the total primary energy consumption will increase by no more than 6%). Despite the fact that the government has decided to provide incentives to processors to help reduce transportation costs when they import oil from more remote areas than the Middle East, the price of energy resources from the Middle East continues to be more attractive for consumers and processors. Strategic oil reserves while increase annually, are mainly designed for short-term effect in the periods of exacerbation of the situation in the oil markets. In this connection, a significant role in ensuring the energy security of the country is given to the geographical diversification of energy sources.

## **Chapter 4: Sino-Russian and South Korean-Russian Energy Relations**

### **4.1. Sino-Russian Energy Relationships. The long story of Negotiations**

*"The Russians are turning east to the Chinese - to the Europeans' surprise. It always seemed to me that the relationship between Russia and China would shift from being based in Marx and Lenin to being based in oil and gas.*

*- Daniel Yergin, chairman of Cambridge Energy Research Association CERA*

Cooperation between Russia and China in the field of energy has been attracting researcher's attention not only in both countries, but in the whole world. Both countries, as noted by Russian President Vladimir Putin, experiencing "security deficit" on the background of worsening of "systemic imbalances in the global economy, finance, trade erosion ...traditional moral and spiritual values."<sup>201</sup> Foreign Minister Sergei Lavrov called energy "the main supporting structure of economic cooperation".<sup>202</sup> This statement is relevant for the following reasons. First of all, the majority of bilateral agreements signed for the last decade, was somehow related to energy. Second of all, energy and energy cooperation are essential for the further development of both countries.

For China, cooperation with Russia is the matter of energy security, as it provides diversification of imports.<sup>203</sup> For Russia, it is especially important that China opposed the anti-Russian propaganda and Western economic sanctions in connection with Ukrainian events. Taking the sanctions into account, it is not only the only apparent solution to diversify export and to partially shift from European to the Asian energy market, but also the possibility of infrastructural development of the east of the country. Confirmation of this view is the fact that among the 80 documents signed by the parties during the five official summits, beginning in

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<sup>201</sup> Putin, V.V. Speech in The Ministry of Foreign Affairs on the 1 of July 2014  
[http://www.mid.ru/brp\\_4.nsf/0/793F91B02AEF462844257D080050E43B](http://www.mid.ru/brp_4.nsf/0/793F91B02AEF462844257D080050E43B).

<sup>202</sup> Sergey Lavrov's speech in The Ministry of Foreign Affairs on the 1 of July 2014. Archive of the Russian Security Council.

<sup>203</sup> Bin, Y.(2014): China-Russia Relations : Geo-economics for geo Politics. Comparative Connections vol. 6, No 2. 145-154/

2009, about a third of the energy-related. It is also important to note that cooperation is based on the structure established in 2008 Energy Dialogue.<sup>204</sup>

The problem of "omnidirectional" Russian pipelines, primarily oriented to the West, raised more than once. Back in December 2005 at the Security Council meeting, President Vladimir Putin said: "We have a large-scale work on the development of transport infrastructure in order to diversify supply routes of energy resources from Russia. In this way we reduce the dependence on potential risks and, of course, open up promising new markets, particularly in the Asia-Pacific region."<sup>205</sup>

#### **4.1.1. Oil. "Skovorodino - Mohe – Daqing" Project**

Back in 2001 both Japan and China were bidding against each other, trying to persuade both the Government and the NOC to pipe them Russian oil. Initially the project of pipeline belonged to Mikhail Khodorkovsky's Yukos oil company. Initially the plan included a construction of a pipeline starting in Angarsk (Yukos Refinery in East Siberia), and with the final destination in Daqing (with oil terminal facility in the north of China). The CNPC agreed on a construction of a pipeline and even began the construction process. Government officials were threatened to lose control over oil exports and divided the responsibilities. The state owned Transneft took over the pipeline, the oil came from Yukos.<sup>206</sup> The renationalization of the oil sector reassessed Yukos contracts, which led to doubts on the Chinese side. In turn, Japan has re-emerged on the surface with the intention to finance the development of the Siberian oil and gas infrastructure to Asia. In that regard the Chinese-Japanese rivalry caused the disruption between the government and the NOCs and inside the companies as well. The government officials were eager to vote for the Japanese project, while Transneft partially wanted to honour the Chinese agreement and was partially interested in a more generous offer made by Japanese, with the preferences given to the future profit, not to the previous arrangements. However, Rosneft, that was responsible for oil

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<sup>204</sup> Luzianin S. Zhao Huashen. (2014): Russian-Chinese Global And regional collaboration AST Press.

<sup>205</sup> Archive of the Russian Security Council <http://www.scrf.gov.ru/documents/1/111.html>.

<sup>206</sup> Helmer.J. China beats Japan in Russian pipeline race Asia Times Accessed on the 1<sup>st</sup> of September 2015 [http://www.atimes.com/atimes/Central\\_Asia/GD29Ag01.html](http://www.atimes.com/atimes/Central_Asia/GD29Ag01.html).

provision, insisted on the construction of the pipeline to China, which caused yet another internal conflict.<sup>207</sup>

The construction of the pipeline started in 2006. Thus, in 2010 during a summit in China, the leaders of both countries participated in the opening of the branch "Skovorodino - Mohe - Daqing", an offshoot of "Eastern Siberia - Pacific Ocean". Deliveries through the pipeline began in January 2011, "with deliveries amounting to 15 million tonnes of oil (300,000 barrels per day (48,000 m<sup>3</sup>/d) each year for 20 years in exchange for a loan worth US\$25 billion to Russian companies Transneft and Rosneft for pipeline and oil fields development."<sup>208</sup> "This way Russian Rosneft was able to repay its debt of \$13 billion, and more importantly, Russia has acquired the necessary funds to develop the Easter Siberian oil and gas fields, which due to the global economic crisis it was lacking."<sup>209</sup> Before the supplies have started the main share of the supply was carried out by railway through Manchuria and Kazakhstan, and through the ports of the Far East.

In 2013, "Rosneft" and China's CNPC have agreed to supply to China for 25 years, 360 million tons of oil. The total amount of supplies is estimated at \$ 270 billion. According to the intergovernmental agreement of 22 March 2013 for the period 2015-2017, the increase in supply on the challenge of the ESPO pipeline "Skovorodino-Mohe" was supposed to be 5 million tons of oil per year. However, China did not have time to complete the construction on time in their territory the pipeline "Mohe-Daqing" (continued from the pipeline "Skovorodino-Mohe"). Therefore, "Rosneft" and CNPC signed a technical agreement on temporary changes to the points of delivery of oil. This gave "Rosneft" an opportunity to supply oil under the contract, not only through Skovorodino, but also through the seaport of Kozmino (endpoint ESPO).<sup>210</sup> According to the Transneft data, Russian oil meets 9% of the total Chinese demand.<sup>211</sup>

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<sup>207</sup> Woods S. Oil for China: The Sino-Russian Waltz *Journal of Energy and Development* 33.2 (2010): 249-265.

<sup>208</sup> Russia Launches Second Leg of Pacific Oil Pipeline *RIA Novosti*.

<sup>209</sup> Jiang, J. Sinton, J. (2011) Overseas Investment by the Chinese National Oil Companies IEA p.5.

<sup>210</sup> CNPC Russia. Accessed the 8<sup>th</sup> of November 2015 [http://www.cnpc.com.cn/ru/els/els\\_index.shtml](http://www.cnpc.com.cn/ru/els/els_index.shtml).

<sup>211</sup> Transneft (2014) : Transneft Yearly Report. Accessed the 8<sup>th</sup> of November 2015. [http://www.transneft.ru/u/section\\_file/17302/go-2014.pdf](http://www.transneft.ru/u/section_file/17302/go-2014.pdf).

In 2013, during his first visit to Moscow, Xi Jinping sides signed eight documents relating to the energy sector. According to the Xinhua News Agency, signed the document envisages an increase in the supply of oil by four times. Moreover, the sides are planning to jointly conduct geological exploration on the shelf of the Pechora Basin, the Barents Sea, and eight areas of Eastern Siberia, and agreed to continue the work on the project "Sakhalin-3" project to build the Tianjin refinery. The share of the CNPC in the Tianjin oil refinery project is 51% and 49% belongs to Rosneft.<sup>212</sup>

#### **4.1.2. Gas Pipeline and the Issue of Price**

As for the direction of the gas, in organizational terms, the interaction of the two countries began in October 2004, when "Gazprom" and CNPC signed a "strategic cooperation agreement." In 2009 the agreement was extended for another five-year term. The two companies have also created a Joint Coordinating Committee and the working group that is studying the possibility of gas processing plants, the creation of gas chemical facilities in Russia, development and construction of a number of Chinese high-sulfur gas fields, as well as explore other areas of cooperation related to the supply of Russian gas through the eastern route.

In 2009 the parties issued a "Memorandum of Understanding on cooperation in the field of natural gas" and a road map on this Memorandum. The idea of a gas pipeline from Russia to China was very much discussed already in the 1990s. "Similarly to the early gas agreements with European states, a cooperation with China stems from an improving political relations between the two countries."<sup>213</sup> Rusia Petroleum, with Sidanko as their main Shareholder owned the rights of the gas field. Subsequently BP, bought a 10% share of Sidanco n 1997, with the intention of getting an access to Russian oil exports to China. It also had 62,9% share in Rusia Petroleum.<sup>214</sup> In 2000, Korea's KOGAS joined Rusia Petroleum and CNPC and an ending point

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<sup>212</sup> Rosneft (2014): Rosneft Press Release Rosneft and CNPC Endorse Feasibility Study for Construction of the Tianjin Refinery. Accessed the 8<sup>th</sup> of November 2015 <http://www.rosneft.com/news/pressrelease/08112014.html>.

<sup>213</sup> Belyi.A. (2015a): Russia's gas export reorientation from West to East: economic and political considerations. *Journal of Energy Law and Business* 2015 Vol 8. N1.

<sup>214</sup> Starinskaya.G. Gazprom gets Kovykte RBC daily <http://www.rbcdaily.ru/industry/562949979787558>.

of the pipeline was supposed to be located on the territory of South Korea, at this point, there were three options proposed: “a direct route through Mongolia, a route eastwards to South Korea traversing North Korea, and a route to South Korea which passed under the Yellow Sea, thus avoiding North Korea”.<sup>215</sup> The project was aimed not so much at the diversification of exports and the implementation of significant gas supplies to China, but on the energy supply of the Irkutsk region and the development of the region as a whole. The problem was that Chinese consumers at the time were not prepared to pay the price for gas that was acceptable for the Russian market, so the pipeline would stretch to South Korea, with higher gas prices. Russia focused on world prices \$ 355 for 1 thousand cubic meters and China offered \$ 235 for 1 thousand cubic meters. As is the case with the oil pipe described above, the government of Vladimir Putin was not going to lose control over the export of natural resources. Moreover, strict government policies introduced tougher adjustments in the management of oil and gas sector, which affected the ownership of resources exploration, taxes, oil and gas companies itself and, of course exports. In 2011, as the result the TNK-BP lost their control over the Kovykta gas field and was forced to transfer their rights to Gazprom for the settlement price of \$ 700 million.<sup>216</sup> Gazprom at the time had other plans for the gas field and the government drew a very different circuit pipeline supplies gas to the west of the country. Because of the delay and price differences, China had to turn to Turkmenistan and the project was frozen. It is notable to add that according to the Oxford gas journal for 2013 China meets 50% of their demand with Turkmen gas.<sup>217</sup>

Gazprom did not want to lose the theoretical opportunity of entering the Asian gas market, so it introduced another project of supplies, but from another region—the Yakutia Republic. It should be noted, that the Chinese part was not so enthusiastic about the project, favouring Kovykhta scenario, due to the proximity to the northern border. “Since the mid-2000s, Russia's Gazprom and China's National Petroleum Company (CNPC) have been negotiating the possibility of a gas pipeline from Siberia to China. Nevertheless, negotiations were stuck due to the price issue.”<sup>218</sup>

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<sup>215</sup> Speed.A. (2014): The long road to the China-Russian gas pipeline deal: the end of the beginning p.2.

<sup>216</sup> Starinskaya.G. Gazprom gets Kovykte. *RBC daily* <http://www.rbcdaily.ru/industry/562949979787558>.

<sup>217</sup> Chen.M.(2014) The Development of Chinese Gas Pricing. *Oxford Oil and Gas Journal* July 2014. p.7.

<sup>218</sup> Belyi.A. (2015a): Russia's gas export reorientation from West to East: economic and political considerations. *Journal of Energy Law and Business* 2015 Vol 8. N1.p.2.

#### **4.1.3. Coal**

Coal has a vital role in the energy mix of both countries. Russia and China are among the world leaders in terms of proven reserves of coal. China ranks first in the world coal production, but consumes more. China compensates for the difference at the expense of imports, and remains the second importer after Japan coal.

Until 2002, Russia delivered to China small amounts of coal. In 2002-2008, exports rose slightly. However, since 2009, the situation changed drastically. In 2009 only, the volume of coal supplies to China surpassed the whole volume of deliveries from 2001 to 2009. Experts attribute their expectations that China, India, Japan and South Korea, which together represent about 25% of the total demand for coal (180 million tonnes) of coal imports will double over the next five years.<sup>219</sup> But today, such predictions will have to undergo some radical adjustment.

On the 24<sup>th</sup> of June 2009 Russia and China signed a Memorandum of Understanding on cooperation in the coal sector, which identified strategic directions: the development of coal resources, the possibility of increasing the supply of coal to China and etc.

At the same time coal consumption in Russia was falling steadily, and the only way for the development of the coal industry was the increase in exports. For a long time the list of the leaders of Russian raw materials importers was stable, but in 2009 the picture has changed. China rapidly became one of the leading importers. Deliveries of coal from Russia to China in 2009 increased by 38 times and reached 9.3 million tons.<sup>220</sup> In 2013 for the first time in recent years the volume of exports of Russian coal to the Asia-Pacific countries has exceeded the volume of shipments to Europe. In 2013, 60 million tons of coal was exported from Russia to Europe, comparing to 65 million tons exported to Asia-Pacific countries.<sup>221</sup> Thus, export became

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<sup>219</sup>Ministry of Energy Statistics of the Russian Federation  
[http://minenergo.gov.ru/activity/coalindustry/index.php?sphrase\\_id=20712](http://minenergo.gov.ru/activity/coalindustry/index.php?sphrase_id=20712).

<sup>220</sup> Petrenko.I. (2013): Chinese vector of Russian coal Central Dispatch Administration of the fuel and energy complex report p.12.

<sup>221</sup> Ministry of Energy Statistics of the Russian Federation Accessed on the 4<sup>th</sup> of September  
[http://minenergo.gov.ru/activity/coalindustry/index.php?sphrase\\_id=20712](http://minenergo.gov.ru/activity/coalindustry/index.php?sphrase_id=20712).

not only the main driver of coal industry, but the unique support for the conservation of production at the current level.

The coal from Russia is delivered not only by sea, but also by rail. However, it should be noted that experts are not so enthusiastic about rail deliveries. Far East direction is extremely overloaded. According to experts of "Russian Railways", underdeveloped railway infrastructure in the Far East direction, may lead to transport collapse.<sup>222</sup> At the same time, the volume of capital investments required for the development of infrastructure is large enough and it can pay off only if they increase the size of tariffs for railway transportation of coal. However, this will increase and the final price of coal products for consumers and dramatically reduce its competitiveness on the world market.

In the near future, we can predict a trend in the reorientation of Russian coal exports to the Asian market back on the European, due to some changes in the Chinese coal policy. While there is a slowdown in GDP growth in China, we can witness a restructuring of the economy from energy and resource-intensive to a more high-tech industries. These changes are reflected in the statistics of last year and impose considerable adjustments on the future plans of the Chinese manufacturers.

For example, in 2014 the volume of coal imports to China amounted to about 291.22 million tons, which is 10.9% less than in 2013. According to Jiao Jian, Vice Chair of China Coal Importers Association, the main factors that caused changes in the coal market are the slowdown of economic growth and the buildup of coal capacity inside the country.<sup>223</sup> This policy caused a slowdown in demand for imported coal in China. But we will take a closer look at that issue in our next chapter.

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<sup>222</sup> RZD Partners Transport Policy Accessed on the 4<sup>th</sup> of September <http://www.rzd-partner.ru/news/transportnaia-politika>.

<sup>223</sup> Russian Metals Mining Conference Report Accessed on the 4<sup>th</sup> of September <http://www.russian-metals-mining.com>.



#### **4.1.4. Power**

In this area the cooperation is carried out within the project under the patronage of the Russian companies Inter RAO UES, RusHydro and the State Grid Corporation of China. The first deliveries of electricity began in 2009. Within two years, it amounted to about 1-1.2 billion kW/h. In 2012, it was doubled and tripled in 2013. The power supply is carried out through the province of Heilongjiang on two interstate transmission lines, "Blagoveshchensk-Hoihu" and "Blagoveshchensk-Aigun".<sup>224</sup>

The project to increase electricity exports from Russia to China is implemented within the framework of strategic cooperation between the two countries in the field of electricity.

The aim of the project is the gradual increase in the supply of electricity to Chinese consumers up to 60 billion kWh per year, during 2009-2020. The project envisages the construction of new generating facilities (mainly coal-fired thermal power plants based on coal deposits in the Far East) with a total capacity to 10.8 GW, as well as on the territory of Russia and China with a total length of 3.4 thousand km.<sup>225</sup>

In 2013, during the Chinese leader's visit to Russia, the leaders discussed the plan of joint construction of power plants with capacity of 10 GW in Siberia and the Far East, with the calculation of the export surplus in China. Furthermore, countries agreed on the modernization of existing and construction of six new power plants. By 2036 planned supply comprised 100 billion kW/h of electricity from Russia to China.<sup>226</sup>

There have been negotiations on a large-scale contract, but the main stumbling block remains the issue of the price. The main argument is that, the selling price of electricity in China (about 0.05 US dollars per 1 kW) is lower than that paid by the Russian consumer.<sup>227</sup> The prices at which the Russian population gets electricity are much higher - because on the way to the retail

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<sup>224</sup> Inter Rao Foreign Activity Accessed on the 4<sup>th</sup> of September <http://www.interrao.ru/activity/foreignact/>.

<sup>225</sup> Vostochnaya Energeticheskaya Company. Projects Accessed on the 4<sup>th</sup> of September [http://www.eastern-ec.ru/ru/about\\_company/projects/](http://www.eastern-ec.ru/ru/about_company/projects/)

<sup>226</sup> Belyi. A. (2015a): Russia's gas export reorientation from West to East: economic and political considerations *Journal of Energy Law and Business* 2015 Vol 8. N1.

<sup>227</sup> Fedorovsky. A. (2013): Russian-Korean investment cooperation. Russian International Affairs Council. Accessed on the 1st of March 2014 [http://russiancouncil.ru/en/inner/?id\\_4=2328#top-content](http://russiancouncil.ru/en/inner/?id_4=2328#top-content).

consumer, electricity passes a dozen transformations. The costs of electricity transformation in China are covered by the Chinese side.<sup>228</sup>

The problem is that the energy of the Far East is set up so that it is now produced surplus of electricity. Russia may sell this surplus to China, or do so-called "idle discharge" to the hydro power plant, which will have a damaging effect on the ecology of the region. Here is what the analyst of the leading Russian investment company Finam writes on this subject:<sup>229</sup>

“The retail price of electricity for consumers both in China and in Russia, is significantly higher than wholesale price. For example, Chinese enterprises of commercial sector such as technical centers for car maintenance, in 2014 to pay for electricity the price of 936 yuan / MWh (US \$ 146 US / MWh), which is comparable to the rate for similar consumers of the Far East, for example in the Khabarovsk Territory and Amur region. According to statistics in 2014, Russia exported electricity to China at the price of 42 USD / MWh. At the same time, according to data released in September 2014, by the State Committee for Energy control in China, the average wholesale price of electricity in the province of Heilongjiang was US \$ 49 / MWh (without VAT). As for the value of the export price on a new contract, that in 2016 it will amount to an average of US \$ 49 / MWh, and for subsequent years will be calculated according to a formula taking into account the increase in the price of the wholesale market in Heilongjiang province .“

Between 2004 and 2015, imports of electricity from Russia to China increased by more than tenfold, to 0.27 billion kWh in 2004 to 2.65 billion kWh by the end of 2015. Russia now accounts for about 50% of China's total imports of electricity (7.44 billion kWh).<sup>230</sup>

In February 2014, Russia and China have announced plans to build a thermal power plant with capacity of 5-8 GW based on Erkovetskaya coal mine (it is expected that the annual electricity

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<sup>228</sup> Topalov.A. (2014): Energy Alliance. In addition to oil and gas, China is interested in cooperation in the sphere of electric power industry. Gazeta.ru Accessed on the 4<sup>th</sup> of September 2015

<sup>229</sup> Strijova.S. Export electricity to China: plus or minus? Finam. Accessed on the 4<sup>th</sup> of September 2015 <http://finam.info/news/eksport-elektroenergii-v-kitay-plyus-ili-minus/>

<sup>230</sup> Vostochnaya Energeticheskaya Compania. Projects. Accessed on the 4<sup>th</sup> of September 2015 [http://www.eastern-ec.ru/ru/about\\_company/projects/](http://www.eastern-ec.ru/ru/about_company/projects/)

generation of power plants could reach 35-50 billion kWh), which will fulfill the obligations on existing agreements on electric power export.<sup>231</sup>

## **4.2. Russo-South Korean Energy Cooperation. The Ideal Buyer**

“Since the establishment of diplomatic relations between the Russian Federation (former Soviet Union) and the Republic of Korea in 1990, the Russian-South Korean relations developed rapidly and covered almost all areas of cooperation.”<sup>232</sup> The priority areas of mutually beneficial economic cooperation between Russia and the Republic of Korea are the large-scale investment projects related to the development of natural resources of Russian regions and the creation of new production facilities in eastern Russia. These days there are a lot of for large-scale exports to South Korea of Russian liquefied gas, oil and electricity. However, despite the geographical proximity, the geopolitical situation has a negative impact on the implementation of the energy supply.

### **4.2.1 Oil**

Cooperation between Russia and South Korea in that area began in 2005. In December that year Rosneft and KNOC signed an agreement under which KNOC purchases from Rosneft 40% stake in the management company that was responsible for the development of the West Kamchatka shelf. The operator on the project was a 100% subsidiary of West Kamchatka Holding BV - Kamchatneftegaz.<sup>233</sup>

Earlier, in September 2004, Rosneft and KNOC signed a memorandum of understanding stating, in particular, about the intentions of the joint development of the West Kamchatka shelf of the

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<sup>231</sup> Topalov.A. (2014): Energy Alliance. In addition to oil and gas, China is interested in cooperation in the sphere of electric power industry. Gazeta.ru Accessed on the 4<sup>th</sup> of September 2015 <http://www.gazeta.ru/business/2014/04/24/6005317.shtml>

<sup>232</sup> Fedorovsky.A.(2013): Russian-Korean investment cooperation. Russian International Affairs Council. Accessed on the 1st of March 2014 [http://russiancouncil.ru/en/inner/?id\\_4=2328#top-content](http://russiancouncil.ru/en/inner/?id_4=2328#top-content).

<sup>233</sup> Rosneft Official Website Our Activities [http://www.rosneft.ru/Downstream/petroleum\\_product\\_sales/](http://www.rosneft.ru/Downstream/petroleum_product_sales/).

Sea of Okhotsk. According to the document, the parties intend to carry out cooperation through the joint venture, which holds the license for exploration and production of mineral resources at the specified site. In February 2005, the parties signed an interim financing agreement providing for the implementation of seismic surveys and exploration drilling.<sup>234</sup>

It should be noted that the projected resources section of the West Kamchatka shelf area of 60 thousand square kilometres estimated previously at 900 million tons of standard fuel by 26 prospective structures. According to Rosneft, the project is comparable in scale to the project "Sakhalin-1" and "Sakhalin-2". The first phase of the project included investments in exploration in the amount of approximately \$ 150 million. It was assumed that exploration until commercial discoveries will be funded by the Korean side. Rosneft will have the right to receive a certain portion of revenues immediately after the start of commercial production. Later in 2013 Rosneft signed an agreement with the second largest oil Company in South SK Group. Totally in 2014 Rosneft has delivered 1 599 thousand tons of oil worth more than 1300 million US dollars to the company SK Energy only.<sup>235</sup> To date, Russia takes the 8th place among the suppliers of oil to South Korea, its share in the oil balance of the country is 4%.<sup>236</sup>

### ***The modernization of the Khabarovsk refinery***

In September 2004, in Moscow in the presence of President Vladimir Putin and President Roh Moo-hyun Russian diversified holding company Alliance Group and Korean corporation Samsung signed the "Agreement on the modernization of the Khabarovsk oil refinery."<sup>237</sup>

The volume of investments in accordance with the project is more than \$ 500 million. Alliance Group, which owns a controlling stake in the Khabarovsk refinery, launched a comprehensive program of technical re-equipment of the plant in 2000. The reconstruction program consisted of three stages and involved both modernization and reconstruction of existing plant capacity and construction of new plants.

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<sup>234</sup> South Korea Report of the Ministry of Energy of the Russian Federation p5. Energy Magazine Vol.45 p.13.

<sup>235</sup> Rosneft Official Website Our Activities Accessed on the 4<sup>th</sup> of October 2015

[http://www.rosneft.ru/Downstream/petroleum\\_product\\_sales/](http://www.rosneft.ru/Downstream/petroleum_product_sales/).

<sup>236</sup> U.S. Energy Information Agency Report on South Korea p. 2 Accessed on the 4<sup>th</sup> of October 2015

<http://www.eia.gov/beta/international/analysis.cfm?iso=KOR>.

<sup>237</sup> Ministry of Energy of the Russian Federation. South Korea Report of the p.5.

#### **4.2.2. Gas. LNG driven cooperation**

##### ***Cooperation between Gazprom and KOGAS***

The cooperation in the Gas sector started in May 2003, when Gazprom and KOGAS signed a cooperation agreement for a period of 5 years, which covered a wide range of issues, including the elaboration of possible supplies of Russian natural gas to South Korea.<sup>238</sup>

Later in October 2006 Russia and South Korea signed an intergovernmental agreement on cooperation in the gas sector, which provided, starting with 2012-2013 natural gas supplies to South Korea in the amount of about 10 billion cubic meters a year.<sup>239</sup>

To implement it, the parties established a permanent joint working group. Countries considered two options. The first option was the construction of the pipeline through China with a gasket on the bottom of the Yellow Sea to South Korea. As we said at the beginning of a chapter in 2003, the company "RUSIA Petroleum", then owned the license for the Kovykta gas condensate field, considered the possibility of gas supplies to South Korea through China. Kovykta gas had to go through the pipeline, the envelope of the southern tip of Lake Baikal, to the border with the Chinese province of Manchuria. Then, the pipe should be laid to the Chinese city of Dalian on the coast of the Gulf of Bohai. From there, one branch was supposed to go to Beijing, the second - in the Republic of Korea at the bottom of the Yellow Sea. The total length of the pipeline could exceed 4.8 thousand km.<sup>240</sup> Due to the political tensions on the peninsula and in China both parties had to freeze the project until 2011. Then occurred the second option - laying pipes directly to South Korea from Vladivostok on the bottom of the Pacific Ocean. "Gazprom" estimates the second option, and the company's specialists came to the conclusion that, given the

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<sup>238</sup> Steklov M.(2013): Energy cooperation between Russia and South Korea *Politics International* p.23.

<sup>239</sup> Steklov M.(2013): Prospects of cooperation between the Russian Federation and the Republic of Kazakhstan to provide energy assistance to North Korea: an article in the collection of papers presented at the XI scientific conference of Korean Studies in Russia and CIS countries Korea: View from Russia Publishing House of the RAS IFES. p.28.

<sup>240</sup> Steklov M.(2012): Energy projects in the triangle of Russia-Kazakhstan-Korea: an article in a collection of reports submitted on X Scientific Conference Korean Studies in Russia and the CIS countries, the Korean peninsula and the Challenges of Globalization Publishing House of the RAS IFES.

difficult terrain, great depth and a relatively small volume of supply of gas (10 billion cubic meters per year) project unprofitable.

In September 2011, heads of energy agencies of South and North Korea signed a preliminary agreement with "Gazprom" for the supply of Russian natural gas across the peninsula. However, no binding agreement has been reached and no investment in this project has been done.<sup>241</sup> Currently, there are three options for gas supplies to South Korea: a pipeline through North Korea, either by sea through the territory of China, or by means of LNG. According to Russian analysts, the most obvious barrier to gas supplies via the pipeline through North Korea to South Korea is undoubtedly the tense political situation between the two Koreas. "Given that South Korea is almost completely satisfies the demand for energy through imports, it will be difficult to persuade South Korea to trust North Korea on the issue of energy security. It is much more advantageous in this respect is the idea to increase the supply of LNG to the country due to the expansion of existing facilities for the production of LNG (construction of the third line for the liquefaction plant project "Sakhalin-2" capacity of 5 million tonnes), or using products with a new project, "Gazprom" - "Vladivostok LNG" capacity of 10-15 million tonnes. An additional benefit of this will be the possibility of LNG supply to other markets in the region, thereby diversifying the risks of investing in the pipeline, designed only for deliveries to Korea."<sup>242</sup>

### ***LNG Deliveries to South Korea***

In September 2006 Gazprom supplied its first LNG shipment to study the market in the Republic of Korea. LNG supply was implemented by a subsidiary of Gazprom – Gazprom Marketing and Trading Ltd. LNG cargo was purchased from Japanese Mitsubishi Corporation which bought gas from the company Celt - a joint venture of Mitsubishi Corporation and Tokyo Electric Power

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<sup>241</sup> Kim.S. .(2014): The Russian-South Korean cooperation in the energy sector: prospects and challenges. *Asia and Africa today*. №12.

<sup>242</sup> Novitsky M. (2014): Gas for Korea. *Expert Magazine* from April 2014.

Inc. LNG was delivered in a volume of 145 thousand cubic meters (about 92 million cubic meters of natural gas) to the gasification terminal in Pyongtaek, owned by KOGAS.<sup>243</sup>

In August 2008, with the increase in trading transactions and sea transportation of LNG, Gazprom has allocated this business into a separate subsidiary, Gazprom Global LNG Ltd. Russia is among the seven largest suppliers of LNG to South Korea, its share in the balance comprises 5%.<sup>244</sup>

#### **4.2.3. Coal**

Russia is among the three largest suppliers of coal to South Korea.

For more than 15 years Sakha-Korean joint venture coal mining company Erel LTD operates in the Republic of Sakha (Yakutia). The shareholders of the joint venture are Jakutugol (58.9%), LG International (34.2%), the Japanese company Lisco (1%) and the Ministry of Property Relations of the Republic of Sakha (Yakutia) (5.9%). Approximately 70% of the company's products exported abroad to the coal markets in Japan, South Korea and other countries in the Pacific Region, and the rest goes to Russian consumers. In 2008 and 2009 a number of Russian coal companies signed long-term contracts of supply of coal to South Korea. Also in November 2011, it has been produced by experienced coal supplies from Russia to South Korea via North Korea. Deliveries of coal from Russia are carried out on reconstructed in 2008-2013 in the railroad Hassan (Primorsky Krai of Russia) - Rajin (DPRK). Initially, the Rajin port was planned to build a container terminal for the processing of 100,000 20-foot containers a year, but due to changes in market conditions and the structure of freight cargo traffic the North Korean authorities decided to build an infrastructure for the processing of bulk goods.<sup>245</sup> It is planned to double the amount of shipping in the next two years.<sup>246</sup> From 2013 to 2014 the export of Russian coal to Korea increased by 20% and amounted to 14% share of total imports.<sup>247</sup>

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<sup>243</sup> Steklov M. (2012): Energy projects in the triangle of Russia-Kazakhstan-Korea: an article in a collection of reports submitted on X Scientific Conference Korean Studies in Russia and the CIS countries, the Korean peninsula and the Challenges of Globalization Publishing House of the RAS IFES.

<sup>244</sup> Kim.S. (2014): The Russian-South Korean cooperation in the energy sector: prospects and challenges. *Asia and Africa today*. 2014. - №12.

<sup>245</sup> Kim.S.(2014): The Russian-South Korean cooperation in the energy sector: prospects and challenges. *Asia and Africa today*. №12.

<sup>246</sup> Ministry of Energy of the Russian Federation South Korea Report of the p.5.

<sup>247</sup> U.S. Energy Information Agency Report on South Korea p.2.

## **Chapter 5: Evolution of Energy Relations between China and Russia and South Korea and Russia in Terms of “the Crimean Crisis”**

*“We have no eternal allies, and we have no perpetual enemies. Our interests are eternal and perpetual, and those interests it is our duty to follow.”*

*- Henry John Temple*

### **5.1. Sino-Russian Energy Relations Evolution: Partnership or “Marriage of Convenience”?**

*The concept of “the Crimean crisis” was coined by political scientists and journalists to describe the events that occurred on the peninsula of Crimea in February - March 2014 that resulted in the annexation of the Crimea by the Russian Federation.*

“Some of the sanctions strategically target important areas of promise for Russia's energy industry, like Arctic exploration and deep-water and unconventional drilling.”<sup>248</sup> It is not that difficult to prove, that the sanctions have caused some significant damage to the Russian financial and energy sector. It is predicted, that the Russian oil production will have to face a rapid slowdown in the nearest couple of years. Rosneft, the largest state owned company has some real difficulties dealing with the existing debts and getting new credits. The LNG Yamal Project requires another US\$50 billion to continue the construction and it will require more investment in the future. Last but not least, the economists predict a financial crisis, which Sberbank, as the largest state-owned bank will face in the nearest future. All the factors we mentioned above, are influencing the investment climate in the country, and do not provide foreign investments with the reassurance needed. It also concerns the international banks that provided the loans of about US\$700 billion to Russia's corporate sector. Seeking for an alternative to the European energy market and in order to diversify its importers Russia has turned to the East, mainly towards his nearest neighbour – China.

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<sup>248</sup> Domm.P.(2014): How Sanctions are hurting Russian Energy Sector. *CNBC* Accessed on the 10<sup>th</sup> of May 2015. <http://www.cnb.com/2015/04/24/how-sanctions-are-hurting-russias-energy-sector.html>.



Russian President Vladimir Putin and the Chinese Leader Xi Jinping met five times within the period of one year. This includes the signing of 40 documents on gas supplies from Russia to China (Shanghai May 2014) documents, as well as the joint declarations and negotiations on the BRICS summit (Fortaleza, July 2014), SCO (Dushanbe, September 2014), APEC (Beijing, November 2014), the presence of Xi Jinping at the Olympic Games in Sochi (February 2014) and at the celebration of the 70th anniversary of victory in World War II (May 2015) show that a bilateral Russian-Chinese dialogue takes priority in the foreign policy positions of Moscow and Beijing, especially when it comes to the geopolitical and energy cooperation at the global and regional levels. According to Russian experts, the Russian vector of China's energy is transformed into a geopolitical.<sup>249</sup>

However the relations between Russia and China still cause the vibrant polemics among the international press. Released after the visit of Prime Minister Medvedev to China, the article of "Xinhua" agency has stirred up public opinion: the Russian-Chinese relations are nearing the end? Article Chinese analyst envisages the profound crisis in Russia, wondering whether Russia would be able to overcome it. However, many journalists and analysts interpret this as a statement of "strategic deadlock" in relations with Russia.<sup>250</sup>

However, there are a number of economic and political reasons that refute the negative predictions about the future cooperation.

First, the relationship in the energy sector. China is in dire need of oil, in particular, Russian oil. Oil supplies from Africa (mostly from Angola) and the Persian Gulf are not safe, due to the high dependence on the Malacca Strait political relations between states. In the case of China's conflict with the US, the last will be able to block the "oil artery," and interrupt the supply to China from the region.<sup>251</sup> In this case, China will import oil only from Latin America, the supply of which in the structure of imports is insignificant. Exploration projects in the Arctic have long-term implementation plans.

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<sup>249</sup> Luzianin. S. Zhao Huasheng (2015): Report. Russian-Chinese dialogue. Model 2015. The Russian Council for International Affairs. №18 2015.

<sup>250</sup> Umin.I. China state media: "Russia has reached a deadlock" - on the results of Medvedev's visit to China. South Insight. P.34.

<sup>251</sup> Jian.Z. (2014): China's Energy Security: Prospects, Challenges, and Opportunities. Brookings. P.14.

The closest and most reliable partner is Russia, which is ready to deliver hydrocarbons, the most important component, supporting its economy. Russia needs to diversify exports, China - imports. Tensions between Russia and the West creates favourable conditions for rapprochement between the two states, and China's struggle against the United States for the status of world hegemony, only contributes to the development of Russian-Chinese relations. Despite the fact that China has refused to fund the pipeline "Power of Siberia" and "Gazprom" will now have to build it on their own, in the energy sector there has been another breakthrough. Confirmation of the strengthening of Sino-Russian relations in the energy sector may be the fact that in November 2015 Russia overtook Saudi Arabia to become the largest supplier of oil to China.<sup>252</sup>

Secondly, China does not reject cooperation with Russia, which showed the meeting of Prime Ministers of the two countries in China. Over 30 documents were signed during Medvedev's visit. In particular, "Gazprom" has agreed with China's CNPC on the design of the pipeline "Power of Siberia" on the cross-border area, and "Novatek" has sold 9,9% of shares of "Yamal LNG" to the Chinese Silk Road fund. Moreover, China and Russia agreed on joint opposition to information wars, the sides are designing joint research projects in this field.<sup>253</sup>

Third, China took the side of Russia to the Syrian issue. China's Foreign Ministry called the incident with the Su-24 Russian VKS loss to the international efforts to combat terrorism. At this stage, it is said that in the medium term, China does not intend to sever relations with the Russian Federation.<sup>254</sup>

Can we then argue that China sees Russia as a major partner in the energy sector? Yes and no. China is beneficial to import hydrocarbons from Russia, as long as the partner country has preserved even small economic stability, and until China finds a more profitable source. Considering all the above, it can be noted that the Chinese side is interested in developing relations with all countries, which will help it in its development. For the Russian part the issue

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<sup>252</sup> Segdi.A. (2015): Russia overtakes Saudi Arabia as largest supplier of oil to China. The Guardian. Accessed on the 1<sup>st</sup> of November 2015. <http://www.theguardian.com/business/datablog/2015/jun/24/russia-overtakes-saudi-arabia-largest-supplier-oil-china>.

<sup>253</sup> Mitrachovic. S. Dmitry Medvedev's visit to China. National Energy Security Fund. Accessed on the 1<sup>st</sup> of November 2015. <http://www.energystate.ru/news/2139.html>.

<sup>254</sup> Topalov.A. China's softly hints. Geopolitika. Accessed on the 1<sup>st</sup> of November 2015 <http://geo-politica.info/kitay-myagko-namekaet.html>.

is more complex, until the Russia re-establishes their relation with Europe, or solves the issue with the Eastern part, there is no feasible alternative for energy exports, on which Russian economy so heavily depends.

### **5.1.1. Russia's position**

"Relations between Russia and China as a result of joint concerted efforts have reached a new stage of comprehensive strategic partnership of cooperation", - stated in the "Joint Statement of the Russian Federation and the People's Republic of a new stage of relations of comprehensive strategic partnership of cooperation", said Vladimir Putin at the end of his visit to China.<sup>255</sup>

"Since 2010, China firmly holds the position of the main trading partner of Russia by the end of 2014, despite the unfavourable trends in the global economy, we were able to prevent a decline in turnover, which amounted to about \$ 88.4 billion.", - said the President Vladimir Putin during his official visit to China in 2015.<sup>256</sup> "Russian-Chinese relations have become an important factor in ensuring the foreign policy interests of the two countries in the XXI century, played a prominent role in the formation of just, harmonious, secure world order. In addition, our bilateral ties have serious prospects for further sustainable development. I emphasize that our countries are facing similar challenges today. First of all, it is the improvement of infrastructure and the promotion of high-tech sectors. In many respects our sectoral priorities are the same: energy conservation and energy efficiency, the development of new information technologies, transport, and environmental protection. Unconditional breakthrough of this year - is a massive gas deal. In addition, we have a fundamental understanding on the issue of the opening of the Western Corridor supplies. Many technical and commercial parameters of the project have already been approved and that serves as a perfect basis for achieving the final accords."<sup>257</sup>

In the context of "the Crimean crisis" Russian interest in expanding economic cooperation with China has increased. We could witness some positive changes in the cooperation not only in the

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<sup>255</sup> Joint Statement of the Russian Federation and the People's Republic of a new stage of relations of comprehensive strategic partnership of cooperation. Accessed on the 15<sup>th</sup> of April 2015 <http://kremlin.ru/events/president/news/46972>.

<sup>256</sup> Vladimir Putin's interview with Chinese media in 2015, on the eve of his visit to China for the 70<sup>th</sup> Anniversary of Victory in World War II Accessed on the 15<sup>th</sup> of April 2015 <http://kremlin.ru/events/president/news/46972>.

<sup>257</sup> Vladimir Putin's interview with Chinese media in 2014 on the eve of his visit to China, at the APEC forum. Accessed on the 15<sup>th</sup> of April 2015 <http://kremlin.ru/events/president/news/46972>.

energy sector, but in other areas (the financial sector, the supply of equipment, participation of China in the implementation of large-scale infrastructure projects in Russia, joint projects in the technology sector, and so forth.) Moreover, it is not only connected to the cooling of relations and the inability of the former cooperation with the countries of the European Union and the United States, but also with the actual freezing of cooperation with Japan in some important areas, such as energy.<sup>258</sup> Thus, China has all the chances to become the leading partner in the trade and economic cooperation with Russia, at the same time achieving the most favourable conditions for itself.

### **5.1.2. Chinese view on the subject**

“The Crimean crisis” played a significant role in Sino-Russian relations. The crisis has changed the international political situation and dealt the most serious blow to relations between Russia and the West since the Cold War. With regard to the Sino-Russian cooperation, the Ukrainian events have made some changes in foreign policy. At the same time, the crisis has virtually eliminated the possibility of development of relations between Russia and the West in political and economic sense, in the short term. China is Russia’s major economic partner and investor.<sup>259</sup> The role of China is becoming more visible. After “the Crimean crisis” Sino-Russian strategic cooperative partnership will be further strengthened, the role of relations between Moscow and Beijing in the international arena will increase further. “The Crimean crisis” has accelerated the development of Russian-Chinese relations, but did not change their nature and direction. They are based on stable, shared interests. “Turn to the East” - a long-term strategy for Moscow due to fundamental causes of the Russian-Chinese rapprochement that emerged long before the Ukrainian crisis.<sup>260</sup> Energy has always been one of the most important drivers of Russian-Chinese cooperation. A special role is dedicated to the Gas agreement, signed in 2014. Difficulties in Russian-European and Russian-Ukrainian energy relations to some extent

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<sup>258</sup> Russia's position on strengthening the legal foundations of the world order. Comment Information and Press Department. 05/25/2015 Ministry of Foreign Affairs.

<sup>259</sup> The crisis in Ukraine - new opportunities for China? People's Daily China from 04.25.2014.

<sup>260</sup> The future cooperation between Russia and China People's Daily China from 01.09.2014.

accelerated the signing of this agreement.<sup>261</sup> "Together, we carefully took care of the evergreen tree of Russian-Chinese friendship, autumn came, and it is time to harvest, time to gather the fruits," - said Xi Jinping during the Joint Statement of the Russian Federation and the People's Republic of China a new stage of comprehensive relations of partnership and strategic interaction.<sup>262</sup>

Despite the fact that the negotiations on gas supply have continued for decades, it is fair to say that the events of "the Crimean crisis" pushed Russia towards the signing of the agreement to the conditions of China.

2014 was a turning point in energy relations between Russia and China. European countries have expressed their desire to reduce the share of Russian gas in its exports, which contributed to Russia to make price concessions, and finally sign the actual agreement on gas supplies to China. This agreement allows Russian gas suppliers for a long time to rely on trade with the world's fastest growing energy demand state. This deal not only served as the starting point for energy export reorientation, but also for political reorientation. Therefore, this issue cannot be examined purely in economic terms, since these projects in the future will determine Russia's place on the Asian market, in view of the growing competition for it. China, as the second largest economy of the world, in its turn has a strong argument for their plan of development of the international and local order. A number of Chinese experts believe that China, having an upper hand in negotiations, can worsen the relationships with Russia.<sup>263</sup> In order to prevent that from happening Chinese and Russian leaders expressed their positive attitude towards the development for many times in the last few years.

During his official visit to china in 2015 President Putin said, that "cooperation between Russia and China is extremely important to keep the peace in the framework of international law". The head of the PRC agreed with Putin. "Whatever changes may take place in the international situation, we must adhere to a busy line, expand and deepen all-round mutually beneficial

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<sup>261</sup> The future cooperation between Russia and China People's Daily China from 01.09.2014.

<sup>262</sup> Joint Statement of the Russian Federation and the People's Republic of China a new stage of comprehensive relations of partnership and strategic interaction. Accessed on the 15<sup>th</sup> of April 2015  
<http://kremlin.ru/events/president/news/46972>.

<sup>263</sup> Charap.S. The US and Russia in Asia-Pacific. The International Institute for Strategic Studies. 2016. P.9.

cooperation", - he said. "Together, we carefully took care of the evergreen tree of Russian-Chinese friendship, autumn came, and it is time to harvest, time to gather the fruits," - said Xi. "President Putin and I agreed that the parties must redouble their efforts to ensure that, by 2015, the turnover will comprise 100 billion US dollars. We still pay more attention to improving the quality of our cooperation and we intend to create an even greater number of large-scale joint strategic projects in the spirit of mutual benefits." <sup>264</sup>

Many analysts see in the rapprochement of Russia and China the threats to create an anti-American and anti-Western alliance - says the chairman of the Foreign Affairs Commission of the NPC Fu Ying on the pages of Foreign Affairs. However, China is not interested in the formal alliance with Russia, nor in the creation of an anti-Western bloc, says a Chinese politician. Rather, Beijing hopes for a relationship that will help maintain a reliable environment for the development and interaction of the two countries. The politician also believes that the analysis of relations between Russia and China without the involvement of the United States will not be complete. In general, relations between the three countries remind sided triangle, in which the greatest distance is between Moscow and Washington. In turn, the Sino-Russian relations in the triangle are the most positive and stable. US-China relations are uneven, and the US-Russian became very tense, especially in light of US sanctions against Russia. Meanwhile, Beijing and Moscow oppose Washington's tendency to sanctions and "double standards" in foreign policy.<sup>265</sup> China, criticizing the sanction does not express their political solidarity, but rather an economic interest. China sees Russian "turn to the East" as an opportunity to strengthen their position in the region, since at the moment balancing the relations with the west is more important for Russia, then to expand their influence. Such imbalance of power will force Russia not only to accept the hegemony of China in the South-East Asia, but also in the South Caucasus and the Eastern Europe. <sup>266</sup> Second of all the issue of gas prices was solved in China's favor. Last, but not least, it opens the new market for the Chinese automotive, high tech, and infrastructure development industries. <sup>267</sup>

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<sup>264</sup> Joint Statement of the Russian Federation and the People's Republic of China a new stage of comprehensive relations of partnership and strategic interaction. Accessed on the 15<sup>th</sup> of April 2015 <http://kremlin.ru/events/president/news/46972>.

<sup>265</sup> Ying.F. How China Sees Russia Beijing and Moscow Are Close, but Not Allies, Foreign Affairs. Accessed on the 25<sup>th</sup> of December 2015. <https://www.foreignaffairs.com/articles/china/2015-12-14/how-china-sees-russia>.

<sup>266</sup> Charap.S. The US and Russia in Asia-Pacific. The International Institute for Strategic Studies. 2016. P.9.

<sup>267</sup> Charap.S. The US and Russia in Asia-Pacific. The International Institute for Strategic Studies. 2016. P.10.

## *Gas Supplies*

On the 21<sup>st</sup> of May, 2014 Gazprom and CNPC signed a contract for the supply of Russian pipeline gas to China. According to the contract the Russian side will deliver 38 billion cubic meters of gas per year to China for the 30 years to come. On the 23<sup>rd</sup> of May 2014, the parties signed an order of the actual implementation of the project and the roadmap to it. China will cover the financial expenses for the upstream. In order to demonstrate the good will Russia will refuse all royalties and export revenues.<sup>268</sup> The total cost of the 30-year contract for the supply of Russian gas to China is \$ 400 billion, told reporters the head of "Gazprom" Alexey Miller. According to Miller, this is the largest contract for the "Gazprom", providing for the supply to China 38 billion cubic meters of gas per year. "This is an unparalleled contract, nothing of that sort has been ever signed with no other company", - he said.<sup>269</sup>

"The final agreed price, allegedly close to the one on which Russia insisted, than the one that was willing to pay China. Instead, it was decided to abandon the idea of a mandatory prepayment. High supply price reflects China's willingness to pay more for a more environmentally friendly fuel, "- said in a pre-trial detention of the IHS British expert company issued after the signing of the gas agreement in Shanghai.<sup>270</sup> According to Bank of America Merrill Lynch oil and gas analyst K.Kostanyan the price for gas will amount to approximately \$350 per tcm.<sup>271</sup> Significantly, the price level is lower than the initial one of \$380-420 per tcm. The energy analyst calculated the upstream investment costs with the pipeline construction costs and came up with the number of 70 billion USD.<sup>272</sup> China's need for gas in 2013 rose by 26%, oil - 8%. These figures were stated by the director of the Research Center for China's energy strategy of the Institute of world problems Xia Yishan, during a video bridge "Russia - China: Prospects for energy cooperation." "There is not enough of hydrocarbons in china. There will be a demand, "- he stressed.<sup>273</sup>

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<sup>268</sup> Belyi. A. (2015a). Russia's gas export reorientation from West to East. economic and political considerations Journal of World Energy Law and Business Vol. 71 p.5.

<sup>269</sup> Yan.Z. (2014): A new milestone in energy cooperation between Russia and China. Xinhua, China.

<sup>270</sup> Yan.Z. (2014): A new milestone in energy cooperation between Russia and China. Xinhua, China.

<sup>271</sup> Kostanyan. K. (2015): Oil and Gas Prospects RIA Novosti from the 1<sup>st</sup> of August 2015.

<sup>272</sup> Igor Morgulov Deputy Foreign Minister interview with South Korea's Yonhap News Agency, October 4, 2015 The Ministry of Foreign Affairs of The Russian Federation . Accessed on the 10 December 2015.

[http://en.mid.ru/en/web/guest/foreign\\_policy/news/-/asset\\_publisher/cKNonkJE02Bw/content/id/1827753](http://en.mid.ru/en/web/guest/foreign_policy/news/-/asset_publisher/cKNonkJE02Bw/content/id/1827753).

<sup>273</sup> Yan.Z. (2014): A new milestone in energy cooperation between Russia and China. Xinhua, China.



President Vladimir Putin in his statement said that the total investment from the Russian side to implement the contract of 55 billion US dollars, with China - about 22 billion dollars. "As for the contract, then, indeed, in the gas industry in Russia, and the Soviet Union, it is a watershed event. This is the largest contract in the history of the gas industry of the former USSR and the Russian Federation in the country measured by the volume.

I note that it was really hard work at the expert level. Our Chinese friends are sophisticated and heavy negotiators. But, as a result of mutual concessions, we were able to reach not only acceptable, but satisfactory terms of the contract for both parties. Both sides eventually ended up pleased with the compromises that have been made and at a price and on other conditions."<sup>274</sup>

"This means guaranteed supplies for 50 years to come, of both the external and the domestic market."<sup>275</sup> Putin added, that "after the signing of the present contract the construction will start already tomorrow, and secondly, it gives us the opportunity to proceed to the next project with Chinese partners, namely, to begin to work on the West delivery route, from the resource base in Western Siberia."<sup>276</sup>

However, in the summer the Chinese side refused to finance the construction of the pipeline. The main direction of supply - the east one - is the supply of pipeline Yakutia - Khabarovsk - Vladivostok ("The Power of Siberia") (see Map 12) with the total capacity of 61 billion cubic meters of gas, which will involve the development of the Kovykta field and Chayandinskoye and a number of fields independent companies. From this gas pipeline Gazprom will built the withdrawal to China.

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<sup>274</sup> Vladimir Putin's interview with Chinese media in 2014 on his visit to Shanghai in 2014. Accessed on the 15<sup>th</sup> of April 2015 <http://news.kremlin.ru/news/21064>.

<sup>275</sup> Vladimir Putin's interview with Chinese media in 2014 on his visit to Shanghai in 2014. Accessed on the 15<sup>th</sup> of April 2015 <http://news.kremlin.ru/news/21064>.

<sup>276</sup> Vladimir Putin's interview with Chinese media in 2014 on his visit to Shanghai in 2014. Accessed on the 15<sup>th</sup> of April 2015 <http://news.kremlin.ru/news/21064>.



**Map 12. “Power of Siberia” pipeline Project**

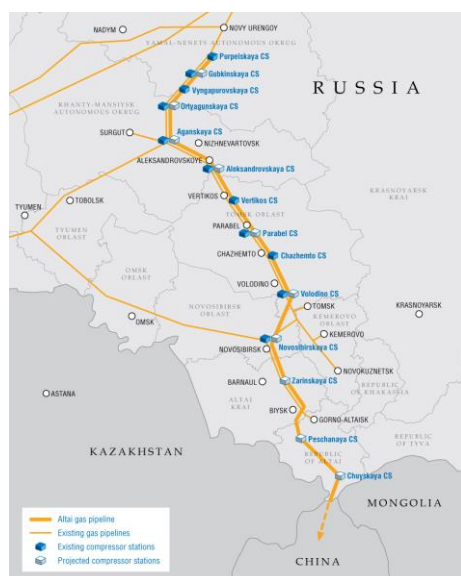
Source – Gazprom <http://www.gazprom.de/collaboration/projects/east-program/>

Successful price agreement in favour of China led to a consideration of the supply through another route – the western one with the pipeline “Altai”, from Urengoi in the Western Siberia to Shanghai. In May 2015, the parties signed an agreement on the implementation of the supply through the Western route. The project also implies a supply of 30 billion cubic meters of gas per year from existing fields in Western Siberia. Duration of the contract is the same - 30 years.<sup>277</sup>

<sup>277</sup> Belyi.A. (2015a): Russia's gas export reorientation from West to East: economic and political considerations. *Journal of Energy Law and Business* 2015 Vol 8. N1. p.23.

Along with the second “string” the President of Gazprom A. Miller predicted the appearance of the third one, and in September 2015 "Gazprom" and China's CNPC signed a memorandum on the supply of pipeline gas to China from the Far East. At this stage, it is planned to carry out commercial and technical studies of the possibility of supplies from the Far East, and on the basis of these studies supply volumes, terms and crossing point will be determined. He also pointed out that, the new pipeline will be relatively short, because the company has already built a gas pipeline Sakhalin-Khabarovsk-Vladivostok.<sup>278</sup>

### Map 13. “Altai” Pipeline project



**Source – Gazprom** <http://www.gazprom.ru/about/production/projects/pipelines/altai/>

Critics of reorientation to the East argued that gas deliveries to China will be able to compensate for delivery to Europe. Indeed, 38bcm of annual gas supply can substitute only a quarter of the amount of the Russia's current gas exports to Europe.<sup>279</sup> On the other hand, as we noted earlier, China is a market of high energy demand, and the fact that agreements have long-term basis, we can expect an increase in gas deliveries from Russia to China. “Early Soviet export plans to the EU included only marginal supply volumes to Austria, Italy and Germany, while the plan to

<sup>278</sup> "Gazprom" and CNPC have agreed on a third route of gas supplies to China from the 3<sup>rd</sup> of September 2015 Interfax.ru <http://www.interfax.ru/business/464468>.

<sup>279</sup> Henderson J. Stern J. (2014): The Potential Impact on Asia Gas Markets of Russia's Eastern Gas Strategy Oxford Energy Comment p.4.

reach a national production of 120 bcm was a remote perspective. Gas contracts with Germany in 1968 considered 3 bcm of export with a perspective to increase to 5 bcm by 1971.”<sup>280</sup> So after the development of infrastructure and the construction of the pipelines the volumes were three times bigger. Indeed we can expect that by 2020, when the pipeline will be ready the oil prices will rise again, but it is hard to predict how they will fluctuate in the next five years. Today, the reality seems to us as follows.

The sharp drop in oil prices strongly inhibits the actual signing of the contract on gas supplies for two other directions. The market price of gas in the summer of 2015 did not exceed \$ 200 per 1 thousand cubic meters, but to recoup the construction of the pipeline to Russia it must be twice as high, according to analysts, and the chances that the Chinese part will not agree to it are highly unlikely.

The real action on the construction of "Nord Stream-2"<sup>281</sup> has not yet begun, and Poland, as a major transit area of Russia have adopted counter-measures. “Prime Minister Ewa Kopacz has criticized plans by Gazprom PJSC to expand its undersea pipeline directly to Germany, which bypasses east European countries that rely on Russia for their energy.”<sup>282</sup> In order not to depend on its eastern neighbour, Poland built LNG terminal for the purchase of gas from Qatar. At this stage it is difficult to predict the losses for the Russian gas sector. "Nord Stream - 2" project, created in spite of the sanctions the may well remain a project. There is one conclusion we can make, at this point, the cooling of relations with Europe, pushes EU countries to diversify its energy suppliers, and that puts China in a position of power in the relationship with Russia, and allows them to dictate their terms. China's position in the negotiations is more advantageous - China can afford to wait. According to the head of East European Gas Analysis Mikhail Korchemkin taking into account today's pricing environment Russia can only sell China gas

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<sup>280</sup> Belyi. A, '(2014): Russian Oil and Gas in the New International Context' Oil, Gas, and Energy Law Intelligence, 23 September 2014, <http://www.ogel.org/journal-advance-publication-article.asp?key—453> Accessed on the 10<sup>th</sup> of December 2014.

<sup>281</sup> “Nord Stream 2” is the project of the Pipeline that avoids Ukraine for transit, and goes directly to Germany. The agreement was signed in September between Russia’s Gazprom PJSC and European companies including Royal Dutch Shell Plc, EON AG and Engie <http://www.bloomberg.com/news/articles/2015-09-08/nord-stream-2-pipeline-expansion-hurts-eu-unity-poland-says>.

<sup>282</sup> Strzelcki.M. (2015) : Poland Opens LNG Terminal, Pledges to End Russian Dependence Bloomberg From the 12of October 2015 <http://www.bloomberg.com/news/articles/2015-10-12/poland-opens-lng-terminal-pledges-to-end-russian-gas-dependence>.

from the Kovykta field (and this is just "Eastern Route", under which the contract has already been signed.)<sup>283</sup>

### **LNG**

The largest construction project of a liquefied natural gas plant in Russia is "Yamal LNG", on the resource base of the South Tambeykoye field, located in the northeast of the Yamal Peninsula. The shareholders of the project are the Russian "NOVATEK" (60%), French Total (20%) and China's CNPC (20%). Despite the fact that France has allowed Total to continue to work on the project, sanctions, introduced by America and the European Union have a direct impact on the further development of the project. As we have noted earlier sanctions affect the export of technology and energy equipment. Since NOVATEK came under sectoral sanctions, contractors and suppliers are having real financial problems. Although it is possible to find a substitute for the technology and equipment the financial matters will be more difficult to solve. The Yamal LNG sees China as a future gas importer, and in this regard China becomes the main ally regarding the future investment in the plant.

In September 2015 French Total appealed to the World Bank with a request for 20 billion-dollar loan. It is assumed that most of the funding will be provided by Chinese banks. Later "Novatek" has signed a framework agreement with Chinese investment "Silk Road Foundation" (SRF) for the sale of 9.9% in the "Yamal LNG".<sup>284</sup> The Russian side hopes that it will attract further investment from Chinese banks. In this situation, we can assume that any upcoming price issues will be resolved in favor of the Chinese side. If Chinese banks to finance the project, it would mean that the "turn to the East" for Russia really becomes a reality. To date, China has never financed foreign projects of this magnitude. The project does not have that much time - contracts for the supply of gas, mainly to Asia, have already been signed and deliveries have to begin in 2017.

The delay may cause the Kremlin or the Partnership to pay damages at their own expense or, as analysts believe, to start buying gas for the execution of contracts on the spot market.<sup>285</sup> For

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<sup>283</sup> Korchemkin.M (2015) : East European Gas Analysis Report *Vedomosti*, August, p.23.

<sup>284</sup> Serov M. (2015) : Chinese Invest fund will buy 9.9% of Yamal LNG *Vedomosti*, August,2015.

<sup>285</sup> Repin.I. (2015): Sanctions have an Affect on Yamal LNG *Oil Insider Pro*, p.3 2015.

Russia, the success of the project is also very important. The success of the program would show poor efficacy of Western sanctions on Russian oil and gas industry, which accounts for two-thirds of the country's export earnings, and would extend Russia's influence in the world. So at the end 2014, the Government has already subsidized the Yamal LNG with 2.8 billion dollars. Vladimir Putin also endorsed the prominent tax incentives allowing gas supplies abroad, putting an end to Gazprom's monopoly on gas exports. This led to a new paradigm of Russian LNG exports.

As we have noted in the previous chapter since 2006, Gazprom or its daughter companies had a full monopoly on the export of natural gas and LNG.<sup>286</sup> We have witnessed the power of that monopoly during the development and the implementation of the gas pipeline from China to Russia. At the same time the size and the revenues of the other companies have grown in the last years, and the sanctions and the Chinese support, have put Rosneft and Novatek in line with Gasprom.

Thus, we can conclude that the impact of sanctions and China's support of the project Yamal (NOVATEK) and agreements on the construction of gas pipeline with Gazprom led to a change in the Russian regulatory landscape. It not only de-monopolised the export, which is still a case for European countries, but caused a disruption in between Russian exporters.

Russia is the second largest supplier of oil to the Chinese market and China, if the agreement signed last year will be implemented, could become the second consumer of Russian gas. On the other hand China takes a cautious attitude to investment in Russia. CNPC refused to buy a stake in one of the best Russian oil fields,<sup>287</sup> but “traded in September a stake in a refinery under construction in the Russian far east for shares in refineries inside China.”<sup>288</sup> Gazprom is building a gas pipeline to China without funding from the Chinese side, and the negotiations on the second pipeline are tightened. There is also a large competition on the Asian LNG Market,

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<sup>286</sup> Belyi. A,(2015a): 'Russian Oil and Gas in the New International Context' Oil, Gas, and Energy Law Intelligence, 23 September 2015, <http://www.ogel.org/journal-advance-publication-article.asp?key—453> Accessed on the 10<sup>th</sup> of December 2015.

<sup>287</sup> Perlez.J. China and Russia Reach 30-Year Gas Deal”, The New York Times May, 2014.

<sup>288</sup> Kramer.A. Russia Oil Giant Selling Assets The New York Times October 2015.

the large Chinese energy companies have already signed a number of contracts for the purchase of LNG for several years ahead.<sup>289</sup>

Another change of paradigm we can witness is that the producers can no longer control the price the way they used to. Even if Russia successfully “turns to the east, the Asian markets we will have an upper hand in terms of price.

As we can see, Russia-China energy relations are aimed at establishing a strong chain of energy supplies from Russia to China, however, we will have to underline, that this will occur in a different power relation. China, being the only feasible alternative to the European markets, and the only lender to the biggest LNG project in Russia, holds a certain negotiating leverage against Russia.

Structural changes in the Russian energy sector, such as de-monopolisation of LNG exports, as well as the rejection of royalties show that “the Crimean crisis” and the implementation of sections brought significant changes and contributed to the development of the relationships between China and Russia and even changed its nature.

In 2013, China's dependence on oil imports has increased greatly; in this regard strengthening of energy cooperation with Russia is of particular importance. Although the relations in this field are developing rapidly, the parties still didn't open their markets to all-round cooperation, which does not contribute to the establishment of closer economic ties. Strengthening of multi-level interaction in the energy sphere, the participation of China in the development of Russian projects and the participation of Russia in cooperation in oil refining carried out by the Chinese side, will allow full use of the benefits of mutual cooperation. After the oil and gas industry the electric power industry is one of the most important. In the past 20 years, China's demand for energy is constantly increasing. Russia's Siberia and Far East have excess capacity for electric power generation, which makes it possible to transport it to China by high-voltage lines. China and Russia can create an energy bridge, which in the future will enable to implement the concept of Energy Ring of Northeast Asia. Nuclear energy is one of the main areas of energy cooperation.

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<sup>289</sup> Paton.J. Origin Energy expects Chinese LNG buyer to fulfil contract World Oil June 2015.

Both states can participate in the development of floating nuclear power plants and fast neutron reactor. "Russian energy resources, of course, are very important for China, but without sufficient funding from the PRC, and a number of liberal reforms from the Russian side, the efficient use and demand from the market can not reveal all of its advantages."<sup>290</sup>

## **5.2. South-Korean Energy Relations Evolution: A bleak perspective**

### **5.2.1. Russian View**

South Korea has always been of particular interest to Russia, and although the fall in oil prices has distanced the prospects of full output of Russian energy resources into Korean energy market, it didn't lose its attractiveness. At this stage South Korea can hardly serve as a counterweight to China, but Russian researchers assume that the role of South Korea in the Russian energy exports can change in the long run. The difficult situation on the Korean Peninsula has forced Gazprom to abandon the idea of building a gas pipeline through the territory of the DPRK. According to economic analyst Gregory Berg, for Gazprom it would be irrational to invest in additional narrowly directed gas transmission projects, since the growth of capital expenditure will be negatively perceived by the shareholders. Given that South Korea is almost completely satisfies the demand for energy through imports, it will be difficult to persuade South Korea to trust North Korea on the issue of energy security. "It is much more advantageous in this respect to increase the volumes of LNG supply to the country due to the expansion of existing facilities for the production of LNG (construction of the third turn on the liquefaction plant project "Sakhalin-2" capacity of 5 million tonnes. An additional benefit of this will be able to supply LNG to other markets in the region, thereby diversifying the risks of investing in the pipeline, designed only for deliveries to Korea, "- says Birg.<sup>291</sup>

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<sup>290</sup> Luzianin. S. Zhao Huasheng (2015): Report. Russian-Chinese dialogue. Model 2015. The Russian Council for International Affairs. №18 2015.

<sup>291</sup> Birg. G. Between the two Koreas (2015): On the illiquidity of the pipeline. *Russian Journal of Business Research* 2015 №78. p.2.



The question of American influence in South Korea worries the minds of Russian scientists, and is a major stumbling block in their opinion. According to the study<sup>292</sup>, conducted by the Primakov Institute of World economy and International Relations, Russia sees no threat in their union. Russia, in its turn, perceives itself as a key partner for Seoul to reduce South Korean's dependency on China. Russia suggests that the process of reunification of two Koreas is impossible without all region powers, which also include China and Russia. Russia, taking an active position in the development and implementation of the project can help prevent the future threats to their role in the region. "From Moscow's point of view, strengthening mutual understanding and maintaining security on the Korean Peninsula are the top priorities in Russia–South Korea relations. With regard to Seoul's proposed concept of a 'Eurasia initiative', Moscow understands it as an attempt to conduct a more multilateral and balanced foreign policy that considers not only US priorities, but also China's regional interests."<sup>293</sup>

### **5.2.2. South Korean View**

"South Korea did not join the sanctions against Russia despite the external pressure", said the chairman of the Korean-Russian Inter-Parliamentary Council, a deputy of the National Assembly of the Republic of Korea Kim Han Gil at a meeting with members of the Federation Council of Russia.<sup>294</sup> In our opinion this, there are several prerequisites to the non-implementation of Sanctions against Russia from Korean side. News messages in the Korean media about the events in Ukraine and the annexation of the Crimea were rather neutral. It is significant that the forces of Donetsk and Lugansk were commonly referred by the Korean press as "pro-Russian rebel", although sometimes the term "separatists" was negatively applied to them. On the other hand, the Korean press, describing the referendum on Crimea, stressed that the decision to join the Crimea to Russia is supported by the majority of the population.<sup>295</sup> Influence of America on the Korean peninsula is still strong, although greatly weakened over the past few years. It is reasonable to assume that under strong pressure from Washington, South Korea would join the

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<sup>292</sup> Charap.S. The US and Russia in Asia-Pacific. The International Institute for Strategic Studies. 2016. P.10.

<sup>293</sup> Charap.S. The US and Russia in Asia-Pacific. The International Institute for Strategic Studies. 2016. P.12.

<sup>294</sup> South Korea does not intend to impose sanctions against Russia. *Ria Novosti*  
<http://ria.ru/world/20150722/1142232827.html>.

<sup>295</sup> Birg. G. Between the two Koreas (2015): On the illiquidity of the pipeline. *Russian Journal of Business Research* 2015 №78. p.2.



sanctions, but at this stage, South Korea does not want to ruin relations with Russia, but rather benefit from the situation, following the Chinese example.

Vladimir Putin and Park Geun-hye met during the UN Climate summit in Paris in 2015. Putin pointed out, that "despite the fluctuations in world market conditions, we generally develop good economic relations", - said Vladimir Putin. Agreeing with him, Park Geun-hye said that in 2014 the two countries have managed to achieve record levels of turnover and humanitarian contacts. Pak also stressed that "new Eastern policy" of the Russian Federation and "Eurasian Initiative" of the Republic of Korea share a common goal, which allowed "to achieve good results."

Official Seoul described the positive results of the summit. "The meeting between the two leaders, which took place in the year that marks the 25th anniversary of the establishment of diplomatic ties, allowed to assess the state of bilateral cooperation and discuss ways to further enhance cooperation. The summit was a mechanism that allowed to strengthen the base for further establishing and developing friendly relations and meaningful cooperation "- said in a statement, the Republic of Korea Presidential administration released after the summit.<sup>296</sup>

Today we cannot say that the energy relations between the two countries have changed a lot under the influence of "the Crimean crisis". No tangible investment from Korean side into the energy complex of Russia has been done, multimillion-dollar contracts for the supply of energy resources have not been concluded. NOVATEK and Gazprom offered South Korean companies a stake in different energy projects, but the investors were not interested. "Considerable opportunities for Russian-South Korean cooperation still depend on the bilateral and multilateral development of the mineral and energy resources of Siberia and the Far East. Nevertheless, experience accumulated over time has uncovered the possibility of diversifying bilateral cooperation."<sup>297</sup> Given the high share of energy-intensive industries in the industrial structure, energy imports in South Korea will increase. In these circumstances, the desire to weaken South Korea's dependence on the Middle East, on the one hand, and Russia's plans to deploy part of the energy exports to the east, on the other, create favourable conditions for the intensification of Russian-South Korean cooperation in the energy field. The potential role of South Korea in the

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<sup>296</sup> Kiryanov.O (2015). The Summit. *Rossiskaya Gazeta* №787. Izvestia Publishing House.p-24.

<sup>297</sup> Fedorovsky.A.(2013): Russian-Korean investment cooperation. Russian International Affairs Council. Accessed on the 1st of March 2014 [http://russiancouncil.ru/en/inner/?id\\_4=2328#top-content](http://russiancouncil.ru/en/inner/?id_4=2328#top-content).

Russian energy export should be assessed not only in quantitative parameters, but also taking into account the economic and political interests of Russia in a wider range. The South Korean market can be effectively utilized for carrying out the policy of diversification of Russian energy exports, primarily gas, the price of which is largely dependent on the selected transport schemes. In view of the developing dialogue between the two Koreas, South Korea's intention to withdraw from the energy isolation of the continental direction can create a real basis for Russian energy exports electricity to South Korea through North Korea corridor. For Russia, the use of this route is of strategic interest because it would take a more independent stance in negotiations with China, as well as to strengthen influence in Northeast Asia.

However, taking into account the care with which South Korean companies are considering Russian energy projects, we can expect that the dynamics of the energy dialogue between Moscow and Seoul will be largely determined by the rate of formation of the east Russian production capacity for the extraction of energy, infrastructure development and improvement of the investment Climate in the Russian energy sector. In the near-term interest on the part of South Korea will be shown to the equity in relatively small and fast-payback projects.

Seoul is also concerned about the dominant role of the state-owned energy corporations in energy projects, investment activities and joint ventures, where the share of small and medium sized companies is very low. On the example of Gazprom's and Rosneft's acquisition issues it is impossible to call their activities transparent, which also present a major problem for Seoul. All these influence the level of future investments.<sup>298</sup>

The place of South Korea in the future energy export mix of Russia will depend on the level of coordination in energy field between the countries of Northeast Asia. For these reasons, South Korea is a consistent supporter of energy integration in the region that has for Russia, both positive and negative sides. On the positive side, you can highlight the possibility of using North Korean corridor for energy exports and electricity in the Republic of Korea, in order to avoid monopoly dictate on prices for gas and electricity from China. The negative points should include the consolidation of consumers (China, Japan, South Korea) at the expense of the

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<sup>298</sup> Charap.S. The US and Russia in Asia-Pacific. The International Institute for Strategic Studies. 2016. P.10.

supplier (Russia).mDespite existing difficulties and differences in the approaches of Russia and South Korea to the issues of energy cooperation, the existence of objective conditions for its development, and their compliance with the strategic objectives of both sides will continue to play a decisive role. Based on the findings from a study on the status of Energy of the Republic of Korea and the prospects for its further development we would like to provide the following recommendations:

- With the adoption of commitments to reduce emissions of "greenhouse" gases in full the South Korean side may be interested in the acquisition of undeveloped quotas of other countries. The relative lack of development of the industry in the Far Eastern regions of Russia allows offering part of its quota to South Korea. In addition, the interest of the Republic of Korea to reduce emissions of "greenhouse gases" can be used as an additional argument in favor of transferring surplus electricity from the Russian Far East to the Korean Peninsula.
- To implement the geographic advantages of cooperation with the Republic of Korea in the energy sphere, Russia should pursue a more balanced and competitive pricing policy in the transport channels that will successfully compete with foreign sources of energy, primarily gas and coal, benefiting from marine transportation.
- In light of the recent release six-party talks on the Korean Peninsula, there is an opportunity to direct the efforts of the three countries to find a way out of North Korea's energy crisis, addressing this problem is not only in terms of economic benefits, but also in the broader context of strategic interests of the parties. This approach determines the participation of the state structures of the Russian Federation and the Republic of Korea to co-finance energy projects in North Korea and the provision of private companies involved in this process, with sound economic benefits and guarantees.
- The place the Republic of Korea in the Russian energy exports will be largely determined by the degree of coordination of regional energy policy on the scale of the NEA. It is in the interests of Russia to create a permanent mechanism to coordinate regional energy policy, which would translate the fierce competition between the countries for access to Russian energy resources in a constructive way. This would eliminate many of the barriers to the development of the east of the country, and, at the same time cooperation with South Korea would be an effective instrument occupies in relations with China and trying to impose its pricing policy in the conditions of "the Crimean crisis".

## **Conclusion**

In the course of this paper we tried to answer the question “How did “the Crimean Crisis” influence the development of the Energy Relations (ER) of China and South Korea with the Russian federation?” To answer this question, I employed the theory of neoclassical realism, evaluating the role of energy resources in the global geopolitical process. Attention has been paid to the power projections of the Russian-Chinese, Russian-South Korean energy cooperation, in attempt to depict the imperatives of the bilateral cooperation, fostered by the sanctions and the cooling down in the relationships between Russia and the EU.

The above analysis brings us to some general conclusions. The annexation of the Crimea by the Russian Federation provoked the United States, the European Union and a number of other countries to introduce sanctions against Russia. Some of the EU countries even declared their intention to reduce the consumption of Russian gas. Taking an attempt to restore the balance of power, the Russian energy sector, which suffered the most, had to turn towards the Asian Markets. These events have contributed to several important changes in the current geopolitical environment and within Russia.

The first part of the paper described the current status of energy in South Korea and China and described the influence of energy on national security. In this part we also analysed the current energy security issues the countries are facing, as the premises for explaining the basis of their cooperation with Russia in that sector.

The second part of the thesis provides a deeper understanding of how this cooperation functions, what are the main areas, what is the legal basis of it and what are the main stumbling points for the development. The analysis depicts an imbalanced economic cooperation, which is more tangible on paper, than in reality.

The last part shows that the evolution of energy relations happened between China and Russia and didn't happen between Russia and South Korea, which indicates, that the attempts of the reorientation to the East have been taken, but they are highly unidirectional. Tensions between Russia and the West created favourable conditions for rapprochement between China and Russia, and China's struggle against the United States for the status of world hegemony, only contributes to the development of Russian-Chinese relations. Despite the fact that China has refused to fund the pipeline "Power of Siberia" and "Gazprom" will now have to build it on their own, in the energy sector there has been another breakthrough. Confirmation of the strengthening of Sino-Russian relations in the energy sector may be the fact that in November 2015 Russia overtook Saudi Arabia to become the largest supplier of oil to China.<sup>299</sup> Also the progress has been repeatedly emphasized in the joint statements of leading politicians of both countries. "Relations between Russia and China as a result of joint concerted efforts have reached a new stage of comprehensive strategic partnership of cooperation, as for the gas contract, this is the largest contract in the history of the gas industry of the former USSR and the Russian Federation in the country measured by the volume", - stated in the "Joint Statement of the Russian Federation and the People's Republic of a new stage of relations of comprehensive strategic partnership of cooperation", adopted at the end of Vladimir Putin's visit to China.<sup>300</sup> To quote Chinese leader on the subject - "Together, we carefully took care of the evergreen tree of Russian-Chinese friendship, autumn came, and it is time to harvest, time to gather the fruits".<sup>301</sup>

The signing of the gas agreement waved a new era of these relations. Although the relations in this field are developing rapidly, the parties still didn't open their markets to all-round cooperation, which does not contribute to the establishment of closer economic ties. Strengthening of multi-level interaction in the energy sphere, the further financial participation of China in the development of Russian projects and the participation of Russia in cooperation in oil refining carried out by the Chinese side, will allow full use of the benefits of mutual

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<sup>299</sup> Segdi.A. (2015): Russia overtakes Saudi Arabia as largest supplier of oil to China. The Guardian. Accessed on the 1<sup>st</sup> of November 2015. <http://www.theguardian.com/business/datablog/2015/jun/24/russia-overtakes-saudi-arabia-largest-supplier-oil-china>.

<sup>300</sup> Joint Statement of the Russian Federation and the People's Republic of a new stage of relations of comprehensive strategic partnership of cooperation. Accessed on the 15<sup>th</sup> of April 2015 <http://kremlin.ru/events/president/news/46972>.

<sup>301</sup> Joint Statement of the Russian Federation and the People's Republic of China a new stage of comprehensive relations of partnership and strategic interaction. Accessed on the 15<sup>th</sup> of April 2015 <http://kremlin.ru/events/president/news/46972>.

cooperation. China still takes a cautious attitude towards the investment in Russia. CNPC refused to buy a stake in one of the best Russian oil fields, but “traded in September a stake in a refinery under construction in the Russian far east for shares in refineries inside China.”<sup>302</sup> Gazprom is building a gas pipeline to China without funding from the Chinese side, and the negotiations on the second pipeline are tightened. There is also a large competition on the Asian LNG market; the large Chinese energy companies have already signed a number of contracts for the purchase of LNG for several years ahead.

China, being the only feasible alternative to the European markets, and the only lender to the biggest LNG project in Russia, possesses a certain negotiating power for future supplies. Thus in this paper we could introduce a new paradigm of the energy relations, where the consumer occupies a more favourable position and can negotiate a price in his favour.

Structural changes in the Russian energy sector, such as de-monopolisation of LNG exports, as well as the rejection of royalties show that “the Crimean crisis” and the implementation of sanctions brought significant changes and contributed to the development of the relationships between China and Russia and even changed its nature. However, if Russia normalise the relation with the West, the nature of relations between these countries may change and the question of the position of Russia in the region may rise again.

The results achieved in Russian-South Korean energy dialogue remains modest, due to a number of reasons both objective and subjective. On the Korean side these reasons are represented by the lack of Korean major oil and gas companies that would be able to compete in the Russian market with leading multinationals and state-owned companies of China and India; opposition to government and business circles interested in maintaining focus on Middle Eastern sources; Activity pro-American lobby, seeking to prevent the growth of dependence on energy supplies from Russia. As the unfavorable investment pattern the South Korean side takes a negative attitude of the Russian leadership to the PSA regime and distribution of foreign investor's national tax regime. From the Russian side cooperation is hindered by the uncertainty of plans for the formation of the resource base and the transport infrastructure in Eastern Siberia and the

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<sup>302</sup> Kramer.A. Russia Oil Giant Selling Assets *The New York Times* October 2015.

Far East, by the constant amendments made change the law governing foreign economic activities, a clear preference for China and Japan, that have a high investment potential and a more capacious market. The potential role of South Korea in the Russian energy export should be assessed not only in quantitative parameters, but also taking into account the economic and political interests of Russia in a wider range. The South Korean market can be effectively utilized for carrying out the policy of diversification of Russian energy exports, primarily gas, the price of which is largely dependent on the selected transport schemes. For Russia the cooperation with South Korea is of strategic interest because it would take a more independent stance in negotiations with China and will strengthen Russian influence in the Northeast Asia. But as long as there is tension on the Korean peninsula there is no real perspective of the pipeline construction, and the only way for Russia is to increase the volume of LNG supplies. Moreover, taking into account the care with which South Korean companies are considering Russian energy projects, we can expect that the dynamics of the energy dialogue between Moscow and Seoul will be largely determined by the rate of formation of the east Russian production capacity for the extraction of energy, infrastructure development and improvement of the investment Climate in the Russian energy sector. Seoul is also concerned about the dominant role of the state-owned energy corporations in energy projects, investment activities and joint ventures, where the share of small and medium sized companies is very low. On the example of Gazprom's and Rosneft's acquisition issues it is impossible to call their activities transparent, which also present a major problem for Seoul. All these influence the level of future investments.<sup>303</sup>

In the near-term, we can assume that the interest on the part of South Korea will be shown to the equity in relatively small and fast-payback projects. The participation of Korean companies in the implementation of energy projects in Russia and the opening of lines of credit is likely to be conditional on the supply of South Korean materials and equipment, using South Korean experts. On the issue of gas supply to Korea will seek to coordinate with other importers, primarily with China, to achieve the optimum price for Russian gas, adhering to the principle of domination buyer over the seller that could complicate reaching agreement on terms of participation of South Korea in the procurement of Russian gas It will be exported through the pipeline.

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<sup>303</sup> Charap.S. The US and Russia in Asia-Pacific. The International Institute for Strategic Studies. 2016. P.10.

Sanctions and the cooling of relations with Europe have revealed a number of shortcomings of internal Russian energy policy and domestic economic policy in general. De-monopolization of exports is just the beginning of restructuring the economic policy of the country, so heavily dependent on energy exports. Russian government will have to make a number of changes in order to improve the energy strategy and economic policies to regain its former position in the global energy market. Freezing of the number of Russo-Japanese energy projects and the stagnation in the relations with Korea, show that the reorientation to East is very unidirectional.

### **Research limitations:**

This paper tries to depict the core issue of the thesis: Russian-Chinese energy relations and South-Korea-Russia Energy relations and their development in terms of “the Crimean crisis as accurate as possible. However as any research the findings in this paper are subject to limitations. In this case time and space limitations will be applied. The time limitations stretches within the period of ten-fifteen years, but in order to understand the full-scope of cooperation we also took a look on events that happened prior to that time limitations. Although we have been using a lot of contemporary sources the remark should be done, that there have been a limited number of scientific literature on the problem of “the Crimean Crisis” due to the fact that the process has not been finished and remains the subject to global dynamics.

With respect to the analytical parts, the limits are according to the chosen methodology. The paper is based on statistical reports, using quantitative data and on analytical literature. We tried to make sure that the findings are supported not only by the empirical analysis, but the quantitate one.

It should be noted that the findings and predictions of different international organisations and institutions may vary, because of the difference in methods of obtaining the information. The author has conducted the research form applying both political and economic consideration in order to provide a complex analysis of all the many layers of the issue.



Finally it is important to state, that that hypothetically the appliance of another framework could show another outcome, and the results could be different from those presented in this paper.

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## **Abstract**

The annexation of Crimea by the Russian Federation prompted a number of governments to apply sanctions against individuals, businesses and officials from Russia. Some of the sanctions strategically target Russian energy sector. The cooling of relations with Europe made Russia take decisive action towards the diversification of energy importers. This thesis analysis how the sanction influenced the development of energy relations between Russia and China, and between South Korea and Russia. We analysed the areas of interaction in energy sector between the countries and how it changed after the crisis. It is found that the sanctions influenced the restructuring of energy exports from Russia. The crisis also caused an acceleration in signing the a contract for gas supplies to China. It also marks a change in the balance of power between suppliers and importers. Energy relations between South Korea and Russia, in spite of all the prospects of such cooperation did not evolve. In our work, we have given a number of recommendations for improving relations between the two countries.

Die Annexion der Krim durch die Russische Föderation veranlasste einige Regierungen dazu, Sanktionen gegen einzelne Persönlichkeiten, Firmen und Funktionäre aus Russland zu verhängen. Einige Sanktionen sind gezielt gegen den russischen Energiesektor gerichtet. Die Abkühlung im Verhältnis zu Europa veranlasste Russland dazu, entschiedene Schritte in Hinblick auf eine Diversifizierung seiner Energieimporteure zu setzen. Diese Masterarbeit möchte aufzeigen, wie sich die Sanktionen auf die Entwicklung der Energiebeziehungen zwischen Russland und China bzw. zwischen Russland und Südkorea ausgewirkt haben. Es wurden dabei die Interaktionsbereiche im Energiesektor analysiert und dargestellt, wie sie sich nach der Krise verändert haben. Diese Arbeit kommt zu dem Schluss, dass die Sanktionen auf die Restrukturierung der Energieexporte aus Russland großen Einfluss hatten. Die Krise beschleunigte ebenfalls das Unterzeichnen eines Abkommens zu Erdgaslieferungen nach China. Weiters stellt die Krise einen Wendepunkt im Kräftegleichgewicht von Lieferanten und Importeuren dar. Energiebeziehungen zwischen Russland und Südkorea kamen allerdings trotz guter Vorzeichen für eine solche Zusammenarbeit nicht zustande. In dieser Arbeit wurden



ebenfalls eine Reihe von Anregungen für die Verbesserung der Beziehungen der beiden Länder gegeben.