

**Russia's Energy Strategy: Challenges and Foreign Energy
Policy**

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ABSTRACT

Russia is one of the most important players in the global energy system and one of the world's largest producers and exporters of energy. Energy is essential to the security, stability and development of the Russian Federation, as its economy heavily depends on energy exports. As such, energy security is a priority. Russia's Energy Strategy aims to ensure its energy security and to guarantee its position in the global energy system. The Strategy identifies the main internal and external challenges to its energy security. New challenges are emerging, such as strengthening of competition in energy markets, emergence of new energy producers and supply routes, sanctions, instability and volatility of oil prices, among others. Therefore, Russia needs to adapt to the new dynamics in order to maintain its position and ensure its security. The strategy towards foreign energy policy is a key element to face these challenges. Russia is developing a strategy based on diversification to the Asia-Pacific region, in particular to China, as well as on energy cooperation with its traditional consumers, but also with other entities such as BRICS, EAEU, OPEC and GECF. This dissertation aims to analyse how the external challenges to Russia's energy security are shaping its strategy towards foreign energy policy.

Keywords: Russia; Energy; Strategy; Challenges; Foreign Energy Policy.

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RESUMO

A Rússia é um dos mais importantes actores no sistema energético global e um dos maiores produtores e exportadores de energia do Mundo. A energia é assim fundamental para a segurança, estabilidade e desenvolvimento da Federação Russa, já que a sua economia depende fortemente das exportações energéticas. Como tal, a segurança energética é uma prioridade. A Estratégia Energética Russa tem como principal objectivo garantir a sua segurança energética e assegurar a posição Russa no sistema energético global. A estratégia identifica os principais desafios internos e externos à sua segurança energética. Estão a surgir novos desafios, como o aumento da competição dos mercados energéticos, a emergência de novos produtores, as sanções, a instabilidade e a volatilidade dos preços, entre outros. Assim, a Rússia necessita adaptar-se às novas dinâmicas de forma a manter a sua posição e garantir a sua segurança. A estratégia para política externa energética é uma parte fundamental para fazer face a estes desafios. Como tal, a Rússia está a desenvolver uma estratégia de diversificação para a região da Ásia-Pacífico, em especial para a China, e também uma estratégia de cooperação energética com os seus tradicionais consumidores, mas também com outras entidades como os BRICS, a EAEU, a OPEC e o GECF. Esta dissertação pretende analisar como os desafios externos à segurança energética Russa estão a moldar a sua estratégia para a política externa energética.

Palavras-chave: Rússia; Energia; Estratégia; Desafios; Política Externa Energética.

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List of Abbreviations

APR	Asia-Pacific Region
BRICS	Brazil, Russia, India, China and South Africa
CIS	Commonwealth of Independent States
CNPC	China National Petroleum Corporation
EAEU	Eurasian Economic Union
EastMed	Eastern Mediterranean Pipeline
EBRD	European Bank for Reconstruction and Development
EEC	Eurasian Economic Commission
EIA	US Energy Information Administration
EIB	European Investment Bank
ES-2020	Energy Strategy of Russia for the period up to 2020
ES-2030	Energy Strategy of Russia for the period up to 2030
ES-2035	Energy Strategy of Russia for the period up to 2035
ESPO	Eastern Siberia and Pacific Ocean
EU	European Union
FEC	Fuel and Energy Complex
GDP	Gross domestic product
GECCF	Gas Exporting Countries Forum
IEA	International Energy Agency
JMMC	Joint Ministerial Monitoring Committee
JODI-Gas	Joint Organisations Data Initiative Gas
JTC	Joint Technical Committee

LNG	Liquefied natural gas
MS	Member States
NESF	National Energy Security Fund
OECD	Organisation for Economic Cooperation and Development
OPEC	Organization of the Petroleum Exporting Countries
PCIs	Projects of Common Interest
PIF	Public Investment Fund
R&D	Research and Development
RDIF	Russian Direct Investment Fund
RES	Renewable Energy Sources
RF	Russian Federation
SCP	South Caucasus Pipeline
SCPX	South Caucasus Pipeline Expansion
SGC	Southern Gas Corridor
TANAP	Trans Anatolian Pipeline
TAP	Trans Adriatic Pipeline
US	United States
USD	United States Dollars

Units of Measurement

Bcm	Billion cubic metres
Bcf	Billion cubic feet
GW	Gigawatts

Km	Kilometre
Mln	Million
Mmt	Million metric tons
Mt	Megaton
Mtoe	Million tonnes of oil equivalent
Mtpa	Million metric tonnes per annum
Sq.	Square kilometres
Tscf	Trillion standard cubic feet
TWh	Terawatt hours

Introduction

The present dissertation is part of the Master's degree in Political Science and International Relations, specialization in Globalization and Regional Dynamics. This dissertation focuses on *Russia's Energy Strategy: Challenges and Foreign Energy Policy*.

Natural resources play an essential role in international relations although their importance has changed throughout the centuries. On the 18th and 19th centuries, during the period of the First Industrial Revolution, as the demand for coal soared thanks to iron and steam, coal experienced a massive escalation. In the 20th century, during the First World War, oil gained importance as a vital energy resource, and in the Second World War it became a keystone in war strategies. After the war, during the “Thirty Glorious”, it became the leading energy resource, and a strategic resource to guarantee power and recognition in the international system. The oil crisis of 1973 warned the consuming countries that energy was a security issue. Since then, energy security became crucial in the international agenda and countries developed strategies to ensure it.

In the last decades, natural gas was acknowledged as a competitive and geopolitical resource. At the same time, concerns about climate changes grew. The aim to reduce the consume of fossil fuels have led to an increase of natural gas consume, since it is a cleaner fossil fuel, with less environmental impacts. For the same reason, the importance of renewable energies is increasing gradually, gaining space in the global energy system, consequently some of the biggest world economies, such as European Union (EU) or China, are improving the production of renewable sources and developing more efficient technologies.

Energy is an important and strategic factor in global security and regional politics, moreover a strong influencer in international relations. Energy resources have been vital to the world's economy and essential to ensure national and global stability and security. The deprivation of energy would impact the State, the society as a whole and even the citizens as individual entities, leading to a serious problem of instability. For these reasons, it is crucial that the States manage their energy resources effectively to maintain its economic development and ensure its national security. As the global demand for energy rapidly growth over the last decades pressuring the markets, geopolitical tensions and international competition spread among the major energy world powers. At the same time new risks to energy security emerge (i.e. climate changes or disruption of energy

networks), along with new threats (i.e. blackouts, terrorism or piracy), therefore the energy paradigm changes drastically, which drew the attention of States and International Organizations for the need to further develop short, medium and long-term strategies to address those challenges and to reduce the vulnerabilities of energy security.

The Russian Federation has one of the world's biggest energy reserves and it is one leading energy producer and exporter. The role that Russia plays in the energy global system and in the energy market has been shaping Russian foreign policy since the end of the Cold War. After the collapse of the Soviet Union in 1991, the Russian Federation suffered a major hit. Indeed, the breakup of the Soviet Union into independent States brought alongside an economic, social and political crisis weakened Russia's position as a great power in the international system. After troubled times under Gorbachev and Yeltsin's presidency, the Putin era meant a resurgence of the Russian power.

In the XXI Century, Russia reappears with a monumental role in world politics and as one of the main and strongest players in the international system. This revival of its power was mainly due to the strategic use of the energy resources and a successful energy policy. Energy was used as a basis to social-economic development. However, this strategy had a negative outcome and made the Russian economy heavily dependent on energy exports. A substantial part of the State's revenue and gross domestic product (GDP) comes from oil and gas exportations, so the energy market has a very strong importance to the Russian economy and to its security. Meanwhile, the conflict between Russia and Ukraine and the Crimea issue, and the consequently tensions with the European Union, provided an insight into energy security's problems.

Geopolitics of energy play a major role in Russia's strategic vision, since location of energy resources, supply and demand dynamics, transit routes, energy infrastructures and even resource prices have a major influence on Russian development, thus influencing Russia's domestic and foreign policy. As a result of the dynamics and changes in the global energy system, and due to Russia's position in the energy global system and the influence of energy in its security, there is a set of challenges, both internal and external, which may jeopardize Russia's energy security and weaken its power. Therefore, energy security is one the state's priorities.

Concerns about energy security are visible through the elaboration of medium and long-term energy strategies. Since 2003, Russia's Government approved two energy

strategies: The *Energy Strategy of Russia for the period up to 2020* (ES-2020) and the *Energy Strategy of Russia for the period up to 2030* (ES-2030), in 2009. In 2014, a draft for the *Energy Strategy of Russia for the period up to 2035* (ES-2035), was submitted to approval. In the same year, the Analytical Center for the Government of the Russian Federation together with the Ministry of Energy of Russian Federation and the Russian Union of Industrialists and Entrepreneurs conducted the first public forum to discuss the Energy Strategy 2035. In 2015, a preliminary version of the Project ES-2035 was published in the Ministry of Energy's website. Throughout the year, the project was discussed by the Minister of Energy Alexander Novak and Prime Minister Dmitri Medvedev, multiple times. On 1 February 2017, an updated and revised version of the draft of *Energy Strategy of Russia for the period up to 2035* was published in the Ministry of Energy's website.

This dissertation analysis how the main external challenges to Russia's energy security are shaping its strategies towards foreign energy policy. First, we will analyse Russia's energy profile and the role of energy in its economy. Then we will identify and analyse the main external challenges to Russian energy security and the energy strategies that it is developing in order to face them.

CHAPTER I

Research Framework

1.1. Relevance, objectives and research questions

Russia is, first and foremost, an energy superpower. It is one of the largest energy producer and exporter in the world and so one of the biggest players in the global energy market. Russia's position in the energy global system and the importance that energy resources have to its development, stability and security are some of the main reasons that made energy security one of the state's priorities. Consequently, Russia developed three official energy strategies that set objectives, priorities, guidelines and mechanisms of energy policy essential to ensure its energy security, overcome the challenges and maximize the effective use of natural energy resources and the potential of the energy sector. In 2003, Russia's approved its first *Energy Strategy of Russia for the period up to 2020*. In 2009, it approved the second one: *Energy Strategy of Russia for the period up to 2030* and finally, in 2014, a draft for the *Energy Strategy of Russia for the period up to 2035*, was submitted to approval and its latest recent version was published in early 2017.

This last strategy updated, clarified and adjusted the priorities, tasks, indicators and forecast scenarios adopted in the ES-2030. It includes the internal and external challenges; the objectives and stages of implementation of the strategy; the directions of the fuel and energy complex (FEC), specifically oil, gas and coal industries, electric and heat power, nuclear power and renewable energy sources (RES); the guidelines of state energy policy, which main components are: subsoil use and management; energy saving and efficiency; ecology and climate change; domestic markets and industry; scientific and technical innovation; social sphere and development of human capital; regional energy policy and foreign energy policy; and finally it contains the implementation mechanisms, the expected results and the progress in the implementation of the previous strategy.

The energy security issue has been extensively studied from the perspective of energy consumers, however few studies consider energy security from the perspective of energy producers. This dissertation studies energy security from an energy producer perspective, the Russian Federation, by analysing the official energy strategy documents,

and in particular the draft of *Energy Strategy of Russia for the period up to 2035*, which has not yet been thoroughly studied. Nevertheless, it is an essential document to understand the current Russian perspective on energy security issues. Furthermore, in Portugal, despite the issue of energy security being widely studied, Russia's energy security, its challenges and its official strategy are not so much. Understanding Russia's energy strategy is important as it is a key player in the global energy system and the main energy supplier of the European Union.

This dissertation aims to analyse how the main external challenges to Russian energy security are shaping its strategies towards foreign energy policy. To achieve our main objective, we define three secondary objectives that aim to analyse (i) Russia's energy panorama, (ii) the main external challenges to Russian energy security and (iii) Russia's main strategies towards Foreign Energy Policy.

We gave particular emphasis on external challenges and foreign energy policy, as we consider that they not only affect the future of the Russian Federation but also the future of other players in the world energy scene and Russia's relations with them. To fulfil our objective, we analysed the three strategies to understand how they evolved over the years. We chose to analyse the period since 2014 until the end of 2017. This specific period is justified by the launch of the *Energy Strategy of Russia for the period up to 2035* in 2014, which is the official document that contains the challenges and strategies analysed in this dissertation. Besides that, 2014 was marked by the annexation of the Crimea, the European Union's sanctions against Russia, the suspension of the formal EU-Russia Energy Dialogue format and the consequent deterioration of the EU-Russia relation.

To accomplish the objectives proposed, we defined the following main question: *how the external challenges to Russia's energy security are shaping its strategies towards Foreign Energy Policy?* Derived from this main question occur the following questions: (i) what is Russia's energy panorama? (ii) what are the main external challenges to Russian energy security? and (iii) what are the main strategies of Russia towards Foreign Energy Policy?

1.2. Methodology

For the elaboration of this dissertation, a qualitative research of primary sources was used based on official documents of the Russian Government and the Ministry of Energy, which were translated to English by reliable native Russian speaker. Although there were limitations due to the lack of knowledge of the Russian language, which reduced the access to some Russian sources, the translations allowed us to be able to surpass these restrictions. The Russian sources were essential to improve our knowledge about the Russian perspective and to accomplish our objectives. However, the research was limited only to open sources, it was not possible to have access privileged sources or confidential documents, that eventually would have important information.

As secondary sources, we consulted books, news, studies and articles in periodicals and renown journals. During the research, a wide range of scholarly works were studied to have a great diversity of perspectives from authors with different nationalities, including Russian authors, and coming from different institutions. A quantitative research was also conducted by analysing statistical information with data on prices, production, import and export of energy resources in Russia. This data was collected from different sources: official data from international sources such as the *World Bank*, the *International Energy Agency (IEA)*, *Eurostat*, *BP* and *US Energy Information Administration (EIA)*, and from Russian official sources such as the *Russian Central Bank* and *Gazprom*.

This dissertation is organized in five chapters. The first and present Chapter *Conceptual Framework*, concerns the framing and conceptualization of the presented theme. To develop this research some concepts are deeply analysed, as the concept of Geopolitics and Geopolitics of Energy, considering its relevance in the Russian context; the concept of Energy Security, including energy producers' perspective, in particular of Russian Federation; and concepts related to National Strategy, National Interest and Foreign Policy, always considering the Russian perspective.

In the second Chapter *Russia's Energy Panorama*, the Russian energy profile and system are characterized through the analysis of recent data and the aim is to understand the importance of energy resources, in particular by analysing how Russian economy relies on its energy exports. Understand the importance and the role that energy plays in

the Russian Federation is essential to understand the importance of the challenges and how they can affect Russia's security.

In the third Chapter *Challenges to Russian Energy Security*, the main external challenges to Russia's energy security, according to *Energy Strategy of Russia for the period up to 2035*, are identified and analysed to understand how they can affect Russia's security. Realize which are the main challenges is fundamental to understand how Russia's energy strategy is structured.

In the fourth Chapter *Russia's Energy Strategy*, the ES-2020 and the 2030 are analysed to understand how the strategies changed over the time. We identified and analysed four main strategies towards foreign energy policy of the ES-2035, and the energy relations with other actors.

The fifth Chapter is the *Final remarks*, where we analyse the results of our research and answer our questions.

1.3. Conceptual analyses

The analysis of some key concepts is fundamental to accomplish the study and to understand Russia's energy panorama, its challenges and strategies. In the first place, it is crucial to realize the geopolitics concept. Rudolf Kjellén (1864-1922) was the first political scientist to use the term "geopolitics" in 1899, describing it as "the theory of the state as a geographical organism or phenomenon in space" (Cohen, 2015, p.15). Geopolitics studies how politics or ideologies can be explained by geographic variables, such as location, size, population, resources or technological development (Leigh, 2014). There is an important connection between elements such as power, political interest, decision-making, strategic thinking and geographic space, so geopolitics intends to analyse the interaction between all these variables, to understand how political decisions are shaped by geographic elements. Saul Cohen defines geopolitics as "an analysis of the interaction between, on the one hand, geographical settings and perspectives and, on the other, political processes. (..) Both geographical settings and political processes are dynamic, and each influences and is influenced by the other" (Cohen, 2015, p.16 cited in Campos and Fernandes, 2017, p.25). In the perspective of Professor Colin Flint, geopolitics is "the struggle over the control of geographical entities with an international

and global dimension, and the use of such geographical entities for political advantage” (Flint, 2017, p.36).

The concept of *Geopolitics of Energy* resulted from *Geopolitics* and is fundamental to understand the dynamics of Russian energy strategies. Melvin A. Conant and Fern Gold (1978, p.3, cited in Campos and Fernandes, 2017, p.24), two representatives of the classical studies on energy geopolitics, published, in 1978, *The Geopolitics of Energy*, a study which is considered crucial to energy geopolitical studies. According to them the “access to raw materials, especially access to energy is a top priority of international political relations. The ability to obtain these essential commodities is no longer subject to the traditional colonial relations or military protection, but depends on geographical factors and the political decision-making of the governments based on different political conditions. The country having control over the resources will control those who rely on the resources, which will lead to a profound transformation of international relations.”

Luke Kerr Oliveira (2015, p.6 cited in Campos and Fernandes, 2017, p.27), in his analysis of the energy geopolitics of emerging economies, declared that the *Geopolitics of Energy* can be understood as the analysis of all the geopolitical and strategic elements that influence the control of energy reserves, exploration technologies, energy infrastructure, transport and end use of the energy resources. In Oliveira’s definition, the variables considered in the analysis of energy geopolitics are: (i) the geographic location and distribution of the main energy reserves; (ii) the geographic location of the exporting and importing countries and of the largest consume and produce centres; (iii) the role of disputes on energy resources between importing and exporting countries or disputes between large energy consumers; and (iv) the strategies adopted by countries, a group of countries or major powers to ensure their own energy security or to influence other countries in the energy field (Campos and Fernandes, 2017, p.27).

Further, Philip Andrews-Speed wrote that “energy geopolitics refers to the study of national security and international politics in the context of the global energy scene” (Speed, 2016). Despite of the range of perspectives of the concept of Geopolitics of Energy, it can be understood as “the study of the interactions between all the actors involved in the global energy scenario, as well as the influence of energy and all the variables of the complex energy system in the decision-making process at political, economic, military and social levels” (Campos and Fernandes, 2017, p.28).

Energy Security is the central concept of this research. Despite the extensive research on the topic, there is no consensus and no universal concept of energy security (Fernandes, 2017, p.65). The concept is multidimensional and has a polysemic nature (Baumann, 2008; Chester, 2010; Sovacool, 2011; Vivoda, 2010). There are plenty concepts that differs according to the actor who defines it, the variables it considers and the perspective adopted. The political science perspective, for example, provides different views of how international relations and energy security interacts. They analyse the degree of interdependence, distribution of power and incentive to use the energy as a weapon (Månsson; Johansson and Nilsson, 2014). The meaning of the concept depends on factors “such as a country’s special circumstances, level of economic development, perceptions of risks, as well as the robustness of its energy system and prevailing geopolitical issues” (Ang, Choong and Ng, 2015, p.1078) and even factor like energy resources, geographic location, political system and the external relations of the countries themselves (Fernandes, 2017, p.66). “The definition and dimensions of energy security appear to be dynamic and evolve as circumstances change over time. For instance, as energy technologies advance, awareness of climate change and sustainability increases, the relevant facets of energy security are reshaped” (Ang, Choong and Ng, 2015, p.1078).

Ang, Choong and Ng (2015) pointed out the main aspects of energy security as: energy availability, infrastructure, energy prices, societal effects, environment, governance, and energy efficiency. However, a simple distinction can be carried out to clarify what is energy security to consuming and to producing countries. Consuming countries seek security of supply, the assurance of finding constant supplies for their needs, through a diversity of suppliers and adequate transport infrastructure. The latter prioritise security of demand, the assurance that their production will be purchased at a fair price, provided by a diversity of customers and over a long term, so that national budgets might anticipate a steady and predictable revenue flow” (Fernandes, 2017, p.66). “Different countries interpret what the concept means for them differently. Energy-exporting countries focus on maintaining the “security of demand” for their exports, which after all generate the overwhelming share of their government revenues. For Russia, the aim is to reassert state control over “strategic resources” and gain primacy over the main pipelines and market channels through which it ships its hydrocarbons to international markets” (Yergin, 2006, p.71).

The International Energy Agency, the first institution to concern about the energy security issue, defines energy security as “the uninterrupted availability of energy sources at an affordable price” (IEA, 2017c). The International Atomic Energy Agency (2006, p.2) identify some goals of energy security such as “secure energy supply; fuel import reduction; technology self-sufficiency; protection against supply disruptions; protection against price volatility; diversity of technologies and sources; reducing threats to or from neighbouring states; well-functioning energy markets and environmental sustainability”. In the World Economic Forum’s perspective (2009, p.20), energy security has four objectives: “(i) autonomy, energy supply that is within the control of a country and free from disruption by external agents; (ii) reliability, or distribution that is safe and meets demand without interruption; (iii) affordability, or prices commensurable with the buying power of consumers; and (iv) sustainability, or sufficient supply of energy to support a high quality of life without damaging the environment”. Yergin (2006, p.70) defined it as the “availability of sufficient supplies at affordable prices”. However, these definitions, as well as other bibliography, are very limited and dominated by the perspective of consumer countries and the security of supply, not taking into account the concerns of producer countries.

“There is no doubt that energy security is a common objective, despite covering the different interests of all the actors involved in the complex energy system. However, and precisely for being “common”, it should incorporate the interests of all involved parties: consumers, suppliers and transit countries” (Fernandes, 2017, p.67). For energy exporting countries, security of demand may be equally important to security of supply. Both the economy in general and the national budget can be heavily dependent on income from energy exports (Johansson, 2013). As President Vladimir Putin alleged at the G8 meeting in 2006, “energy security means security not only for the consumers but also for the producers” (Putin, 2006). To respond to its energy concerns and to ensure its energy security, producing countries shared at least three common objectives: (i) stable demand; (ii) competitive prices and (iii) reliable and long-term buyers (Campos and Fernandes, 2017, p.28). These objectives are fundamental to ensure the return of the investment in the exploitation of energy resources, as also to maintain the development and stability of their economies, since in most cases the economy of these countries rely on energy exports, as Russia.

In the Russian perspective, “energy security is the country’s security, that of its citizens, society, state and economy from the threats to a reliable supply of fuel and energy. These threats are determined by external (geopolitical, macroeconomic, market) factors, as well as by the condition and operation of the country’s energy sector” (Ministry of Energy of the Russian Federation, 2010, p.28). According to Duarte and Fernandes (2011, p.47) energy security can be affected by risks and threats. A risk can be understood as any action that may produce negative effects although resulting from acts that did not intend to have this effect, as for example questions related to infra-structures, transports, dependency or diversification. On the other side, a threat is an action that deliberately aims to have a negative effect, as such terrorism, piracy or embargos.

The Russian Government considers that “energy security is provided and determined by resource sufficiency, economic availability, ecological and technological acceptability. Resource sufficiency determines the physical possibility of deficit-free supply of energy resources to the national economy and the population. Economic availability determines the profitability of such supply at appropriate market prices. Ecological and technological acceptability determines the possibility of extraction, production and consumption of energy resources within the existing technological and ecological limitations determining operation safety for energy facilities at various phases” (Ministry of Energy of the Russian Federation, 2010, p.28).

To ensure its energy security, Russia’s developed a strategy. To Russia, a strategy “sets a course of long-term development of the energy sector, independent from the wide-field predictions of long-term changes in external and internal conditions. The Strategy does not come from the adaptation of the Russian energy sector to external conditions, but from the target model of its future development, that is based on a stable (invariant) system of phased target indicators of development” (Ministry of Energy of the Russian Federation, 2010, p.6).

The Foreign Energy Policy is a component of Russia’s Energy Strategy. From a conceptual view, it is understood as “the interaction of Russian energy sector with actors outside Russia and includes the sales of Russian energy commodities abroad, the transit of these commodities from Russia through areas controlled by other States, Russia’s position on global and regional energy markets and, last, but not least, reputational issues that have to do with the foreign perceptions of Russia as an international energy player” (Oxenstierna and Tynkkynen, 2014, p.213).

Considering the importance of energy to the Russian Federation, the understanding of the concept of national security seems crucial in this dissertation. According to Russian Federation national security is “meant the security of its multinational people as the bearer of sovereignty and as the only source of power in the Russian Federation” (The Ministry of Foreign Affairs of the Russian Federation, 2000). In Russian conception the state of national security is “the state of protection of the individual, society, and the state against internal and external threats in the process of which the exercise of the constitutional rights and freedoms of citizens of the Russian Federation, a decent quality of life and standard of living for them, sovereignty, independence, state and territorial integrity, and sustainable socioeconomic development of the Russian Federation are ensured. National security includes the country's defence and all types of security envisioned by the Russian Federation Constitution and Russian Federation legislation - primarily state, public, informational, environmental, economic, transportation, and energy security and individual security” (The Russian Government, 2015).

The national security is ensured when the national interests are guaranteed. “Russia's national interests are a totality of balanced interests of the individual, society and the state in economic; domestic political, social, international, informational, military, border, environmental and other fields. (...) The interests of the state lie in the inviolability of the constitutional system and of Russia's sovereignty and territorial integrity; in political, economic and social stability; in unconditional assurance of lawfulness and maintenance of law and order; and in the promotion of equal and advantageous international cooperation. Russia's national interests may only be realized based on sustainable economic development (The Ministry of Foreign Affairs of the Russian Federation, 2000).

1.4. State of the art

Russia's Energy Strategy document has not been broadly studied by scholars at international level. Some few examples are authors as Alexey Gromov and Nikolay Kurichev (2014), whose work is part of a more extensive research coordinated by Susanne Oxenstierna and Veli-Pekka Tynkkynen (2014). Natalia Victorovna Kuznetsova and Ekaterina Vasilievna Kuznetsova (2015a) analysed the official Russia's Energy Strategy,

by comparing the three existing strategies between 2003 and 2017. there are other authors who address Russia's Energy Strategy, such as Adnan Vatansever (2017). One of the subjects most studied is energy relation between Russia and China, by authors such as Anton Orlov (2016), James Henderson, Tatiana Mitrova (2016), Morena Skalamera (2016), Elena Shadrina (2014), Thomas Stephan Eder (2014), Miroslav Mares and Martin Larys (2012).

Energy security is not much studied either from the Russian perspective, Jack D. Sharples (2013), Adrian Dellecker and Thomas Gomart (2011) are few examples of works about this issue. Consequently, there is no abundant bibliography on the challenges to Russian energy security, or specifically on the challenges identified by the Russian Energy Strategy, studies such as Natalia Victorovna Kuznetsova and Ekaterina Vasilievna Kuznetsova (2015a) are one of the few good examples of this. Some authors such as Aleksandra Malovaa and Frederick van der Ploeg (2017), Maaïke C., Bouwmeester and J. Oosterhavenb (2017) and Shebonti Ray Dadwal (2016), have written about oil price volatility and how this is a risk factor for Russia. Another challenge, which is also studied, is the sanctions imposed by the EU and the USA. Studies on the subject can be found in works by authors such as, Christian Dreger, Konstantin A. Kholodilina, Dirk Ulbricht, Jarko Fidrmuc (2016), Yelena Tuzova, Faryal Qayumb (2016) and Susanne Oxenstierna and Per Olsson (2015). Jarosław Ćwiek-Karpowicz (2012) studied the way the changes in the energy paradigm, particularly how the shale gas revolution impacts the Russian energy market.

About the Russian energy sector, there are several works, such as Heli Simola and Laura Solanko (2017), more specifically on the oil sector, there are several works by Tatiana Mitrova (2016). Authors such as James Henderson, Tatiana Mitrova (2015), Robert Johnstonn and Emily Stromquist (2014) developed works concerning the natural gas sector. Regarding renewable energies and sustainability, it is possible to find works by authors such as Sergei Bobylev and Renat Perelet (2013). Another aspect that is also studied is the new Russia's energy projects such as Yamal LNG project, with works by Aurélie Bros and Tatiana Mitrova (2016), Nord Stream II, by Andreas Goldthau (2016), Hannes Adomeit (2016) and Kai-Olaf Lang and Kirsten Westphal (2017), Turkstream, by authors such as Ilya Zaslavskiy (2017) and Power of Siberia, by Roman Sidortsov, Aytalina Ivanova and Florian Stammeler (2016).

An important aspect in the Russian energy literature is the geopolitics of energy in Russia, with titles by Matthew Sussex, Roger E. Kanet (2015) and Robert Ebel (2009). Many of the works also address Russia's geopolitical objectives and how it uses energy as a political tool, as evidenced by authors such as Randall Newnham (2011). The overwhelming part of the bibliography studies the EU-Russia energy relation and the risks to the EU because of the EU's energy dependence from Russian resources, as authors such as Yusin Lee (2017) and Andrej Krickovic (2015), as well as the question of geopolitics of natural gas and the triangle Russia-Ukraine-European Union, studied by authors like, Thijs Van de Graaf and Jeff D. Colgan (2017) and Tatiana Romanova (2016).

These themes are often studied in several articles published by prestigious scientific journals such as *Energy*, *Energy Policy*, *Energy Strategy Reviews*, *Foreign Affairs*, *Journal of Eurasian Studies* and *Post-Soviet Affairs*. And in institutes and think tanks such as *Center for Energy and Security Studies*, *Chatham House*, *Council of Foreign Relations*, *Energy Economics*, *European Centre for Energy and Resource Security*, *International Institute for Strategic Studies*, *International Journal of Energy Economics and Policy*, *Oil, Gas & Energy Law* and *Oxford Institute for Energy Studies* and *The Energy Journal*.

In Portugal, most of the literature on the energy security issue takes into account the European perspective, as in research works of authors such as Ana Morgado dos Santos (2015), António Costa Silva (2007; 2008; 2015), Carla Fernandes (2015), Catarina Mendes Leal (2015), Ruben Eiras (2011), Licínia Simão (2017) and Teresa Rodrigues (2011). As for the role of energy in the Russian strategy more specifically, there is also some material, as the research coordinated by Major-General Viana (2014). Authors such as José Fânzeres (2014) and José Félix Ribeiro (2017) focus on the geopolitical issue and strategic importance of the energy sector for Russia. Maria Raquel Freire (2011; 2014) studies the Russian Foreign Policy.

The energy issue in the EU-Russia relation is having some progress in Portugal, by the development of research projects, such as the “Geo4Ger - The Geopolitics of Gas and the Future of Euro-Russian Relation”, financed by FCT – Fundação para a Ciência e a Tecnologia, with the participation of the *Instituto Português de Relações Internacionais* and the *Instituto da Defesa Nacional*, that intend to: (i) identify political, economic and geopolitical trends that can compromise or enable the expected increase on Europe's and Russia's consumption and gas production for the in coming decades; (ii) forecast the

impact of these geopolitical realities, their implications on gas production and consumption in Europe and Russia, and their consequences in the gas market; and (iii) evaluate how changes in the gas market may affect the future of Euro-Russian relationship (IPRI, 2016).

The research shows that there are few works that broadly study Russia's Energy Strategy documents neither the recent *Energy Strategy of Russia for the period up to 2035*, especially in Portugal. So, this dissertation aims to contribute to a broader analysis of the theme.

CHAPTER II

Russia's Energy Panorama

“A new chapter in the history of international politics has begun, one in which the pursuit and control of energy resources would be the central dynamic of world affairs, and governments.”

Michael Klare, 2014¹

2.1. Russia's Energy Profile

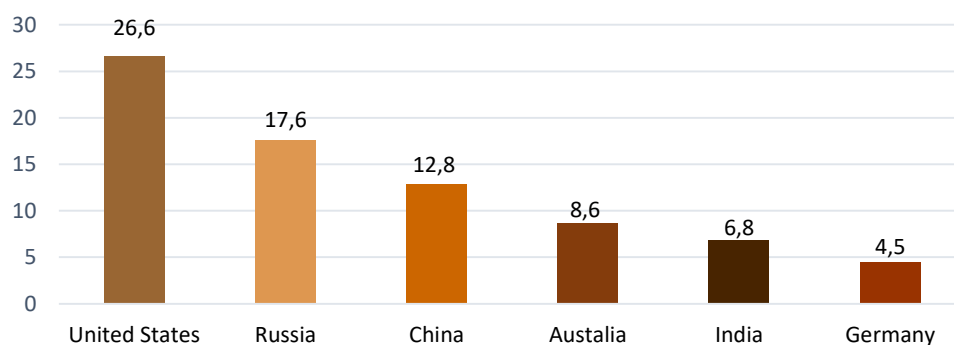
The Russian Federation, a Eurasian country, is the largest country in the world by surface area, with 17.1 million (mln) square (sq.) kilometres (km) (as of January 1, 2015, agricultural land occupied 13%, forest land 51%, surface waters including swamps 13%). With 146.5 million people, (as of January 1, 2016) and a GDP of 80,804 billion roubles in 2015 (Rosstat, 2016), corresponding to about 1.366 trillion United States Dollars (USD) (World Bank, 2017). Russia is one of the most important energy producers and exporters in the world. To understand the importance of the challenges to Russian energy security, it is essential to understand Russia's energy profile in what concerns to reserves, production and consumption of coal; oil: natural gas; liquefied natural gas (LNG); electricity; nuclear energy and renewable energy.

2.1.1. Coal

In 2015, Russia had the second largest World's coal reserves, with 17.6%, only behind the United States (US) with 26.6% (Cf. Chart 1) (BP, 2016). Most of Russia's coal resources are largely concentrated in Siberia and the Far East regions (IEA, 2014). There are 22 coal basins and 129 coal deposits in Russia, with a dispersed geographical distribution. Almost 70% of the proven reserves are in two basins: Kansk-Achinsk and Kuznetsk basins (Cf. Chart 2) (Analytical Center for the Government of the Russian Federation, 2016).

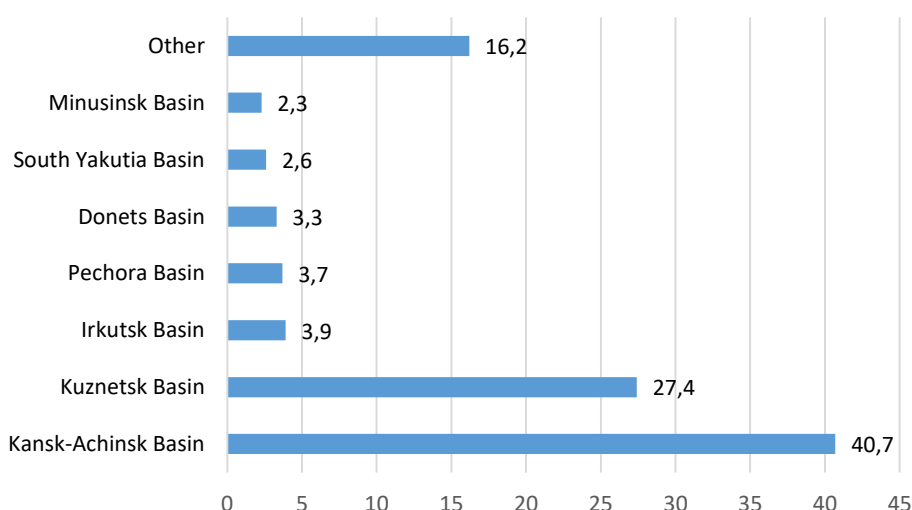
¹ Guay, M, 2014. Climate Change: Our Children Are in Danger. CreateSpace Independent Publishing Platform.

Chart 1 – World coal proved reserves, in 2015 (%)



Source: BP, 2016.

Chart 2 –Russia’s coal reserves, by the main basins, in 2015 (%)



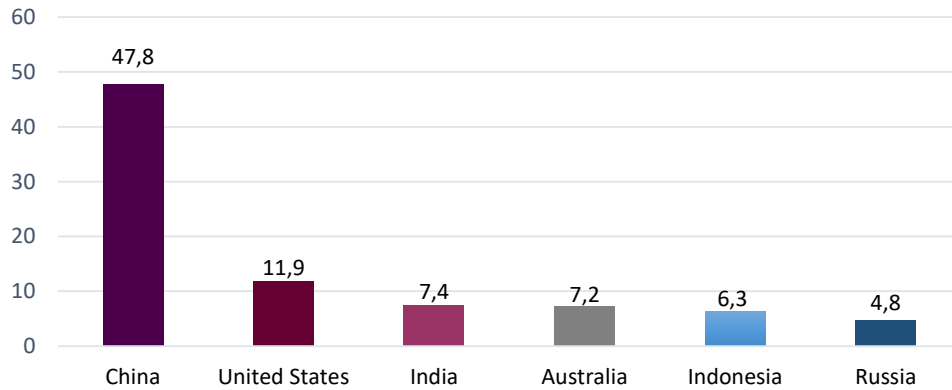
Source: Analytical Center for the Government of the Russian Federation, 2016.

In the same year, with 4.8% of world production, Russia ranked sixth among the world’s largest coal producers². China was the leader, with 47.8% of the world production (Cf. Chart 3) (BP, 2016). The rise of coal production was observed in all largest basins and Kuznetsk coal basin remains the centre of Russian coal production, with 58% of total (Analytical Center for the Government of the Russian Federation, 2016). Russia exported 155.1 Mt of coal in 2015, about 44% of its domestic production (IEA, 2016), and about 11% of world’s exports (IEA, 2016a). About 46% of Russia’s coal exports went to Europe

² In 2015, Russia produced 349.3 megatons (Mt), an increase of 16.3 Mt over the previous year (IEA, 2016).

and about 45% went to Asia (EIA, 2016). The large volume of coal export from Russia is shipped by sea, which in 2015 meant approximately 142.3 Mt (SUEK AG, 2015).

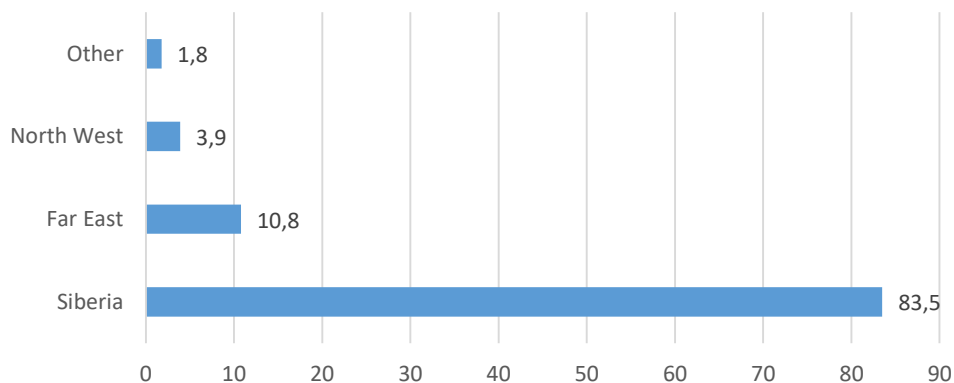
Chart 3 – World coal production, in 2015 (%)



Source: BP, 2016.

The largest part of coal production is located in Siberia (with 83.5% of the total coal production), followed by Far East with 10.8% (Cf. Chart 4). In Siberia, the largest coal production is situated in Kemerovo Oblast, (with 58% of the total), and in the Far East coal production is in Sakha Republic and in the North-West in Komi Republic, both with 4% (Analytical Center for the Government of the Russian Federation, 2016).

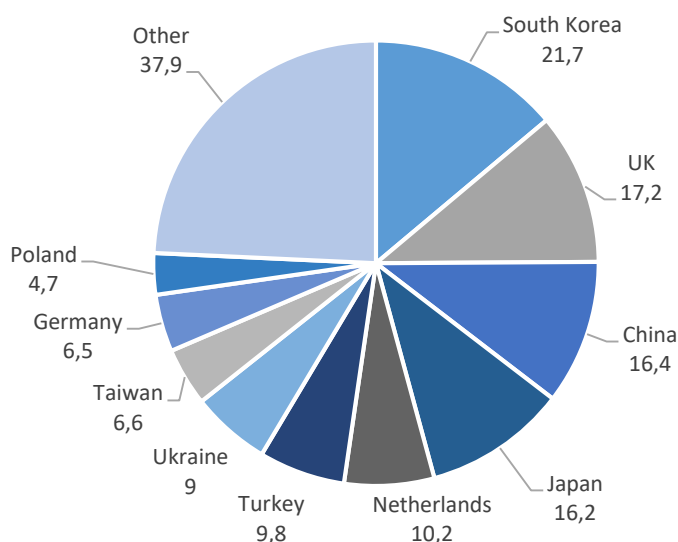
Chart 4 - Coal production in Russia by region



Source: Analytical Center for the Government of the Russian Federation, 2016.

In 2014 China was the main destination of Russia’s coal exports, however in 2015 exports fell by almost 40%, placing China in the third place with 16.4%, mainly because Chinese coal demand decrease significantly due to its environmental concerns (Cf. Chart 5). The UK continues to be the second leading destination, but it also cut purchases in 29%. These reductions were partially compensated by increased supplies to South Korea, with more 26%, which made it the main destination of Russian coal exports in 2015. Exports to Japan increased in 8% and to Netherlands in more 33% (Analytical Center for the Government of the Russian Federation, 2016.).

Chart 5 - Russia’s coal exports by destination, in 2015 (%)



Source: Analytical Center for the Government of the Russian Federation, 2016.

About 59.5 Mt of all types of Russian coal were shipped through western ports, namely Murmansk, Ust-Luga, and Tuapse. The Port of Murmansk transhipped about 13.6 Mt of coal, out of which 12 Mt was coal from SUEK AG (SUEK AG, 2015). Russia’s coal-exporting ports are located to serve either European or Asian markets. Vanino and Vostochny lie in the East and handle exports to Asia. China and some East European countries receive imports from Russia directly by rail (EIA, 2016). The Primorsky Krai region has an advantageous position to export coal into the Pacific Rim, thanks to the easy access to the Asian markets as China and Japan. Three ports in Primorsky Krai represent about 40% of all coal exports of the country: Vostochny, Vanino and Nakhodka

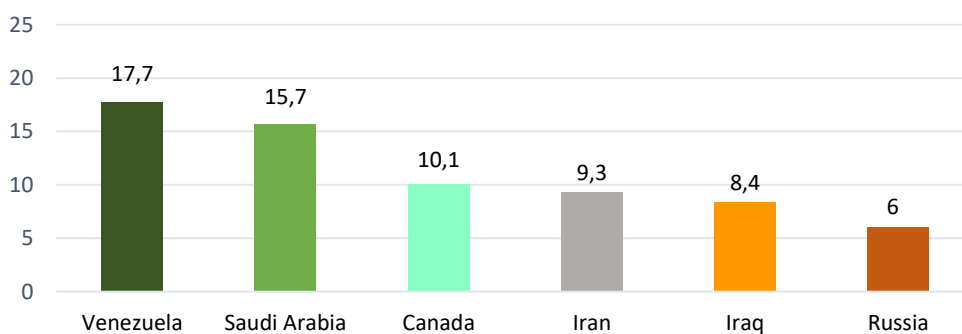
(Grambrel, 2014). SUEK is the leading coal producer, with approximately 35% of Russia's coal production (Analytical Center for the Government of the Russian Federation, 2016). A great part of the production is thermal coals with surface and underground mines from the west of Siberia to the Far East. Kuzbassrezrezugol is also an important company. Several big producers such as Rospadskaya, Yuzhkuzbassugol, Yuzhny Kuzbass, Kuzbassugol, Vorkutaugol, Yakutugol and Sibuglemet, share the coking coal market (Melnikov and Philpott, 2017).

China continues to be the leader in coal consumption, with half of the world consumption, followed by India (10.6%) and United States (10.3%), Russia was the fifth largest consumer of coal in 2015, with 2.3% (BP, 2016). In same year, coal consumption in Russia showed a slight growth, more 1.3% as compared with previous year. However, Russian coal imports fell by 9%. Most imports are from Kazakhstan (about 96%) (Analytical Center for the Government of the Russian Federation, 2016).

2.1.2. Oil

Regarding oil reserves, in 2015 Russia was in sixth position on the ranking, with 6% of the world's reserves (Cf. Chart 6) (BP, 2016), having most of the reserves in Western Siberia, in the Volga region and in the Ural Mountains (EIA, 2016).

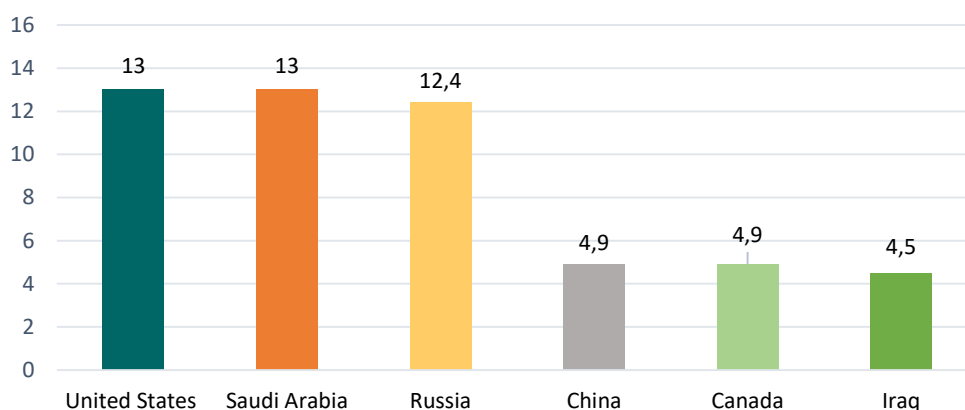
Chart 6 – World oil proved reserves, in 2015 (%)



Source: BP, 2016.

By 2015, Russia was the third largest oil producer, with 12.4%, only behind the United States and Saudi Arabia, both with 13% (Cf. Chart 7) (BP, 2016). In that year, the world's oil supply grew by 2,8%, however Russia's share in the global oil production decreased despite the growth of the overall production. It happened mainly due to the increase of production in countries like United States, or Iraq. (Analytical Center for the Government of the Russian Federation, 2016).

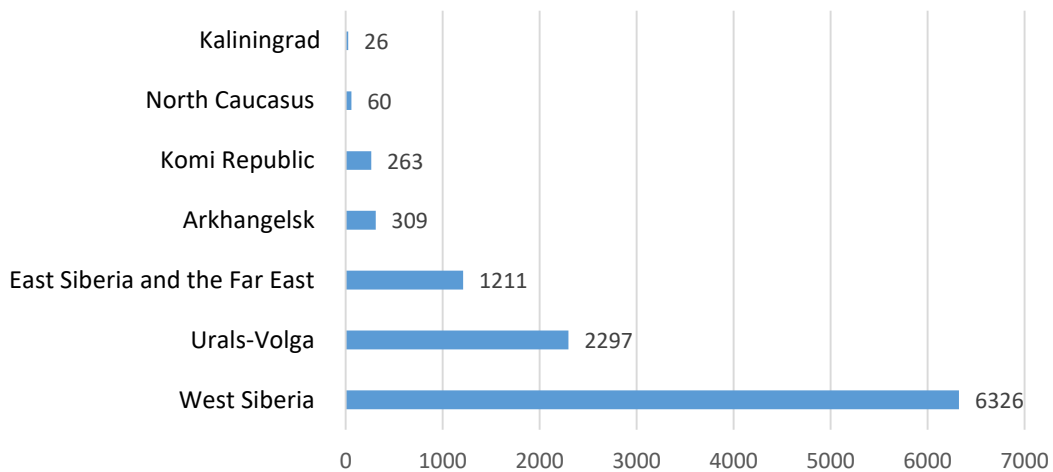
Chart 7 - World oil production, in 2015 (%)



Source: BP, 2016.

Western Siberia is the main oil-producing region, contributing for over 60% of Russia's total production in 2014. One of the largest and oldest fields in West Siberia is Samotlor, which has been decreasing since reaching a post-Soviet era peak of 635,000 b/d in 2006. However, a continued investment and the application of standard enhanced oil recovery techniques, helped to control the reduction, been kept to an average of 3% since 2015. Urals-Volga region is the second largest producer region, with 22% of the domestic oil production, followed by East Siberia and Far East, with about 10% (Cf. Chart 8) (EIA, 2016).

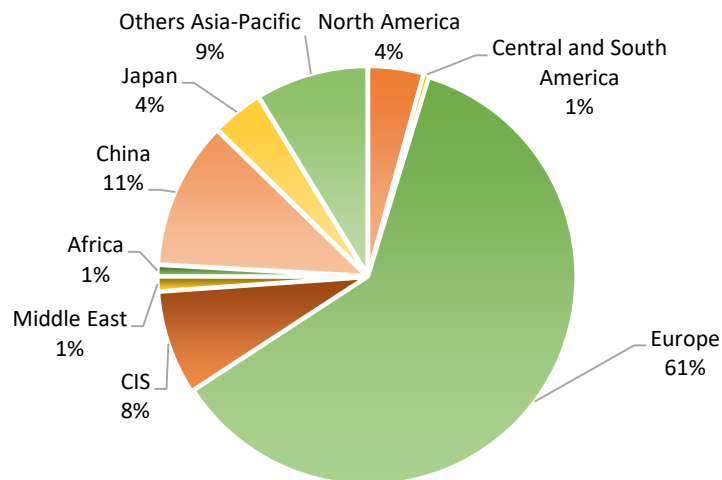
Chart 8 - Russia's oil production by region, in 2014 (Thousand b/d)



Source: EIA, 2016.

In 2015, Russian exports ranked the first place, represented 13.5% of world oil exports. The entire Middle East region represented 33.7% of world exports and the Asia-Pacific Region (APR) 11.4%. Europe was Russia's largest export destination, with 61%, followed by Commonwealth of Independent States (CIS), with 8%. The remaining destinations had a small percentage, namely China with 11% and Japan with 4%. (Cf. Chart 9) (BP, 2016).

Chart 9 - Russia's oil exports by destination, in 2015 (%)

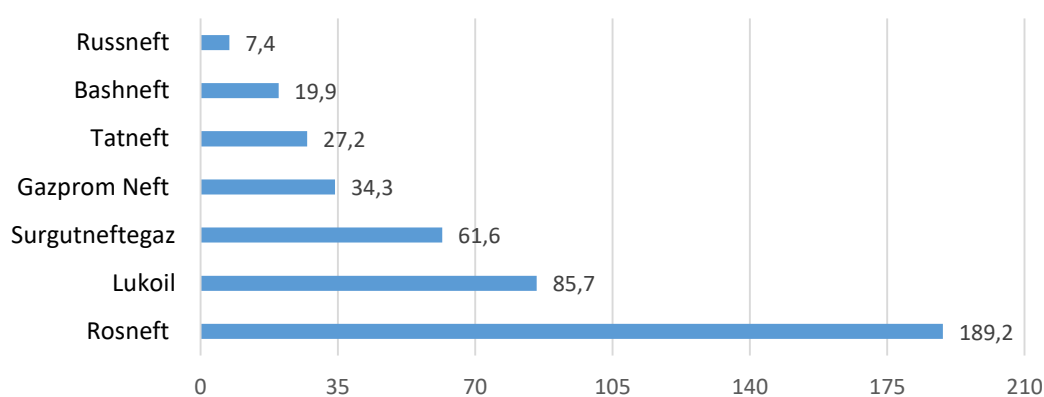


*Values include crude oil and byproducts

Source: BP, 2016.

Domestic companies dominate most of the Russia's oil production. Following the collapse of the Soviet Union, Russia initially privatized its oil industry, but Russia's oil and gas sectors have gradually been reverted to state control over the past few years. The state controls more than half of Russia's oil production (Henderson, 2015). Only three Russian companies are responsible for over 75% of total Russian oil production, namely Rosneft, that alone produces about 44%; LUKOIL, with 20% and Surgutneftegaz, with 14% (Cf. Chart 10) (Analytical Center for the Government of the Russian Federation, 2016).

Chart 10 - Russia's Crude oil production by company, in 2015 (Mt)



Source: Analytical Center for the Government of the Russian Federation, 2016.

Russia has an extensive domestic distribution and export pipeline network, which is almost entirely managed by the state-owned Transneft. The biggest pipeline is Druzhba, with a capacity to transport 2 million b/d, it extends over 2.500 miles and supply oil from the West Siberia and Urals-Volga region to Europe. Follows the Baltic pipeline I and II, with a capacity of 1.3 and 0.6 million b/d, respectively (EIA, 2016). They connect the Druzhba pipeline to the Primorsk and Ust-Luga Ports on the Gulf of Finland. Novorossiysk is Russia's main oil terminal on the Black Sea coast. Its load capacity is more than 1million b/d, followed by the Primorsj and Ust-Luga Ports and Kozmino, near Vladivostok in the Russian Far East. These top four ports together are responsible for approximately 85% of Russia's seaborne crude oil exports in 2015 (EIA, 2016).

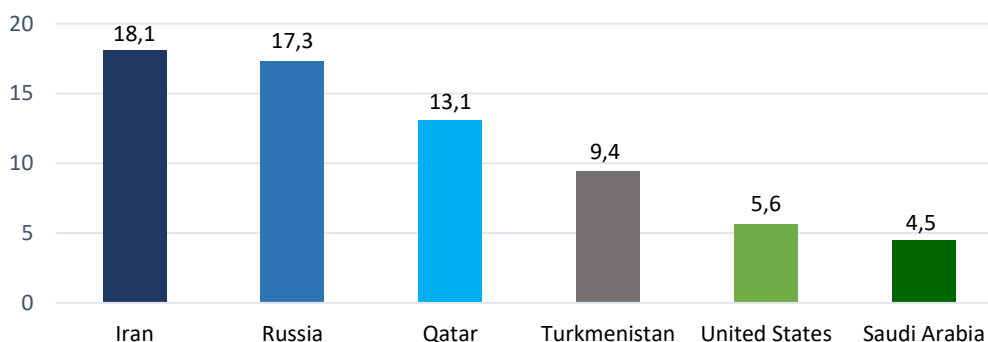
In 2015, Russia was the sixth largest oil consumer with 3.3% of the world consumption (BP, 2016). It imported 2.9 million tonnes of crude oil from the CIS and 2.0

million tonnes of oil products, 1.4mt of which came from the Middle East, 0.3mt from China and 0.2mt from Europe (BP, 2016).

2.1.3. Natural Gas

In 2015, Russia had the second largest natural gas reserves, with 17.3%, only behind Iran with 18.1% (Cf. Chart 11) (BP, 2016). The bulk of the country's natural gas reserves under development and production are in northern West Siberia, Yamalo-Nenets camp is the main one, with almost 90% of the domestic production. In the East Siberia and the Far East region, the Sakhalin camp is the largest, and in the Ural-Volga region, the Orenburg camp is the most important, although having a lower percentage than the West Siberia camps (EIA, 2016).

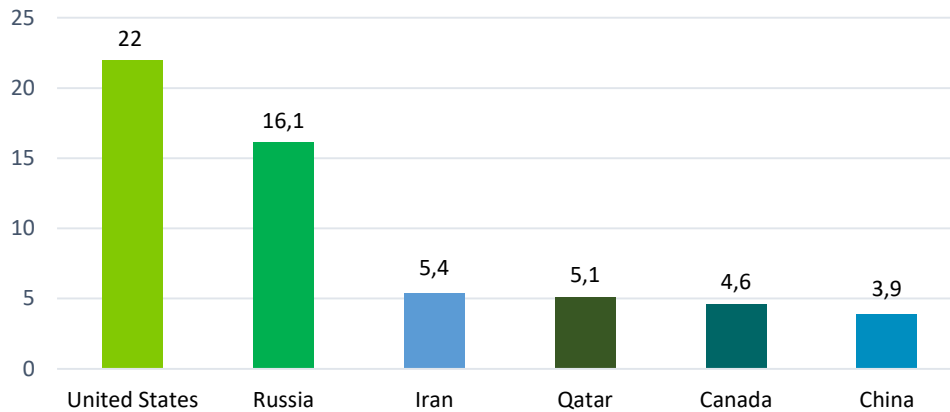
Chart 11 – World natural gas proved reserves, in 2015 (%)



Source: BP, 2016.

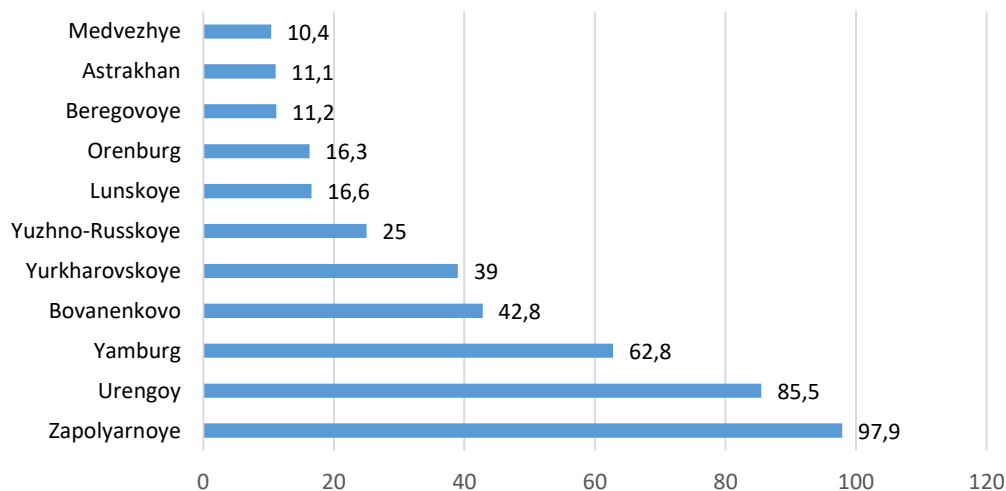
In 2015, Russia was the second largest natural gas producer in the world, with 16.1%, only surpassed by the United States, with 22% (Cf. Chart 12). In 2012, Russia lost its leading position to the USA, due to the increase of shale gas production, in addition, the growth of gas production in Qatar and Iran influenced the reduction of Russia's share in global gas production. In 2014, the three main gas fields, namely Zapolyarnoye, Urengoy and Yamburg, were responsible for over 50% of gas production (Cf. Chart 13) (Analytical Center for the Government of the Russian Federation, 2016).

Chart 12 - World natural gas production, in 2015 (%)



Source: BP, 2016.

Chart 13 – Russia’s gas production, by field, in 2014 (bcm)

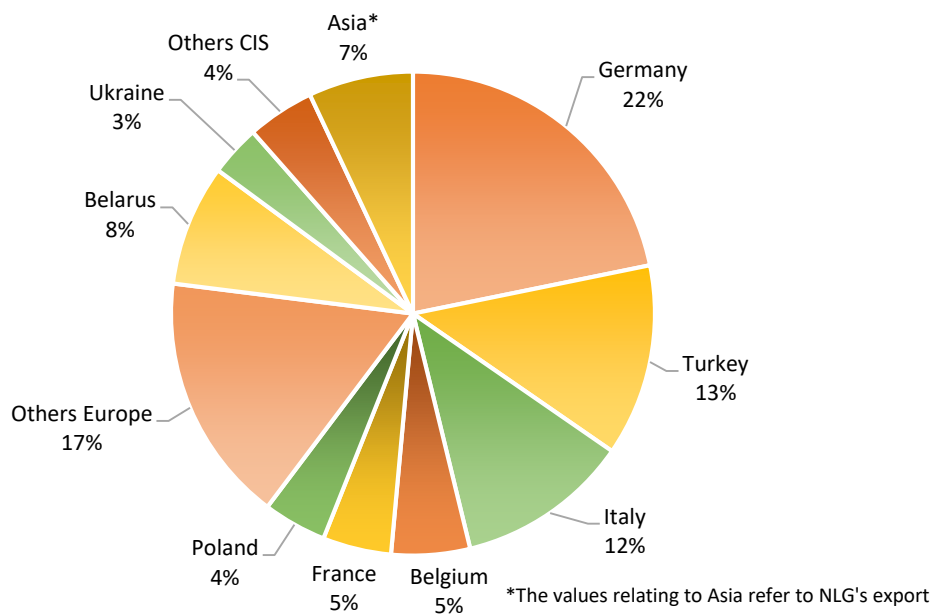


Source: Analytical Center for the Government of the Russian Federation, 2016.

In 2015, Russia exported 89% of its natural gas to Europe. Its main consumer was Germany, with 22%, followed by Turkey with 13% and Italy with 12%. The RF exported 3% of its natural gas to Ukraine and 4% to other CIS countries. Asia contributed for 7% of LNG exports (Cf. Chart 14) (BP, 2016). The state-run Gazprom dominates the country’s upstream natural gas sector, it provided 64.1% of country's gas production in 2015, less 3.4% than in 2014 (Analytical Center for the Government of the Russian Federation, 2016). “Gazprom’s gas supplies to European consumers are projected to set a record in 2016. In 2015, this Russian energy company delivered 158.6 billion cubic

meters (bcm) to Europe and Turkey. In 2016 this number is set to hit almost 180 bcm – a 12% increase” (Bochkarev, 2017). Despite this, production from other companies has been growing, such as Novatek and Rosneft (EIA, 2016). The share of independent gas producers in Russia increased from 16% in 2007 to 36% in 2015 (Analytical Center for the Government of the Russian Federation, 2016).

Chart 14 - Russia’s natural gas exports by destination, in 2015 (%)



Source: BP, 2016.

In 2015, Russia’s natural gas transportation system included about 100,000 miles of high-pressure pipelines and over 20 underground natural gas storage facilities (EIA, 2016, p.19). The Unified Gas Supply (UGS) system is the collective name for the interconnected western portion of Russia’s natural gas pipelines and includes domestic pipelines and the domestic portion of export pipelines in European Russia (EIA, 2016). The Brotherhood pipeline (Urengoy-Pomary-Uzhgorod) is the largest gas transportation route (Cf. Fig. 1), it can carry over 100 bcm gas per year, transiting Ukraine and running to Slovakia. The Yamal-Europe pipeline runs across Russia, Belarus and Poland reaching Germany. Its length is beyond 2000 km. The gas transportation route through Romania carries Russian gas to this country, transiting Ukraine and Moldova, and runs further to the Balkan countries and Turkey. The Blue Stream is intended for direct gas deliveries to

Turkey, bypassing transit countries (Cf. Fig. 1). The 1,213-km-long gas pipeline comprises an overland and offshore sections, starting close to Izobilnoye in Stavropol Region, and ending in Ankara, Turkey; and the Nord Stream offshore pipeline laid on the bottom of the Baltic Sea with a capacity of 55 bcm per year allows a direct transportation of gas for clients in Western Europe, bypassing transit states. The pipeline comprises two lines with a throughput capacity of 27.5 billion cubic meters/year each. Its route lies under the Baltic Sea from Portovaya Bay near the city of Vyborg to the German coast near Greifswald, stretching 1224 km. Germany, the UK, the Netherlands, France, Denmark and other European states are the target markets for this pipeline (Gazprom, 2017c).

Fig. 1 – Map of pipelines for supplying Europe with Russia’s natural gas



Source: Anderson, 2014.

In terms of consumption, Russia is in second place, with 11.2% of natural gas world’s consumption, preceded by the United States with 22.8%. In 2015 Russia imported

16.9bcm of natural gas, 10.9bcm were from Kazakhstan, 3.3bcm from Uzbekistan and 2.8bcm from Turkmenistan (BP, 2016).

2.1.4. Liquefied Natural Gas

LNG accounts for a relatively small share of Russia's energy exports, as in 2015 Russia's share in the global LNG market was only 4%. Russia's Sakhalin LNG plant is the most important liquefaction plant, with a capacity of 9.6 million metric tonnes per annum (Mtpa) (Analytical Center for the Government of the Russian Federation, 2016). Russia has new LNG plants projects to increase its competitiveness in the energy market. The Yamal LNG project is the most competitive and complex LNG project and it is expected to debut in the end of 2017, with an installed capacity of 16.5Mtpa (Analytical Center for the Government of the Russian Federation, 2016). It is located above the Arctic Circle, a region that is ice-bound for seven to nine months during the year and isolated from all cities and oil and gas infrastructure. Yamal LNG unlocks access to the vast gas resources of the Russian Arctic, while also opening a new LNG sea transport route to Asia using ice-class LNG carriers (Total, 2017). This project is carried by the Russian company Novatek and the French company Total. It is also planned to implement projects in Vladivostok and the Baltic Sea, by Gazprom and Sakhalin Island, by Rosneft (Analytical Center for the Government of the Russian Federation, 2016).

LNG is exported by sea to the Asia-Pacific countries. During most part of the year, the ice-class tankers takes cargoes west from the Yamal peninsula to Asia. During winter, when the direct route is too icebound to be navigable, the ice-class tankers will take cargoes west from the Yamal peninsula to Europe. In Europe, the LNG will be loaded on to regular LNG tankers that will deliver the cargoes to Asia via the Suez Canal (EIA, 2016). Most of LNG has been contracted to Japanese and South Korean buyers under long-term supply agreements. In 2015, Sakhalin LNG exported over 500 billion cubic feet (bcf) of gas, which went to Japan (72%), South Korea (24%), Taiwan (2%), and China (2%) (EIA, 2016).

2.1.5. Nuclear energy

In 2015, Russia was the third-largest generator of nuclear electricity, with 7.6% of the world total production, behind the United States, with 32.3% and France, with 17%.

It has the fifth-largest installed nuclear capacity, with 25 gigawatts (GW) (IEA, 2017a), distributed across 36 operating nuclear reactors at 10 locations, nine of them are located west of the Ural Mountains and another one is the Bilibino plant in the far northeast (EIA, 2016). The Russian Federation's main uranium deposits can be found in four districts: The Trans-Ural district in the Kurgan region; the Streltsovskiy in the Transbaikal region, near the Chinese and Mongolian borders; the Vitimsky district in Buryatia; and the recently discovered remote Elkon district in the Sakha Republic (World Nuclear, 2017).

In 2016, Russia consumed 44.5 million tonnes of oil equivalent (Mtoe) of nuclear energy, the higher value of the last decade (BP, 2016) and it used 18.3% of the nuclear energy in total domestic electricity generation (IEA, 2017a). Rosatom is the leader Russia's state-owned nuclear company and is doing business at least 44 states (Rosatom, 2017). It controls all aspects of the nuclear sector in Russia, including uranium mining, fuel production, nuclear plant engineering and construction, generation of nuclear power, and nuclear plant decommissioning (EIA, 2016).

2.1.6. Renewable Energy

Renewable energies do not have a prominent position in Russia. In 2016, Russia consumed only 0.2Mtoe of renewable energy (BP, 2016). In 2015 Russia was in seventh place in the ranking concerning electricity generation by renewables, with 169 terawatt hours (TWh). Bioenergy and hydropower are the main sources of renewables in Russia's energy system. In the same year, Russia was the fifth producer of hydroelectricity, with 4.3% of the world total (IEA, 2017a). The remaining renewable power generation capacity is spread among solar, wind and geothermal resources. One of the largest solar power plants in the country is in Kaspiysk, Dagestan. The geothermal capacity is mainly located in the eastern part of Russia. A significant share of the total Bioenergy based generation capacity is located in the north-western part of the country. Solar, wind and small hydropower are mainly in the southern parts of Russia (Irena, 2017).

2.1.7. Electricity

Russia is one of the top producers and consumers of electric power in the world, with over 230 gigawatts of installed generation capacity. Fossil fuels are used to generate

about two-thirds of Russia's electricity, followed by hydropower (18%) and nuclear (16%). Most of the fossil fuel-fired generation comes from natural gas (EIA, 2016). In terms of generation, total electricity production from renewables reached 184TWh per year in 2015. Hydropower and Bioenergy accounted for almost all of this generation (182.8TWh/year). Wind had the lowest share of all (55GWh/year) (Irena, 2017). In 2015, total electricity consumption in Russia decreased by 0.4% in 2015 (Analytical Center for the Government of the Russian Federation, 2017).

2.2. Energy and Russian economy

Energy has always had a strong role to the Russian economy and to maintain the power that Russia holds in the international arena. In 1997, the President Vladimir Putin defended a thesis entitled *Strategic Planning of the Renewal of the Mineral-raw Materials Base of the Region in Conditions of the Formation of the Market Economy (St Petersburg and Leningrad Region)*, to obtain its doctoral degree in Economic Sciences at the St. Petersburg Mining Institute (Balzer, 2005; Jack, 2004). Though the content of the dissertation is not public, two years later, Putin (2006, p.50) published an article where he analyses that mineral raw material resources have an important potential for the country's economic development and that potential "permits viewing the raw materials complex as the basis for sustainable development of the country in a long-term perspective". Putin wrote that "when effectively utilized the natural resource potential becomes one of the most important preconditions for the sustainable entry of Russia into the world economy" factors (Putin, 2006, p.50), besides that "sustainable development based on natural resources means guaranteeing the economic security of the country through creating a reliable natural resource base to meet the current and future needs of Russia's economy, taking into consideration ecological, social, demographic, defence and other factors" (Putin, 2006, p.49).

However, this strategy is bringing challenges to Russia due to the heavily dependence that Russian economy has on the energy sector and energy exports. Energy resources play a crucial role in the Russian economy and Russia's Fuel and Energy complex contributes significantly to the socio-economic development of the country. "Russia enjoys vast energy and mineral resources which serve as a basis to develop its economy; as an instrument to implement domestic and foreign policy. The role of the

country on international energy markets determines, in many ways, its geopolitical influence” (Kupchinsky, 2009). Russia’s prime minister, Dmitri Medvedev (2015), explained that one reason why the *Energy Strategy of Russia for the period up to 2035* is important is precisely because “the fuel and energy complex accounts for over a quarter of the gross domestic product, almost 30 percent of the national budget, over two-thirds of export revenue and a quarter of total investments”.

In 2014, 51% of the state’s revenue came from oil and gas. By 2016, this percentage declined to 36% (Ministry of Finance of the Russian Federation, 2017), but continues to carry a huge importance. This decline can be justified by several factors, including the reduction of energy imports, Russia's strategy to diversify the economy, and the decline of oil prices. Oil is the largest product in the share of export revenues, while natural gas is the second most important resource, followed by coal. The hydrocarbons together are responsible for about 55% to 75% of the total Russian exports per year, dominating Russia’s exports profile. Non-hydrocarbon natural resources, such as metals, minerals and forestry products, are also important and account for around 8-9% of total Russian exports (Kuhrt and Feklyunina, 2017).

The share of the Fuel and Energy Complex in fixed assets’ investments and in the structure of federal budget revenues is about one third, about 50% in the structure revenues of the federal budget and more than half in Russian exports. The contribution of the energy complex to the country's GDP is about 25-26% (Ministry of Energy of the Russian Federation, 2017). The Russian economy went through a hard time in the last years and until early 2015, partially due to the fall of the oil prices, which inevitably led to the decrease in Russian federal budget incomes by 850 bln rubles (Analytical Center for the Government of the Russian Federation, 2017). The average rate of annual GDP growth over the last five years is just 1.2%. Also, the depreciation of the rouble has caused the dollar value of Russia’s GDP to shrink by over 40% between 2013 and 2015. In dollar term, the Russian economy is the 13th largest in the world, with \$1.3 trillion. However, measured at purchasing power parity Russia’s GDP was, despite the recession, \$3.4 trillion in 2015, making Russia the 6th largest economy in the world (Kuhrt and Feklyunina, 2017). The crisis also affected the energy sector, in particular the energy industries, because it heavily damaged the investment in Russia (Analytical Center for the Government of the Russian Federation, 2017).

This dependency can represent a challenge to Russia's national security and the Russian Government take it seriously. The *Russian National Security Strategy* (2015) considers that "one of the main avenues of ensuring national security in the sphere of the economy for the long term is an increase in the level of energy security, which includes stable provision of internal demand for standard-quality energy sources, a growth in energy efficiency and energy savings and in the competitiveness of Russian energy companies and producers of energy resources, the prevention of shortages of fuel and energy resources, the creation of strategic fuel reserves and reserve capacities, the production of subassemblies, and the stable functioning of energy and heat supply systems". The Russian Government (2017) approved in May 2017 the *Russian Federation Economic Security Strategy until 2030*, which aims to counter economic security challenges and threats, prevent crisis situations in the raw materials, production, science and technology, and financial sectors, and maintain people's living standards. The strategy relates the economic security with energy security and identifies as one of main challenges and threats to economic security the change in the structure of global demand for energy resources and consumption as well as the development of energy-saving technologies. One more challenge is the low rates of economic growth, conditioned by internal reasons, including limited access to long-term financial resources, inadequate development transport and energy infrastructure.

This excessive dependence on energy exports to maintain Russian economic development leaves Russia very vulnerable to actions over which it has no control. "The fact that the last three periods of economic distress have been preceded by downturns in natural resource prices offers a stark illustration of this vulnerability" (Kuhrt and Feklyunina, 2017).

According to *Energy Strategy of Russia for the period up to 2030* (2010, p.20), the decreasing energy intensity of the economy is the main objective of the Russian energy policy. Russia is aware of the vulnerabilities and the risks of an economy based on energy revenues and understands that it is necessary to restructure the Russian economy to solve the problem of dependence on energy exports, in order to create more opportunities to the country's socio-economic development. One of the main changes in the *Energy Strategy of Russia for the period up to 2035* compared to *Energy Strategy of Russia for the period up to 2030* is the idea that the Fuel and Energy Complex will be a stimulating infrastructure, creating the conditions for the development of the Russian

economy, instead of being a locomotive of economic development (The Russian Government, 2014, p.7).

CHAPTER III

Challenges to Russian Energy Security

3.1. Main external challenges to Russia's energy security

The global energy system has been in a constant process of change and evolution over the years, which consequently affects the dynamics between the energy markets, suppliers, importers and even transit countries. These dynamics have consequences to several energy actors, including Russia. Since 2014, Russia has been facing a geopolitical crisis, which was intensified by the introduction of a number of sanctions against Russia in the wake of the Crimea issue, as well as by the deep and steady drop of the oil prices that seriously damaged its FEC and its economy (Ministry of Energy of the Russian Federation, 2017). Consequently, Russia is facing a set of challenges to its energy security that may have serious consequences for the future of Russia's security when considering the role of energy in the country's socio-economic development. The *Energy Strategy of Russia for the period up to 2035* identifies some key internal and external challenges that are a major concern in terms of energy security. An internal challenge is any risk or threat to Russia's energy security, caused by domestic factors, inherent only to the Russian Federation, while an external challenge is any risk or threat to Russia's energy security, caused by external factors which Russia has no control over. In this dissertation we will only analyse the main external challenges.

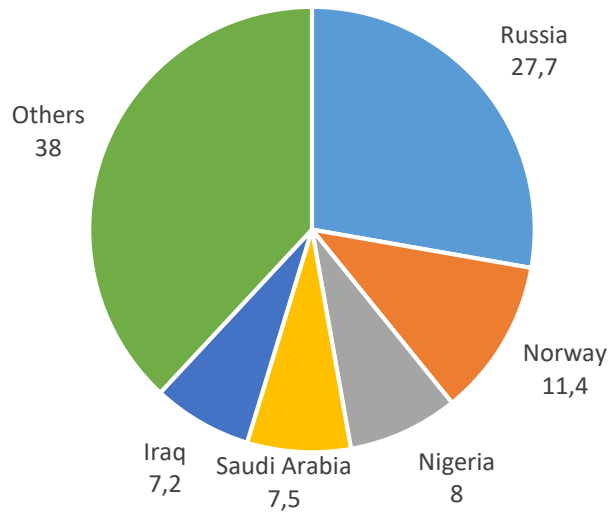
3.1.1. Slowdown of demand for Russian energy resources in traditional markets

The *Energy Strategy of Russia for the period up to 2035* identifies as a key challenge a possible stagnation or at least a significant slowdown of the external demand for Russian energy resources, in particular in the European market, its largest consumer (Ministry of Energy of the Russian Federation, 2017, p.6). The panorama of world energy markets is changing, and it is suffering substantial transformations in the volume and demand structure. This is happening due to the non-uniform economic growth and development of the different regions of the world; the inevitability of the new geopolitical and global

economic crises and the acceleration of changes in the technological structures. The desire of most countries to diversify their energy structure and to develop endogenous non-carbon energy sources, including non-traditional types of fuel, slows down the growth in demand for imports of hydrocarbons and narrow the Russian energy market. Although the current trends, Alexey Teksler, First Deputy Minister of Energy of the Russian Federation, affirmed, in a Forum about the future of hydrocarbons, that “it is too early to say traditional energy has died. In the next 15-20 years, the world will remain hydrocarbon, despite the slowdown in the rate of growth of traditional energy sources and a significant increase in renewable energy” (The Ministry of Energy of the Russian Federation, 2015).

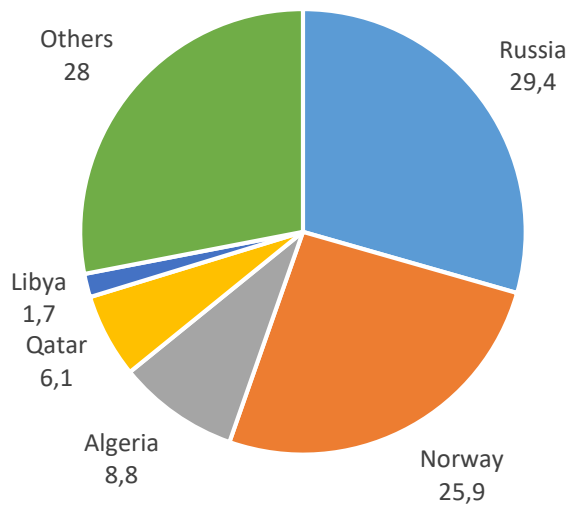
The increase of renewable energy and the development of distributed generation and storage as well as smart grids, may affect Russian energy security, essentially because this would reduce the energy dependence of important consumers, as Europe, which may lead to a decrease in the imports of Russian energy sources, consequently, causing economic, social and national security problems. Energy dependence is one the biggest challenge to European Union’s energy security. The domestic production of the EU is decreasing and has not been able to keep up with the demand, from 2013 to 2014 European gas production decreased 11.2%, which means it is necessary to increase its energy imports (Eurostat, 2016). In 2015, the EU had an energy dependence of 54% (Eurostat, 2017a). The main source of EU’s energy imports is Russia. In 2015, 27,7% of imported crude oil comes from Russia. The second largest exporter is Norway, with 11,4%, a much smaller percentage (Cf. Chart 15). Regarding natural gas, 55,3% of natural gas came from just two suppliers: Russia, with the largest percentage of 29,4%, and Norway with also an important percentage of 25,9% (Cf. Chart 16) (Eurostat, 2017).

Chart 15 - EU's crude oil imports by country, in 2015 (%)



Source: Eurostat, 2017a.

Chart 16 - EU's natural gas imports by country, in 2015 (%)

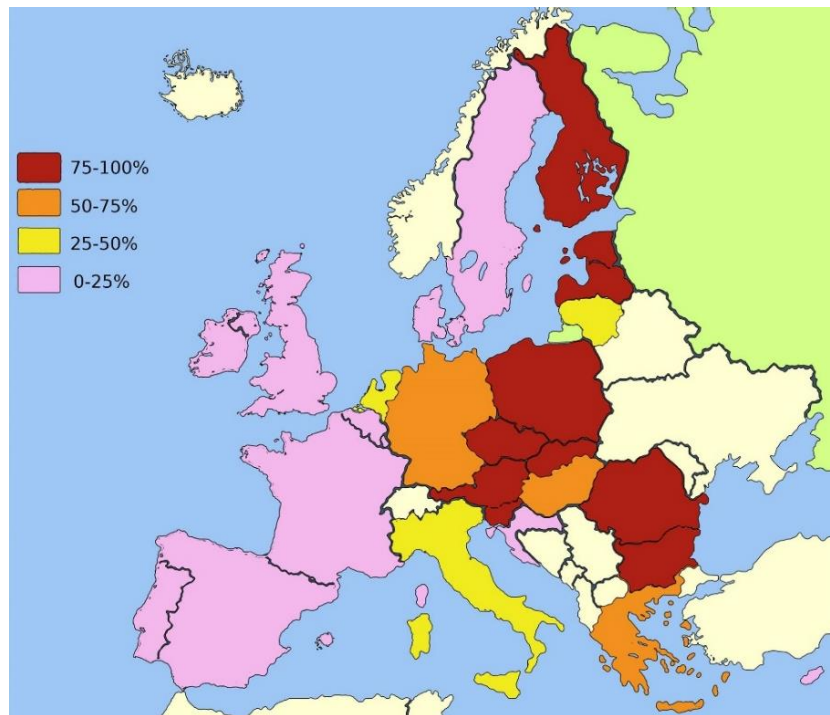


Source: Eurostat, 2017a.

Nevertheless, within the Member States, there are very different levels of dependence on Russian energy supplies. Countries such as Bulgaria, Czech Republic, Austria, Poland, Romania, Slovenia or Slovakia rely heavily on Russian gas exports, ranging from 75% to 100%. It is in these countries dependence is more serious and the concerns about security of supply are stronger. Others, as Germany or Greece, depend

between 50 and 75%, and a third group, such like Italy and Lithuania, depend on 25 to 50%. On the other hand, there are countries like Portugal and Spain that do not depend on Russia, or show a low level of dependence, as France (Cf. Fig. 2) (Eurostat, 2017).

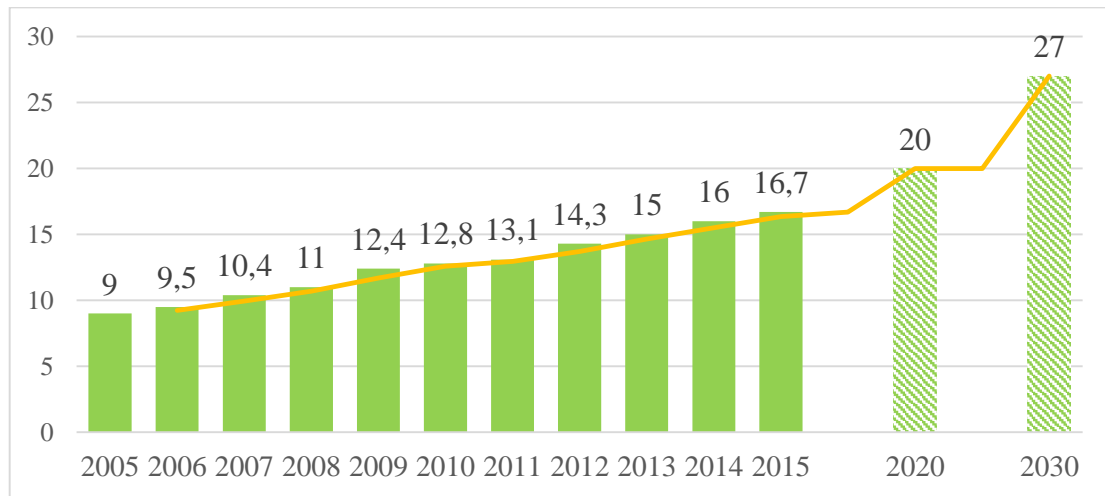
Fig. 2 - Share of Russia's natural gas in EU-28 imports, 2016 (%)



Source: Eurostat, 2017.

EU's energy security faces serious challenges giving these factors, consequently, to improve its energy security and ensure its security of supply, the European Union is developing a set of strategies and targets, as to diversify the supply sources and to reduce the import of fossil fuels by increasing the endogenous production of renewable energy and attempting to diversify its energy consume mix and increase the share of renewable energy sources in the energy balance (European Commission, 2014). Since 2005 until 2014 the share of energy from renewable sources in gross final consumption of energy increased from 9 to 16.0% (Cf. Chart 17) (Eurostat, 2016). The EU established long-term targets to 2020, which aims to achieve 20% of renewables in consumption, and to 2030, which intends to increase to 27% (European Commission, 2017).

Chart 17 - Share of renewable sources in energy gross final consumption, 2005-2014 and 2020 and 2030 Targets (%)



Source: Eurostat, 2016.

Since the EU depends on Russian resources, Russia equally relies on European market to exports its energy products, which is a major challenge to its energy security. As mentioned in the second chapter, in 2015, Russia exported 61% of its oil to Europe and 89% of its natural gas was exported to Europe (BP, 2016), making the EU the largest market to the Russian energy resources. Therefore, there is a strong relation of energy interdependence between the two players that, according to Kratochvi (2013), is somehow asymmetrical in favour of the EU, as Russia is more dependent on the European market than the EU is on the Russian energy supplies. Even though the lack of diversity in energy suppliers is a serious risk to the European energy security, the EU is capable of replacing the energy sources from Russia more easily than Russia can replace the EU imports (Kratochvi, 2013). For both sides the energy relationship is more than just a question of economic expediency. It is vital to their continued economic wellbeing and to their national values and objectives and thus represents a fundamental security question (Krickovic, 2015).

3.1.2. Strengthening of competition in energy markets and emergence of new energy producers and supply routes

One of the main challenges identified by the *Energy Strategy of Russia for the period up to 2035* is the emergence of new energy exporters and the increase of

competition in global markets due to a significant growth of unconventional hydrocarbon, namely in North America, which could decrease the competitiveness of Russian energy resources in foreign markets (Ministry of Energy of the Russian Federation, 2017, p.6). Furthermore, the development of breakthrough technologies can strengthen the competition in global markets and change the structure of international flows of energy, which creates a number of threats and new opportunities for Russia's FEC (Ministry of Energy of the Russian Federation, 2017, p.9)

The natural gas market is going through some changes, both in supply and in demand. The demand for energy is rising in some areas, mainly due to the increase of population and GDP. Population is projected to grow by around 1.5 billion people (BP, 2017) and the world's GDP is expected to rise by 3.0%/year from 2015 until 2040. These growths will require more energy, increasing the demand. More than half of this increase is expected to be on non-OECD countries, like China and India (EIA, 2017). The rising demand in Asia countries, related with the fast-growth of emerging economies, is affecting the dynamics of the gas market. Besides, the consuming patterns are also changing. The consumption of natural gas will grow faster than oil and coal, overtaking the last one, with a share of growth of 1.6% per year between 2015 and 2035 (BP, 2017).

On the supply side, the increase of unconventional gas production is one of the biggest changes. It was mainly visible in the U.S. because of the ongoing shale gas revolution, which brought new gas suppliers to the global energy market. Furthermore, market reforms in Argentina, Brazil, Egypt and Mexico can bring new investments and technologies to the gas industry (IEA, 2017b). The liquefaction capacity from Australia and the US is also increasing, which lead to a fast-growing LNG trade (IEA, 2017b). All of this is disrupting the traditional gas business and pricing models (IEA, 2017b). The shale gas boom in the United States made the U.S. the leader on natural gas production and allowed it to become a key exporter instead of an importer. U.S. LNG exports can lead to important changes in the international gas market, by diversifying supply sources and challenging traditional business models and suppliers. The increase of LNG creates competition with pipelines gas supplies, because it is much more flexible, competing with traditional long-distance gas trade, and contractual rigidities. This could benefit consumers and transform the global gas security (IEA, 2017). The increase of competition, the globalization of the energy market and the emergence of energy resources as shale gas, LNG and RES, can seriously affect the Russian market.

US LNG export capacity is expected to increase continuously over the next few years. The U.S. has a total capacity of 18.6 bcm/year, considering the projects that are already operational and under construction, it is expected that the total LNG export capacity will reach over 90bcm/year before 2020 (Charles River Associates, 2018). IEA estimates that the US will contribute for 40% of the world's extra gas production in 2022 and more than 50% of the production increase will be used for LNG export. This means that, in 2022, the U.S. can be on course to challenge Australia and Qatar in what concerns to leadership in LNG exporters (IEA, 2017). Despite the modest position of the U.S. as an LNG supplier in the EU, these changes can lead the US LNG to become more competitive in Europe. In the third quarter of 2017, the EU's share of LNG imports was 16%, the highest over the last four years. Imports from the US reached 0.84 bcm, a record level, covering 6% of total EU LNG imports. At the same time, Lithuania became the eighth MS to import LNG from the US (European Commission, 2017d). Netherland and Poland also received their first U.S. LNG delivery on the beginner of June 2017. The U.S State affirmed that it "has worked closely with European partners to diversify European energy supplies through new sources of natural gas, vital interconnectors and new facilities to import LNG" and it intend to contribute to strengthen Europe's energy security (U.S. Department of State, 2017). Poland's President Andrzej Duda confirmed that the country is expecting to sign a long-term deal for LNG supplies from the U.S. to reduce its dependence on Russian gas. Piotr Wozniak, CEO of the PGNiG, said in a statement that the "delivery shows that Poland can successfully serve as a gateway for US LNG to our part of Europe" (Elliott and Easton, 2017).

Poland is one of the EU's country that most depends on Russia's natural gas (Eurostat, 2017b). Poland consumes about 16bcm of gas per year, majority coming from Russia based on a long-term deal with Gazprom which expires in 2022 (Gocłowski and Rampton, 2017). Besides the LNG from the U.S. coming to its terminal at the Baltic Sea (Gocłowski and Rampton, 2017), another alternative to the Russian gas is to transport the supplies from Norway via one planned Project of Common Interest (PCI), the Baltic Pipe Project, which is an infrastructure project that will create a new gas supply corridor in the European market, transporting gas from the Norwegian gas system in the North Sea to Poland and Denmark, enabling the supply to Swedish market too. It is planned to become operational in 2022 (Baltic Pipe Project, 2017). Another important PCI in Poland is the North-South Gas Corridor, which connects the LNG Terminal in Świnoujście, with the

Baltic Pipe, through central Poland, the Czech Republic, Slovakia and Hungary with the proposed Adria LNG terminal in Croatia. It aims to increase the integration of regional gas markets and security of supply in Eastern Europe, which depends heavily on Russian gas, by enabling access to new sources of supply (Gaz-System, 2017).

Australia is also having a boom in the production of LNG. In 2015-2016, the country's production increased 48% and it exported 37mt of LNG (APPEA, 2017), having China, Japan and Korea as the main importers (Reuters, 2017). In 2019, LNG exports are expected to reach 74mt (Williams, 2017). This boost will come from three projects that will add 21mt to Australia's LNG export capacity: (i) Chevron's Wheatstone, currently starting up; (ii) Inpex Corp's Ichthys, and (iii) Royal Dutch Shell's Prelude, both projected to start in 2018 (Reuters, 2017) (Williams, 2017). Giving these developments, Australia is on track to overtake Qatar as the world's biggest exporter of shipped gas by 2019 (Fickling, D., 2017). Considering the growth of suppliers as U.S. and Australia, Qatar, an important partner to the EU in what concern to natural gas, is planning to expand its export capacity by lifting the self-imposed ban on development of its North field, the largest non-associated natural gas³ field in the world, with recoverable reserves of over 900 trillion standard cubic feet (tscf), or approximately 10% of the world's known reserves (Clemente, 2017). Qatar intend to maintain its leadership on LNG market, when global LNG market is strengthening (Finn, 2017).

To improve its energy security and ensure its security of supply, the European Union needs to diversify its energy suppliers to decrease its dependence on Russian energy resources. This make Europe an important market for US LNG exports, since it can be a source of diversification and competition in the gas market to improve the EU's energy security of supply (European Commission, 2017b). One of the strategies is to diversify energy infrastructures, as such in 2013 the EU settled a list with key energy infrastructure projects known as Projects of Common Interest (PCI), for example new gas pipelines and LNG terminals, that should be implemented as a matter of priority and urgency that focus on the regions identified as vulnerable in the EU gas stress tests of 2014 (Cf. Fig. 3). In 2017, the list was updated and identified 173 PCI (European Commission, 2017a). These projects aim to connect the European energy network and to help to create an integrated EU energy market. The implementation of these projects

³ Natural gas which is in reservoirs that do not contain significant quantities of crude oil (Oil & Gas Field Technical Terms Glossary, 2017).

would reduce the EU's dependency on a single-source and give MS access to LNG, either via terminals or indirectly via inter-connectors (European Commission, 2017c). Despite the planned PCIs, the EU LNG terminals are not completely distributed across Europe. There is a need to develop a connected network that makes possible the trade within the MS as well as building new terminals in strategic locations and improving access to existing ones. Only after that, energy security in European countries that are more vulnerable and have a strong dependence on a restricted number of suppliers will be improved (European Commission, 2016).

Fig. 3 - Projects of Common Interest – Natural Gas



Source: European Commission, 2017b.

Other than the new emerging suppliers, new transit countries and routes can also become a challenge to Russia. One of the biggest PCI is the Southern Gas Corridor (SGC), which has been promoted by the Commission as a key infrastructure to ensure the EU's energy security and security of supply, as well as to reduce its dependence on Russian gas. SGC is one of the most ambitious projects undertaking, involving many countries and companies and intends to change the gas market (BP, 2017b). The SGC is a set of infrastructure projects aimed to improve energy security of the EU's and diversifying energy supplies by bringing natural gas from the Caspian region to Europe. The projects, which represent an investment of approximately US\$50 billion, stretch over 3,500

kilometres, crossing seven countries and involving more than a dozen major energy companies (TAP, 2017). In 2019-2020 it is expected that it will transport approximately 10bcm of gas. However, the EU aims to increase the capacity from 80 to 100bcm of gas per year in the future (European Commission, 2017b).

The Southern Gas Corridor consists in several energy projects. One of them is the Shah Deniz 2, that will produce gas offshore in the Caspian Sea and add 16bcm/year of gas production to the approximately 9bcm produced by Shah Deniz 1 (BP, 2017a). To make possible for this gas to reach Europe is required an enhancement of some existing infrastructure and the development of new pipelines. The natural gas processing plant at the Sangachal Terminal on the Caspian Sea coast in Azerbaijan will be expanded, as well as the Italian gas transmission network, and there are possibilities for further connections to gas networks in South Eastern, Central and Western Europe (TAP, 2017).

Besides, there are three pipeline projects: (i) South Caucasus Pipeline Expansion (SCPX); (ii) Trans Anatolian Pipeline (TANAP) and (iii) Trans Adriatic Pipeline (TAP). The SCPX is an expansion of the existing South Caucasus Pipeline (SCP) with a new parallel pipeline across Azerbaijan to the Georgia-Turkey border, which will triple the gas volumes exported to over 20bcm. The TANAP will transport natural gas produced by Azerbaijan's Shah Deniz-2 gas field over 1850km, from the Turkish border with Georgia to the Greek border (TANAP, 2017a). The pipeline will transport 16bcm, 5 of which will be delivered to Turkey. The capacity is expected to rise to 25bcm and later to 31bcm by additional investments (TANAP, 2017). The TAP, with 878km, will connect with the TANAP, from Greece-Turkey border, passing through Albania, traversing the Adriatic Sea until reach the Southern Italy coast (Cf. Fig. 4) (TAP, 2017a). From then, the purpose is to reach many European markets (TAP, 2017) (Bankwatch Network, 2017).

Fig. 4 – Southern Gas Corridor



Source: BP, 2018.

The Eastern Mediterranean Pipeline (EastMed) is another key project to European energy security. It was identified as a PCI in 2016 and it aims to transport natural gas through an offshore and onshore pipeline from East Mediterranean to Greece, via Cyprus and Crete, connecting the Poseidon pipeline to Italy (Cf. Fig. 5) (IGI Poseidon, 2017). EastMed is a €6 billion pipeline (Zahr, 2017) with 2000km (1.300km offshore and 600km onshore) that is projected to transport 10bcm per year in the beginning. It is considered an important project because it could (i) enhance the EU gas security of supply; (ii) develop the EU's resources such as the offshore gas reserves around Cyprus and Greece; and (iii) promote the development of a South Mediterranean Gas Hub (Edison, 2017). In the end of 2017, Italy, Greece, Cyprus and Israel signed a memorandum of supporting the construction of EastMed (Reuters, 2017b). The EastMed could be an important alternative to Russian gas and, consequently, a challenge to Russian energy security. However, the prices are not expected to be as much competitive as the prices of Russian gas (Zahr, 2017).

Fig. 5 - EastMed



Source: Edison, 2017.

3.1.3. The sanctions and the difficult access to investment

The lack of technological development has been one of the major obstacles to Russia's development. Wear and tear of FEC's capital assets is almost 60%. Over 90% of the existing power plants, 83% of buildings, 70% of boilers, 70% of the power grid equipment, and 66% of heating networks were built before 1990 (Kuznetsova and Kuznetsova, 2015). The *Energy Strategy of Russia for the period up to 2035* identify the technological backwardness of the Russian Fuel and Energy Complex regarding the level of developed countries, as one of the main problems to the sector's development (Ministry of Energy of the Russian Federation, 2017, p.5). In 2016, the Russian Prime Minister Dmitry Medvedev declared, in a meeting to discuss Russia's Energy Strategy to 2035, that "one of the challenges facing us is the dependence of our energy sector on foreign technology and equipment" (Medvedev, 2016a). The high level of dependence on imports of certain types of technological equipment, materials and services from other countries is one of the main factor that prevents the development and innovation of the sector, as well as low rates of renovation of infrastructure and production, high dependence on external economic conditions, unstable energy markets and limited opportunities to attract affordable long-term financial resources (Ministry of Energy of the Russian Federation, 2017, p.5).

Russian energy dependence on foreign technology, equipment, materials, software and services has reached a critical level in certain areas and created a threat to Russia's energy security. In particular, this applies to hydraulic fracturing technology, directional drilling, drilling software processes and production of hydrocarbons, flexible tubing, catalysts for refining and petro chemistry, gas turbines high power, hydraulic excavators and shearers driving coal reservoirs large capacity, the automated control systems, digital transmission systems information and in general IT-equipment in the power industry (Ministry of Energy of the Russian Federation, 2017, p.47).

The technological backwardness has been exacerbated by the sanctions imposed by the European Union and the United States that are precisely blocking the access to the technological materials that Russia needs and delaying the implementation of investment projects in this area. The use of discriminatory measures in key sectors of the Russian economy that restrict the access to foreign financial resources and modern technologies is one of the biggest challenges and partially responsible for the weak innovative activity and backlog in the development and introduction of new technologies. (Ministry of Economic Development of the Russian Federation, 2017).

In 2014, the European Union considered that Russia “violated international law by annexing Crimea and allegedly fomenting separatist uprisings in the eastern Ukrainian region of Donbass” (Russel, 2016). As a response the EU adopted of several diplomatic measures in March 2014, such as: the cancellation of the EU-Russia summit and the Member States (MS) decided not to hold regular bilateral summits; bilateral talks with Russia on visa matters as well as on the new agreement between the EU and Russia were suspended; instead of the G8 summit in Sochi, a G7 meeting was held in Brussels on 4-5 June 2014. Since then, meetings have continued within the G7 process; the EU countries also supported the suspension of negotiations over Russia's joining the Organisation for Economic Cooperation and Development (OECD) and the IEA. This was followed by asset freezes and visa bans targeted at 149 individuals and 38 entities; restrictions on economic relations with Crimea and Sevastopol; economic sanctions targeting exchanges with Russia in specific economic sectors and measures concerning economic cooperation, namely the European Investment Bank (EIB) and European Bank for Reconstruction and Development (EBRD) were requested to suspend the signature of new financing operations in Russia and EU bilateral and regional cooperation programmes with Russia

was re-assessed and certain programmes suspended (Council of the European Union, 2017).

The United States (U.S.) also imposed a series of progressively tighter sanctions on Russia which limited the access of Russian firms to US capital markets, namely: Novatek, Rosneft, GazpromNeft and Transneft. As well as the prohibition of the export of goods, services or technology in support of deep-water, Arctic offshore, or shale projects to Russia. Before the sanctions, many companies such as ExxonMobil, Eni, Statoil or China National Petroleum Corporation (CNPC) partnered with Rosneft to explore the Arctic offshore and shale projects, however after the sanctions some Western companies have ceased their involvement. Arctic offshore and shale resources are unlikely to be developed without the help of Western companies, which will not strongly influence Russian production in the short term since the resources are only expected to start producing in 5 to 10 years. The direct effect of these sanctions has been to halt the large-scale investments that Western firms had planned to make in these resources (EIA, 2016).

There are differences between the EU and the U.S.'s sanctions, whereas the EU's restrictions on the energy sector allow activities under prior agreements, US measures do not. US list of sanctioned persons is shorter and includes some different people; and also US economic sanctions target both oil and gas companies, while EU sanctions only concern the oil sector, so there are no obstacles to new pipelines, such as Nord Stream 2, probably so they do not affect Russian gas supplies to Europe. Sanctions did not mean to reduce Russia's short-term ability to export oil and gas, because this could damage the European energy security. Nevertheless, the longer sanctions continue, the harder it will be for Russia to maintain production of oil and gas at current levels (Russel, 2016). Apart from the US and EU, Albania, Australia, Canada, Iceland, Japan, Liechtenstein, Moldova, Montenegro, Norway, Switzerland and Ukraine have adopted similar measures (Russel, 2016).

Among several restrictive measures imposed by the EU, to "curtail Russian access to certain sensitive technologies and services that can be used for oil production and exploration" (Council of the European Union, 2017) is the one that affects the most the Russia's technological development and restrains the exploration of new geological areas. The technologies banned include: drilling units, horizontal drilling equipment, offshore drilling rigs to be used in the Arctic, software for hydraulic fracturing, remotely operated

underwater vehicles, high pressure pumps, drill pipes and casing, equipment for industrial purification of natural gas and several other units (Bros and Mitrova, 2016). Some of the largest Russian energy companies were seriously affected, such as the leading oil producer Rosneft that experienced a hard-hit from the financial restrictions due to its large foreign currency debt and Novatek has had trouble raising the US\$27 billion it needs for its Yamal project because the access to US capital is blocked (Russel, 2016). These sanctions coupled with low energy prices could lead to delays in long and medium-term key projects such as Yamal LNG and cause severe damage to the Russian economy (Bros and Mitrova, 2016). However, sanctions did not end all cooperation. For example, BP is in the process of acquiring a 20% stake in the east Siberian Taas-Yuriakh field, while Norway's Statoil is still cooperating with Rosneft on oil fields such as North-Komsomolskoye, below the Arctic Circle, which means it is outside the scope of sanctions (Russel, 2016).

3.1.4. Instability of world energy markets and volatility of oil prices

A great part of Russia's budget comes from energy revenues, reason why Russian economy heavily depends on energy supplies, and so the energy global prices is one of main external factors that influences its economy (Idrisov, 2015). The *Energy Strategy of Russia for the period up to 2030* had already mentioned the instability of the world energy markets and volatility of energy prices as a main challenge faced by Russia (Ministry of Energy of the Russian Federation, 2010, p.14). Furthermore, the development of advanced technologies, the new dynamics of energy markets, the increase of demand, the development of unconventional energy resources and renewable energies, as well as the strengthening competition by new suppliers are changing the global energy market and the international energy flows and prices, which challenge Russia's energy security and stability. The *Energy Strategy of Russia for the period up to 2035* identify the relatively low prices and the high volatility of prices, especially on oil market, as one of the key challenges to Russian energy security (Ministry of Energy of the Russian Federation, 2017, p.18).

Price volatility is a major concern as it “alters the system of relative prices to which market participants have to adjust, causing macroeconomic transition costs” (Johansson, 2013, p.252). Enno Harks (2010) identified several factors that influence the

price volatility, as (i) the shrinking level of market information; (ii) the erosion of spare production capacity, (iii) tensions in the Middle East, and (iv) the massive influx of financial investors on the oil spot and paper markets. Ayhan Demirbas (2017, p.267) identified two kinds of factors: invariant and variable. Invariant factors are associated with costs of “exploration, drilling, production, distribution, marketing and packaging and storage, and chemical composition”. While variable factors are related with “levels of oil production and consumption, global economic activity, exchange value of the US dollar (\$), current supply and demand, geopolitical reasons, weather-related developments, and political events” (Demirbas, 2017, p.2). All of these factors are somehow interconnected. The price will depend on the investments that will influence the level of production. When the demand sudden increased, for example during cold weather, if the production does not follow up, it will drive the prices up. In the other hand, if there is a high level of supply with regard to demand, the prices will drop. In periods of economic crises and global downturn, the demand will reduce, which will drop the prices. Besides, oil is valued in US dollars and, consequently, when dollar is deflated, the price will be cheaper (Demirbas, 2017, p.2).

Price volatility has costs for both consumers and producers. However, consuming and producing countries have different interest with regard to energy prices. For consuming countries, it is desirable to have prices at a low level, but without hampering the development of supply in order to meet the demand. In the other hand, producing countries want to keep prices as high as possible without reducing the demand (Johansson, 2013). For producer countries with budgets heavily dependent on energy revenues, as the Russian Federation, it means that they will have unpredictable revenues, causing instability of their economies. Likewise, it causes uncertainties in what concern to investments and planned projects (Harks, 2010). It is of a great interest for exporting countries that prices stay stable in order to maintain the incomes stable, and to keep the level of production and exportation (Harks, 2010). Natural resources prices and revenues play an essential role in Russia’s economy. However, “Russia is a price taker, not a price maker, on global natural resources markets”. Russian companies have a small degree of market power and do not have a strong price-forming influence (Kuhrt and Feklyunina, 2017, p.21). There are some controversy and a lack of consensus with regard to the correlation between Russia’s economic growth and oil prices. In the 2000s, Russia went through an exponential economic growth, which coincided with strong increases in world

oil prices, what can mean that higher prices boost economic growth. However, in 2013 and 2014, oil prices were higher, but the economic growth did not keep up with it (Idrisov, 2015).

In recent years, the oil market has been characterized by frequently drops in the oil price. Oversupply is one of the factors that has played a major role to the fall of crude oil prices, especially in OPEC (Demirbas, 2017). In 2015, the OPEC MS refused to reduce their production, which brought down prices by more than half. If the production was reduced the prices could have been higher (Analytical Center for the Government of the Russian Federation, 2017). Brent crude oil price, measured in U.S. dollars per barrel, declined by 47% versus 2014, and the price for the first half of 2016 decreased 31% in comparison to the first half of 2015. In rubles, the price declined 16% from 2014 to 2015, and 16% from the first half of 2015 to the first half of 2016 (EIA, 2016a). Consequently, Russian federal budget revenues from oil and natural gas fell by 21% and 29%, respectively (EIA, 2016a). The Russian companies did not suffer strong negative impacts. Rosneft even increased its capital expenditure on exploration and production by 30% comparing with 2014. Rosneft's capital expenditure in the first half of 2016 was 33% higher than in the first half of 2015. However, Lukoil's spending declined 11% in 2015 versus 2014, and expenditures in the first half of 2016 were 2% lower than in the first half of 2015 (EIA, 2016a). Higher prices correspond to a higher level of production of goods and services by the domestic economy, as well as greater wealth for Russian economic agents (Idrisov, 2015). Consequently, lower prices in the energy market have the opposite effect and can serious damage Russia's security and economic development.

CHAPTER IV

Russia's Energy Strategy

“Russia is an energy superpower that uses its vast resources as the basis of economic development and as an instrument for carrying out domestic and foreign policy”

Joseph A. Stanislaw, 2008⁴

4.1. Russia's Energy Strategy

The forecast of energy markets and industries is essential to understand the future of the energy panorama and make decisions on major investments to reinforce Russia's position (Makarov, 2012). The importance of the Russian energy sector in the global energy market and the role of FEC's revenues for the national economy and State's budget requires the establishment of a long-term strategy for energy. The strategy identified the major internal and external challenges and recognize the need for development of long-term measures to deal with the existing problems in the energy sector, by setting priorities and guidelines in different phases of implementation.

Russia has so far had three documents that define its energy strategy. The first strategy implemented, the *Energy Strategy of Russia for the period up to 2020*, in 2003, acknowledged Russia's FEC as the basis for economic development and a tool for conducting internal and foreign policies and assumed that the role of the country in the world energy markets determines its geopolitical influence (Ministry of Energy of the Russian Federation, 2003). The ES-2020's main goal was to maximize the use of energy resources and the potential of energy sector in order to fulfil the purposes of economic growth and improvement of quality of life of the country's population (Ministry of Energy of the Russian Federation, 2003). The *Energy Strategy of Russia for the period up to 2030*, approved in 2009, maintain the same goal of the previous one but embrace new priorities related with innovation and efficiency of Russia's energy sector. The ES-2030 identified “new guidelines for the development of the energy sector in the transition of

⁴ Stanislaw, J., 2008. *Power play – Resource nationalism, the global scramble for energy, and the need for mutual interdependence*. Deloitte Center for Energy Solutions. p.9

Russian economy to the innovative path of development” (Ministry of Energy of the Russian Federation, 2010, p.10). The draft of *Energy Strategy of Russia for the period up to 2035* has a new perspective. The ES-2035 understands that internal and external challenges, new dynamics in economic parameters and resource-technological potential of the Russian energy sector show the need to make changes in the model of its development, by speeding up innovative development and structural adjustment. Its main goal is a “structurally and qualitatively new stage of Russia’s energy sector, contributing to its socio-economic development” (Ministry of Energy of the Russian Federation, 2017, p.13). One of the major differences between the ES-2035 and the ES-2030 is that the FEC should stop being a driver of the Russian economy, to become a stimulating infrastructure instead, providing conditions for integration, development and diversification (Bushuyev, 2014) (Kapitonov, 2017).

Kirill Molodtsov, Deputy Minister of Energy of the Russian Federation, affirmed that the *Energy Strategy of Russia for the period up to 2035* is one of the main documents that sets the guidelines for the energy sector and regional development programs of the Russian oil and gas complex. He explained that ES-2035’s main goal is the transition of the country’s energy sector through structural transformation to a higher new level, maximizing the dynamic social and economic development of the Russian Federation. As the main tasks of the Strategy, the Ministry pointed: (i) ensuring the needs of the country’s social and economic development with energy services and products; (ii) improving the territorial-production structure of the fuel and energy complex, taking into account the priorities and directions of regional and spatial development of Russia; (iii) the need to diversify export flows and maintain leadership positions in the world energy and (iv) ensuring the technological independence of the energy sector (Molodtsov, 2017).

4.2. Russia’s Foreign Energy Policy

Foreign Energy Policy is a component of Russia’s Energy Strategies. In the ES-2020, Foreign Energy Policy’s main goals were the integration of Russia in the world energy system and strengthening of Russia’s position in the world energy markets; international cooperation in the development of fuel and energy resources and accessibility for Russian energy companies to foreign energy markets, advanced energy technologies and foreign investment (Ministry of Energy of the Russian Federation, 2003, p.41). The ES-2030 identified Foreign Energy Policy’s main objective as “the maximum

efficient use of the Russian energy potential for full-scale integration into the world energy market, enhancement of positions thereon and gaining the highest possible profit for the national economy” (Ministry of Energy of the Russian Federation, 2010, p.55). To the ES-2035, Russia’s Foreign Energy Policy aims the preservation and strengthening country’s position as one of the leaders of the world energy market, reducing risks and increasing the efficiency of foreign economic activities of Russian energy companies (Ministry of Energy of the Russian Federation, 2017, p.59).

4.2.1. Cooperation with traditional consumers

In regard to energy, the Russian Federation and the European Union have a strong relation of interdependence. Russia is aware of the importance of the EU as a strategic partner to ensure the exports of energy resources, which gives it economic advantages and a geopolitical position in Europe, that Russia has no interest in compromise.

The *Energy Strategy of Russia for the period up to 2020* published in 2003 already recognized the importance of Western and Central European countries as one of the largest market to Russia’s energy exports (Ministry of Energy of the Russian Federation, 2003, p.54) and emphasized the desire to remain a stable and reliable partner for European states and contribute to international energy security, while strengthening its position on energy global markets (Ministry of Energy of the Russian Federation, 2003, p.41). The *Energy Strategy of Russia for the period up to 2030* also stressed the importance of energy dialogue that were being actively conducted with European Union, among others energy actors (Ministry of Energy of the Russian Federation, 2010, p.56) and intended to further develop energy cooperation with the EU (Ministry of Energy of the Russian Federation, 2010, p.58). Later, the *Energy Strategy of Russia for the period up to 2035* also identifies as an important part of its strategy the “development of constructive dialogue with the European Union on a long-term Energy cooperation and mutual interests” (Ministry of Energy of the Russian Federation, 2017, p.60), bearing in mind a stable relation with traditional consumers of Russian of energy resources, to keep the share of the Russian energy exports in the world market (Bushuyev, 2014).

Challenges as a possible slowdown in demand for Russian energy resources and the strengthening of competition and the instability in energy markets require the adaptation of Russian energy system to the current market trends. That could be made by

increasing the flexibility in long-term contracts without destroying their basic principles (Analytical Center for the Government of the Russian Federation, 2014). New LNG supplies and the fast-growth of production capacity are changing the energy market and increasing competition. Oversupply of LNG is making the prices fall. These factors increase the need for Russia to make changes (Henderson and Mitrova, 2016). One concern of consumers is the Gazprom's long-term contract with price-locks, that must be more flexible (Rapoza, 2017). Nevertheless, Russia is aware of the risks of competition, and Gazprom, is already replacing long-term gas supply contract to shorter ones, making more flexible prices and started to partially use spot prices as reference points (Slav, 2017).

One of the ES-2020's goal was the development of an active and constructive dialogue with the European Union in the energy field (Ministry of Energy of the Russian Federation, 2003, p.42). However, in the course of the crisis in Ukraine, on which the EU and Russia have very different points of view, the energy dialogue EU-Russia was suspended. There has not been held any official meeting between the Russian government and the European Commission. Nevertheless, cooperation is still happening at working-level in issues of mutual interest. The Ukraine issue changed the relation, but it is vital to make efforts to return the dialogue and further cooperation. Sanctions imposed by the EU are one of barriers to the improvement of the relation. Despite the negative impacts of this, energy supplies from Russia to EU continued to rise. It is fundamental for both sides to restore the energy dialogue to discuss the changes in the energy market and the future of Russia-EU trade (Zagorski and Zellner, 2016).

The *Foreign Policy Concept of the Russian Federation*, approved by the President Vladimir Putin on November 30, 2016, assumed that the EU remains an important trade, economic and foreign policy partner for Russia. For that reason, the RF "is interested in a constructive, stable and predictable cooperation with EU countries based on the principles of equality and respect for each other's interests" (Ministry of Foreign Affairs of the Russian Federation, 2016). The development of a stable relation with the EU implies the improvement of legal contractual framework and institutional cooperation mechanisms, to "ensure mutual benefit and the best possible configuration of partnership ties, including in the energy segment" (Ministry of Foreign Affairs of the Russian Federation, 2016).

According to the ES-2020, the cooperation between Russia and the European partners would include the implementation of joint investment projects, a wide involvement of European investors in projects for the development of oil and gas production on Russian territories, and cooperation on energy saving, (Ministry of Energy of the Russian Federation, 2003, p.52) as well as the exchange of experience in advanced scientific and technical developments (Ministry of Energy of the Russian Federation, 2003, p.54). Bressand (2010) also identified three areas of cooperation that energy producers and consumers can develop: (i) protection against short-term interruptions in oil and gas supplies, by natural or political reasons; (ii) promotion of long-term investment in resources development; (iii) increasing role of governments in influencing energy-resources depletion and consumption paths.

Interdependence is a key vulnerability for energy security of both actors. Consequently, the EU is trying to reduce its dependence by various means: increase of endogenous production and renewable energy; diversification of suppliers, new infrastructures projects, etc. However, reduce its dependence increases energy security risks for Russia. Therefore, it “looks like a classic security dilemma – where neither side can improve its own security without threatening the security of the other side” (Krickovic, 2015, p.3). To understand the risks associated with this mutual dependence and maintain the relations with the EU at the level of cooperation is essential to avoid the risks and costs. “Energy interdependence and the growing scale of energy trade require continuing collaboration among both producers and consumers to ensure the security of the entire supply chain” (Yergin, 2006, p. 78).

Russia’s Prime Minister Dmitry Medvedev recognize this interdependence and argued that if the EU stops buying Russian energy resources, it would be a problem for both. Unlike some European actors, Russia tries not to securitize the issue, Medvedev affirmed, in an interview for the German newspaper Handelsblatt, that “mutual dependence is called business” (Medvedev, 2016). The ES-2035 foresees that the export of Russian natural gas to Europe has the potential for growth, regardless of the EU’s strategy of diversification and the competition with LNG supplies (Ministry of Energy of the Russian Federation, 2017).

The Russia’s relations of cooperation with Europe are different according to the country. Germany is the biggest Russia’s energy partner within the EU. Therefore, Russia aims to maintain the good relations with Germany, in particular regarding energy. On the

occasion of German Unity Day, President Vladimir Putin affirmed that “Russia attaches great importance to preserving the positive potential accumulated in relations with Germany over a long period. We hope that the year of regional-municipal partnerships, which is an extension of ‘cross years’, will promote wider mutually beneficial bilateral relations in various spheres” (Tass, 2017b). The ES-2030, recognizing the high risks associated to the gas transit routes to Europe (Ministry of Energy of the Russian Federation, 2010, p.76) and, at the same time, assuming that the European market would remain the main destination to Russian energy exports for the entire implementation period of the strategy (Ministry of Energy of the Russian Federation, 2010, p.23), defined a strategy focused on reducing transit risks, including the improvement of export infrastructures with the construction of Nord Stream project, which aimed the diversification of Russia’s transit routes to the European market to ensure reliable supplies (Ministry of Energy of the Russian Federation, 2010, p.56).

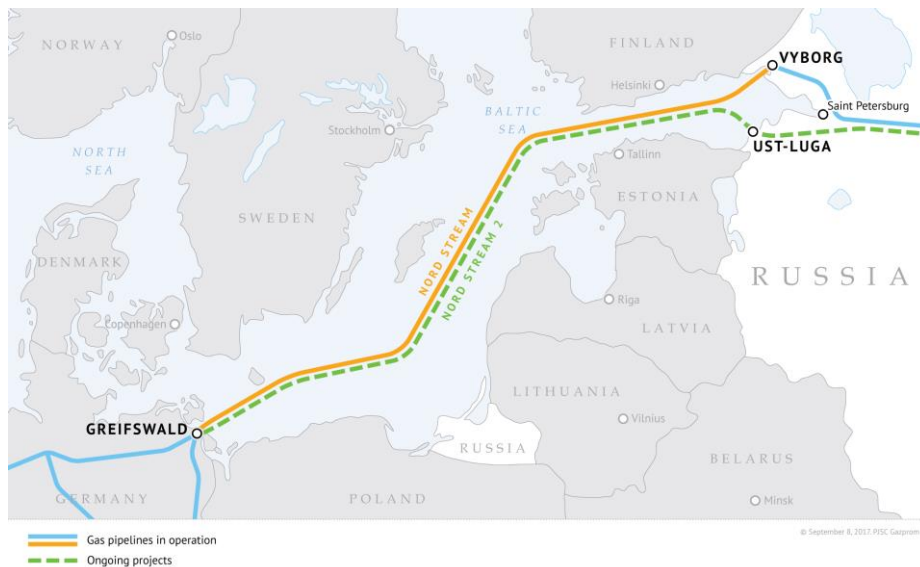
The Nord Stream pipeline connects the Russian gas directly to the EU market and was an element that strengthened the relation between Russia and Germany. It is an infrastructure of two twin pipelines with 1,224 km that transport Russian gas from Vyborg to Lubmin, in Germany. They have been operational since 2011 and 2012, respectively, and have a combined capacity of about 55 bcm of gas a year. Gazprom is the major shareholder with 51%, followed by the German companies Wintershall Holding GmbH and PEGI/E.ON with 15.5% each, and the Dutch company N.V. Nederlandse Gasunie, along with the French ENGIE, with 9% each (Nord Stream, 2017a). In October 2015, Nord Stream has transported 100bcm of Russian gas to the EU (Nord Stream, 2017).

The success of the Nord Stream and the importance of Germany’s energy imports to Russia’s economy and security, justified the interest of building the Nord Stream 2 (Cf. Fig. 6). The ES-2035 identified the Nord Stream as a fundamental route for the export of Russian gas to Europe and pointed out its ongoing expansion - Nord Stream 2 (Ministry of Energy of the Russian Federation, 2017, p.23). The Russian Government understands that challenges to its energy security as: *(i)* the increasing competition in world market due to the development of the LNG market; *(ii)* the reduction or slowdown in gas demand in Europe, in part to reduce the risks of transit of energy resources; and *(iii)* the sanctions imposed to Russian oil and gas companies that affect the supply of modern technology and equipment used for exploration and development of Russian deep-water, and the attraction of long-term investments; will require strong answers to preserve the position

reached by the Russian gas industry (Ministry of Energy of the Russian Federation, 2017, p.24). In that matter, Nord Stream 2 can bring more security and benefits for Russia.

According to Butler (2017) Nord Stream 2 is also a strategy to overcome the volatility of prices, “with the oil price beyond control, Russia has every incentive to maximise its revenue from gas sales and to maintain its share of the European gas market by whatever means.” Nord Stream 2 project is a 1.200km pipeline with a capacity of 55bcm of gas per year, led by Gazprom, which will transport gas from Ust-Luga, Russia to Greifswald, Germany, across the Baltic Sea, similar to what already happens with the Nord Stream. Both Nord Stream and Nord Stream 2 will have a capacity of 110bcm per year and ensure a reliable supply to Europe (Gazprom, 2017a).

Fig. 6 – Nord Stream 2



Source: Gazprom, 2017a

Russia considers that the commercial project will bring benefits for all participants (The Russian Government, 2016a). The tensions and unreliable relations between Russia and Ukraine are a big concern to Russian energy security. This new pipeline is extremely important to Russia to end its reliance on Ukraine, its main transit route to supply the EU markets, and the uncertainties about the transit route. Also, the Nord Stream 2 could make Russia save up about €1.8billion a year in transit fees in Ukraine (Dempsey, 2015) and it would be a shorter and cheaper route from Yamal gas field (EPRS, 2017). On the

European side, Germany wants to make an energy transition from coal and nuclear to a cleaner energy, as renewable sources and natural gas. The Nord Stream 2 could increase Germany's capacity to embrace this transition. Given the context of insecurity of transit routes through Ukraine and the concerns about the EU's energy security, the Nord Stream 2 could make Germany an important hub for distributions across the Europe (Zha and Shiryayevskaya, 2017). Also it "is crucial for making gas deliveries to Europe more reliable" (The Russian Government, 2016a).

The cooperation with Germany is also expanded at the technological level, and may be important to overcome the need for technological investments. Despite the problems between Russia and the EU, Dmitry Medvedev underlined the importance of German business and its contributions to Russia's development by sharing knowledge, technology and continued investment. The Prime Minister argued that "there is no alternative to cooperation" (The Russian Government, 2016). This cooperation with German can also open a possibility to end the sanctions. Russia's Prime Minister considers that sanctions are blocking opportunities and profits for both sides (The Russian Government, 2016). German businesses continue to establish some of the previous trade ties (Noack, 2017). Germany was firmly against the new United States' sanctions against Russia, because they could harm German economy and damage energy projects, as Nord Stream 2, that are important to Germany's energy security. Also, they are considered infective. Brigitte Zyprie, German Minister for Economic Affairs and Energy, considers "this as being against international law" (Reuters, 2017a).

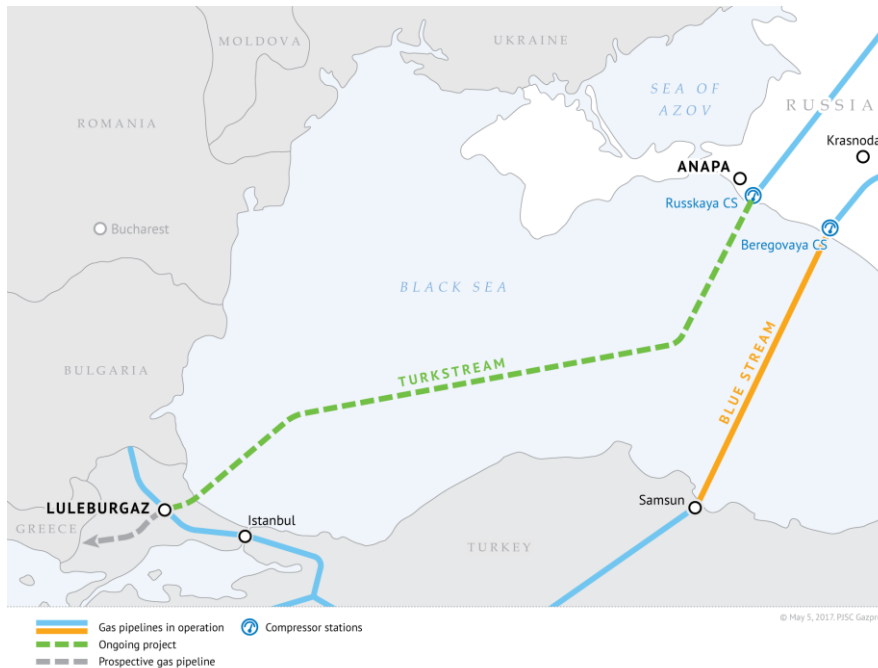
Italy is another European country that has been harmed by sanctions against Russia. Vito Petrocelli, Italian parliament member from the Five Star Movement party, said "there is absolutely no benefit from these sanctions" (RT, 2016). Italy's party Forza Italia, led by Silvio Berlusconi, is also against the extension of the EU's anti-Russian sanctions (Tass, 2017). Italy is one of the main Russia's partners within the EU. During Russia-Italy talks, the President Vladimir Putin affirmed the intention of continue to develop an effective cooperation with Italy in the energy field, arguing that "Russia is Italy's biggest natural gas supplier, covering 43 percent of its gas demand" (Putin, 2017). Russia-Italy cooperation is essential to overcome some challenges, as the need for investment. Despite the sanctions, Intesa Sanpaolo, Italy's largest bank, signed an agreement with Independent Petroleum Company that is seeking to raise \$5.8bn for a new drilling project. On top of that, Rosneft and Eni signed an Extension Cooperation

Agreement in May, 2017. There were previous agreements for the joint development of exploration activities in the Russian Barents Sea and Black Sea (ENI, 2017). Also, in 2013, both companies signed a declaration on development of the Russia's Arctic shelf (Tass, 2017a). This new agreement will evaluate the use of ENI's technology for processing heavy oil residues at Rosneft's refineries (ENI, 2017a). The agreement will cover the following areas: "exploration and production of hydrocarbons, refining, trading, logistics, marketing and sales, petrochemicals, technology and innovation" (Rosneft, 2017).

Although not a member of the European Union, Turkey is another European country that has important energy relations with Russia. Turkey is the second largest consumer of Russian natural gas in the European market (BP, 2016). The gas cooperation between Russia and Turkey started in 1984, with the signature of an agreement on natural gas supplies to Turkey (Gazprom, 2014). Until 2003, the Russian gas reached Turkey only via Trans-Balkan pipelines. Then, it started to be transported by Blue Stream as well (Coote, 2017), that was identified as a key infrastructure project planned in the ES-2030 (Ministry of Energy of the Russian Federation, 2010, p.56).

The Russia's Energy Strategy up to 2035 highlights a new pipeline project for Turkey – the TurkStream (Ministry of Energy of the Russian Federation, 2017, p.24). It will transport natural gas from Russkaya compressor station, at Russia, across the Black Sea, to Turkey's Western Coast near Kivikoy, with an onshore section to Ipsala, near Turkey-Greece border. The pipeline will be composed by two strings: the first one will deliver gas to Turkish consumers, while the second string intend to reach the southern and south-eastern Europe (Cf. Fig. 7). The construction of the first string of the TurkStream pipeline started on May 2017, in the Black Sea near the Russian coast (Gazprom, 2017d).

Fig. 7 - TurkStream



Source: Gazprom, 2017d.

TurkStream will have a capacity of 63bcm (14 bcm to Turkish market and about 50bcm will be conveyed to a delivery point in Turkey-Greece border) (Gazprom, 2014). It is expected that TurkStream substantially improves the reliability of gas supply to Turkey, and to southern and South-Eastern Europe (Gazprom, 2017d), and further develops the Russia-Turkey partnership and cooperation in the energy field, as Russia will rely on Turkey as a transit country to reach the EU's energy market (Haddad, 2017).

4.2.2. Diversification of Russia's energy export markets and products

A possible slowdown of demand for energy Russian resources in traditional markets and the strengthening of competition in energy markets, due to the emergence of new energy producers and supply routes are serious challenges that Russia's energy security is facing and that can put in risk the Russian position in the global energy market. Therefore, Russia recognize the need to adapt to the new market's trends. Nevertheless, not all changes in the energy market have negative impacts on Russian energy security. In the foreseeable future, the changes in the demand side, in particular, the expected fast-

growth of energy demand and consumption in Asian countries can bring new opportunities to Russia.

Henderson and Mitrova (2016) believed Asia-Pacific is more open to doing business with Russia than Europe. Russia and China are neighbour countries with a long historic relation. During the Cold War the basis of the relation was the political ideology, nowadays the economic dynamics unites the two global actors. They have strong commercial ties, dominated essentially by the trade of hydrocarbons. In 2015, energy resources represented 67% of total exports from Russia to China. Presently, oil and coal are the main resources exported, but in the future, natural gas is expected to represent a major resource in Russia-China trade, due to China's measures to reduce its dependence of coal because of environmental concerns (Henderson and Mitrova, 2016).

The energy expert Daniel Yergin (2006) argued that “the key to energy security has been diversification”, and Eiras (2011, p.18) considers that “diversification is the fundamental principle of energy security both for the oil and natural gas”. The Russian Prime Minister Dmitry Medvedev also affirmed that considering the global changes in the world markets and growing competition there is a need for a balanced export policy, that provides the possibility to expand areas and formats of energy cooperation, as Russia seriously needs to diversify its energy exports, both in terms of geography and product structure (Medvedev, D., 2016a). Taking into account the efforts of the EU to reduce its dependence on Russian energy resources, it seems extremely important that Russia adopt a strategy of diversification of its export markets, and turning to Asian markets, in particular to China, may be the right strategy.

In 2003, Russia had already thought about the diversification of energy markets and the expansion of its geographic presence to maintain energy and economic security (Ministry of Energy of the Russian Federation, 2003, p.41). The ES-2020 intended to develop and to increase oil and gas production in the Eastern Siberia, in order to supply the markets of the Asia-Pacific region (Ministry of Energy of the Russian Federation, 2003, p.45). As a result, it planned the construction of Angarsk – Nakhodka oil pipeline project to ensure the access to the APR market (Ministry of Energy of the Russian Federation, 2003, p.70). The ES-2030 also aimed the diversification of Russian hydrocarbons export destinations, by increasing the exports to APR, and established a set of measures that targeted the construction of industrial, transport and social infrastructures in the Eastern region of Russia that would make possible the

diversification (Ministry of Energy of the Russian Federation, 2010, p.60). It planned the implementation of an integrated gas supply system in the Eastern Siberia and Far East, along with the construction of gas pipelines and LNG projects and infrastructures, enhancing the diversification of Russia's gas export markets by allowing supplies to Korea and China in the first place (Ministry of Energy of the Russian Federation, 2010, p. 79).

The *Energy Strategy of Russia for the period up to 2035* identifies as a central strategy to overcome the current challenges the diversification the geographical structure of energy exports, with a significant increase in the share of Asia-Pacific Region, recognizing the necessity to intensify the energy cooperation and dialogue with Asian consumers (Ministry of Energy of the Russian Federation, 2017, p.14). In addition, it highlights the promotion of Russian commodity structure diversification and the expansion of Russian energy exports, contributing to increase competitiveness and strengthening the position of Russian companies abroad, including the provision of non-discriminatory and favourable treatment of domestic energy and service companies in foreign energy markets, including the markets final energy (Ministry of Energy of the Russian Federation, 2017, p.59). Henderson and Mitrova (2016, p.5) consider that “if the business of selling raw hydrocarbons can be matured into upstream and downstream partnerships which involve Russian companies participating in the sale of energy to end-users in consuming markets”, energy can be used for the reinforcement of geopolitical alliances with emerging powers in Asia, attenuating the negative impacts of current relations with the West.

The success of Russia-China energy relation requires a radical increase of Russia's flexibility of energy exports and larges investments in the development of proper energy and transport infrastructure (Ministry of Energy of the Russian Federation, 2017, p.7). Energy Minister Alexander Novak understand that it is necessary to build new enterprises, modern transports, industrial infrastructures and equipment and believes that Russia has “a unique experience in the creation, operation, and financing of the largest infrastructure systems in all branches of the fuel and energy complex” (Ministry of Energy of the Russian Federation, 2016a). Russia's Prime Minister Medvedev argued that is imperative to pursue a flexible export policy, expanding the energy exports list, minimising costs and improving transport infrastructures for the development of new

fields and to expand exports, in order to maintain its leading position in global energy production (Medvedev, 2015).

Russia can position itself as a strategic partner in order to satisfy Chinese energy needs. The Minister of Energy, Alexander Novak, believes that the eastern regions of Russia have the necessary resource base to do it (Ministry of Energy of the Russian Federation, 2016a). The new gas production centres and the integrated gas system will ensure Russia's capacity to provide long-term supplies to Russian consumers in the Eastern part of the country and to export to APR countries (Gazprom, 2017). The annual increase of oil production in Eastern Siberia and the Far East is about 10%. By 2016, it reached 70mt per year. By 2035, it is expected to reach 120mt per year, only in these regions. As for gas, the eastern region produced about 45bcm per year. In the future, this value is expected to increase to 135 bcm (Ministry of Energy of the Russian Federation, 2016a).

The construction of the Eastern Siberia and Pacific Ocean (ESPO) pipeline was an essential project that allowed to drain the oil production in Eastern Siberia and the Far East. The project represented the first step of the strategy and made possible an exponential increase of oil exports to China. EPSO is a 4,188km oil pipeline that exports Russian crude oil to Asia Pacific markets (Hydrocarbons Technology, 2017). The construction of the initial stage of the pipeline (ESPO-1) started in 2006, from Taishet to Skovorodino, with a capacity of 30mt per year. From Skovorodino to Mohe, in the Chinese border, was constructed another branch with a capacity of 15mt, with a further extension to Daqing. The project was completed in 2010. The second part of the pipeline (ESPO-2), to Kozmino Bay, with a 30mt per year capacity was completed in 2012. Later, in 2014, the pipeline's capacity was increased to 58mt/year with the addition of new pumping stations and storage tanks (Henderson and Mitrova, 2016, p.29).

The construction of ESPO meant new contracts between Rosneft and Chinese companies and an increase capacity of oil exports and geographic diversity of Russian exports. In 2015, Russia's oil exports to China increased substantially, representing a volume of 42.43 million metric tons (mmt) (China Daily Europe, 2016), which means an increase of more than the double of the volume from 2010 (Røseth, 2017), and a 28% increase compared to 2014 (China Daily Europe, 2016). President Vladimir Putin considers that energy is a priority area of cooperation between the two countries and highlights the importance of Russia as a leading oil supplier to China, as "in 2016, Russia

exported 27.3 million tonnes under inter-governmental agreements alone. Total exports, including commercial contracts, amount to 52.5 million tonnes” (Putin, 2017a).

In 2003, the ES-2020 distinguished China, Korea, Japan and India as promising markets for gas, oil, electricity and nuclear energy, and projected an increase in the Russian oil exports to APR from 3 to 30%, in 2020, and up 15% to natural gas (Ministry of Energy of the Russian Federation, 2003, p.55). In the same way, the ES-2030 foresaw an increase in the share of the Asia-Pacific countries in the structure of the Russian energy export to 16–17%, in the first phase of implementation, followed by an increase to 21–22% in the second phase and, later, to 26–27% until 2030 (Ministry of Energy of the Russian Federation, 2010, p.166). The ES-2035 considers that the maintenance of Russia as a top leader in production and exportation of energy resources depends on its capacity to diversify its geographically supplies, and expects an increase in the share fuel and energy total exports to Asia-Pacific to 30–40% until 2035, a much larger percentage than the expected in the previously energy strategies (Ministry of Energy of the Russian Federation, 2017, p.66). In the oil market, the supplies to the APR are expected to increase, and the current volumes of exports to Europe are expected to maintain, with a possible slight decrease by the end of the period under review.

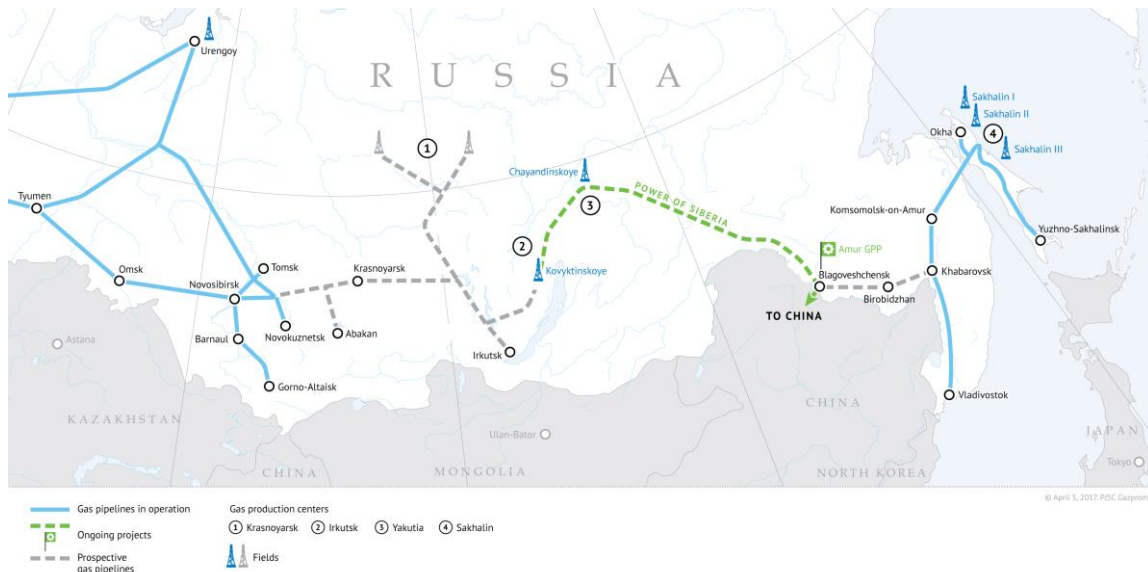
Coal supplies also have prospects of growth in markets as India, Malaysia, and Vietnam, but its potential is largely dependent on its competitiveness and transportation costs (Ministry of Energy of the Russian Federation, 2017, p.7). Russia expects to maintain its position in the European gas market and, simultaneously, foresees that by the end of 2035 more than a third of Russian gas exports will be to the APR countries, projecting an increase of natural gas and LNG exports to APR to 27–29% (Ministry of Energy of the Russian Federation, 2017, p.66).

This increase of natural gas exports will only be possible with the development of a new project in Eastern direction emphasized in the ES-2035 – the Power of Siberia (Ministry of Energy of the Russian Federation, 2017, p.24). Power of Siberia is one major route and a key element to the improvement of Russia-China energy relations. Russia is planning the construction of a set of energy infrastructures between the two countries that aims to allow the export of natural gas from East Siberia Russian consumers to China (Cf. Fig. 8). The project will have 4,000km and an estimated capacity of 38bcm per year (Gazprom, 2014a). The first agreement of supply was signed in May 2014. Gazprom and CNPC negotiated a \$400 billion deal to supply up to 38bcm of gas a year to China over

30 years, by the planned Power of Siberia pipeline (Henderson and Mehdi, 2017). A few months later, Russia and China signed a framework for one more agreement where Russia will supply 30bcm a year over 30 years via the planned Altai pipeline, now titled Power of Siberia – 2 (Orlov, 2016). However, the discussion about this pipeline are now stalled due to uncertainties and disagreements (Stronski and Ng, 2018). The Power of Siberia has also been suffering delays, resulted from divergences in the negotiations. Only two years after the agreement, Gazprom received a \$2.2 billion loan from Bank of China to the pipeline’s financing (Stronski and Ng, 2018).

The construction of Power of Siberia’s first section started in September 2014. The pipeline goes from Chayandinskoye field to Blagoveshchensk, in the Chinese border, along 2,200km. Then, a section with 800km from the Kovyktinskoye field to the Chayandinskoye field will be built, and another section from Svobodny to Khabrorovsk, with 1000km (Gazprom, 2014a). The third stage consists in expanding the gas transmission capacity of Chayandinskoye and Blagoveshchensk fields (Gazprom, 2017b). On December 2015, Gazprom and CNPC signed an agreement on the construction of the gas pipeline’s cross-border section. On September 2016, both companies signed an Engineering, Procurement and Construction (EPC) contract for the construction of the submerged cross-border section under the Amur River. In China’s territory, the construction works started in April 2017 (Gazprom Export, 2017). Alexei Miller, Gazprom’s Top Executive, confirmed that by the end of 2019 Russia will supply gas to China and is convinced that “the facility is a crucial link in the chain of gas supplies to China” (Graeber, 2017). President Vladimir Putin called it “the deal the biggest in the history of Russia’s gas industry” (The Economist, 2014). The Deputy Director of the National Energy Security Fund (NESF) Alexei Grivach, believes that the Power of Siberia will solve the gas deficit in the northeast of China and make possible to reduce the dominance of coal in those provinces (EurAsia Daily, 2017).

Fig. 8 – Power of Siberia



Source: Gazprom, 2017b.

Although the eventual benefits of this new projects, Stronski and Ng (2018) argued that China is being able to push for favourable terms, “due to China’s lower urgency for gas and Russia’s isolation from the West”. Prices have not yet been negotiated, but it is expected that China will pay less than the European partners, which brings some questions to the viability of the projects (Stronski and Ng, 2018). Konstantin Simonov, director of the NESF, argued that China understands the importance of gas contracts and it is as much interested as Russia. However, it is negotiating hard and trying to take advantage from Russia’s needs (Gorshkov, 2014). Simonov affirmed that Russia is a comfortable choice for China due to its gas prices and its geographical proximity, and he believes that “cooperation in the field of energy is today the backbone of our economic interaction”, considering energy cooperation between the two countries as mutually beneficial (China Daily Europe, 2016). Alexey Grivach considers that for Russia, the agreements signed between Gazprom and CNPC are an important element to enhance the development of gas fields in Eastern Siberia and Far East and, consequently, the socio-economic development of the region. However, he recognizes that are risks associated, because China is the only importer of this gas. Yet, it is natural to have this kind of dependency in supplier-consumer deliveries from pipelines. In order to prevent the associated risks, Russia concluded the long-term contracts with a take-or-pay clause, “which protects the supplier from the sole importer’s whims” (Grivach, 2014).

Russia-China energy cooperation have a huge potential and may be crucial to ensure Russian energy security. Nevertheless, the European market remains vital to Russia, and it is not trying to replace it by tuning to Asia. Zagorski and Zellner (2016) considers that the Asian market is an increasingly important supplement, rather than an alternative to Russia-Europe cooperation. Russian Prime Minister Medvedev argued that Russia must increase its presence in new fast-growing markets, primarily, the APR, while honouring its obligations towards European customers (Medvedev, 2015). Alexey Grivach argued that the supplies to China will not directly affect gas supplies to the European market, as new gas fields will be developed in Eastern Siberia, “which can hardly be used for gas exports to Europe”. Also, Gazprom’s long-term contracts with Europe in the next 25 years are completely insured. Contract with China only represents about 25% of current European proceeds, however, exports to China will indeed be a new source of export revenue and diversification, that can reduce Russia’s financial dependence on gas sales to European countries, and if Russia and China boost their cooperation, the gas sales revenues might increase to 45-50% (Grivach, 2014).

4.2.3. Cooperation within the BRICS and the Eurasian Economic Union

Considering the quickly increasing of market competition, the acceleration of the development of new technologies and, simultaneously, the high volatility of oil prices, Russia’s energy security is becoming much more vulnerable. Therefore, Russia badly needs to follow up the new trends of the energy sector and attract investment, technology and human capital to the Russian FEC. To make it possible, Alexander Novak argued that “it is necessary to involve foreign partners in all parts of the production chain - from the extraction and transportation of energy resources to their deep processing, generation of electricity, and promotion” (Novak, 2016). It is crucial to increase the implementation of joint projects with leading companies in other countries. In view of that, the Energy Minister considers that BRICS (Brazil, Russia, India, China and South Africa) have a huge potential for further energy cooperation, as they have many common interests and similar economic problems, in particular the dependence on high technology imports (Novak, 2016). Novak (2016) proposed to “significantly deepen economic cooperation, creating joint research and development (R&D) projects and promoting high-tech products in the fuel and energy sector”.

Bearing in mind the potential of BRICS energy cooperation, the *Energy Strategy of Russia for the period up to 2035* intend to expand the directions and formats of energy cooperation with member countries of BRICS, and to promote technological cooperation with it (Ministry of Energy of the Russian Federation, 2017, p.60). It was the first time that cooperation with BRICS was considerate in Russia's energy strategies, as previously strategies did not mention it. Nevertheless, the ES-2020 also supported the cooperation with foreign companies to develop joint projects in Russia's national production, benefiting from advanced foreign technologies (Ministry of Energy of the Russian Federation, 2003, p. 25) and emphasized the importance of international cooperation in scientific and technical areas to create favourable conditions and mechanisms to enhance Russia's development. However, it only underlined the cooperation with CIS countries (Ministry of Energy of the Russian Federation, 2003, p.112).

BRICS plays an important role in international energy security, as the countries are major players in energy supply and demand (Sahu, 2016). In 2017, the Ministry of Energy of Russian Federation established that the key goals for international cooperation area were the expansion of technological cooperation and the creation of modern oil and gas production equipment and scientific centres, together with Arab investors and BRICS countries (Ministry of Energy of the Russian Federation, 2016b). Sergey Lavrov, the Russian Foreign Minister highlighted that BRICS "is an important element of network diplomacy" and "for promoting the coinciding interests of the participants" (Mastepanov, 2016). Regardless of BRICS countries have different energy panoramas and diverse levels of technological advances, all countries share common goals as energy efficiency or the development of environmentally friendly technologies. Thus, they understand the importance of promoting energy cooperation between the BRICS, by sharing experiences in areas related to energy development, production and consumption (Mastepanov, 2016).

In recent years, there has been several advances in energy cooperation within the BRICS. In July 2015, BRICS countries met in the Seventh BRICS Summit, in Ufa, Russia, where they adopted the Strategy for the BRICS Economic Partnership, which intend to expand cooperation at several levels, namely in trade and investment, manufacturing and minerals processing, energy, science, technology and innovation and financial cooperation. In what concern to energy, the Strategy for Economic Partnership defined that countries should concentrate their efforts in the following priority areas (i) increasing the level of awareness of the needs of producing and energy consuming

countries; (ii) providing mutual support for the diversification of energy supplies; (iii) development of energy infrastructure; (iv) promoting universal access to energy; (v) increasing the level of energy efficiency, including the joint development and share of energy-efficient and cleaner energy technologies; (vi) introduction of environmental friendly technologies of production, storage and consumption of energy resources; (vii) promoting the use of renewable energy sources; (viii) increasing the efficiency clean energy sources, such as natural gas (BRICS, 2015).

The strategy settles that BRICS energy cooperation will develop within the framework of regular energy dialogue, cooperation for investments and research on advanced energy technologies, strengthen cooperation between public and private sectors and exchange of information on national policies, statistical data and forecasts (BRICS, 2015). In this Summit, BRICS signed a Memorandum focused on energy saving in the BRICS that aims to promote the access to energy efficient technologies, through cooperation in joint scientific and technological research, conferences and seminars, capacity building and technology transfer and sharing energy policies (Higher School of Economics, 2015).

The Ufa Declaration, resulted from the Seventh BRICS Summit, highlighted the investment in areas such as infrastructure, logistics and renewable sources of energy, to fulfil the goal of sustainable growth of BRICS's economies (BRICS, 2017). BRICS expressed their interest in joining efforts to face the challenge of competitiveness, collaborating for the promotion of investment opportunities. The Article 69 of the Ufa Declaration noted that "recognizing the importance of monitoring global trends in the energy sector, including making forecasts of energy consumption, developing recommendations for the development of energy markets, for ensuring energy security and economic development", they encourage their relevant bodies to consider the possibilities of energy cooperation within the BRICS (BRICS, 2017). It proposed to balance the interest of energy consumers, producers and transit countries, aiming to create the necessary conditions for a sustainable development of the energy markets. The declaration reaffirmed the necessity of advancing international cooperation in energy saving, energy efficiency and developing energy efficient technologies. In the wake of the Summit, Russia proposed the first meeting of the BRICS Ministers of Energy, preceded by the meeting of Working Group on Energy and Energy Efficiency. The group

express their desire of jointly develop energy efficient technologies and equipment and further their cooperation in this field (BRICS, 2017).

Russia is the country which is making more efforts to further develop BRICS energy cooperation. The country proposed a Roadmap for Trade, Economic and Investment Cooperation until 2020, which includes over 50 projects, namely in the area of Energy and Environmental Protection (UNIDO, 2015). In the framework of the roadmap, it was proposed to establish a BRICS Energy Association, which would include a Fuel Reserve Bank and an Energy Policy Institute, aiming to provide joint studies on energy and energy security and analysis on outlooks on energy markets (Duggan, 2015). The Energy Association would include regular Summits of global energy companies, implementation of joint investment projects; analytical reviews on energy, creation of partnerships that facilitating development of fair oil price benchmarks and cooperation in innovative energy technologies, among many others (UNIDO, 2015). President Vladimir Putin argued that this association would “help create new instruments and institutions to strengthen energy security for all the countries involved” (Mirzadeh, 2014).

Minister of Industry and Trade of the Russian Federation, Denis Manturov, said BRICS states "are united in their desire to improve their positions in the struggle for technological leadership in the global market” (International Centre for Trade and Sustainable Development, 2017). In June 2017, Energy Ministers of BRICS met to discuss the possibility of establishing the BRICS Energy Research Cooperation Platform. Russia is convinced that the “joint analysis of natural resources reserves, markets and technological capacities will contribute to increasing the efficiency of cooperation in energy sector within BRICS framework” (Sputnik, 2017). Russia's Security Council Secretary, Nikolai Patrushev, argued that BRICS should invest in the exploration of new energy deposits, “which are often located in remote areas and which exploitation would be difficult from the technological standpoint” (Sputnik, 2017). Therefore, the BRICS Energy Research Cooperation Platform could be an opportunity to increase countries’ capacities to exploit those areas (Sputnik, 2017).

Sharova (2015) argued that BRICS have a considerable potential for the exchange of experience in innovative technologies and it could be an opportunity to overcome technological backwardness from Western states. The European countries used to be primarily partners in financial and technological investments to develop Russian energy resources, namely in the Arctic. However, the deterioration of Russia’s relations

with Western countries and the negative impacts of the sanctions, including difficulties to obtain financial deals, reveal the importance and the urgency of consider other countries as potential investors and partners in energy and technological cooperation. Cooperation within BRICS countries is a great opportunity for Russia to minimize the impact of Western sanctions, reinforce its positions in the global economy and ensure sustainable innovative and technological development of the country. Among BRICS countries, China is the most significant partner of Russia, followed by India, Brazil and South Africa (Sharova, 2015). Considering the present outlook, China can become a very important partner to increase Russian energy security and face those challenges. Russia-China energy cooperation focuses in different areas, including energy technology. Russia and China have a great potential to cooperate on “the exploration of non-conventional oil and gas, and the development of new energy technologies” (Lifan and Chengzhi, 2015).

Cooperation with China may be essential to successfully develop the eastern Siberia’s drillings and pipelines, which involves huge costs. Chinese investment can be crucial to several projects of Rosneft and Gazprom. Skalamera (2016, p.100) argued that “China is committing to provide the financial liquidity that Russian companies need, in exchange for increased equity in Russia's upstream and control over the prices of the oil and gas supplies”. China sees a great potential in the Russian Far East, Siberia and the Russian Arctic due to the importance of energy resources, export markets and new shipping and trading routes to China’s “One Belt, One Road” initiative (Klimenko and Sørensen, 2017). Western sanctions forced Russia to look for an alternative source of investment and technology, which consequently bring Russia and China closer (Stronski and Ng, 2018). The sanctions represented an opportunity for Chinese companies to approach Russia’s energy projects and increase their technological cooperation in the oil and gas sectors. The Yamal LNG project has been the best example of China investment in Russian energy projects.

On December 2017, Yamal LNG project’s started producing LNG. The Yamal LNG plant is the world's largest natural gas project in the Arctic region and is planned to start with a production capacity of 5.5 Mt/year, with three production lines that will supply 4 Mt of LNG to China per year (China Plus, 2017). The \$27 billion project is mostly owned by Novatek, with 50.1% stake, followed by Total and CNPC, with 20% each. Due to Western sanction limiting financial and technological investment, China becomes the most attractive partner. China covered two-thirds of external lending needs.

Besides, China's COSCO has also held a 50% stake in the four LNG shipping carriers from Yamal. (Stronski and Ng, 2018). Chinese Silk Road Fund purchased 9.9% of the project for approximately €1.09 billion and provided a \$790 million loan for the project. Chinese banks also provide a 15-year loan of 12 billion dollars (Røseth, 2017). Moreover, Chinese engineers have been assisting in the construction of surrounding infrastructures, including a Chinese-produced polar drilling rig (Stronski and Ng, 2018).

Chinese investment is essential to cover up the Russian financial needs, namely in the development of infrastructure and resource extraction. Not disregarding the importance of energy cooperation with China, Russia is also concentrating its focus on other players in Eurasian region, namely through the straightening of energy cooperation with Eurasian Economic Union (EAEU). The *Energy Strategy of Russia for the period up to 2035* considers that, to overcome the current challenges to the Russian energy security, is important to develop efforts to create a “common energy market of the Eurasian Economic Union”, including crude oil, petroleum products, natural gas and electric power (Ministry of Energy of the Russian Federation, 2017, p.60). The ES-2035 defined that the common market would be regulated by the general principles of energy sector and it would provide free movement of energy flows, energy services and technology, as well as investments in the energy sector, including coordinated policy in the field of subsoil use and regulation of energy markets (Ministry of Energy of the Russian Federation, 2017, p.60). The previous strategies had already highlighted the importance that the region has to Russia. The ES-2020 supported the development of energy dialogue in the old Eurasian Economic Community (Ministry of Energy of the Russian Federation, 2003, p.42) and the ES-2030 emphasized the development of energy cooperation with the countries of the Eurasian Economic Union (Ministry of Energy of the Russian Federation, 2010, p.58).

In 2014, Russia, Belarus and Kazakhstan signed the founding treaty of the Eurasian Economic Union, to which Armenia and Kyrgyzstan joined (Pastukhova and Westphal, 2016). On January 1, 2015, the EAEU was established. In the same year, Russia presents a proposal for a common energy market. The article 81 of the Treaty on the Eurasian Economic Union already considered the “formation of a Common Energy Market of the EAEU” (World Trade Organization, 2014). According to the article 79, the common market should be based on the following fundamental principles: (i) ensuring market pricing for energy resources; (ii) ensuring the development of competition in the

common markets of energy resources; (iii) no technical, administrative and other barriers to trade in energy resources, equipment, technology and related services; (iv) ensuring the development of a transport infrastructure for the common markets of energy resources; (v) ensuring non-discriminatory conditions for economic entities of the Member States in the common markets of energy resources; (vi) creation of favourable conditions to attract investments in the energy sector of the Member States; and (vii) harmonization of national rules and regulations for the functioning of the process and business infrastructure of the common markets of energy resources (World Trade Organization, 2014). Adamkul Zhunusov, Minister of Energy and Infrastructure of the Eurasian Economic Commission (EEC), affirmed that “before July 1, 2018 the Agreement on the formation of a common energy market of the Union and five documents defining the rules of the market must be developed” (Eurasian Economic Commission, 2017).

Russian Energy Minister, Alexander Novak, identified the formation of a common energy market as the key task in the Eurasian direction (Novak, 2016). This initiative would represent one of the world’s largest energy markets, in a strategic localization, between Europe and Asia (Pastukhova and Westphal, 2016). Russia considers that economic prosperity of the EAEU members depends on the stability of energy sector. The establishment of the common market in the EAEU is very important to Russia to consolidate its status and its influence in the region, in the wake of Ukraine crises (Pastukhova and Westphal, 2016). Spitsyn and Kulubekova (2016, p.695) argued that “the creation of the common energy markets would strengthen the resource-oriented domestic large-scale business and prepare the groundwork for the emergence of new transnational corporations, cooperating within the Eurasian Economic Union”.

4.2.4. Cooperation with OPEC and within GECF

In Russian perspective, energy cooperation is a key element of its Foreign Energy Policy to achieve positive results. Due to the instability in oil and gas markets, Russia and the Organization of the Petroleum Exporting Countries (OPEC) shared common problems and energy goals, as well as similar energy panoramas. The same happens with Gas Exporting Countries Forum (GECF), from which Russia is a member. The *Energy Strategy of Russia for the period up to 2035* emphasis the “promotion of cooperation with OPEC, on the basis of proximity of the energy mix and common

problems to be solved” and “the coordination of activities to enhance the stability and predictability of the world oil and gas markets with the members of the Organization of the Petroleum Exporting Countries and the Gas Exporting Countries Forum” (Ministry of Energy of the Russian Federation, 2017, p.60). This cooperation can be a crucial element to ensure the Russian energy security. Alexander Novak (2016) affirmed that, in the framework of multilateral cooperation, Russia must continue to focus on strengthening interaction with OPEC and GECF in particular.

The cooperation between Russia and OPEC exists since 1998, with a regularly participation in OPEC’s sessions and conferences as an observer. The cooperation becomes more dynamical with the establishment of an energy dialogue between Russia and OPEC in 2005, which involves annual meetings with the Minister of Energy of Russian Federation and the Secretary General of OPEC, as well as expert meetings about oil market development. The cooperation focuses essentially on the global energy industry, production, shifts on demand side, oil refining industry and short and medium-term forecasts for the development of the oil market (Ministry of Energy of the Russian Federation, 2017a). The previously energy strategy up to 2020 highlighted the importance of being actively engage in dialogue and conferences as a basis for cooperation, and interacting with other producing countries, namely OPEC members, but did not mention the cooperation with GECF (Ministry of Energy of the Russian Federation, 2003, p.42). The last energy strategy up to 2030 defined as a goal the coordination of activity on world oil and gas markets with the OPEC and GECF countries (Ministry of Energy of the Russian Federation, 2010, p.58), and stressed that energy dialogue with these organizations was being actively conducted (Ministry of Energy of the Russian Federation, 2010, p.56).

On 31 May 2017, the Minister of Energy of the Russian Federation, Alexander Novak, co-chaired the Sixth High-level Meeting of the OPEC-Russia Energy Dialogue, in Moscow. In the meeting, the parties highlighted that “OPEC-Russia Energy Dialogue continues to represent a valuable contribution among producing countries towards collective efforts in support of sustainable market stability” (OPEC, 2017b). The meeting also focused on the analysis of technology dimensions and impacts on oil demand, a vital issue to Russia. Russia-OPEC Energy Dialogue is very important to analyse oil market outlooks and forecast for the medium and long-term, also in energy transportation and technology areas, which is extremely valuable to understand the challenges and the needs

of Russian FEC and prepare the future strategies (OPEC, 2017b). Following the meeting, Alexander Novak noted the importance of the energy dialogue and cooperation and their positive impacts on oil market. HE Mohammad Sanusi Barkindo, OPEC Secretary General, agreed that “the constructive, collaborative and intensive dialogue had achieved positive results” (OPEC, 2017a).

The instability of World’s energy markets and the volatility of oil prices are not only challenges for Russia, but common challenges to several other energy producing countries. As a result, cooperation between Russia and OPEC reach a new level, through the establishment of the Declaration of Cooperation, or the entitled OPEC + Deal. In December 2016, twenty-four countries, including OPEC countries, led by Saudi Arabia and non-OPEC countries, led by Russia agreed on an unprecedented deal to face the challenges in the oil market resulting from the collapse of oil prices between 2014 and 2016, when oil prices went from \$115 per barrel to about \$27, which was the lowest price since 2003 (RIA Novosti, 2017a). From the OPEC side, the agreement was signed from Saudi Arabia, Iran, Iraq, Qatar, Nigeria, Algeria, Ecuador, Libya, Gabon and Venezuela. From the non-OPEC side, Russia, Mexico, Azerbaijan, Brunei Darussalam, Equatorial Guinea, Bahrain, Malaysia, Oman, Sudan, South Sudan, signed it (Ministry of Energy of the Russian Federation, 2016). As explained previously, low prices in oil market strongly affect producing countries. Therefore, these oil-producing countries agreed on joining efforts and concluded an agreement that aimed the reduction of oil production, in order to stabilize prices at a favourable value.

The agreement defined that the parties had to reduce production by 1.8 million barrels per day from the level of October 2016. At first, the agreement was settled for the first half of 2017 (RIA Novosti, 2017a). Then, on May 2017, the parties agreed to extend the period for an additional nine months beginning on 1 July 2017, until March 2018. Later, on November 2017, the Declaration of Cooperation was amended to take effect until December 2018, bearing in mind the possibility of further adjustments in June 2018 (OPEC, 2017). To ensure the compliance with the terms of the agreement, it was created a group of five countries to monitor its implementation - the Joint Ministerial Monitoring Committee (JMMC) - composed by three countries belonging to OPEC (Algeria, Kuwait and Venezuela) and two from non-OPEC (the Russian Federation and the Sultanate of Oman) (Ministry of Energy of the Russian Federation, 2016). It was also created a Joint

Technical Committee (JTC) proposed to provide monthly technical assistance to the parties of the Declaration of Cooperation (OPEC, 2017).

The Declaration of Cooperation recognizes the current oil market conditions and short to medium-term prospects and the “need for joint cooperation of the oil exporting countries, to achieve a lasting stability in the oil market in the interest of oil producers and consumers” (OPEC, 2017, p.5). Consequently, the parties are committed to “strengthen their cooperation through a dynamic and transparent framework, including regular monitoring, joint analyses and outlooks for a sustainable market stability in the medium- to long-term” and “to ensure continuity and proactive cooperation through established regular meetings at technical and ministerial levels” (OPEC, 2017, p.8). Mohammed Barkindo, OPEC Secretary General, stated that OPEC, together with their partners from non-OPEC countries, “wrote a new chapter in the history of this industry”. The results from the agreement were positive, as by the end of the year, prices were about \$60 per barrel, a comfortable price for all the participants (RIA Novosti, 2017a). According to the Russian Minister of Energy, Alexander Novak, the agreement means that cooperation between OPEC and countries has reached a new level and it is expected to have a long-term character. Novak argued that is necessary “to restore the situation in the markets to ensure the balancing of supply and demand” and, consequently, the agreement is open to other countries who wants to join in to work together in order to stabilize the market (Ministry of Energy of the Russian Federation, 2016).

Vladimir Voronkov, Permanent Representative of Russia to Vienna, considers that diplomacy begun to have a more active role, and the recent cooperation between Russia and OPEC is a good example of that. Voronkov believes that the agreement has brought important benefits for Russia, once according to some estimates brought an additional 1.5 trillion rubles in Russian budget, and highlighted its significance as an absolutely historic moment for the global energy market, as for the first time a group of countries, OPEC and non-OPEC, agreed on a voluntary reduction of the volume of oil production (RIA Novosti, 2017).

The OPEC + Deal opened space to a broader cooperation between oil producing countries that could create opportunities to cooperation at other levels. Khalid al-Falih, Saudi Arabia's Energy Minister, noted that the “relation between the OPEC countries and not OPEC has become much deeper” and that the common work over led to “a new friendship, new opportunities, and laid the foundation for future cooperation” (RIA

Novosti, 2017a). The cooperation between Saudi Arabia and Russia is the best example of that and are committed to maintain the cooperation after the deal expires as the two producers are already working in several areas. Russian Energy Minister noted that “the world’s two biggest oil producing and exporting countries can continue their cooperation for the good of the crude industry, for the good of stability” (Mazneva, 2018). In the framework of OPEC + Deal, thirty-two projects were planned between them. Novak said Russia is “focused on developing cooperation with Saudi Arabia not only within the OPEC framework but also outside the cartel” (RT, 2017).

In October 2017, Russia and Saudi Arabia announced a \$1 billion fund to invest in joint energy projects, and are also discussing gas projects (Novak, 2018) and additionally signed a deal to invest \$150 million in Russia’s Eurasia Drilling Company (Sputnik, 2017a). Novak argued that to meet the demand needs is necessary to work together including on joint studies and projects, exchange of information and investments, namely in upstream technology (Novak, 2018). Russia and Saudi Arabia created a joint Russian-Saudi Energy Platform, which includes the Russian Direct Investment Fund (RDIF), the Public Investment Fund (PIF) of Saudi Arabia and the Saudi Arabian Oil Company Aramco, and aims to find investment opportunities in Russian oil projects and hi-tech energy companies (Sputnik, 2017a). Kirill Dmitriev, head of the RDIF, affirmed that it is a great opportunity for both countries to exploit their unique technologies (Reuters, 2017c). Saudi Arabia is also interested in investing on Russia’s LNG production. It is expected a deal between Novatek and Aramco to invest in LNG-2 project, in the Arctic (Mahdi and Mazneva, 2018).

Russian energy cooperation is not only focused on oil market; it considers gas market too. Russia is a member of the Gas Exporting Countries Forum, which is a union between the world’s leading gas producing and exporting countries. GECF was established in 2008, in Moscow, with the signature of the Agreement on the Functioning of the Gas Exporting Countries Forum, and became operational in the end of 2009. It aims to ensure the security of demand and supply in the gas market, through the coordination of actions between the members. In 2016, GECF approved the Long-Term Strategy, where several priority areas are defined, among “cooperation to develop effective ways and means for cooperation amongst GECF Member Countries in various areas of common interests” and “international positioning of the GECF as a globally recognized intergovernmental organization, which is gas market expertise reference

institution and benchmark for gas exporting countries positions” (GECF, 2017h, p.4). Furthermore, it was developed the forecast for the development of the gas industry for the period up to 2040, where Russia had an active participation (Ministry of Energy of the Russian Federation, 2017b).

GECF is an essential tool to promote the share of experience, views and information in topics that are crucial to Russia’s energy security, such as gas market trends and forecasts, production and transportation technologies, techniques to maximizing the contribution of natural gas resources, among others (GECF, 2017e). GECF analyses natural gas data based on primarily sources from member countries that is fundamental to understand the present market and the future trends (GECF, 2017a) and is an official partner of the Joint Organisations Data Initiative Gas (JODI-Gas), an ample source of monthly natural gas data (GECF, 2017d). The GECF market monitoring develops regular analytical articles and working papers on important issues as energy policies, natural gas supply and demand, prices, transportation and storage, among others (GECF, 2017f). It also has short-term monthly reports on natural gas and LNG markets (GECF, 2017g), and outlooks that provide analysis of gas market developments in medium and long-term, contributing to understand the challenges and prepare strategies (GECF, 2017c). The Forum also promotes monthly lectures and seminars with experts from several areas, such diplomatic corps, academic, companies, energy ministers and others (GECF, 2017). It still has a forecasting tool that analyses the dynamics taking place in the gas market at a specific time horizon – the Global Gas Model (GGM). The GGM is an extremely useful tool that enable countries to understand key uncertainties, contributing to a better develop of future energy policies (GECF, 2017b).

On January 2018, Deputy Energy Minister of Russia Yuri Sentyurin took the office as Secretary General of GECF for a period of two years (GECF, 2018). Sentyurin affirmed that GECF expects an increase in the demand for natural gas, which is motivated by the economic, technical and environmental advantages of natural gas over others fossil fuels, as coal. Considering the expected needs, the Secretary General assumed that GECF countries have to make great investments in the next years, namely in the development of LNG. Sentyurin identified the main medium-term challenges as those related to technology shifts, slow pace of global gas demand growth, the increase of competition with the growth of non-GECF gas suppliers and sanction’s impacts on gas projects (Neftegaz, 2018).

Taking into account the negative impacts resulted from sanctions, GECF's representatives expressed their concern and opposition to the use of unilateral sanctions on their members, so including Russia, that are affecting the gas sector (Alper, 2017). Therefore, this means that Russia has the support of GECF member states and could get benefits from the close cooperation with them, which may be an important instrument to face the sanctions and the increasing competition in the gas market. Furthermore, Russia is trying to increase and develop its gas production, namely in LNG, so this cooperation can be an added value to share knowledge and improve Russian technology.

CHAPTER V

Final remarks

This dissertation aimed to analyse how the main external challenges to Russia's energy security are shaping its strategies towards Foreign Energy Policy. Energy security is a huge concern to Russia. As such, since 2003, Russia developed three energy strategies to ensure and improve the country's energy security. In 2014, it released the most recent one: a draft of the *Energy Strategy of Russia for the period up to 2035*, which was updated in early 2017. To accomplish our analysis and to understand how challenges and strategies changed over the time, we study the three official documents (ES-2020, ES-2030 and ES-2035), giving a special emphasis on the draft of ES-2035, from which we identified the current main external challenges and strategies. To fulfil our main objective, we defined three derived questions: (i) what is Russia's energy panorama? (ii) what are the main external challenges to Russian energy security? and (iii) what are the main strategies of Russia towards Foreign Energy Policy?

Regarding to the first question, we could understand that Russia is one of the most important and prominent players in the world energy system, with a position of excellence in international energy markets, mainly in what concern to oil and natural gas. It has some of the largest energy reserves of the world and huge capacities of production. It is one of the leading energy exporters and contributes to meet the needs of a great part of the world's population. However, the Russian energy panorama is vulnerable due to two factors: its strong dependence on the European energy imports and dependence of Russian economy on energy exports. Oil and gas exports are a crucial part of the Russian economy, representing a very significant part of State's revenues, which makes Russia quite susceptible to the dynamics of energy markets. Considering the characteristics of the Russian Federation, energy is a fundamental element to the stable functioning of the State, and to maintain a powerful position in the international system.

In regard to the second and third questions, we could identify four main external challenges⁵: (i) the sanctions and the difficult access to investment; (ii) slowdown of

⁵ Each of these challenges and strategies cover several elements that are closely related.

demand for Russian energy resources in traditional markets; (iii) strengthening of competition in energy markets and emergence of new energy producers and supply routes; and (iv) instability of world energy markets and volatility of oil prices; and four major strategies⁵ to face them: (i) cooperation with traditional energy consumers; (ii) diversification of Russia's energy export markets; (iii) cooperation within the BRICS and the Eurasian Economic Union; and (iv) cooperation with OPEC and within GECF.

After we acknowledged the answers for the previous questions, it was possible to analyse how the two parties are related, and consequently we were able to answer our main question: How the external challenges to Russia's energy security are shaping its strategies towards Foreign Energy Policy?

Bearing in mind the importance of energy exports to Russia, one of the main challenges it faces is a possible slowdown of demand for Russian energy resources in traditional markets, particularly in European countries. Russia has an excessive dependence on the European energy imports. In 2015, 61% of Russian oil exports had Europe as destiny (BP, 2016). This dependence is especially serious with regard to natural gas, as Europe represented an overwhelming 89% of the share of Russia's exports (BP, 2016). The European Union is a major consumer of Russian energy resources and it equally relies heavily on Russia to satisfy its energy needs. Considering the current panorama of EU-Russia relations, the EU intends to develop a strategy to reduce its dependency on Russian resources, in order to shrink the risks to its energy security. One part of the strategy is the increase of endogenous renewable energy production. Even though, it still is not a threat to the position of oil and natural gas as major fuels, there is already a significant increase in production and incorporation of renewables in the consume of European countries. Another part of the strategy is the diversification of its energy suppliers, which can lead to a slowdown of demand for Russian energy resources.

The EU's diversification strategy can be boosted by the strengthening of competition in energy markets and emergence of new energy producers and supply routes, which represent another serious challenge to Russian energy security. Although Russia has obviously a prominent place in natural gas production, it is no longer the leader as it has been overtaken by the United States since 2012. This change happened mainly due to the boom in shale gas production, which lead to the emergence of the United States as a new LNG exporter. In addition, Australia and Qatar, currently major LNG suppliers, are also seeking to increase their production and export capacities, thus increasing

competitiveness in the world energy market. The increase of LNG trade in the last years can be explained by the facilities that LNG provides, as its transport requires less obligations than the transport of natural gas through pipelines, which implies a much greater geopolitical meaning and a higher degree of dependency between producers, consumers and transit countries, increasing the risks for energy security. Although one of the objectives of Russia's energy strategy is to diversify the structure of its production in order to guarantee its competitiveness in international energy markets (namely through a significant increase in the production and export of LNG), with the development of projects in the Arctic such as Yamal LNG or LNG-2, Russia, unlike the United States, still does not stand out among LNG exporters.

Although currently U.S.'s LNG occupies a small percentage in the European market, the emergence of the United States as a new gas supplier can increase its importance in the European market and become an alternative to diversify its suppliers. For example, Poland, which relies heavily on imports of Russian gas, has begun to sign agreements with the United States to import LNG in order to gradually try to replace Russian gas. The European Union, in accordance with its diversification objectives, is planning the development of several energy infrastructure projects, as LNG terminals, that aim to diversify their suppliers. Among several projects, Southern Gas Corridor and EastMed are the most outstanding ones. Although the SGC is already at a much more advanced stage than EastMed, when the two projects were completed they will be an important step towards the diversification of European energy suppliers. This does not mean that the EU will no longer depend on Russian gas supplies, as the capacity of these projects is not sufficient to meet the European needs. However, the EU could decrease its dependence on Russian gas imports and improve its buyer bargaining power when negotiating contracts with Gazprom, pushing Russia to a more vulnerable position.

Taking into account these challenges, Russia felt the need to develop a strategy based on the diversification of Russia's energy export markets, namely toward the Asia-Pacific Region, in particular to China. Although Russian-Chinese Energy Relations are not something new, as the expansion of energy exports to Asia had already been considerate in previous strategies, namely with the construction of ESPO, which allowed a significant increase of Russian oil exports to China, the increase of natural gas exports to Asia is the new biggest focus of Russia's Energy Strategy. China has a great potential to meet the Russian goals due to significant increase of demand for natural gas, mostly

because it is a cleaner fossil fuel than coal, so it can contribute to overcome China's environmental problems. The Russian-Chinese energy cooperation has many factors that can lead to its success, as for example their geographic proximity and their energy needs, that somehow are complementary, as China needs a reliable energy supplier and Russia needs to diversify its energy buyers. The most remarkably part of Russia's energy strategy toward China is the construction of the Power of Siberia pipeline, which is the most ambitious and important infrastructure that Russia is building to make possible the diversification of gas export to Asia. The pipeline aims to transport Russian natural gas from the Kovyktinskoye and Chayandinskoye fields to China. The construction has already begun, and Russia expects it to be operational by the end of 2019. Power of Siberia will improve Russia's energy security and give Russia more flexibility in what concern to its energy policy, as it will become less depend on European imports and, consequently, improve Gazprom's bargaining power.

As an energy exporter, one of the main concerns related to its energy security is a stable demand, which is insured by a diverse range of energy buyers. Therefore, the enhancement of Russia-China energy relations is essential to maintain Russia position in the energy global market and to ensure its energy security and the stability of its economy. Although, Russian-Chinese energy relation means an increase of diversification of energy export market, it is not necessarily a shift from Europe, but instead an additional source. Although the relation with European countries has been deteriorated due to the issue of the Crimea, Russia continues to regard energy cooperation with Europe as a priority and one of the strategies that it aims is precisely the cooperation with traditional consumers and the improvement of energy relations. Russia-EU energy relation began to be politicized and seen as a security issue in recent years due to tensions between Russia and Ukraine, one of the main transit countries of Russian natural gas to Europe. However, Russia has never made any direct threats to Europe and has always promoted energy cooperation initiatives. Although the energy dialogue is currently suspended by the EU decision, Russia argues that it must be re-established and that it is an important part of Russia-EU energy cooperation.

In fact, Russian energy strategies for the European Union have not changed significantly and are essentially based on a perspective of cooperation and rapprochement. Energy cooperation between Russia, a major producer and exporter, and the European Union, a large consumer market, is essential and both can work together to

improve security of supply and avoid energy disruptions, increase investments in joint projects with a positive impact on the energy security of both parties and even to the share experience and knowledge in areas such as energy efficiency and technology development. Cooperation with European countries is equally important in order to obtain support against the sanctions imposed. Germany and Italy, the two largest consumers of Russian gas within the European Union, are being affected by the sanctions and have serious doubts about the positive impacts of them. Therefore, they can be two important allies for lobbying within the EU to end the sanctions imposed or at least to minimize their impacts.

The ES-2035 advocates the development of a constructive dialogue, based on mutual interests and the maintenance of a stable relation with the European partners, as Russia believes that it is the right approach to overcome the current problems with Europe, rather than to securitize the issue. Even so, energy interdependence between the European Union and Russia can be interpreted as a security issue, the fact that there is interdependence means that both sides have common interests and needs that they do not want to see compromised, especially Russia, which has fewer alternatives to the European market than the EU has to the Russian resources. As Russian Prime Minister said, "mutual dependence is called business" (Medvedev, 2016). So, Russia's energy strategy foresees that natural gas exports to Europe will continue to have the potential to grow and so it remains a market in which Russia is committed. The two planned projects for the supply of natural gas to the European market, namely Nord Stream 2 and TurkStream, are the proof of this commitment and that Russia is not trying to move away from Europe. These projects are perhaps being driven by Russia's interest in diversifying its supply routes to Europe and avoid using Ukraine as a transit country, thereby increasing its energy security. Nord Stream 2 is one of the most important projects for Russia, as it will increase Russia's capacity to export to Europe, and resulted from a relation of cooperation with Germany. Turkey is the second largest consumer of Russian gas in Europe after Germany. The construction of the TurkStream gas pipeline is fundamental to ensure another route to reach the European market.

However, both infrastructure projects in Europe, the projects aiming the diversification of exports to Asia and even the national projects to diversify Russia's production structure, require large investments, which leads to another challenge: the sanctions and the difficult access to investment. The Russian FEC is characterized by a

technological backwardness that is jeopardizing its potential and development. Currently, the Russian energy sector depends on foreign technology and equipment to exploit the national energy resources. This dependency has been aggravated in recent years by the sanctions imposed by the European Union and the United States in the wake of the Crime issue. The sanctions are blocking the access to investments and technology that Russia urgently needs to accomplish the planned energy projects. Consequently, they delay the innovation and development of the sector and, at a later stage, can have serious economic impacts. Before the sanctions, Russia used to rely on investment of many European companies to develop its energy projects, namely in the Arctic. However, after the sanctions many European companies left the projects, creating difficulties for Russia and increasing their need for investment.

To overcome this challenge, Russia's energy strategy intends to improve the cooperation within the BRICS and the Eurasian Economic Union. The sanctions are leading Russia to adapt and move quickly towards other energy partners with whom it can cooperate, especially in terms of financing and technology. In this regard, the Russian energy strategy aims the promotion of technological cooperation with BRICS countries. Although they have very different energy profiles, Russia considers that BRICS have a huge potential to become important energy partners because of the interests and challenges that they have in common. Energy cooperation within the BRICS can essentially involve the promotion, research and develop of projects and high technologies in the energy sector. In recent years, BRICS have been enhancing their energy cooperation through their meetings, where cooperation initiatives in the energy sector are clear, especially driven by Russia, which has made several proposals such as the BRICS Energy Association or the Energy Policy Institute, revealing Russia's interest in further developing energy relations with these countries.

Russia believes that these initiatives are essential to share knowledge and technologies that would create opportunities for all countries involved and would be an important stimulus for the development of BRICS's energy sector, helping to overcome the technological backwardness regarding to Western countries. Energy and technological cooperation with the BRICS may be an essential strategy to face the current challenges and obtain the access to technologies that Russia needs to meet its objectives with regard to the exploitation and production of resources in Eastern Siberia and Far East. On this subject, China has proved to be a major partner. The biggest success case

has been the Chinese investment in the Russian Yamal LNG project, which is absolutely necessary to cover Russian financial needs in the extraction of resources and development of infrastructures, which have large associated costs.

Russia's energy cooperation is also concentrated in Eurasia, essentially through the Eurasian Economic Union, within which the ES-2035 aims to create a common energy market. The common energy market can be an important opportunity for Russia to ensure market prices and competition, to lift barriers on trade of resources, equipment and technology, to guarantee the development of necessary infrastructures and to attract investments. Also, it is an important strategy to consolidate Russia's position in the region and maintain the stability of the energy sector.

Sanctions' negative effects have been aggravated by the instability of world energy markets and volatility of oil prices. The global energy market is facing changes, due to factors as the emergence of new suppliers, the increase of competition, new demand trends, among others. All these changes strongly influence energy markets and generate instability. In addition, in recent years, oil prices have fallen sharply, mainly due to oversupply. Considering that Russia is a major energy exporter and that its economy heavily relies on those exports to obtain a significant part of state's revenues, the increasingly instability of markets and the high volatility of oil prices is one of the biggest challenges weakening Russia because it will cause instability on national economy and bring uncertainties regarding planned investments.

The improvement of cooperation with OPEC has been one of the main strategies to face the challenge mentioned above. Although Russia and OPEC have already cooperated for many years with participations in forums and the Russia-OPEC energy dialogue, it was in 2017 that Russia-OPEC energy cooperation has reached a new level, with the establishment of the OPEC + Deal. This historic agreement has allowed, with an effort by several OPEC and non-OPEC countries to impose limits on own oil production, that oil prices stabilize at a comfortable price. This agreement also resulted in a rapprochement between Russia and Saudi Arabia, which resulted in several Saudi investments in joint energy projects. Saudi financial investment can be a feasible and important alternative to overcome the negative impacts from sanctions.

The Russian energy strategy also expects the strengthening of energy cooperation initiatives within GECF members, to increase the share of experience and

technological knowledge regarding to gas, which can bring important progresses in Russian FEC’s development. In addition, this cooperation can also work as a platform to increase GECF’s influence and power in international energy markets in order to cope with competition from new gas exporters who are not GECF members, as is the case of the United States of America. In January 2018, a Russian deputy assumed the position of Secretary General of GECF for two years. This period could be an opportunity for Russia to reinforce the cooperation as it plans and to promote more initiatives regarding to energy development. GECF members have spoken publicly against the unilateral imposition of sanctions, notably against Russia, which can be an important step to at least reduce sanctions.

Table 1 - The correlation between Russia’s challenges and strategies

External Challenges	Strategies towards Foreign Energy Policy
Slowdown of demand for Russian energy resources in traditional markets	Diversification of Russia’s energy export markets
	Cooperation with traditional energy consumers
Strengthening of competition in energy markets and emergence of new energy producers and supply routes	Diversification of Russia’s energy export markets
	Cooperation with traditional energy consumers
Sanctions and the difficult access to investment	Cooperation with traditional energy consumers
	Cooperation within the BRICS and the Eurasian Economic Union
	Cooperation with OPEC and within GECF
Instability of world energy markets and volatility of oil prices	Cooperation with OPEC

Source: Ministry of Energy of the Russian Federation, 2017.

In sum, Russia's strategies towards foreign energy policy changed over the time and are deeply shaped by the new challenges that Russian energy security is facing. Between 2003, when the first energy strategy was published, and 2014, when the official draft of the most recent energy strategy was first published, the World's energy market had been under major changes, that resulted in the emergence of new challenges for Russia. To face those challenges, Russia was forced to adapt its strategy to a new reality, by strengthening energy cooperation with new entities, such as the BRICS and EAEU, which in previous strategies had not been considered or when they were considered, as happened with OPEC, they had not reached the present high level of cooperation.

Although in previous strategies Russia already considered the potential of Asia-Pacific as an export market. The strengthening of Russia-China energy cooperation was the most outstandingly proof of how challenges are shaping Russia's energy strategy towards Foreign Energy Policy. In this strategy, Russia had to adapt by aiming to diversify its natural gas export markets to China.

Regarding to Europe, since the first strategy until now, the challenges faced and relation with the European Union changed a lot. However, not everything has changed and Russia's answer continues to be the same: cooperation. In fact, if we had to define the basis of the *Energy Strategy of Russia for the period up to 2035*, it would be cooperation.

To sum up, Russia have two main strategies to deal with currently external challenges: cooperation and diversification. These will be the core of its Foreign Energy Policy until 2035. Yet, the success of Russia's strategies is dependent on external actors' responses and strategies.

In the future, we consider that it is important to continue to analyse the Russian Energy Strategies, as it is crucial to understand Russia's perspectives and goals. Nevertheless, in addition to the difficulties resulting from limitations in the knowledge of the Russian language, this dissertation was limited by the Russia's Energy Strategy itself, which is basically a political document, and therefore does not go into detail on the measures announced or how they will be carried out. Access to privileged information would certainly be a way of increasing the reliability of this analysis, but this was not possible and we had to restrict ourselves to open source information.

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