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The New Geopolitics: EU-Russia Relations towards the Carbon Neutrality Era

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Table of Contents

Introduction

I Environmental and Social Relevance

The International Renewable Energy Agency (IRENA) defines energy transition as "a pathway toward the transformation of the global energy sector from fossil-based to zero-carbon by the second half of this century"[1]. Therefore, one of the main challenges of this century will consist in achieving the so-called "Carbon Neutrality Era" through the reduction of carbon dioxide (CO_2) emissions. The international community set ambitious goals with the signing of the Paris Agreement and expressed its commitment to keeping the rise of average global temperatures below 2 degrees.

In order to achieve the Paris objectives, the transformation of the energy system needs to be accelerated[2] and natural gas, as one of the cleanest burning fossil fuels[3], may play a crucial role in the achievement of a clean energy transition. Indeed, its lower carbon content makes natural gas an environmentally friendly fuel with several benefits[4], especially compared to other fossils[5]. For these reasons, the IEA's Executive Director, Fatih Birol, claimed that natural gas must be fundamental not only in reducing air pollution, but also in limiting the rise of energy-related CO_2 emissions through the displacement of coal in power generation, heating and industrial uses[6]. As a matter of fact, emissions from burning natural gas in a power plant are 50% to 60% lower than emissions from burning coal[7].

Despite natural gas being considered a solution to employ for reaching a clean energy transition, it still emits CO_2 and, therefore, some changes to making it a net zero-carbon fuel are required. In this regard, it is worth mentioning the Net Power gas plant, near Houston, which should produce natural gas at zero-carbon emissions[8], as this may represent an effective solution not only for achieving the transition but also in its aftermath.

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[1]IRENA, *'Energy Transition'*, definition available at https://www.irena.org/energytransition, last access November 2019
[2]IRENA, *'Global Energy Transformation: a roadmap to 2050'*, 2019
[3]GAS EXPORTING COUNTRIES FORUM (GECF), *'Environment'*, definition available at https://www.gecf.org/gas-data/environment.aspx, November 2019
[4]Such as air quality and greenhouse gas emissions
[5]INTERNATIONAL ENERGY AGENCY, *'Natural Gas source Market Report Series: Gas 2018'*, April 2019
[6]INTERNATIONAL ENERGY AGENCY, *'Demand from Asia is set to power the growth of the global gas industry over the next five year's*, November 2019
[7]NATIONAL ENERGY TECHNOLOGY LABORATORY (NETL), *'Cost and performance baseline for fossil energy plants'*, Volume 1: *Bituminous coal and natural gas to electricity*, 2010, Revision 2. November. DOE/NETL-2010/1397, United States Department of Energy
[8]ENYDAY, *'Da Houston, futuro a emissioni zero'*, November 2019

Looking at the social aspect of this issue, the importance of the energy trade has to be considered in defining and shaping national and supranational foreign and domestic policy.

Nowadays, energy is no longer a mere product utilized in trading but is a tool of leverage and of foreign policy. In the following thesis, it will be analyzed how energy shapes the relations between the EU and Russia in the energy field. Indeed, there is hardly any aspect of these relations that can be analyzed without considering the energy factor.

Considering the aforementioned environmental importance of the energy issue, it is easily imaginable that in order to achieve full decarbonisation, countries will stop importing oil and natural gas that emit CO_2. The following thesis has, therefore, the scope of analyzing the development of a new variety of geopolitics in light of the changes in the environmental and political spectrum, while a specific focus is given to the relations between the European Union and Russian Federation and their likely evolution as they head towards the carbon neutral era.

II Methodology, Research Question, Aim of the Study, Hypothesis

The scope of this study is to provide a coherent explanation of the driving forces behind the transformation of EU-Russia relations. Many competing theories and perspectives can be employed to explain the relationship between EU and Russia in the energy field, but most of the available scientific research cannot fully investigate all the features that characterize this relationship.

Traditionally, Realism[9] has easily been used to explain how Russian foreign policy is shaped according to national interests. The realist theory explains that pursuing power is the main goal of a State, and in this case illustrates that energy is not a mere good, but a tool of leverage in the relations between two actors. Therefore, this would explain why the Russian will of maintaining strict control over the energy sector. The realists would condemn the European Union for its dependence on Russian gas and they would state that the EU must, therefore, issue its policies in line with Russian ones. But realism does not explain the European Union behavior, that is better analyzed through the

[9]SIDDI M., *'EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?'*, Russian Politics, BRILL, 2017; WAHEEDA R., *'Theory of Complex Interdependence: A Comparative Analysis of Realist and Neoliberal Thoughts'*, International Journal of Business and Social Science, vol. 6, no. 2, February 2015; COHEN B. J., *'The Political Economy of International Trade*', Annual Review of Political Sciences, Vol 2, 1999

theory of liberalism[10], due to the crucial importance given to the role of institutions, collaboration among the EU Member States and market approach. None of those theories can clearly explain all the features of EU-Russia relations. The liberalism cannot explain the lack of cooperation between EU and Russia, and realism cannot explain why the Russian Federation depends on the European Union for the revenue related to its energy exports. Hence, realism and liberalism may explain the behavior of only one actor not both.

These approaches appear to be surpassed and, over the years, liberal theories pointed out the importance of the relationship of interdependence between EU and Russia in the energy field, which became one of the pillars of the theoretical analysis of this relation.

Until today the methodological prism used to analyze the energy relations between EU and Russia has often been the theory of interdependence described by Nye and Keohane. They identified two kinds of interdependence: the symmetrical one, when two parties are equally dependent on each other and therefore will be equally hurt by a break in the relations; and the asymmetrical one, when one country is more dependent on the other and will be more hurt in case of a break[11]. Nye and Keohane in drawing their theory did not aim at providing a perfect explanation of the course taken by International Relations, as the traditional theory such as Realism or Liberalism may suggest.

Conversely, Interdependence Theory "unites the theoretical traditions of realism and liberalism in such a way as to clarify the conditions under which the propositions of one tradition or the other are more or less likely to be valid"[12]. Sensitivity and Vulnerability are the cornerstones from which to start the analysis of the energy relationship; indeed, they are the keys to employ to understand the degree of interdependence of every actor. This thesis puts the politics of decarbonisation into the framework of sensitivity and vulnerability, investigating how carbon neutrality will affect these notions and, consequently, the relations between the European Union and the Russian Federation.

Therefore, one may try to rely on social constructivism, by claiming that an actor defines its interests through interaction with other actors and this especially happens in

[10]SIDDI M., *'The Role of Power in EU–Russia Energy Relations: The Interplay between Markets and Geopolitics'*, Europe-Asia Studies, Francis & Taylor, 2018; YOUNGS R., *'The EU's role in World Politics: A Retreat from Liberal Internationalism*', Francis & Taylor, 2010
[11]KEOHANE R. O., NYE J. S., *Power and Interdependence*, Boston: Little, Brown, 1977
[12]*Ibidem*

the case of supplier-consumer relationships[13]. Indeed, constructivists state that actors cannot be analyzed in isolation from the environment in which they act[14]; therefore, the EU-Russia relations in the energy field cannot be studied without analyzing the existing interdependence.

Constructivism is used as a major explanatory framework of the EU-Russia relations in the energy field. In this regard, Kratochvíl and Tichý highlight the necessity to find a linkage between the distribution of material abilities and resources between EU and Russia, since this relationship influences the concept of asymmetrical and symmetrical interdependence between the two actors[15]. Then, constructivists investigate the existing institutional structures between the EU and Russia. Finally, the focus should be on the ideational framework that "gives meaning to both material resources and institutional structures"[16].

Additionally, to measure the interdependence between the EU and Russia, this study will be backed up by quantitative methods and analysis of tables, graphs, data, and maps. Most of these data provided by the BP, EIA, EU, Eurostat, IEA, IRENA, Gazprom Statistics[17].

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[13]SHARPLES J. D., '*Russian approaches to energy security and climate change: Russian gas exports to the EU'*, Environmental Politics, 22:4, July 2013

[14]CHRISTIANSEN T., JORGENSEN K. E., WIENER A., *'The social construction of Europe'*, Journal of European Public Policy 6(4), 1999; POLLACK M. A., *'Theorizing EU Policy-Making'* in WALLACEETAL H., *Policy-Making in the European Union*, 6th edition, Oxford: Oxford University Press, 2010; PICK L., *'EU-Russia energy relations: a critical analysis'*, University of Leeds, POLIS Journal Vol. 7, Summer 20

[15]KRATOCHVÍL P., TICHÝ L., *'European Union discourse on energy relations with the Russian Federation'*, Czech Journal of Political Science, 19(2), 2012

[16]COX R. W., *'Social forces, states and world orders: Beyond international relations theory*', Millennium – Journal of International Studies, 10(2), 1981; PROEDROU F., *'The EU-Russia Energy Approach under the Prism of Interdependence'*, European Security, 16:3-4, December 2007

[17]BP, *'BP Statistical Review of World Energy'*, 68th edition, 2019; ENERGY INFORMATION ADMINISTRATION, *'Country analysis briefs: Russia'*, 2007(a), April 2007; ENERGY INFORMATION ADMINISTRATION, *'International Energy Outlook 1987 – Projections to 2000'*, Volume 987, US Government Printing Office, May 1998; EUROPEAN COMMISSION, *'2030 Climate & Energy Framework'*, European Commission Website; EUROPEAN COMMISSION, *'Energy Roadmap 2050'*, Luxembourg: Publications Office of the European Union, 2012; EUROPEAN PARLIAMENT, *'EU-Russia Relations'*, Topical Digest, October 2016; EUROPEAN PARLIAMENT, *'Policy Briefing – EU and Russian Policies on Energy and Climate Change'*, DG EXPO/B/PolDep/Note/2013_308, December 2013; EUROPEAN UNION EXTERNAL ACTION, *'The European Union and the Russian Federation'*, May 2019; EUROPEAN UNION, *'Agreement on partnership and cooperation establishing a partnership between the European Communities and their Member States, of one part, and the Russian Federation, of the other part'*, Eur-Lex, Official Journal of the European Communities, 1997; EUROSTAT, *'EU imports of energy products – recent developments'*, Statistic Explained, December 2019; EUROSTAT, *'EU-Russia Summit',* STAT/14/13, January 2014; EU-RUSSIA ENERGY DIALOGUE, *'Roadmap: EU-Russia Energy Relations until 2050'*, March 2013; GAZPROM WEBSITE, *'40 Years Together History of Cooperation between Gazprom and Eni';* GAZPROM WEBSITE, *'PJSJ Gazprom Annual Report 2018'*, January 2019; GAZPROM WEBSITE, *Nord Stream 2*, Gas Pipeline; GAZPROM, *Gas Pipeline: Yamal – Europe, Russian gas supplies to Western Europe*, last access March 2020; INTERNATIONAL ENERGY AGENCY, *'Natural Gas source Market Report Series: Gas 2018'*, April 2019; INTERNATIONAL ENERGY AGENCY, '*The IEA Model of Short Term Energy Security: Primary Energy Sources and Secondary Fuels',* Paris: IEA, December 2011; INTERNATIONAL ENERGY AGENCY, *Demand*

After an analysis of the available literature, the main research question has been arranged as *"how the relation of interdependence between the European Union and the Russian Federation in the energy field developed over the years and will be affected in the light of full European decarbonisation by 2050"*. Russia and Europe are deeply interdependent and notions as vulnerability and sensitivity might be impacted by the neutrality carbon era.

In order to answer the research question, it is required to start this study from some assumptions. The main one is that the European Union will intensify its efforts to reach carbon neutrality, reducing its imports of coal, oil, and gas and, therefore, creating uncertainties in the relationship with the Russian Federation.

The second one is that decarbonisation will affect the relations between countries and, it will probably influence the prime position of some energy producers by defining a new kind of geopolitics.

Going towards the neutrality carbon era is a challenge launched by the EU that will, probably, affect the Russian exports and therefore its GDP. If Russia is willing to continue to trade with the European Union, it has to export either a zero-carbon gas or renewable energy, and therefore speeding up its transition.

This thesis attempts to provide a new perspective for EU-Russia relations towards 2050, imagining a new type of energy partnership that goes beyond fossil fuels.

III Literature Review

The drafting and completion of this study required an analysis of a wide range of literature, including books, academic articles and papers, official documents, speeches, and statistical material. Before the beginning of the research analysis, it was crucial to demarcate the area of study in order not to follow the wrong line of inquiry. During the analysis of the literature, it was possible to notice that most studies provide a quite unilateral perspective of the energy issue, reflecting the consumer side of the equation.

The literature review was crucial to study the existing theories, knowledge, and scientific findings related to the interdependence between EU and Russia relations in the energy sector.

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from Asia is set to power the growth of the global gas industry over the next five years, November 2019; INTERNATIONAL ENERGY AGENCY, World Energy Outlook 2019; IRENA, *Global Energy Transformation: a roadmap to 2050*, 2019

The academic material on the EU-Russia relation in the energy field that was being studied before I approached the subject provided a quite conflictive overview of the relationship.

The major group of European scholars tend to research Russian energy as a tool of political influence[18]. Conversely, Russian studies are more focused on investigating the material bases of asymmetry[19], with a specific focus on complementarity and mutual interdependency. The same controversial national approaches may be seen in the studies of the normative framework of EU-Russia energy relations[20]. Valuable analysis of the recent changes in the energy spheres may be found in Schmidt-Felzmann that provides an analysis of the EU-Russia relations after the events in Crimea in 2014[21], in Krushceva and Maltby, Galenovich, Moravicsik and Gustafson that focus their analysis on whether the EU-Russia relations will be affected by the decarbonisation[22]. However, following the constructivism in its explanation of EU-Russia energy relations this study contributes to fulfilling the gap in understanding how the decarbonisation trend influences the self-perception of the EU vis-à-vis Russia.

The literature was searched through the most important academic sources of information such as Google Scholar, EBSCO, Eurostat, Springer, Taylor and Francis,

[18]GOLDTHAU A., SITTER N., *'Soft power with a hard edge: EU policy tools and energy security'*, Review of International Political Economy, February 2015; POPOVIC N., *'The Energy Relationship Between Russia and the European Union'*, E-International Relations Students, February 2020; BUGAJSKI J., *'Dismantling the West: Russia's Atlantic Agenda'*, Potomac Books Inc., Washington DC, October 2009; LUCAS E., *The New Cold War: Putin's Russia and the Threat to the West*, Bloomsbury, February 2008; GOLDMAN M., *'Oilopoly: Power, Putin and the Rise of the New Russia'*, Oneworld Publications, May 2010; ZASLAVISKIY I., *'Corruption Pipeline: The Threat of Nord Stream 2 to EU Security and Democracy',* The Free Russia Foundation Paper, November 2017

[19]BELYI A., *'New dimensions of energy security of the enlarging EU and their impact on relations with Russia'*, Journal of European Integration, 25:4, 2003; KAVESHNIKOV N., *'The issue of energy security in relations between Russia and the European Union'*, European Security, 2010; KRICKOVIC A., *'When Interdependence Produces Conflict: EU–Russia Energy Relations as a Security Dilemma'*, Contemporary Security Policy, 36:1, 3-26, February 2015; NURSIN G., Prof. VISNE, Prof KORKMAZ, *'The Energy Interdependence Model Between Russia and the EU: An Evaluation of Expectations for Change'*, Perceptions, vol. XIX, 2014

[20]AALTO P, *'The EU-Russia Energy Dialogue and the Future of European Integration: From Economic to Politico-Normative Narratives'*, in AALTO P., '*The EU-Russian Energy Dialogue: Europe's Future Energy Security',* Hampshire: Ashgate, 2008; CASIER T., *'The EU–Russia Strategic Partnership: Challenging the Normative Argument'*, Europe-Asia Studies, Vol 65, Issue 7, September 2013; FERNANDES S., *'Russia and Transforming Security Relations in Europe: A Mix of Strategic and Normative Rationales'*, e-cadernos CES, n°19, 2013

[21]SCHMIDT-FELZMANN A., *'Negotiating at cross purposes: conflicts and continuity in the EU's trade and energy relations with Russia, pre- and post-2014'*, Journal of European Public Policy, October 2019

[22]KHRUSHCHEVA O., MALTBY T., *'The future of EU-Russia energy relations in the context of decarbonisation'*, Geopolitics, Vol 21, Issue 4, June 2016; GALENOVICH A., *'Russia and the EU: A perspective on climate policy collaboration'*, Sustain Europe, last access May 2020; MORAVCSIK A., *'Power of Connection: Why the Russia-Europe gas trade is strangely untouched by Politics'*, Nature, January 2020 review of GUSTAFSON T., *'The Bridge: Natural Gas in a Redivided Europe',* Harvard University Press, January 2020

Academia, Jstor and Science Direct; think tanks like RIAC, IAI, ISPI; the websites of the main political institutions involved, namely the European Union and the government of the Russian Federation, the MGIMO library and the online library of LUISS; and the main energy institutions concerned: the IEA and the IRENA. The studies analyzed are written in Italian, English, and Russian.

Chapter I: EU-Russia Relationship in the Energy Sector

1.1 Historical Background (until 2000)

The relations between the European Union (EU) and the Russian Federation are defined by an inextricable connection that revolves around the energy sector. Russia is the main EU's energy partner, the Country supplies 30% of the EU's oil imports, 40% of its natural gas and 39% of solid fossil fuels (mainly coal)[23]. Despite the growing importance of energy over the years, this is not the exclusive feature that defines their relations. Namely, geographical proximity, security, infrastructures, cooperation in various industrial sections, trade, institutional interactions, and historical bonds are only a few of the factors that shaped the cooperation of these two powers.

In light of the current evolution of the energy sector, the relations between the European Union and the Russian Federation will likely change. In order to carry out this analysis, it is crucial to bear in mind when this relationship began and how it developed during the years. Russian supplies to the European Union have gradually acquired relevance and, to better understand the dynamics of energy export and the role it plays in the international arena, it is fundamental to analyze the evolution of the cooperation between the Soviet Union and Europe, and later between the Russian Federation and the European Union[24].

The relationship in the energy field began in a time of tensions in the context of the Cold War. The cooperation in the energy sector, indeed, started between the end of the 1950s and the first years of the 1960s when some reserves of oil and gas were discovered in the Soviet Union (USSR), principally in Siberia[25]. Therefore, when in the 1960s production and pipelines facilities were built in USSR, trade between East and West was expected to increase. The energy relation that was being defined seemed to be complementary since the Soviet Union was one of the major players in terms of resources, while Europe was poor of fossil fuels. The geographical proximity made possible to establish an overall long and durable partnership even though the relations have not always been positive.

[23]EUROSTAT, *'Shedding light on energy in the EU – A Guided Tour of Energy Statistics'*, Edition 2019
[24]From here on Europe is considered as the block of Western European countries during the Cold War.
[25]RUSSELL J., *'Energy as a Factor in Soviet Foreign Policy'*, The Royal Institute of International Affairs, London, January 1977

1.1.1 Oil

Before 1950, Soviet oil was mainly consumed within the Soviet Union, but by 1955 its production almost doubled and, between 1955 and 1965, rose from 71 to 243 million tons (Mt) due to new oil fields discovered in the Ural-Volga area[26]. USSR started to work on how to make oil production as profitable as possible and the answer was found in exporting oil to Europe that, meanwhile, was going through fast industrialization without the support of domestic energy resources[27].

The first significant deal was formalized in 1960 when ENI, the major Italian oil state-owned company, signed an agreement with the Soviet State-run company SoyuzneftExport (SNE). The contract envisaged the supply of 11 Mt of crude oil and 1 Mt of fuel oil between 1961 and 1965, renewed in 1963 for an increase to 21.4 Mt of crude oil and 700 Kt of fuel oil until 1970[28]. The oil was sold in exchange for materials such as synthetic rubber, steel pipes and pipeline equipment necessary to build Soviet pipes[29]. Iron and steel needed for the pipe construction were supplied by Finsider, an Italian State-owned company. As a result of this arrangement, in 1970, the volume of oil imported from the Soviet Union arose to 14% of total Italian oil imports[30]. ENI was also planning to build two more pipelines: an oil pipe planned to connect the USSR to East Germany, a project that was never finalized due to diplomatic pressure made by France and US[31]; and a second pipe that was supposed to link the seaport of Trieste (Italy) to

[26]CANTONI R., '*What's in a pipe? NATO's confrontation on the 1962 large-diameter pipe embargo'*, HAL, March 2016; MORAVCSIK A., *'Power of Connection: Why the Russia-Europe gas trade is strangely untouched by Politics'*, Nature, January 2020 review of GUSTAFSON T., *'The Bridge: Natural Gas in a Redivided Europe'*, Harvard University Press, January 2020

[27]CANTONI R., *What's in a pipe? NATO's confrontation on the 1962 large-diameter pipe embargo*, HAL, March 2016

[28]NARA – RG 59, *Central Decimal File, 1960–1963*; Foreign Service Dispatch, *'Petroleum – Notes of an Interview With Enrico Mattei by Time-Life'*, Writer SCOTT J. M.; Amemb Rome H. GARDNER AINSWORTH to DS, 11 July 1961, pp. 1, 3–4; ASMAE, *Telegrammi ordinari, Russia (Ambasciata Mosca)*, 1961, vol. 55 arrivo (Jan. – Jun.), n. 898, 12 Jan., n. 1146, 14 Jan.; n. 1395, 17 Jan., n. 2416, 26 Jan.; n. 2889, 30 Jan., n. 5014, 21 February; ASENI, Fondo ENI, Presidenza RAFFAELE GIROTTI, b. 264, fd. 482E, *'Missione a Mosca per acquisto greggio'*, 14–19 Febr. 1961. P. 7. in CANTONI R., *'Breach of Faith? Italian-Soviet Cold War Trading and ENI's International 'Oil Scandal''*, Quaestio Rossica, Ural Federal University 2015

[29]ARCHIVIO STORICO DEL MINISTERO DEGLI AFFARI ESTERI, *Rome (ASMAE) – Telegrammi ordinari*, Russia (Ambasciata Mosca), 1960, vol. 59 arrivo (Jul-Dec), n. 36288; Italian Embassy in Moscow (Itemb Moscow) (Pietromarchi) to Ministry of Foreign Affairs, '*Contratto ENI-Finsider*', 3 October 1960; n. 37331; Itemb Moscow (Pietromarchi) to Ministry of Foreign Affairs, '*Importazione petrolio*', 11 October 1960

[30]PEROVIC J., *Cold War Energy - A Transnational History of Soviet Oil and Gas*, Palgrave Macmillan, 2016

[31]ENI eventually supplied certain pumping and auxiliary equipment, while the plan to provide technical assistance toward installing the pipelines was dropped. See also NARA – RG 59, *Central Decimal File, 1960-1963, b. 2694*, confidential, Memorandum of Conversation, *'Italian Government Guaranteed Credit for Soviet Pipeline Project'*, February 1960; Amemb Rome (Zellerbach) to State Department, 1 March 1960; AN – 19900317/13, fd. 1, sub-fd. Italie 1955/1979, secret, Note SDECE, *L'activité de l'Ente Nazionale Idrocarburi* (octobre 1959 – octobre 1960), 18 October 1960, p. 15 (FOIA n° 111 382)

Wien, and from there to Czechoslovakia where the Soviets were lying the Druzhba pipeline[32].

In the same year, West Germany signed a barter contract with the USSR; Germany's trade with the Soviet Union grew, in only three years (1952-1962), from USD196.5 mln to USD401.5 mln[33]. West Germany exported to the USSR mainly "plants for chemical and extractive industry, iron and steel products, ships and large-diameter pipes", while it bought crude oil[34]. In 1962, three firms from the Ruhr region, for instance, Mannesmann, Hoeschst and Phoenix-Rheinrohr, signed an agreement with the Soviet Union to exchange 163 Kt of steel pipeline in turn of "pig iron"[35].

In 1978, West Germany discussed a barter-deal concerning the construction of a new refinery in the Tomsk region, supported by German technology and investments; in exchange the USSR would feed the refinery with 10 mil tons of crude oil every year for 10 years.

In 1960, Soviet oil exports accounted for 25% of the total exports to Europe; in the 1970s it was the most traded item between Europe and USSR[36]. In 1966, Soviet oil amounted to 7.5% of the total West Germany import, while for Italy this percentage was 20%[37].

In 1968 the Soviet Union was exporting 86.2 million tons of oil, half of which to Eastern Europe and the remaining 50% to Western European countries[38]. Germany and Italy also took part in the supply of materials for the construction of the Druzhba pipeline. It was the longest pipe ever built and its construction lasted from 1954 to 1964, it aimed to connect Almetjewsk in Tatarstan to Belarus and Poland to Schwedt/Oder in Eastern

[32]CANTONI R., *What's in a pipe? NATO's confrontation on the 1962 large-diameter pipe embargo*, HAL, March 2016; TNA – FO 371/153362, fd. RT 1532/6, f. RT 1532/6D, Jarratt A. A., Ministry of Power, to Fearnley J. T., FO, 17 June 1960

[33]CANTONI R., *What's in a pipe? NATO's confrontation on the 1962 large-diameter pipe embargo*, HAL, March 2016

[34]STENT A. E.., *From embargo to Ostpolitik - The Political Economy of West German-Soviet Relations, 1955–1980*, Cambridge University Press, 1982; ASMAE, *Telegrammi ordinari, Russia (Ambasciata Mosca)*, 1961, vol. 55 arrivo (Jan-Jun), n. 13, Itemb Moscow (Pietromarchi) to Ministry of Foreign Affairs, *'Stampa sovietica',* 2 January 1961

[35]"Pig iron is the product of smelting iron ore (also ilmenite) with a high-carbon fuel and reductant such as coke, usually with limestone as a flux" in International Iron Metallics Association Website, last access May 2020.

[36]MOE A., *'The Future of Soviet Oil Supplies to the West'*, Soviet Geography, 1991

[37]TNA, *'Interdepartmental Working Party on the Security of Oil Supplies, note of a meeting*', POWE 58/70, SOS(67)1, July 1967

[38]GOLDMAN M. I., *'The Enigma of Soviet Petroleum: Half-Full or Half Empty?',* Volume 41, Issue 1, London: George Allen & Unwin, Spring 1980; Data from Foreign Trade of the USSR for 1963, Moscow, 1964

Germany, and Mosyr in Belarus through Ukraine to Czechoslovakia[39].

Within Europe, France was the least interested in cheap Soviet oil since it was pressuring the other European countries to buy French-controlled oil coming from Algeria[40]. Although France was collaborating with the Soviet Union on two Caspian Sea oil platform yards of USD 300 million orders[41].

Apart from the trade in energy resources, Italy and West Germany were the two European countries most involved in business with the Soviet Union; in fact, commercial exchanges between Soviet companies and Italian ones were already in place during the 1960s. In 1966 FIAT, the Italian automobile manufacturer company, opened a plant in Togliatti (Russia)[42].

During the Cold War, this cooperation was certainly not appreciated by the United States that were concerned that the USSR could use energy as a tool of pressure on the West. In spite of the efforts of USA, the cooperation continued to grow for two reasons: on the one hand, because of the lack of domestic energy resources in Europe, where the need of fossils energy resources exceeded the fear of a possible dependency on USSR; on the other hand, because the Soviet Union, due to the stagnation it suffered in this period, needed to boost its economy by importing and exporting goods, therefore it was a reliable partner compared to the ones of North Africa and the Middle East, which between the 1950s and 1960s were involved in several military conflicts[43]. The desire to create a more solid relationship of interdependence together with the European will of diversification away from the MENA region – particularly due to its geopolitical instability – represented the main drivers of the European interest in buying Soviet oil.

The instability of this area was also demonstrated in 1973 when some Arab producing countries imposed an embargo on whoever supported Israel in the war of the Yom Kippur and limited the exports of oil causing concern of a potential fuel shortage; the oil prices quadrupled in only few months[44]. Arab oil supplies to Europe were gradually

[39]NIES S., *'Oil and gas delivery to Europe An Overview of Existing and Planned Infrastructures'*, Gouvernance Européenne et Geopolotique de L'énergie, IFRI, January 2011
[40]CANTONI R., *What's in a pipe? NATO's confrontation on the 1962 large-diameter pipe embargo*, HAL, March 2016; ASENI, Fondo ENI, Estero, Rapporti commerciali con l'estero, b. 2, fd. 7DA, *'Altro petrolio sovietico per l'Italia'*, Financial Times, December 1959
[41]STEIN E. L., *'The Politics of Soviet Oil'*, Volume 8, Issue 3, Energy Policy, Elsevier, September 1980
[42]CANTONI R., *'What's in a pipe? NATO's confrontation on the 1962 large-diameter pipe embargo'*, HAL, March 2016
[43]It refers to the war of independence in Tunisia (1956), Algeria (1962) and Libya (1951), in addition to the following revolution in Libya (1969) as well as the Suez Crisis that affected the stability of oil and gas supplies; see also ISTMAT, *Народноехозяйство СССР за 70 лет [National economy of the USSR of 70 years]*, Statistical digest, Moscow: Finance and statistics, 1987
[44]LUNDESTAD G., *The United States and Western Europe since 1945*, Oxford University Press, 2003; DI

reduced from 24% in September 1973 to 12% in March 1974[45]. European countries did not own enough energy resources to sustain themselves and therefore turned to USSR. Despite the official support given to the Arab States, USSR did not limit in any way its oil export to Europe, on the contrary, it took advantage of the higher prices by increasing trade[46]. As a consequence, the export of Soviet oil and products to OECD countries grew by 28%[47]. To provide an example, the Soviet oil exported to the Netherlands increased from 2.433.400 tons to 3.219.900 tons from 1972 and 1973[48]. On the USSR side, in 1970 crude oil exports accounted for 20% of the Soviet hard currency earnings, in the half of 1970s for 40% and between 1979 and 1981 it amounted to 80% of the earnings[49]. This meant that the revenues from oil and gas exports were financing the Soviet capacity to buy other items such as food and machinery[50]. Hence, the relationship in the energy field with the West was crucial to ensure Soviet stability at the domestic level.

In 1984, USSR was the main exporter of crude oil to Western European countries[51], by exporting 216 million tons of oil of which 2/3 to Western Europe[52]. However, West Germany and France could rely on domestic coal production, while Italy was strongly dependent on oil and therefore on the Soviet Union[53]. Indeed, Italy imported three times more Soviet oil than West Germany and four times more than France,

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NOLFO E., *Storia delle Relazioni Internazionali – Gli Anni della Guerra Fredda 1946-1990*, Laterza Editori, 2015

[45]Estimates from the U.S. Senate Committee on Foreign Relations Subcommittee on Multi-national Corporations, *U.S. Oil Companies and the Arab Oil Embargo: The International Allocation of Constricted Supplies*, a report prepared by the Federal Energy Administration, 94th Congress, 1stSession, January 1975, Washington (DC), in BARDAZZI R., PAZIENZA M. G., TONINI A., *European Energy and Climate Security - Public Policies, Energy Sources, and Eastern Partners*, Springer International Publishing Switzerland, January 2016

[46]KLINGHOFFER A. J., *The Soviet Union and the Arab Oil Embargo 1973,1974*, Pennsylvania State University, May 2015

[47]STERN J. P., *Soviet oil and gas exports to the West: commercial transaction or security threat?*, RIIA/Policy Studies Institute Joint Energy Programme paper no. 21, London: Gower, June 1987

[48]This data is probably in line with the other Western European countries, in IZDATEL'STVO "MEZHDUNARODNYE OTNOSHENIIA", *'Vneshniaia torgovlia SSSR za 1973 god: statisticheskii obzor*', Moscow, 1974

[49]STERN J. P., *Soviet oil and gas exports to the West: commercial transaction or security threat?*, RIIA/Policy Studies Institute Joint Energy Programme paper no. 21, London: Gower, July 1987; ISTMAT, *'Внешняяторговля СССР [Foreign Trade of the USSR]'*, Statistical digest, Moscow: Finance and statistics.

[50]HANSON P., *Soviet Foreign Trade and Europe in the Late 1980s*, Royal Institute of International Affairs, August – September 1986

[51]STERN J. P., *Soviet oil and gas exports to the West: commercial transaction or security threat?*, RIIA/Policy Studies Institute Joint Energy Programme paper no. 21, London: Gower, July 1987

[52]ERMOLAEV S., *The Formation and Evolution of the Soviet Union's Oil and Gas Dependence*, Carnegie Moscow Center, March 2017; CIA, *Prospects for Soviet Oil in the 1980s*, Directorate of Intelligence, released 2008

[53]CANTONI R., *What's in a pipe? NATO's confrontation on the 1962 large-diameter pipe embargo*, HAL, March 2016

representing in this way a great challenge to European energy security[54].

1.1.2. Gas

The 1960s were characterized by the beginning of Soviet gas exports to Europe. Gas began to be exported later than oil, and this shift occurred because of a number of factors: partly because gas production was cheaper than oil; partly because it was a better fuel for specific industrial uses since it was cleaner and more consistent as well as more functional to certain industrial and manufacturing activities[55]; partly because, from the 1960s to 1970s, Kruschev adopted a "gasification" strategy that implied an increase of the production in USSR providing a greater gas capability to many Soviet satellites in Eastern Europe and to Western Europe[56]; partly because of the 1973 Arab oil embargo that certainly played a great role in shaping the energy policies of the European countries which started paying greater attention to gas to loosen their dependence on unpredictable oil suppliers.

The period from 1966 to 1974 was the most beneficial for the growth of the EU-Russia relations. The political distention due to the *Ostpolitik* of Willy Brandt and the Nixon presidency – with Kissinger Secretary of the State – made it easier for Western Europe to come closer to the Soviet Union. The Soviets needed the gas trade with the West because it represented both a component of the political détente and 70% of USSR income[57]. Besides, the already existent interdependence in the oil sector made possible to strengthen the energy relationship and expand it to the gas sector.

Cooperating with the European countries was not only crucial for the economy but also for maintaining stability. Exporting gas from Western Siberia to Europe was, at the same time, a way to develop the region that was lacking infrastructures and to acquire foreign currency[58]. The Soviet Union knew that to fully exploit Western Siberian energy it needed to cooperate with the West. The main Directorate of Soviet Gas Industry, Glavgaz, was created in 1956 to administer the Siberian fields and integrate them with

[54]ANESI, b. 19800118/3 CEE/Hydrocarbures, 1960-2, fd. *Politique vis-à-vis des pays de l'Est*, Council of European Communities - General Secretary, *'Note d'information - Assemblée Parlementaire européenne'*, 7 October 1960, FOIA n° 111 382
[55]VICTOR D. G., JAFFE A. M., HAYES M. H., *Natural Gas and Geopolitics: From 1970 to 2040*, Cambridge University Press, 2006
[56]*Ibidem*
[57]HOGSELIUS P., *'Red Gas: Russia and the Origins of European Energy Dependence'*, Palgrave Macmillan, October 2013
[58]KUDRIASHOV S., *'Vestnik Arkhiva Prezidenta, Spetsial'noe izdanie: General'nyi sekretar' L. I. Brezhneva, 1964-1982'*, Vestnik Arkhiva Prezidenta, Spetsial'noe izdanie, Moskva, 2006

the gas system. The Soviet strategy was to build pipes to create a network with West European countries meanwhile importing from them high-quality pipelines crucial to the development of the system[59]. For instance, in 1970 Soviet Union and West Germany signed an agreement known as "pipe for gas"; under its terms German steel manufactures supplied the pipelines necessary to deliver gas from Siberia to Central Russia in turn of Soviet natural gas[60].

It seemed that the energy relationship created during the 1960s along with the interdependence developed in the oil sector was providing results also in the gas industry. In fact, building a pipeline creates a "relationship of commodity" in which investments, personal contacts and market shares are strictly connected to technology, and existing structures, establishing in this way increasing interdependence once the infrastructures are settled[61].

In ten years, 1956-1966, Soviet gas production sharply increased from 13.7 bcm to 150 bcm per year[62]. This rapid expansion needed to be matched with a demand: the European one.

Hence, the first contract on natural gas was signed between Austria and USSR in 1968 for the supply of 1.5 bcm per year[63], followed by West Germany (1973), Italy (1974) and Finland (1974), but this trade became significant only in the 1980s, when France, Germany, and Italy signed bilateral long-term contracts with Take-or-Pay (TOP) clauses with the Soviets[64]. This kind of contract is generally aimed at guaranteeing the stability of the commercial relationship for decades; therefore, they boost security and development of stable gas supply systems[65]. The agreements signed by Ruhrgas (FRG), Osterreichische Mineralölverwaltung (OMV - Austria), Eni (Italy) and Gaz de France (GDF - France) with the USSR were all based on the idea that the European countries

[59]HOGSELIUS P., *'Red Gas: Russia and the Origins of European Energy Dependence'*, Palgrave Macmillan, October 2013
[60]*Ibidem*
[61]MORAVCSIK A., *'Power of Connection: Why the Russia-Europe gas trade is strangely untouched by Politics'*, Nature, January 2020 review of GUSTAFSON T., *'The Bridge: Natural Gas in a Redivided Europe'*, Harvard University Press, January 2020
[62]HOGSELIUS P., *'Red Gas: Russia and the Origins of European Energy Dependence'*, Palgrave Macmillan, October 2013
[63]PEROVIC J., *Cold War Energy, A Transnational History of Soviet Oil and Gas*, Palgrave Macmillan, 2016
[64]The TOP is a clause allowing buyers to purchase lower volumes than contractually agreed. Below a certain threshold, however, buyers were required to pay as if they had purchased the gas, regardless of whether they had actually purchased it. See LOCATELLI C., *'The natural gas industry in Russia: reforms under debate'*, Encyclopédie de l'énergie, December 2017
[65]BOUSSENA S., LOCATELLI C., *'Gazprom et l'incertitude du marché gazier européen: vers une stratégie de défense de sa part de marché?'*, Revue d'Economie Industrielle, n° 157, June 2017

should supply know-how and pipelines equipment in exchange for gas. Thirteen years later, more than nineteen countries were buying gas from the Soviet Union.

Among the Western European countries, Italy was the first to find a deposit of natural gas in the Po Valley and developed the largest gas market in Western Europe by the mid-1960s[66]. In these years, the USSR was interested in European investment and technical know-how, while Europe was interested in buying the Soviet gas that came from Western Siberia[67]. ENI started to invest in natural gas during the 1960s to reduce the Italian dependence on oil. In 1969 ENI and the Soviet Union signed a contract that envisaged Italy to import 6 bcm of natural gas for 20 years in exchange for plants and machinery for soviet automobile, chemical, and petrochemical industries[68]. Through this agreement, ENI laid the foundations of the Urengoy-Pomary-Uzhgorod (Brotherhood) pipeline[69]. So, when the Soviet SNE formalized the contract with Czechoslovakia to build the Brotherhood pipeline, ENI proposed to SNE to receive 5 mln cm of natural gas for 15 years, in turn of industrial equipment and payment in cash[70]. Within this project, ENI advised to establish the "Trans-European Pipeline" to connect Ukraine via Hungary and Yugoslavia to Northern Italy. However, the Austrian OMV as well as several German steel industries challenged ENI's project and pushed the USSR to link the pipeline to Czechoslovakia and Austria. However, ENI faced delivery problems since it was unclear how to transport the Soviet gas from Austria and Czechoslovakia to Italy. This problem was fixed in 1974 when a pipe to connect the Austrian-Czechoslovak border to Tarvisio (Italy) was finally launched[71]. Among the Western European Countries, Italy became the most dependent on Soviet gas: its natural gas imports grew from 26% to 60% between 1975 and 1979 [Figure 1][72].

[66]VICTOR D. G., JAFFE A. M., HAYES M. H., *Natural Gas and Geopolitics: From 1970 to 2040*, Cambridge University Press, 2006

[67]MORAVCSIK A., *'Power of Connection: Why the Russia-Europe gas trade is strangely untouched by Politics'*, Nature, January 2020 review of GUSTAFSON T., *'The Bridge: Natural Gas in a Redivided Europe',* Harvard University Press, January 2020

[68]DE MAIO G., SARTORI N., *'Le relazioni tra Italia e Russia, Senato della Repubblica'*, Osservatorio di Politica Internazionale, November 2018; PEROVIC J., Cold War Energy, *A Transnational History of Soviet Oil and Gas*, Palgrave Macmillan, 2016

[69]GAZPROM WEBSITE, *'40 Years Together History of Cooperation between Gazprom and Eni'*

[70]PEROVIC J., *Cold War Energy, A Transnational History of Soviet Oil and Gas*, Palgrave Macmillan, 2016

[71]RATTI G to CEFIS E., *'ASENI, Fondo ENI'*, b. 264, f. 482E, ACS, AAM, b. 159, 1971; HOGSELIUS P., *'Red Gas: Russia and the Origins of European Energy Dependence'*, Palgrave Macmillan, October 2013

[72]GREER B. I., RUSSELL J. L., *'European Reliance on Soviet Gas Exports: The Yamburg-Urengoi Natural Gas Project'*, The Energy Journal, Vol. 3, No.3, July 1982

Figure 1: Percentage of Gas Imported by France, West Germany, and Italy from 1975 to 1979

	1975	1976	1977	1978	1979
France					
Abu Dhabi	-	-	+[a]	-	+
Algeria	23	23	18	18	17
Netherlands	77	67	60	56	58
Norway	-	3	10	12	11
Switzerland	-	-	+	+	+
USSR	-	7	12	15	14
Other	-	-	-	+	-
	100	100	100	100[d]	100
West Germany					
Netherlands	87	85	79	59	57
Norway	-	-	3	17	18
USSR	13	15	17	25	25
	100	100	100	100	100
Italy					
Libya	26	22	20	18	16
Netherlands	48	39	28	26	24
USSR	26	39	52	57	60
	100	100	100	100	100

Source: United Nations, Economic Commission for Europe, Annual Bulletin of Gas Statistics for Europe (New York, 1980)
+[a] Less than 0.5%
[d] Some totals may not add due to rounding

The first contract between France and the Soviet Union on gas supply was signed in 1971, for the purchase, from Bratislava, of 2.5 bcm of natural gas per year, for 20 years[73]. This agreement brought out the need for establishing a network of pipelines across Europe to make possible the transport and delivery of natural gas. Therefore, the Mittel-Europäische Gasleitung (MEGAL) pipeline system – operated by the Mittel-Europäische Gasleitungsgesellschaft – was built; it was a complex of corporate linkages between European gas operators[74]. MEGAL was the subsidiary of Ruhrgas, GDF, ÖMV and Stiching Metal and represented also an intermediary necessary to collect capital for building pipelines[75]. To boost this network, a first contract was signed in Paris in 1973, between Austria, Italy, and Germany, over the creation of the Trans Austria Gasleitung (TAG) that provided Czechoslovakia, Italy, and Austria with two gas pipelines respectively of 850 and 950 mm in diameter[76].

Moreover, also the gas exports from the Soviet Union to West Germany grew. From 1958 to 1962 the German pipeline's export to USSR increased from 3.200 tons to 255.400[77]. The will of continuing the bilateral trade between West Germany and the USSR was proved by a new "gas for pipe" agreement in 1974, that envisaged the delivery

[73]PEROVIC J., *Cold War Energy, A Transnational History of Soviet Oil and Gas*, Palgrave Macmillan, 2016
[74]*Ibidem*
[75]BELTRAN A., WILLIOT J. P., OETTINGER G., *'Les Routes du Gaz'*, Cherche Midi, November 2012
[76]PEROVIC J., *Cold War Energy, A Transnational History of Soviet Oil and Gas*, Palgrave Macmillan, 2016
[77]HOGSELIUS P., *'Red Gas: Russia and the Origins of European Energy Dependence'*, Palgrave Macmillan, October 2013

of 60 bcm of gas over 20 years between Ruhrgas and the Soviet Union[78]. As a result, between 1978 and 1979, West Germany was importing 25% approximatively of its natural gas from the Soviet Union. In 1983 it was inaugurated the "Yamal"[79] pipeline, that connected the field of Urengoy to Uzhgorod (along the Ukrainian border) to West Germany[80]. This pipe contributed to the beginning of the "gasification" process, a strategy developed in the Soviet Union in the 1980s and based on the shift from oil to gas[81]. By expanding its production, the USSR was able to export additional gas to Western European countries and in return, it bought goods, high-tech, and grain. Thus, increasing the interdependence already existing.

[Figure 2] illustrates the percentage of Soviet gas as part of the total gas consumption from 1976 to 1980 and the percentage of Soviet gas as part of the total primary energy consumption of the abovementioned countries.

Figure 2: Energy Balances of OECD Countries: 1975/1979

	1976	**1977**	**1978**	**1979**	**1980**
France					
Total gas consumption	4.9	8.6	10.7	9.5	14.8
Total primary energy	0.5	0.9	1.1	0.9	1.7
West Germany					
Total gas consumption	9.1	11.0	15.9	16.4	17.5
Total primary energy	1.3	1.6	2.4	2.7	2.9
Italy					
Total gas consumption	17.2	25.1	29.5	31.9	23.1
Total primary energy	2.8	4.1	4.9	5.1	3.6

Sources: Organization for Economic Co-operation and Development, *Energy Balances of OECD Countries: 1975/1979* (Paris, 1981); *Energy Statistics of OECD Countries: 1975/1979* (Paris, 1981)

This picture is significantly different when it comes to Eastern European countries where, in the 1980s, 80% of energy consumption was covered by Soviet supplies[82]. Being part of the Communist bloc, Eastern European countries bought gas directly from USSR, increasing in this way their dependency on the USSR.

The relationship between USSR and Europe continued to grow and the "Deal of

[78]*Ibidem*

[79]This pipeline was called Yamal since connected the Urengoy field in the region of Yamalo-Nenets (West Siberia) but it is not related to the Yamal – Europe pipeline built in 1994

[80]HOGSELIUS P., *'Red Gas: Russia and the Origins of European Energy Dependence'*, Palgrave Macmillan, October 2013; THANE G., *'The Soviet Gas Campaign: Politics and Policy in Soviet Decision making',* Santa Monica: Rand, 1983; ZICKEL R. E., *Soviet Union: a country study*, 2nd Edition, Washington D.C.: US Government Printing Office, 1991

[81]HÖGSELIUS, *'Red Gas: Russia and the Origins of European Energy Dependence*', Basingstoke: Palgrave Macmillan, October 2013

[82]HOFFMAN G. W., *Energy projections oil, natural gas and coal in the USSR and Eastern Europe*, IPC Business Press, September 1979

the Century" was signed in 1981, when Ruhrgas and Soiuzgazeksport entered a contract concerning the supply of 40 bcm[83], which increased the consumption of Soviet gas in West Germany up to 30% of the total gas consumption[84]. The plan envisaged a route of 5000 km from the Siberian fields to Czechoslovakia before being split into two pipes, one heading to West Germany and Benelux countries, and the second one to Italy and Austria[85]. This was the largest agreement finalized between USSR and Western European countries in the Cold War period.

The construction of this pipeline created some concerns in the USA; the new infrastructure would have indeed increased the hard currency flows to USSR, as well as strengthening the grip of Soviet Union over Europe and making the European ally vulnerable to any Soviet interruption of the supplies[86]. The USA started to put pressure the European Governments to stop buying Soviet gas and imposed sanctions over technological goods useful to build oil and gas pipelines. Western European countries reacted by claiming "an infringement of European sovereignty"[87]. Building a new pipeline was, in fact, crucial for Western European countries not only in consideration of the need of gas itself but also because of the strong unemployment (UK 14%, France 9%, Germany 8%) that was severely affecting them; infrastructural investments related to pipes construction could have been a way to stimulate the economy that was stalling[88]. In fact, the Iranian revolution resulted in the so-called "second oil shock", that led to a raise in the oil prices. The growing oil prices affected the Western European economies that suffered of a slowdown and of a consequent increase in the unemployment rate.

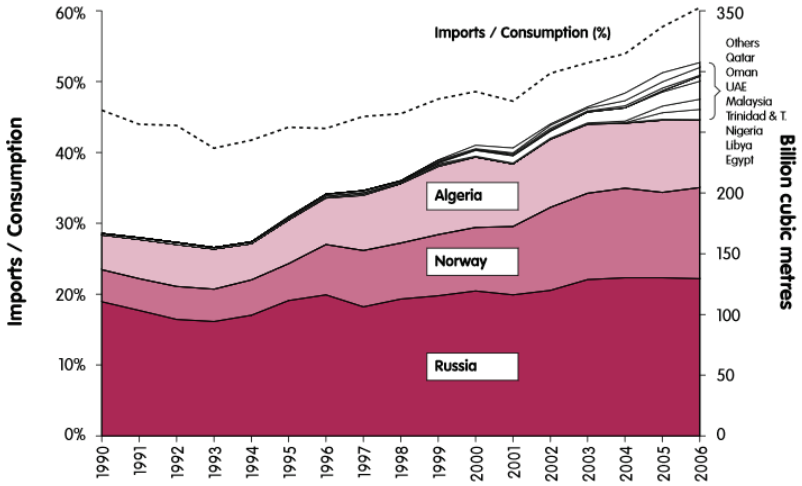
1.1.3 Energy Cooperation during the 1990s

The collapse of the Soviet Union occurred in conjunction with a period of decreasing oil prices. From 1986 to 2000 the oil price declined to USD20 per barrel

[83]KRISTALLOGRAPHIE Z. F., *'20. Jahrestagung der Deutschen Gesellschaft fur Kristallographie'*, Oldenbourg Wissenschaftsverlag, Munich, March 2012
[84]DER SPIEGEL, *'Keine Post Zum Fest? - Osthandel: Schnell festgezurrt [East Trade: Fast Tied]',* in Der Spiegel online, n. 47, ss129, 1980
[85]STERN J. P., *Soviet oil and gas exports to the West: commercial transaction or security threat?*, RIIA/Policy Studies Institute Joint Energy Programme paper no. 21, London: Gower, July 1987; DER SPIEGEL, *'Der unverziehene Strang nach Osten [The Unchanging Strand to the East]'*, Der Spiegel online, n.12, ss. 32-41, 1982
[86]DEMIDOVA K., *'The deal of the century: the impact of construction of SNGP on the US-West European relations during the first term of the Reagan presidency'*, in Patel K. K., Weisbrode K., *European Integration and the Atlantic Community in the 1980s*, Cambridge University Press, October 2013
[87]LUNDESTAD G., *The United States and Western Europe since 1945*, Oxford University Press, 2003
[88]RUBCHENKO M., *'Заложникии ндустриализации [Industrialization hostages]'*, Expert, August 2010

approximately[89], negatively impacting the Russian economy that was already suffering because of the reforms carried out by Gorbachev and Yeltsin. The Energy Information Administration forecasted that a USD1 dollar change in oil prices could increase or decrease the Russian GDP by 0.35%[90]. As a result, Moscow was forced to pursue strategies such as "*exporting at all costs*" and privatizing the oil sector. Regards to gas, in the 1990s the former Soviet Union exported 109 bcm of natural gas to Europe, of which 46.1 bcm to Eastern Europe and 59.7 bcm to Western Europe[91]. [Figure 3] shows how the gas trade from Russia to EU overall increased from 1993 to 2006.

Figure 3: EU27 Gas Imports, 1990-2016



Source: BP Statistical Review, Eurostat

The latter led to the sale of most of the oil resources, making businessmen able to buy oil assets at low prices and selling them years later at increasing prices; for instance, Roman Abramovich bought the oil company Sibneft for USD100 mln and sold it at USD13.1 bln[92]. Oligarchs were, therefore, capable of taking control of the energy sector and at the end of Yeltsin years, the State controlled only 10% of the sector[93]. As far as the national gas sector is concerned, it is worth to point out that the Gazprom shares were sold to foreign and domestic buyers and during the 1990s the State owned only 38% of the share capital[94].

The most important deal signed between the European Union and the Russian

[89]ENERGY INFORMATION ADMINISTRATION, *'Annual oil market chronology'*, 2007(b), April 2007
[90]ENERGY INFORMATION ADMINISTRATION, *'Country analysis briefs: Russia'*, 2007(a), April 2007.
[91]SAGERS M. J., *'The Russian Natural Gas Industry in the Mid-1990s'*, Post-Soviet Geography, 36:9, 1995
[92]KRAMER A., *'Russian gas giant to buy nation's no. 5 oil producer'*, New York Times, September 2005
[93]NEWNHAM R., *'Oil, carrots, and sticks: Russia's energy resources as a foreign policy tool'*, Journal of Eurasian Studies, July 2011
[94]*Ibidem*

Federation during the 1990s was certainly the Yamal-Europe gas pipeline. In 1994 the construction of this pipeline begun; the project envisaged 1.420-mm pipeline strings for a length of over 2.000 km[95]. The Yamal Peninsula was one of the most profitable for producing oil and gas in Western Siberia and therefore it was logical to link it to the European increasing gas demand[96]. In 1999 the Yamal-Europe pipeline begun to deliver gas running through four countries: Russia, Belarus, Poland and Germany[97]. In 2006, the pipeline reached its maximum capacity and nowadays it delivers 32.9 bcm of gas to Europe[98].

Worth of mention is the cooperation between Germany and Russia in these years. Indeed, after the fall of the Berlin wall, BASF – a large German consumer of natural gas – tried to establish a collaboration with Russia to ensure gas supply and build its own transportation system[99]. Therefore, during the 1990s, W&G Beteiligungs-GmbH & Co. KG was created, a joint venture between OAO Gazprom and Wintershall Holding GmbH (BASF subsidiary)[100].

Between 1993 and 1994 Gazprom signed an Agreement of Cooperation with Gaz de France and an Agreement on Gas Supply, for 20 years, with Neste (Finland)[101].

Attempts to formalize a partnership between the newborn European Union and the Russian Federation were made in the 1990s. The necessity of a shared approach led the two actors to establish the Partnership and Cooperation Agreement (PCA), a legal framework for political and economic relations that entered into force in December 1997. Its main goal was to foster "the promotion of trade and investments as well as the development of harmonious economic relations between the EU and Russia"[102]. The Art. 65 of the PCA was devoted to energy cooperation, fostering the collaboration on the

[95]GAZPROM, *'Gas Pipeline: Yamal – Europe, Russian gas supplies to Western Europe'*, last access March 2020
[96]ENERGY INFORMATION ADMINISTRATION, *'International Energy Outlook 1987 – Projections to 2000'*, Volume 987, US Government Printing Office, May 1998
[97]STERN J. P., *'Natural Gas in Europe – The Importance of Russia'*, Oxford Institute for Energy Studies, 2005
[98]GAZPROM, *Gas Pipeline: Yamal – Europe, Russian gas supplies to Western Europe*, last access March 2020
[99]VICTOR N. M., VICTOR D. G., *'Bypassing Ukraine: Exporting Russian Gas to Poland and Germany'*, in VICTOR D. G., JAFFE A. M., HAYES M. H., *Natural Gas and Geopolitics From 1970 to 2040*, Cambridge University Press, 2006
[100]HOLZ F., ENGERER H., KEMFERT C., RICHTER P. M., VON HIRSCHHAUSEN C., *'European natural gas infrastructure: The role of Gazprom in European natural gas supplies'*, Study Commissioned by The Greens/European Free Alliance in the European Parliament, DIW Berlin: Politikberatung kompakt, No. 81, Berlin, 2014
[101]GAZPROM WEBSITE, *'About Gazprom - History – Chronicle'*, last access April 2020
[102]EUROPEAN UNION EXTERNAL ACTION, *'The European Union and the Russian Federation'*, May 2019

improvement of quality and security of energy supply; the regulation of the energy sector according to the market economy; the support to the energy investments; the modernization of energy infrastructures and the minimization of environmental damages related to energy[103].

In 1994, the European Union negotiated with Russia to sign the *Energy Charter Treaty (ECT)* that sought to institute a common liberal free trade market for energy, involving Russia and other producers. The Charter aimed at promoting the harmonization of laws on energy investments and disciplining the access to infrastructures in the former USSR, particularly in Russia[104]. But the Russian government, during the 1990-s refused to agree to the Treaty's conditions for two main reasons. Firstly, because of the *Transit Protocol*, that implied the opening to competition and guaranteed the "*freedom of transit*" by opening the access to pipeline networks to all producers[105]. Secondly, because the Charter represented a threat to Gazprom's position due to its requirement for participating States to the provision that allowed foreign and independent producers to acquire oil and gas infrastructure[106].

The refusal to further apply the ECT and to discuss its ratification was made in 2009, after a set of transit crises with Ukraine. The Russian perception was that Ukraine violated the Treaty and the Protocol even after their ratification. Therefore, the Energy Charter Treaty appeared for Russia unable to provide any workable instrument to resolves such type of crisis and the Country decided not to ratify it.

1.2 The EU-Russia Relations After 2000: The Shifting

The collapse of the Soviet Union, the end of the Cold War, the creation of the European Union may have influenced the path that the relationship between the two blocs followed.

Due to its heterogeneity, the European Union lacked a common energy policy and a shared approach to energy matters. The European Union has been often criticized for its internal divisions and inability of speaking with a sole voice to Russia. Therefore, it

[103]EUROPEAN UNION, *'Agreement on partnership and cooperation establishing a partnership between the European Communities and their Member States, of one part, and the Russian Federation, of the other part'*, Eur-Lex, Official Journal of the European Communities, 1997
[104]FINON D., LOCATELLI C., *'Russian and European gas interdependence: Could contractual trade channel geopolitics*?', Energy Policy, Elsevier, January 2008
[105]KRICKOVIC A., *'When Interdependence Produces Conflict: EU–Russia Energy Relations as a Security Dilemma'*, Contemporary Security Policy, 36:1, 3-26, February 2015
[106]RAIK K., RACZ A., *Post-Crimea Shift in EU-Russia Relations: From Fostering Interdependence to Managing Vulnerabilities*, International Centre for Defence and Security, Estonia, May 2019

was quite common for some Member States to negotiate bilateral agreements with Russia by considering energy one of the most important national and security issues.

The approach that Russia pursued was defined as "Divide and Rule – *divide et impera*", a strategy based on negotiating with the Member States instead of the European Union as a whole[107]. This could be considered both as the result of a Union of countries strongly divided on energy matters since the European Union did not – and still does not – have exclusive competence on energy, and as the legacy of the Soviet Union, which used to negotiate with individual States instead of with a community. Some critics claimed that the "divide-and-rule" approach was beneficial to Russia to obtain concessions from some Member States and to block unfavorable policies or put pressure on issues considered crucial for the Russian interests[108]. Choosing to pursue this approach can also be explained through a speech given by the Chief of the Duma in which he highlighted the difficulties that Russia faced in dealing with "Brussels bureaucrats" that were slowing down all the progress made with the European countries[109].

The "divide-and-rule" approach reflected two main aspects of Russian foreign policy. On the one hand, the conception for which bilateral State-to-State relationships preserved the sovereignty of each Country while avoiding intrusive supranational norms[110]. On the other hand, it mirrored the Russian will to be a Great Power that conducted its energy trade with equals, while marginalizing the smaller Member States and the institutions[111]. For instance, in its Foreign Policy Concepts (2000, 2008 and 2013), Russia made clear that Germany, France, and Italy were "*resource for advancing Russia's national interests in European and world affairs*"[112]. These countries have always enjoyed positive relations with Russia, and Germany and Italy made in recent years profitable bilateral agreements; for instance, low gas prices; favorable contractual conditions; and long-term agreements on the construction of the North Stream that

[107]VAROL T., *'The Russian Foreign Energy Policy'*, European Scientific Institute, July 2013
[108]SCHMIDT-FELZMANN A., *'All for One? EU Member States and the Union's Common Policy Towards the Russian Federation'*, Journal of Contemporary European Studies, vol. 16 (2), September 2008
[109]LEONARD M., POPESCU N., *'A Power Audit of EU-Russia Relation's*, ECFR, Policy Paper, November 2007
[110]MANKOFF J., *'Russian Foreign Policy. The Return of Great Power Politics'*, Rowman & Littlefield Publishers, INC, New York, November/December 2009
[111]HAUKKALA H., *The EU-Russia Strategic Partnership. The Limits of Post-sovereignty in International Relations*, Routledge, 2010
[112]MINISTRY OF FOREIGN AFFAIRS OF RUSSIA, *'The Foreign Policy Concept of the Russian Federation'*, approved by the President of the Russian Federation V. Putin in June 2000; MINISTRY OF FOREIGN AFFAIRS OF RUSSIA, *'The Foreign Policy Concept of the Russian Federation'*, July 2008; MINISTRY OF FOREIGN AFFAIRS OF RUSSIA, *'Concept of the Foreign Policy of the Russian Federation'*, approved by President of the Russian Federation V. Putin in February 2013

connected Russia and Germany, or the relation on the South Stream, which later failed, where mainly Italy and Gazprom were involved[113]. European leaders such as Gerhard Schröder, Silvio Berlusconi and Jacques Chirac sometimes ignored European positions in order to continue their privileged relations with the Russian Federation[114]. Following the path traced by history, Italy and Germany are, today, the largest buyers of Russian gas, constituting around half of the total gas imported by the whole EU[115]. Indeed, in 2018, Italy imported from Russia about 45% of its total gas imports and Germany almost 55%[116]. Within the European countries, Germany and Italy upheld the largest trade volumes with Russia and the most beneficial relations[117].

Conversely, Central and Eastern European countries were much more dependent on Russian resources and enjoyed less profitable relations then Western European ones. For instance, Czech Republic, Estonia, Bulgaria, Hungary, Lithuania, Poland, and Slovakia were the most reliant countries on Russian energy supply and their main fear was to not receive enough quantities of energy resources[118]. On average these countries imported 85% of their natural resources from Russia and this was enough to make energy an instrument of coercion[119]. The "divide-and-rule" approach could be employed to explain why Central and Eastern European countries were quite apprehensive concerning possible uses of energy as a political tool. It was the very European enlargement towards the East that created further frictions as Russia was used to see this area as "its natural sphere of influence"[120].

The legacy of Soviet bilateral energy policies, the lack of some crucial competencies at the European level, the inability of the EU to speak with one voice, and the Russian tendency to adopt a "divide-and-rule" approach characterized the evolution of the EU-Russia relations as well as Putin's ascent.

For President Putin to be a successful leader it was necessary to restore the economy of the Country and to gain the support of public opinion. This was made possible

[113]BELKIN P., *'The European Union's Energy Security Challenges'*, CRS Report for Congress, January 2008
[114]BARYSCH K., *'Russia, Realism and EU Unity'*, Centre for European Reform, Policy Brief, July 2009
[115]GIRARDI A., *'Growing Dependent on Russia: The Gas Routes in Europe'*, Forbes, December 2018
[116]BP, *'BP Statistical Review of World Energy'*, 8th Edition, 2019
[117]EUROSTAT, *'EU-Russia Summit'*, EU28 trade in goods deficit with Russia fell slightly to 66 bln euro in the first nine months of 2013, STAT/14/13, January 2014
[118]VAROL T., *'The Russian Foreign Energy Policy'*, European Scientific Institute, July 2013
[119]GHALEB A., *'Natural Gas an Instrument of Russian State Power'*, Strategic Studies Institute, US Army War College, Carlisle, October 2011
[120]POPOVIC N., *'The Energy Relationship Between Russia and the European Union'*, E-International Relations Students, February 2020

through a combination of factors. Firstly, Russia's economic recovery because of the increase in prices of the oil barrel – from USD20 bbl/d to USD40 bbl/d between 1999 and 2000, increasing even more in the next years with a peak between 2011 and 2013[121]. Secondly, social and economic reforms such as cutting taxes, reforming the pension system, and improving public utilities had a positive impact on the economy. These reforms also mended the social texture and the well-being of the population after a decade of erroneous reforms[122]. Lastly, Russia was seemingly restoring its position of Great Power using energy as a tool in exchanging political concessions, namely the creation of new infrastructures and routes in transit countries such as Ukraine or Belarus[123]. President Putin wanted to restore Russia's image in the global panorama and promote the Country's natural interests both in Europe and in the world[124]. Thus, Russian recovery was mainly possible thanks to the profitable export of oil and gas due also to higher prices.

Given this framework, the deep process of reforms in the energy sector carried out by Vladimir Putin when he became President in 2000, cannot be ignored. The Russian Energy Strategy may be summarized as follows: State-run energy sector, enhancing the relations with the CIS countries to control their energy production/exports to Europe, dominating the European energy market[125]. As Putin stated: "*energy is, at least today, the most important motive force of world economic progress. The present and future prosperity of Russia depend directly on the place we occupy in the global energy context*[126]".

Maintaining the oil and gas sector stable was, and it still is, crucial for Russia's GDP. Therefore, the main plan was to reverse the privatization of the energy companies by making them State-run. Putin, indeed, wanted to stabilize the Country's economy by bringing oil and gas industries under the state control as they represented 60% of the stock market capitalization and 22% of tax revenue for the State[127]. For instance, in the first decade of the century the oil rents on GDP accounted on average to around 12.5%, in the

[121]Macrotrends, WTI Crude Oil Prices
[122]NIKONOV V., *'The Putin Strategy'*, Russia in Global Affairs, Vol.3, No.1, January-March, 2005
[123]GOLDTHAU A., SITTER N., *'Soft power with a hard edge: EU policy tools and energy security, EU policy tools and energy security'*, Review of International Political Economy, February 2015
[124]A commentary on and unofficial translation of the Russian document of 2000 by the European Commission's Delegation to Russia
[125]NORLING N., *'Russia's Energy Leverage Over China and the Sinopec-Rosneft Deal'*, Central Asia-Caucasus and Silk Road Studies Program, China and Eurasia Forum Quarterly, Vol.4, No.4, November 2006
[126]LEGVOLD R., *'Russia's Strategic Vision and the Role of the Energy'*, NBR Analysis, Russian Energy Policy and Strategy, Vol.1, No.2, July 2008
[127]WOLOSKY L. S., *'Putin's Plutocrat Problem'*, Foreign Affairs, March/April 2000

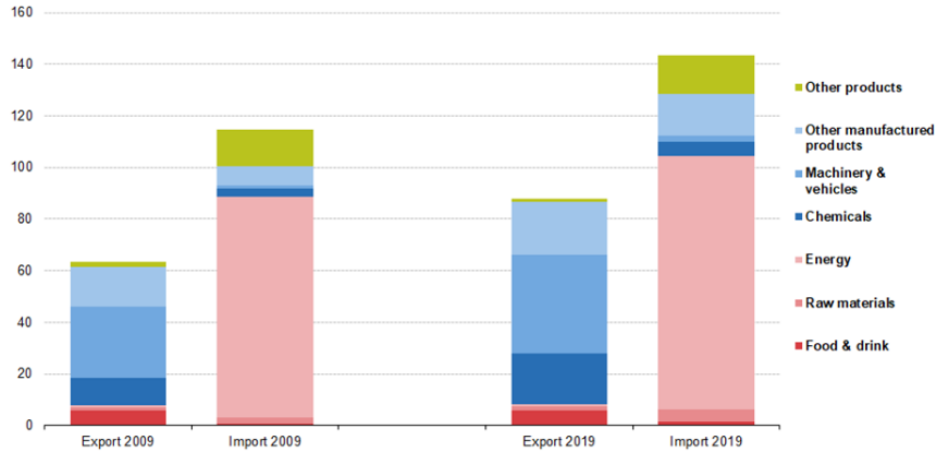
second one amounted to above 8% of the Russian GDP[128]. Natural gas had less weight on the Country's GDP since it accounted to around 5% of Russia's GDP in the first decade of 2000s, and to about 3% in the second one[129]. The Russian President recognized the importance of oil and gas in the Russian economy and tried to find a balance between enhancing the State control and making the energy sector attractive for investments. As a result, the Government nationalized the major energy companies; namely, Gazprom, Rosneft and Transneft; energy enterprises became joint-stock companies; and energy resources were put under governmental control. In this way energy companies were able to underpin foreign policy objectives, acting both globally and in the "near abroad"[130].

During the 2000s exports of energy sources to the EU was overall increasing [Figure 2-3], therefore further development of the relations was expected. The Energy Dialogue was established in 2000 to endow Russia and the EU with a space in which they would have been able to discuss every theme connected to the energy sector. Energy soon became the main topic of conversation during the EU-Russia Summit in 2003, 2005 and 2008[131].

In 2001, Russia was the main European energy supplier by exporting more than 20% of the European total gas consumption and 16% of the oil consumption[132]. The energy exports continued to be stable and, in 2004, the EU was the destination of 53% of Russian oil exports and 62% of Russian gas exports, representing about 20% of Russian GDP (with Gazprom alone accounting for 8% of it)[133]. [Figure 4] shows how the energy trade continued to grow also in the second decade of the 2000s. The most-traded item between the EU and Russia was energy, representing 68% of the total trade.

[128]TRADING ECONOMIES, *Oil Rents (% GDP)*
[129]TRADING ECONOMIES, *Natural Gas Rents (% GDP)*
[130]FINON D., LOCATELLI C., *'Russian and European gas interdependence: Could contractual trade channel geopolitics*?', Energy Policy, Elsevier, January 2008
[131]EUROPEAN COMMISSION, *'EU-Russia energy dialogue'*, Energy, the European Commission Website
[132]LABUSZEWSKA A., *'The Resource Wealth Burden – Oil and Gas Sectors in the Former USSR'*, Warsaw, Poland: Center for Eastern European Studies, December 2003; and *'EU/Russia Energy Dialogue: An Overview'*, June 2001
[133]SMITH A. M., *'Russia & The EU Under Putin'*, Conflict Studies Research Centre, July 2004

Figure 4: EU-27 trade with Russia by product group, 2009 and 2019 (EUR bln)



Source: Energy Information Administration, Eurostat

Notwithstanding the positive efforts made during the 2000s, the Russia-EU relationship stalled and was negatively affected by several events such as the gas disputes in 2006 and 2009.

In 2004, Russian gas towards European markets accounted for about 40% of the total European gas imports and 28% of demand[134]. Ukraine represented the pivot of Russian exports to Europe with a percentage of 80% of gas delivered via the Country to the EU[135]. In 2004, with the past Ukrainian debt being settled and stable delivery of gas, it seemed that Russia and Ukraine were on good terms. However, the situation changed when Viktor Yushchenko won the presidential election in Ukraine and tried to loosen ties with Russia[136]. The relationship worsened even more in 2005 when it was revealed that part of the Russian gas delivered by Gazprom in Ukraine was missing[137].

Gazprom asked Ukraine to align with the European standards and pay market – and therefore higher – prices. Gazprom suggested that if Ukraine were not able to pay the new tariffs the company itself could grant a loan, while President Putin offered a delay of three months for the new tariffs to enter into force[138]. When Yushchenko refused both these solutions, Gazprom suspended the transfer of gas.

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[134]CEDIGAZ, *Trends and Figures in 2004*, Cedigaz/IFP: Rueil Malmaison, 2005. Europe comprises all the countries on the European Continent plus the UK, Ireland, and Turkey, but excluding all former Soviet states apart from the Baltic countries.

[135]STERN J., *'The Russian-Ukrainian gas crisis of January 2006'*, Oxford Institute for Energy Studies, February 2006

[136]*Ibidem*

[137]The company holds the world's largest natural gas reserves and gas transmission systems. It is among the four top producers for oil in Russia and it is the number one, worldwide, for production of thermal energy. Information available at GAZPROM WEBSITE

[138]STERN J., *'The Russian-Ukrainian gas crisis of January 2006*, Oxford Institute for Energy Studies, February 2006; BBC, *'Russia offers delay on gas hike'*, BBC News, Europe, December 2005

The effects on the European Union were instantaneous: Hungary lost more than 40% of its Russian supplies, France 25-30%, Poland 14%[139] and Italy 25%[140]. After this incident, a new kind of energy security concept was developed and a new awareness of being vulnerable to Russian energy exports arose.

Between 2008 and 2009 a similar situation occurred again: on the one hand, Ukraine was not able to pay back the debt accumulated with Gazprom; on the other hand, Russia accused Ukraine of stealing gas that was directed to Europe. Hence, it was useless to continue to provide gas for Europe, and President Putin again interrupted the supply[141].

Europe received 1/5 of the total gas needed via Ukraine and 18 European countries remained without gas after Gazprom cut the supply[142]. Supplies of gas to Europe were completely interrupted for the first time since the construction of the gas transit system in Soviet times: not even during the gas dispute of 2006 did the shortfalls result in a complete disruption of supply.

These crises strongly influenced the energy policies of the two parties and their energy security concepts. For the European Union, Gazprom was not a reliable partner anymore and it was necessary to find new transit routes to avoid Ukraine and any related geopolitical risk; while for Russia the time had come to complete its shift from Europe towards Eurasia and China[143]. This was made clear in the Russian Foreign Concept of 2008, where Russia claimed to have fully recovered and it was ready to play a role of vital importance as a global actor that had a Great Power status in a multipolar world. Europe was not any longer one of the main concerns for the Country's foreign policy. Instead, CIS countries, the North African region, and the Arab world became Russian priorities – a novelty of extraordinary importance that explains how the shift from Greater Europe to Eurasia began.

The EU-Russia relations worsened after the events of 2008 and 2014 respectively in Georgia and Ukraine.

The Georgian crisis represented the first time that Russia and the EU were openly at opposite poles in the management of a political crisis in their respective neighborhoods. The crisis broke out in 2008, when Tbilisi tried to restore its territorial integrity with

[139]BBC, *Russia vows to end gas shortage*, BBC News, Europe, January 2006
[140]Italy lost 32 mln cub of gas in Russia-Ukraine gas dispute, source: RIA Novosti, January 2006
[141]REUTERS, *Timeline: Gas Crises Between Russia and Ukraine*, World News, January 2009
[142]PIRANI S., STERN J., Yafimava K., *The Russo-Ukrainian gas dispute of January 2009: a comprehensive assessment*, Oxford Institute for Energy Studies, February 2009
[143]VAROL T., *'The Russian Foreign Energy Policy'*, European Scientific Institute, July 2013

military invasion in South Ossetia – that along with Abkhazia benefited from a special autonomy[144]. The Russian peace-keeping troops on the territory responded with air strikes and the situation eased through the signing of a cease-fire agreement between Russia and Georgia. Russia supported and recognized the independence of Abkhazia and South Ossetia attracting the condemn of part of the international community[145].

The last crisis between the European Union and Russia occurred in 2014 and led to the suspension of relations. The dispute came about the reunification of the Crimea (a Ukrainian region) to Russia, an act which was condemned by the European Union. In 2014 Sevastopol called for a referendum to join the Russian Federation[146], resulting in 97% of votes in favor of the reunification with Russia. The international community immediately reacted by declaring the referendum illegal, since, according to international law, a referendum cannot be considered a legitimate way for a State to annex a part of another one[147].

As a reaction to the events in Crimea, in 2014 the EU-Russia summit was canceled, as well as bilateral meetings between Russia and EU members. The G8 – initially foreseen in Sochi – became a G7 held in Brussels. Most importantly, economic sanctions were imposed on Russia to target finance, arms, dual-use goods and various technologies for oil production and exploration and contributed to the reduction of trade[148]. Russia strongly criticized the "double standard" used by the European Union and its "geopolitical expansion", referring to the European Enlargement[149]. Hence, Russia decided to react with the so-called countersanctions that banned a variety of European agricultural products, and this reduced trade even further. It was estimated that the European Union lost around USD240 billion in trade with Russia since the issuing of sanctions[150], while Russia lost USD50 billion[151]. In fact, the European Union calculated that Russia lost every year around 2% of its GDP due to sanctions' effects[152]. In a climate of tension as at that time, the European Union also questioned the South Stream project; the pipeline that was planned to connect the South of Europe (Italy) to Russia bypassing

[144]INSTITUTE FOR WAR AND PEACE REPORTING, *Russia's war with Georgia: 2008 Timeline*, Refworld, August 2014
[145]CNN, *'2008 Georgia Russia Conflict Fast Facts'*, updated March 2020
[146]ROGERS J., *Why did Russia annex Crimea and what Happened on the Kerch Strait?*, The Sun, April 2019; THE GUARDIAN, *Ukraine crisis: an essential guide to everything that's happened so far*, April 2014
[147]POST, *Il referendum sulla Crimea è legale?*, March 2014
[148]EUROPEAN COUNCIL, *EU restrictive measures in response to the crisis in Ukraine*, Policies, 2019
[149]RUSSIAN FEDERATION, *Foreign Policy Concept of Russian Federation 2016*
[150]RUSSIA BRIEFING, *2019 Russian-EU Bilateral Trade Increasing*, June 2019
[151]THE MOSCOW TIMES, *'EU Lost 5 Times More From Sanctions Than Russia, Putin Says'*, June 2019
[152]EUROPEAN PARLIAMENT, *'EU-Russia Relations'*, Topical Digest, October 2016

the transit countries. This will be further analyzed in the next chapter. After 2014, the relations between EU and Russia are frozen.

The events in Crimea had strong implications on the EU-Russia energy relations. Despite the efforts made to avoid any disruption of gas, the conflict led to the interruption of supplies from Russia to Ukraine until it was reached an agreement between European Union, Russia, and Ukraine[153]. This amplified the European fear of future disruptions of the gas coming from Russia via Ukraine and pushed the EU to implement new measures to avoid transit countries. In response to this political crisis, on May 2014, it was issued the *European Union Energy Security Strategy*, with the aim of guaranteeing the well-being of the European populations by ensuring uninterrupted energy resources and strengthening the European energy security.

1.3 Energy Interdependence

The relations between the European Union and the Russian Federation are labeled as one of the most renowned case of interdependence. Generally, scholars theorized the pacific effects of economic interdependence since Nations do not want to be involved in conflicts with their economic partners to save their gains[154]. To a certain extent, the interdependence contributed to the distention of the relations between EU and Russia. In fact, during the Cold War, interdependence proved to be a driver stronger than political conflicts.

However, during the 1990s, the development of increasingly different visions on how to organize the energy sector dissolved the glue that was holding the relations and the logic of interdependence stopped to work. In effect, before the 1990s, the State-centric vision of the energy sector was quite shared; while, afterwards, the European Union decided to adopt a strategy of liberalization. This strategy was firstly followed by Yeltsin, but then a change of course occurred with Putin and this led to the emergence of new tensions. Additionally, exogenous factors with respect to the energy trade have further damaged the relations, both at the political and energy level. Geopolitical issues – such as the NATO/EU enlargement and the consequent redefinition of European and Russian

[153]AOUN M.-C., *'European Energy Security Challenges and Global Energy Trends: Old Wine in New Bottles?'*, IAI-OCP Policy Center partnership, January 2015

[154]KANT I., *Kant's Political Writings*, 2nd ed. Hans Reiss, H. B. Nisbet (trans.), Cambridge: Cambridge University Press, 1991 [1795]; ONEAL J. R., ONEAL F. H., MAOZ Z., RUSSETT B., *'The Liberal Peace: Interdependence, Democracy, and International Conflict 1950–85'*, Journal of Peace Research, Vol. 33, No. 1, February, 1996; MAOZ, *'The Effects of Strategic and Economic Interdependence on International Conflict Across Levels of Analysis',* University of California, 2009

sphere of influences, Ukrainian and Georgian crisis, US interference – became more important and the energy relationship suffered the consequences of this rhetoric becoming a victim rather than a trigger of tensions.

Even with the progressively emergence of frictions between EU and Russia, some features of their relationship in the energy field remained stable.

Firstly, the high-level political engagement between leaders of some Member States and Russia; namely, Italy and Germany that cemented their energy-related agreements. Then, the willingness by both EU and Russia, as importing and exporting partners, to diversify in order to limit their exposure. As well as the US opposition to a tighter cooperation between European Union and Russia, that mirrors the past disapproval of the collaboration between European States and USSR. In this regard, it is worth to point out the strong US opposition to the construction of the North Stream II. Additionally, in spite of all the efforts that have been made and the tensions occurred, the Russian market share in key European markets today remains quite similar to the level observed in the 1970s. Oil and, to a lesser extent, gas remain a very important component of the Russian economy, which struggles to diversify making Russia a possible case of "Dutch Disease"[155]. All in all, strong path dependency dynamics can be observed in EU-Russia relations.

Interdependence in the EU-Russia relations is strongly developed in the energy sector and can be of two types: symmetrical and asymmetrical. In the first category, the two parties are equally dependent on each other and a break in the relations will hurt them in the same way. In the second one, an actor is considerably more dependent on the other and will be hurt more by a rupture of the relations[156].

In the energy field, interdependence is defined by the fact that the European Union imports a huge part of its energy consumption from Russia and the Russian Federation is willing to sell its resources to Europe because it is the most profitable market. Therefore, this appears like a "win-win" situation. Energy relations between EU and Russia are characterized not only by strong rationality that connects the nearest consumer – Europe

[155]In the event a country experiences a boom of tradable resources, for example oil, or the price of those resources grows due to exogenous factors, the exchange rate suffers of appreciation and, as a consequence of the growing wages, there is the relocation of part of the labor force destinated to the natural resources sector. As a result of the appreciation, there is a loss of international competitiveness in the manufacturing sector. This phenomenon is called "Dutch Disease" and the Russian Federation, due to its huge reserves, exports and production of oil and natural gas is a good candidate for the "Dutch Disease". ALGIERI B., *'The Dutch Disease: evidence from Russia'*, Springer Science, December 2007

[156]KEOHANE R. O., NYE J., *Power and Interdependence: World Politics in Transition*, New York: Little, Brown and Company, 1989

– with a large producer – Russia – but also by the existence of infrastructures that transport oil and gas, making the energy trade more difficult to abandon. This can be exemplified through the concept of "*path dependency*" – a phenomenon whereby the decisions taken in the past persist and have effects on the present[157]. In the case of the EU-Russia relations the path dependency makes quite hard to find alternative energy partners.

To understand how the concept of interdependence evolved in this relationship, it is needed to analyze two related concepts: sensitivity and vulnerability. Sensitivity refers to "*to the costs that each side suffers when the other State does not offer it the benefits it should get from their relationship*" such as a reduction in energy supply[158]. Vulnerability represents "*the degree of weakness of an interdependent state if the other attempts to terminate their interdependent relationship*", for instance, the severe consequences that the European Union would suffer in case of a disruption in the energy supply from Russia[159].

Traditionally, scholars agreed that the Russian Federation was sensitive to EU actions since it was the main destination for Russian energy exports. Hence, if the exported quantities diminished Russia would lose a great part of its income. Specifically, energy exports account nowadays for 30% of the Russian GDP[160]. In spite of this, conventionally, Russia was not considered vulnerable as the Country could choose to diversify its energy exports. However, the shift to alternative energy partners requires time and it may result in making useless a capital-intensive asset. While the European Union was traditionally considered vulnerable since there was not any other supplier that could fulfill the Russian level of exports to the EU[161].

Nevertheless, the degree of vulnerability differed within European countries. Before the enlargement of the European Union in 2004, the European dependency on Russia's energy was around 25%, while the average dependence in Central and Eastern

[157]HEDLUND S., *Path Dependence in Russian Policy Making: Constraints on Putin's Economic Choice*, Post-Communist Economies, Vol. 12 N° 4, 2000
[158]KEHOANE R. O., NYE J. S., *Power and Interdependence*, Boston: Little, Brown, 1977; PROEDROU F., *The EU-Russia Energy Approach under the Prism of Interdependence*, European Security, 16:3-4, December 2007
[159]KEHOANE R. O., NYE J. S., *Power and Interdependence*, Boston: Little, Brown, 1977
[160]Crude oil and oil products accounted for an average of 40% of Russia's total export income from goods and services in 2000–17. Natural gas exports, the price of which is linked to the oil price, accounted for 12%; in RAIK K., RACZ A., *Post-Crimea Shift in EU-Russia Relations: From Fostering Interdependence to Managing Vulnerabilities*, International Centre for Defence and Security, Estonia, May 2019
[161]CASIER T., *The Rise of Energy to the Top of the EU-Russia Agenda: From Interdependence to Dependence?*, Geopolitics, Volume 16, Issue 3, August 2011

European countries was around 77%[162]. The degree of interdependence varied for every Country according to its share of energy imports. Eurostat shows that geographic proximity was still crucial since the countries that imported less than 25% of gas and oil from Russia were the ones situated further away from it (with the only exception of Latvia). Indeed, Estonia, Lithuania, Slovakia, and Finland imported more than 75% of their petroleum imports from Russia; instead, less than 25% of Russian oil imported to Europe went to Spain, France, Italy, and the UK, while between 25% and 50% of the oil was imported by the Netherlands and Germany[163].

It is worth to highlight a distinction between oil and gas in the analysis of interdependence. Oil is a less sensitive topic between EU and Russia since it can be sent through oil tankers around the world and received from various countries. Conversely, gas, at least in absence of LNG terminal, can be moved only through pipeline, making the relation emerged from its transport more difficult to break. These general assumptions about oil and gas can be applied to the concrete case of Russia and the EU. Particularly, until 2009, Russia did not have any LNG terminal and even then, the terminal was in the Far East and therefore not so relevant. Hence, it is not a coincidence that the most relevant energy security issues concern gas rather than oil; although oil, in monetary terms, has more value than gas for the Russian GDP.

However, in the European-Russian relation, there is a significant paradox about energy interdependence. The European Union, in 2019, imported 20% of its total oil consumption from Russia and 40% of its gas consumption[164]; while Russia was heavily dependent on European demand, indeed, in 2019 around 70% of Russian natural gas exports went to Europe and around 55% of its total oil exports was delivered to EU[165]. This data meant that in case of an interruption in the supplies, the Russian economy would face very negative consequences, particularly because there is not a valid and immediate alternative destination to this export. Shifting to new markets needs planning investments and financial support in due time[166], while pipes that connected Russia to the EU were already in place.

Nevertheless, the perception of insecurity as well as the policies adopted to lessen

[162]*Ibidem*; BOCSE A. M., *'EU Energy Diplomacy: Searching for New Suppliers in Azerbaijan and Iran, Geopolitics'*, Geopolitics, Routledge – Taylor & Francis Group, October 2018
[163]EUROSTAT, *'EU imports of energy products – recent developments'*, Statistic Explained, December 2019
[164]BP, *'BP Statistical Review of World Energy'*, 68th edition, 2019
[165]*Ibidem*
[166]CASIER T., *The Rise of Energy to the Top of the EU-Russia Agenda: From Interdependence to Dependence?*, Geopolitics, Volume 16, Issue 3, August 2011

the degree of energy dependence were mostly European. Within the European Union, the awareness that energy could be a possible weapon spread and this feeling was amplified by the European dividedness on energy matters. Despite the European dependence on Russia was not overall so strong, not acting collectively made the most dependent countries felt that their sovereignty was in danger[167]. And the gas disputes made the European States believe that Russia was using the energy tool in an authoritarian way to expand its influence and follow its geopolitical agenda[168].

Rather than sensitive or vulnerable, both Russia and UE appeared as "captive of each other". Moves to alleviate the energy dependence were taken from both sides. The EU carried out policies of diversification, liberalization of the energy market. As a response, the Russian Federation tried to diversify its markets, for instance by attempting to defend oil indexation in long-term gas contracts and upholding control of transit routes.

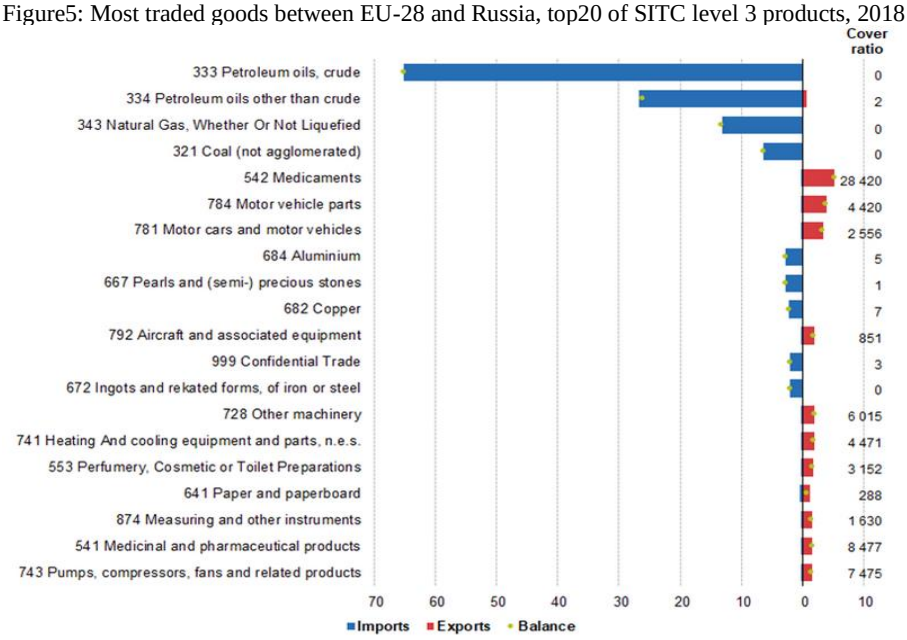
1.4 Status Quo

The disputes about gas in 2006 and 2009 and the political tensions about Crimea and Georgia, certainly, contributed to the worsening of the EU-Russia relations that today are considered frozen. However, despite the effects of the European sanctions and the Russian counter-sanctions, the energy relationship between the two partners did not deteriorate but continue to be overall stable.

The most traded items between the EU and Russia, in 2018, were oil, followed by petroleum products other than crude, natural gas (liquefied or not) and coal [Figure 5][169]. Between 2018 and 2019, Russia was the largest exporter of oil to the EU, followed by Norway, Iraq, Kazakhstan, and Nigeria[170].

[167] *Ibidem*
[168] BUGAJSKI J., *Dismantling the West: Russia's Atlantic Agenda,* Potomac Books Inc., Washington DC, October 2009; LUCAS E., *The New Cold War: Putin's Russia and the Threat to the West*, Bloomsbury, February 2008; GOLDMAN M., *Oilopoly: Power, Putin and the Rise of the New Russia*, Oneworld Publications, May 2010
[169] EUROSTAT, *Most traded goods between EU-28 and Russia*, top 20 of SITC level 3 products, February 2019
[170] EUROSTAT, *EU imports of energy products – recent developments*, Statistic Explained, December 2019

Figure5: Most traded goods between EU-28 and Russia, top20 of SITC level 3 products, 2018 (EUR bln)



Note: While the trade balance provides information on the absolute value of trading positions, the cover ratio provides a relative measure that is based on the ratio (expressed in percentage terms) between the value of exports and the value of imports; if exports are higher than imports then the cover ratio will be above 100.

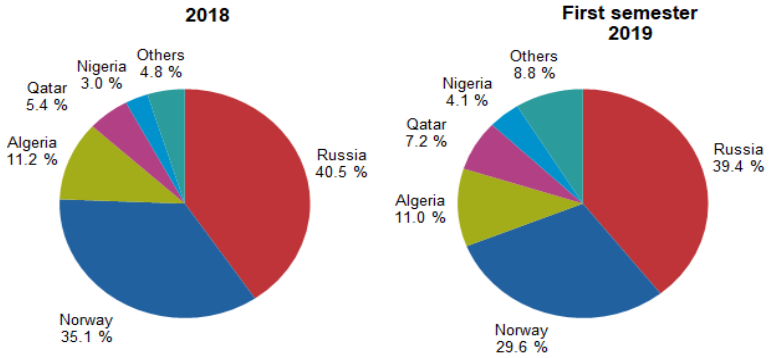
Source: Eurostat

The sanctions regarding the energy sector were limited to oil. In fact, it is worth pointing out that if sanctions had been imposed on the gas sector, they would have represented a double-edged sword for the EU. Lack of sanctions on natural gas derives from the fact that gas is less substitutable than oil because it is mainly transported by pipeline; there is no global liquid market with wide availability of cargo spot; and long-term contracts have to be respected. Today Russia still is the European main natural gas supplier, followed by Algeria, Qatar and Nigeria [Figure 6][171].

Central and Eastern European countries were the most concerned over a future disruption of gas supplies. In fact, Bulgaria, Czech Republic, Estonia, Latvia, Hungary, Austria, Romania, Slovenia, Slovakia and Finland imported more than 75% of their natural gas from Russia[172].

[171] EUROSTAT, *'EU imports of energy products – recent developments, Statistic Explained'*, December 2019
[172] *Ibidem*

Figure 6: Extra-EU imports of natural gas from main trading partners, 2018 and first semester 2019 (share (%) of trade in value)



Source: Eurostat Database (Comext) and Eurostat Estimates

Trade of the natural resources at this level was possible because the relationship in the energy sector constitutes the backbone of the whole EU-Russia relation creating continuity in the midst of harsh sanctions and a deteriorating political environment[173].

However, it is possible to draw a parallel between the present and the past. As in the past, the economic aspects of the relation in the energy field[174] was more important than the influence of USA on the European Union and the tensions deriving from the Cold War; in the last few years, the decrease in European gas production and the wide availability of Russian gas supplies created incentives to strengthen trade.

The European Union tried to diversify not only its imports but also its way of transporting energy. If previously, gas was transported mainly via pipelines, over the last few years liquefied natural gas (LNG) has become more and more important[175].

These energy strategies combined with the aforementioned data provide an idea of the magnitude of the impact that every European step taken to enhance energy security has on Russia.

Diversification strategies as well as the creation of an integrated energy market in the EU have made the EU less vulnerable to supply disruptions from Russia, reducing dependence. On the other hand, Russia remains still highly dependent on the EU as an outlet market. This is gradually changing, as Russia has expanded its LNG export potential and built a pipeline to China (Power of Siberia). However, it will take time before Russia manages to replace the EU as its main fossil fuel export outlet.

[173]SCHMIDT-FELZMANN A., *'Negotiating at cross purposes: conflicts and continuity in the EU's trade and energy relations with Russia, pre- and post-2014'*, Journal of European Public Policy, October 2019; FORSBERG, T., *'From Ostpolitik to 'Frostpolitik'? Merkel, Putin and German foreign policy towards Russia'*, International Affairs 92(1): 21–42, 2016

[174]Graph 2 explained how the European need of energy matched Moscow's need of hard currency.

[175]BP, *'BP Statistical Review of World Energy'*, 68th Edition, 2019

Chapter II: Energy Security: Opposing Concepts?

After the 1973 "oil shock", the concept of energy security shifted in its meaning from military preparedness to non-traditional areas such as the energy sector and, after the end of the Cold War, this concept became even more important[176]. The International Energy Agency (IEA) defined energy security as 'the uninterrupted physical availability at a price which is affordable, while respecting environmental concerns'[177]. Generally, energy security depends on several features, such as "diversification of energy supply, energy saving capability, development of energy infrastructure, and stability on the international arena"[178].

Discourse on energy security gained further importance in the first decade of the century, after 9/11 events, when it appeared that the major oil producers could have extremely different interests compared to the major buyers[179]. Several other events threatened the energy security of European countries, such as the US sanctions on Iran due to the tensions regarding the development of its nuclear programme, the damages to oil infrastructures in Nigeria, the Hurricane Katrina that destroyed part of the US installations in the Gulf of Mexico[180]. But what prompted the European debate on energy security was the instability of the flows throughout the transit countries.

2.1 Two Different Energy Security Concepts

History of European energy security is not recent: with the Green Paper (2000), the European Union embraced the International Energy Agency's definition of energy security[181] and outlined its concerns over energy dependency and oil prices[182]. From that moment, the European Union launched numerous proposals to increase its energy

[176]DE JONG S., WOUTERS J., STERKX S., *'The 2009 Russian-Ukrainian Gas Dispute: Lessons for European Energy Crisis Management after Lisbon'*, Kluwer Law International in European Foreign Affairs Review 511, January 2010; YOUNGS R., *'Energy Security: Europe's New Foreign Policy Challenge'*, London-New York, Routledge, January 2009

[177]INTERNATIONAL ENERGY AGENCY, '*The IEA Model of Short Term Energy Security: Primary Energy Sources and Secondary Fuels',* Paris: IEA, December 2011

[178]BAEHR J., STAWICKI E., ANTCHAK J., *'энергетическое право [Energy Law]'*, Zakamycze, 2003

[179]BAKER J. A., '*Global Energy Market: Comprehensive Strategies to meet Geopolitical and Financial Risks – the G8, Energy Security, and Global Climate Issues'*, Baker Institute Policy Report, Public Policy of Rice University, N. 37, July 2008; BIEGUN S., '*The Global American Politics of Energy'*, in CAMPBELL K. M., NYE J. S., SCOWCROFT B., PRICE J., *The Global Politics of Energy*, Aspen Institute, 2008

[180]MULLER-KRAENNER S., *Energy Security: Re-Measuring the World*, Sterling, VA: Earthscan London, 2008

[181]EUROPEAN UNION, *'Green Paper - Towards a European Strategy for the Security of Energy Supply'*, (COM(2000)769), November 2000

[182]*Ibidem*

security. In 2005, the *Energy Community* was established, to expand the European Energy Market to South-East Europe and ensuring energy supplies to the "wider Europe"[183]. The Treaty was signed by the EU and Albania, Bosnia and Herzegovina, Croatia, Former Yugoslav Republic of Macedonia, Montenegro, Serbia, the United Nations Interim Administration Mission in Kosovo, while Moldova and Ukraine signed in 2014. In 2007, the *Black Sea Synergy* was signed to continue the dialogue on energy security between Europe and its partners in the Black Sea region[184]. In 2008, the European Commission issued *The EU Energy Security and Solidarity Action Plan: Second Strategic Energy Review*[185], based on five pillars necessary to strengthen security within the energy sector, namely: "*infrastructure needs and the diversification of energy supplies; external energy relations; oil and gas stocks and crisis response mechanisms; energy efficiency; making the best use of the EU's indigenous energy resources*"[186].

The gas disputes spurred an in-depth debate over whether Russia could use energy as a weapon in the geopolitical field, emphasizing how greatly the EU depended on Russia and putting energy even more in the spotlight of national security[187]. Therefore, in 2009 Member States, assessing the economic damages caused by the interruption of supplies during the Ukraine-Russia disputes, decided to establish the *Early Warning Mechanism*, within the Energy Dialogue established in 2000. Right after, a Memorandum – not legally binding – between EU and Russia was signed in Moscow with the scope of preventing and managing future energy crisis[188].

With this new awareness, Europe adopted several measures to lessen its dependency on Russia, for instance, opening the gas market, inquiring the long-term contracts between Gazprom and European customers, launching antitrust cases, and

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[183]ZIENIEWICZ A., '*The External Dimension of the EU Energy Security'*, Yearbook of Polish European Studies, 2010

[184]COMMISSION OF THE EUROPEAN COMMUNITIES, *'Communication from the Commission to the Council and the European Parliament black sea synergy - A new regional cooperation initiative'*, COM(2007) 160 final, Eur-Lex, Brussels, April 2007

[185]COMMISSION OF THE EUROPEAN COMMUNITIES, *'Commission Staff Working Document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Second Strategic Energy Review, An EU Energy Security and Solidarity Action Plan, Energy Sources, Production Costs and Performance of Technology for Power Generation, Heating and Transport'*, (COM(2008)781) final, Brussels, November 2008

[186]MITROVA T., '*European Gas Import Requirements and Russian Gas Export Potential',* Energy Research Institute Russian Academy of Sciences, Warsaw, June 2008

[187]UMBACH F., '*Global energy security and the implications for the EU'*, Energy Policy, Volume 38, Issue 3, March 2010; WEBB T., BARNETT N., '*Gas: Russia's secret agenda energy supply is a 'political weapon''*, The Independent, January 2006

[188]COMMISSION PRESS RELEASE, *'The EU and Russia reinforce the Early Warning Mechanism to improve prevention and management in case of an energy crisis'*, IP/09/1718, Brussels, November 2009

setting new standards for gas supplies, along with the liberalization of the gas market and the diversification of transit routes and energy resources.

Over the years, energy security acquired more importance at the Community level. European institutions called for coordinated policies and Member Sates tried to enforce it by acting together in accordance with their national security interests[189]. In 2011, the *Energy Infrastructure Package* was adopted to identify the main corridors for oil, gas, and electricity transport, and, in 2014, the European Commission classified the critical projects for energy security.

Although the trade of oil and gas remained constant, the events in Crimea boosted even more the already existing concerns on energy security within the European Union, leading to the establishment of the *Energy Union* and the *European Energy Security Strategy*. The former outlined the need to reduce dependency on certain suppliers, especially Russia, to point out the vulnerability to supply interruptions and shocks, and to highlight the necessity for a collective approach to energy policy by acting with "one voice"[190]. The Energy Union was the way to put into practice these goals. It was established in 2015 by the European Commission, under the chairmanship of the Polish President Donald Tusk, to provide European consumers with "secure, sustainable, competitive and affordable energy"[191]. To reach these objectives the European Union would define its energy policies taking into account five main aspects: energy security, fully-integrated internal energy market, energy efficiency, decarbonising the economy, and research, innovation and competitiveness[192]. The *EU Global Strategy* issued in 2016 gave a specific focus to energy and energy security.

In recent years, energy security and climate change dominated the European energy policy. These two issues are strongly related since low-carbon goals are usually correlated to the diversification of energy supplies[193]. The transition to renewable energy is motivated by both sustainability and security of supply considerations. Apart from

[189]ZIENIEWICZ A., '*The External Dimension of the EU Energy Security'*, Yearbook of Polish European Studies, 2010
[190]EUROPEAN COMMISSION, '*Communication from the Commission to the European Parliament and the Council - European Energy Security Strategy'*, COM(2014) 330 final, Brussels: European Union, April 2014
[191]EUROSTAT, *Shedding light on energy in the EU – A Guided Tour of Energy Statistics*, Edition 2019
[192]*Ibidem*
[193]MCCOLLUM D., KREY V., RIAHI K., '*An integrated approach to energy sustainability',* Nature Climate Change, International Institute for Applied Systems Analysis, November 2011; MCCOLLUM D., KREY K. RIAHI K., KOLP P., GRUBLER A., MAKOWSKI M., NAKICENOVIC N., *'Climate Policies Can Help Resolve Energy Security and Air Pollution Challenges'*, Springer Science, Business Media Dordrecht, February 2013

reducing greenhouse gas emissions, a wider adoption of renewable energy also allows the EU to reduce fossil fuel consumption and thus imports[194]. Therefore, adopting climate policies to reduce dependence on fossil fuels and external suppliers may be the most effective way to enhance energy security in the long-term[195].

Energy security has usually been treated as security of supply, but as producer and consumer respectively, Russia and the EU differ in their visions of the issue. Indeed, States which own huge volumes of resources base their energy security strategies on the efficient utilization of hydrocarbons; supervising oil, gas and coal reserves; preventing the exhaustion of energy deposits; exploring new sources; continuing the monitoring and the growth of their export markets. Conversely, countries that lack natural resources try to boost their energy security by diminishing their dependence on external suppliers, diversifying imported energy fuels, regulating the internal market coherently with energy security (for instance, internal integrated European market, liberalization, cheap prices). Still, there are issues that both consumers and producers share, namely the reliability of transit infrastructures.

Russia's energy security strategy is based on the continuity of its energy export and, therefore, long-term demand and commitments of the buyers are crucial[196]. The importance of oil and gas incomes led Russia to reevaluate the concept of energy security and centralized the energy sector. In 2006, Putin provided a non-traditional definition of "energy security", by making it one of the main G8 topics and pointing out the importance of harmonizing "security of demand" with "security of supply"[197]. Furthermore, in 2012, Russia adopted its *Energy Security Doctrine* through which energy security was defined according to three levels, global, national, and regional, and the main threats to it were identified as internal and external[198]. Internal threats are due to financial, social, political, and technological factors, while the external ones depend on economic and political

[194]CRIQUI P., MIMA S., '*European climate—energy security nexus: A model-based scenario analysis*', Energy Policy, Vol. 41, issue C, 2012
[195]ZECCA A., CHIARI L., '*Fossil-fuel constraints on global warming'*, Energy Policy 38, January 2010
[196]BELOVA M., '*Interview on Russian energy policy'*, Interviewed by Sharples J. D. [in person], Moscow: Institute for Energy Strategy, June 2011; ZOLOTUKHIN, A. B., '*Interview on Russian energy and foreign policy'*, interviewed by SHARPLES J. D. [in person] Gubkin Russian State Oil and Gas University, Moscow, October 2011
[197]The Global Energy Security Action Plan approved at the G8 Strelna; LESAGE D., VAN DER GRAFF T., WESTPHAL K., *The G8's role in global energy governance since the 2005 Gleneagles summit*, Global Governance, JSTOR, April 2009
[198]BOGOVIZ A., LOBOVA S., RAGULINA Y., ALEKSEEV A., *'Russia's Energy Security Doctrine: Addressing Emerging Challenges and Opportunities'*, International Journal of Energy Economics and Policy, Vol. 8, October 2018

international events[199]. The aim of Russia's *Energy Security Strategy* was to soften or limit the consequences deriving from the abovementioned risks.

Putin approved the new *Energy Security Doctrine*, which highlighted the domestic importance of ensuring production and delivery of energy supplies, investing in the energy sector, and regulating energy resource prices[200]. The Doctrine envisaged as new main priorities the Eurasian Economic Union, the CIS and BRICS countries, the Shanghai Cooperation Organization, the Gas Exporting Countries Forum, and OPEC, while highlighting the importance of acting as a global actor in guaranteeing energy security. The current Russian energy security strategy is mainly based on strengthening Russian position in the global energy market, ensuring energy supplies, securing transit routes, developing energy infrastructures in neighboring countries, expanding its markets to Asia, in particular.

2.1.1 Liberalization of Energy Market – Increasing the Internal Sources for Energy Security

Geopolitical concerns led the European Union to adopt several strategies to increase its energy security, such as the liberalization of the EU's internal energy market.

The liberalization process was mainly constituted by the *First Energy Package*, composed by the electricity (1996)[201] and natural gas (1998)[202] Directives; the *Second Energy Package* concerning common rules for the internal market in natural gas[203]; and the *Third Energy Package* constituted by two new Directives on electricity (2009)[204] and gas (2009)[205].

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[199] *Ibidem*

[200] GRIFFIN R., *'Putin approves new Russian energy security doctrine'*, S&P Global, Moscow, March 2019

[201] COUNCIL OF THE EUROPEAN UNION, European Parliament, *'Directive 96/92 EC of the European Parliament and of the Council concerning common rules for the internal market in electricity'*, Official Journal of the European Communities, Brussels, December 1996

[202] COUNCIL OF THE EUROPEAN UNION, European Parliament, *Directive 98/30/EC of the European Parliament and of the Council of 22 June 1998 concerning common rules for the internal market in natural gas*, Official Journal of the European Communities, Brussels, June 1998

[203] COUNCIL OF THE EUROPEAN UNION, European Parliament, *Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC*, Official Journal of the European Communities, Brussels, June 2003

[204] COUNCIL OF THE EUROPEAN UNION, European Parliament, *Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC*, Official Journal of the European Communities, Brussels, July 2009

[205] COUNCIL OF THE EUROPEAN UNION, European Parliament, *Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC*, Official Journal of the European Communities, Brussels, July 2009

These acts legislated the introduction of several novelties in the EU-Russia energy relation. Among which, the most important was the brake up (unbundling) of vertically integrated gas companies and the expansion of this norm to foreign partners[206]. "Unbundling" meant that companies could not operate all the phases of the energy (gas and electricity) chain under the same ownership. The effects of this policy affected both the European companies that were vertically integrated in these processes and Russian companies operating in the production phase (upstream) that could not enter in downstream sectors in Europe[207]. In particular, according to the Third Energy Package gas producers were not allowed to operate transportation infrastructures. This caused a loss of power of national energy companies that are crucial actors in shaping energy policies since they buy fuels and manage transport, storage, and production activities[208].

The Package also included the so-called "Gazprom clause"[209], according to which companies from non-Member States could not control transmission systems except if "(i) there is an agreement between the European Union and the Country in which these non-EU companies are based, and (ii) these non-EU companies can demonstrate that they are not influenced by an operator active in the production or supply of gas or electricity, or by a third Country"[210]. This was also called the "reciprocity clause" since it prevented foreign companies like Gazprom from acquiring gas assets within the European Union unless their host countries did not open up their markets to reciprocate[211]. The Russian Federation could have been damaged by the "*reciprocity clause*" since this clause was aimed at blocking Gazprom's expansion in the European natural gas market[212]. So that President Putin defined the Third Energy Package "*a robbery*" and "*violation of Article 34(1) of the Partnership and Cooperation Agreement*"[213].

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[206]KRICKOVIC A., *'When Interdependence Produces Conflict: EU–Russia Energy Relations as a Security Dilemma'*, Contemporary Security Policy, 36:1, 3-26, February 2015
[207]*Ibidem*
[208]RAIK K., RACZ A., *Post-Crimea Shift in EU-Russia Relations: From Fostering Interdependence to Managing Vulnerabilities*, International Centre for Defence and Security, Estonia, May 2019
[209]COUNCIL OF THE EUROPEAN UNION, European Parliament, *Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC*, Official Journal of the European Communities, Brussels, July 2009; EEAS, '*EU-Russia Common Spaces - Progress Report 2008'*, EU Neighbors, March 2009
[210]GUTIERREZ J., KOSTADINOVA E., *'"Gazprom Clause" in Commission's Proposal for a Third Energy Package Disputed'*, in *'Brussels Energy Brief'*, McDermott Will & Emery Stanbrook, April 2008
[211]EURACTIVE, *'EU, Russia to explore 'reciprocity' in energy trade'*, Euractive, May 2012
[212]DRALLE T. M., *Ownership Unbundling and Related Measures in the Energy Sector: Foundations, the Impact of WTO Law and Investment Protection*, Dresden: Springer, 2018
[213]HOBÉR K., '*WTO and Russia'*, in Rovine A.W., *Contemporary Issues in International Arbitration and Mediation*, The Fordham Papers, Volume 8, Brill–Nijhoff, October 2015

An Integrated Internal European Energy Market was identified as one of the most beneficial ways to guarantee secure and affordable energy to European citizens while producing economic benefits[214]. The European Union issued several Directives for regulating two main markets: gas and electricity. An integrated gas market could lead to cheaper and more flexible gas prices, permitting new suppliers to enter the market[215]. Creating an integrated market is possible through the development of new infrastructures, which would contribute to the opening of new gas markets, meanwhile increasing energy security and reducing dependence on few suppliers[216]. Besides, an integrated internal gas market would prevent any supplier to sell gas to European countries at different prices, as Russia already did[217].

Achieving integrated gas markets require strong coordination of the energy policies of the Member States and the elimination of subsidies in favor of national energy industries. Since energy is such a sensitive issue, it is not likely that Member States will decide to compromise and give up their prerogatives.

The Third Energy Package was preceded by the entry into force of the Lisbon Treaty that listed energy as a "shared competence", meaning that Member States were able to legislate only in areas on which the EU decided not to[218]. The European Union was entitled of directing the objectives related to energy policy, but the measures decided by the EU's "*should not affect the right of a member state to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply*"[219]. Hence, the European Union was responsible to define a common policy to which Member States adapted, also in regard to Russia.

The strength that the *Lisbon Treaty* gave to Brussels made possible to take actions at the internal level such as dismantling national energy monopolies[220]. The main

[214]EUROPEAN COMMISSION, *Electricity Market Design*, Energy, September 2016; Newbery D., Strbac G., Pudjianto D., NOEL P., *Benefits of an Integrated European Energy market – prepared for: Directorate-General Energy European Commission*, LeighFisher, London, July 2013
[215]NEWBERY D., Strbac G., Pudjianto D., Noel P., *'Benefits of an Integrated European Energy market – prepared for: Directorate-General Energy European Commission'*, LeighFisher, London, July 2013
[216]*Ibidem*
[217]SIDDI M., *'The EU's Energy Union – Towards an Integrated European Energy Market?'*, The Finnish Institute of International Affairs, FIIA Briefing Paper 172, March 2015
[218]INFORSEEUROPE, The Lisbon Treaty and Sustainable Energy, International Network for Sustainable Energy, December 2010
[219]LISBON TREATY, *Consolidated version of the Treaty on the Functioning of the European Union – Part Three: Union Policies and Internal Actions – Title XXI: Energy – Article 194, Official Journal 115 P. 0134 – 0134, May 2008*
[220]HERRANZ-SURRALLÉS A., *'Energy diplomacy under scrutiny: parliamentary control of intergovernmental agreements with third-Country suppliers',* West European Politics 40(1), November 2016

difference between EU and Russia is that European companies are to a large extent private, while Russian ones, despite the existence of anti-trust regulations and market principles[221], are closely connected to the State[222]. The consequence is that Russian companies act, at the same time, according to the economic logic of the free competition and to foster geopolitical interests of the Country.

The opening of the EU gas market to competition had conflictive consequences. On the one side, it alleviated the European fear of depending on Russia's energy; on the other side, it increased tensions between the two players since Russia felt that the European Union was not taking into consideration its quest for stable market and prices[223]. Indeed, Russian energy companies and the government historically were closely linked to each other; income from the export of energy resources remained in the Country and could be invested to support the growth of the Russian economy[224]. Therefore, any reduction of the possibility from Russia to move freely in foreign markets raised some concerns within the government.

The goals set through the Third Liberalization Package were certainly admirable, but the results were not the ones expected. Indeed, the European willingness to increase competition, prohibit monopolies, and access gas at competitive prices conflicted with the reality, in which Russia had the largest gas resources at the cheapest price[225].

2.1.2 Energy as a State-Run Sector: The Role of Gazprom

The energy sector in Russia is defined as State-run since several strategic oil and gas companies are owned by the State. For instance, the oil leader Rosneft was established through a presidential decree, its board is mainly composed of politicians[226], and its majority shareholder – Rosneftegaz JSC is a company 100% State-owned[227]. Lukoil is an oil company owned by the State with a 14% stake that controls around 2% of oil production and 1% of oil refining capacity worldwide. Regarding nuclear energy,

[221]AVDASHEVA S., GOLOVANOVA S., *'Oil explains all: desirable organisation of the Russian fuel markets (on the data of three waves of antitrust cases against oil companies)'*, Post-Communist Economies 29(2), February 2017
[222]TYNKKYNEN V. P., *'Energy as Power: Gazprom, Gas Infrastructure, and Geo-Governmentality in Putin's Russia',* Slavic Review 75 (2), Summer 2016
[223]KRICKOVIC A., *'When Interdependence Produces Conflict: EU–Russia Energy Relations as a Security Dilemma'*, Contemporary Security Policy, 36:1, February 2015
[224]*Ibidem*
[225]HENDERSON J.*, 'Russia's gas pivot to Asia: Another false dawn or ready for lift off?'*, The Oxford Institute for Energy Studies, November 2018
[226]ROSNEFT WEBSITE, '*Corporate Governance – Board of Directors* '*Sovet Direktorov''*, last access April 2020
[227]ROSNEFT WEBSITE, '*Rosneft at a Glance'3*, April 2020

Rosatom is a corporation fully State-owned. These Companies are the so-called "National Champions", but among them, the most important one for what concerns the EU-Russia energy relations is certainly Gazprom.

In 1989, the Soviet Gas Industry Ministry was transformed into Gazprom State Gas Concern, and later, through a Presidential Decree of 1993 Gazprom was established as a joint-stock company. In 2004, Gazprom fused its assets with Rosneft making it possible to provide the State with the majority stake[228]. Indeed, while in the 1990s the Russian government held 38.5% of the company's shares, from 2005 this quota increased to 50 plus one.

Today, the company plays a crucial role in the energy sector contributing to quite a significant part of Russian GDP and until 2011 Gazprom held export monopoly for Russian foreign gas trade[229], becoming known as the Russian Giant. Gazprom owns the world's largest natural gas reserves, accounting for 71% of Russian gas reserves and 16% of the global ones. It is the world-leading gas producer and contributes to the global output with a share of 12%[230]. The Company is top ranking worldwide for thermal generation and its gas exports reaches more than 30 countries. Being a State-owned company Gazprom generally worked according to the national interests, even though every operation conducted by this energy giant was taken in accordance to the business rationality that maximized the profits[231]. This dualism became more complicated in 2003 when the Russian government adopted the Energy Program through which commissioned Gazprom of the control of the gas production, making the company a global player able to influence foreign countries' energy sectors.

The most profitable energy relationship that Gazprom enjoyed was with the European Union. In 2019, exports to Europe represented 70% of Gazprom's revenue and in 2018 the Company held a 36.7% share of the European gas market[232]. Today, Gazprom holds shares in transportation, storage, and distribution companies both in Central and Eastern Europe. Indeed, the company tried to influence the EU energy policy through the acquisition of assets in the European gas market, particularly in the downstream sector,

[228]BRILL OLCOTT M., *The Energy Dimension in Russia Global Strategy – Vladimir Putin and the Geopolitics of Oil*, The James A. Baker III Institute for Public Policy Rice University, October 2004
[229]VAVILOV A., NICHOLLS D., *Gazprom: an Energy Giant and Its Challenges in Europe*, 2014; the latest available data showed that Gazprom "accounts for about 8 percent of Russia's GDP, one-fifth of its exports, and one-fifth of its market capitalization" in Aslund A., *Russia After the Global Economic Crisis*, Peterson Institute for International Economics, April 2010
[230]GAZPROM WEBSITE, *About Gazprom*, https://www.gazprom.com/about/
[231]VAVILOV A., NICHOLLS D., *Gazprom: an Energy Giant and Its Challenges in Europe*, December 2014
[232]SOLDATKIN V., Record Russian gas sales to Europe help Gazprom profits double, Reuters, April 2019

consistently with Russian policy. To expand its position within the European market, the company purchased participations also in storage activities. As a consequence of this expansion in the European market, Gazprom enjoyed the support of the Russian government and some European countries in view of possible new sanctions[233].

In the European midstream sector, the Company tried to foster the diversification of its export routes through the construction of the Nord Stream, Yamal-Europe pipeline and the project of the South Stream pipe, aimed at reducing the dependency of Russia on Ukraine as a transit Country and expand its presence in Europe, mainly in the Italian and German markets[234].

In the Yamal-Europe pipe, the Belarus section is completely operated by Gazprom Transgaz Belarus subsidiary of OAO Gazprom, the Polish one is operated by EuRoPol GAZ s.a. owned by 48% by Gazprom[235]. PJSC Gazprom owns 51% of the Nord Stream shares, while Winthershall and E.ON own 15.5%, and Gasunie and Engie 9%. Gazprom also owned "50 % of each of the national companies founded to develop the onshore section of South Stream in Southeast Europe (Austria, Bulgaria, Greece, Hungary, Slovenia, and Serbia (51%))" [236].

To successfully conduct its downstream integration strategy, Gazprom acquired assets in European transport and distribution companies; this guaranteed Gazprom the right to directly sell its resources in the European market[237]. The downstream integration was also very convenient for the Company since it represented a way to recover the margin that retailers obtained at the final sale. During the 2000s, Gazprom's strategy became more competitive and the company started to buy gas storage capacity in Europe, for a total of 5 bcm working gas in autumn and winter 2018/2019[238]. Gazprom owned gas facilities in Austria (Haidach), Germany (Jemgum, Rehden, Katharina, and Etzel), Serbia (Banatski Dvor), the Netherlands (Bergermeer), and the Czech Republic (Dambořice)[239]. The Company was very active in Lithuania's pipe operators and Baltic States' distribution

[233]RAIK K., RACZ A., *Post-Crimea Shift in EU-Russia Relations: From Fostering Interdependence to Managing Vulnerabilities*, International Centre for Defence and Security, Estonia, May 2019
[234]SARTORI N., *'The European Commission vs. Gazprom: An Issue of Fair Competition or a Foreign Policy Quarrel*?', Istituto Affari Internazionali, January 2013
[235]HOLZ F., ENGERER H., KEMFERT C., RICHTER P. M., VON HIRSCHHAUSEN C., *'European natural gas infrastructure: The role of Gazprom in European natural gas supplies'*, Study Commissioned by The Greens/European Free Alliance in the European Parliament, DIW Berlin: Politikberatung kompakt, No. 81, Berlin, 2014
[236]*Ibidem*
[237]ENCYCLOPÉDIE DE L'ÉNERGIE, *'The natural gas industry in Russia: reforms under debate'*, Geostrategia – l'Agora strategique 2.0 du CSFRS, May 2018
[238]GAZPROM WEBSITE, *'PJSJ Gazprom Annual Report 2018'*, January 2019
[239]GAZPROM WEBSITE, *'PJSJ Gazprom Annual Report 2018'*, January 2019

companies, especially in Finland where Russia is still the only gas supplier. Gazprom was also very present in Eastern and Central Europe, namely Bulgaria, Romania, Slovakia, and the Czech Republic[240]. In Europe, Gazprom managed to establish trading companies controlled by Gazprom Marketing & Trading Ltd. (GM&T), and this was useful to increase gradually its downstream presence in European local distribution[241]. The company also owns several subsidiaries in Europe, for instance, GM&T Switzerland AG, GM&T France SAS, GM&T Retail Germania GmbH, GM&T Retail Ltd. in the UK and Gazprom Global LNG[242]. The company also has shares in storage facilities of Austria, Germany, Latvia, and Serbia, that amounts to 6% of the total European gas storage capacity[243].

The major obstacle to Gazprom's strategy was the European legislation, namely the Third Energy Package and the "*Gazprom clause*" that prohibited foreign producers and suppliers from holding a majority share in EU transport systems or from being a transmission system operator (TSO) in a Member State[244].

During the last decades, Gazprom heavily invested in the European storage, distribution, trading, and transportation capacity, controlling large shares in Central and Eastern European countries. Gazprom dominant presence within the European energy market generated concerns around whether the company could use its assets to put pressure on the European countries. Gazprom is, indeed, in an ideal position to be the main supplier of gas to Europe due to Russia's proximity to Europe, huge natural resources reserves, and low prices offered. In fact, Gazprom enjoys lower costs in the production of gas in already existing fields, which improved its position in a potential price war with other suppliers[245]. In the next decade, the European gas demand would probably increase, forcing the EU to decide whether it prefers to decrease its dependence on Russia or buy natural gas at the cheapest price. In the first case, reducing the role of Gazprom in Europe is one of the main steps to take.

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[240]HOLZ F., ENGERER H., KEMFERT C., RICHTER P. M., VON HIRSCHHAUSEN C., *European natural gas infrastructure: The role of Gazprom in European natural gas supplies*, Study Commissioned by The GREENS/EUROPEAN FREE ALLIANCE in the European Parliament, DIW Berlin: Politikberatung kompakt, No. 81, Berlin, 2014

[241]*Ibidem*

[242]*Ibidem*

[243]*Ibidem*

[244]WILLEMS A., SUL J., BENIZRI Y., '*Unbundling as a Defence Mechanism Against Russia: is the EU Missing the Point*?', in TALUS K., FRATINI P., *'EU-Russia Energy Relations'*, Brussels: Euroconfidential, May 2011

[245]RAIK K., RACZ A., *Post-Crimea Shift in EU-Russia Relations: From Fostering Interdependence to Managing Vulnerabilities*, International Centre for Defence and Security, Estonia, May 2019

2.1.3 Energy Pricing that Benefits Consumers/Producers

The EU and Russia have very different visions on how natural gas should be priced. Indeed, Gazprom prefers long-term contracts since they guarantee certainty over prices and funds to destine to transit investments and production[246]. Long-term contracts ensure security to supplying countries uncertainties and guarantees stability. This strategy strengthened Russia's energy security but increased European dependency on Russia.

On the other side, the EU was skeptical about Russian behavior, since it seemed that Russia, through long-term contracts, was furthering the European dependence on its natural resources[247]. The European Union was particularly concerned about the fact that long-term contracts were a barrier for entry into the market and consequently they were in contrast with the EU's free market principles[248]. For these reasons, in September 2012, the European Commission opened an antitrust investigation against Gazprom for an alleged violation of the EU competition rules[249].

The European Commission started its investigation in 2011, through unannounced inspections of energy companies in ten Member States, in Central and Eastern Europe, to discover whether some of them were involved in anticompetitive activities or had information about it[250]. Among several companies, Gazprom was investigated for abusing its position in Central and Eastern Europe's gas supply market through the implementation of three anti-competitive behaviors: market partitioning, barriers to supply diversification, and unfair pricing[251]. Gazprom was suspected of using the "destination clause" to partition the European energy market by preventing the buyers from selling the purchased gas to consumers in third countries and therefore potentially dividing the European market into sub-ones[252].

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[246]In accordance to official Russian government estimates, the Country will need to invest USD 565–509 bln into the energy sector for the period 2009–2030, see MINISTRY OF ENERGY, '*Energeticheskaya strategiya Rossiii do 2030 goda* [Russia's Energy Strategy till 2030]', Russian Federation, 2009

[247]LENARD M., POPESCU N., *'A Power Audit of EU-Russia Relations'*, London: European Council on Foreign Relations, 2007; BUGAJSKI J., *'Dismantling the West: Russia's Atlantic Agenda'*, Potomac Books, Inc. Washington D.C., October 2009

[248]SARTORI N., *'The European Commission vs. Gazprom: An Issue of Fair Competition or a Foreign Policy Quarrel?'*, Istituto Affari Internazionali, January 2013

[249]EUROPEAN COMMISSION, *'Case No. 39816: Upstream gas supplies in Central and Eastern Europe'*, Antitrust/Cartel Cases, last update July 2018

[250]EUROPEAN COMMISSION, *'Antitrust: Commission confirms unannounced inspections in the natural gas sector'*, MEMO/11/641, September 2011

[251]EUROPEAN COMMISSION, *'Antitrust: Commission opens proceedings against Gazprom'*, IP/12/937, September 2012; see also Art.102 of the Consolidated Versions of the Treaty on the Functioning of the European Union, TFEU, March 1957

[252]STERN J. P., *'The Future of Russian Gas and Gazprom'*, Oxford and New York, Oxford University Press, January 2005

The Russian giant was also investigated for preventing the gas supply diversification by not allowing the access to its pipelines to third-party suppliers. Finally, the company was charged for using the Take-or-Pay contracts to impose unfair prices as some European countries were paying gas 30% more than others[253]. In TOP contracts buyers agreed to buy a specific quantity of gas or to pay a fee if it is not fully purchased. The gas price was usually linked to oil prices[254].

According to the European Commission, opening the investigation was not a political move, but a legally due action aimed at ensuring fair competition within the European market[255]. Conversely, the Russian Federation saw the antitrust proceeding as an attempt to influence Gazprom activities, prices, and the results of trade negotiations[256]. Therefore, Moscow could not see this procedure in any other way than a political attack on its National Champion. In 2012, President Putin approved an executive order *"On Measures to Protect Russia Federation Interest in Russian Legal Entities' Foreign Economic Activities"*[257] aimed at fostering the protection of Russian strategic enterprises operating abroad from investigations, and obliged Russian companies to obtain the government approval before making amendments to agreements finalized with foreign partners, revealing information and selling their financial assets and properties abroad[258]. In 2014, Russia opened a proceeding in the WTO by accusing the European Union of unreasonably restricting imports from Russia; the Country in particular against the Third Energy Package and the reforms of the European Energy Market[259]. However, the WTO Dispute Settlement Panel confirmed that European regulation was in line with the principles defined by the WTO law[260].

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[253]SYTAS A., GLOYSTEIN H., *'EU says Russia must accept its gas market rules'*, Reuters, September 2012
[254]SARTORI N., *'The European Commission vs. Gazprom: An Issue of Fair Competition or a Foreign Policy Quarrel?'*, Istituto Affari Internazionali, January 2013
[255]*Ibidem*
[256]BELTON C., BARKER A., CHAFFIN J., *'Kremlin Shield from EU Probe'*, The Financial Times, September 2012
[257]RUSSIA PRESIDENCY, *Executive order on measures protecting Russian interests in Russian legal entities' foreign economic activities*, Moscow, September 2012
[258]SARTORI N., '*The European Commission vs. Gazprom: An Issue of Fair Competition or a Foreign Policy Quarrel?*, Istituto Affari Internazionali, January 2013
[259]WTO, '*DS476: European Union and its Member States – Certain Measures Relating to the Energy Sector'*, April 2014
[260]EUROPEAN COMMISSION, '*Commission welcomes WTO ruling confirming lawfulness of core principles of the EU*
third energy package', August 2018; Talus, K. and Wüstenberg M., *'WTO Panel Report in the EU – Energy Package dispute and the European Commission Proposal to amend the 2009 Gas Market Directive'*, Journal of Energy and Natural Resources Law 36(2), Volume 37, Issue 3, October 2018

The investigation was closed in 2018, when Gazprom sealed an agreement with the European Antitrust Regulators to review its pricing structure and allow competitors to be present in the Eastern European market; in this way the Gazprom avoided fines and terminated a case that had been opened for 6 years[261]. Strong efforts were made to adopt a new pricing scheme decoupled from oil and based on gas-to-gas competition. As a result, Gazprom agreed to extend hub indexation to countries in Central Easter Europe and accepted a partial reference to spot prices[262]. The deal gave the possibility to Gazprom's clients to ask for lower prices and for reviewing prices every two years and to eventually go to arbitration in case of a no-deal agreement[263]. Companies like Uniper (Germany), RWE (Germany), DONG (Denmark) and Engie (France) managed to renegotiate their contracts with the Russian giant, establishing a market-based structure[264]. As a result, one-third of Gazprom's agreements were oil-linked, one-third hub-priced linked and the remaining one-third was made by hybrid contracts[265]. Additionally, the company agreed to change gas delivery points for markets particularly isolated because of a lack of infrastructures[266]. All of this represented a way of ensuring gas competitiveness, fair prices, and integrating the Central and Eastern European energy markets. However, Poland and Lithuania did not enjoy the fact that Russia avoided to pay the fine of around 10% of its gas export revenues, and the Prime Minister of Lithuania claimed that "it is a pity not to fine Gazprom"[267].

2.1.4 Diversification Policies: Diversification of Routes *vs* Diversification of Suppliers

The European Union sought to reduce its energy reliance on foreign suppliers by adopting a diversification policy that branched out mainly in three aspects: decreasing the

[261]YUN CHEE F., DE VARBONNEL A., *EU ends antitrust case against Gazprom without fines*, Reuters, May 2018
[262]ARGUS, '*Russia 'should adapt' gas export contracts'*, January 2014, "The International Court of Arbitration of the International Chamber of Commerce adjusted Gazprom's long-term price contract formula with RWE's Czech subsidiary (formerly RWE Transgas) and ordered Gazprom to include gas market indexation. Analysts commented that this was the first court ruling to impose spot pricing on Gazprom" (DG Ener, 2013a).
[263]YUN CHEE F., DE VARBONNEL A., *EU ends antitrust case against Gazprom without fines*, Reuters, May 2018
[264]STERN J., ROGERS H., *'The Dynamics of a Liberalised European Gas Market: Key determinants of hub prices, and roles and risks of major players'*, NG94, OIES, December 2014
[265]REUTERS, '*Russia's Gazprom calls Nord Stream 2 pipeline risks'*, February 2018
[266]YUN CHEE F., DE VARBONNEL A., *EU ends antitrust case against Gazprom without fines*, Reuters, May 2018
[267]*Ibidem*

dependence on transit countries, reducing dependence on Russia, and diversifying energy resources.

The transit disputes between Belarus, Ukraine, and Russia made the Brotherhood and Soyuz (Ukraine) gas pipeline and the Yamal (Belarus) one unreliable, as well as the oil pipeline – Druzhba. Diminishing dependence on transit countries became, therefore, one of the main pillars of the European and Russian strategies. Indeed, Russia declared that in the gas disputes it was a victim of Ukraine's national political tensions[268]. Bypassing transit countries represented a chance for Russia to show itself as a reliable partner. In this case, Russian interests mirrored the European ones.

The main attempts to build transportation systems that avoid transit countries were made through the creation of two pipelines, the Nord Stream and the South Stream.

Nord Stream is a gas pipe that connected Russia across the Baltic Sea directly to Germany, from where the gas is delivered to all European countries bringing advantages to both Russia and Germany. In fact, in this way, Gazprom consolidated its presence in Europe, and Germany strengthened the role of its infrastructures as the core of the European transportation system and improving at the same time the security of its supplies[269]. In 2000, the Commission defined the Nord Stream as a "priority project" into the *Trans-European Network for Energy (TEN-E) Guidelines*, and in 2006, it confirmed again this status[270]. The first 48-in pipe was ordered in 2011 and its twin in 2012 for full value of EUR 7.8 bln.[271]. The construction was possible through an agreement between Gazprom and the German Wintershall, the involvement of the German E.ON operator, the French GDF Suez, and the Dutch Gasunie[272]. This joint venture had a political and economic aim; indeed, it secured the final market of gas imports and appealed to a broader consensus within the EU[273]. Nowadays, the Nord Stream is 1,224 km long and delivers 55 bcm of natural gas.

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[268]PUTIN V., *'Opening address at the meeting with representatives from the Bavaria business community'*, Munich, September 2006; PUTIN V., *'Interview with the ZDF Television Channel'*, ZDF Television Channel, June 2006; PUTIN V., *'Answers to journalists' questions following visit to Italy'*, Milan, October 2014; ZUBKOV V., *'Premjer-ministr Viktor Zubkov provel peregovory v Kijeve',* Radio Svoboda, April 2008

[269]BARDAZZI R., PAZIENZA M. G., TONINI A., *European Energy and Climate Security - Public Policies*, Energy Sources, and Eastern Partners, Springer International Publishing Switzerland, January 2016

[270]GAZPROM WEBSITE, *Nord Stream*, Gas Pipeline, last access Mach 2020

[271]NORD STREAM, *Fact sheet*, The Nord Stream Pipeline Project, 2014

[272]BARDAZZI R., PAZIENZA M. G., TONINI A., *European Energy and Climate Security - Public Policies, Energy Sources, and Eastern Partners,* Springer International Publishing Switzerland, January 2016

[273]*Ibidem*

After the construction of the Nord Stream, Russia and the EU started to work on a quite controversial project: the Nord Stream 2, with the scope of doubling the gas transport capacity of the first pipe for a total 110 bcm natural gas capacity[274]. The 1,200-km pipeline should start from Ust-Luga (Leningrad region) and through the Baltic Sea arrives in Greisfwald (Germany)[275]. In 2017, the Nord Stream 2 AG signed a financing contract with ENGIE, OMV, Royal Dutch Shell, Uniper, and Wintershall, aimed at financing 50% of the project's cost.

Even though increasing the Nord Stream's capacity could be considered a way to strengthen the diversification strategy, this project divided Europe into two parties. On the one side, Germany highlighted the importance of avoiding any gas disruption as it had already happened in the past; on the other side, countries such as Poland stressed that Gazprom was not a reliable supplier and feared that Nord Stream 2 would be a tool to exclude Eastern Europe from the transit chart[276]. The USA supported the vision displayed by Eastern countries and strongly condemned the German-Russian relation during the 2018 NATO summit, and the Congress adopted a legislation that permitted to impose sanctions against companies involved in building the pipe as a way to interrupt or even terminate the project [277].

Along with the negotiations concerning the Nord Stream 2, there was the development of the South Stream project. This gas pipeline was meant to connect Russia to Italy through Bulgaria, Black Sea and the Balkans avoiding transit countries. It was a beneficial plan both for Italy, that otherwise would become the main buyer of Russian gas still dependent on transit countries, and for Gazprom that was implementing its diversification strategy[278]. In 2007, Gazprom finalized the MoU with ENI to build a pipe of 900 km[279], and in 2009 Alexey Miller – Gazprom Chairman – and Paolo Scaroni – former ENI CEO – signed an Addendum to the MoU to increase the pipe capacity from 31 to 63 bcm per year and defining the market issues[280]. Italy was the main partner, but other European countries joined the project. For instance, Hungary, Bulgaria, Greece, and

[274]GAZPROM WEBSITE, *Nord Stream 2*, Gas Pipeline
[275]*Ibidem*
[276]ZASLAVISKIY I., *'Corruption Pipeline: The Threat of Nord Stream 2 to EU Security and Democracy'*, The Free Russia Foundation Paper, November 2017
[277]CONGRESSIONAL BUDGET OFFICE, *'Protecting Europe's Energy Security Act of 2019'*, Cost Estimate, August 2019; CONGRESS, '*H.R. 3206'*, 116th Congress, 1st Session, June 2019
[278]BARDAZZI R., PAZIENZA M. G., TONINI A., *European Energy and Climate Security - Public Policies, Energy Sources, and Eastern Partners*, Springer International Publishing Switzerland, January 2016
[279]SPUTNIK INTERNATIONAL, *'Russia, Serbia sign South Stream gas pipeline deal'*, Sputnik News, February 2008
[280]GAZPROM WEBSITE, *Gazprom delegation visits France*, Press Release

Slovenia signed Intergovernmental Agreements on Co-operation with Russia, France through Electricité de France (EDF) signed the MoU with Gazprom for potential involvement in the construction of the offshore section[281]. The project branched out in four 32-inches pipes with a whole capacity of 63 bcm per year. The construction began in 2014 and was interrupted a few months later when Putin withdrew the political and financial support necessary to accomplish the work[282]. Probably, the increasing tensions with the European countries related to the economic sanctions, made this remarkable investment less attractive and Russia decided to give up this project.

A pillar of the European diversification strategy is the reduction of the dependency on Russia. One of the most promising projects in this compound was the Southern Gas Corridor (SGC) planned to connect Azerbaijan to Europe bypassing Russia. This project was divided into several segments such as TAP, TANAP, and ITGI, the first two almost completed, while the ITGI is not currently under construction.

The main stage in building the Southern Gas Corridor was the construction of pipelines in Azerbaijan, Turkey, Greece, Albania, and Italy built with the scope to deliver the Azeri gas, from the Shah Deniz II gas field, for a total investment of USD 40 bln[283].

The project envisaged the construction of three pipelines with a total length of almost 4,000 km: The South Caucasus Pipeline (SCP) linking Azerbaijan to Turkey via Georgia, the Trans-Anatolian Pipeline (TANAP), and the Trans-Adriatic pipeline (TAP)[284].

TANAP-TAP system, in its first stage, will deliver approximately 10 bcm of Azerbaijani gas to the EU, and namely to Bulgaria (around 1 bcm), Greece (around 1 bcm) and Italy (around 8 bcm).

The Trans Adriatic Pipeline (TAP) and the Trans Anatolia Pipeline (TANAP) represented a crucial part of the Southern Gas Corridor. In fact, TAP's contract envisioned the construction of a 545 km onshore line in Greece and a 215 km onshore line in Albania that, as an extension of TANAP pipe, would bring gas from Azerbaijan via Turkey,

[281]GAZPROM WEBSITE, *Gazprom and MFB create South Stream Hungary Zrt joint venture company*, Press Release, January 2010
[282]BARDAZZI R., PAZIENZA M. G., TONINI A., *European Energy and Climate Security - Public Policies*, Energy Sources, and Eastern Partners, Springer International Publishing Switzerland, January 2016
[283]ROBERTS J., *'The Southern Gas Corridor'*, Atlantic Council, Washington, DC, USA, 2017 in HAFNER M., TAGLIAPIETRA S., *The European Gas Markets – Challenges and Opportunities*, Palgrave Macmillan, 2017
[284]GOTEV G., *'Europe's Southern Gas Corridor 'almost ready', says Azebaijan's SOCAR'*, EURACTIV, February 2020

Greece, and Albania to Italy (San Foca)[285]. Additionally, Saipem would lay a 105-km subsea section between Albania and Italy and an 8-km connection to Italy's Snam Rete (Brindisi). The main shareholders are SOCAR (Azerbaijan), Snam (Italy), BP (UK), Fluxys (Belgium), Enagás (Spain) and Axpo (Switzerland). TAP's capacity was supposed to be 10 bcm expandable to 20 bcm through the addition of two compressor stations[286]. The construction is concluded by 90% and the main difficulties were faced in Italy, where local authorities along with a movement named "NO TAP" strongly opposed the completion of the pipe due to eventual damages caused at the landfall and the displace of olive trees necessary for local production[287]. TAP was also, initially, projected to be connected to IAP[288] and the Greece-Bulgaria Interconnector (IGB).

The Interconnector Turkey-Greece-Italy (ITGI) included two segments, the Interconnector Turkey-Greece (ITG) of a 11.5 bcm capacity/year and the Interconnector Greece-Italy (IGI) of a 10 bcm capacity[289]. The project also comprised a bypass line between Greece and Bulgaria (IGB). The collaborative agreement was signed in Rome in 2007 among the three countries, and the project was inaugurated in November. The 296-km infrastructure was partly financed by the European Union (50% of technical studied and 29% construction costs), partly by Greece (29% construction costs)[290]. IGI project was divided into an underwater 207-km section known as Poseidon and a 600-km ground section.

Among the projects never realized, Nabucco deserves a special mention. It was a 3,893 km pipe thought to connect Turkey to Austria passing through Bulgaria, Romania, and Hungary. Its capacity was estimated in 31 bcm per year, but the project was never implemented due to French withdrawal in 2008[291].

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[285]ROBERTS J., *'The Southern Gas Corridor'*, Atlantic Council, Washington, DC, USA, 2017 in HAFNER M., TAGLIAPIETRA S., *The European Gas Markets – Challenges and Opportunities*, Palgrave Macmillan, 2017

[286]TRANS ADRIATIC PIPELINE, *TAP at a Glance*, TAP Website, 2020

[287]ROBERTS J., *'The Southern Gas Corridor'*, Atlantic Council, Washington, DC, USA, 2017 in HAFNER M., TAGLIAPIETRA S., *The European Gas Markets – Challenges and Opportunities*, Palgrave Macmillan, 2017

[288]The Ionian Adriatic Pipeline (IAP) meant to connect the existing Croatian gas transmission system, via Montenegro and Albania to TAP in Energy Community, Gas_16/Ionian Adriatic Pipeline (Fier, AL – Split, HR), last access April 2020

[289]SARTORI N., '*The European Commission's Policy Towards the Southern Gas Corridor: Between National Interests and Economic Fundamentals'*, IAI working papers 12/01, January 2012

[290]HYDROCARBONS TECHNOLOGY, *Interconnection Turkey Greece Italy (ITGI) Pipeline*, https://www.hydrocarbons-technology.com/projects/turkeygreeceitalypip/

[291]SARTORI N., '*The European Commission's Policy Towards the Southern Gas Corridor: Between National Interests and Economic Fundamentals'*, IAI working papers 12/01, January 2012

The Southern Gas Corridor aimed at diversifying also the oil imports; in this regard, the EU promoted a Baku-Tbilisi-Ceyhan (BTC) pipeline. This pipe had a capacity of 1.2 bln bpd and brought oil from Azerbaijan, Kazakhstan, and Turkmenistan directly to Europe[292].

The European Commission greatly invested in the Southern Gas Corridor to answer the "call for energy diversification" from countries most dependent on Russian supplies; in the meantime, creating an opportunity for the Mediterranean countries to form an integrated energy market while optimizing energy supplies[293].

The European search for new suppliers continued through the Eastern Mediterranean (EastMed) Pipeline, a geopolitical project planned to deliver 10 bcm of natural gas from Israel and Cyprus to Greece and Italy, through the Poseidon pipeline[294]. EastMed was quite a divisive project due to several factors. Primarily, Lebanon claimed a violation of its sea borders in case of the pipe's construction; the ongoing territorial disputes in Cyprus made building a pipeline a quite sensitive topic; the Turkish government opposed this project in order to avoid a competition to TANAP and used the Cyprus question as a leverage to achieve this objective[295]. Furthermore, EastMed faced technical problems in its implementation since the pipe should pass through a seismically active area. It was planned to carry out seven drilling rigs between November 2019 and November 2020, five jointly provided by ENI and Total, two by ExxonMobil and Qatar Petroleum, while Edison executed the project feasibility studies[296]. The project appeared to have more political value rather than economic. The East Mediterranean is an area of interest for the European Union due to a concentration of gas and oil resources in Israel, Cyprus, Lebanon, Syria, and Palestine[297]. Likewise, improving the energy trade with the EU, may represent a way for these countries to foster their economy and ensure their energy security. In addition, Mediterranean countries - such as Greece, Cyprus, and Turkey - can provide a crucial contribution in producing and managing renewable energy sources, for instance, solar and wind energy. Thus, this cooperation would have positive

[292]ISMAYILOV E., *'BTC Increases Oil Transportation Through Turkey'*, Eurasia Review, August 2014
[293]AOUN M.-C., *'European Energy Security Challenges and Global Energy Trends: Old Wine in New Bottles?'*, IAI-OCP Policy Center partnership, January 2015
[294]DUKHANIN A., *'Prospects for Gas Infrastructure Development in Countries of South-Eastern Europe'*, Amazonia Investiga, June 2019
[295]*Ibidem*
[296]KAMBAS M., ZAWADZKI S., *'Exxon's Cyprus gas discovery adds another giant to East Med collection'*, Reuters, February 2019,
[297]AOUN M.-C., *'European Energy Security Challenges and Global Energy Trends: Old Wine in New Bottles?'*, IAI-OCP Policy Center partnership, January 2015

implications for those countries helping them to easily meet their energy demand and providing greater income, while being in line with the European goals by 2050[298]. However, those who criticized these projects claimed that it is unlikely that an Eastern Mediterranean pipe would attract investors, and the quantity of gas transported does not justify the financial costs[299].

The realization of SGC and EastMed projects brought to light several structural difficulties within the European Union; namely, different domestic interests, diverging national energy priorities, financial constraints. These challenges in addition to the geopolitical instability that characterized the Middle East and the Caspian regions made impossible the realization of the abovementioned projects because of the European inability to act with one voice.

In spite of the abovementioned difficulties, the European Union continued to foster its diversification through alternative technologies such as Liquefied Natural Gas (LNG).

LNG was particularly appealing to the European Union since it does not require the construction of pipe systems and offers a wide range of potential suppliers. The natural gas is super-cooled and then transported by tanker ships. Generally, the liquefaction and regasification phases of LNG are more expensive than a competing potential pipe project, but the transport in long-distance is cheaper and more flexible; hence its comparative advantages may overcome the disadvantages[300]. In 2018, 23% of the gas imported by the EU was LNG, 31% of which came from Qatar, 10.5% from Russia and 5% from the USA[301]. Central and Eastern Europe are still heavily dependent on Russian gas, while in Western countries, the volume of imported LNG is increasing. LNG has been successful in reducing dependency on Russia; for instance, this was the case of Lithuania that in 2014 opened the FSRY LNG import terminal[302].

Several European countries own large reserves of shale gas and some studies showed that this could be a way for Europe to reduce by 50% its dependency on Russia

[298]ABDALLAH M. B., ALLAL S., KAPPAUF J., PREURE M., *'Towards a Euro-Mediterranean Energy Community: Moving from import-export to a new regional energy model'*, IPEMED, Paris, May 2013
[299]PAPADIMITRIOU J., *'EastMed gas pipeline flowing full of troubling questions'*, DW made for minds, January 2020; TSAFOS N., *'Can the East Med Pipeline Work?'*, CSIS – Center for Strategic & International Studies, January 2019
[300]JENSEN J. T., *'The Development of a Global LNG Market'*, Oxford University Press, 2004
[301]BP, *'BP Statistical Review of World Energy'*, 68th Edition, 2019
[302]AOUN M.-C., *European Energy Security Challenges and Global Energy Trends: Old Wine in New Bottles*?, IAI-OCP Policy Center partnership, January 2015

in 30 years[303]. However, the "fracking" process necessary to extract shale gas has proved to be quite difficult in Europe. Mainly because shale gas deposits were deep underground, making them particularly expensive to exploit, and because they lied in populated areas, causing environmental concerns and political opposition from countries such as France, Holland, and Bulgaria that banned fracking practices[304]. Despite these difficulties, the shale revolution already affected the European energy market, since the pressure from the US shale gas exports to Europe made Gazprom renegotiate its long-term contracts with European clients reducing prices by 10%[305]. The USA tried to strengthen their position in the European shale market, but they failed. For instance, the US attempt to kick-start a shale market in Romania ended up in mass protest and the US trade mission in Bulgaria resulted in a fracking ban[306]. All the efforts to boost the shale production in Europe resulted in failures, showing that, at least currently, the shale gas does not have a future in Europe.

Russia and Europe developed two different strategies in the energy sector. While the European Union pushed to liberalize its market, Russia believed in the leading role of the State to ensure stability and wealth within the Country. The Russian Federation worked to strengthen its control over energy routes in post-Soviet space and to ensure that energy resources were transported to Europe through Russian channels. To accomplish this objective, the Country took advantage of the Soviet legacy, for instance, infrastructures and refineries in post-Soviet States[307]. The Russian Federation was able to establish a sort of monopoly, which made it possible to export to Europe gas that generally was produced in other countries[308].

Many of the existing pipelines are located in post-Soviet States in order to maintain the control over these routes, Russia bought infrastructures in CIS countries (the case of Beltransgaz), used its geographic position to influence the central Asian energy producers which transport their hydrocarbons via Russian pipes, and built infrastructures to avoid the transit through these countries (Nord Stream).

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[303]U.S. ENERGY INFORMATION AGENCY, *'Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States',* U.S. Department of Energy, June 2013

[304]KRICKOVIC A., *'When Interdependence Produces Conflict: EU–Russia Energy Relations as a Security Dilemma'*, Contemporary Security Policy, 36:1, 3-26, February 2015

[305]FINANCIAL TIMES, '*Gazprom Bows to Demand with Gas Price Cut'*, February 2012

[306]NELSON A., *'The rise and fall of fracking in Europe'*, The Guardian, September 2016

[307]KRICKOVIC A., *'When Interdependence Produces Conflict: EU–Russia Energy Relations as a Security Dilemma'*, Contemporary Security Policy, 36:1, 3-26, February 2015

[308]VICTOR D. G., JAFFE A. M., HAYES M. H., *Natural Gas and Geopolitics: From 1970 to 2040*, Cambridge University Press, 2006

Indeed, in the last decade, Russia set ambitious goals for what concerns the diversification of energy exports. In the *Energy Strategy of Russia for the period up to 2030*, the Country highlighted how the volume of energy exports to Europe will decline by 2030, "due to export diversification to Eastern energy markets (China, Japan, [the] Republic of Korea, [and] other countries of the Asia-Pacific region) [...]"[309]. Russia turned towards Asia and, in particular, China, to carry out its diversification because many Russia's new oil and gas fields are situated in the Eastern part of the Country, making the transport of energy cheaper and easier. Moreover, strong cooperation with China meant a further development of the Siberian part of Russia, which is among the least developed regions.

In its strategy, Russia claimed that the key to achieving energy security was building transport systems and energy infrastructures in Eurasia[310]. The main challenges became how to create an efficient Eurasian Economic Union on the former Soviet Republics and the integration of East Siberia and Russian Far-East within a socio-economic texture through energy transport and infrastructures[311].

The diversification strategy carried out by Russia also envisioned the diversification of the transit routes. Hence, the Country tried to secure its dominance in the Black Sea and Caspian Basin countries to avoid that Central Asia and the Caucasus could become corridors for delivering natural resources to Europe. Therefore, in 2005, Russia completed the construction of the Blue Stream, a pipe that connected the country with Turkey. According to scholars, this project was planned to avoid that Europe could work on a Trans-Caspian Pipeline that would connect Turkmenistan and Azerbaijan to Turkey, and from there on to Europe[312].

The search for geographical diversification, exacerbated by the tensions that emerged with the European Union pushed the Russian Federation to turn to friendlier countries in its neighborhood, namely China.

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[309]MINISTRY OF ENERGY OF THE RUSSIAN FEDERATION, *'Energy strategy of Russia for the period up to 2030'*, Moscow, November 2009

[310]JOHNSON C., DERRICK M., *'A splintered heartland: Russia, Europe, and the geopolitics of networked energy infrastructure'*, Geopolitics, Volume 17, Taylor & Francis, April 2012; BRADSHAW M., *'A new energy age in Pacific Russia: lessons from the Sakhalin oil and gas projects'*, Eurasian Geography and Economics, Taylor & Francis, May 2010; KONOPLYANIK A., *'A common Russia–EU energy space: the new EU–Russia partnership agreement, Acquis communautaire and the energy charter'*, Journal of energy & natural resources law, Taylor & Francis, 2009

[311]BOGOVIZ A., LOBOVA S., RAGULINA Y., ALEKSEEV A., *'Russia's Energy Security Doctrine: Addressing Emerging Challenges and Opportunities'*, International Journal of Energy Economics and Policy, Vol. 8, October 2018

[312]BLAGOV S., *'Russia Tries to Scuttle Proposed Trans-Caspian Pipeline'*, Eurasianet.org, March 2006

In 2009, the East Siberia-Pacific Ocean (ESPO) oil pipeline was built, and it boosted the volume of oil exported from Russia to China and the Asia-Pacific region[313]. Indeed, it was from 2009 that Rosneft and other Russian oil companies started to put pressure to the government to adopt an oil policy that turned the exports to the East rather than West. In 2017 the oil export to Asia accounted for 30% of total oil exports compared to 8% in 2010[314].

The largest agreement in the history of natural gas – "Power of Siberia" – was signed between China and Russia in 2014 and envisaged the delivery of 38 bcm/year over 30 years[315]. The companies that contributed to the finalization of the contract were Gazprom and China National Petroleum Corporation (CNPC); with a delivery route from East Siberia to North-East China[316]. This agreement was an attempt of the Russian Federation to find new allies because of the increasing fraction with the West.

Furthermore, the sign of Power of Siberia represented a way to show to both Europe and the USA that the country was able to accomplish alternative energy agreements, expanding its markets and making powerful political friends in a dark economic period caused by the Western sanctions[317]. This move represented a way for Russia to expand its energy market to Asia while continuing to trade with Europe, and at the same time lessening its vulnerability deriving from the European diversification strategy.

Power of Siberia was inaugurated in December 2019 to foster the energy exchange between Russia and China. However, if on the one hand, this strategic move represented a way for Russia to decrease its dependency on Europe; on the other hand, it offered China a tactical advantage over Russia. Indeed, Russia wanted the route from West Siberia to Xinjiang (China) via Altai [318]; as this would have increased the Russian exports, provided gas at a lower price since the route already existed and it could also be a connector

[313]HENDERSON J., Mitrova T., *'Energy relations between Russia and China: Playing chess with the dragon'*, Oxford Institute for Energy Studies Paper WPM 67, August 2016; Simola H., Solanko L., *'Overview of Russia's oil and gas sector'*, BOFIT Policy Brief 5, Helsinki: Bank of Finland Institute for Economies in Transition, 2017

[314]ARGUS MEDIA, *'Russian and Caspian crude export destinations'*, October 2018

[315]HENDERSON J., *'Russia's gas pivot to Asia: Another false dawn or ready for lift off?'*, The Oxford Institute for Energy Studies, November 2018; *'Gazprom's China Gas Price Said to be Near German Level'*, Bloomberg, June 2014; *'Putin Snubs Europe with Siberian Gas Deal that Bolsters China Ties'*, Financial Times, November 2014

[316]FOY H., *'Russia's $55bn gamble on China's demand for gas'*, Financial Times, April 2018

[317]HENDERSON J., *'Russia's gas pivot to Asia: Another false dawn or ready for lift off?'*, The Oxford Institute for Energy Studies, November 2018

[318]ASTAKHOVA A., KOBZEVA O., *'Russia-China talks over new gas routes stalled – sources'*, Reuters, June 2017

between Europe and the East[319]. Conversely, China favored a route from East Siberia to North-East China, establishing in this way a unique source for its market and taking away from Gazprom the possibility to be an intermediary between the East and the West[320].

The Chinese strategic power was particularly influential since Russia was going through a quite a peculiar situation of political and financial tension. Therefore, China was able to negotiate the delivery of gas at very favorable conditions, namely, a 10% discount[321]. The main difference between China and the European Union becomes clear when these parties negotiate prices. China is not yet ready to buy gas at European prices and consequently the EU is still the most profitable partner for the Russian Federation.

The shift towards Asia was also influenced by the production of LNG. Indeed, in 2009, the first Russian plant for LNG was built on Sakhalin Island (Russia's Far East), its production has been shipped mainly to Korea and Japan[322]. The Novatek's project in the Russian Arctic (Yamal and Gydan regions) envisaged the delivery of 3MM tonnes of LNG every year to CNPC via the Northern Sea Route and was financed by China in terms of money and engineering skills[323]. In fact, China is strongly willing to increase its presence in the Arctic and this may result in further help to Russia, which may consequently produce a boost in Russia's LNG production.

2.2 Implications

Both the European Union and the Russian Federation adopted a variety of policies aimed at increasing their energy security. They have been involved in a competition that looks like a zero-sum game, in which every move that an actor makes inexorably caused an effect on the other.

For instance, the European Union implemented a liberalization strategy to reduce the risk that energy could be used as a weapon, but this created concerns in the Russian Federation about the possibility of losing its position in favor of other suppliers. Europe tried to diversify its supplies and transit routes to reduce its dependency on Russia, but the latter feared that these strategies might lead to a possible decrease in oil and gas prices

[319]GEROPOULOS K., *'Russia's western route to China may jeopardise Gazprom's supplies to Europe'*, New Europe, September 2018
[320]HENDERSON J., *'Russia's gas pivot to Asia: Another false dawn or ready for lift off?'*, The Oxford Institute for Energy Studies, November 2018
[321]WOOD MACKENZIE, *'Can Gazprom deliver Power of Siberia to China by 2020?'*, September 2017
[322]RAIK K., RACZ A., *Post-Crimea Shift in EU-Russia Relations: From Fostering Interdependence to Managing Vulnerabilities*, International Centre for Defence and Security, Estonia, May 2019
[323]LNG WORLD NEWS, *'Russia's Novatek delivers two Yamal LNG cargoes via NSR to China'*, July 2018

causing damages to Russia's economy. And, when Russia tried to avoid transit disputes to secure its deliveries and income, the EU believed that a new transit system may transform energy in a greater tool to blackmailing transit countries[324].

The liberalization discourse shows how Russia and EU have often adopted divergent approaches to the energy issue. The European Union is willing to liberalize the gas market to foster internal and external competitiveness, secure lower prices, and influence the current system defined by vertical relations[325]. Competitive dynamics will make the market more flexible, pushing the suppliers to negotiate short-term contracts and renegotiate the most disadvantageous clauses.

In opposition, the liberalization of the European gas market might represent for Russia an unfavorable modification of price indexation and price formulae, a variation of the volume of gas exports to the EU, and a greater exposure to "price risk" and "volume risk"[326]. Hence, what is beneficial for the EU, it is a liability for Russia, showing once again the incompatibility of the two energy strategies.

Even though the European Union tried to diversify its supplies, it is still locked to Russia for several reasons like geographical proximity, volumes of exports and existing infrastructures[327].

Indeed, the EU looked towards the Middle East and Eastern Mediterranean countries that own huge natural reserves, but the geographical distance makes Russia the cheapest supplier; moreover, importing gas from new producing countries in the MENA Region requires massive investments on capital-intensive projects that, along with the geopolitical concerns, make Russia the EU's best partner.

Another alternative could be to import the American LNG, but the United States is not able to meet the whole European energy need.

These examples show how the European Union has alternatives to Russia's energy, but these options imply political risk and high costs, whereas existing infrastructures, geopolitical proximity, and low prices make Russia the best positioned supplier. Sometimes energy security and affordability develop in parallel showing clearly which is the best partner in the market; while other times, an actor needs to decide whether

[324]KRICKOVIC A., *'When Interdependence Produces Conflict: EU–Russia Energy Relations as a Security Dilemma'*, Contemporary Security Policy, 36:1, 3-26, February 2015
[325]FINON D., Locatelli C., *'The liberalisation of the European gas market and its consequences for Russia*', HAL, November 2007
[326]*Ibidem*
[327]POPOVIC N., *'The Energy Relationship Between Russia and the European Union'*, E-International Relations Students, February 2020

the advantages of enhancing energy security outweigh the disadvantages of buying at higher prices. This uncertainty is the reason why Russia prefers long-term contracts. Indeed, exporting huge quantity of energy resources to Europe implies that Russia's economy will heavily suffer in case of an interruption of supplies. Therefore, this kind of contracts eliminates uncertainties leading to a trade-off between affordability and security.

What really could work for the European Union is to carry out a strategy of diversification of its energy mix with the purpose of reaching the decarbonisation by 2050. Meaning that maybe not in the short/medium-term, but almost certainly in the long one, achieving the carbon neutrality will impact the European gas demand from Russia[328].

The increasing frictions between Russia and the West encouraged the Country to find new allies to foster its geopolitical balance. Russia wants to reduce its energy dependency on the EU because of the incoming decarbonisation of the European energy sector that, in the long term, may result in a decrease of the European demand for Russian hydrocarbons. Furthermore, the diversification may represent a way for Russia to protect itself from new sanctions that could target even more the energy sector creating huge damages to the economy and its modernization[329]. Additionally, future expansions in volumes of gas reserves could face limits deriving from a lack of appropriate infrastructures.

The main achievement within the energy security sphere was the deal between Vladimir Putin and the Chinese President XI Jinping of a USD 400 bln for the construction of "Power of Siberia" pipeline[330]. Today's cooperation between China and Russia probably revolves around some peculiar geopolitical events, for instance, European and American sanctions and the conflictual relationship between China and the USA. Chinese and Russian energy needs are quite complementary since China's demand for natural gas is growing and Russia needs new costumers. However, continuing this relationship means only to transfer dependency from Europe to China, and this would not be wise for Russia and would not increase its energy security. The cooperation in the energy field between Russia and China may indirectly affect the European Union; indeed projects such as Sakhalin Island LNG, Yamal LNG, and Power of Siberia are fed by

[328]STERN J., *'Challenges to the Future of Gas: unburnable or unaffordable?'* Working Paper NG 125, Oxford Institute for Energy Studies, December 2017
[329]HENDERSON J., *'Russia's gas pivot to Asia: Another false dawn or ready for lift off?'*, The Oxford Institute for Energy Studies, November 2018
[330]HORNBY L., ANDERLINI J., *'China and Russia sign $400bn gas deal'*, Financial Times, May 2014

natural gas that could be exported to Europe rather than to Asia, giving Russia new leverage in its negotiations with the EU[331]. Although it could be wrong to claim that this cooperation represents a threat to Europe, it is necessary to stress that Russia now has alternatives to the EU, in the same way in which the EU has alternatives to Russia. The cooperation with China improved the position of Russia in vis-à-vis negotiations with the European Union and today the European Union should consider the prospect to compete with China for cheap gas in the next decade, as China is the only real alternative to the EU. In spite of this reorientation, the Russian Federation continued to carry out its projects with the European Union, namely Nord Stream 2. This occurred because, even though China is a new potential alternative to the EU, the country probably it does not like to heavily depend on Russia for its gas supply.

Every step taken within the European or Russian diversification framework prompts a vicious cycle, in which the attempt of each power to improve diversification causes further efforts at diversification on the other side. Consequently, energy interdependence became an element of rupture in the EU-Russia relationship in the energy field and, instead of tightening the relations, it contributed to worsening them. It seems that, in this specific case, decreasing the degree of interdependence may alleviate the energy security's apprehension leading to an improvement of the relationship.

[331]HENDERSON J., *'Russia's gas pivot to Asia: Another false dawn or ready for lift off?*', The Oxford Institute for Energy Studies, November 2018

Chapter III: EU-Russia Long-term Strategy

One of the main challenges of this century will consist in achieving the so-called "Carbon Neutrality Era" through the reduction of carbon dioxide (CO_2) emissions. The international community set ambitious goals with the signing of the Paris Agreement and expressed its commitment to keeping the rise of average global temperature below 2 degrees. The Paris Agreement was made within the United Nations Framework Convention on Climate Change (UNFCC) to bring all nations together to fight against climate change. The Agreement entered in force on November 2016 and today has been signed by 197 countries and ratified by 187[332]. In order to achieve the objectives set in the Paris agreement, the transformation of the energy system needs to be accelerated[333] and natural gas, as one of the cleanest fossil fuels[334], may play a crucial role in the achievement of a clean energy transition. Indeed, its lower carbon content makes natural gas an environmentally friendly fuel with several benefits[335] if compared to other fossils fuels[336]. For these reasons, the IEA's Executive Director, Fatih Birol, claimed that natural gas must be fundamental in limiting the rise of energy-related CO_2 emissions through the displacement of other fossil fuels in final uses[337]. As a matter of fact, emissions from burning natural gas in a power plant are 50% to 60% lower than emissions from burning coal[338].

Despite natural gas being considered a solution to employ for reaching a clean energy transition, it still emits CO_2 and therefore some changes to making it a net zero-carbon fuel are required. The new role of energy resources will affect the relations between energy partners shaping geopolitics. In this context, analyzing the climate-related strategies of the European Union and the Russian Federation is necessary to understand how their energy relationship will be shaped in the next decades.

The scope of this chapter is to analyze and compare the energy and climate strategies of Russia and the EU up to respectively 2030 and 2050. The scenarios provided

[332]BRITANNICA, Paris Agreement, last update November 2019
[333]IRENA, *Global Energy Transformation: a roadmap to 2050*, 2019
[334]GAS EXPORTING COUNTRIES FORUM (GECF), *Environment*, definition available at https://www.gecf.org/gas-data/environment.aspx, November 2019
[335]Such as air quality and greenhouse gas emissions
[336]INTERNATIONAL ENERGY AGENCY, *'Natural Gas source Market Report Series: Gas 2018'*, April 2019
[337]INTERNATIONAL ENERGY AGENCY, *Demand from Asia is set to power the growth of the global gas industry over the next five years*, November 2019
[338]NATIONAL ENERGY TECHNOLOGY LABORATORY (NETL), *Cost and performance baseline for fossil energy plants*, Volume 1: *Bituminous coal and natural gas to electricity*, 2010, Revision 2. November. DOE/NETL-2010/1397, United States Department of Energy

by the European Commission and the International Energy Agency represent the source of this analysis.

The International Energy Agency based its scenarios on several determinants such as: population (standard of living, urbanization, number of inhabitants), economic growth rate, prices, technology (efficiency), supply availability, climate. Hence, it is worth pointing out that a scenario is not a forecast, but it represents what could happen in the future under given conditions.

3.1 EU Climate and Energy Strategy up to 2050

The EU embraced the general targets defined in the Paris Agreement and structured its energy and environmental policy in three main documents: the *2020 Climate & Energy Package*, the *2030 Climate & Energy Framework* and the *Roadmap for a Competitive Low Carbon Europe*. Since 2009, the European Union launched its strategy to tackle climate change by setting the targets to 2020. In 2014, the European Council adopted new objectives towards 2030, that were revised upwards in 2018 in regard to renewable energy and efficiency. All these steps are part of a long process necessary to achieve the transition by 2050. Indeed, these strategies were based on three fundamental objectives: environmental sustainability, energy efficiency, and energy security. The main macro-areas of intervention were: reducing the emissions in the atmosphere through the decrease of dependence on fossil fuels and the increase of energy efficiency in industrial activities; increasing the fuel efficiency in buildings and improving support for technological development; and developing renewable resources by incentives and technological development.

The weight of the European countries in the global economy and energy is certainly considerable. Indeed, the European Union accounts for 22% of global GDP[339] and about 10% of energy-related carbon emissions[340]. The EU should therefore not only reduce its emissions, but also play a key role leading by example and in terms of technological innovation in "hard-to-abate" fields.

3.1.1 Member States Emission Targets by 2030 and 2050

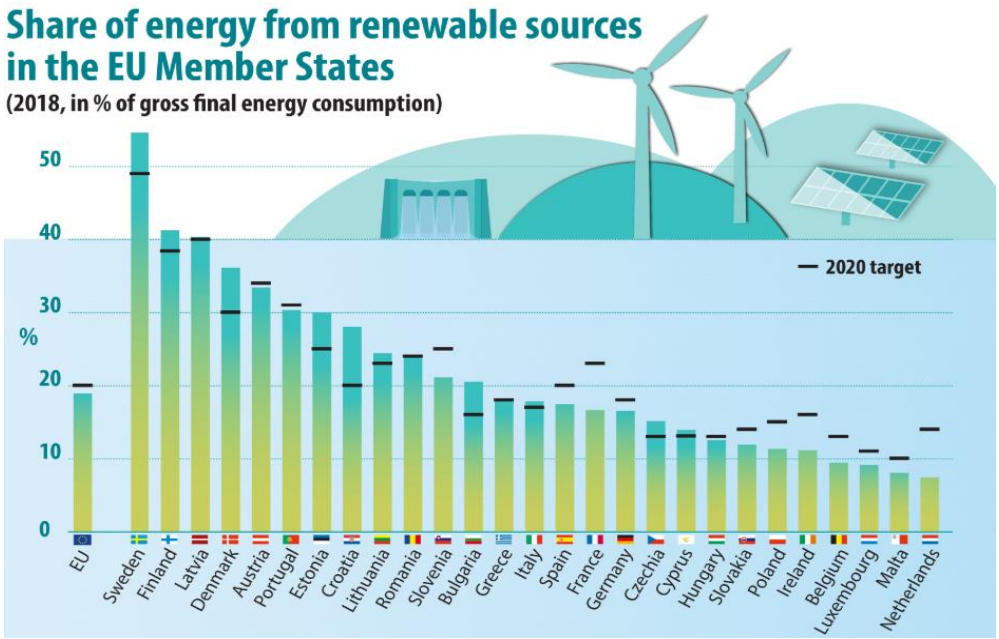
The European Union defined its goals for reducing GHGs progressively up to 2050. The *2020 Climate & Energy Package* envisaged a "20% reduction in greenhouse

[339]World Bank – GDP (current USD) European Union
[340]BP, *'BP Statistical Review of World Energy'*, 68th edition, 2019

gas emissions, 20% energy from renewables and 20% improvement in energy efficiency"[341].

In 2014, the European Council approved the *2030 Climate & Energy Framework* that set more ambitious goals than the *2020 Climate & Energy Package* by outlining "At least 40% cuts in greenhouse gas emissions (from 1990 levels), at least 27% share for renewable energy, and at least 27% improvement in energy efficiency"[342]. These targets were revised upwards in 2018, the aim was to cut the GHG emissions by 40%, to reach at least 32% share for renewable energy, and at least 32.5 improvement in energy efficiency. Within this framework, the European Union should reduce by 43% (compared to 2005 levels) the emissions deriving from the European Union Emissions Trading System (ETS) – the world's first and largest carbon market; and by 30% the emissions coming from non-ETS sectors[343]. The European Members were successful in decreasing their CO_2 emissions by 2% between 2017 and 2018. At national level, some countries proved to be virtuous and made huge progress to meet the 2020 targets already in 2018 [Figure 7].

Figure 7



Source: ec.europa.eu/Eurostat

[341]EUROPEAN COMMISSION, *'2020 Climate & Energy Package'*, European Commission Website, Last Access April 2020; EUROPEAN COMMISSION, *'Commission Staff Working Paper – Analysis of options beyond 20% GHG emission reductions: Member State results'*, SWD(2012) 5 final, Brussels, February 2012

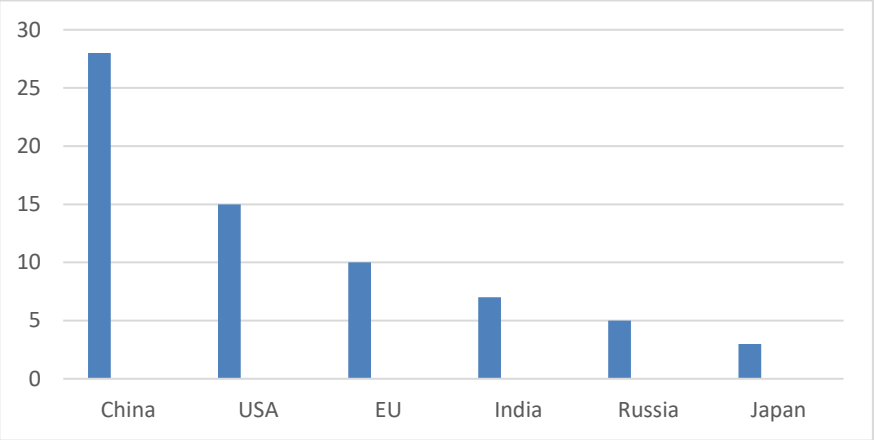
[342]EUROPEAN COMMISSION, *'2030 Climate & Energy Framework'*, European Commission Website, Last Access April 2020

[343]EUROPEAN COMMISSION, *'2030 Climate & Energy Framework'*, European Commission Website, Last Access April 2020

It is worth noting that in the European New Green Deal, published in December 2019, the Commission committed to present a plan to increase the reduction of CO_2 emissions to 50%-55% by 2030 compared to 1990 levels. The European Commission estimated that carrying out the climate and energy actions, under the Current Policies, will lead to a reduction of the emissions by only 60% by 2050[344].

Nowadays the European Union is still one of the major CO_2 emitters after China and the USA [Figure 8].

Figure 8: CO_2 Emissions % of the total World



Source: BP Statistical Review 2019

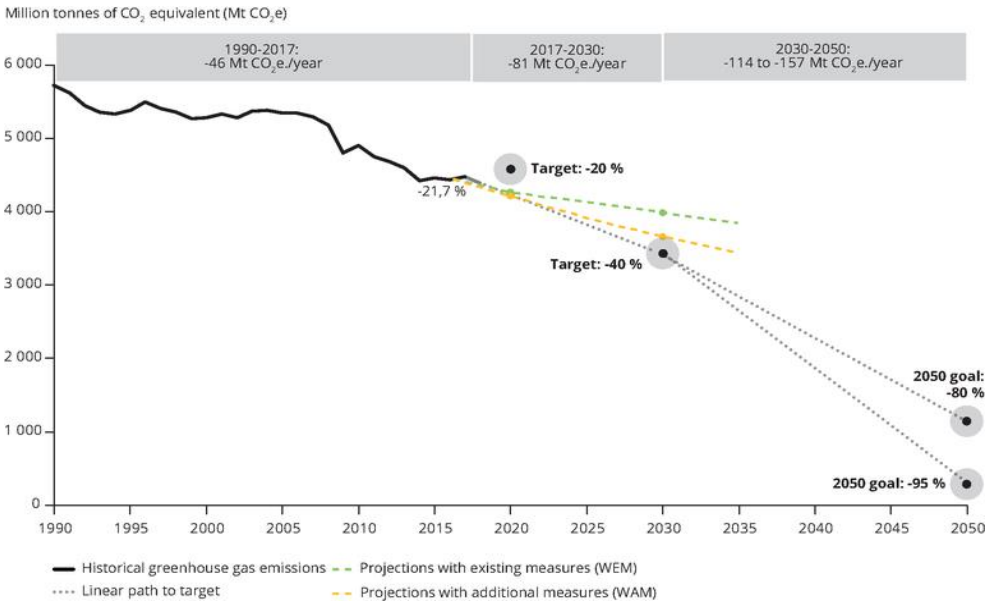
3.1.2 Roadmap for a Competitive Low Carbon Europe

In 2011, the European Commission launched the *Roadmap for moving to a Competitive Low Carbon Economy in 2050*, the *Energy Roadmap*, and the *Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system (Transport White Paper)*. Through these acts, the EU set ambitious targets necessary to achieve a low carbon economy by 2050, the main one was to reduce the Greenhouse Gas Emissions (GHG) of at least 80% (up to 95%), compared to the 1990 level's emissions, by 2050, [Figure 9][345].

[344]PITTEL K., *'The Long-Term Climate Strategy of the European Union – a Reality Check'*, EconPol – European Union, August 2019

[345]EUROPEAN COMMISSION, *'Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions – The roadmap for transforming the EU into a competitive*', low-carbon economy by 2050, COM/2011/0112 final, Climate Action, March 2011

Figure 9: Greenhouse gas emission trend projections and targets



Source: European Environment Energy, December 2019

The Roadmap established a gradual cut of the emissions with 10-years targets. For instance, GHG should decrease by 40% in 2030, 60% in 2040, and finally by 80%-95% in 2050.

Reaching the low-carbon era is possible only through the contribution of every economic sector in conformity with "their technology and economic potential"[346]. However, certainly, the energy sector will be the one to concur the most at the decarbonisation by implementing low-carbon technologies.

In this regard, the European Commission listed specific areas of intervention. Among them, reaching high energy efficiency is crucial to reduce CO_2 emissions; this may be possible by increasing the energy savings through more rigorous minimum requirements for new buildings, incentivizing virtuous behaviors, and employing efficient vehicles. Additionally, the Roadmap envisaged almost full decarbonisation of the electricity sector and electrification through the integrated electricity market, the adaptation of interconnections, the distribution and transmission infrastructures on long distances, and the development of smart grids[347].

[346]EUROPEAN COMMISSION, Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions – The roadmap for transforming the EU into a competitive, low-carbon economy by 2050, COM/2011/0112 final, Climate Action, March 2011

[347]EUROPEAN COMMISSION, *'Energy Roadmap 2050'*, Luxembourg: Publications Office of the European Union, 2012

Moreover, renewable energy sources (RES) should be fundamental in the transition of the European gross final energy consumption, by representing a substantial range of electricity consumption. Nuclear energy is a key source for electricity generation with zero carbon emissions and it should represent 15%-18% of the total energy demand by 2050[348]. Besides, the European Commission presumes that oil will continue to be important in the European energy mix in 2050, mainly as a fuel for air and maritime transport, but it should adapt to changes in its demand.

However, natural gas can provide an essential contribution to decarbonisation, particularly in the medium term. Gas is valuable for its flexibility, which makes it a suitable balancing partner for intermittent RES in power generation. Besides, gas can be employed in the transportation sector (LNG fueled trucks and ships). But most of all, coal-to-gas switching offers significant CO_2 abatement potential. In the longer term, however, gas will need to be decarbonized as well. In this respect, promising technologies exist such as Carbon Capture and Storage (CCS), although significant investment is needed. Natural gas can also be transformed into hydrogen through Steam Methane Reforming (SMR). If combined with CCS, 'blue hydrogen' derived from natural gas would provide consumers with clean molecules.

Hence, the gas market needs more integration, more liquidity, and further diversification of supplies. Connecting the European internal market to new gas infrastructures along the North-South axis may be a way to improve the role of gas by creating a well-functioning wholesale market[349]. Finally, the last two pillars of the European strategy are the technological development and the mobilization of private investments.

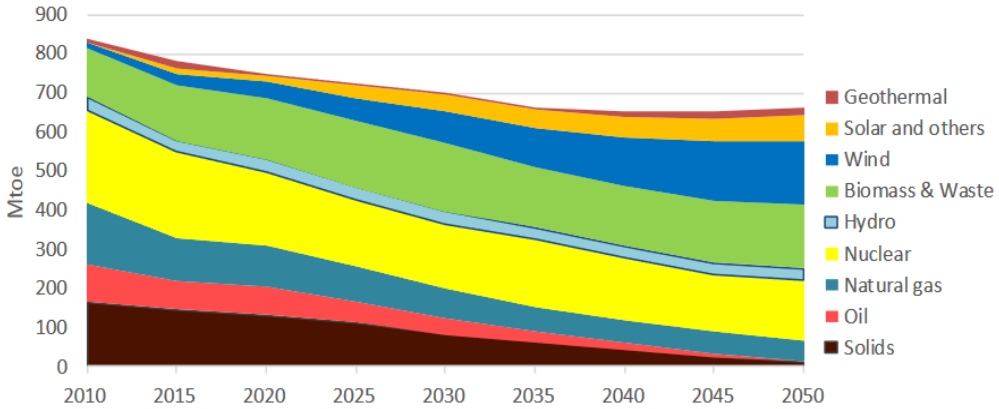
The European Commission forecasted that the primary production in the European Baseline would decrease by 28% in 2050, compared to the 2005 levels[350]. Specifically, by 2050, the production of fossil fuels should drop by 88%, while the production of renewable sources would double [Figure 10].

[348] *Ibidem*

[349] EUROPEAN COMMISSION, *'Energy Roadmap 2050'*, Luxembourg: Publications Office of the European Union, 2012

[350] EUROPEAN COMMISSION, *'IN-DEPTH ANALYSIS IN SUPPORT OF THE COMMISSION COMMUNICATION COM(2018) 773 – A Clean Planet for all A European long-term strategic vision for a prosperous, modern, competitive and climate neutral economy'*, Brussels, November 2018

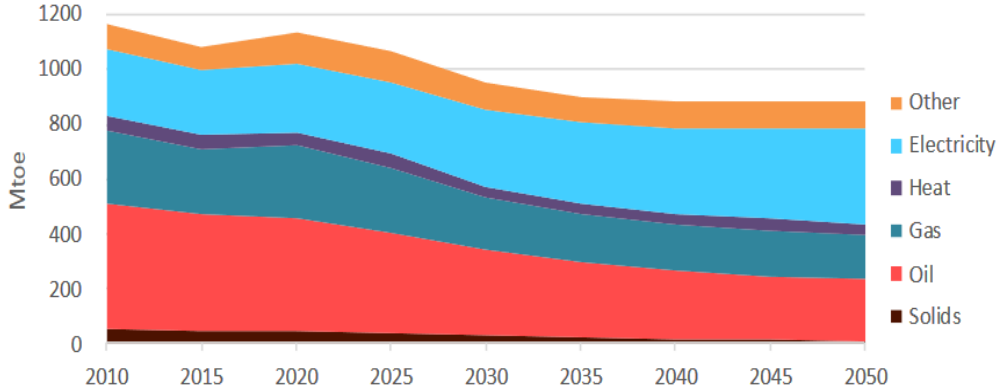
Figure 10: Primary energy production in the Baseline



Source: Eurostat (2010, 2015), PRIMES

As to final energy consumption in the baseline [Figure 11], the European Commission estimated a decrease by 26% from 2005 to 2050, due also to the changes in the European energy mix, resulting from the increasing use of electricity vis-à-vis fossil fuels[351].

Figure 11: Final Energy Demand by Fuel/Energy Carrier



Note: "Other" includes biomass and waste
Source: Eurostat (2010, 2015), PRIMES

The European Commission states that, by 2050, electricity would play a greater role than today by contributing to the decarbonisation of heating/cooling sectors and transports and constituting 36%-39% of the final energy demand. Indeed, in 2025, offshore wind would constitute the largest source of electricity supply, overtaking nuclear power and gas.

[351] *Ibidem*

3.1.3 World Energy Outlook Scenarios: focus on European Energy Demand

The International Energy Agency issued the World Energy Outlook (WEO) 2019, a document that attempts to project the outcomes of the policies taken by decision makers through three scenarios.

The first one, the Current Policies Scenario (CPS), maps out what happens if no further changes in policies are taken, considering only what will happen in the energy sector according to the policies and regulations already in place. For instance, in this scenario, the energy demand is expected to increase by 1.3% per year to 2040, a rate well below the 2.3% growth seen in 2018[352].

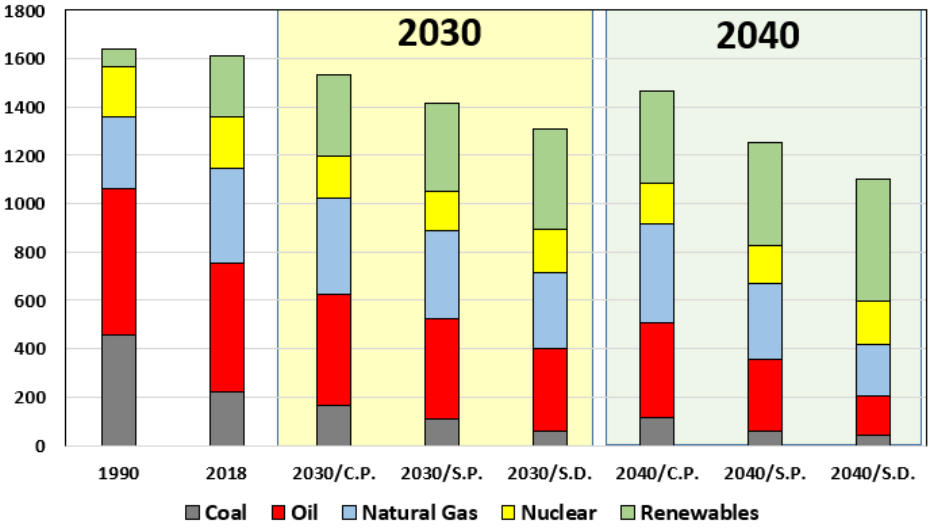
The second one, the Stated Policies Scenario (SPS), mirrors the results of the policies already announced and to be implemented[353]. In this case, the energy demand grows at a rate of 1% by 2040 and this growth is fed mainly by zero carbon sources (renewable 20% and nuclear 5%) and by natural gas that amounts to 25%[354].

Finally, the Sustainable Development Scenario (SDS) outlines the path to follow in order to keep the increase of the global temperature below the 2 degrees in accordance with the objectives set in the Paris Agreement and the United Nations Sustainable Development Agenda. The main goal is to reach global "net zero" carbon dioxide (CO_2) emissions by 2070[355].

The Roadmap of the EU is coherent with the World Energy Outlook in showing how the European Energy demand might change towards 2040, forecasting different results according to different scenarios. In fact, it is possible to draw some main differences between the Stated Policies Scenario – Current Policies Scenario and the Sustainable Development one. The most interesting one is that, in the latter, renewable sources play the greatest role in the energy sector and nuclear power demand increased, mainly to fill the void left by gas, oil, and coal. Conversely, in the first two scenarios, natural gas and oil still have significant importance in the EU's energy demand [Figure 12-13].

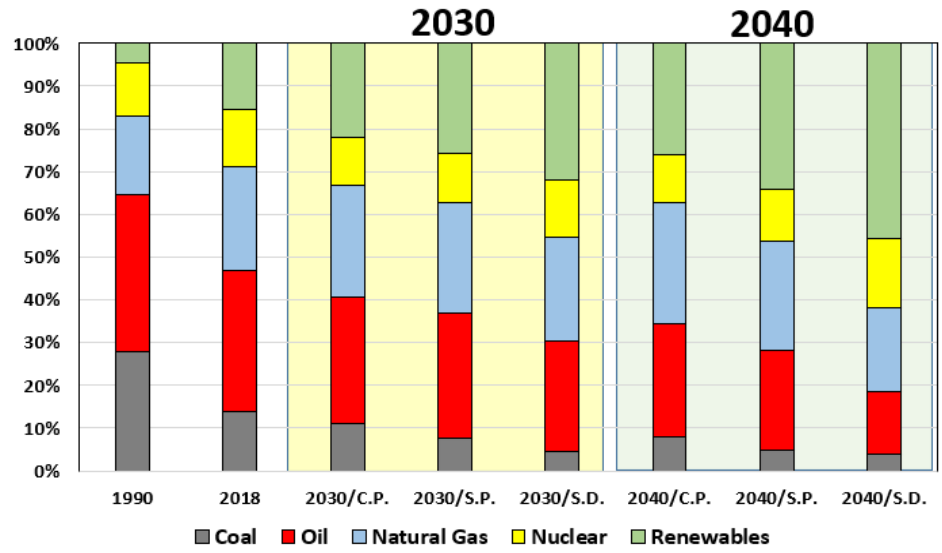
[352] INTERNATIONAL ENERGY AGENCY, World Energy Outlook 2019
[353] *Ibidem*
[354] *Ibidem*
[355] *Ibidem*

Figure 12: EU Energy Demand (Mln. Toe)



Source: IEA – WEO 2019

Figure 13: EU Energy Demand (%)



Source: IEA – WEO 2019

Energy demand in the European Union would change only if supported by policy interventions by the Member States. In the United Kingdom, the switch from coal to gas contributed to decreasing by 55% the emissions in electricity generation. This result was achieved also with the establishment of a carbon price floor that enforced a minimum price to generators of GBP 9/tonne CO_2, doubled in 2015[356]. Additionally, the reform of the Emission Trading Scheme (ETS), which aimed at removing surplus allowances from the market, caused an increase of ETS price from about EUR 5/tonne CO_2 in 2016 to over

[356] *Ibidem*

EUR 20/tonne CO_2 in 2018, improving the position of gas vis-a-vis coal[357]. However, in the EU, hard coal is still being produced in a number of countries such as Poland, leading them to support the fuel; meantime, the production of lignite continued in Germany, the Czech Republic, and other Eastern European countries. Nevertheless, the production of coal will decrease in conjunction with its consumption. Coal output will drop by 80% between today and 2040.

In certain European countries nuclear energy plays a very important role: in 2018, it contributed to 25% of electricity in the EU and, in some European States, constituted more than half of the electricity supply. However, some countries planned to reduce their nuclear shares, namely, Germany, Belgium, and Spain planned to phase out nuclear, while France announced its objective to reduce the nuclear share of power generation to 50%[358].

Renewable power would also be crucial for the energy transition. Indeed, the *"Clean Energy for All Europeans"* package expected the renewable energy target to be 32% of gross final consumption by 2030, calling for more than 50% share of renewables in electricity.

[Table 1] illustrates in detail how the European oil demand will decrease up to 2040, in line with the Stated Policies and Sustainable Development Scenarios.

Table 1: Oil demand (mb/d)

			Stated Policies				Sustainable Development	
	2000	**2018**	**2025**	**2030**	**2035**	**2040**	**2030**	**2040**
European Union	13.1	11.1	10.1	8.8	7.4	6.3	7.3	3.5

Source: IEA – WEO 2019

Nevertheless, what really matters is how, according to the International Energy Agency, the European demand for natural gas will float. In fact, IEA predicted a significant decrease of the natural gas demand between 2018 and 2040 [Table 2].

Table 2: Natural gas demand (bcm)

			Stated Policies				Sustainable Development	
	2000	**2018**	**2025**	**2030**	**2035**	**2040**	**2030**	**2040**
European Union	487	480	477	442	416	386	387	266

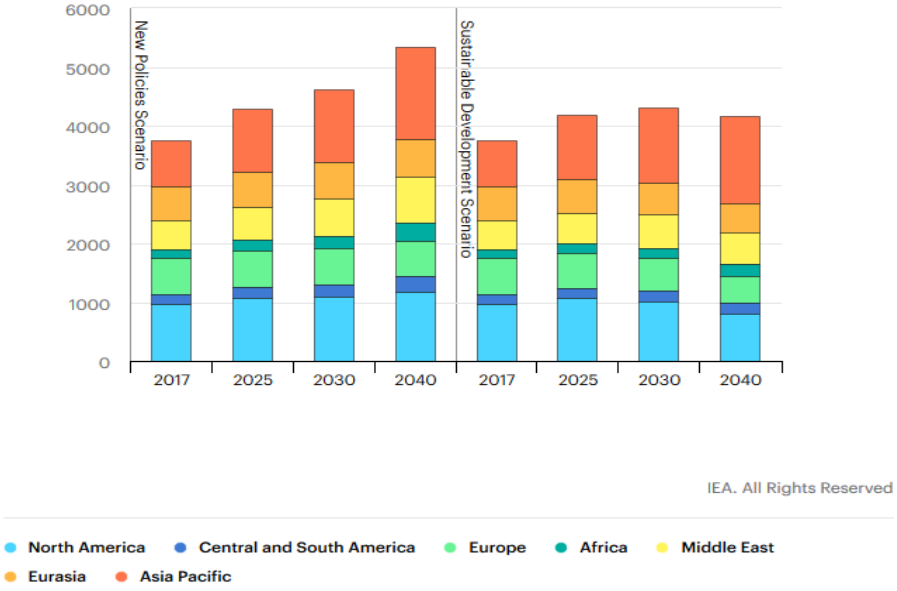
Source: IEA – WEO 2019

The International Energy Agency assumed that the European gas demand should follow two different decreasing trends in accordance with the Stated Policies Scenario

[357] *Ibidem*
[358] *Ibidem*

and Sustainable Development Scenario. In the first case, the gas demand would decrease by around 100 bcm; in the second one, by above 200 bcm. The main difference between the two scenarios is that, in the latter, the gas demand remains stable until 2025 and then declines [Figure 14], reflecting faster decarbonisation and improvements in energy efficiency of sectors like industry and building.

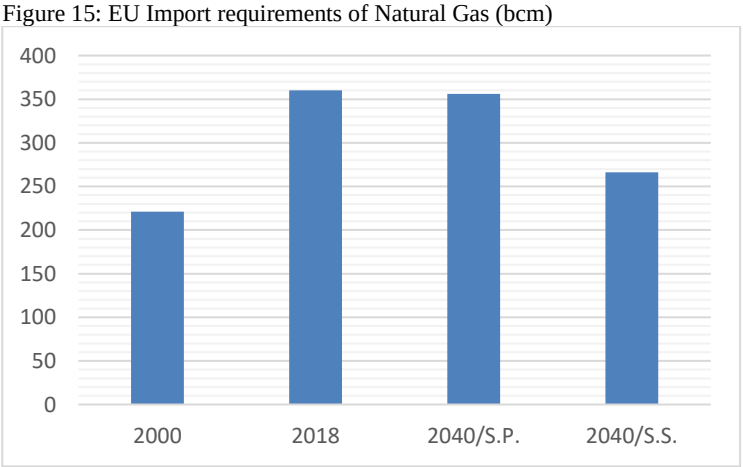
Figure 14: Gas Demand by Region and Scenario, 2017-2040 (bcm)



Source: IEA – WEO 2018

Similarly, the IEA presumed that the European gas production might drop by 25%, from 120 bcm to 40 bcm, between 2018 and 2040. In the WEO, it is also envisaged the decrease of gas imports between 2020 and 2040. For instance, in the Stated Policies Scenario, it is forecasted a minor decline than the one expected in the Sustainable Development Scenario (100 bcm) [Figure 15].

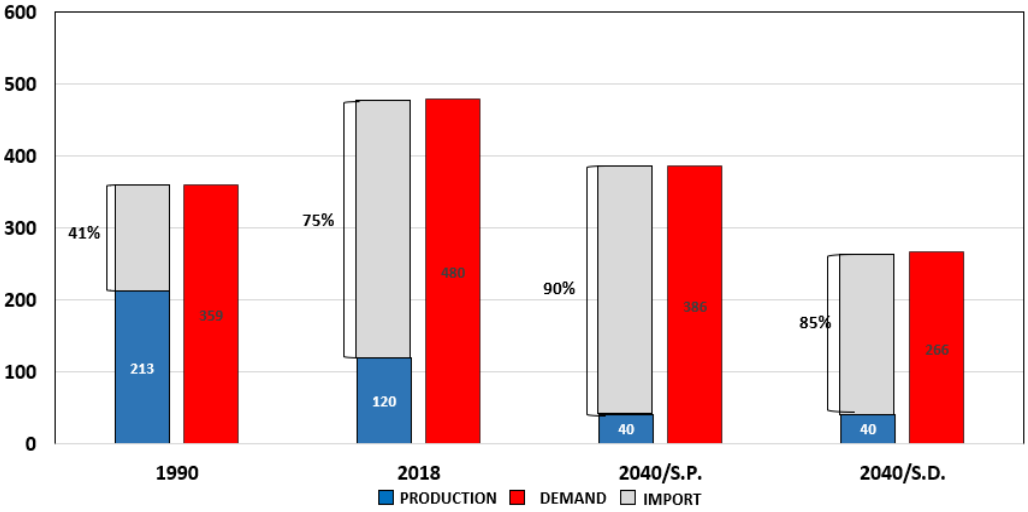
Figure 15: EU Import requirements of Natural Gas (bcm)



Source: IEA – WEO 2019

The International Energy Agency estimated that, in accordance to the Sustainable Development Scenario, the EU would import[359] 226 bcm of natural gas in 2040, this means about 100 bcm less than today [Figure 16].

Figure 16: Production and Consumption of Natural Gas in EU (bcm)



Source: IEA – WEO 2019

3.2 Russia's Energy Strategy up to 2030

The Energy Strategy of Russia up to 2030 has two main goals: maximizing the effective use of natural energy resources and exploiting the energy sector as a way to sustain the economic growth of the country, improving the quality of life of the citizens and strengthening the economic position of Russia in the international arena[360].

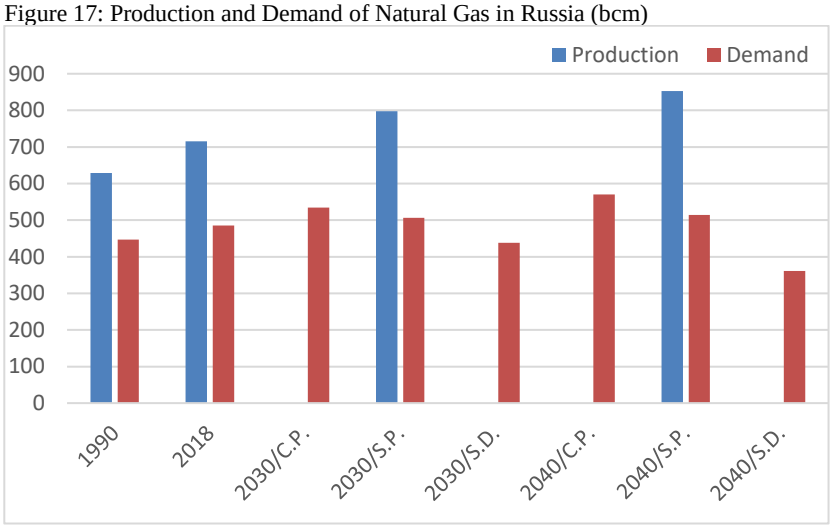
Russia's strategy aims at the reduction of the economic dependence on the energy sector (compared to 2005 levels) through decreasing by not less than 1.7 times the share of fuels and energy resources in the country's GDP; decreasing respectively by no less than 1.4 times and no more than twice the share of energy investments as a percentage of GDP and the total volume of investments; decreasing more than twice the energy intensity of GDP; decreasing by no less than 1.6 times the electricity intensity of GDP[361]. This Strategy also highlights the strategic importance of the Russian energy sector for the economic development of the country; namely, energy infrastructures should contribute to developing the Eastern Siberia and the Far East.

[359]Import requirements: Difference between demand and expected production
[360]MINISTRY OF THE RUSSIAN FEDERATION, *'Energy Strategy of Russia – for the period up to 2030'*, approved by decree 1715-r of the Government of the Russian Federation dated 13 November 2009, Moscow, 2010
[361]*Ibidem*

The objectives envisioned by Russia's Energy Strategy would be accomplished through three phases: the renovation of the energy sector, increasing the energy savings with the help of new technology and focusing on the efficiency of economy-wide energy.

Consistently with the Stated Policies Scenario, the International Energy Agency presumed that the production of Russia's natural gas should increase from 715 bcm to 853 bcm between 2018 and 2040 [Figure 17]. In the Sustainable Scenario the demand of natural gas remains substantially stable. These scenarios are based on the assumptions that without a reduction in the production, Russia will need to export its natural gas to avoid the creations of potential surplus. However, it will no longer be possible to export them to Europe, and Russia would find another potential outlet, for instance, in China.

Figure 17: Production and Demand of Natural Gas in Russia (bcm)

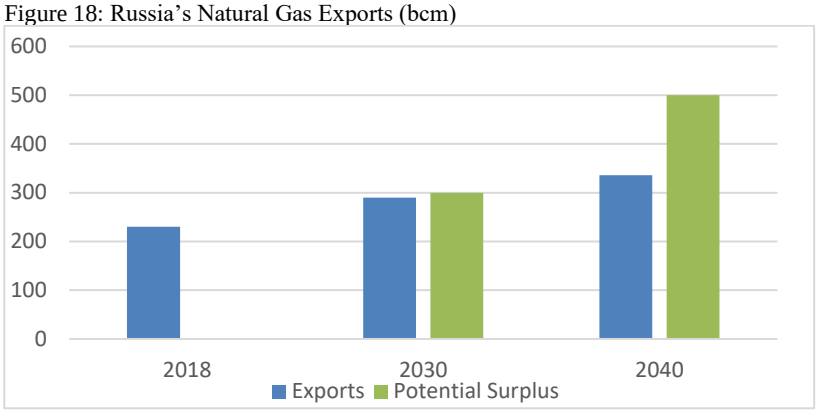


Source: IEA – WEO 2019

The Russian exports of the natural gas mirror the European decreasing demand (2040 [Figure 18]). In 2018, the Russian Federation totally exported 247.9 bcm, of which 170 to the European Union. In 2030, the gas exports will remain quite steady since the long-term contracts will still be in force until 2030. Finally, the period from 2030 to 2040/2050 will be the most uncertain and the most difficult to predict since, to be consistent with the Paris Agreement, many countries would cut their emissions and, consequently, their imports of natural gas, producing a 164 bcm potential surplus[362].

[362]PISKULOVA N., *'Drivers of EU-Russian cooperation on environmental issues: the view from Russia'*, EUREN Brief N°10, January 2020

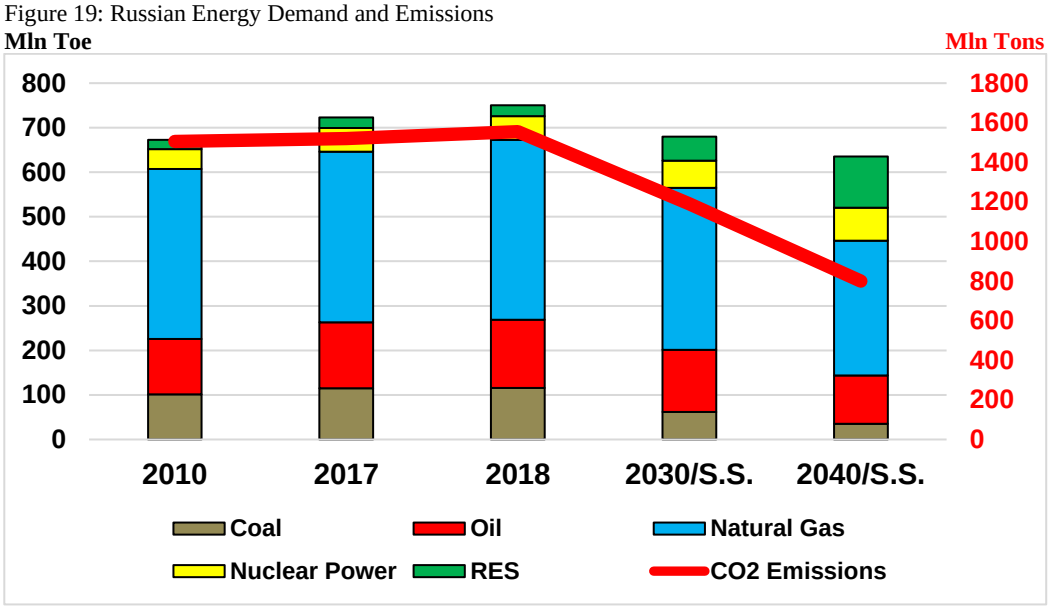
Figure 18: Russia's Natural Gas Exports (bcm)



Source: IEA – WEO 2019

A significant difference between the two Scenarios is noticeable in CO_2 emissions, by 2040. Indeed, CO_2 emissions should account for 1484 Mt in the Stated Policies Scenario and 800 Mt the Sustainable Development Scenario [Figure 19].

Figure 19: Russian Energy Demand and Emissions



Source: IEA – WEO 2019

The International Energy Agency estimated that natural gas would remain the main source of Russian energy, followed by renewable sources that would mainly be used in power generation.

It is worth to point out that in the 2003 *Energy Strategy*, the Russian Federation recommended an increase of the investments in renewable energy with the goal of doubling its production between 2000 and 2020. The goal was to rise the share of renewable sources in energy production from 0,5% to 1%[363]. Later, the 2009 *Energy*

[363] RUSSIAN GOVERNMENT, *'Энергетическая стратегия России на период до 2020' (Energy Strategy of*

Strategy set more significant targets, increasing the shares of renewables in energy production from 0.5% to 4.5% between 2009 and 2020[364]. Russia was able to double its renewable resources share in the energy production in 2010, reaching 1%, and then the Country revised the target downwards to 2.2% instead of 4.5%[365]. Significant progress occurred in the Far East, where renewable energy seems to be a cheaper alternative to the conventional electricity generation[366].

Nuclear power is also quite significant in electricity generation and Russia plans to increase its nuclear capacity and replace its old plants.

Electricity trade between EU and Russia has some potential. Trade is expected to increase in the next decades, and the two actors are exploring opportunities in the electricity market and the development of new infrastructures[367]. Additional efforts are required to improve the market structure of the Russian electricity sector.

Despite the documents adopted by the Russian Federation, State financial aid on projects for decarbonisation is limited. In fact, the Russian priorities in the energy sector remain oil and gas[368].

3.3 Comparison of EU and Russia Strategies up to 2030/2050 and spaces of Cooperation

Both the EU and Russia signed the Paris Agreement, but they have divergent visions about how to shape environmental policies. In fact, Russia did not join the Kyoto Protocol, even after its extension in 2012, and made limited efforts to cut its carbon emissions compared to the European Union[369]. However, in the last years, Russia started to take some steps to adopt a more dynamic and result-oriented climate policy[370]. Conversely, the European efforts were generally directed to reach the carbon neutrality

Russia for the Period up to 2020), Moscow 2010

[364]MINISTRY OF THE RUSSIAN FEDERATION, *'Energy Strategy of Russia – for the period up to 2030'*, approved by decree 1715-r of the Government of the Russian Federation dated 13 November 2009, Moscow, 2010

[365]RUSSIAN GOVERNMENT, *'Проект Энергетической Стратегии на период до 2035' (Draft of Energy Strategy up to 2035)*, 2014

[366]GUSAV A., *'Evolution of Russian Climate Policy: from Kyoto Protocol to the Paris Agreement'*, L'Europe en formation, n°380, August 2016

[367]EU-RUSSIA ENERGY DIALOGUE, *'Roadmap: EU-Russia Energy Relations until 2050'*, March 2013

[368]CORPORATION DEVELOPMENT, *'Обзор развития отрасли альтернативной энергетики в 2014 году, Спецвыпуск, Корпорация Развития Белгородская Область', (Development Review of the alternative energy in 2014)*, 2014

[369]EUROPEAN PARLIAMENT, *'Policy Briefing – EU and Russian Policies on Energy and Climate Change'*, DG EXPO/B/PolDep/Note/2013_308, December 2013

[370]GUSAV A., *'Evolution of Russian Climate Policy: from Kyoto Protocol to the Paris Agreement'*, L' Europe en formation, n°380, August 2016

by 2050, which calls for a substantial amount of investments in renewable energy and efficiency through very structured planning.

These different strategies reflected different interests and positions in the energy market. Indeed, Russia, as an owner of huge hydrocarbon resources, did not feel the need to excessively invest in renewable sources. Contrariwise, Russia aims at increasing its exports of natural resources. The European Union, instead, as a consumer/importer, is more interested in seeking alternatives to hydrocarbons.

In 2011, the European Commission and the Russian government defined the long-term perspective of their energy relations. Therefore, in 2013, the *"Roadmap for EU-Russia Energy Cooperation Until 2050"* was issued with the scope of further developing the EU-Russia energy system and market; fostering the coordination in the energy sector; implementing joint projects on renewable sources, technologies, and grid modernization; and establishing a common energy space[371].

Although after the Ukrainian events this collaboration has been suspended, it can be useful to understand how Russia and EU can further their collaboration. The main goal of the EU-Russia Energy Roadmap was to achieve the harmonization of their respective markets and the elimination of the barriers between them by 2050.

Energy efficiency would be, undoubtedly, among the areas of cooperation between the European Union and the Russian Federation. Russia owns a high potential for energy savings and efficiency, being one of the largest oil and gas suppliers in the World. Hence, in the Energy Strategy of the Russian Federation up to 2030, energy efficiency is considered as a priority in order to modernize the Country's economy[372]. Additionally, a great incentive to foster cooperation between the two parties is the increasing integration of Russia in the World economy and the necessity for the Russian companies to be in line with the international standards.

Even if the European and Russian energy policies are significantly different, some synergies cannot be reached without solid cooperation. The relationship in the energy field has been usually defined as a relation between producer and consumer. The Roadmap for the EU-Russia Energy Cooperation until 2050 planned the modernization of the relations through the adoption of the Partnership for Modernization that should lead

[371]EU-RUSSIA ENERGY DIALOGUE, *'Roadmap: EU-Russia Energy Relations until 2050'*, March 2013
[372]*Ibidem*

to a switch from a producer-customer based relation to a more technology-oriented cooperation[373].

As far decarbonisation is concern, the EU and Russia will share some considerable challenges, namely: investments in cooling/heating sectors and their modernization, carbon capture and storage, reducing GHG emissions through new technologies.

The Carbon Capture and Storage (CCS) is a technology that can capture up to 90% of CO_2 emissions, preventing CO_2 emissions from entering in the atmosphere[374]. Indeed, the EU saw CCS mainly in two ways: as an opportunity to substantially reduce emissions from carbon intensive generation assets; and as a chance to increase investments in large-scale hydrogen production with carbon capture and storage technology as the energy vector[375]. Carbon capture and storage technology is actively supported by the European Union since it is seen to pave the way for a low-carbon energy system[376]. CCS technology may create a win-win dynamic in the EU-Russia relations by providing clean energy essential to carry out decarbonisation and, meanwhile, allowing the trade of molecules such as natural gas.

The main goal of the cooperation between EU and Russia is to reduce uncertainties to a "tolerable level" for both Parties. To lessen uncertainty between both sides, the European Union should inform Russia about the forecast of its long-term demand for Russian natural gas as well as the estimated implications of the EU low carbon policies[377].

This is absolutely essential for Russia in taking decisions on new investments, infrastructures, and resource depletion.

On the other side, Russia should inform the European Union about its long-term natural gas availability for Europe. This would permit the European Union to develop an efficient strategy on future gas supplies for Member States. The Cooperation between EU and Russia envisaged the elimination of barriers to an integrated and coordinated gas market, the further development of technologies in the gas sector, and several joint projects in this field[378].

Uncertainties persist over possible changes in the oil trajectory demand in Europe as well as changes in future Russian oil exports. For instance, the environmental policies

[373] *Ibidem*
[374] CCS[a], *'What is CCS?'*, Carbon Capture and Storage Association, last access May 2020
[375] TURAN G., *'Driving Decarbonisation with Carbon Capture and Storage'*, T&D World, January 2020
[376] *Ibidem*
[377] EU-RUSSIA ENERGY DIALOGUE, *'Roadmap: EU-Russia Energy Relations until 2050'*, March 2013
[378] *Ibidem*

issued by both EU and Russia to reduce GHG emission through the increase of carbon prices, the improvement of energy efficiency, fuel switching, taxation policies, and the adoption of stricter environmental standards, may negatively impact oil trade between EU and Russia. EU and Russia share some common interests in the oil sector, the most important one of which is certainly the stability of the oil market. Therefore, investments and the enhancement of existing infrastructures are central as well as sharing oil production, supply, and demand prospects; exchanging information; cooperating in downstream and upstream sectors[379].

A fundamental obstacle in the development of the EU-Russia climate collaboration is the difference in the approach adopted to deal with climate issues. In fact, in the European Union, climate change is considered as one of the most important problems to tackle as soon as possible, and the EU plans to adjust its energy strategy because of it. Conversely, in Russia, energy strategies mainly focus on exports of fossil fuels and pipelines. However, part of the Russian business community perceives climate commitments as opportunities for business rather than a risk, being aware of the benefits deriving from a low-carbon business model[380]. In fact, some Russian businessmen recognized to be exposed to the external risks deriving from the adoption of carbon regulation and adjustment measures taken by other countries[381].

If Russia wants to achieve some results in the decarbonisation process, it needs a legal framework for decarbonisation. This will also contribute to the harmonization of the regulations between EU and Russia and could facilitate trade and investments between them[382]. In fact, showing that Russia made progress to reduce its emission will create a more stable and attractive investment business climate for the European companies.

EU Member States could also provide support in the development of a legislation that back up the abovementioned Russian climate targets. Meeting these requirements would need the conjunct support of public and private entities along with the government.

Close cooperation between the EU and Russia could be beneficial for both actors. Russia could issue a legislation based on the experience of the EU on renewable energy sources, meanwhile importing the latest technology and innovations. In this way, Russia

[379]*Ibidem*
[380]GALENOVICH A., *'Russia and the EU: A perspective on climate policy collaboration'*, Sustain Europe, last access May 2020
[381]*Ibidem*
[382]DUPONT C., OBERTHUR S., *Decarbonisation in The European Union – Internal Policies and External Strategies*, Palgrave Macmillan, 2015

could increase its investments in the environment field and attract, even more, European companies in the Russian market. Similarly, the European Union could benefit from a new market for EU renewable technologies and services. Furthermore, the enlargement of the European renewable energy market to Russia could lead to economies of scale that may reduce the costs of renewable sources.

Russian decarbonisation targets are quite different compared to the European ones. This is not surprising, assuming that production and exports of fossil fuels have been the focus of Russian energy policies for decades. Until today, the EU and Russia developed a rhetoric of cooperation in the field of energy and climate, but they did not take concrete actions in this regard. Spaces for collaboration may be found both in the renewable energy field and in the trade of clean gas.

Climate change and decarbonisation acquired a significant importance in the Russian energy discourse only because of Medvedev. Indeed, he believed that "*Russia must become a leading country measured by the efficiency of production, transportation and use of energy*"[383] and, therefore, he combined issues such as modernization, national security, and climate policy[384].

The commitments to climate measures announced by Medvedev changed during the years and were, generally, low. In fact, the prioritization of the environmental security diverges considerably between EU and Russia and the cooperation between EU and Russia in the climate field was quite poor. Except for small-scale projects, like the export of electricity from hydropower stations in Russia to Finland[385].

Divergent visions on climate and energy policies are proved by the fact that decarbonisation and renewable energy represented the goal of the EU's energy policy towards the carbon neutrality era.

Conversely, Russia aims at protecting its demand for energy exports since the central role of fossil fuels has ensured economic growth over the years. The practical Russian policies in the energy sector deal with pipelines and show that the EU market is still considered to be a key consumer of Russian gas. This is demonstrated by the Russian willingness to complete the Nord Stream 2 and South Stream, and even by the latest export data from Yamal LNG plant. This difference may create further misbalances.

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[383]PRESIDENT OF RUSSIA WEBSITE, *'Dmitry Medvedev's Article 'Go, Russia!''*, Moscow, September 2009
[384]PRESIDENT OF RUSSIA WEBSITE, *'Opening Remarks at Meeting on Climate Change'*, Moscow, February 2010
[385]KHRUSHCHEVA O., MALTBY T., *'The future of EU-Russia energy relations in the context of decarbonisation'*, Geopolitics, Vol 21, Issue 4, June 2016

Chapter IV: Future of the EU- Russia Relations in the energy sector

4.1 Energy Transition

The EU-Russia relationship in the energy field was traditionally driven by fossil fuels dynamics that placed the European Union and the Russian Federation at the opposite poles of the commodity chain. The transition to the "carbon neutrality era" raised the question about how and to what extent the decarbonisation will affect the relations between consumers and suppliers, and therefore, between EU and Russia.

Energy transition means transforming the traditional paradigm built for decades around the supply of fossil fuels through the evolution of the energy pattern into a clean, secure, and economically accessible model[386]. History showed that every energy transition is somehow the result of the technology acceleration. Indeed, in a period of transformation, usually, there is also a change of infrastructures, markets, actors, strategies and therefore of the geopolitical balance.

Changing the energy paradigm calls for close attention to economic, social, and political consequences as well as to any potential frictions between government.

The current energy system is based on fossil fuels dynamics. Indeed, for decades the geopolitics of energy overlapped that of hydrocarbons. States that, in the past, benefited of geopolitical influence due to their capacity of supplying fossil fuels will see a decrease in their power. Therefore, some producers of fossil fuels are already trying to restructure their economies to avoid that a possible reduction of their energy export may have remarkable destabilizing effects[387]. Some believe that producers of fossil fuels should make the most of their resources as long as they can, lowering prices of natural resources to make them more competitive on the market and challenge the increasing role of renewables[388].

Reserves of hydrocarbons are geographically concentrated. This meant that global energy markets were mostly in the hands of a few producing countries, paving the way to relations of dependence between States[389]. In particular, the geopolitics of natural gas

[386]ALBERTI M., *'Democratica, regionalizzata e digitale: geopolitica delle energie rinnovabili'*, in LIMES Rivista Italiana di Geopolitica, *CINA-RUSSIA LA STRANA COPPIA - La doppia pressione di Washington avvicina Pechino e Mosca come mai prima. Gli effetti strategici di una non-alleanza*, November 2019
[387]*Ibidem*
[388]PALTSEV S., The Complicated Geopolitics of Renewable Energy, Bulletin of the Atomic Scientists, October 2016
[389]ALBERTI M., *'Democratica, regionalizzata e digitale: geopolitica delle energie rinnovabili'*, in LIMES Rivista Italiana di Geopolitica, *CINA-RUSSIA LA STRANA COPPIA - La doppia pressione di Washington avvicina Pechino e Mosca come mai prima. Gli effetti strategici di una non-alleanza*, November 2019

developed around the pipelines, giving relevance to more geographically sensitive and strategical points.

4.2 First Phase: Stability of the EU-Russia Relations in the Energy Field

To understand the impact of climate and energy policies taken by the EU and Russia, as well as the effects of the important changes in the European energy demand, it is necessary to draw a temporal differentiation between the coming decades.

To conduct a detailed analysis of how the EU-Russia relations in the energy field will develop, it is possible to split the period from 2020 to 2050 in three phases.
The first phase – from 2020 to around 2030 – is characterized by the efforts in carrying out diversification policies from EU and Russia, along with the fulfillment of the already described energy strategies.

In this period, the relationship between the EU and Russia is expected to be quite stable and, despite the attempts of the EU to diversify energy sources, the gas supplies from Russia will continue because of the long-term contracts up to 2030. In fact, with these contracts ruling the gas trade between the EU and Russia, the practical assumption is that the gas trade will not decrease. In this frame of time, the hydrocarbon relationship between EU and Russia will continue taking over the future potential cooperation on decarbonisation.

As a result, in the short term, the European Union will remain an importer of gas supplies and Russia will remain an important exporter for the EU[390].

In the first phase, natural gas will remain at the heart of the European strategy to support the energy transition and as an alternative of more polluting sources[391]. Although gas maintains its strategic importance to help the phase out of coal, the rise of new carbon-free sources of energy will be crucial in shaping the future energy paradigm.

4.3 Intermediate Phase: the growing role of Renewable energy

Despite its low emissions, natural gas still produces CO_2 emissions that cannot be entirely eliminated even through the use of CCS[392]. The CO_2 emissions produced from natural gas will be not consistent with the European strategy of decarbonisation. In

[390]RUSSIAN GOVERNMENT, *'Resolution N°1715-r on Russia's Energy Strategy Until 2030'*, Moscow, Russia, 2010
[391]ENI STAFF, *'Research for the Energy Transition'*, Eni Website, February 2020
[392]TRINOMICS, *'The role of Trans-European gas infrastructure in the light of the 2050 decarbonisation targets: Final report'*, European Commission, September 2018

contrast, in the long run, resources such as renewable energy and hydrogen may represent more carbon-free alternatives to natural gas, leading to an intermediate phase: from 2030 to approximately 2050.

In this second phase, the EU will intensify its efforts to cut emissions by reducing the imports and use of hydrocarbons. Although the European Union should reduce its imports of fossil fuels, during this period, it will still depend on Russia's exports of gas.

As a consequence, in this frame of time, low and zero-carbon forms of gas should play a key role, but this would be possible only once they will become market-ready. Hence, the demand for natural gas and other "gaseous fuels" would depend on several factors like costs, access, technology, policy decisions, and so on[393].

The role of gas in this intermediate phase will be depending inter-alia on the deployment of carbon-capture and storage technologies, on the production of hydrogen from natural gas, and as a back-up for renewable sources[394].

4.3.1 The role of Carbon Capture Storage (CCS) and Carbon Capture, Utilization and Storage (CCUS) in Decarbonisation

Carbon Capture Storage (CCS) and Carbon Capture, Utilization and Storage (CCUS) are two technologies employed to capture dioxide emissions from conventional power generation processes[395]. The main difference between CCS and CCUS is that the former captures the emissions and store them into the ground, while the second capture and use them to produce new products.

The European Union support the deployment of CCS technology and highlighted its importance in supporting the decarbonisation of sectors like heating, transport, and power generation, pointing out the importance of CCS for the deployment of low-carbon hydrogen[396].

Today in Europe, CCS technology is more advanced than CCU, but both might represent efficient solutions to help the EU to meet the 2030 and 2050 climate targets. Indeed, the European Union is well placed to benefit from these technologies because of its extensive gas pipeline network that can be employed to transport decarbonized

[393]CĂTUȚI M., EGENHOFER C., ELKERBOUT M., *'The future of gas in Europe: Review of recent studies on the future of gas'*, N°2019/03, CEPS, August 2019
[394]*Ibidem*
[395]CTCN CLIMATE TECHNOLOGY CENTER & NETWORK WEBSITE, *'CO2 Capture technology'*, Last access May 2020
[396]IOGP (International Association of Oil and Gas Producers), 'The potential for CCS and CCU in Europe', Report to the thirty second meeting of the European gas regulatory forum, May 2019

gases[397]. The conversion of existing infrastructures may also represent a way to reduce the costs deriving from the employment of CCS technologies[398].

CCS is quite important in the energy transition since it represents a way to cut the emissions in sectors that do not have any alternatives – at least in the medium term; and it allows fossil fuels assets to be exploited, meanwhile taking action against the emission of CO_2[399].

However, there are some challenges that CCS technology needs to face. Firstly, even if CCS provides several benefits to the environment, there is still concern about the impact of CO_2 related to fossil fuel extraction. Secondly, many believe that CCS may be employed in the medium-term but not in the long one, since these technologies are related to carbon-emitting energy sources. Who supports this argument believes that the goal of the energy transition should be encouraging the deployment of new and clean technologies useful to substitute fossil fuels.

CCS and CCUS technologies may represent a way to continue the energy trade based on hydrocarbons, and therefore, to keep steady the trade between EU and Russia. In this case, in the intermediate phase, the relation of interdependence between the two actors will continue along with the energy trade.

4.3.2 The Role of Hydrogen in the Energy Transition

In the energy transition framework, hydrogen represents one of the most effective ways to reduce CO_2 emissions[400].

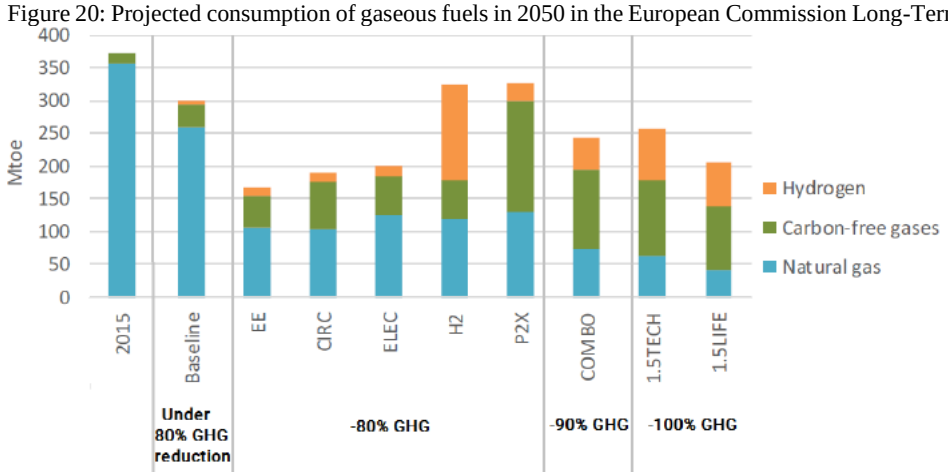
There are three kinds of hydrogen. The so-called "grey hydrogen", the most common one, which is produced from natural gas or coal. This is the hydrogen with the highest level of emissions. Then, there is the "blue hydrogen", also produced by natural gas or coal, but the emissions are captured through CCUS techniques. Finally, there is the "green hydrogen" produced by electricity from water (through the process of electrolyze). In this case hydrogen is produced using renewables and, in this way, does not generate CO_2 emissions[401].

[397] *Ibidem*
[398] HOUSE OF COMMONS ENVIRONMENTAL AUDIT COMMITTEE, *'Keeping the lights on: Nuclear, Renewables and Climate Change'*, Sixth Report of Session 2005–06, Volume 1, March 2006
[399] KENYON D., JEYAKUMAR B., *'The role of carbon capture in deep decarbonisation'*, Pembina Institute, October 2015
[400] BIROL F. in ALVERA M., *Generation H, healing the climate with hydrogen*, Mondadori 2019
[401] SNAM, *'The hydrogen challenge: the potential of hydrogen in Italy'*, October 2019

The hydrogen consumption could expand in several sectors mainly because of two reasons. First, green hydrogen is carbon neutral. Second, green hydrogen technology could compete with oil and gas-based technology as long as production costs are reduced because of economies of scale.

In fact, in the scenario of decarbonisation at 95-100% level, the natural gas is almost entirely phased out. On the contrary, in the 80% decarbonisation scenario, natural gas might still play a role in the European energy demand, a role that at the present is still uncertain [Figure 20].

Figure 20: Projected consumption of gaseous fuels in 2050 in the European Commission Long-Term Strategy



Source: European Commission, COM (2018) 773 final, 2018

Hydrogen might be crucial in sectors that cannot be electrified with renewable energy; namely: maritime and air transport, heavy transport, and some energy-intensive industries. Additionally, hydrogen can be stored providing compensation to the volatility of the wind and photovoltaic electricity production that are subjected to seasonal and day production variability[402].

Some believe that it will be possible to create a European energy system based partly on electricity produced from renewable sources and partly on hydrogen from third countries[403]. Turning electricity into gaseous hydrogen will bring advantages also at the geopolitical level allowing the requalification of the already existing gas pipelines. For instance, this would make it possible to use the thousands of kilometers of already available transit routes between the EU and Russia.

Using hydrogen as a source of energy would permit to overcome some obstacles that stand in the way of the decarbonisation, such as reducing the emissions in transport

[402]LOMBARDINI M., *'Idrogeno e geopolitca: cosa manca nella rivoluzione energetica'*, ISPI, February 2020
[403]VAN WIJK A., WOUTERS F., RACHIDI S., IKKEN B., *'A North Africa - Europe Hydrogen Manifesto'*, Dii Desert Energy, September 2019

sectors not currently electrifiable through renewable energy; storing electricity produced from renewable sources, supplying energy-intensive sectors with clean energy; and producing raw materials like ammonia with renewable sources[404].

On a geopolitical level, the replacement of hydrocarbon with hydrogen may help fossil fuels producing countries, like Russia, towards a virtuous energy transition.

In particular, Steam Methane Hydrogen (SMR) is a process in which "*methane (CH_4) reacts with steam to produce hydrogen and CO_2*"[405]. To be carbon-neutral, the hydrogen that was obtained through the SMR needs to be combined with CCS technology. This represents a valid opportunity to continue the gas trade between EU and Russia, and in the meantime carrying out the decarbonisation.

Nowadays, the main limit of hydrogen is represented by the low availability of hydrogen technologies applicable on a large scale and the costs. However, the Hydrogen Council recently published a report in which it was envisaged a reduction of 50% of the hydrogen production costs over the next decade[406].

4.3.3 Renewable Energy Sources (RES)

To reach carbon neutrality, the European Union has also pursued the development of renewable energy sources. Indeed, the growth of renewable energy in the last decade has outpaced that of any alternative resource, including fossil fuels[407]. In the period between 2010 and 2019, the costs of producing electricity from renewable sources decreased by 81% for photovoltaics and by 46% for onshore wind[408]. Investments connected to sustainability policies increased by 34% between 2016 and 2018, and in 2018 they amounted to USD 31 trillion[409]. It is worth noting that, the European Investment Bank will no longer fund fossil-based power generation projects from 2021[410].

In this way, renewable power became a game-changer, the cheapest way for some countries to produce electricity[411]. Hence, renewable sources will not only be essential in

[404]LOMBARDINI M., *'Idrogeno e geopolitca: cosa manca nella rivoluzione energetica'*, ISPI, February 2020
[405]PÖYRY, *'Hydrogen from natural gas –The key to deep decarbonisation'*, Discussion Paper commissioned by Zukunft ERDGAS, July 2019
[406]LOMBARDINI M., *'Idrogeno e geopolitica: cosa manca nella rivoluzione energetica'*, ISPI, February 2020
[407]IRENA, A New World – The Geopolitics of the Energy Transformation
[408]2019 Tracking SDG7 - The Energy Progress Report, a joint report of IEA, IRENA, UNSD, WB, WHO, 2019
[409]GLOBAL SUSTAINABLE INVESTMENT ALLIANCE, data relative to 2018.
[410]ALBERTI M., *'Democratica, regionalizzata e digitale: geopolitica delle energie rinnovabili'*, in LIMES Rivista Italiana di Geopolitica, *CINA-RUSSIA LA STRANA COPPIA - La doppia pressione di Washington avvicina Pechino e Mosca come mai prima. Gli effetti strategici di una non-alleanza*, November 2019
[411]*Ibidem*

the energy transition, but they will also link the transition to environmental issues, giving them more relevance.

Renewable energy reformulates the structural links on which the traditional geopolitics of fuels was built on, such as abundancy/scarcity, dependence/security, stability/fragility. In fact, the main difference between renewable sources and fossil fuels is that renewables are available in most States, while fossil fuels are distributed in some geographical areas. The geopolitics of renewable energy is characterized by many players and resources. Instead of focusing only on a few resources like oil and gas, renewable energy depends on factors like access to technology, electricity distribution networks, rare earth materials, and so on[412].

There is an important difference between fossil fuels and renewables. Fossil fuels can be stored, but they can be used once; in contrast, flows do not exhaust themselves and their supply is harder to interrupt[413]. For instance, the interruption of Russian supplies in 2006 and 2009 had consequences on the gas supplies to the European Union. In the next decades, more the EU will produce clean electricity and build interconnections of electricity grids, harder it will be to suffer from any disruption.

The linkage between energy security and distribution of power will remain, but many believe that the energy sources will no longer be so scarce to be employed as a tool of leverage mainly within the European Union[414]. In any case, energy will maintain a central role in international relations because of its importance for the economic development of all countries. In this regard, the energy transformation and renewable sources might generate a peace dividend[415].

On the other side, renewable sources require certain minerals for their production, such as cobalt, lithium, and rare earth elements in general[416]. Rare earths materials are, actually, not so rare, but they were perceived as scarce because their markets are

[412]PALTSEV S., *'The Complicated Geopolitics of Renewable Energy'*, Bulletin of the Atomic Scientists, October 2016
[413]IRENA, *A New World – The Geopolitics of the Energy Transformation*
[414]ALBERTI M., *'Democratica, regionalizzata e digitale: geopolitica delle energie rinnovabili'*, in LIMES Rivista Italiana di Geopolitica, *CINA-RUSSIA LA STRANA COPPIA - La doppia pressione di Washington avvicina Pechino e Mosca come mai prima. Gli effetti strategici di una non-alleanza*, November 2019
[415]GOLDTHAU, A., KEIM M., WESTPHAL K., *'The Geopolitics of Energy Transformation: Governing the Shift - Transformation Dividends, Systemic Risks and New Uncertaintie's*, Comment No. 42, German Institute for International and Security Affairs, October 2018
[416]The term 'rare earths' refers to 17 elements often found in the same ore deposits: cerium, dysprosium, erbium, europium, gadolinium, holmium, lanthanum, lutetium, neodymium, praseodymium, promethium, samarium, scandium, terbium, thulium, ytterbium and
yttrium

cyclical[417]. For instance, when the demand grows, the suppliers need time to react properly since they have to implement new mining projects that usually require long-lead times. As a result of the time lag prices, high prices are an incentive for companies to overinvest; therefore, booming demand is followed by a price collapse and the start of a new cycle[418].

Hence, countries that are rich in rare earth materials might use them to pressure those States that lack them, redefining the geopolitics. To provide an example, China holds a substantial part of these materials and this created concerns about the possibility of using them as a tool in the foreign policy of the country.

One of the main concerns about renewable energy is represented by the shift of potential conflicts from hydrocarbon infrastructures to electricity grids. For instance, if Ethiopia develops its hydropower and is willing to sell its excess of electricity to Egypt, it should come to an arrangement with transit countries like Sudan, creating traditional concerns about energy security and the role of transit countries[419]

This is why some believe that the shift from fossil fuels to renewables will not bring greater peace, but it will simply cause a geographical shift of conflicts. It is worth to point out that fossil fuels are not often a direct source of conflict, but they tend to aggravate already existing tensions.

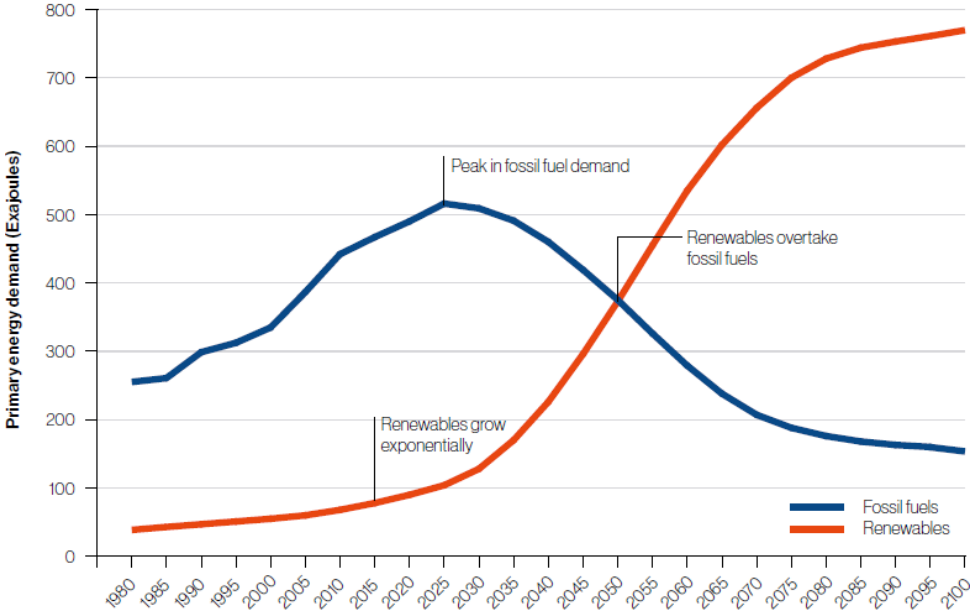
4.4 Last Phase: Decarbonisation

Conversely, the last phase would be characterized by a high level of uncertainties since the decarbonisation should be reached, representing the end of the interdependence of the European Union from external suppliers and, therefore, from Russia.

The pace of the energy transition is uncertain, but there are several scenarios that show how after a near-term peak in the growth of fossil fuel demand, there will be a fast uptake of renewable sources in line with the decline of fossil fuels demand [Figure 21].

[417]IRENA, *A New World – The Geopolitics of the Energy Transformation*
[418]*Ibidem*
[419]PALTSEV S., *'The Complicated Geopolitics of Renewable Energy'*, Bulletin of the Atomic Scientists, October 2016

Figure 21: Energy Transformation – Fossil Fuels/Renewables Demand



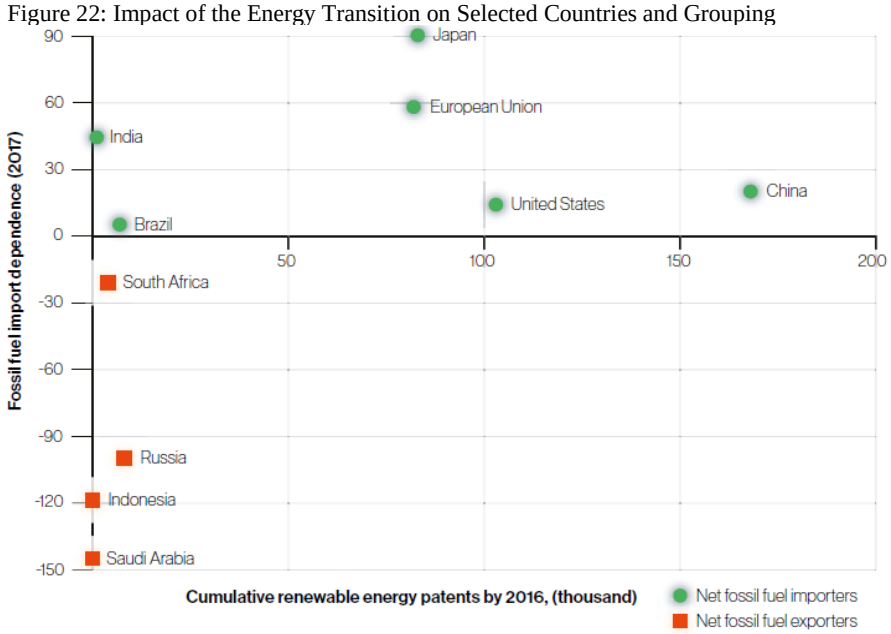
Source: Shell Sky Scenario 2018

The graph below defines the impact of the energy transition on selected countries [Figure 22]. The Y-axis illustrates the share of imports of fossil fuels in the total primary energy consumption of selected countries (2017). The graph shows that the higher a country depends on fossil fuels the more is the share of oil, gas, and coal imported[420]. Conversely, countries that export fossil fuels have negative shares. States and the EU are placed in the graph according to their current energy economy.

The X-axis shows the cumulative renewable energy patents registered by the end of 2016. Countries located in the upper right quadrant are the ones that will benefit the most from the transition since they were the most dependent on fossil fuels but were able to place themselves at the vanguard of the clean energy race[421].

[420]IRENA, *A New World – The Geopolitics of the Energy Transformation*
[421]IRENA, A New World – The Geopolitics of the Energy Transformation

Figure 22: Impact of the Energy Transition on Selected Countries and Grouping



Source: BP, IRENA

The Graph depicts how the European Union is one of the actors most dependent on fossil fuels and, in the meantime, holds a strong position in technologies for renewable energy. Russia is the largest gas exporter and the second largest oil exporter in the world. Therefore, the forecasts are based on the assumption that Russia will face some major challenges in adapting to an energy system in which electricity is mainly produced from renewable sources.

The practical result envisaged is that the decline in exports will cause a decrease in Russia's revenue and, to prevent the economic disruption, the Country needs to adapt its economy and reduce its dependence on hydrocarbons. Russia's economy is more diversified if compared to other producers, but oil and gas are still crucial for Russia's State budget since they account for 40% of the fiscal revenues[422]. However, the IRENA considers Russia a Country moderately exposed and resilient, meaning that it would be able to manage the transition and implementing effective measures to diversify its economy[423]. By diversifying its energy system, Russia would be able to strengthen its long-term prospects and protect its economy from the price volatility of international commodities[424].

[422]IEA, Outlook for Producer Economies, in *World Energy Outlook 2018*, International Energy Agency, 2018
[423]IRENA, *A New World – The Geopolitics of the Energy Transformation*
[424]LEDERMAN D., MALONEY W., *'Trade Structure and Growth'*, in Lederman D., Maloney W., *'Natural Resources: Neither Curse nor Destiny'*, The World Bank, 2007

In the future, the relations between EU and Russia may be less exposed to the dynamics of the international energy market and more to cooperative ones, based on the creation of shared values such as the contrast to climate change. Sustainable energy concerns not only States, but also communities, local government, NGOs, industries and so on, placing the basis for more cooperative geopolitics.

The European Union has been subject for decades to the reliance on external sources of energy, namely fossil fuels, concerned for any possible disruptions of supplies. In the next decades, the European Union would acquire a new negotiating power, being the leader of the energy transition. Today, the European Union is fostering its diversification, showing that energy security will no longer depend on hydrocarbons, but on the ability to produce wealth at the domestic level according to the principles of economic, social, and environmental sustainability. Furthermore, the EU is endowed with industrial technologies and know-how, as well as cultural foundations that make it possible to be the leader of the energy transition.

The climate measures adopted by the European Union could be perceived as a threat to the economy of Russia that heavily depends on exports of fossil fuels[425].

To protect its interests, Russia could exercise lobbying efforts to keep natural gas the pivot of a "climate-friendly" energy system[426]. In fact, natural gas is a flexible resource necessary for the transition to renewable energy, and it can be used as a "bridging fuel" to a more clean and sustainable power system[427].

4.4.1 Growing cooperation between Russia and China

The increasing tensions between Russia and the European Union due both to political reasons and the EU energy policy made Asia – in particular China – a territory of extraordinary importance for the Russian Federation. The Chinese growing demand of energy made it a key destination for the Russian exports of oil and gas. Indeed, the rapid Chinese demographic growth along with the economic one made China the major energy consumer in the world[428].

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[425]CASIER, T., *'The Geopolitics of the EU's Decarbonisation Strategy: A Bird's Eye Perspective'*, in DUPONT C., OBERTHÜR, S., *'Decarbonisation in the European Union: Internal Policies and External Strategies'*, Palgrave MacMillan, Houndmills, 2015; KHRUSHCHEVA, O., MALTBY, T., *'Evolutions and Revolutions in EU-Russia Energy Relations'*, in: DUPONT, C., OBERTHÜR S., *Decarbonisation in the European Union: Internal Policies and External Strategies*, Palgrave MacMillan, Houndmills, 2015

[426]DUPONT C., *'When Decarbonisation meets Disinformation: EU-Russia Energy Relations'*, Policy Brief, Issue 2016/15, June 2016

[427]*Ibidem*

[428]KLIMENKO V., KLIMENKO A., TERESHIN A., MITROVA T., *'Impact of Climate Changes on the Regional*

Combining the trends of demand and supply, it is possible to analyze some interesting dynamics. For instance, the shift of the Russian energy markets to Asia will occur because of the mixed effects of the increase of the Asian energy consumption, mainly in China, and the reduction of the European one. This makes the Asian markets more appealing, while the EU will represent a quantitatively less relevant market implying less significance of the relations between EU and fossil fuels exporting States[429].

The relations between Russia and China were boosted in the last few years by three projects, that were developed almost simultaneously: the Russian Power of Siberia pipeline – gas from Siberia arrived to the Chinese border –, the LNG project in the Russian Arctic, and the doubling of gas pipeline supplies through Mongolia to China[430].

These plans gave a new pace to the energy partnership between China and Russia. The revival of this relationship matches the growing difficulties that Russia faced in the European energy market.

The conditions that the scenarios of the International Energy Agency stem from assume that also the supply of crude oil to the EU will decline after 2020. In effect, the structural drop in oil demand accompanied by resistance of geopolitical nature for additional supplies of Russian gas pushed the country to open up to the possibility of expanding its export of oil to the Pacific region, where a significant growth of the refining capacity is expected[431].

For Russia, the opening of the Chinese market intakes the need of further development of the existing infrastructure and production projects in the Far East and Eastern Siberia. The Chinese oil and gas imports from Russia suffer from the lack of infrastructures between the two countries. Oil and gas pipelines are expensive and require long-term planning; this is the reason why China can take an important portion of the Russian energy exports, but such a part cannot be enough to compensate for the impact of the EU energy policy[432].

Energy Balances and Energy Exports from Russia', Thermal Engineering, Pleiades Publishing, Vol. 66, n°1, May 2018

[429]ISPI, *Energia e geopolitica - Gli attori e le tendenze del prossimo decennio*, Milano, 2014

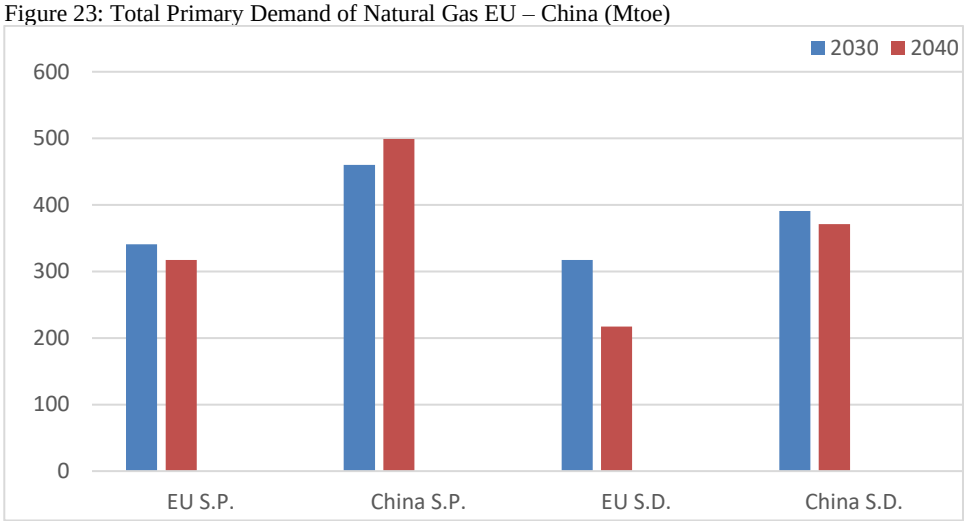
[430]PAOLINI M., *'I vasi comunicanti nell'equazione energetica fra Russia e Cina'* in *CINA-RUSSIA LA STRANA COPPIA - La doppia pressione di Washington avvicina Pechino e Mosca come mai prima. Gli effetti strategici di una non-alleanza*, LIMES Rivista Italiana di Geopolitica, November 2019

[431]KLIMENKO V., KLIMENKO A., TERESHIN A., MITROVA T., *'Impact of Climate Changes on the Regional Energy Balances and Energy Exports from Russia'*, Thermal Engineering, Pleiades Publishing, Vol. 66, n°1, May 2018

[432]PAOLINI M., *'I vasi comunicanti nell'equazione energetica fra Russia e Cina'* in *CINA-RUSSIA LA STRANA COPPIA - La doppia pressione di Washington avvicina Pechino e Mosca come mai prima. Gli effetti strategici di una non-alleanza*, LIMES Rivista Italiana di Geopolitica, November 2019

The scenarios of the International Energy Agency assume that the European demand for natural gas will decrease by 2040; therefore, Russia needs to find new energy partners. The CIS countries cannot fully match the supply of natural gas from Russia; hence, China becomes the most important opportunity for Russia. The scenarios provided by the International Energy Agency assume that the Chinese demand for gas imports will grow by 2040; and according to the IEA, the Chinese total primary demand will surpass the European one [Figure 23].

Figure 23: Total Primary Demand of Natural Gas EU – China (Mtoe)



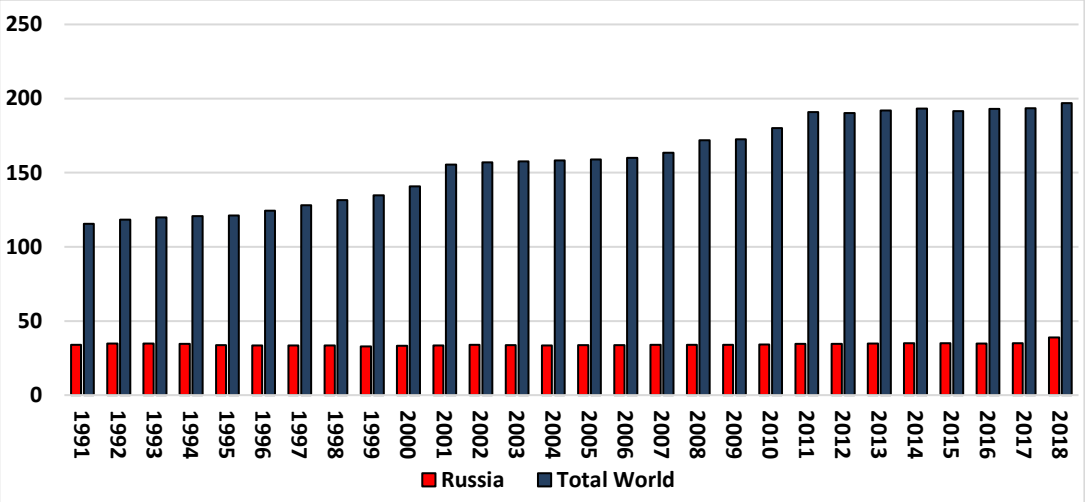
Source: IEA – WEO 2019

Between January and August 2018, according to the Federal Statistics Agency of Russia, crude oil accounted for 28.8% of Russia's total exports, while gas accounted for 10.9%. China was the main buyer of the first item (22% of the total exported), but only 1% of the gas export was directed to China[433].

Russia today faces a challenging scenario: its natural gas resources are crucial for the growth of the economy, but they are unbalanced on their distribution on the territory. These resources are important not only for the oil and gas supplies but also for the economic development of these regions. Russia owns 19.8% of the total proved reserves of gas [Figure 24] and 6.1% of the total proved reserves of oil [Figure 25].

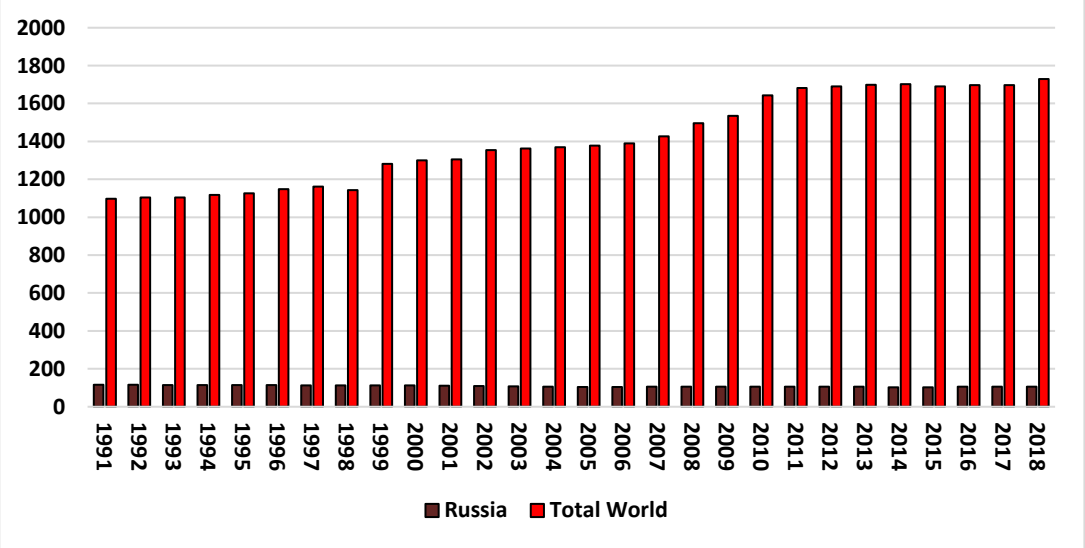
[433]PAOLINI M., *'I vasi comunicanti nell'equazione energetica fra Russia e Cina'* in *CINA-RUSSIA LA STRANA COPPIA - La doppia pressione di Washington avvicina Pechino e Mosca come mai prima. Gli effetti strategici di una non-alleanza*, LIMES Rivista Italiana di Geopolitica, November 2019

Figure 24: Russia – Natural Gas Reserves (Trillions Cubic Meters)



Source: BP Statistical Review of World Energy 2019

Figure 25: Russia – Oil Reserves (Thousands million Barrels)



Source: BP Statistical Review of World Energy 2019

Therefore, the exploration of resources in areas like the Arctic represents, rather than an alternative, an opportunity. The Russian Arctic can be unveiled as a very important natural gas reserve.

Novatek launched a technological challenge by building LNG plants, with all components made in Russia to experience an innovative liquefaction process in the Arctic. The Chinese Silk Road Fund and China National Petroleum Corporation hold respectively 9.9% and 20% stakes of the Yamal Liquified Natural Gas project in the Arctic[434].

[434]ØSTHAGEN A., *'The New Geopolitics of the Arctic: Russia, China and the EU'*, Wilfired Martens Centre for European Studies, April 2019

LNG production in the Russian Arctic has been highly valued in China. In fact, imports of LNG from the Arctic define a reassuring trajectory for Beijing, since the route flows entirely within Russian waters up to the Kamchatka terminal, thus allowing Beijing to diversify both the suppliers and the supply lines of LNG that today are still concentrated on China's seas route – historically perceived as critical[435].

4.5 Implications and Policy Recommendations

The split of the future in forthcoming decades helps to understand the possible path that the relationship between EU and Russia in the energy field may follow. To conduct a thorough analysis, the scenarios provided by IEA, IRENA, and the European Commission are crucial. Tring to define which will be the implications of the taken policies on the EU-Russia relations in the energy fields requires to assume that the full decarbonisation will be reached.

What emerges from the abovementioned time division is that the interdependence between the European Union and the Russian Federation might mainly follow three paths.

Firstly, starting from the assumption that the EU will reach full decarbonisation by 2050, the relation of interdependence between the EU and Russia may be subjected to an interruption. Indeed, if the Russian Federation is not willing to trade green fossil fuels, the relations between the two actors might deteriorate. If this occurs, Russia will certainly turn to new energy partners to boost its exports and economy. The only partner that can replace the EU for volumes of oil and gas imports is China, thus, leading to an increase of the already existing interdependence between China and Russia.

However, this is not the only possible alternative. The second path that the EU-Russia relations might follow regards the cooperation in the renewable sector. Indeed, it is worth pointing out that Russia owns a great renewable potential and the cooperation in this field may shape a new narrative in which decarbonisation is an opportunity rather than a disadvantage.

The EU-Russia relationship may continue to prosper by updating the energy systems of the two actors through more sustainable and cleaner strategies. The International Renewable Energy Agency (IRENA) stated that Russia owns great renewable potential. For instance, solar energy potential is 50% higher than Germany,

[435]PAOLINI M., *'I vasi comunicanti nell'equazione energetica fra Russia e Cina'* in *CINA-RUSSIA LA STRANA COPPIA - La doppia pressione di Washington avvicina Pechino e Mosca come mai prima. Gli effetti strategici di una non-alleanza*, LIMES Rivista Italiana di Geopolitica, November 2019

wind potential is the largest in the World, Russia owns the greatest water reserves in the world, along with abundant reserves of bioenergy in all its forms and also the geothermal potential is quite significant[436].

The potential of cooperation between the EU and Russia in the sector of renewable sources can be a catalyst to prompt the relations in an uncertain future[437]. President Vladimir Putin described renewable energy as "definitely the main development path, the proper path" for mankind. About the expenses which are required to develop the renewable sources in Russia, IRENA stated that the jobs created would partly repay the spending, while other profits will be brought by the potential of selling clean energy not only to the EU, but also to Russia's neighbors such as China and Mongolia[438].

Additionally, if Russia opens up to foreign investments in the energy sector, the European companies could enter even more in the Russian market and in the renewable energy sector. Thus, the EU Member States could provide their know-how for the development of energy efficiency and renewable energy resources; in the meantime, the Russian market could represent a fundamental opportunity for technology transfer and trade by the European companies[439].

A further space of collaboration may be represented by the electricity sector. In effect, in the next decades, States would exploit always more renewable sources and integrate their electricity networks. This would lead to the emergence of new interdependence relations, but more sustainable and less related to the production of hydrocarbons than in the past. This could also be a space of collaboration between EU-China-Russia, being an opportunity to move electricity from one part of the Eurasian land to the other[440].

Finally, the third space of cooperation might be represented by the development of CCUS/CCS technology and the trade of green fuels like hydrogen. The cooperation in this field is based on the assumption that these technologies will be developed to such an extent that they will be applied on a large scale. In this case, it will be possible to continue

[436]IRENA, *'Remap 2030 – Renewable Energy Prospects for the Russian Federation'*, April 2017
[437]*Interview at Simonov K.,* General Director of National Energy Security Fund, Moscow, April 2010; *Interview at Pichkov O*., Moscow State Institute of International Relations, April 2010 in DUPONT C., OBERTHUR S., *Decarbonisation in The European Union – Internal Policies and External Strategies*, Palgrave Macmillan, 2015
[438]FOY H., *'Russia struggles to unleash clean energy potential'*, Financial Times, May 2017
[439]DUPONT C., OBERTHUR S., *Decarbonisation in The European Union – Internal Policies and External Strategies*, Palgrave Macmillan, 2015
[440]ZACHMANN G., *'The European Union-Russia-China energy triangle'*, Policy Contribution Issue n°16, Bruegel, December 2019

to trade the gas molecule and, therefore, the energy trade between EU and Russia would continue in the gas sector. This would certainly represent the most optimal situation for both actors that would manage to carry out the decarbonisation, meanwhile, without limiting the gas trade. Indeed, Gazprom is currently looking to hydrogen to provide the EU with cleaner gas. The aim of the company is to create a USD 175 bln market by 2050, hence, bigger than the existing USD 110 bln gas market[441]

On the other side, the European Commission is aware that the commerce of blue hydrogen will lead to dependence on external suppliers, with Russia being one of the biggest exporters[442]. In fact, blue hydrogen will represent a way to maintain the relationship with the Russian Federation steady in the future, but also to continue the relationship of interdependence developed over the years.

In the energy transition, every country has its own characteristic and challenges to face; therefore, it is necessary to create a clear and secure path to achieve economic and energy transformation. EU and Russia need a tailored to measure strategy to deal with the implications of the decarbonisation. This strategy may consist in a constant planning that allows Russia to set its gas production level according to the European demand for fossil fuels. An agreed supply and demand planning will also prevent both EU and Russia to arrive unprepared to 2050.

Therefore, cooperating in the sectors of renewables or green fuels may become a way to strengthen the relationship between the EU and Russia. The modernization of their energy systems may result in the definition of a new kind of relation between EU and Russia based on cooperation instead of confrontation.

The period up to 2050 is characterized by variables and uncertainties, but the collaboration in the technology field, investments, exchange of know-how, cooperation in the renewable energy field, trade of hydrogen, and a structural planning, these are all factors that can foster the relationship between EU and Russia in the energy sector instead of limiting it.

[441]SHIRYAEVSKAYA A., *'Russia Looks to Hydrogen as Way to Make Gas Greener for Europe'*, Bloomberg November 2018
[442]JAKÓBIK W., *'Hydrogen alliance could help rebuild European unity'*, Euractiv, April 2020

Conclusions

The scope of this study was to investigate the main features of the interdependence between the European Union and the Russian Federation in the energy field, in order to understand their dynamics and their evolution under the influence of decarbonisation policy. Hence, the focus of this thesis was to define the political implications of the energy trade, basing the analysis on a qualitative perspective.

In this regard, this thesis tried to provide an answer to the research question *"how the relation of interdependence between the European Union and the Russian Federation in the energy field developed over the years and will be impacted in the light of full European decarbonisation by 2050"*.

The hypothesis provided in this thesis consists in an unique view of the transformation of the relations combined with the elaboration of a "positive and cooperative" agenda, showing how a cooperative partnership between EU and Russia can exist and be structured.

The historical analysis of the EU-Russia relations in the energy field was required to identify the scientific findings and conclusions. Particular attention was devoted to the role of natural gas, which makes it possible to identify the structure of the energy trade and the drivers that allow the energy relationship to continue despite political tensions.

This study illustrated the path and the stages that interdependence between the EU and Russia followed. The analysis began with the description of how the relationship in the energy field began in a time of tensions in the context of the Cold War. The interdependence between EU and Russia developed in the oil sector during the 1960s, and, from the 1970s spread to the gas sector. Over the decades, several contracts were signed between the Soviet Union and the Western European Countries and during the 1990s, this legacy was collected from the European Union and the Russian Federation.

Nowadays, the relations between the European Union and the Russian Federation are labeled as one of the most renowned cases of interdependence. What is truly interesting is that to a certain extent, interdependency contributed to the distention of the relations between the EU and Russia. In fact, during the Cold War, interdependency proved to be a driver stronger than political conflicts.

However, during the 1990s, the development of increasingly different visions on how to organize the energy sector dissolved the glue that was holding the relations and the logic of interdependence stopped to work.

Additionally, geopolitical issues – such as the NATO/EU enlargement and the consequent redefinition of European and Russian sphere of influences, Ukrainian and Georgian crisis, US interference – became more important and the energy relationship suffered the consequences of this rhetoric becoming a victim rather than a trigger of tensions.

In spite of these political tensions, the energy relation continued, and the energy trade remained steady. EU and Russia developed two energy policies and energy security concepts often diametrically opposed, but the relationship in the energy field continued. On the one side, the European Union is interested in diminishing its dependence on external suppliers, diversifying imported energy sources, regulating the internal market coherently with energy security (for instance, internal integrated European market, liberalization). On the other side, the current Russian energy security strategy is mainly based on strengthening Russian position in the global energy market, ensuring energy supplies, securing transit routes, developing energy infrastructures in neighboring countries, expanding its markets to Asia, in particular.

The scope of this thesis was to analyze how the relations between EU and Russia in the energy field might be affected by the decarbonisation policies. In this regard, the scenarios provided by the European Commission, IEA, and IRENA, serve as a back-up of the analysis. The assumption drawn by these Organizations was that by 2050 the European energy demand for natural gas could decrease, creating further frictions between the EU and Russia. In fact, the two actors defined different energy policies because of their divergent perception of the climate issue. On the one side, the European Union has carbon neutrality as the main goal to achieve and increase energy production from renewable sources or green fuels. On the other side, the practical policies of the Russian Federation deal with pipelines and gas exports, thus creating further misbalances. The third chapter provides a comparison of the European and Russian energy strategy respectively up to 2050 and 2030, showing differences and similarities.

Therefore, taking into account some assumptions like the fact that the EU will reach the decarbonisation target, the decrease in the EU gas demand, and the further development of the existing technologies, it was possible to draw some conclusions.

We can imagine scenarios in which the relationship of interdependence may continue. In fact, the relationship can remain steady because the European Union might import blue hydrogen from Russia, or developing the CCS technologies, making it possible to continue the gas trade between the EU and Russia. Furthermore, even if the

EU would succeed in abandon all the forms of hydrocarbons, natural gas will still be necessary to compensate for the volatility of renewable sources. Therefore, the degree of interdependence between the EU and Russia may vary, but not disappear.

Secondly, the relationship of interdependence may continue but in the renewable energy sector. In fact, Russia owns a huge renewable potential that may serve as a prompt for energy cooperation between the EU and Russia. In this case, the interdependence will simply shift from hydrocarbons to renewables.

However, if hydrogen or RES trade plans between the EU and Russia fail to materialise, interdependence between the two actors will gradually diminish as decarbonisation deepens in the EU. In this case, Russia will need to export its fossil fuels, namely oil and natural gas, to other partners. China, among the Asian partners, will certainly represent the best option in terms of prices and volumes. If this occurs, the relation in the energy field between the EU and Russia will suffer. However, this implies that the European Union will be almost self-sufficient in the energy field.

To conclude, it is easy to imagine that gas trade between the European Union and the Russian Federation will continue up to 2050, and probably even later. Indeed, even if the European Union is interested in reducing its dependence on Russia, it is too risky to state that the EU will abandon Russia as an energy partner. The historical analysis showed how the interdependence between the EU and Russia revolved around the energy sector and continued despite the political frictions between the two actors.

Interdependency is, indeed, a natural characteristic of EU-Russia relations in the energy field, but the decarbonisation is affecting the balance of sensitivity and vulnerability and thus the role of both within the system. The EU's vulnerability to Russian exports of gas may diminish as a result of the climate measures taken by the EU. Conversely, Russia might find itself to be highly sensitive to potential decreases in volumes of gas exported. Hence, the attempts made to reach the carbon neutrality may modify the traditional balance of vulnerability/sensitivity in favor of one actor rather than another.

The geographical proximity and the existing infrastructures suggest that the relationship between the European Union and the Russian Federation in the energy field will continue. What is uncertain is the degree of interdependence that will characterize the relationship between the two actors and whether the balance between the notions of sensitivity and vulnerability will remain stable or not.

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Summary

Energy represents a highly relevant topic in international relations, and the importance of energy trade has to be considered in analyzing national and supranational foreign policy. This thesis studies how energy shaped the relations between the European Union and the Russian Federation. Indeed, there is hardly any aspect of these relations that can be analyzed without considering the energy factor.

The originality of this research consists in investigating the EU-Russia relations through the prism of decarbonization policies. This study has, therefore, the scope of analyzing the development of a new variety of geopolitics deriving from the changes in the environmental and political spectrum.

The International Renewable Energy Agency (IRENA) defines energy transition as "a pathway toward the transformation of the global energy sector from fossil-based to zero-carbon by the second half of this century"[443]. Therefore, one of the main challenges of this century will consist in achieving the so-called "Carbon Neutrality Era" through the reduction of carbon dioxide (CO_2) emissions.

Considering the environmental importance of the energy issue, it is easily imaginable that in order to achieve full decarbonisation, countries will stop importing oil and natural gas that emit CO_2, modifying the balance of powers in the energy relations between States.

After an analysis of the available literature, the main research question has been arranged as *"how the relation of interdependence between the European Union and the Russian Federation in the energy field developed over the years and will be affected in the light of full European decarbonisation by 2050"*.

This thesis attempts to provide a new perspective for EU-Russia relations towards 2050, imagining a new type of energy partnership that goes beyond fossil fuels.

The work consists of four chapters. The first chapter shows that the relations between the European Union (EU) and the Russian Federation are defined by an inextricable connection that revolves around the energy sector. In order to carry out the analysis, it is crucial to bear in mind when this relationship began and how it developed during the years. Russian supplies to the European Union have gradually acquired relevance and, to better understand the dynamics of energy export and the role it plays in

[443]IRENA, *'Energy Transition'*, definition available at https://www.irena.org/energytransition, last access November 2019

the international arena, it is fundamental to analyze the evolution of the cooperation between the Soviet Union and Europe, and later between the Russian Federation and the European Union.

The relationship in the energy field began in a time of tensions in the context of the Cold War. The commercial relation in the energy sector, indeed, started between the end of the 1950s and the first years of the 1960s when some reserves of oil and gas were discovered in the Soviet Union (USSR), principally in Siberia. Therefore, when in the 1960s production and pipeline facilities were built in USSR, trade between East and West was expected to increase. The energy relation that was being defined seemed to be complementary since the Soviet Union was one of the major players in terms of resources, while Europe was poor in fossil fuels. The geographical proximity made it possible to establish an overall long and durable partnership even though the relations have not always been positive.

In this regard, it is crucial to analyze how the development of the EU-Russia relations in the energy field created some concerns in the USA; the exchange of energy sources would have indeed increased the hard currency flows to USSR, as well as strengthening the grip of Soviet Union over Europe and making the European ally vulnerable to any Soviet interruption of the supplies.

Nevertheless, the relationship continued and several attempts to formalize a partnership between the newborn European Union and the Russian Federation were made in the 1990s. However, the collapse of the Soviet Union, the end of the Cold War, the creation of the European Union may have influenced the path that the relationship between the two blocs followed.

Hence, the chapter focuses on the strategy that the Russian Federation adopted in negotiating with the EU. Due to its heterogeneity, the European Union lacked a common energy policy and a shared approach to energy matters. Therefore, it was quite common for some Member States to negotiate bilateral agreements with Russia by considering energy one of the most important national and security issues. The approach that Russia pursued was defined as "Divide and Rule – *divide et impera*", a strategy based on negotiating with the Member States instead of the European Union as a whole[444]. This could be considered both as the result of a Union of countries strongly divided on energy matters since the European Union did not – and still does not – have exclusive competence

[444]VAROL T., *'The Russian Foreign Energy Policy'*, European Scientific Institute, July 2013

on energy, and as the legacy of the Soviet Union, which used to negotiate with individual States instead of with a community. Some critics claimed that the "divide-and-rule" approach was beneficial to Russia to obtain concessions from some Member States and to block unfavorable policies or put pressure on issues considered crucial for the Russian interests[445].

The legacy of Soviet bilateral energy policies, the lack of some crucial competencies at the European level, the inability of the EU to speak with one voice, and the Russian tendency to adopt a "divide-and-rule" approach characterized the evolution of the EU-Russia relations as well as Putin's ascent.

It is worth pointing out the deep process of reforms in the energy sector carried out by Vladimir Putin when he became President in 2000. The Russian Energy Strategy can be summarized as follows: State-run energy sector, enhancing the relations with the CIS countries to control their energy production/exports to Europe, dominating the European energy market[446]. Maintaining the oil and gas sector stable was, and it still is, crucial for Russia's GDP. Therefore, the main plan was to reverse the privatization of the energy companies by making them State-run.

The first chapter studies also how the development of increasingly different visions on how to organize the energy sector dissolved the glue that was holding the relations and the logic of interdependence stopped to work. In effect, before the 1990s, the State-centric vision of the energy sector was quite shared; while, afterward, the European Union decided to adopt a strategy of liberalization. This strategy was firstly followed by Yeltsin, but then a change of course occurred with Putin and this led to the emergence of new tensions.

In fact, to a certain extent, interdependency in the energy fields contributed to the distention of the relations between the EU and Russia and during the Cold War, interdependence proved to be a driver stronger than political conflicts. However, exogenous factors with respect to the energy trade have further damaged the relations, both at the political and energy level. Geopolitical issues – such as the NATO/EU enlargement and the consequent redefinition of European and Russian sphere of influences, Ukrainian and Georgian crisis, US interference – became more important and

[445]SCHMIDT-FELZMANN A., *'All for One? EU Member States and the Union's Common Policy Towards the Russian Federation'*, Journal of Contemporary European Studies, vol. 16 (2), September 2008
[446]NORLING N., *'Russia's Energy Leverage Over China and the Sinopec-Rosneft Deal'*, Central Asia-Caucasus and Silk Road Studies Program, China and Eurasia Forum Quarterly, Vol.4, No.4, November 2006

the energy relationship suffered the consequences of this rhetoric becoming a victim rather than a trigger of tensions.

Even with the progressive emergence of frictions between the EU and Russia, some features of their relationship in the energy field remained stable. Firstly, the high-level political engagement between leaders of some Member States and Russia; namely, Italy and Germany that cemented their energy-related agreements. Then, the willingness by both EU and Russia, as importing and exporting partners, to diversify in order to limit their exposure. As well as the US opposition to tighter cooperation between the European Union and Russia, which mirrors the past disapproval of the collaboration between the European States and the USSR. Additionally, in spite of all the efforts that have been made and the tensions occurred, the Russian market share in key European markets today remains quite similar to the level observed in the 1970s. Oil and, to a lesser extent, gas remains a very important component of the Russian economy, which struggles to diversify making Russia a possible case of "Dutch Disease"[447]. All in all, strong path dependency dynamics can be observed in EU-Russia relations.

The perception of insecurity along with the policies adopted to lessen the degree of energy dependence were mostly European. Within the European Union, the awareness that energy could be a possible weapon spread and this feeling was amplified by the European dividedness on energy matters. And the gas disputes made the European States believe that Russia was using the energy tool in an authoritarian way to expand its influence and follow its geopolitical agenda[448].

Moves to alleviate the energy dependence were taken from both sides and the second chapter focuses on the policies taken to enhance energy security, illustrating how these policies were sometimes diametrically opposed. EU and Russia have been involved in a competition that looks like a zero-sum game, in which every move that an actor makes inexorably caused an effect on the other.

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[447]In the event a country experiences a boom of tradable resources, for example oil, or the price of those resources grows due to exogenous factors, the exchange rate suffers of appreciation and, as a consequence of the growing wages, there is the relocation of part of the labor force destinated to the natural resources sector. As a result of the appreciation, there is a loss of international competitiveness in the manufacturing sector. This phenomenon is called "Dutch Disease" and the Russian Federation, due to its huge reserves, exports and production of oil and natural gas is a good candidate for the "Dutch Disease". ALGIERI B., *'The Dutch Disease: evidence from Russia'*, Springer Science, December 2007

[448]BUGAJSKI J., *Dismantling the West: Russia's Atlantic Agenda,* Potomac Books Inc., Washington DC, October 2009; LUCAS E., *The New Cold War: Putin's Russia and the Threat to the West*, Bloomsbury, February 2008; GOLDMAN M., *Oilopoly: Power, Putin and the Rise of the New Russia*, Oneworld Publications, May 2010

For instance, the European Union implemented a diversification strategy to reduce the risk that energy could be used by Russia to put political pressure on European countries, but this created concerns in the Russian Federation about the possibility of losing its position in favor of other suppliers.

Europe tried to diversify its supplies and transit routes to reduce its dependency on Russia, but the latter feared that these strategies might lead to a possible decrease in oil and gas prices causing damages to Russia's economy. And, when Russia tried to avoid transit disputes in order to secure its deliveries and income, the EU believed that a new transit system may transform energy into a greater tool to blackmailing transit countries[449].

Even though the European Union tried to diversify its supplies, it is still locked to Russia. Indeed, the alternatives of the EU imply either political risk or high costs, whereas existing infrastructures, geopolitical proximity, and low prices make Russia the best positioned supplier. Sometimes energy security and affordability develop in parallel showing clearly which is the best partner in the market; while other times, an actor needs to decide whether the advantages of enhancing energy security outweigh the disadvantages of buying at higher prices. This uncertainty is the reason why Russia prefer long-term contracts. Indeed, exporting a huge quantity of energy resources to Europe implies that Russia's economy will heavily suffer in case of an interruption of supplies. Therefore, this kind of contracts eliminates uncertainties leading to a trade-off between affordability and security.

What really could work for the European Union is to carry out a strategy of diversification of its energy mix with the purpose of reaching the decarbonisation by 2050. Meaning that maybe not in the short/medium-term, but almost certainly in the long one, achieving the carbon neutrality will impact the European gas demand from Russia[450].

Then, the research illustrates how the increasing frictions between Russia and the West encouraged the Country to find new allies to foster its geopolitical balance. Russia wants to reduce its energy dependency on the EU because of the incoming decarbonisation of the European energy sector. Furthermore, the diversification may represent a way for Russia to protect itself from new sanctions that could target even more

[449]KRICKOVIC A., *'When Interdependence Produces Conflict: EU–Russia Energy Relations as a Security Dilemma'*, Contemporary Security Policy, 36:1, 3-26, February 2015
[450]STERN J., *'Challenges to the Future of Gas: unburnable or unaffordable?'* Working Paper NG 125, Oxford Institute for Energy Studies, December 2017

the energy sector creating huge damages to the economy and its modernization[451]. Additionally, future expansions in volumes of gas reserves could face limits deriving from a lack of appropriate infrastructures.

The main achievement within the energy security sphere was the deal between Vladimir Putin and the Chinese President XI Jinping for the construction of "Power of Siberia" pipeline[452]. Chinese and Russian energy needs are quite complementary since China's demand for natural gas is growing and Russia needs new costumers. However, this relationship means only to transfer dependency from Europe to China, and this would not be wise for Russia and would not increase its energy security. The cooperation in the energy field between Russia and China may indirectly affect the European Union; indeed projects such as Sakhalin Island LNG, Yamal LNG, and Power of Siberia are fed by natural gas that could be exported to Europe rather than to Asia[453]. Although it could be wrong to claim that this cooperation represents a threat to Europe, it is necessary to point out that Russia now has alternatives to the EU, in the same way in which the EU has alternatives to Russia. The cooperation with China improved the position of Russia in the negotiations with the European Union and today the European Union should consider the prospect to compete with China for cheap gas in the next decade, as China is the only real alternative to the EU.

The scope of the third chapter is to analyze and compare the energy and climate strategies of Russia and the EU up to respectively 2030 and 2050. The scenarios provided by the European Commission and the International Energy Agency represent the source of this analysis.

Both the EU and Russia signed the Paris Agreement, but they have divergent visions about how to shape environmental policies. In fact, Russia aims at protecting demand for its energy exports since the central role of fossil fuels has ensured economic growth over the years. The practical Russian policies in the energy sector deal with pipelines and show that the EU market is still considered to be a key consumer of Russian gas. This is demonstrated by the Russian willingness to complete the Nord Stream II, and even by the latest export data from Yamal LNG plant.

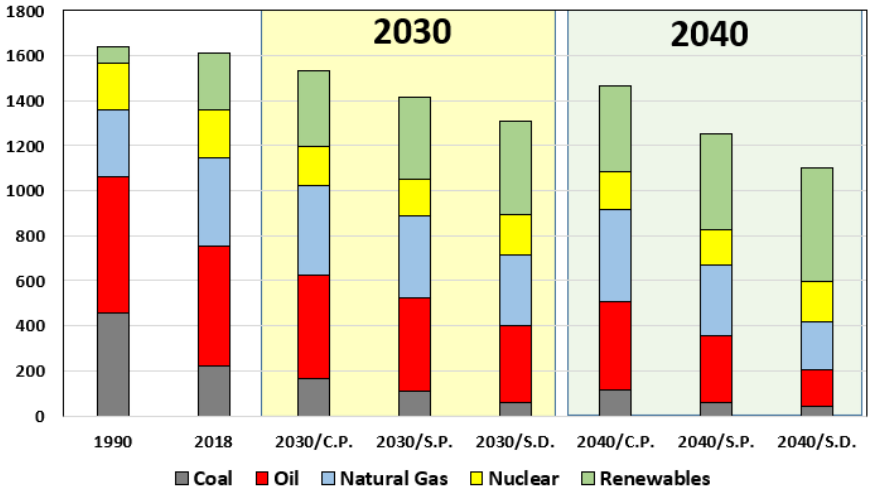
[451]HENDERSON J., *'Russia's gas pivot to Asia: Another false dawn or ready for lift off*?', The Oxford Institute for Energy Studies, November 2018
[452]HORNBY L., ANDERLINI J., *'China and Russia sign $400bn gas deal'*, Financial Times, May 2014
[453]HENDERSON J., *'Russia's gas pivot to Asia: Another false dawn or ready for lift off*?', The Oxford Institute for Energy Studies, November 2018

However, in the last years, Russia started to take some steps to adopt a more dynamic and result-oriented climate policy. Conversely, the European efforts were generally directed to reach carbon neutrality by 2050, which calls for a substantial amount of investments in renewable energy and efficiency through very structured planning.

These different strategies reflected different interests and positions in the energy market. Russia, as an owner of huge hydrocarbon resources, did not feel the need to excessively invest in renewable sources. Contrariwise, the Country aims at increasing its exports of natural resources. The European Union, instead, as a consumer/importer, is more interested in seeking alternatives to hydrocarbons.

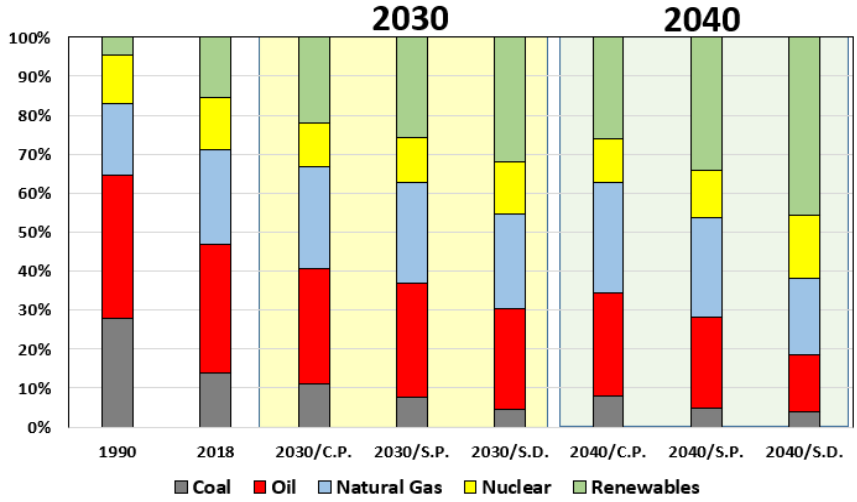
The Roadmap of the EU is coherent with the World Energy Outlook in showing how the European Energy demand might change towards 2040, forecasting different results according to different scenarios [Figure 1-2].

Figure 1: EU Energy Demand (Mln. Toe)



Source: IEA – WEO 2019

Figure 2: EU Energy Demand (%)



Source: IEA – WEO 2019

Energy demand in the European Union would change only if supported by policy interventions by the Member States. Nevertheless, what really might impact the EU-Russia relations in the energy field is how, according to the International Energy Agency, the European demand for natural gas will float. In fact, IEA predicted a significant decrease in the natural gas demand between 2018 and 2040 [Table 1].

Table 1: Natural gas demand (bcm)

			Stated Policies				Sustainable Development	
	2000	**2018**	**2025**	**2030**	**2035**	**2040**	**2030**	**2040**
European Union	487	480	477	442	416	386	387	266

Source: IEA – WEO 2019

Finally, the last chapter emphasizes the role of the energy transition and how the EU-Russia relationship in the energy field might be shaped towards 2050. The EU-Russia relation was traditionally driven by fossil fuels dynamics that placed the European Union and the Russian Federation at the opposite poles of the commodity chain. The transition to the "carbon neutrality era" raised the question about how and to what extent the decarbonisation will affect the relations between consumers and suppliers, and therefore, between EU and Russia.

Energy transition means transforming the traditional paradigm built for decades around the supply of fossil fuels through the evolution of the energy pattern into a clean, secure, and economically accessible model[454]. For decades, the geopolitics of energy overlapped that of hydrocarbons. States that, in the past, benefited from geopolitical influence due to their capacity of supplying fossil fuels will see a decrease in their power. In fact, reserves of hydrocarbons are geographically concentrated, meaning that global energy markets were mostly in the hands of a few producing countries, paving the way to relations of dependence between States[455]. In particular, the geopolitics of natural gas developed around the pipelines, giving relevance to more geographically sensitive and strategical points.

To understand the impact of climate and energy policies taken by the EU and Russia, as well as the effects of the important changes in the European energy demand, it is necessary to draw a temporal differentiation between the coming decades.

Therefore, the period from 2020 to 2050 is divided into three phases.

[454]ALBERTI M., *'Democratica, regionalizzata e digitale: geopolitica delle energie rinnovabili'*, in LIMES Rivista Italiana di Geopolitica, *CINA-RUSSIA LA STRANA COPPIA - La doppia pressione di Washington avvicina Pechino e Mosca come mai prima. Gli effetti strategici di una non-alleanza*, November 2019
[455]*Ibidem*

The first phase – from 2020 to around 2030 – is characterized by the efforts in carrying out diversification policies from the EU and Russia, along with the fulfillment of the already described energy strategies. In this period, the relationship between the EU and Russia is expected to be quite stable and, despite the attempts of the EU to diversify energy sources, the gas supplies from Russia will continue because of the long-term contracts up to 2030.

However, despite its low emissions, natural gas still produces CO_2 emissions that cannot be entirely eliminated even through the use of CCS[456]. The CO_2 emissions produced from natural gas will be not consistent with the European strategy of decarbonisation. In contrast, in the long run, resources such as renewable energy and hydrogen may represent more carbon-free alternatives to natural gas, leading to an intermediate phase: from 2030 to approximately 2050.

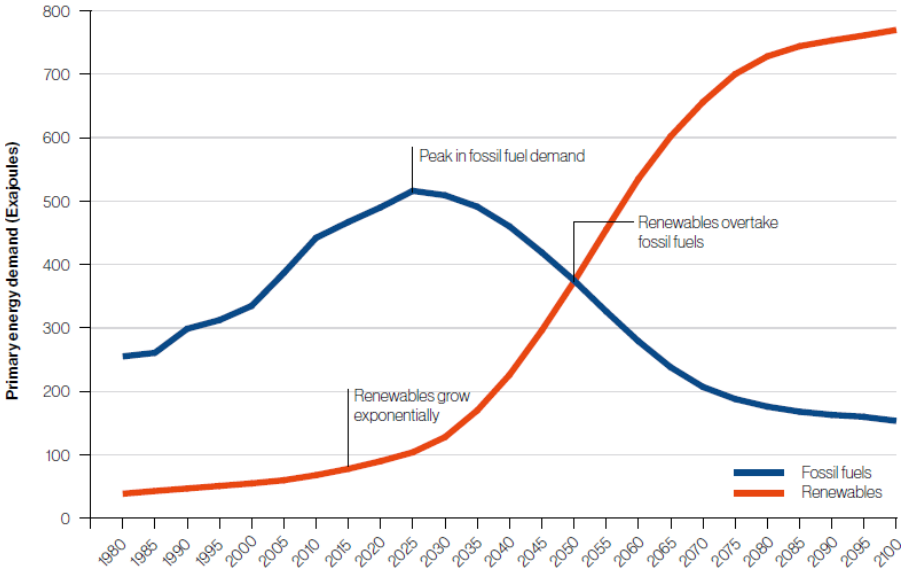
In this second phase, the EU will intensify its efforts to cut emissions by reducing the imports and use of hydrocarbons. The role of gas in this intermediate phase will be depending inter-alia on the deployment of carbon-capture and storage technologies, on the production of hydrogen from natural gas, and as a back-up for renewable sources[457].

The last phase would be characterized by a high level of uncertainties since the almost complete decarbonisation should be achieved, representing the end of the interdependence of the European Union from external suppliers and, therefore, from Russia. The pace of the energy transition is uncertain, but there are several scenarios that show how after a near-term peak in the growth of fossil fuel demand, there will be a fast uptake of renewable sources in line with the decline of fossil fuels demand [Figure 2].

[456]TRINOMICS, *'The role of Trans-European gas infrastructure in the light of the 2050 decarbonisation targets: Final report'*, European Commission, September 2018

[457]CASIER, T., *'The Geopolitics of the EU's Decarbonisation Strategy: A Bird's Eye Perspective'*, in DUPONT C., OBERTHÜR, S., *'Decarbonisation in the European Union: Internal Policies and External Strategies',* Palgrave MacMillan, Houndmills, 2015*;* KHRUSHCHEVA, O., MALTBY*, T., 'Evolutions and Revolutions in EU-Russia Energy Relations',* in: DUPONT*, C.,* OBERTHÜR *S., Decarbonisation in the European Union: Internal Policies and External Strategies,* Palgrave MacMillan, Houndmills, 2015

Figure 2: Energy Transformation – Fossil Fuels/Renewables Demand



Source: Shell Sky Scenario 2018

The climate measures adopted by the European Union could be perceived as a threat to the economy of Russia that heavily depends on exports of fossil fuels[458]. To protect its interests, Russia could exercise lobbying efforts to keep natural gas the pivot of a "climate-friendly" energy system[459]. In fact, natural gas is a flexible resource necessary for the transition to renewable energy, and it can be used as a "bridging fuel" to a more clean and sustainable energy system

Considering some assumptions like the fact that the EU will reach the decarbonisation target, the decrease in the EU gas demand, and the further development of the existing technologies, it was possible to draw some conclusions.

We can imagine scenarios in which the relationship of interdependence may continue. In fact, the relationship can remain steady because the European Union might import blue hydrogen from Russia, or developing the CCS/CCUS technologies, making it possible to continue the gas trade between the EU and Russia. Furthermore, even if the EU would succeed in abandoning all the forms of hydrocarbons, natural gas will still be necessary to compensate for the volatile availability of renewable sources. Therefore, the degree of interdependence between the EU and Russia could change, but not disappear.

Secondly, the relationship of interdependence may continue but in the renewable energy sector. In fact, Russia owns a huge renewable potential that may serve as a prompt

[458] *Ibidem*
[459] DUPONT C., *'When Decarbonisation meets Disinformation: EU-Russia Energy Relations'*, Policy Brief, Issue 2016/15, June 2016

for energy cooperation between the EU and Russia. In this case, the interdependence will simply shift from hydrocarbons to renewables.

However, if hydrogen or renewable energy sources (RES) trade plans between the EU and Russia fail to materialize, the interdependence between the two actors will gradually diminish as decarbonisation deepens in the EU. In this case, Russia will need to export its fossil fuels, namely oil and natural gas, to other partners. China, among the Asian partners, will certainly represent the best option in terms of prices and volumes. If this occurs, the relation in the energy field between the EU and Russia will suffer. However, this implies that the European Union will be almost self-sufficient in the energy field.

To conclude, it is easy to imagine that energy trade between the European Union and the Russian Federation will continue up to 2050, and probably even later.

Indeed, even if the European Union is interested in reducing its dependence on Russia, it is too risky to state that the EU will abandon Russia as an energy partner. The historical analysis showed how the interdependence between the EU and Russia revolved around the energy sector and continued despite the political frictions between the two actors.

Interdependency is, indeed, a natural characteristic of EU-Russia relations in the energy field, but the decarbonisation is affecting the balance of sensitivity and vulnerability and thus the role of both within the system. The EU's vulnerability to Russian exports of gas may diminish as a result of the climate measures taken by the EU. Conversely, Russia might find itself to be highly sensitive to potential decreases in volumes of gas exported. Hence, the attempts made to reach the carbon neutrality may modify the traditional balance of vulnerability/sensitivity in favor of one actor rather than another.

The geographical proximity and the existing infrastructures suggest that the relationship between the European Union and the Russian Federation in the energy field will continue. What is uncertain is the degree of interdependence that will characterize the relationship between the two actors and whether the balance between the notions of sensitivity and vulnerability will remain stable or not.