UNIVERSITA' COMMERCIALE "LUIGI BOCCONI"

PhD SCHOOL

PhD program in Legal Studies

Cycle: 32nd

Disciplinary Field (code): IUS/13

The relations between the Russian Federation and the EU in the energy field

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PhD Thesis by

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ID number: 3028096

Academic Year 2019/2020

INDEX OF THE PhD THESIS - with pages

ABSTRACT

This thesis will shed light upon the current international energy legal agreements that govern energy dispute settlements among states, controversies over transit, and conciliator and arbitrator procedures. The role of energy as a tool of foreign policy will be analyzed by singling out the main global oil and gas producers, as well as their current and future trends in the economic and geopolitical sphere.

The energy relations between the EU and the Russian Federation will be studied both through the analysis of legal agreements and recent sanctions, as well as through the economic and legal interpretation of a relation that dates back to Soviet times.

There will be an evaluation of the possible usage of energy pipelines and other energy aspects as instrument of foreign policies by the Russian Federation in the last thirty years. The current and future options for the EU to diversify its energy imports will be clarified and potential future energy producers will be examined both in terms of conventional and unconventional resources.

The emergence of China as one of the top energy consumers in the world represents a factor that has dramatically changed the global and the Russian gas market. The new relation between Moscow and Beijing in the energy field has the potential of affecting the future EU-Russia relations: various elements will be cited in order to clarify this correlation. Finally, the new focus on LNG infrastructure by Russian authorities and the current legal controversies around the construction of Nord Stream 2 will be coupled with an analysis of the EU past and current legislative framework in the energy field.

Finally, there will be a concrete contribution in the scholarly debate around the pivotal question of the future of the EU-Russian energy relations and the various analytical components affecting it. After studying the different legal, geopolitical and economic factors at play in this relation, a critical observation of their relative weight and importance will allow to measure their impact on the overall scenario as well as comprehend their value and clout in the whole European energy market. Through this clear and accurate academic outcome, it will be possible to single out viable and tangible energy policies to be activated by European policymakers.

CHAPTER 1: INTERNATIONAL ENERGY SCENARIO

1.1 International and European energy legal background

EU energy law has steadily grown over the last twenty years. The first proper energy market directives appeared in 1996, with the electricity market Directive, which was followed by the gas market Directive in 1998. These two Directives were expanded with a new set of energy packages: the second and third Energy Package respectively adopted in 2003 and 2009. Over the last decade, new EU legislation was also enacted in areas such as security of supply and green energy, i.e. renewables, energy efficiency, carbon capture and storage and so on. The geographical reach of EU energy rules exponentially expanded in 2004 with the adhesion to the EU of 10 new member states (especially Eastern European countries)[1].

The EU has actively exported its energy laws and policies since the completion of its internal market in the Eighties. In the early 1990s, the Energy Charter Treaty (ECT) was the first step in this direction, followed by the Energy Community Treaty, signed in 2005: the treaty requests that member states implement large parts of the EU energy acquis. It was adopted by following the provisions contained in the Second Internal Energy Market Package for electricity and gas of 2003. On the other hand, the ECT was inspired by the principles that were later enshrined in the EU first energy package (1996-1998)[2].

In 1970s, there was no international energy law in the modern sense, since international law relating to energy was developed only with the two major oil crises, in 1973 and 1979, which gave impetus to the creation of a truly international energy market. Nowadays, the international regulations of energy activities by public international law covers several issues, which are needed to regulate international energy markets. An example of the emergence of a truly international energy law is represented by the fact that disputes between energy companies and host governments are often settled not in national courts, but before international arbitral tribunal. Disputes about energy trade may be resolved under the WTO Dispute Settlement Understanding or by panels set up within the framework of free trade deals[3].

Most issues concerning the production, transportation and distribution of energy are governed by national regulations. From a functional point of view, domestic law is of pivotal importance for the operation of energy markets. This includes property rights, exploitation of energy resources, taxation, subsidies, competition and antitrust regulations, as well as environmental protection and labour rights.

Yet, the energy markets have a strong international character and international law performs a series of relevant features that national law cannot perform alone. Public international law has an important role in allocating claims for territorial sovereignty and for the determination of jurisdiction among different countries (jurisdictional function). In fact, public international law

[1] A. POLITI, «The shaping of Eastern Europe. Alternative priorities and outcomes», *NATO Defense College Foundation*, 2015.

[2] Full text of the Energy Charter Treaty available at https://energycharter.org/process/energy-charter-treaty-1994/energy-charter-treaty/

[3] K. TALUS, «Research Handbook on International Energy Law», *Edward Elgar*, 2014

adjudicates the jurisdiction of countries to legislate in areas that are relevant for the functioning of international energy markets, such as the establishment of property regimes in the exploitation of energy resources. In this regard, a key legal instrument in the allocation of sovereign rights in the sea was the United Nations Convention on the Law of the Sea (UNCLOS), which differentiates the various jurisdictions over activities in different maritime zones.

Another key feature is constituted by institutional infrastructure, i.e. formal organizations and legal tools (especially international treaties), which are needed for inter-state cooperation (institutional function). This function plays a relevant role for establishing international institutions to administer and adjudicate energy-related issues. An example of multi-party projects involving a cross-border energy project could be the Baku-Tbilisi-Ceyhan (BTC) oil pipeline between Turkey, Azerbaijan and Georgia.

International public law allows facilitating and stabilizing the functioning of international energy markets (market function). Many treaties and agreements allow the cross-border trade of energy: rules on trade in energy and energy transit are present in the WTO, in free trade deals such as the North American Free Trade Agreement (NAFTA), the Energy Community, the Energy Charter Treaty (ECT). In addition, many bilateral investment treaties (BITs), and other investment provisions in legal instruments, such as the ECT, provides for a certain legal environment over the relations between foreign energy companies and host states. All these international legal agreements have the aim of protecting and promoting energy investments[4].

Public international law also has the function of preventing harm to third parties and the environment, as result of the energy production and distribution activities (public policy function). This function is necessary in order to regulate the problem of negative externalities of human activities, as each state individually would not have an incentive to set up regulations for the protection of the environment, especially if the other states would not do the same, thus creating a competitive advantage for the other states' companies[5].

Even though all these functions are pivotal for international energy markets to operate smoothly, it is necessary to stress the fact that international law cannot replace domestic legislation, as this is limited to the administration and regulation of some cross-border features of international energy markets.

In June 1990, the then Dutch Prime Minister, Ruud Lubbers, proposed the creation of the European energy space. A political declaration was signed in December 1991, and after three years of talks, the Energy Charter Treaty and the Protocol on energy efficiency and related environmental issues were signed in December 1994. The ECT entered into force in April 1998 after the 30th signature was ratified. Its main rationale at the time was the development of energy cooperation between Europe and the countries of the former Soviet Union: European states wanted to create an international legal framework to invest in energy-rich countries that had just

[4] S. SCHILL, «The interface between national and international energy law», *Edward Elgar Publisher*, 2014
[5] Ibidem

abandoned the communist economic regime. In sum, the key reason of this legal instrument was the need to increase energy cooperation between Eastern and Western Europe[6].

For the EU, the major aim of the ECT was to protect through international law (compatible with the rules of the first energy package) the energy flows from the Russian Federation to Europe, and to increase the energy investments by European companies in the Russian Federation and in the countries of the Commonwealth of Independent States (CIS)[7]. On the other hand, the Russian Federation wanted to strengthen an adequate legal framework for energy investments of foreign companies in its territory, especially at the time of the delicate passage from a communist economic model to a market-driven system. In this regard, the ECT is the first multilateral investment agreement in the field of energy with high standard of investment protection, including dispute settlement. The Energy Charter Treaty (ECT), signed in 1994 and entered into force in 1998, is the first and only international agreement to provide a set of provisions concerning trade, transit, and investment protection in the energy sector.

The ECT has been built on investment protection practices present in many bilateral investment treaties, and in the investment chapter XI of NAFTA[8]. The ECT has two types of investment protection. It includes binding hard law obligations for the post-establishment phase of the energy investments and soft-law obligations for the pre-establishment phase. Moreover, it has a clear reference to two GATT principles, such as most favoured nation and national treatment[9].

These substantive rules on investment protection are strengthened by giving access to binding international dispute resolution mechanisms, both at state-to-state and investor-to-state level. The ECT envisages the possibility by the investor to have a direct access to the investment arbitration forum: ICSID, ICC Stockholm or UNCITRAL.

Despite having signed the ECT, the Russian Federation never ratified it, despite numerous EU demands in this sense, such as former EU Commission President Barroso statement at the G-8 in St. Petersburg in 2006 that “Russia must ratify ECT”. In August 2009, Russia decided to withdraw from the provisional application of the ECT as Moscow considered the treaty as too friendly towards energy consumers, and too rigid towards energy producers such as Russia. In April 2009, Russia had tabled an alternative to the ECT, i.e. the ‘Conceptual Approach to the New Legal Framework for Energy Cooperation’.

This was followed by the Draft Convention, distributed by the Russian authorities in September 2010. It became hard to reconcile many provisions included in the Convention with the WTO and ECT principle of national treatment, most-favoured nation and investment protection. The Draft Convention contained strong elements related to State-controlled market measures. Over the last two decades Russian legislation has evolved towards a tighter national control over energy resources. In 2008, the Russian Duma adopted the Russian federal law on foreign investments in

[6] A. KONOPLYANIK, «Multilateral and bilateral energy investment treaties: do we need a global solution? », *Edward Elgar Publisher*, 2014

[7] J. LAURILA, «Transit Transport between the European Union and Russia in Light of Russian Geopolitics and Economics», in *Emerging Markets Finance & Trade*, Vol. 39, No. 5 (Sep. - Oct., 2003), pp. 27-57

[8] Full text available at https://www.italaw.com/sites/default/files/laws/italaw6187%2815%29.pdf

[9] A. KONOPLYANIK, «Multilateral and bilateral energy investment treaties: do we need a global solution?», *Edward Elgar Publisher*, 2014

companies having strategic importance for state security and defense: a measure, which reaffirmed state control over key energy resources[10].

The main ground regarding Russian decision to withdraw from the ECT related to the issue of energy transit, and the differing view on the issue between the EU and Russia. The first issue had to deal with the correlation between transit and domestic tariffs (article 7.3 ECT): i.e. whether these had to be equal (EU position) or not (Russian position). Another point of contention concerned the conciliation procedure for transit disputes (article 7.6 and 7.7 ECT), and referred to the method of recalculation of interim tariffs and final transit tariffs once a dispute is settled. In 2002, a multilateral phase of negotiations around a Draft Transit Protocol (draft TP) was launched.

These negotiations never managed to obtain a positive result due to the highly divisive content of draft TP Article 20, which related to the Regional Economic Integration Organisation (REIO clause). The EU proposal was that within the EU, cross-border gas transportation had to be considered as transit only when energy flow crossed the whole EU territory. This was the key disagreement between the EU and Russia, as this would have exempted the EU to apply the Transit Protocol within its territory. The EU conception of the REIO has been based on the principle that the EU legislative framework constitutes a more favourable system of governance than the ECT transit regime.

After the gas crises of 2006 and 2009 with Ukraine, Russia began to criticize the Energy Charter for its inability to solve these disputes, even though neither Ukraine nor Russia asked the ECT to activate its conciliation procedure as foreseen in article 7. Some analysts also pointed out at the Yukos case as the reason behind Russian decision to abandon the ECT and thus avoid the arbitration procedures for other similar cases. Yet, this interpretation seems not to be logical due to the rule enshrined in Article 45(3)(b), which states that after the termination of the ECT provisional application its obligations on investment protection will remain in force for the next 20 years (for Moscow until 2029).[11]

When the ECT was signed in 1994, the legal instrument was largely based on the principles of the first EU energy Directives (1996 and 1998), but by the time of the third energy market rules (2009), a potential for conflict between the more liberalized EU energy acquis and the ECT with its minimum standard became real. In fact, with the third energy package the unbundling clause and the mandatory third party access (MTPA) gave the EU a more powerful role in the liberalization of its internal energy market. On the other hand, the ECT has not evolved from the rules devised in the early 1990s: an example of this tension is represented by the fact that the ECT does not require mandatory third party access[12].

Another factor in the relatively loss of legal and geopolitical importance by the ECT is represented by the diminished interest towards the Energy Charter Treaty by the European Union, especially after the creation of the Energy Community in 2005. With the establishment of the Energy Community, it became clear that the EU preferred to expand its internal energy legislation to non-

[10] A. BELYI, «International energy law, institutions, and geopolitics», *Edward Elgar Publisher*, 2014
[11] A. KONOPLYANIK, «Multilateral and bilateral energy investment treaties: do we need a global solution?», *Edward Elgar Publisher*, 2014
[12] I. SIDDIKY, «The international legal instruments for cross-border pipelines», *Edward Elgar Publisher*, 2014

EU countries through EU-based organisations. In Brussels policymakers started to view the ECT as an international legal instrument that could be a hindrance to the liberalization efforts carried out by the European Union. Indeed, the Community allowed the export of the EU liberalization model to other non-EU member states

Dispute settlements among states

The main source of international law for determining and resolving maritime boundary disputes among sovereign states is the 1982 United Nations Convention on the Law of the Sea (UNCLOS). In case of disputes, Annex VI of UNCLOS established a specialized tribunal to resolve maritime disputes between states. The International Tribunal for the Law of the Sea is responsible for adjudicating disputes arising out of the convention.

States can also choose ad hoc arbitration, which can be set up through special agreement or through the arbitration procedures set out in Annex VII of UNCLOS. It must be noted that a basic principle of international law is that a state can only be brought to court if it has consented to its jurisdiction. However, when a state ratifies the UNCLOS, it automatically gives its acceptance of the jurisdiction of a tribunal established according to Annex VII[13].

Arbitration is highly employed in many industry sectors, especially in the energy one. The validity of this assumption is based on the amount of energy disputes registered under the International Centre for Settlement of Investment Disputes (ICSID): they were the 37 per cent of the total cases between 1972 and 2012, by far the largest share. Arbitration is a consensual method of dispute resolution and ICSID administers only disputes between investors and states: it is the most relevant framework in this regard. ICSID was founded in 1965 and it has been ratified by 153 states[14].

Until the 1970s, customary international law was generally hostile to the idea that a state could exercise diplomatic protection on behalf of its shareholders in a company. However, energy arbitration under the ICSID Convention and other treaties, such as the Energy Charter Treaty, have extensively contributed to the now-widespread doctrine that shareholders are entitled to bring investment arbitration claims to court, without the need to resort to state protection. The 1982 award in Kuwait v. Aminoil was key in eroding state sovereignty and this award constituted a fundamental pillar of the modern system of international investment protection[15].

Through the adoption of the Lisbon Treaty in 2009, the European Union has assumed exclusive competence for foreign direct investment. This is highlighted by the European Commission's view that, with respect to bilateral investment treaties (BITs) with non-EU countries, Brussels should replace such deals with new investment protection treaties negotiated by the Commission on behalf of the EU[16].

In the European gas market, gas has traditionally been sold under long term, take-or-pay supply contracts. These contracts usually have a term of 10-25 years and most of them have price clauses

[13] K. HOBER, «Recent trends in energy disputes», *Edward Elgar Publisher*, 2014
[14] A. SABATER, M., STADNYK, «International arbitration and energy: how energy disputes shaped international investment dispute resolution», *Edward Elgar Publisher*, 2014
[15] Ibidem
[16] Y. SELIVANOVA, «The WTO agreements and energy», *Edward Elgar Publisher*, 2014

where the gas tariff is linked to that of oil. Under the long-term take-or-pay gas supply contracts, the buyer is obliged, every year, to take and pay for no less than normally 80-90 per cent of the agreed volume as enshrined in the contract. As one can understand, in this type of contracts the largest risk is taken by the buyer, and not by the seller. In order to mitigate this risk, many contracts envisage a price review clause.

If the buyer wants to review the price set in the contract, three factors have to occur. First, the new circumstances must be the results of actions beyond the control of the party. Second, such circumstances have significantly the underlying price assumptions. Third, there is a need to revise the price formula that was agreed at the time of the conclusion of the contract in order to take into consideration the new changes. Finally, these changes have to be the outcome of events, that are usually dubbed 'trigger events'. In order to justify a price revision, trigger events must have happened over a determined period of time, usually three years.

Over the recent years, the emergence of the US as LNG exporter has radically changed the world gas markets. This has led to a falling price of gas, which caused a vast series of price review arbitrations under long-term take-or-pay gas supply agreements. In these instances, the buyers have employed the shale gas trade surge as a trigger event to justify their requests for new gas prices.

Industry forecasts widely expect the rapid growth of gas to continue. The IEA and other leading forecasters project that gas consumption will grow by at least 1.6% per year over the coming decades. Among all fossil fuels, gas is the only energy source for which consumption is projected to grow in the long-run under all key scenarios, including the most aggressive low-carbon transition scenarios. As a result, gas is expected to overtake coal as the second leading source of energy by 2040.

Despite the positive recent developments and future outlook, gas has arguably not yet achieved the most optimistic growth projections. In particular, the share of gas in the global energy mix has remained virtually unchanged since 2010, with marginal growth only starting to be realized in 2017. This is due to challenges that gas faces in some markets based on its cost competitiveness relative to other fuel sources, accessibility of secure supply, and debates about the role that gas can play in promoting environmental sustainability.

Traditionally, the European gas price has been indexed to the oil price. However, due to the liberalization of gas markets, new global gas producers, a surge in gas trade and oversupply, the gas price has steadily departed from the price of oil over the last decade. This phenomenon is called decoupling. Moreover, spot market places are growing in importance and they become more liquid. In this regard, there are reliable natural gas indices that have become relevant trading points: the Henry Hub in the U.S., the National Balancing Point (NBP) in the UK, and Zeebrugge in Belgium. The emergence of more liquid gas markets globally has facilitated the creation of single points for spot trading. However, without sufficient liquidity, it is difficult to create a pricing hub[17].

LNG has the advantage to travel long distances and to different markets. Liquefied natural gas is also quickly becoming an alternative to diesel. By arranging LNG infrastructure on a ship or a barge, costs can be reduced. Floating storage and regasification units (FSRUs) can be less

[17] K. HOBER, «Recent trends in energy disputes», *Edward Elgar Publisher*, 2014

expensive to build than onshore receiving terminals. After the first LNG export licence granted to Cheniere Energy's Sabine Pass liquefaction project in the US in 2012, Asian buyers have increased their interest in importing US LNG as this would diversify their energy imports strategy and accrue the liquidity of the Asian gas markets. It is undeniable that a liquid price with a large volume is often less subject to manipulation[18].

Gas storage infrastructure is another key component of supply security. In Europe and North America, substantial underground storage capacity is available, equivalent to between 15-25% of total annual gas consumption. This plays a key role in managing seasonal variability in gas demand, in particular helping to stabilize prices in the winter when demand spikes. Over 90% of global gas storage capacity is concentrated in Europe and North America, making managing gas demand variability a particular challenge in other regions. In China, gas demand is becoming more seasonally variable as consumption grows in the buildings sector and a lack of storage infrastructure is in turn straining pipeline and LNG import capacities at peak periods.

Since 2010, global gas production has generally grown marginally faster than consumption, at a 1.8% average from 2010-16 (vs. 1.5% consumption growth). Furthermore, unconventional gas production in the US, Canada, Australia, China, and Argentina was responsible for the majority of net production growth. Over that period, unconventional gas accounted for 332bcm of additional production, compared with net growth of 49bcm in conventional gas.

The geographic diversity of global gas production is extensive and growing. While proven gas reserves are concentrated in the Middle East and CIS countries, no single region dominates production. The continued growth of unconventional gas is expected to ensure this trend going forward as well, adding more exports and domestic producers to the markets.

In recent years, a strong consensus has emerged among energy industry forecasters about the future of natural gas. All major industry reference case forecasts anticipate gas will be the fastest growing fossil fuel, with specific projections for consumption growth between 1.6% and 2.0% per year until 2040. Even under scenarios that include stringent climate change emissions reductions, gas consumption is expected to continue to grow over the coming decades. This consensus is notable, given that forecaster views diverge on growth trends of other fuels, including some who project oil and coal consumption to peak as early as the 2020s.

Among the prominent gas growth forecasts, several have now aligned around an average gas consumption growth rate of 1.6-1.7% per year through 2035. All of these forecasts are based on an outlook of favorable comparative economics of gas vs. alternative fuel sources, as well as government policies, including countries' Nationally Defined Contributions (NDCs) submitted as part of the Paris climate process[19].

Relative to coal and oil products, gas offers the fundamental advantage of emitting significantly less greenhouse gas emissions. However, this advantage only supports the economic case for gas if the externality costs of those emissions are priced or otherwise reflected through policy measures. The United Kingdom is a recent example of where such a policy was implemented to introduce a stable carbon price, and gas consumption grew significantly as a result. Announced in 2011, and

[18] P. ROBERTS, R., MAALOUF, «Contractual issues in the international gas trade: LNG – the key to the golden age of gas», *Edward Elgar Publisher*, 2014

[19] IEA 2017 New Policies Scenario

reaffirmed in 2015, the UK government established a carbon price floor of $20/t of CO2. Once implemented fully from 2016, this resulted in gas becoming more cost competitive relative to coal when considering the total cost of energy. In response, the operators of multiple coal-fired plants announced plans to close these plants or shift to gas-fired generation. This specific policy initiative resulted in gas consumption growth of 12.6% for 2016, replacing reduced coal capacity in the power sector[20].

Traditionally, gas price in long-term supply contracts has been indexed to crude oil price. Gazprom has longed used long-term take-or-pay gas supply contracts with its European clients. However, with the emergence of a more liquid and interconnected global gas market, more and more countries in the EU have managed to replace those contracts, following gas price review arbitrations. In some instances, Gazprom has agreed to reduce the take-or-pay price levels to around 60 per cent. EU energy legislation (especially the third energy package) has also affected Gazprom's European activities, and Russian membership of the WTO could also play a role in restricting Gazprom's traditional business patterns in Europe[21].

The monopoly and dominant position charges raised in 2012 against Gazprom by the European Commission signalled a new phase of business relations between the EU and the Russian state. With regard to the Russian adhesion to the WTO, there are two key provisions that could affect Gazprom's business in Europe. The first one is Article 14 of the GATT Agreement, which deals with state enterprises. State enterprises are accepted under the GATT system, provided that they act in a commercial way. This means that a seller can request different prices from different clients, but only if this difference is based on purely commercial grounds[22].

Analysts have long argued whether Gazprom acts with a purely commercial pattern, without any political interference from the Kremlin. In the case of breach of Article 14 of the GATT Agreement, the WTO has a dispute settlement mechanism that could be invoked by WTO member states. Another WTO provision that directly relates to Gazprom's business is Article 5 of the GATT Agreement, i.e. the transit clause. Article 5 was not specifically devised for energy products but the doctrine has generally accepted energy as being covered by such clause[23].

Article 5 stipulates that all WTO member states must provide free transit for other member states. Therefore, thanks to this provision Gazprom cannot refuse companies of other WTO member states to send gas through its transportation network without a reasonable reason. Despite this positive development, one must notice that some key CIS states, such as Belarus and Turkmenistan, are not part of the WTO system.

Another practice carried out by Gazprom could be in breach of WTO rules, i.e. the so-called dual pricing. For decades, Gazprom has kept prices for gas consumed domestically at a level, which was lower than the one used for exportation. Scholars have wondered whether such practice could

[20] Official data from OFGEM, Office of Gas and Electricity Markets

[21] G. PAGOTTO, «Russia vs EU over the Third Energy Package: An Assessment of the legitimacy of Russian claims vis-a-vis WTO regulations», *European University of St Petersburg*, 2014

[22] M. KRUSE, «Analysis of the proposed gas directive amendment», *Arthur D Little*, 2018

[23] Y. SELIVANOVA, «The WTO Agreements and energy», *Edward Elgar Publisher*, 2014

constitute a form of subsidy under the meaning of the WTO Agreement on Subsidies and Countervailing Measures[24].

EU role in liberalizing energy sector

The EU has developed three liberalization packages in the field of energy. The first one (1996-1998) introduced a limited third-party access regime (a tool to open up national monopolies) in the transmission and distribution networks. The second and third one further strengthened these measures with rules on ownership unbundling, better coordination of the operation and development of networks across borders in the EU, through the introduction of the Agency for Cooperation of Energy Regulators (ACER).

The liberalization of EU energy market has been the result of both legislative and jurisdictional initiatives. Article 267 of the Treaty of the Functioning of the European Union allows domestic courts to make preliminary references to the Court not only on matters of interpretation but also on the validity of the acts of the EU institutions. Moreover, Article 263 TFEU allows the Court to review the legality of the acts of the EU institutions. Given the preeminent role of the European Commission in the energy field (especially through its competition investigations), Article 263 TFEU gives the Court a relevant role in limiting the Commission's discretion[25].

Article 258 TFEU ensures that Member States fulfil their obligations under the Treaties. The Article states that: "If the Commission considers that a Member State has failed to fulfil an obligation under the Treaties (…), the Commission may bring the matter before the Court of Justice of the European Union". Therefore, the Court seems to have a rather active role in infringement proceedings. An example of this can be found in the fact that two years after the third energy package was adopted (2009), the Commission launched infringement proceedings against 19 Member States for non-transposition of the Electricity and Gas Directives of the third energy package[26].

In its judgement given in Costa v. ENEL, the European Court of Justice ruled that all energy products constitute a good within the meaning of Article 34 TFEU, which states that: "Quantitative restrictions on imports and all measures having equivalent effect shall be prohibited between Member States". In the Campus Oil ruling, the case concerned the request by Ireland on importers of petroleum products to buy a specific proportion of their overall petroleum products from an Irish refinery (the only one in the country). This was deemed a quantitative restriction under Article 34 TFEU but Ireland argued that the measure was justified under Article 36 TFEU in view of the necessity to ensure security of supply[27].

Article 36 states that: "The provisions of Articles 34 and 35 shall not preclude prohibitions or restrictions on imports, exports or goods in transit justified on grounds of public morality, public policy or public security". In Campus Oil judgement, the Court affirmed that the case related to an objective covered by the concept of public security, as a continuous energy flow is vital for the functioning of any modern state. However, the European Court of Justice also determined the

[24] Ibidem
[25] S. PENTTINEN, «Energy market liberalization», *Edward Elgar Publisher*, 2014
[26] Ibidem
[27] Ibidem

proportionality of the measure and found out that in the measure in question the economic purpose was predominant and therefore the practice could not be justified.

The original General Agreement on Tariffs and Trade (GATT) did not contain any specific provision concerning energy or energy trade[28]. With the oil crises of 1973 and 1979, there were some attempts to negotiate specific provisions regarding regulation of natural resources and energy but these negotiations were not successful during the Uruguay Round. Anyhow, with the Uruguay Round, tariff peaks for hydrocarbons were scrapped and duties were generally limited. With the accession to WTO by the Russian Federation in 2012, many analysts believed that the dual pricing for gas in the Russian domestic and export markets could have been in breach of WTO rules[29].

According to GATT Article I, Most-Favoured Nation Treatment must be granted to any WTO member in relations to its export. This means that WTO nations cannot levy duties on exports to one market higher than the exports to another WTO member state's market. This rule is usually not of great concern to WTO practices, as it is not normally in the interest of exporting nations to levy high export duties. Likewise, if a WTO state grants a special treatment to the imported products of another WTO member state, then this treatment must be extended to all other WTO nations.

The second legislative pillar of GATT is national treatment. A WTO member state cannot impose a less favourable treatment to imported products, than the one given to domestic products. The host state cannot apply to the imported products regulations, requirements, taxation and domestic law, which are different from the ones applied to like domestic items.

Despite Most-Favoured Nation treatment being applied to all policies, national treatment is valid only to treatment of products after entering the territory of a nation, once passed the customs control. A key feature that distinguishes Most-Favoured Nation from the national treatment is that the former applies to both import and exports, whereas the latter is applicable only to non-discrimination of imports, but not exports.

With regard to imported goods, it is relevant to identify whether the products are 'like' the domestic ones. In order to determine this, various elements have to be analysed: physical characteristics, end-use of products, consumers' tastes and preferences and tariff classification of products. A case-by-case analysis rules with regard to the classification of like products.

In the energy sector, a key element of concern by energy-producing states has been the energy taxes imposed by importing countries, which are viewed as an economic hurdle by energy exporters. These are often set by many developed countries, both as a certain income-generating tool and as an insurance against negative externalities. According to the WTO doctrine, if these duties are imposed on a non-discriminatory basis, they are in line with WTO law.

Article XI of GATT prohibits quantitative restrictions. This means that any protection should be accomplished via tariffs (on price) and not through practices concerning the volumes (such as quotas). Some scholars have argued that OPEC organisation could constitute a cartel, which applies quantitative restrictions on exports, that are in violation of Article XI of GATT. Despite this

[28] I. SIDDIKY, «The international legal instruments for cross-border pipelines», *Edward Elgar Publisher*, 2014
[29] Y. SELIVANOVA, «The WTO Agreements and energy», *Edward Elgar Publisher*, 2014

interpretation, the key difference lies here in the concepts of production and exportation. If the energy has been produced, then GATT does prohibit WTO countries to limit volumes for export. Yet, even though GATT sets out regulations for trade in products and goods, it does not legislate on the mere production of resources. Hence, OPEC decisions on upper limits of oil production do not fall under the scope of GATT[30].

According to Article XX GATT exceptions, a member states can accomplish measures which are in breach of WTO rules, if these are taken to carry out legitimate policy objectives, such as protection of human health or environment. Article XX (b) states that the measure needs to be necessary to protect human, animal or plant life or health. In addition, in order for the measure to be lawful, no other less restrictive trade practice cold be identified in order to reach the same policy objective.

Transit rules are of great importance for energy trade, as energy is a product, which is hard to transport and store. Article V GATT provides for freedom of transit and products in transit cannot be subject to any unnecessary delays or restrictions. Moreover, WTO member states cannot discriminate traffic in transit based on the nationality of the product, the place of origin, departure or destination. Up to now, no WTO dispute settlement panel has dealt with energy transit: in the past, most of these controversies have occurred outside the WTO scope. For instance, neither Russian nor Ukraine were WTO member states during the gas crisis related to transit in 2006.

The energy sector has been traditionally linked with state enterprises, which are either government controlled or state owned. According to Article XVII GATT, WTO Member States must ensure that State Trading Enterprises (STEs) conduct their business in a way, which is in line with the guidelines of non-discrimination, as requested in GATT for governmental practices related to import or exports by private traders.

Another feature, which is peculiar to the energy sector, is the question of subsidies. Both carbon fuels subsidies as well as green energy subsidies amount to a volume of hundreds of billions of US dollars worldwide. Especially in the past, subsidies have been given to enterprises so that they could get the initial funding required to set up the costly industrial extractive equipment necessary to develop the domestic energy sector.

More recently, many states around the world have started pumping money into green energy technologies, as a measure to assuage the negative impact of energy extraction practices on the pollution of our planet. In many instances, programmes aimed at promoting renewable energy have been interpreted as prohibited subsidies. According to Article I of the Agreement on Subsidies and Countervailing Measures (SCM Agreement), a subsidy is a ‘financial contribution by a government or by any public body’ or ‘any form of income or price support’ whereby the state awards a benefit. Therefore, a subsidy can be both a direct transfer of funds, but also a fiscal incentive or tax credit.

A key controversy, which arose in the field of subsidy, is the so-called ‘dual pricing’: i.e. when a country decides to keep national tariffs for energy products at a level which is lower than the price set for its energy exports. As a result of this policy, there is a clear reduction of prices of energy for domestic industrial producers. Since the domestic actors pay less for their energy, they have an

[30] Y. SELIVANOVA, «The WTO Agreements and energy», *Edward Elgar Publisher*, 2014

advantage over foreign competitors. Despite this competitive advantage, it is highly unlikely that this policy is inconsistent with WTO rules.

In the case of dual pricing, the discounted price for energy is applied to all companies and industries in the national economy. According to the SCM Agreement, in order for a measure to be a subsidy, it must be specific to an enterprise or industry or a region. The WTO panel in the Canada – Softwood Lumber did not believe that 'any provision of a good in the form of a natural resource would automatically be specific, precisely because in some cases, the goods provided (oil, gas, water and so on) may be used by an indefinite number of industries'. This is precisely the case in the energy sector and hence the lawfulness of dual pricing under WTO legislation. A different scenario arises when the government decides to grant financial support to energy production plants that use renewable energy: in this case, the subsidy would be specific and it must then be proved whether such a subsidy has a negative impact to the industries to other WTO member states[31].

Legal issues related to transit

Transit is a key feature, which is also covered by the Energy Charter Treaty (ECT), which defines the concept of energy transit in Article 7 (10) as:

" (i) the carriage through area of a contracting party, or to or from port facilities in its area for loading or unloading, of energy materials and products originating in the area of another state or (ii) the carriage through the area of a contracting party of energy materials and products originating in the area of another contracting party and destined for the area of that other contracting party."

The transit issue is highly complex and controversial, especially in the energy field. Article 7 (1) of ECT refers to the non-discrimination of passage with no distinction allowed as to origin, as well as to the absence of unreasonable delays. One of the key problem related to transit concerns the varied interests of import, export and transit countries.

One of the pivotal role of the ECT was constituted by the need to resolve transit disputes. The settlement of disputes is regulated by Articles 7 (6), (7), 26 and 27. Article 7 (6) stresses the non-interruption of transit in case of any dispute. Article 7 (7) of the ECT lists the different mechanisms that can be activated by the parties to settle their controversies. If a dispute arises, the parties must first inform the secretary general of the Charter Conference Secretariat about the transit issue. After consultation with all the parties involved, the secretary general appoints a conciliator within 30 days: the main role of the conciliator would be to settle the differences between the parties and facilitate the signing of an agreement[32].

If the parties do not reach any agreement, within 90 days after the activation of the conciliator, then the conciliator can release an interim order regarding the tariffs and other matters related to the dispute. The decision by the conciliator must be observed by the parties for a period of one year. After the expiry of one year, if the parties still cannot reach an agreement, they can bring the dispute to an arbitration under Articles 26 and 27 of the ECT.

[31] P. ROBERTS, R. MAALOUF, «Contractual issues in the international gas trade», *Edward Elgar Publisher*, 2014
[32] K. YAFIMAVA, « Transit: the EU energy acquis and the Energy Charter Treaty », *Edward Elgar Publisher*, 2014

As mentioned, a draft protocol on energy transit was formally negotiated in 2000 but the talks stalled in 2002, due to the disagreements on the Regional Economic Integration Organisation (REIO) clause by the EU and the Russian Federation. The ECT has proved to be rather ineffective in solving transit dispute between its member states. Article 7 contains several weak points: there is a lot of ambiguity in the way the article is formulated and it does not provide any guideline with regard to the contractual elements of the transit, such as ownership of the pipelines, environmental elements, and legal regime to be applied and so on.

The ambiguity of the article is well exemplified by Article 7 (1) of the ECT, which reads 'the contracting parties shall facilitate the transit of energy'. Here, the concept of facilitation is not properly laid out and does give leeway to contrasting view over the matter. Moreover, Article 7 (6) does not set up a clear structure with adequate power to stop the disruption of supply, and it is not effective in decreasing the interruption of supply.

The dispute settlement mechanism of Article 7 (7) is complicated and foresees a long time frame for parties to bring the matter before an arbitration (i.e. one year after the measure taken by the conciliator). The period of 90 days for the conciliator to take a binding decision can also be construed as a means by the parties to simply negotiate further without the certainty of achieving results, while the supply is being disrupted.

The ECT does not contain any mechanism that allows reinstatement of transit flows, once an interruption of supply has occurred. Moreover, once the conciliator has released its binding decision, there is no clarity as to what happens if the parties do not solve their issue after the expiry date of one year since the decision. In fact, if neither party wants to invoke an international arbitration clause, there is no legal obligation to do so.

The conciliator and arbitrator procedures

The conciliator and arbitrator procedures are different systems to solve transit disputes. Under ECT Treaty, parties can invoke an arbitration, only when they have terminated the conciliation procedure. Under such a procedure, a conciliator becomes an arbitrator only after the 90 days of conciliation have expired. Before that term, a conciliator tries to settle the differences of the parties, so that an amicable solution can be found.

Article 27 (1) ECT considers the possibility of resolving a dispute through diplomatic channels. It is necessary to highlight that only a member state, and not a company or an individual, can use the dispute settlement procedure envisaged under Article 27. According to this Article, an ad hoc tribunal decides on a final award in line with the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL). On the other hand, an investor from one ECT member state can activate a dispute settlement procedure under Article 26 against another member states, even if other dispute settlement systems had been agreed between them[33].

Article 26 ECT envisages the following arbitration for a: the International Centre for the Settlements of Investment Disputes (ICSID), the ICSID Additional Facility Rules, an ad hoc tribunal set up under the UNCITRAL Arbitration Rules, and the Arbitration Institute of the Stockholm

[33] Ibidem

Chamber of Commerce. Despite Article 26 being devised for resolution of investment disputes, it could be employed also in transit dispute, if this constitutes an investment dispute.

As recalled earlier, transit is an issue, which is also dealt by in the WTO rules. Article V mentions that 'there shall be freedom of transit through the territory of each member state, via the routes most convenient for international transit, for traffic in transit to or from the territory of other members'. WTO rules also specify that transit cannot be delayed or restricted. In addition, WTO legislation prescribes the exemption of transit duties or any other tariff. Yet, it allows the transit state to request administrative, transportation and other expenses concerning the transit.

Up to now, the WTO Dispute Settlement Mechanism (DSM) has not been activated in any transit dispute. It is relevant to stress that in order to activate Article V GATT, all the contracting parties must be member of GATT or the WTO. Therefore, any controversy between a WTO member and a non-member cannot be brought before the WTO DSM, since all the parties need to be WTO members for the Dispute Settlement Mechanism to be used[34].

The WTO rules do not specifically deal with energy matters, even though these are not excluded from its rules. Since most energy-related contracts are bilateral or regional, a multilateral forum like the WTO, which does not contain specific provisions on energy, could not be useful for the energy exporting, importing and transit nations.

1.2 Role of energy in foreign policy

Energy exports have often been used by national governments as a means to achieve geostrategic goals. The capability to accomplish that lies in the dependency between the energy producing country and its customer country. There are different elements that can affect such relationships: export routes, pipelines, ownership of national energy companies and monopolistic practices.

History has shown that states have not hesitated to use their energy exports to influence the internal and external policies of their customer countries. Sometimes, energy resources are a vital part of the foreign policy of a country and in the past they have been cause of tensions and crises among states.

Even during the Second World War, Nazi Germany tried to acquire the oil resources of Azerbaijan through a military campaign, called "Edelweiss": its failure contributed to the disaster of the Nazi invasion of the USSR. Even in more recent times, after the Yom Kippur War, in 1973, many Arab countries decided to punish the Western support to Israel by imposing cuts in oil supplies and a fall in oil production. The ensuing energy crisis led many Western countries to reassess their energy policies: states like Japan tried to develop more energy-efficient technologies to be applied in its industrial sectors.

On the other hand, countries like the United Kingdom tried to extract more domestic resources in the North Sea and thus acquiring a stronger energy independence. The United States responded to the OPEC moves by intensifying their exploration activities in Alaska and by imposing a crude export ban that lasted until few years ago.

[34] A. BELYI, «International energy law, institutions, and geopolitics», *Edward Elgar Publisher*, 2014

After the Soviet invasion of Afghanistan and the Iranian Islamic revolution in 1979, Riyadh and Washington became close allies. In 1980, US President Jimmy Carter, described one of the major pillars of his foreign policy (which would then be known as Carter Doctrine): the US viewed the Persian Gulf region as a key strategic area for their national security and any attempt by a foreign state to disrupt the trade flow in the Hormuz Strait would have faced an adequate response by Washington. It was the start of a strategic and military cooperation between the United States and Saudi Arabia (aimed at countering Iran's influence in the region) that would last until today.

It is interesting to recall that around 30% of the world's oil exports pass nowadays through the Hormuz Strain. One must notice that the rapprochement between Washington and Riyadh was possible due to the mediator role played by the US in the Egypt-Israel agreements signed in 1978 in Camp David. Thanks to Jimmy Carter's mediation, Egypt and Israel formally recognised each other and the US started supplying Cairo with weapons and other military aid as a reward for its new attitude towards Israel.

In the Caucasus region, Azerbaijan has actively employed its energy resources to isolate Armenia, with which Baku is involved in a protracting crisis related to the status of the Nagorno-Karabakh territory. In fact, Baku managed to convince its European customers to build pipelines that run neither through Russia nor Armenia but instead through Georgia and Turkey: the Baku-Tbilisi-Ceyhan oil pipeline became operational in 2006. Further energy cooperation is expected between Azerbaijan and the European Union with the upcoming completion of the Southern Gas Corridor.

Due to the US and Saudi Arabia close alliance, over the past few decades Iran has tried to forge a new strategic partnership with China. Teheran has managed to sell a large chunk of its oil exports to China. Iran is one of the most important oil exporting countries in the world with a 2.4 million barrels of oil per day[35]. Iran has also tried to seek geopolitical and economic support from Russia: due to the common support of Bashar Al-Assad in Syria, Moscow and Teheran managed to find a common ground in their bilateral relationship. Moscow has also been recently active in Iraq. In 2017, Rosneft made investments in the Iraqi Kurdistan oil sector worth 3.5 billion. In 2016, Iran was delivered a Russian defence missile system, the S-300: this constituted an important deal both from an economic and geopolitical point of view[36]. After the US withdrawal from the Joint Comprehensive Plan of Action (JCPOA), i.e. the Iranian nuclear deal reached in 2015, Russia together with the other European powers and China reaffirmed its will to respect the agreement and continue investing in Iran.

It is interesting to notice that recent bilateral relations between Russia and Iran were rather tense and the reason was the cancellation by Moscow of a shipment of S-300 defensive missiles to Tehran. In fact, in 2010, Russia called off the sale of five S-300 missile batteries to Iran as part of a deal worth 800 million dollar. The two countries had signed the S-300 missile system agreement in 2007, but it was later scrapped due to a new round of UN Security Council sanctions against the Islamic Republic. The cancellation led to tensions between the two countries, including a 4 billion

[35] B. SHARAFEDIN, «Iran vows to sell as much oil as it can despite U.S. sanctions», *Reuters*, 10 July 2018. https://www.reuters.com/article/us-iran-nuclear-usa/iran-vows-to-sell-as-much-oil-as-it-can-despite-u-s-sanctions-idUSKBN1K010W (last consulted: September 2018)

[36] F.-S. GADY, «Russia Supplied S-300 Air Defense Battalion to Iran», *The Diplomat*, 20 March 2016. https://thediplomat.com/2016/05/russia-supplied-s-300-air-defense-battalion-to-iran/ (last consulted: September 2018)

dollar Iranian legal complaint against Russia. In November 2013, Iran announced it had launched a missile production factory aimed at improving the country's own air defense prowess.

As one can notice, energy has played a pivotal role in the international arena and Russia has always been one of the most active actors in this regard. In order to exert its influence in the international energy field, Moscow has employed different elements, and one of them relates to the contractual restrictions imposed by Russia over its customers. In fact, Gazprom exports gas to central and western Europe mostly under long-term contracts of up to 25 years, usually based on intergovernmental agreements. In addition to that, the majority of these deals are tagged to the crude price.

A typical long-term contract has the so-called "take-or-pay" clauses, which fixes the amount of natural gas that will be supplied. However, if the consumer decides not to purchase all the volume of gas envisaged in the contract, it will have to pay a compensatory tariff. This allows Gazprom to retain a predictable flow of external financial credit, which in turn allows Moscow to foster its budget and sustain its financial savings. On the other hand, such a contract gives little economic flexibility to the customer, which is tied up towards Gazprom for a long period of time.

An additional element of the "take-or-pay" contracts is represented by the destination clauses. This obligation prohibits the option for the customer to re-sell the gas it received from Russia. Besides, the specification of delivery points compels the Russian counterpart to purchase the gas only through the designated route or pipeline, and not through other pipelines or suppliers. A contract with such clauses gives Gazprom a greater leverage over its customers and has the effect of fragmenting the European market.

Given the greater liquidity of the international gas market which followed the surge of LNG sales, Russia has started to adjust its market matrix in order to allow the signing of more short-term contracts. Examples of this new trend are the deals Gazprom signed with Croatia and Estonia. In 2017, Gazprom signed a deal with the Croatian PPD which envisaged the supply of 1 bcm of gas per year for 10 years. In 2016, Estonian firm Eesti Gas signed a very short-term contract (to last until 2019) for the delivery of 0.4 bcm of natural gas yearly.

This new tendency was also the result of the competition of American shale gas being sold in the European market. The scenario of an ever growing volume of LNG from the States (due to their glut in their domestic production) has created a shift in Gazprom's external policies. The recent emergence of Washington as a global energy superpower has created a new defensive posture by Gazprom towards its European customers. Gazprom tries to retain its market share in Europe by allowing new short-term contracts and lowering prices to undercut the American competition. The result of this new policy has been highlighted by the rise of Gazprom market share, which reached the 40% of the European gas imports in 2017[37].

LNG supplies are becoming more and more common in the European market. Europe's net liquefied natural gas (LNG) imports were up by 19.5 percent to 7.5 million tonnes in 2017,

[37] D. BOCHKAREV, «Gazprom plays ball: the depoliticization of the European gas market», *energypost.eu*, 25 January 2017.

compared to the previous year[38]. Qatar is the largest supplier of liquefied natural gas worldwide. This status has given Doha the opportunity to strengthen economic and political relations with LNG consumers in Asia and South America. Its economic strength has recently been affected by a serious geopolitical crisis with its neighbours. In June 2017, the United Arab Emirates, Saudi Arabia, and few other Arab states severed diplomatic relations with Doha, and they justified this move by accusing Qatar of supporting terrorism. Qatar supplies the UAE with natural gas through an undersea pipeline. This could be a reason why the crisis has not deflagrated into an open military confrontation.

1.3 Main oil and gas producers

The Middle East region

Forty years ago, Qatar was a petroleum backwater compared with its Persian Gulf neighbors Kuwait, Saudi Arabia and the United Arab Emirates. Its transformation began in 1971, when Shell discovered Qatar's North Field, the world's largest non-associated gas reservoir. The term "non associated" refers to natural gas that does not contain large quantities of crude oil in a reservoir. Little was done to develop the field until the country completed its first LNG plants at Ras Laffan in 1996 in partnership with Exxon Mobil. Proved gas reserves in Qatar are the third largest in the world and they are estimated to stand at 25 trillion cubic meters. The offshore North Field is the main gas reserve in Qatar.

Over the past few years, Qatari gas production has experienced a significant boost: in 2017, natural gas production in Qatar amounted to around 175 billion cubic meters. The rise was mainly caused by demand for new liquefied natural gas (LNG): Qatar has been the world's largest LNG exporter since 2006, with export volumes hitting 77 million tonnes per year in 2017. It has also diversified its exporting markets, going beyond traditional Asia markets and reaching out to Europe, the United States and South America. It now supplies its natural gas to more than 23 countries.

In 2005, Qatar declared a moratorium on development of the North Field, to give the country time to study the impact of such a rapid increase in output on the reservoir[39]. The moratorium, that lasted until 2017, was applied only to the Qatari side and not the Iranian side[40].

The Qatari North Field contains about 910 trillion cubic feet (tcf), which accounts for 14% of worldwide natural gas reserves. The South Pars field, a geologic extension of the North field, contains an estimated 280 trillion cubic feet (tcf) of natural gas and belongs to the Islamic Republic of Iran. This single field contains about 20% of the world's natural gas reserves. However, its

[38] M. TEMIZER, «European LNG imports up by 19.5% in 2017», *Anadolu Agency*, 15 June 2018. https://www.aa.com.tr/en/energy/lng-lpg/european-lng-imports-up-by-195-in-2017/20503 (last consulted: September 2018)

[39] S. SALACANIN, «Qatar's battle for LNG market share», *Al Jazeera*, 15 June 2017. http://studies.aljazeera.net/en/reports/2017/06/qatars-battle-lng-market-share-170615114638015.html (last consulted: September 2018)

[40] T. FINN, «Qatar restarts development of world's biggest gas field after 12-year freeze», *Reuters*, 3 April 2017.

lifetime will fall given Qatar's aggressive plan to boost production from the field: in 2018, Qatari government affirmed that they were keen to expand gas production by 30% at the North field[41].

Qatar has heavily invested in its natural gas pipeline infrastructure. The Dolphin Gas Project, among the largest energy initiative ever undertaken in the Middle East, has been supplying Qatari natural gas to the United Arab Emirates and Oman since 2007. The Dolphin Gas Project employs gas produced from offshore fields: the gas is then processes at the onshore plant in Ras Laffan, the biggest LNG gas plant ever built. This huge terminal produces around 2.5 billion cubic feet of natural gas daily. The gas is sent through a 230-mile-long underwater pipeline — one of the longest underwater pipelines in the world — to the Abu Dhabi market. The pipeline has the capacity to supply up to 3.2 billion cubic feet of natural gas per day.

Qatar has also focused its attention to what is happening at the moment in North America. There is little doubt that Doha (which hosts the Gas Exporting Countries Forum) has foreseen the impact on the global energy market of the shale revolution in the USA and of the tar sands in Alberta, Canada. For this reason, it wants to be part of the upcoming gas trends and it decided to raise its exposure to Western Canadian natural gas scenario. Over the past few years, Qatar has targeted North American assets (Suncor Energy is an example) to participate in one of the world's biggest oil and gas plays as well as to diversify its investments portfolio. Qatar is the latest Middle East oil and gas exporter attracted to North American assets. Over the last few years, Abu Dhabi's majority state-owned Taqa has picked up a number of assets in Canada and the US and has stakes in shale operations in British Columbia and tight gas assets in Alberta. On the other hand, Saudi Arabia has a 100% control over the shares of Port Arthur, US largest refinery[42].

The United Arab Emirates is a major oil producer and exporter. In 2017, the United Arab Emirates produced around 3.94 million barrels of oil daily and exported 2.3 million barrels per day to markets around the world. The government of Abu Dhabi has decided to invest heavily in green (especially solar) and nuclear energy and is keen to become a clean energy leader worldwide. United Arab Emirates are among many countries in the world that have invested on green energy potential. Other countries around the globe are following suit: Germany, while struggling at times, is pursuing green energy aggressively. Morocco is increasing the share of renewables to 42% in the energy mix by 2020. Even Saudi Arabia has shown a strong interest in the solar technology and is investing around 200 billion dollar on that[43].

Rapidly rising demand and slow production growth have made the United Arab Emirates a net importer of gas over the past few years. It could seem surprising that despite having some of the largest energy reserves in the world, and with top natural gas producers such as Iran and Qatar in

[41] A. MIRZA, «Qatar awards design deal for North Field expansion to US' McDermott», *S&P Global Platts*, 7 May 2018. https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/050718-qatar-awards-design-deal-for-north-field-expansion-to-us-mcdermott (last consulted: September 2018)

[42] M. EGAN, «Saudis take 100% control of America's largest oil refinery», *CNN*, 1 May 2017. https://money.cnn.com/2017/05/01/investing/saudi-arabia-buys-largest-oil-refinery-port-arthur/index.html (last consulted: September 2018)

[43] J. DEIGN, «SoftBank's Mega Solar Deal in Saudi Arabia Faces a Rocky Future», *Wood Mackenzie Business*, 25 April 2018. https://www.greentechmedia.com/articles/read/softbank-mega-solar-deal-saudi-arabia-rocky-future (last consulted: September 2018)

the immediate neighborhood, the UAE is currently looking to the USA for natural gas supplies[44]. The UAE has the second largest Arab economy and both the fifth largest proved oil and fourth largest proved natural gas reserves in the region. Rapidly rising energy consumption coupled with slow production growth made the UAE a net natural gas importer since 2008. This was also the result of soaring energy consumption by its population as well as the growth of energy-intensive industries. Despite its large gas reserves, production is limited due to the fact that a majority of their natural gas contains high sulphur[45].

The UAE is, therefore, also pursuing a diversification strategy by adding nuclear and renewable power generation capacity. As recalled earlier, Abu Dhabi is importing gas from Qatar (Dolphin Energy) and needs alternative source of supply to feed its power generation and water desalination facilities and continue to boost its oil production. In fact, in the Middle East the vast majority of energy consumption comes from desalinating seawater and residential cooling. Because of the increasing threat on the Strait of Hormuz through the tension with Iran, Abu Dhabi had decided to step up its LNG imports.

As already mentioned, Abu Dhabi has also ensured a relevant piped natural gas flow from Qatar through the Dolphin pipeline. Though, the UAE is wary of depending on Qatar for natural gas supplies because of regional rivalries, in addition to price disagreements with Doha. Therefore, with the US joining the global LNG market as new producer, it makes sense for countries like the UAE to keep their natural gas supply options open. The UAE has the unique title of being a pipeline natural gas net importer and LNG net exporter[46].

The United Arab Emirates are building four nuclear reactors at Barakah to free up energy resources for the more profitable export markets. In Dubai's 20-year plan, Saeed Mohammed Al Tayer of the Supreme Council of Energy predicted that "20 per cent of [Dubai's] energy supply will in future be drawn from a peaceful civil nuclear program". Recently the UAE opened what was, in March 2013, the largest solar plant in the world, the 100 MW Shams 1 at a cost of about 600 million dollars[47]. But two hundred Shams 1 will be needed to equal the output of the four Barakah nuclear reactors when Korean nuclear energy company, Kepco, brings them online for Abu Dhabi in 2020. In a 20 billion-dollar deal announced in December 2009, United Arab Emirates selected a Korean consortium led by Kepco to build four reactors. All four units planned for Barakah, close to the border with Saudi Arabia, should be in operation by 2020[48].

[44] L. GRAVES, «UAE looks to increase US LNG imports», *The National*, 6 December 2017. https://www.thenational.ae/business/energy/uae-looks-to-increase-us-lng-imports-1.681829 (last consulted: September 2018)

[45] https://www.worldenergy.org/data/resources/country/united-arab-emirates/gas/ (last consulted: September 2018)

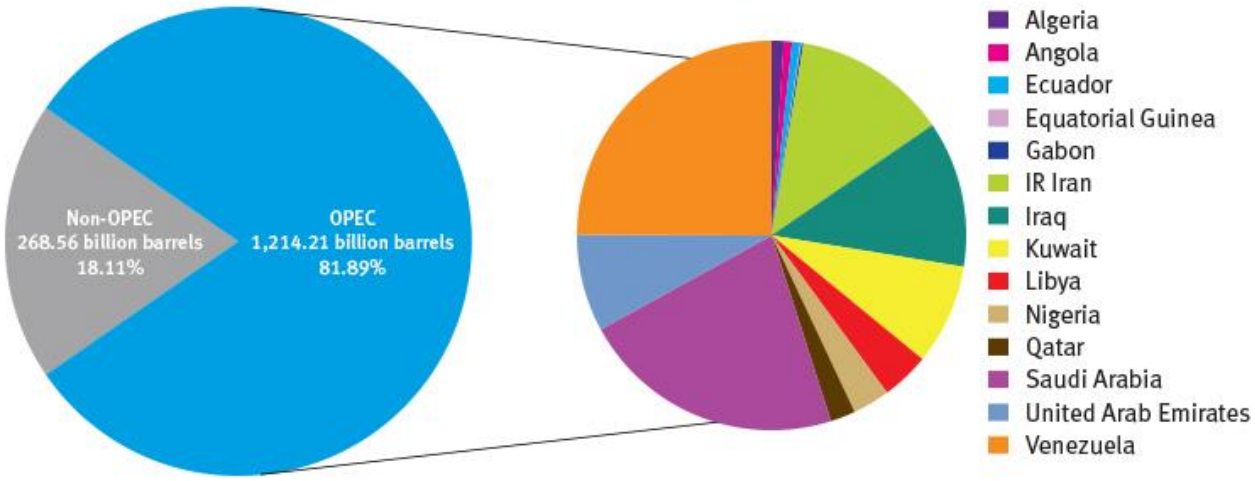
[46] Ibidem

[47] D. FINEREN, «UAE opens first big solar energy plant», *Reuters*, 17 March 2013. https://www.reuters.com/article/us-uae-solar/uae-opens-first-big-solar-energy-plant-idUSBRE92G08B20130317 (last consulted: September 2018)

[48] J. LANGTON, «UAE's first nuclear power plant delayed until late 2019 or 2020», *The National*, 27 May 2018. https://www.thenational.ae/uae/uae-s-first-nuclear-power-plant-delayed-until-late-2019-or-2020-1.734445 (last consulted: September 2018)

As a member of the Organization of the Petroleum Exporting Countries (OPEC), Kuwait is currently the world's 10th largest oil producer[49]. Despite having the second smallest land area among the OPEC member countries, Kuwait exports the third largest volume of oil. Kuwait's economy is heavily dependent on petroleum export revenues. Kuwait is one of the world's top oil producers as the country has a 2.8 million barrels per day production capacity[50].

OPEC share of world crude oil reserves, 2017



OPEC proven crude oil reserves , at end 2017 *(billion barrels, OPEC share)*

Venezuela	302,81	24,9%	Kuwait	101,50	8,4%	Qatar	25,24	2,1%	Gabon	2,00	0,2%
Saudi Arabia	266,26	21,9%	UAE	97,80	8,1%	Algeria	12,20	1,0%	Equat. Guinea	1,10	0,1%
IR Iran	155,60	12,8%	Libya	48,36	4,0%	Angola	8,38	0,7%			
Iraq	147,22	12,1%	Nigeria	37,45	3,1%	Ecuador	8,27	0,7%			

Source: OPEC Annual Statistical Bulletin 2018.

Enhanced oil recovery techniques helped Oman's oil production rebound from a multi-year decline in the early 2000s. The past decade has experienced a reduction in the production, in part due to the maturation of some key fields. By 2008, production had fallen to around 700,000 barrels per day (bpd), down from a peak of some 950,000 bpd eight years before. With the increased deployment of new technologies, along with the opening up of new fields, output is again around the highs of the beginning of the century, and fields that have been in operation for up to 40 years have had their productive lifespan extended. In early 2018, oil production in Oman amounted to 900,000 bpd[51].

As far as natural gas is concerned, Oman currently exports LNG from two liquefaction facilities (trains) at Qalhat near Sur, although rising domestic demand for natural gas could limit the volumes available for export in the future. The LNG sector is the largest income source for Muscat after oil sales. The world demand for LNG is estimated to continue growing, and in 2018 global

[49] S. DUTTA, «Top 10 Oil & Gas Companies: Kuwait Petroleum Corp», *Oil & Gas IQ*, 13 February 2018. https://www.oilandgasiq.com/strategy-management-and-information/articles/top-10-oil-gas-companies-kuwait-petroleum (last consulted: September 2018)

[50] J. ELASS, «Is Kuwait rethinking its oil expansion plans?», *The Arab Weekly*, 24 February 2019. https://tradingeconomics.com/kuwait/crude-oil-production (last consulted: September 2018)

[51] J. GNANA, «Gas to overtake oil production in Oman by 2023, says Rystad», *The National*, 5 March 2019. https://timesofoman.com/article/130180 (last consulted: September 2018)

LNG demand grew to 300 million metric tons per year[52]. Increased LNG demand has been coming from China and India.

Indeed, the six Gulf Cooperation Council (GCC) states consume more primary energy than the whole of Africa even though their population is only one-twentieth the size of the population of the continent. Strongly subsidized energy has fed consumption growth in the region in recent years and led to government spending hikes for energy subsidies[53].

The Middle East region constitutes a pivotal area both in geopolitical as well as in energy terms. The recent discoveries of vast natural gas and oil fields in the Eastern Mediterranean have sparked for the EU the prospects of new energy supplies from Israel and Cyprus. Directly related to this issue is Ankara's role in the future energy infrastructures bound to Europe from the Eastern Mediterranean and Central Asian regions. The proposed TANAP gas pipeline from Azerbaijan (Shah Deniz gas field) will run through the Anatolian peninsula and will be then linked to Italy through the TAP (Trans Adriatic Pipeline). The importance of Turkey as vital transit countries for the EU supplies will have a strong geopolitical impact in the future relations between Brussels and Ankara.

Egypt used to be a net exporter of natural gas until 2010 but the rise in domestic energy consumption has terminated this trend. The necessity to guarantee new energy supplies from abroad has obliged Egypt authorities to import LNG from its terminals in the Red Sea and in the Mediterranean. In addition, Egypt seems to be increasingly interested in the LNG export prospects of the Leviathan fields owned by Israel. The end of gas supplies from Egypt has impelled the Hashemite dynasty in Amman to look at Israel as a future reliable partner in the field of natural gas. All this changed with the discovery of two supergiant gas fields off the coast of Egypt, i.e. Zohr (2015) and Noor (2018). Due to the volume of these discovery, Cairo seems bound to become a net exporter of gas over the next decade.

There is no doubt that the geopolitical stability of the Middle East lies in the future of the Iranian nuclear deal. The United States and the European Union imposed restrictive trade measures at the end of 2011 and during the summer of 2012: these have damaged the Iranian energy sector more sharply than any previous programme of sanctions. The sanctions hindered Iran's ability to sell oil, resulting in a drop of 1 million barrel per day in crude oil exports in 2012 compared with the previous year.

The state-owned National Iranian Oil Company (NIOC) is responsible for all the oil and natural gas projects. In fact, since the outbreak of the Iranian Revolution in 1979 the Iranian constitution forbids any foreign or private ownership of natural resources. This constituted a necessary political step to honor the memory of Mossadeq, a former Iranian Prime Minister who in the 1950s nationalized the Iranian energy activities of the Anglo-Iranian Oil Company. For this act, in 1953 he was ousted thanks to a CIA-backed coup d'état (which was codenamed "Ajax") pressured by the

[52] V. HENZE, «LNG Trade to Surpass 300MMtpa for the First Time This Year, as Asia and Europe Drive Up Imports», *Bloomberg*, 22 March 2018. https://about.bnef.com/blog/lng-trade-to-surpass-300mmtpa-for-the-first-time-this-year-as-asia-and-europe-drive-up-imports/ (last consulted: September 2018)

[53] A. YOUSEF, «Gulf Cooperation Council (GCC) countries 2040 energy scenario for electricity generation and water desalination», KTH, March 2014, available at https://www.diva-portal.org/smash/get/diva2:839740/FULLTEXT01.pdf

MI5 and by the British Foreign Office. However, nowadays international oil companies can participate in the exploration and development phases through buyback contracts.

International sanctions continue to affect foreign investment in Iran's energy sector, limiting the technology and expertise needed to expand the capacity at oil and natural gas fields and reverse production declines: a situation that Russia has been experiencing over the last few months. Iran holds nearly 10% of the world's crude oil reserves and 13% of OPEC reserves. About 70% of Iran's crude oil reserves are located onshore, with the remainder mostly located offshore in the Persian Gulf. Iran also holds proved reserves in the Caspian Sea, although exploration has been at a standstill[54].

Iran has also the second-largest proved natural gas reserves in the world, after Russia. Iran holds 17% of the world's proved natural gas reserves and more than one-third of OPEC reserves. Iran's largest natural gas field, South Pars (located north of the Qatar's North Field), is deemed to constitute around 40% of Iran's gas reserves. Natural gas production from South Pars is critical to meet rising domestic consumption and to satisfy export obligations.

South Pars is an offshore field, which is at a shallow depth and near the coast. Therefore, there are lower costs of production. Operator of the development is the National Iranian Oil Company (NIOS). Actors in the development are also Gazprom, ENI and Total. Gas from the "South Pars" is sent through pipelines bound to the Iranian port of Asaluye. South Pars contains 8% of the world gas reserves and 50% of the total gas reserves of Iran.

Although Iran's aspirations to build a liquefaction facility for LNG date back to the 1970s, the country has yet to build one. Despite ambitious plans, Iran has had to cancel or delay LNG projects because of US and EU sanctions that made it impossible to obtain financing and to purchase the necessary technology. Given the political constraints, Iran's LNG projects are lagging behind.

Despite Tehran's will to export its natural gas east towards Pakistan, the pressure of the US (and Saudi Arabia) on Islamabad has had strong repercussions on the bilateral relations between the two Asian countries. In 2012 and 2013, Islamabad and Tehran signed various agreements regarding the location, future supply and financial terms of the gas pipeline (which is also dubbed "the peace pipeline"). Though, already in 2013 the Iranian government formally complained with Pakistan over the delays related to the construction of the Pakistani part of the project. In late November, Saudi Arabia unofficially handed over to Islamabad a financial gift of 1.5 billion dollars. According to Pakistani local press, Saudi Arabia did what the US could not do to keep Pakistan away from a 7.5-billion dollar gas pipeline project with Iran[55]. Saudi Arabia might have persuaded Islamabad to cancel the Iran-Pakistan (IP) pipeline project, which is vital to end energy shortages in the country.

Pakistan has recently claimed that work on the pipeline was not possible because of sanctions imposed by the United States and the European Union on Iran over its nuclear program. Iran has

[54] Vv.Aa., «Country Analysis Brief: Iran», *US Energy Information Administration*, April 2018, available at http://www.ieee.es/en/Galerias/fichero/OtrasPublicaciones/Internacional/2018/EIA_Iran_9abr2018.pdf (last consulted: September 2018)

[55] A. SHAHEEN, «IP project: US threatens curbs if Pakistan pursues Iran deal, says PM», *The Express Tribune*, 5 August 2013. https://tribune.com.pk/story/586623/ip-project-in-jeopardy-us-threatens-curbs-if-pakistan-pursues-iran-deal-says-pm/ (last consulted: September 2018)

warned that Islamabad is contractually obliged to complete the project that would allow Tehran to export gas to its southeastern neighbour. Iran has already laid the pipeline its side up to its border with Pakistan. Financing has been the key issue for Islamabad. Islamabad has so far failed to secure the required funding for the IP pipeline due to the threat of sanctions from the US. Pakistan had been asking Iran, China and Russia to fill the finance gap.

According to some media sources, Islamabad is trying to devise a new gas deal with Iran. Iran will convert natural gas into LNG and then export it to Pakistan by using terminal facility of Oman. In last 2017, Iran and Oman signed an agreement, according to which Oman will purchase natural gas from Iran for a period of 15 years: the project envisages the laying of a 1.2 billion dollar gas pipeline across the Gulf to Oman[56]. The Iranian LNG shipments from Oman would then be processed at LNG terminals in Pakistan. Though, it is not clear whether the US (that holds the Fifth Fleet in the Persian Gulf) will accept this option. Government officials in Islamabad said the LNG Pakistan terminal could serve as a bridge with Iran as bilateral pipeline developments have been impeded by international sanctions. Islamabad has been operating two LNG station in Port Qasim since the end of 2017[57]. The construction of a LNG terminal is also consistent with the fact that Pakistan and Qatar signed a memorandum of understanding for LNG supplies in 2012.

The Pakistani government is interested in getting China's help with the construction of an LNG terminal and associated pipeline infrastructure at the port city of Gwadar near the Iranian border. In effect, China would be definitely interested in building a gas pipeline from the Pakistani port of Gwadar directly to the Chinese Xinjiang region: this would allow the Chinese to get a direct access to LNG shipments from the Gulf area by avoiding LNG tankers to cross the highly dangerous Strait of Malacca.

Even though Iran could possess the necessary natural gas reserves to overtake Russia's supremacy in the European energy market, it still lacks the necessary infrastructure to bring it to Europe. The Tabriz-Ankara pipeline could be expanded but a real breakthrough over the matter would come with the construction of a new pipeline from the South Pars field to Turkey. Once on Turkish territory, the pipeline could be linked to the TANAP or to the BTE (Baku-Tbilisi-Erzurum) pipeline. The TANAP is expected to have by 2026 a potential volume of 31 bcm natural gas per year[58].

International sanctions continue to affect foreign investment in Iran's energy sector, limiting the technology and expertise needed to expand the capacity at oil and natural gas fields and production declines: a situation that Russia has been experiencing over the last few years. The sanctions imposed on the Ayatollah regime by Brussels and Washington have encouraged Tehran to seek new customers among its neighbours. Iraq signed an agreement with Iran in June 2013 to receive natural gas to fuel Iraqi power plants in Baghdad and Diyala. The initial contract was later increased to 1.4 billion cubic feet per day over 10 years. The past ISIS-related events in Syria and

[56] Vv. Aa., «Iran, Oman Sign Preliminary Agreement on Gas Export», *The Financial Tribune*, 7 February 2017. https://financialtribune.com/articles/energy/59114/iran-oman-sign-preliminary-agreement-on-gas-export (last consulted: September 2018)

[57] K. THOMAS, «Pakistan prepares to launch second FSRU», *LNG World Shipping*, 7 November 2017. https://www.lngworldshipping.com/news/view,pakistan-prepares-to-launch-second-fsru_49782.htm (last consulted: September 2018)

[58] A. KUCUKGOCMEN, «Turkey opens natural gas pipeline from Azerbaijan», *Reuters*, 12 June 2018. https://www.reuters.com/article/energy-turkey-tanap-idAFL8N1TE5BE (last consulted: September 2018)

Iraq have halted the project. This pipeline, dubbed the "Islamic pipeline", was supposed to be prolonged to include Syria (Assad has been a loyal and close ally for Tehran). Some of the gas would have then been supplied via the Arab Gas Pipeline to Jordan and Lebanon[59].

Qatar, supporter of the toppling of the Assad regime has an economic interest in Damascus. Doha is supported by Turkey in this endeavour. Both President Erdogan and Emir Al-Thani want Assad to step aside. In July 2011, Syria, Iran and Iraq (at the time governed by the Shiite Al-Maliki) signed a 10-billion agreement for a gas pipeline from Iran's Asalouyeh near South Pars to Damascus, Syria via Iraq. Iran planned to extend the pipeline from Damascus to Lebanon's Mediterranean port where the gas would be delivered to the EU markets.

Adding to Qatar's determination to hinder the Syria-Iran-Iraq gas cooperation is the discovery in August 2011 by Syrian exploration companies of a huge new gas field near the border with Lebanon and off the coast of Tartus on the Syrian Mediterranean[60]. Any export of Syrian or Iranian gas to the EU would have gone through the port of Tartus (where a Russian naval force has its base). According to the renowned analyst William Engdhal, the Syrian gas discoveries are believed to equal or exceed those of Qatar[61]. The Iran-Iraq-Syria gas pipeline to the EU would be a de facto Shiite pipeline.

The issue of foreign ownership of oil and gas fields in Iran is a contentious one, a legacy of political turmoil in Iran in the 1950s and vivid memories of the days when the country's oil industry was controlled by Western energy companies. After the Islamic revolution in 1979, Iran nationalized its energy sector and kicked many Western companies out of the country. US oil firms have been barred by Washington from working in Iran for the past two decades. Though, recently things have changed.

In May 2018, US President Trump decided to renege on the landmark 2015 deal (Comprehensive Plan of Action) to curtail Iran's nuclear ambitions. In August 2018, Trump also announced new sactions that will target a range of industries, including Iran's car making sector. According to the President, these restrictive measures will be followed by a set of additional and even more stringent steps by November 2018, including an embargo on the import of Iranian oil and sanctions on its banking sector[62]. The future geostrategic posture of the United States will lie in the foreign policy designed by one key country in the region, i.e. Saudi Arabia.

Saudi Arabia has 16% of the world's proved oil reserves and is the largest exporter of total petroleum liquids in the world: it maintains the world's largest crude oil production capacity. More than half of Saudi Arabia's oil reserves are contained in eight fields. The giant Ghawar field, the world's largest oil field with estimated remaining reserves of 75 billion barrels. Saudi Arabia is the

[59] R. KENNEDY JR., «Why the Arabs don't want us in Syria», *Politico.eu*, 23 February 2016. https://www.politico.eu/article/why-the-arabs-dont-want-us-in-syria-mideast-conflict-oil-intervention/ (last consulted: September 2018)
[60] W. ENGDHAL, «Cyprus and the emerging Mediterranean gas wars», *Russia Today*, 1 April 2013. https://www.rt.com/op-ed/cyprus-emerging-gas-wars-151/ (last consulted: September 2018)
[61] W. ENGDHAL, «Syria, Turkey, Israel and a Greater Middle East Energy War», *Voltairenet.org*, 12 October 2012. http://www.voltairenet.org/article176200.html (last consulted: September 2018)
[62] S. K. DEHGHAN, «Trade with Iran and you won't trade with US, Trump warns», *The Guardian,* 7 August 2018. https://www.theguardian.com/world/2018/aug/07/iran-braces-for-new-round-of-us-economic-sanctions (last consulted: September 2018)

second-largest petroleum exporter to the United States, after Canada. Saudi Arabia has the world's fifth-largest natural gas reserves, but natural gas production remains limited.

In order to satisfy the ever-growing energy demand, Saudi Arabia plans to construct 16 nuclear power reactors over the next 20 years at a cost of more than 80 billion dollars, with the first reactor scheduled to be on line in 2022. Riyadh foresees to provide 15% of the energy mix with domestic nuclear power by 2032, along with extensive solar capacity.

Saudi Arabia is turning to its biggest crude oil customer, China, for help in developing domestic nuclear and renewable power as the oil-rich kingdom seeks to diversify its own energy base. Riyadh may spend up to 80 billion dollars on nuclear power plants and 200 billion dollars on solar power projects between now and 2032, making the country's energy sector one of the biggest investment opportunities in the world.

Under an agreement signed in Beijing in August 2014, state-owned Chinese National Nuclear Corporation (CNNC) and Saudi Arabia's energy research centre, known as the King Abdullah City for Atomic and Renewable Energy agreed to cooperate on developing and producing nuclear and renewable energy to meet Saudi domestic demand. The deal followed a nuclear cooperation agreement reached by the two countries in 2012.

Saudi Arabia is the Middle East's biggest consumer of hydrocarbons, with most of its transport, industry and power needs now met from its vast domestic oil and gas supplies. Saudi Arabia the world's fifth biggest energy consumer worldwide, while its economy is ranked about 20th in size[63]. However, it wants to change that equation and free up more oil and gas for the lucrative global export market (especially the ones in East Asia).

The Saudi Royal Family hopes that nuclear energy will provide 15% of the Kingdom's power within 20 years, together with a 15% from solar technology by 2023. Saudi Arabia desalinates over 250 billion gallons of seawater each year (1 gallon = 4.5 litres), and that number will double in the next ten years as the population and industrialization increase[64]. Saudi Arabia's growing population and urbanization is putting pressure on its huge oil supplies. According to the geostrategic project 'Vision 2030' laid out by Saudi Crown Prince, Mohammed Bin Salman, investment in solar production will total about 200 billion dollars, although breakthrough technologies in the next decade could reduce that cost[65].

Nuclear and solar are especially suited to co-generation of electricity and heat for desalination and have become central to the Kingdom's energy strategy. Since Saudi Arabia burns a tremendous volume of oil a year to produce electricity, this change in production is critical to their economic

[63] R. EL GAMAL, «Burning less oil at home will help Saudi exports and Aramco IPO», *Reuters*, 7 March 2017. https://www.reuters.com/article/us-saudi-crude-demand/burning-less-oil-at-home-will-help-saudi-exports-and-aramco-ipo-idUSKBN16E15Z (last consulted: October 2018)

[64] J. MCCARTHY, «Saudi Arabia Is Investing $200 Billion in Solar Energy», *Global Citizen*, 28 March 2018. https://www.globalcitizen.org/en/content/saudi-arabia-solar-energy-200-billion-investment/ (last consulted: September 2018)

[65] D. FRENCH, «SoftBank Vision Fund, Saudi Arabia to create world's biggest solar power firm», *Reuters*, 28 March 2018. https://www.aljazeera.com/news/2018/03/saudi-arabia-create-world-biggest-solar-power-firm-180328103139180.html (last consulted: September 2018)

future[66]. It is much more profitable to sell their oil and gas to China and the West instead of burning it for power and this must be the real explanation behind this Arab "Energiewende".

The Saudi's are not alone in the region in wanting nuclear and renewables to replace their precious oil and gas in generating power. The Saudis understand this math. Nuclear is the best long-term base load source they could have. Not to mention when a country goes nuclear it attains a certain level of respect from its neighbors. Nevertheless, one thing is certain: the Kingdom of Saudi Arabia, with the largest petroleum reserves in the world, will soon enter the global nuclear community. The reasons are economical as well as geostrategic one since its political enemy (Teheran) has reached a level of uranium-enrichment capacities that could allow the Islamic Republic to obtain nuclear warheads. This would constitute a real nightmare for Riyadh.

Iraq, the second-largest crude oil producer in the Organization of the Petroleum Exporting Countries after Saudi Arabia, has an oil production capacity of nearly 5 million bpd. On the other hand, the majority of Iraqi natural gas production is flared: Iraq is taking steps to reduce flaring and to use its natural gas resources in power generation and for re-injection to increase oil recovery. Iraq has the fifth largest proved crude oil reserves in the world and Baghdad holds the tenth largest reserves of conventional gas in the world.

In May 2013, the Iraqi Government finally approved the creation of Basrah Gas Company (BGC), a joint venture between Shell, Mitsubishi and state-owned South Gas Company to support the world's largest program to reduce flared gas. From historical reasons, all the gas produced in Iraqis is associated to the crude oil production and due to the lack of infrastructures after the wars, a significant part of this associated gas is simply flared in order to supply the vital crude oil production.

Therefore, the export of natural gas through the LNG Basrah terminal would provide Iraq with financial resources while hindering gas flaring practices. BGC is planning the construction of the Basra Gas LNG project, which would have a capacity at least of 4.5 million tonnes per year of LNG[67]. Though, the fight again ISIS and the security instability in the southern regions have hindered the project.

The oil-region of Kirkuk has been brought under Kurdish control after the ISIS invasion of northern Iraq in May 2014. This created an even higher advantage for the autonomous government in Erbil: Kurdish President Massoud Barzani had created strong economic and political ties with Turkish President Erdogan. The bitter relations with former Iraqi Prime Minister, Nuri al-Maliki, had prevented the solution to the oil sales by the KRG. The government in Erbil decided to act unilaterally without waiting for oil sales permissions from Baghdad. In March 2014, the KRG announced it was ready to export 100,000 barrels of oil through the federally controlled Iraq-Turkish Pipeline (ITP) as a sign of "good will," hoping that would lead to a major breakthrough of

[66] N. KULISH, «Saudi Arabia, Where Even Milk Depends on Oil, Struggles to Remake Its Economy», *New York Times*, 13 October 2016. https://www.nytimes.com/2016/10/14/world/middleeast/saudi-arabia-oil-prices-economy.html (last consulted: October 2018)

[67] M. MOSTAFA, «Iraq exported 125.5 mln metric tons of LNG in Q3 of 2017», *Iraqi News*, 12 October 2017. https://www.iraqinews.com/business-iraqi-dinar/iraq-exported-125-5-mln-metric-tons-lng-q3-2017/ (last consulted: September 2018)

the dispute between the two sides. However, the successive sabotage of the ITP prevented the Kurds from fulfilling their promise. The oil issue has been at the center of one of the worst rows between the KRG and the Shiite Arab-led government in Baghdad.

Erbil opened its new pipeline to the Turkish port of Ceyhan in December 2014 but after strong opposition from Baghdad, Ankara said it would hold off on allowing the sales until consent from the central government. However, after months of reciprocal political allegations, including Baghdad freezing Erbil out of the national budget for months, no agreement was reached. In the meantime, the Kurdistan Regional Government of Iraq had completed a pipeline from the Dahuk field to Faysh Khabur on the Turkey-Iraq border, where it is connected to the Kirkuk-Ceyhan oil pipeline. The pipeline has a capacity of 150,000 barrels per day. In May 2014, the Kurdistan Regional Government announced that the first oil shipment was transported via the new pipeline.

The Kurdistan Region is ramping up its oil exports to Turkey despite the crisis of 2017 related to the Iraqi federal army re-entering the city of Kirkuk (after the withdrawal of Kurdish Peshmerga fighters from the area). The rate of crude oil flow from the Kurdistan Region to the port of Ceyhan reached 220,000 barrels per day (bpd) in late 2017[68]. The increase in output may help offset lower prices in global oil markets. After the takeover of Kirkuk, Baghdad has outlined plans to reopen the Kirkuk-Ceyhan pipeline to Turkey: this prospect frightens Erbil as this oil flow will reduce its ability to supply Turkey with its own oil[69].

The Central Asian region

The Central Asian region has acquired a key status in the EU energy relations. The recent events in Ukraine have brought about in Brussels the awareness of the need to diversify EU energy supplies: these are too dependent on Moscow. Central Asia and the Caspian Sea basin seem to be two areas with a high potential for future EU gas supplies. The Azeri gas field of Shah Deniz and the opening of the Southern Gas Corridor have been two key points in the European Commission's energy strategies over the last few years. The prospects of piping Turkmen gas to Europe through the Trans Caspian Pipeline would constitute an additional benefit for the EU energy security strategy. However, this project seems to be difficult to implement due to the uncertain status of the Caspian Sea under the international law. In fact, there is a juridical dispute as to whether the Caspian Sea is a lake or a sea: if the latter is the case, then the UN Convention on the Law of Sea (1982) should be applied to it.

In August 2018, in the Kazakh city of Aktau, they finally signed a legal convention. It establishes a formula for dividing up its resources and prevents other powers from setting up a military presence there. The division and distribution of energy resources within the Caspian Sea will

[68] J. PAYNE, «Oil flows via Iraqi Kurdish pipeline to Turkey around 200,000 bpd», *Reuters*, 19 October 2017. https://www.reuters.com/article/mideast-crisis-iraq-oil/oil-flows-via-iraqi-kurdish-pipeline-to-turkey-around-200000-bpd-idUSL8N1MU5MW (last consulted: September 2018)

[69] Vv. Aa., «Baghdad plans to reopen oil pipeline to Turkey, bypassing Kurdistan», *Rudaw*, 10 October 2017. http://www.rudaw.net/english/middleeast/iraq/10102017 (last consulted: September 2018)

remain a major sticking point, requiring further negotiations that Russia and Iran will seek to prolong[70].

In 2005, the completion of the Baku-Tbilisi-Ceyhan pipeline transformed Azerbaijan's oil industry, unlocking the country's oil sector potential by providing an outlet to world markets for crude oil. With the startup of the Shah Deniz natural gas and condensate field in late 2006, Azerbaijan became also a natural gas net exporter. The Shah Deniz field, discovered in 1999 in the Caspian Sea, is one of the world's largest natural gas fields.

Turkey was and is eager to become a route supply for Azeri gas and oil. Ankara has been a staunch supporter of Baku over Nagorno-Karabakh, the disputed enclave controlled by Armenia since the outbreak of a war in the early 1990s. Turkey and Azerbaijan worked closely on the realization of the Baku-Tbilisi-Ceyhan (BTC) crude pipeline. As Russia was unwilling to give away its sway over the former Soviet republics and tried to control the export routes for Azerbaijani oil, Turkey's efforts to develop pipelines circumventing Russia signalled the strategic rivalry between Ankara and Moscow. The geopolitical significance of the BTC project, which became operational in 2006, was widely acknowledged and the pipeline has turned out to be a key component of Turkey's energy supplies and transformed the Mediterranean port of Ceyhan into a major energy hub.

As a gas supplier, Azerbaijan became necessary to Turkey's efforts to diversify its imports away from Russia and Iran. When the Baku-Tbilisi-Erzurum (BTE) gas pipeline became operational in 2007, it not only allowed Turkey to have access to cheaper gas, but also provided Ankara with a viable supply alternative to Moscow and Tehran. The BTE pipeline was constructed parallel to the BTC pipeline, and under the terms of the supply agreement, Turkey was to import gas produced from Shah Deniz I. The discussions around the price of gas, which were hindered by the row caused by Turkey's efforts to normalize diplomatic relations with Armenia in 2009, drew out for a long time. Finally, the dispute was solved as part of a package deal covering several energy issues after 2011, including the development of Shah Deniz II and TANAP.

Shah Deniz I has been delivering gas since 2006 and has an annual production capacity of about 10 billion cubic meters (bcm) of natural gas. The next phase, Shah Deniz II, is important for Europe in terms of providing an alternative gas supply to Russia's Gazprom. It is expected to produce 16 bcm per year from around 2020, with 10 bcm earmarked for Europe and 6 bcm for Turkey[71].

The implementation of the TANAP project following the Baku-Tbilisi-Ceyhan (BTC) main oil export pipeline and the Baku-Tbilisi-Erzurum main gas export pipeline made a significant contribution to the energy security for the EU. The Southern Gas Corridor will provide the first export route for Caspian gas outside of Russian control. The State Oil Company of the Azerbaijan Republic (SOCAR) announced in May 2014 that it signed a joint venture agreement with a Russian state-owned energy firm, Rosneft. The agreement allowed SOCAR and Rosneft to co-operate on the exploration and production of oil and gas projects within Azerbaijan, Russia and in third countries. By concluding a major deal with Rosneft, the Azerbaijani authorities have ensured that Moscow will be a player in the future development of Azerbaijan's energy sector.

[70] E. CHAUSOVSKY, «What Does the New Caspian Sea Agreement Mean For the Energy Market?», *Stratfor*, 17 August 2018. https://worldview.stratfor.com/article/what-does-new-caspian-sea-agreement-mean-energy-market (last consulted: September 2018)

[71] Official data from the company

This is not the first concession Azerbaijan has made to Russia: in February 2014, SOCAR and the Russian oil pipeline monopoly, Transneft, reached a deal on the transportation of oil from Azerbaijan through the Baku-Novorossiysk pipeline. The agreement made little sense from an economic perspective but after the Ukraine crisis, the Azerbaijani government could have believed that strengthening energy ties with major Russian companies could provide some economic leeway in case of future political disputes.

The vast oil reserves in the Kashagan field in Kazakhstan together with the gas reservoir of Galkynish in Turkmenistan have become high priorities for EU energy policies: Brussels has been vocal over the need to build the Trans Caspian Pipeline. The prospect of reaching an agreement among the littoral states (among them Iran and Russia) over the legal status of the Caspian Sea will impinge on the future of this geostrategic plan. The risk for the EU is that both Kazakhstan and Turkmenistan will strengthen their relations with Beijing. Turkmenistan has already signed various agreements with China and Ashgabat is expected to deliver up to 65 bcm per year of natural gas to China by 2020. On the other hand, Kazakhstan is already pumping more than 20 million tons of oil per year to the Chinese region of Xinjiang. Moreover, the recent agreement between Russian giant Gazprom and China's CNPC over the 30-year sale of Russian gas to China has further irked EU policymakers: they fear that this deal will give greater leverage to Russia over the pricing of gas supplies to Europe[72].

Uzbekistan is the third largest natural gas producer in Eurasia, behind Russia and Turkmenistan. With a highly energy-intensive economy, Uzbekistan holds sizeable hydrocarbon reserves of mostly natural gas. However, insufficient pipelines to export higher volumes of hydrocarbons and aging energy infrastructure have slowed the production, distribution, and exports of hydrocarbons in recent years.

Uzbekistan's natural gas transmission and distribution system allows for trade with Russia, Kazakhstan, and Kyrgyzstan. Uzbekistan also serves as a transit country for natural gas flowing from Turkmenistan to Russia and China. In addition, two new natural gas pipelines, Gazli-Kagan and Gazli-Nukus, were built in the last few years to connect the Uzbek gas fields with the existing system.

Uzbekistan's oil production has been in steady decline for more than a decade. Meanwhile, oil domestic consumption has increased. Natural gas production has fluctuated between 52 and 63 billion cubic meters (bcm) for the last decade. In recent years, domestic gas consumption in the country has recorded a level of about 50 billion cubic meters per year[73]. At current consumption rates, Uzbekistan's oil is expected to run out in just over a decade unless significant new finds are made. In order to counter this trend, the government is determined to find new options for the national energy mix. One of them would be to start exploration activities for shale oil and gas in the country: Uzbekistan could become the first Central Asian country to start mining oil shale.

Uzbekistan will have enough gas for the next 30 years, less if exports to China increase as planned. There are concerns that the Uzbek government is prioritizing gas exports, a source of foreign currency, rather than the needs of the population - a fear that has grown since Uzbekistan started

[72] A. LUHN, «Russia signs 30-year deal worth $400bn to deliver gas to China», *The Guardian*, 21 May 2014.
[73] K. ALIYEVA, «Uzbekistan plans to increase gas production in 2018», *Azernews*, 26 December 2017. https://www.azernews.az/region/124629.html (last consulted: September 2018)

exporting gas to China in mid-2012. While Central Asia has a large amount of oil and gas, the region's processing capacity is low, and many of the refined products consumed are imported from Russia via Kazakhstan, which suffers its own shortages.

Tashkent supplied 5.6 bcm of gas to Russia and 4.3 bcm to China in 2016. With output falling overall, those increasing exports may result in more regular gas outages in the capital, which has so far experienced less shortages than the rest of the country[74].

The African continent

The African continent has recently experienced some of the most interesting findings in the energy sector for decades. The huge discoveries of natural gas off the coast of Mozambique and Tanzania have raised the prospects of new LNG shipments from these two countries in just few years. This has triggered an increased interest in these sub-Saharian countries by many Asian nations, especially Japan and China. It is not an accident that on his first foreign trip the then newly elected Chinese President Xi Jinping decided to come to Tanzania to discuss and finalize energy agreements with the authorities in Dar-es Salaam. European companies have tried to get a share of the future revenues of the Rovuma Basin gas field. In July 2014, ENI CEO, Claudio Descalzi, asserted that the proven reserves in the area could cover the gas consumption of a nation like Italy for the next thirty years.

As far as oil is concerned, Nigeria represents a key factor in the African continent. In 2009 the EU signed the Nigeria-EU Joint Way Forward which outlined the geostrategic objectives of the cooperation between Brussels and Abuja. Nigeria is the biggest African economy and has the second largest oil reserves of the continent. Therefore, European companies are interested in the Nigerian oil but the recent security issues in the Niger Delta and the increasing piracy activities off the coasts of the Gulf of Guinea have hampered oil supplies from this Western African country and from the nearby Ghanaian Jubilee oil offshore field. Nigeria signed a treaty with Niger and Algeria in 2009 to build the Trans Saharan Gas Pipeline, which would cost $12 billion pipeline and run over 4,400 km. However, despite an initial funding of 400 million dollars in 2013, the pipeline has remained a dream for the Nigerian government. The main reason lies in the precarious security situation in the country. Investors are aware that Nigeria is currently not able to sustain its obligations to neighbouring African nations via the West Africa Gas Pipeline Company, and this is largely due to insecurity in the Niger Delta[75].

Security constitutes a relevant factor in the African area and the EU has become more and more involved in this sector. The clearest example of EU involvement in the African energy security area is represented by the EU Naval Force Atalanta naval operation in the Gulf of Aden, where the frequent attacks on oil tankers in this pivotal shipping route had constituted a source of concern for European businesses.

[74] Ibidem

[75] B. BUNGANE, «Nigeria: Trans-Saharan Gas Pipeline Project behind schedule», *ESI Africa*, 14 March 2018. https://www.esi-africa.com/nigeria-trans-saharan-gas-pipeline-project-remains-a-dream/ (last consulted: October 2018)

Another important player in the African oil scenario is Angola. Angola is the second-largest oil producer in Sub-Saharan Africa, behind Nigeria. The country experienced an oil production boom between 2002 and 2008 as production started at several deepwater fields. In 2007, Angola became a member of the Organization of the Petroleum Exporting Countries.

Angola has been the fourth-largest supplier of crude oil to China since 2005, behind Saudi Arabia, Russia and Iran. The United States, the European Union, and India are also major destinations for Angolan oil. However, US imports of Angolan crude oil continue to decline because of increased US production.

Angola currently produces small quantities of marketed natural gas as the vast majority of the country's gross production is flared or re-injected into oil wells. However, in June 2013, Angola began exporting liquefied natural gas (LNG), following the completion of the LNG plant at Soyo, which has the capacity to produce 5.2 million tons of LNG per annum[76]. It is composed of a consortium of world renowned oil and gas companies which include Sonangol (22.8%) and affiliates of Chevron (36.4%), Total (13.6%), BP (13.6%), and ENI (13.6%). Angola hopes to commercialize more of its natural gas resources for export and for domestic consumption[77].

As already mentioned, Angola is sub-Saharian Africa's second-biggest crude producer, pumping about 1.54 million barrels a day and sells about half its output to China. The Asian nation was among the first to finance Angola's rebuilding after a 27-year civil war ended in 2002, offering oil-backed loans to fund construction projects as European and other donors imposed conditions such as improving democracy and transparency. However, due to a steady decrease in production Angola's government is facing financial turbulence as Luanda is seeking to re-pay the money that it borrowed from Beijing.

Equatorial Guinea, a tiny nation on Africa's Atlantic coast, is Africa's fourth largest LNG exporter. In 2004 BG Group, a British natural gas company, agreed to buy Equatorial Guinea's gas until 2020 at a price linked to the US Henry Hub natural gas spot market with the intent of liquefying and selling it to US customers. After the LNG demand market shifted to Asia, BG Group started selling the gas there for about three or four times US prices (which plummeted after the shale revolution). In pledging to purchase all Equatorial Guinea's 3.4 million tonnes yearly LNG production, BG Group - later acquired by Shell – undersigned one of the industry's most lucrative LNG deals.

The agreement is a lesson to other LNG producing countries. Probably, if Equatorial Guinea knew this gas was going to be sent to Asia, it would have tried to seek better terms. This deal constituted a clear financial damage to the Equatorial Guinea government.

Over the past few years, Noble Energy made discoveries worth 600 billion cubic feet of natural gas and plans to build a 65-kilometer pipeline to bring the fuel to Punta Europa on Bioko Island.

[76] Official data from the company

[77] I. SLAV, «Angola Faces Oil Industry Crisis», *Oilprice.com*, 7 March 2018. https://oilprice.com/Energy/Energy-General/Angola-Faces-Oil-Industry-Crisis.html (last consulted: September 2018)

Equatorial Guinea has only one plant with one unit, or train, on the Bioko Island with about 3.4 million metric tons of annual capacity[78].

The Equatorial government is devising new legislation in order to increase royalties from future LNG deals close to 50 percent, compared with 12.5 percent contained in current arrangements with Shell (that acquired BG in 2015). The country is also an important oil producer in Subsaharan Africa with 180,000 barrels of oil per day in 2018.

In Africa, a country has been recently tipped to become the largest gas producer in the region in the near future, i.e. Mozambique. Around 180 trillion cubic feet of gas lie in Mozambique's offshore Rovuma Basin. This would be enough to supply Germany, Britain, France and Italy for 20 years. The offshore fields in the Rovuma Basin are developed by US oil major Anadarko and Italy's Eni. Anadarko is currently planning to build an LNG plant to process the gas they discovered in Area 1, off the northern coast of Mozambique near the border with Tanzania: the terminal would be operative as of 2022[79]. In 2017, Eni announced the construction of a Floating Liquified Natural Gas (FLNG) production facility in Area 4, which is also due for completion in 2022 and which would be quicker to complete than an onshore facility[80].

However, some industry analysts say Mozambique may struggle to meet its target date as the start of LNG exports. They argue that timing is key as new supplies enter the energy market from West and East Africa and the global supply/demand pattern is changing, with the United States moving from energy importer to exporter.

Of the total global LNG supplies, about 70 percent is consumed by China, South Korea, India, Japan and Taiwan, and experts suggest that these are the customers Mozambique would aim to supply. Under the new Mozambique national legislation for the energy sector, foreign operators who win licenses to explore for oil and gas must do so in partnership with state oil company ENH. The law also says that 25 percent of all gas and oil produced should go to the domestic market.

In July 2014 ENI CEO, Claudio Descalzi, asserted that the proved reserves in Mozambique could cover the gas consumption of a nation like Italy for the next thirty years. According to ENH, more than 30 billion dollars will be invested initially in Mozambique's natural gas sector to build capacity to produce 20 million tonnes per year of liquefied natural gas (LNG), with the first exports due to start in 2022. The investments will be made to develop the northern ports of Pemba and Palma, where a giant logistics base and LNG production plants are planned[81].

The target markets lie in East and South Asia, where demand for natural gas has been growing fast and prices over the past few years have tended to be the highest in the world. So far Maputo has been supplying only South Africa with its gas: in 2003, South African energy and chemical

[78] O. VUKMANOVIC, «Exclusive: Equatorial Guinea in LNG sale talks as Shell deal winds down», *Reuters*, 10 May 2018. https://www.reuters.com/article/us-equatorial-guinea-lng-deals-exclusive/exclusive-equatorial-guinea-in-lng-sale-talks-as-shell-deal-winds-down-idUSKBN1IB22Y (last consulted: September 2018)

[79] M. MUCARI, «Anadarko wins approval for work on Mozambique gas project», *Reuters*, 7 February 2018. https://www.reuters.com/article/us-anadarko-petrol-mozambique/anadarko-wins-approval-for-work-on-mozambique-gas-project-idUSKBN1FR1QB (last consulted: September 2018)

[80] Data from www.export.gov

[81] Vv. Aa., «US, Italy firms ink multibillion dollar mining deals in Mozambique», *Journal du Cameroun*, 12 August 2017. https://www.journalducameroun.com/en/us-italy-firms-ink-multi-billion-dollar-mining-deals-in-mozambique/ (last consulted: September 2018)

company, Sasol, found onshore gas reserves for 2.6 tcf. The following year Sasol built a 500-mile pipeline to supply South Africa with Mozambique's natural gas[82].

Top leaders from the world's biggest LNG-consuming countries have stepped up diplomatic actions to East Africa in hopes of encouraging natural gas (and coal) exports to their nations. Heads of state in China, Japan and South Korea all welcomed Mozambican efforts in its LNG export strategy. China already has strong trade and aid ties with Mozambique, having built and paid for its foreign ministry building, parliament building and presidential palace.

Tanzania estimates it has 41.7 trillion cubic feet (tcf) of recoverable natural gas reserves. Discoveries offshore of Tanzania and Mozambique waters have led to predictions portraying the region as the world's third-largest exporter of natural gas.

In Tanzania, Statoil, BG Group, Ophir Energy and ExxonMobil are teaming up to look at building that country's first LNG export terminal in the southeastern town of Lindi. Tanzanian government has insisted it wants only one LNG project associated with the more than 30 tcf of reserves found in BG-operated Block 1 and Statoil-operated Block 2.

Statoil, which has discovered as much as 20 trillion cubic feet of natural gas in Block 2, and BG, which says recoverable volumes are as much as 15 trillion cubic feet in three neighboring blocks, seek to build an LNG plant to export gas to Asia, profiting from rising demand in the region. Statoil, Norway's biggest energy company, is targeting another 5 to 15 trillion cubic feet as it plans as many as a dozen wells off Tanzania over the next two years. However, in summer 2018, Tanzania's government stated that construction of the LNG plant will only start in 2022[83].

The prospects for natural gas production has attracted the Chinese attention. President Xi Jinping flew to Tanzania in March 2013 on his first foreign tour after assuming office. In fact, Tanzania was the first African country that he visited after he took office as the Chinese president in 2013. In the capital, Dar es Salaam, President Xi Jinping and Tanzanian President Jakaya Kikwete signed agreements for development projects that would bring in 800 million dollars of aid from China[84].

The civil war in Libya has led to a disastrous stalemate in the oil production in the country. Attacks on oil fields and blockage of harbours have seriously hampered oil exports from the country. Despite the unrest, the natural gas pipeline Greenstream bound to Italy is operating normally. Though, the persistent tribal violence in the country could lead again to the suspension of the gas flow from the Melittah terminal like in fall 2013. The political situation in Algeria is stable. The ailing and aged President Bouteflika was recently re-elected and the country, together with Morocco, was the only one that survived the Arab Spring syndrome. The North-African country is believed to possess vast shale resources: Algeri plans to explore shale gas reservoirs deep in the south but needs foreign expertise and the support of the local population, whose protests in 2015

[82] N. FORD, «More than just pipe dreams: Mozambique's gas may power its expansion», *The Africa Report*, 7 September 2016. http://mozambique-oil.blogspot.com/2014/06/ (last consulted: September 2018)
[83] S. KAMNDAYA, «Tanzania's Natural Gas Plant Construction to Start in 2022», *Allafrica*, 26 June 2018. http://www.thecitizen.co.tz/News/1840340-4631622-1nh62kz/index.html (last consulted: September 2018)
[84] Vv. Aa., «Chinese president Xi visits Tanzania», *The New Times*, 25 March 2013. https://www.newtimes.co.rw/section/read/64222 (last consulted: September 2018)

stopped earlier productions attempts[85]. Algeria ranks third globally after China and Argentina in technically recoverable shale gas reserves with around 700 tcf of reserves[86].

The oil and gas production in Algeria is not expected to rise in the future despite recent discoveries, also in the shale resources, as investments in the country carried out by foreign energy companies have slowed by reason of the widespread corruption in the country. Nevertheless, Algeria keeps on being the third largest supplier of natural gas to the EU and its network pipelines to Italy and Spain are vital for the EU energy security strategy.

The new Chinese economic interests in the African continent have led to strong partnerships between Beijing and other African capital. Angola represents the second oil supplier for the Chinese market[87]. Moreover, China is also interested in the oil field in South Sudan and Nigeria.

The American continent

The United States shale boom is among the best recent examples of how local gas production can drive down the cost of gas and promote domestic consumption. Between 2005 and 2017, US shale gas production increased from 20bcm to over 450bcm per year, resulting in a total increase in US gas production of more than 50% over that period. Such dramatic growth in supply led to a significant decline in gas prices. Prior to the shale boom, wholesale gas prices frequently exceeded $8/MMBtu in North America, whereas in the last two years they have regularly dropped below $2/ MMBtu. Such a dramatic price decline quickly led to gas becoming more competitive with other fuels and gaining share across all sectors of energy use in the US.

The shale revolution with the state-of-the-art extraction techniques as hydraulic fracturing has dramatically changed the future of world energy market. Yet, it is not clear how long this oil bonanza will last. The International Energy Agency predicts that American oil output will continue to climb over the next few years, reaching a high in 2020 and then stabilising in the 2020s. The IEA foresaw that US tight oil production - which draws largely from the Bakken in North Dakota and the Eagle Ford in Texas - will peak around 2020 before declining. The new analysis puts an end to the '100 year supply myth' widely boasted by industry and casts a more skeptical assessment of a US tight oil peak to happen over the next decade. However, by 2023 US export capacity is expected to more than double from current levels to about 4.9 million barrels per day[88].

The US undoubtedly has huge shale reserves but it is impossible to be sure about their size. An example of this unpredictability lies in the oil assessment of the Monterey Shale formation, once estimated to contain about two-thirds of the nation's shale oil reserves. Since 2011 it had experienced an enormous bonanza, reducing the California's need for foreign oil imports through the use of the latest fracking techniques (that allow to extract oil from way deeper layers of rocks than traditional extraction technologies). Though, in May 2014 federal energy authorities have

[85] L. CHIKHY, «Algeria's Sonatrach hopes for Exxon Mobil deal on shale gas», *Reuters*, 24 May 2018. https://www.reuters.com/article/us-algeria-energy/algerias-sonatrach-hopes-for-exxon-mobil-deal-on-shale-gas-idUSKCN1IP369 (last consulted: October 2018)

[86] A. HENNI, «Algeria Aims To Develop Shale Gas Despite Challenges», *Hart Energy*, 18 January 2018. https://www.epmag.com/algeria-aims-develop-shale-gas-despite-challenges-1679136 (last consulted: October 2018)

[87] Y. CHAZAN, «Angola's debt reliance on China may leave it short-changed», *Financial Times*, 13 June 2018. https://macauhub.com.mo/2018/02/27/pt-angola-segundo-principal-fornecedor-de-petroleo-a-china-em-janeiro/ (last consulted: September 2018)

[88] Vv. Aa., «Oil 2018», International Energy Agency, 5 March 2018, available at https://www.iea.org/oil2018/

reduced by 96% the estimated amount of recoverable oil buried in California's vast Monterey Shale deposits. At that time, in fact, the US Department of Energy said that just 600 million barrels of oil could be produced with existing technology, far below the 13.7 billion barrels once thought recoverable[89]. As one can understand, the pace of technological progress can deeply alter the assessments related to monitoring and production of shale formations.

Nevertheless, the real game changers for the South American energy production lie in Venezuela and Brazil. Venezuela has the largest proven oil reserves in the world. However, their deep location does not facilitate its extraction: Caracas would require substantial foreign funding and the business environment present in the country as well as the bleak economic crisis hinder large-scale investments. In Brazil, the huge offshore oil and gas reserves require technological expertise to be extracted: the extraction techniques of the pre-salt resources are extremely costly and a low oil price would damage any concrete production plan. Moreover, the current economic woes in the country and the endemic corruption in the public life in Brasilia could gravely hamper future extraction prospects.

With regard to the American continent, Mexico is a major non-OPEC oil producer and is among the largest sources of US oil imports. Mexico's oil production has declined in recent years, as has its position as a net oil exporter to the United States. Notably, crude oil production is decreasing every year and in 2018 stood at 2 million barrels of oil per day. Mexico is a significant (the third largest in the American continent) but declining net crude exporter, and the country is a net importer of refined petroleum products. Mexico has no international oil pipeline connections[90]. Mexico supplied just 8% of U.S. crude imports in 2017, compared to 16% in 2004. Most of its exports are shipped by tanker from three export terminals on the Gulf Coast in the southern part of the country. Mexico is a net importer of natural gas, mostly via pipeline from the United States, and its natural gas demand is rising because of greater use for power generation[91].

Mexico is a net importer of natural gas, with most imports arriving via pipeline from the United States. As US shale gas output boomed, North American natural gas prices fell, and Mexico's consumption increased. In 2018, US natural gas exports to Mexico accounted for nearly 90% of Mexico's natural gas imports. The United States imports a small amount of natural gas from Mexico, and the trade imbalance is expected to increase even further as recent supply and demand trends in both countries are projected to continue. Mexico meets some of its natural gas demand with LNG. However, all three of Mexico's regasification terminals will become largely idle once the the Sur de Texas-Tuxpan and the Manzanillo-Guadalajara pipelines from the States come

[89] L. SAHAGUN, «U.S. officials cut estimate of recoverable Monterey Shale oil by 96%», *Los Angeles Times*, 20 May 2014. http://www.latimes.com/business/la-fi-oil-20140521-story.html (last consulted: October 2018)
[90] R. PATTERSON, «Why Mexico's Oil Production Could Fall Even Further», *Oilprice.com,* 20 August 2018. https://oilprice.com/Energy/Energy-General/Why-Mexicos-Oil-Production-Could-Fall-Even-Further.html (last consulted: September 2018)
[91] J. CLEMENTE, «Mexico's New President To 'Respect' Oil And Gas Reforms, Maintain Energy Alliance With U.S.», Forbes, 5 July 2018. https://www.forbes.com/sites/judeclemente/2018/07/05/the-u-s-mexican-oil-and-natural-gas-alliance-will-remain-strong/#6702766e749e (last consulted: September 2018)

online in 2019. Once all pipelines are in service, import gas capacity will increase by 6.2 billion cubic feet per day (Bcf/d) to over 11 Bcf/d[92].

Mexico has clearly benefitted from the cheap gas coming from the States. American gas exports to the Central American country, which are travelling via pipeline, are at their highest levels ever. Over the last decade, U.S. gas exports to Mexico via pipeline have more than tripled, to 4.9 billion cubic feet per day (bcfd) in August 2018[93]. Mexico's need for additional power derives from the fact that more and more global manufacturers are moving operations there to take advantage of cheap labour and energy prices in the country. Imports of cheap US shale gas have reduced energy costs for companies in Mexico by 37% over the past decade[94]. Therefore, for many American countries Mexico is now a cheaper manufacturing hub than China. The auto industry is one major manufacturer taking advantage of this new production environment. In fact, Mexico (together with Canada) now assembles a quarter of all vehicles imported into the United States[95].

The future of Mexican car production could change with the new trade agreement between US, Canada and Mexico (USMCA) that was signed in November 2018. Under the new deal (which replaced NAFTA), 75% (up from 62.5%) of the parts that go into a vehicle must be produced in the region to qualify for tariff-free treatment, a measure aimed at boosting US own production. Besides, according to the text of the agreement, cars must be assembled by workers earning at least 16 dollars an hour (another blow to Mexican cheap-labour production).

After generations of state control, Mexico's vast oil and gas reserves opened for business to the international market. In fact, in December 2013, Mexico's Congress voted to break up the longstanding monopoly held by the state-owned oil giant Petroleos Mexicanos, commonly called Pemex, and to open the nation's oil and gas reserves to foreign companies. The new Mexican President, Lopez Obrador, vowed not to scrap this important legislative bill.

Brazil holds 13 billion barrels of proved oil reserves, the second largest in South America after Venezuela. Oil production in Brazil totalled 2.07 million barrels per day on average in 2018[96]. The largest share of Brazil's natural gas production occurs in offshore fields in the Campos Basin in Rio de Janeiro state: a region that produces more than 85% of Brazil's crude oil. Most onshore production occurs in the states of Amazonas and Bahia and is mostly for local consumption due to the lack of transportation infrastructure. In order to meet rising demand and decrease reliance on imports, Petrobras, the largest energy company in Brazil, has planned to increase existing production in the southeast and bring several new natural gas projects operational over the

[92] Vv. Aa., «Mexico to cut most LNG imports», *Argus Media*, 30 August 2018. https://www.argusmedia.com/en/news/1745348-mexico-to-cut-most-lng-imports-cfenergia (last consulted: September 2018)
[93] A. G. LUZ, «Rising U.S. natural gas exports to Mexico capped by pipe delays», *Reuters*, 10 August 2018. https://www.reuters.com/article/us-usa-mexico-natgas/rising-u-s-natural-gas-exports-to-mexico-capped-by-pipe-delays-idUSKBN1KV2B3 (last consulted: October 2018)
[94] T. MAVERICK, «U.S. Natural Gas Export Boom Quietly Begins», *Wall Street Daily*, 3 September 2014. https://www.wallstreetdaily.com/2014/09/03/mexico-natural-gas/ (last consulted: October 2018)
[95] J. CASSIDY, «Don't Believe the Hype About Trump's Trade Deal with Canada and Mexico», *New Yorker*, 2 October 2018. https://www.newyorker.com/news/our-columnists/why-trumps-trade-deal-with-canada-and-mexico-may-not-change-much-for-american-carmakers (last consulted: October 2018)
[96] Data from US Energy Information Administration

coming years. The largest is the offshore Mexilhao project, which contains estimated total reserves of eight trillion cubic feet.

The recent announcements about discoveries in Brazil's offshore pre-salt layer have generated excitement about new gas production. Along with the potential to significantly increase oil production in the country, the pre-salt areas are estimated to contain sizable natural gas reserves as well. Though, the real amount of oil and gas pre-salt reserves off the coast of Rio de Janeiro have not been yet determined. As far as oil is concerned, the viability of the extraction of pre-salt resources, especially in the Lula oil field, could be undermined if the Brent crude price would fall below 70-80 dollars per barrel.

Brazil now supplies 67 percent of its own demand for natural gas. Bolivia accounted for over 80% of Brazilian gas imports. Petrobras is currently the sole importer of LNG and owns three FSRU terminals in the states of Rio de Janeiro, Bahia and Ceara[97]. Over the last two years, the nation's imports of liquefied natural gas sank 75 percent as domestic production climbed. Pre-salt drilling has unleashed a flood of Brazilian gas supply, helping to push production almost 60 percent higher in the past five years and sending LNG imports tumbling to the lowest since 2011 in 2017[98].

Brazil is a leading producer of bio-fuels: Brasilia is the second largest producer after United States and one of the leading exporters of bio-fuels. The EU and Brazil are natural partners in the area of bio-fuels production and technology. Brazil's co-operation is also important in forging an effective regime to control climate change. Deforestation threatens the Amazon Forests in Brazil with 20,000 square kilometers of rainforests that are lost annually. In this regard, conservation of the Amazon has been one of the key priorities of EU-Brazil strategic partnership. It is undeniable that energy and sustainable development are the building blocks of relationship between EU and Brazil. Co-operation in field of biofuels production constitutes the basis of energy relations between the two partners. Therefore, the EU and Brazil have a shared interest in promoting biofuels trade and collaborations in the field of biofuel research.

Proved natural gas reserves in Peru amounted to 14 trillion cubic feet in 2017, the second largest in Central and South America after Venezuela. Crude oil production in Peru has been declining since the mid-1990s. Peru became a natural gas exporter in 2010 when it commissioned South America's first liquefied natural gas (LNG) plant, Melchorita, owned by the Peru LNG consortium (US-based Hunt Oil with 50%, SK Energy with 20%, Repsol YPF with 20%, and Marubeni with 10%). The plant currently has a capacity of 4.4 million tonnes a year[99].

In 2017, Spain was the main importer of Peru's LNG shipments, with almost two-thirds of the cargoes exported by the South American country. This is an interesting figure if compared to the

[97] I. GOMES, «The vanishing LNG Market in Brazil», *Oxford Institute for Energy Studies*, April 2017, available at https://www.oxfordenergy.org/wpcms/wp-content/uploads/2017/04/The-vanishing-LNG-market-in-Brazil.pdf
[98] S. VALLE, «Latin American Giant's Hunger for Foreign Gas Ebbs Amid Oil Boom», *Bloomberg*, 27 March 2018. https://www.bloomberg.com/news/articles/2018-03-27/latin-american-giant-s-hunger-for-foreign-gas-ebbs-amid-oil-boom (last consulted: September 2018)
[99] R. MARTINEZ, «Peru Signals Natural Gas Push In South America», *Hart Energy*, 7 October 2017 https://www.epmag.com/peru-signals-natural-gas-push-south-america-1642206 (last consulted: September 2018)

location of the plant (on the Pacific coast): the natural market should be the Asian one, where prices are generally higher than those in Spain[100].

As the largest oil and natural gas producer in the Caribbean, Trinidad and Tobago's hydrocarbon sector moved from an oil dominant to a mostly natural gas based sector in the early 1990s. In 2018, Trinidad and Tobago was the world's seventh largest LNG exporter[101].

Trinidad and Tobago houses one of the largest natural gas processing facilities in the Western Hemisphere. The Atlantic LNG is the only export terminal of the Caribbean country. Atlantic LNG operates four liquefaction units (trains). Train 4, with a 5.2 million metric tonnes per annum production capacity, is among the world's largest LNG train in operation. Oil production in Trinidad and Tobago peaked at 179,000 bbl/d in 2006, however, it has declined year-over-year since then. The decline has been attributed to maturing oilfields and operational challenges. Trinidad and Tobago ships its LNG to the China, India, the UK, and Thailand[102].

Though, the real game changer in the LNG exports from Trinidad and Tobago could be the Middle Kingdom: Xi Jinping's visit to Port of Spain in June 2013 constituted a clear indication of Beijing's interest in future LNG shipments from the Caribbean country. Trinidad and Tobago has an interesting investment climate and is classified by Canada's Fraser Institute as the third most attractive country in the Caribbean area for foreign investors. In 2014, Shell acquired Trinidad and Tobago's LNG assets owned by Repsol and in 2014 China Investment Corporation bought GDF Suez's 10 per cent of Atlantic LNG's Train 1: these two examples show the interest of foreign companies for this tiny Caribbean country. In a sign of positive cooperation, Chinese Premier Li Keqiang and Prime Minister Keith Rowley from Trinidad and Tobago met in Beijing in May 2018[103].

But there is another reason for the burgeoning relationship between China and Trinidad. Traditionally, the US has been the main export destination for the twin-island Caribbean nation's liquefied natural gas (LNG), of which it is one of the largest producers in the world[104]. However, with the shale gas revolution underway in the US, it will rely less and less on Trinidad's LNG, so it is desperately looking to diversify its export markets. Moreover, with the Panama Canal expansion (accomplished in June 2016), exporting LNG to Asia has become cheaper and quicker. Moreover, in 2017 British Petroleum revealed two large discoveries offshore, which could unlock an extra 2 trillion cubic feet of gas, roughly the annual consumption of Egypt[105].

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[100] R. SONGER, «Spain sees record number of Peru LNG cargoes in 2017», *ICIS*, 14 November 2017. https://www.icis.com/resources/news/2017/11/14/10163540/spain-sees-record-number-of-peru-lng-cargoes-in-2017/ (last consulted: September 2018)

[101] R. COLLINS, «Trinidad Inks Gas Deal With Venezuela to Continue LNG Exports», *Bloomberg*, 25 August 2018. https://www.bloomberg.com/news/articles/2018-08-25/trinidad-inks-gas-deal-with-venezuela-to-continue-lng-exports (last consulted: September 2018)

[102] S. ZAWADZKI, «As Trinidad LNG output grows, cargoes flow far afield», *Reuters*, 10 May 2018. https://www.reuters.com/article/us-trinidadtobago-lng/as-trinidad-lng-output-grows-cargoes-flow-far-afield-idUSKBN1IB2BL (last consulted: September 2018)

[103] W. LI, China, «Trinidad and Tobago sign Belt and Road memorandum», *GBTimes*, 15 May 2018. https://gbtimes.com/china-trinidad-and-tobago-sign-belt-and-road-memorandum (last consulted: September 2018)

[104] Official data from the Ministry of Energy and Energy Industries of Trinidad and Tobago.

[105] R. COLLINS, «Trinidad Inks Gas Deal With Venezuela to Continue LNG Exports», *Bloomberg*, 25 August 2018. https://www.bloomberg.com/news/articles/2018-08-25/trinidad-inks-gas-deal-with-venezuela-to-continue-lng-exports (last consulted: September 2018)

Venezuela's oil output decreased dramatically since the political and economic crisis hit the country in mid-2016: currently the production stands at around 1.3 barrels of oil per day in 2018[106]. Venezuela's oil reserves are the largest in the world and the vast majority is located in the Orinoco heavy oil belt. Venezuela's Orinoco Belt may contain up to 513 billion barrels of crude oil[107]. However, much of the resource is heavy and requires relevant capital and state-of-the-art technology in order it to be produced. The high costs of extraction technologies necessary to use the Orinoco oil sands need large national public investment as well as strong financial backing from foreign energy companies. Unfortunately, the rampant inflation in the country and the political instability constitute two sizable obstacles to foreign investments.

US constitute the largest market for the Venezuelan oil exports. In fact, despite the sanctions and the mutual hostility, the United States is Venezuela's biggest oil market, larger than China or Russia, two of Caracas' biggest allies. U.S. currently accounts for more than 45 percent of the troubled country's oil production[108]. In spite of President Trump's fiery remarks, no US sanction has been deployed on Venezuelan oil exports. Before the economic crisis of 2016, Venezuela's state oil company (PDVSA) had sought additional financing from partners that participated in projects in the Orinoco Heavy Oil Belt. In fact, it aimed at ramping up heavy oil production to as much as 4 million barrels a day by the end of 2019. A level which seems impossible to reach given the current global oil production capacity in the country.

Venezuela has the second-largest natural gas reserves in the American continent, behind the United States. Much of the natural gas is employed to support production in its mature oil fields. In 2018, Venezuela had 5,617 bcm of proved natural gas reserves, which gave Caracas the eighth largest total of proved natural gas reserves in the world. However, approximately 90% of the country's natural gas reserves are associated with oil[109].

In recent years, Venezuela has improved its 2,750-mile domestic natural gas pipeline transport network to allow greater domestic movement and use of natural gas with the roughly 190-mile Interconnection Centro Occidente (ICO) system. The ICO connects the eastern and western parts of the country, making natural gas more easily available for domestic consumers and for reinjection into western oil fields.

In September 2008, Venezuela signed initial agreements to create three joint venture companies to pursue liquefied natural gas (LNG) projects along the northern coast of the country. Though, continued negotiations, technical difficulties, and political concerns are likely to delay the planned start date for the first LNG export terminal, Gran Mariscal Ayachucho.

Russia and China have been lured by the viable prospects of the Orinoco heavy oil belt. In March 2014, Venezuela signed a memorandum of understanding with Russia's state-run Rosneft, the world's largest publicly traded oil company by output and reserves, for two billion dollars in

[106] Vv. Aa., «Country Analysis Brief: Venezuela», *US Energy Information Administration*, 21 June 2018, available at https://www.connaissancedesenergies.org/sites/default/files/pdf-pt-vue/venezuela_0.pdf
[107] D. GRAEBER, «Venezuela facing compounding oil woes», *UPI*, 10 August 2018. https://www.upi.com/Venezuela-facing-compounding-oil-woes/8481533904133/ (last consulted: September 2018)
[108] I. SLAV, «Venezuela Sends More Crude To The U.S. Despite Production Woes», *Oilprice.com*, 5 August 2018. https://oilprice.com/Energy/Crude-Oil/Venezuela-Sends-More-Crude-To-The-US-Despite-Production-Woes.html (last consulted: September 2018)
[109] Data from World Energy Council

financing for oil projects in Venezuela. In the same year, China agreed to lend Venezuela 5 billion dollar, the third tranche of the China-Venezuela Fund. It must be noted that Caracas received by Beijing over 50 billion dollars in loans over a decade in return for oil shipments[110]. Given the high level of debt vis-à-vis China, the Venezuelan government is facing financial hardship in re-paying its loans to Beijing.

The biggest issue for Venezuela is what to do with its immense deposits of tar sands (also known as oil sands). If one counts the technically recoverable oil estimated to lie along the Orinoco River, then Venezuela has bigger oil reserves than any other state, including Saudi Arabia – around 300 billion barrels of oil. The real question about the matter is whether it is economically feasible to produce that oil. The process is energy intensive, costly, and environmentally questionable.

Environmentalists have attacked Canada for producing oil from its tar sands in Alberta. Venezuela's effort could turn out to be even more difficult and more costly, in terms of environmental impact. Under former President Chavez, Caracas' economy became even more reliant on the oil industry notwithstanding the loss in production. In the mid-1990s, Venezuelan production spiked at around 3.5 million barrels of oil a day. In 2013, it was closer to 2.5 million barrels a day and now just 1.3 barrels are produced daily. In the 1990s, Venezuela implemented some plans to transform its tar sands into a lighter crude, known as syncrude. The facilities have an output capacity of 600,000 barrels per day[111]. Venezuela could use more investment to develop its tar sands, but that again would require foreign aid and investment: two tools that President Maduro cannot currently afford.

Currently, despite their financial hardship and economic crisis, Argentina is trying to develop its large and vast shale formations, mostly found in the Vaca Muerta area. Industry experts believe that level of productivity can compete with any of the shale formations at the centre of the US oil and gas boom, such as the Permian basin in Texas or the Bakken area in North Dakota.

Vaca Muerta's current production of about 160,000 barrels of oil a day could grow to almost 900,000 barrels of oil per day by 2024 if the country can attract four billion dollars of investment a year[112]. Some prediction by industry executives even hint at the fact that once the Vaca Muerta project will be in full swing, the United States and Argentina will together account for 30% of the world's gas production[113]. Vaca Muerta has an estimated 308 trillion cubic feet of technically recoverable shale gas resources: second only to the Eagle Ford field in Texas. The Argentinian government plans to expand the production at the field as to stop LNG imports by 2022[114].

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[110] A. ULMER, «Venezuela says better oil loans deal reached with China», *Reuters*, 16 May 2016 https://www.reuters.com/article/us-venezuela-economy/venezuela-says-better-oil-loans-deal-reached-with-china-idUSKCN0Y71VB (last consulted: September 2018)

[111] Data from US Energy Information Administration https://www.csmonitor.com/Environment/2013/0307/What-will-Venezuela-do-with-its-oil-Top-five-energy-challenges-after-Chavez/The-Orinoco-Belt (last consulted: September 2018)

[112] C. NEEF, «Unlocking the potential of Argentina's oil and gas resources», *Financial Times*, 24 September 2018. https://www.ft.com/content/b0bd3358-b10b-11e8-87e0-d84e0d934341 (last consulted: October 2018)

[113] Vv. Aa., «Argentina's Vaca Muerta field: the world's second-largest shale gas deposit», *BBVA*, 16 December 2017. https://www.bbva.com/en/vaca-muerta-worlds-second-largest-shale-gas-deposit/ (last consulted: October 2018)

[114] J. ESPARZA, «Argentina seeking increased natural gas production from shale resources to reduce imports», *US Energy Information Administration*, 10 February 2107.https://www.eia.gov/todayinenergy/detail.php?id=29912 (last consulted: October 2018)

Asian region and Australia

It is in the Asian region that part of the EU energy future will be decided. A thorough scrutiny of the Australian LNG programme is pivotal to get a clearer picture over the long-term energy opportunities for the EU. With regard to oil production, the region has been a net importer of oil since the mid-1990s. Indonesia remains the largest oil producer, at around 800 thousand barrels per day in 2018 but it became a net importer in 2004.

The South East Asian region remains a net exporter of natural gas, but volumes are declining due to growing domestic needs and as many of the key producing fields are mature and declining in output. Brunei Darussalam was the first country in Southeast Asia to export liquefied natural gas (LNG) starting in 1972, and remains an important LNG exporter today. Malaysia and Indonesia were also pioneers in LNG trade and remain in the top five exporters globally. However, Malaysia and Indonesia recently started importing LNG, as in both cases extra supply is needed to satisfy rising domestic needs while respecting long-term export contracts. Malaysia was the world's third-largest exporter of liquefied natural gas after Qatar in 2017[115]. However, the country's growing domestic demand compelled Kuala Lumpur to open its first regasification facility as another source of imports. Malaysia's natural gas production has risen over the past two decades to serve the growing domestic demand and export contracts. Recent foreign investment in deepwater and technically difficult fields provides impetus to maintain natural gas production levels over the next few years.

Thailand and Singapore are reliant on LNG imports and look set to be joined by Vietnam, the Philippines and Myanmar in the coming years. The increasing development of LNG regasification terminals in the region is linked to the limited intra-ASEAN gas pipeline infrastructure and countries' desire for flexibility in gas procurement. Limitations in pipeline connections mean that piped gas trade in the region consists of Indonesia and Malaysia exporting gas to Singapore, and Myanmar exporting gas to Thailand and China[116]. In fact, Rangoon has started pumping oil in the pipeline bound to the Chinese southern province of Yunan. The parallel natural gas pipeline from Myanmar to China started to operate in 2013 and has been providing two bcm of natural gas per year[117].

Australia is the world's second-largest coal exporter (now Beijing has overtaken Canberra in the world production) and the second-biggest liquefied natural gas (LNG) exporter (behind Qatar). Australia's dependence on oil imports has increased to fill the growing gap between domestic consumption and production: it is a trend which can be found in many countries throughout the world and is often linked to the decline curve production of mature oil (and gas) fields. Australia's

[115] J. JAGANATHAN, «Malaysia LNG exports hit 4-yr low on pipeline issues», *Reuters*, 8 August 2018. https://fairplay.ihs.com/tankers/gas/article/4304086/malaysia-bets-on-lng-shipping-to-unlock-more-gas-market-access (last consulted: September 2018)

[116] Vv. Aa., «Southeast Asia Energy Outlook 2017», *International Energy Agency*, 24 October 2017, available at https://www.iea.org/southeastasia/ (last consulted: September 2018)

[117] A. NUSSBAUM, «China Opens Delayed Myanmar Oil Pipeline to Get Mideast Crude Faster», *Bloomberg*, 11 April 2017. https://www.bloomberg.com/news/articles/2017-04-11/china-opens-delayed-myanmar-oil-link-to-get-mideast-crude-faster (last consulted: September 2018)

overall oil production has plummeted since 2000, although new technologies breakthroughs are expected to offset declines in mature fields over the next few years[118].

Australian natural gas production has starkly increased over the past decade with the exploitation of new fields. As a result, Australia has become a leading LNG exporter in the Asia-Pacific region and beyond. Greater expected natural gas production and new LNG capacity in the next few years is likely to boost natural gas exports even more. A large chunk of its LNG exports are bound Japan: Tokyo is the largest LNG importer in the world.

The quest for energy resource has been a long and recurrent theme in the Japanese foreign policy since the Meiji Restoration. It is not a secret that the oil embargo imposed by President Roosevelt on the Japanese Empire in July 1941 was interpreted by Tokyo as a potential *casus belli*. USA decided to take this action after Japan occupied the French Indochina (which became part of the Greater East Asia Co-Prosperity Sphere): the Japanese Empire was eager to conquer the country for the vast resources of rubber and tin present there. The attack on the American naval base of Pearl Harbour on December, 7 1941 was also the result of the fact that President Roosevelt refused to lift the oil embargo on Japan. This proves that history repeats itself. In fact, after the Fukushima Daiichi nuclear accident of March 2011 and the Japanese government decision to suspend the production at all its nuclear power plants, Tokyo had to ratchet up its energy imports. Australia became the largest source of LNG for Japan in 2012.

Over the past decade, Australian LNG exports have increased nearly three times, and they are expected to rise substantially in the medium term. Australia exports natural gas almost exclusively to Asian markets, with Japan having the lion's share, mostly through long-term contracts. Other key consumers include China, South Korea and Taiwan. The second largest economy in the world is determined to have a reliable energy partner in Canberra. In fact, Chinese national oil companies have signed many MoU (Memorandum of Understanding) with international oil companies on investments in several Australian liquefaction projects and signed gas purchase agreements to ensure a proper flow of LNG supplies for the growing market in China.

[118] Vv. Aa., «Country Analysis Brief: Australia», *US Energy Information Administration*, 7 March 2017, available at http://www.spain-australia.org/files/documentos/79_EIA_Australia_7mar2017.pdf (last consulted: September 2018)

Australia liquefaction facilities

Australia has seven operating LNG developments and three more under construction[119]. The Australian government is keen to develop new LNG facilities and expansions of existing facilities within the next decade so that Australia's LNG export capacity can grow substantially. Most of the liquefaction projects are located in the coastal or offshore northwestern Australia and in the northeastern Queensland region.

Australia is committed to overtake Qatar as the world's largest LNG exporter by 2020. Nevertheless, since less expensive natural gas from Russia, the United States, and Africa (Tanzania and Mozambique) will be produced and exported, Australia faces a strong global LNG supply competition.

To reduce project costs and to liquefy gas from fields that are far from shore, companies are turning to the floating liquefied natural gas (FLNG) terminal design, which is less expensive than the cost of an onshore plant. When its operations started in late 2018, Prelude LNG, located off the northwest coast, became the world's third FLNG terminal with a new technology developed by Shell[120].

In 2012 China’s main planning agency, the National Development and Reform Commission, found that the country will produce around 60 billion-100 billion cubic meters of shale gas a year in 2020. Yet, Wu Xinxiong, the director of China’s National Energy Administration, recently predicted that only 30 billion cubic meters a year would be available by 2020[121]. That would barely meet 1% of

[119] Official data from the Australian Petroleum Production & Exploration Associationhttps://www.appea.com.au/oil-gas-explained/operation/australian-lng-projects/ (last consulted: September 2018)
[120] Official data from Shell https://www.lngworldnews.com/shells-prelude-flng-receives-test-cargo/ (last consulted: September 2018)
[121] Vv. Aa., «Shale Game», *The Economist*, 30 August 2014. https://www.economist.com/business/2014/08/30/shale-game (last consulted: September 2018)

China's current energy needs: a figure that will be even lower given Beijing's increasing energy demand.

The news was really disappointing for the Chinese élite. China has recoverable shale gas reserves of 1,115 trillion cubic feet: this makes the country the biggest reservoir of shale gas, with Argentina a distant second with a little over 800 trillion cubic feet[122]. American shale resources are mostly found in easily accessible areas and they are present in rocks that are easy to fracture[123]. Instead, Chinese shale sources are mostly deeper, often in inhospitable areas, and made up of rock that resists American fracking techniques. Besides, some of the biggest reserves are in regions, such as Sichuan province, that have been subject to seismic activity or are short of water, making fracking even tougher.

In the early to mid-2000s, natural gas played a minimal role in the Chinese national energy mix, contributing only 2% of total energy consumption, which was largely supplied by domestic production. National transmission infrastructure to connect different regions was negligible. A decade on, gas has grown to more than 5% of the energy mix and consumption growth has been sustained at an average of 12% per year. In that time, China added over 100bcma of import capacity and sustained domestic production growth of more than 7% per year. This impressive growth was the deliberate result of multiple policy measures aimed at expanding the use of natural gas primarily to reduce urban air pollution. Specifically, the Chinese government has set the goal that gas should be 10% of the domestic energy mix by 2020.

To spur growth, the Chinese government first focused on establishing supply availability and security, through both domestic production and imports. To achieve domestic production growth, the Chinese government prioritized specific regions and utilized its state-owned oil and gas companies to develop the sector, while also more recently opening the sector to investment from international oil companies.

In order to expand imports, China has recently struck supply deals and developed pipelines with Myanmar, Russia, and Turkmenistan, which have added over 40 bcm of supply capacity to date with a further 40 bcm under development. China has also increased LNG import capacity by around 70 bcm since 2010, with a further 20 bcma planned through 2020. The development of the LNG import capacity has coincided with significantly greater supply availability as Qatar and Australia quickly have become China's largest suppliers.

Meanwhile, the Chinese government has adopted a broad set of policies designed to improve the cost competitiveness of gas and otherwise to spur consumption growth. Underpinning the Chinese government support for gas sector development has been a general emphasis on the role of gas in improving urban air quality. Given chronic air pollution in China's northern and coastal cities, and the fact that coal provides the majority of energy, targeted switching to gas was used to improve urban air quality. This resulted in a sustained government push since 2013 to reduce particulate matter (PM2.5) pollution through mandated coal to gas switching. Ultimately, the combination of

[122] I. SLAV, «Why China's Shale Boom Is Struggling», *Oilprice.com*, 21 April 2018. https://oilprice.com/Energy/Coal/Why-Chinas-Shale-Boom-Is-Struggling.html (last consulted: September 2018)
[123] J. LIU, «China Sits on the World's Biggest Shale Gas Prize. Pumping It Out Is the Hard Part», *Bloomberg*, 19 July 2018. https://www.bloomberg.com/news/features/2018-07-19/petrochina-sinopec-are-chasing-an-elusive-shale-boom (last consulted: September 2018)

policy measures undertaken by China succeeded in reducing average annual pollution by one-third and peak winter pollution by more than half.

CHAPTER 2: EU-RUSSIA ENERGY RELATIONS

2.1 Applicable legal rules

In the early 1990s the West wanted to develop a strong economic and energy cooperation with Eastern Europe: it aimed at achieving a higher level of business investments in those countries which had experienced more than forty years of communist rule. The first step in this direction was the adoption of the European Energy Charter (EEC) in December 1991. This was a mere political declaration of principles and did not constitute a binding legal text.

The Energy Charter Treaty (ECT) was signed in December 1994 and is an international agreement which aims to give a multilateral framework for energy cooperation based on the tenets of open, competitive markets and sustainable development. The rationale behind this institution is represented by the need to ensure open markets, non-discrimination and access for foreign investments, especially in energy-related investments and trade. The Energy Charter Treaty has five key pillars: investment protection, trade, transit, environmental protection and dispute settlement. So far, fifty-two states, including the EU and its member states (Italy withdrew in January 2016) have signed the ECT and twenty-two are observers.

The ECT was funded after the demise of the Soviet Union in order to open new energy markets to Western companies that were eager to invest in energy-rich Eastern European and Central Asian economies. The ECT laid down international regulations that had to open and facilitate the exploitation of energy resources by foreign investors in Commonwealth of Independent States (CIS) countries. Being read through this objective, the ECT can be interpreted as a coherent attempt by the EU to expand its energy interests in the former Soviet space since the ECT give the upper hand to energy companies active in the upstream sector.

Despite the sovereignty over energy resources being explicitly protected in the ECT, the ECT also gives strong legal aid to the interests of foreign investors in the ECT signatory countries. It allows this by providing a legal principle of compensation in cases where an ECT country delivers an expropriation. Moreover, ECT countries also have to give the same treatment to national and international business actors (the 'national treatment' principle) and they have to behave with any investors in the same way they do with the investors of their 'most favoured nation'[124].

The provisions related to foreign investments are deemed to be the cornerstone of the treaty. The ECT sets up a hard legal regime for the post-investment phase with binding obligations for the contracting parties similar to the ones contained in many bilateral investment treaties (BITs) and in the now defunct NAFTA. Article 10 (1) is particularly important in this regard as it reads:

Each Contracting Party shall, in accordance with the provisions of this Treaty, encourage and create stable, equitable, favourable and transparent conditions for Investors of other Contracting Parties to make Investments in its Area. Such conditions shall include a commitment to accord at all times to Investments of Investors of other Contracting Parties fair and equitable treatment.

[124] R. LEAL-ARCAS, A. FILIS, «Linking the European Union to the Energy Charter Treaty and the Energy Community», *Queen Mary University*, 2014

Such Investments shall also enjoy the most constant protection and security and no Contracting Party shall in any way impair by unreasonable or discriminatory measures their management, maintenance, use, enjoyment or disposal. In no case shall such Investments be accorded treatment less favourable than that required by international law, including treaty obligations. Each Contracting Party shall observe any obligations it has entered into with an Investor or an Investment of an Investor of any other Contracting Party.

In this article the reference to a 'fair and equitable treatment is related to a common practice in international law and constitutes a relevant principle of investment protection. This enshrines the protection of legitimate investor expectations with respect to the maintenance of a stable and predictable business and legal environment by the host country. The last sentence of Article 10 (1) is interpreted as an 'umbrella clause' and relates to the principle of 'pacta sunt servanda' as enshrined in Article 26 of the 1969 Vienna Convention on the Law of the Treaties. Therefore, a breach of such an obligation as foreseen in Article 10 (1) may represent a violation of a key provision of the ECT.

With regard to the most-favoured-nation treatment, this is linked not only with the investments of investors but also to activities related to investments such as management, maintenance, use and disposal. This principle entails the adoption of standards and rights present in other treaties and agreements granted to other investors: these should be ipso iure applied to any other investor of the contracting states.

Article 13 constitutes another key provision with regard to expropriation. The Article reads:

Investments of Investors of a Contracting Party in the Area of any other Contracting Party shall not be nationalized, expropriated or subjected to a measure or measures having effect equivalent to nationalization or expropriation (hereinafter referred to as "Expropriation") except where such Expropriation is: (a) for a purpose which is in the public interest; (b) not discriminatory; (c) carried out under due process of law; and (d) accompanied by the payment of prompt, adequate and effective compensation.

The importance of the protection against expropriation is not mostly linked to the protection against outright expropriation measures, but rather against 'measures having equivalent effect to nationalization or expropriation'. In addition, the effect of this Article is that it does not distinguish whether the expropriation is lawful or unlawful: in both cases, the investor is entitled to prompt, adequate and effective compensation.

Article 26 (1) examines 'disputes between a Contracting Party and an Investor of another Contracting Party relating to an Investment (…), which concerns an alleged breach of an obligation of the former under Part III'. It is the most significant article with regard to the settlement of disputes arising between an investor and a contracting party. In addition, the Article does not lay down any requirement of exhaustion of local remedies for the right to arbitration to be invoked.

According to Article 26 investment disputes must be settled amicably. If that does not occur, the investor has the choice of submitting the controversy to one of the following fora:

(a) to the courts or administrative tribunals of the Contracting Party party to the dispute;

(b) in accordance with any applicable, previously agreed dispute settlement procedure;

(c) each Contracting Party hereby gives its unconditional consent to the submission of a dispute to international arbitration or conciliation in accordance with the provisions of this Article.

The right to international arbitration of investment disputes is by far the most relevant provision included in this Article. According to Article 26 (4) investors may choose the following forms of international arbitration:

- *ICSID arbitration;*
- *Arbitration under the ICSID Additional Facility Rules*
- *a sole arbitrator or ad hoc arbitration tribunal established under the Arbitration Rules of the United Nations Commission on International Trade Law (hereinafter referred to as "UNCITRAL");*
- *or (c) an arbitral proceeding under the Arbitration Institute of the Stockholm Chamber of Commerce*[125].

Until 2009, Russia had signed the ECT but never ratified it: this move placed Moscow in the position of provisionally applying the treaty. Russia had expressed its willingness to use the Energy Charter Treaty as a reference document whereby to build the EU-Russia energy relations. However, in 2009 Putin stated: "I propose we start laying down a new international legal framework for energy security". In April 2009, the then Russian President, Medvedev, suggested the creation of a "Conceptual Approach to the New Legal Framework for Energy Cooperation". According to the Russian President, the aim was to create a new international legal document that would have benefitted not only the consumers, but the producers and the transit countries as well.

On 20 August 2009, Russia formally notified that it did not want to become a Contracting Party to the ECT. In accordance with Article 45 (3) (a) of the ECT, the provisional application of the ECT by the Russian Federation was terminated on 18 October 2009.

The 1969 Vienna Convention on the Law of Treaties explicitly allows for provisional application of treaties[126]. Article 25 reads: '*A treaty or a part of a treaty is applied provisionally pending its entry into force if: (a) The treaty itself so provides; or (b) The negotiating States have in some other manner so agreed.'*

Besides, article 18 of the 1969 Vienna Convention prescribes that states should 'refrain from acts which would defeat the object and purpose of a treaty when the treaty has been signed or when the state has expressed its consent to be bound by the treaty pending its entry into force.

With regard to the Article 45 of the ECT, this allows a provisional application of the Treaty only if and 'to the extent that such provisional application is not inconsistent with its constitution, law or regulation.' Russian law and constitution does allow the provisional application of international treaties in the Russian Federation and this is clearly expressed in the 1995 Federal Law on International Treaties of the Russian Federation. Article 23 of such law foresees the following:

[125] Full text available here: http://www.europarl.europa.eu/meetdocs/2014_2019/documents/itre/dv/energy_charter_/energy_charter_en.pdf (last consulted: October 2018)

[126] Full text available here: https://treaties.un.org/doc/publication/unts/volume%201155/volume-1155-i-18232-english.pdf (last consulted: October 2018)

'An international treaty or part of a treaty may, before its entry into force, be applied by the Russian Federation provisionally if such has been provided for in the treaty or if an arrangement was reached concerning this with the parties who have signed the treaty.'

Hence, the correct assumption that Russian law allows the provisional application of treaties ipso iure. In line with Article 45 (3) of the ECT, any signatory may also terminate its provisional application of the ECT by written notification to the depository of the ECT of its intention not to become a contracting party of the ECT[127].

Any analysis on the role of energy in the Russian Federation should not neglect two key policy documents which were approved by President Putin. One is the 1997 doctoral dissertation as laid down by Putin at the St Petersburg Mining Institute and the other is the Energy Strategy of the Russian Federation to 2020, which was published in 2003. In both these documents one can read a recurring tenet of the Russian foreign and domestic policy, i.e. the one which postulates that energy policy is tightly linked with Russian national security. According to this geostrategic view, any deal involving the oil and gas sector is inherently linked to Russian sovereignty and security.

The transit regime enshrined in the ECT is funded on the freedom of transit and the principle of non-discrimination. In addition to the existing transit provisions of the ECT, the contracting parties tried to devise new rules on the transit issues through a Transit Protocol. However, in 2011 these negotiations were suspended due to a lack of progress over these issues.

According to the ECT, transit is defined as:

'Carriage through the area of a Contracting Party; or to or from port facilities in its area for loading or unloading, of Energy Materials and Products originating in the area of another state and destined for the area of a third state, so long as either the other state or the third state is a Contracting Party.'

Article 7 (1) analyses the principles of freedom of transit and non-discrimination:

'Each Contracting Party shall take the necessary measures to facilitate the Transit of Energy Materials and Products consistent with the principle of freedom of transit and without distinction as to origin, destination or ownership of such Energy Materials and Products or discrimination as to pricing on the basis of such distinctions, and without imposing any unreasonable delays, restrictions or charges.'

Paragraph 6 of Article 7 contains the relevant provision that a contracting party shall not interrupt or reduce the existing flow of 'Energy Materials and Products' in the event of a dispute over any matter arising from the transit. This is a key provision of the ECT and was the main legal reference during the Ukraine-Russia gas crises of 2006 and 2009. This is the full paragraph:

'A Contracting Party through whose Area Energy Materials and Products transit shall not, in the event of a dispute over any matter arising from that Transit, interrupt or reduce, permit any entity subject to its control to interrupt or reduce, or require any entity subject to its jurisdiction to interrupt or reduce the existing flow of Energy Materials and Products prior to the conclusion of the

[127] K. HOBER, «Investment Arbitration and the Energy Charter Treaty», *Journal of International Dispute Settlement*, Vol. 1 No. 1, 2010

dispute resolution procedures set out in paragraph (7), except where this is specifically provided for in a contract or other agreement governing such Transit or permitted in accordance with the conciliator's decision.'

With regard to dispute settlement procedures, Russia has ratified the 1958 New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards. However, with the adoption of the 2008 Amendment to the 2005 Russian Law on "Concession Agreements" (often used in natural resources contract), the option to solve business disputes through international arbitration was strongly hindered by the Russian Parliament. In fact, the Article 17 read that disputes can be solved "in accordance with the legislation of the Russian Federation in courts, arbitral courts, arbitral tribunals of the Russian Federation"[128].

According to this amendment, awards have to be subject to review by Russian courts and this would limit the application of the 1958 New York convention. According to critics, this would create legal uncertainty and would hamper international business practice in the Russian Federation.

2.2 Sanctions and legal background

In December 1989 the European Economic Community and the USSR concluded a trade and cooperation agreement which entered into force in April 1990. This deal recognized the most-favoured-nation treatment in the trade of goods and a considerable liberalization of imports. Yet, the agreement did not make any reference to oil and gas shipments.

After years of intense negotiations, in June 1994 the Russian Federation and the European Union signed a Partnership and Cooperation Agreement (PCA) which entered into force in December 1997. The PCA also created a framework for political dialogue between the parties, to underpin the political and economic changes that were occurring in the Russian Federation. High-level meetings between the EU and Russian political leaders had to take place twice a year, with a parallel ministerial council.

The PCA was amended with the Russian accession to GATT/WTO in 2012. The PCA contains no explicit provision with regard energy relations, except for economic issues as envisaged in Article 65. Nevertheless, many provisions of the PCA could have a direct or potential effect on energy issues. Article 12 (1) provides for free transit of goods. This Article allows Russian oil and gas to be shipped to third countries through the EU. The silence of the PCA with regard to energy issues can be explained by the fact that the EU and Russia were expecting that the Energy Charter Treaty was to be approved within months after the signing of the PCA.

In 1999, the EU elaborated a Common Strategy on Russia, that had the aim of aiding Moscow to achieve a more competitive energy sector, and to urge the Russians to ratify the ECT. In May 2005, the EU and Russia launched the so-called Road Maps for the creation of the Four Common Spaces. These included a common economic space, which should have been reached via a deal on investment-related issues. As far as energy is concerned, the Road Maps wanted to establish a

[128] S. NAPPERT, «EU-Russia relations in the energy field: the continuing role of international law», *Euroconfidentiel/OGEL*, 2009

structural cooperation to promote trade and transit of energy products, through the framework of the ECT principles.

Despite these noble principles, the Road Maps did not obtain any concrete and tangible result and remained a mere declaration of political intent between the parties. At the sixth EU-Russia summit in October 2000, the two parties decided to set up an Energy Dialogue to be held on a regular basis. This forum did not deliver any specific result, despite the ambitious goals professed in the achievements attributed to the Energy Dialogue in 2006:

'No quantitative restrictions on EU imports of fossil fuels, solutions found to ensure compatibility of Russian long term gas supply contracts with the EU internal market rules by the elimination of destination clauses; promotion of energy efficiency projects.'

Yet, the reports on the most debated questions, such as trade and infrastructure, did not indicate any concrete steps to be taken, but just were limited to vague recommendations. In spite of some limited progress (mostly related to small joint energy efficiency projects), the Energy Dialogues did not bring any real breakthrough on pivotal issues, like the liberalization of Russian pipelines and European investment in the energy sector in Russia[129]. With the Russian annexation of Crimea in early 2014, no EU-Russia Energy Dialogue has been held since then.

2.3 Gas supplies and pipelines

In 2017, Russian gas shipments to the Europe reached the record level of 193.9 billion cubic metres (bcm)[130]. This figure can be explained by the declining rate of the mature gas fields in the North Sea and the recent limits to the production in the Groningen area, in Holland. In addition to that, the competition of liquefied natural gas coming from the States has not been as strong as analysts predicted. The price cap of American LNG is still higher than the one piped from Russia and thus it has not dented the Russian grip on markets in Europe. The fact that Norwegian gas production has probably reached its upward limit is also another factor to take into consideration to explain the Russian gas glut in Europe.

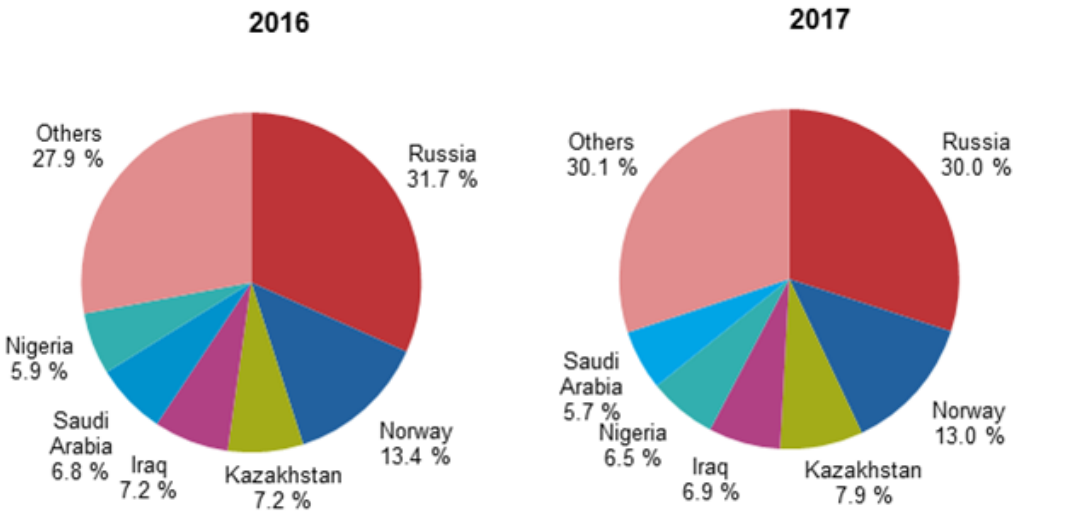
The large market share held by Gazprom in the European gas sector is often depicted as a negative feature whereby the Russian state can politically influence many Eastern European countries. Yet, Moscow is also dependent from its European energy customers. In fact, Russia heavily relies on gas and (especially) oil revenues to finance its state budget. Both in the gas and in the oil sector, Europe constitutes Russia's largest trade market. In 2016, for instance, Europe accounted for 70 percent of Russia's crude oil exports[131]. Therefore, one can notice that the European dependence on energy from Russia can also be construed as an interdependence.

[129] K. HOBER, «The EU-Russia Energy Dialogue: the legal dimension-with particular emphasis on the Energy Charter Treaty», *Mannheimer Swarting Stockholm*, 2010

[130] H. FOY, «Russia's gas exports to Europe rise to record high», *Financial Times*, 3 January 2018

[131] I. SLAV, «Europe Becomes Victim of Russia's Newest Oil Strategy», *Oilprice.com*, 7 January 2018

Extra-EU imports of petroleum oil, shares in value of main trading partners, 2016 and 2017



Source: Eurostat database (Comext) and Eurostat estimates

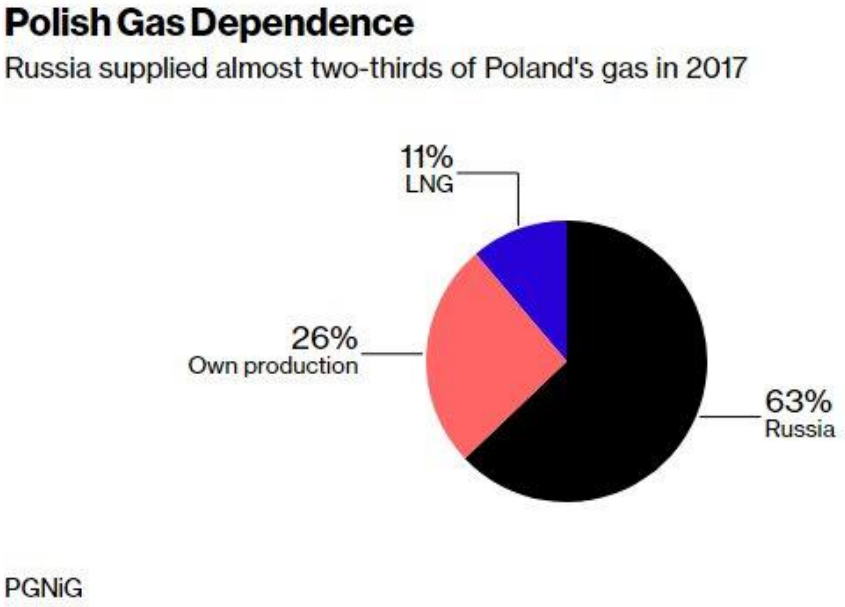
eurostat

In 2017, the EU imported 30% of its oil imports from Russia, by far its largest oil supplier. Norway was second with a share of 13% of crude supplies to the EU. Other relevant EU oil supplier are Kazakhstan (7.9%), Iraq (6.9%), Nigeria (6.5%) and Saudi Arabia (5.7%)[132]. Also in the oil market, like in the gas one, the United States are set to become one of the key players among the global exporters, given their production boom in shale oil reserves in North Dakota (Bakken basin) and Texas (Permian basin).

For Russia the European market is simply too large to be replaced. Moscow's strategic goal to diversify its energy customers constitutes a grand geopolitical strategy which will require another decade to be fully accomplished. For Russia a possible alternative to the European market would be the Chinese one. Power of Siberia, the 4,000-km-long pipeline that should transport the Russian gas from the Far East to China, was announced back in 2014 but should be operational not before the end of 2019. Its maximum capacity would be 61 bcm per year. Even if Power of Siberia would run at full capacity, this volume would not represent even a third of current Russian gas exports to Europe.

The recent aggressive posture carried out by the Russians in the international geopolitical arena has led many European Eastern countries to focus on energy security and diversify their energy sources. In 2014, the Lithuanian government decided to set up a LNG terminal in the port city of Klaipeda. The liquefied natural gas floating storage and regasification unit terminal, dubbed Independence, has a maximum capacity is to 2 billion cubic metres per annum, i.e. a volume that exceed Lithuanian domestic needs. The LNG terminal is generally supplied with LNG shipments coming from Norway or the US.

[132] EU imports of energy products - recent developments, *EUROSTAT*, 2018



As one can see from the chart above, Russia supplied 63% of Poland's gas in 2017. In order to wean off from its dependency from Russian gas, Warsaw built a LNG terminal along its Baltic coast in 2016. The year afterwards, the fist LNG shipment from the States was received with great enthusiasm by Polish authorities, who have eager to diversify their energy imports from Moscow for years. In fall 2017, Polish Oil and Gas Company Group (PGNiG) signed a five-year contract with UK energy company, Centrica, for the shipment of LNG from Cheniere Energy's Sabine Pass LNG terminal over the period 2018-2022. This agreement was finalised at a time when the US President, Donald Trump, visited Warsaw in summer 2017 and announced that the US was ready to help Poland diversify its energy imports.

Politicians in Warsaw have already voiced their opposition to the renewal of the contract that was signed with Gazprom in 1996 and is due to expire in 2022. In the meantime, Poland has also inked a deal with Qatar to provide the Świnoujście LNG terminal with 1.5 bcm of Qatari LNG per year. Polish authorities are also keen to finalise an agreement with Norway for the construction of a natural gas pipeline that would deliver Norwegian gas to Poland, via Denmark. The so-called, Baltic Pipe, would have a maximum capacity of 10 bcm per year and should be operational by 2022[133]. However, the cost of the project has not been reported yet. If completed, the pipeline would transport around the same amount of gas that Poland annually imports from Russia.

The Russian pipeline system dates back to the 1970s and 1980s: until the collapse of the Soviet Union, the pipelines were managed by the Soviet gas ministry. After 1991, the pipelines became transnational and the management of the pipelines was divided between the governments of Russia and Ukraine. The 4,451 km Urengoy-Pomary-Uzhgorod Bratstvo ('Brotherhood') pipeline constitutes Russia's most relevant gas export route, transporting gas from the Urengoi field in Siberia to Europe[134].

The Yamal-Europe pipeline runs across Russia, Belarus and Poland reaching Germany. Its length is beyond 2,000 km, and the pipeline construction began in 1994 with the first sections of the

[133] Baltic Pipe company official data
[134] S. VERMAAT, «Power in the global economy: states versus firms», *Raboud University*, 2015

pipeline completed in 1996. The Yamal — Europe has a maximum capacity of 33 billion cubic meters per annum.

The Russian gas is piped to Europe also through other pipelines, i.e. the Blue Stream and Nord Stream 1. The Blue Stream was built to allow direct gas deliveries to Turkey, bypassing transit countries. The 1,213-km-long gas pipeline consists of an overland and offshore sections, starting close to Izobilnoye in Stavropol Region, and ending in Turkish capital, Ankara. The construction was completed in 2002, and in 2003 the commercial gas flow started.

The Nord Stream offshore pipeline was laid on the bottom of the Baltic sea with a capacity of 55 bcm per year and allows direct gas transportation for Germany, bypassing transit states. The pipeline consists of two lines with a throughput capacity of 27.5 billion cubic meters/year each. Its route lies under the Baltic Sea from Portovaya Bay near the city of Vyborg to the German coast near Greifswald, with a total stretch of more than 1,200 kilometers. Germany, the UK, the Netherlands, France, Denmark and other European states are the target markets for this pipeline[135].

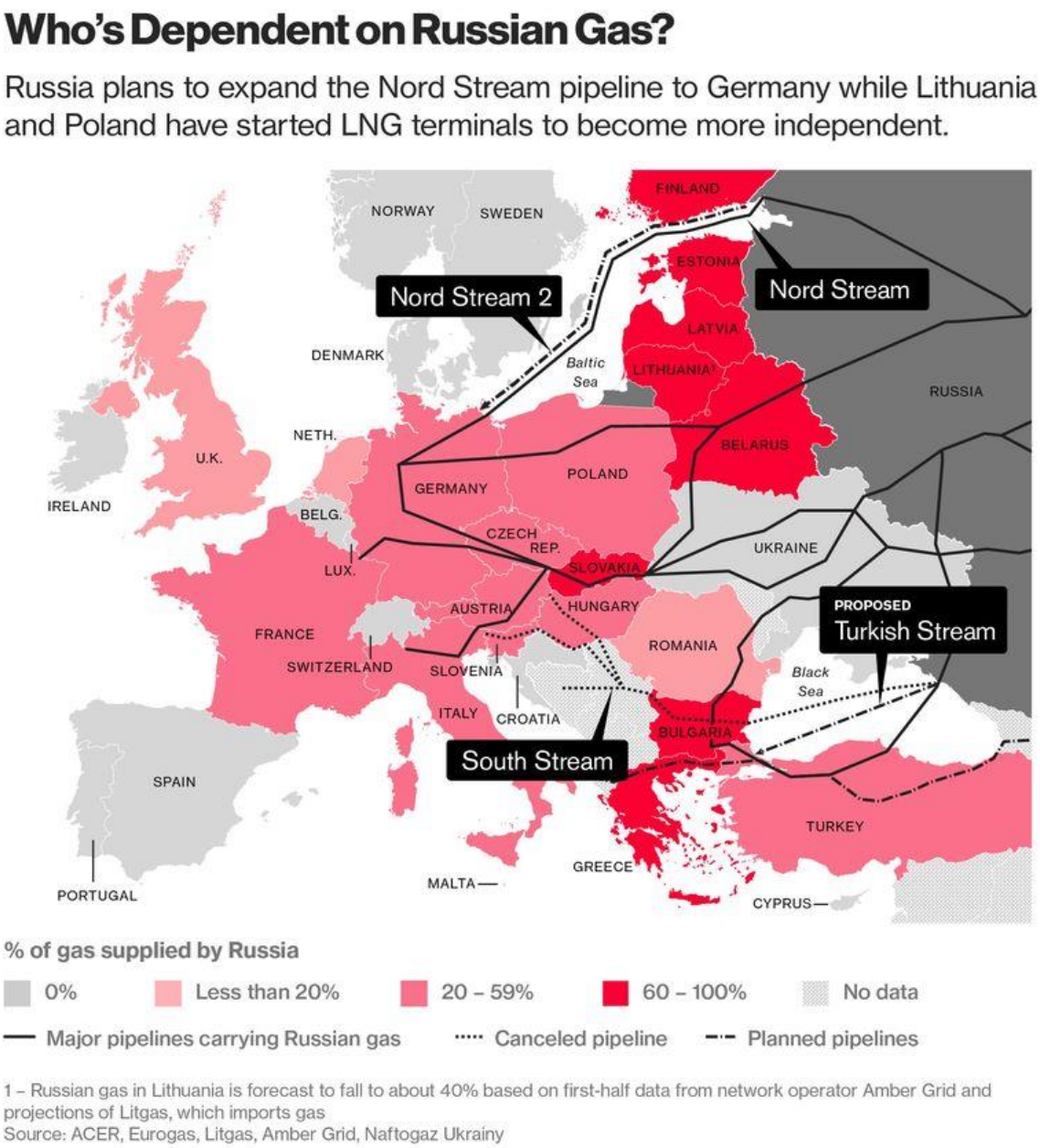
Substantial new LNG liquefaction capacity is projected to come on line over the next five years from the US, which is adding over 60bcma; from Russia's Yamal project, which will add a further 15bcma; and from Australia, where over 20bcma of capacity is under development. Projected growth in pipeline capacity to East and South Asia will also boost supply, as will new or rapidly growing LNG export markets such as Mozambique, West Africa, and the Eastern Mediterranean.

As a result, the global trade in gas is expected to expand, making gas more widely available to new and growing import markets. This will be driven by a larger scale and more liquid global LNG market, which the IEA expects to account for 90% of the growth in global gas trade over the coming decades. By 2040, gas traded between one region and another is projected to account for between 20% and 30% of global gas consumption (against 13% as of 2015), while LNG volumes will likely exceed pipeline volumes.

Growing and diversifying gas infrastructure can promote flexible and reliable gas availability while improving supply security. The development and diversification of global LNG trade has played a key role in helping to advance the availability and security of gas supplies, especially with the advent of more flexible contracting and the availability of spot volumes. Meanwhile, the increasing development of small-scale flexible infrastructure, such as FSRUs, is also facilitating more modular and rapid deployment model of gas supply infrastructure. When stable access to gas is available, that in turn can add greater security for a country's energy sector overall: this is particularly true for the European continent.

Despite the growth of spot traded LNG volumes and shorter contract lengths, the majority of the global LNG trade is still based on long-term contracts and oil index pricing still accounts for more than 70% of all LNG trade. Plus, outside of Europe and the US, liquid physical or financial trading hubs for gas have yet to emerge.

[135] Official data from Gazprom company



2.4 EU foreign policy vis-à-vis the Russian Federation

After the Ukrainian-Russian gas disputes of 2006 and 2009, the EU started to re-think its energy policies vis-à-vis the Russian Federation. Brussels tried to better define its energy scenarios in order to create a more liquid and liberalised energy scenario. The new idea was the energy had to be considered as a commodity: it could be traded and exchanged freely within an integrated European market. The disruptions in the Russian gas supplies during the two crises had shown the need to set clear regulations for suppliers and remove hurdles for the functioning of the internal market.

The product of this political debate was the Third Energy Package of 2009. It foresees that companies present in the European Union must unbundle the gas transit and distribution grids. It also increased competition in the management of pipelines, the so-called third-party access. The EU also set the diversification of supplies as a high priority and urged its member states to increase their efforts in this field. An additional element of this new energy architecture is the need to upgrade the connection of European gas grids: the rationale behind this is the fact that supply disruptions occurring in one European country could be alleviated by activating new supply routes coming from another European state.

Unbundling has been interpreted as a relevant tool to prevent Gazprom to use its position to achieve geopolitical objectives. Gazprom supplies gas to the EU but also owns some pipelines that transport the energy (for instance in Belarus). In 2009, after the enforcement of the Third Energy Package Gazprom had to apply the new unbundling clause, which eroded its monopolistic position in many European member states. However, it is still uncertain whether the EU will approve new legislation so that the Third Energy Package will be applied to cover also the gas pipelines entering the EU market (and not just the ones within the EU)[136].

Recently, the European Commission has shown a clear and active posture in relation to Gazprom's activities in central and eastern Europe. In 2012, it started antitrust procedures against the Russian energy giant and three years later it accused Gazprom of fixing unfair prices, imposing illegal destination clauses and thus creating monopolistic practices. Then, in 2015 the Commission accused Gazprom of breaking EU antitrust rules, leading to higher gas prices in five Central and Eastern European countries, including Bulgaria and Poland. In May 2018, the European Commission announced that Gazprom had accepted a series of concessions, but unlike with competition inquiries into other companies like Google, the EU executive body decided not to impose any financial penalties[137].

In 2015, the EU devised the Energy Union: the new legislative package tries to diversify energy supplies and boost the EU energy security. As part of this package, in April 2017 the European Commission acquired the mandate to carry out a preliminary control over any new energy deal reached by EU member states with non-EU countries. Some analysts have interpreted this move by the Commission as a possible means to stop the construction of the Nord Stream 2. Yet, the new proposed pipeline is based on a business deal among private companies and not on an intergovernmental agreement. Therefore, this new clause will not be applied to the construction of this pipeline.

Another important element of the EU energy strategy is linked to the diversification of its energy sources and the integration of its markets. Interconnection has become a key pillar of this strategy: this means connection of gas grids across the EU, based on the construction of interconnection projects and reverse-flow capabilities. This new policy would increase the EU energy strategy as it allows the gas to flow freely within the EU, and especially towards those member states that could experience an unexpected reduction in their external supplies.

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[136] Official communication of the European Commission on the Third Energy Package, available at http://europa.eu/rapid/press-release_MEMO-11-125_en.htm?locale=en

[137] S. REED, «E.U. Settles With Russia's Gazprom Over Antitrust Charges», *New York Times*, 24 May 2018. https://www.nytimes.com/2018/05/24/business/energy-environment/eu-gas-gazprom.html (last consulted: September 2018)

The resilience of the European energy infrastructure would greatly benefit from this new scenario. Among the proposed infrastructure are the Eastmed pipeline, the Southern Gas Corridor, the Trans-Caspian pipeline, and LNG terminals in Poland, Croatian and northern Greece. In order to accomplish this policy, over the past few years the EU has given its go-ahead to many Projects of Common Interest (PCIs), devoted to the integration of European gas and electricity markets, mostly through the funding of the Connecting Europe Facility instrument.

Reverse-flow capabilities have been one of the key factors to upgrade the resilience of the European gas market. After the Ukraine-Russia gas crises, reverse-flow has been interpreted by policymakers in Brussels as a top priority in the EU energy integration. Reverse-flow capabilities have been deployed in many eastern European countries, such as Slovakia, Poland, Romania, Hungary, the Czech Republic and Ukraine. Total reverse-flow capacity in central and eastern Europe is now around 150 bcm per year, equivalent to three-quarters the volume that the EU imports annually from the Russian Federation. Ukraine has greatly benefited from this new infrastructure, which has become the cornerstone of the EU resilience in face of gas disruptions.

Together with reverse-flow capabilities, new LNG supplies have been supported by the European Commission as a possible way forward in the European quest to wean off its dependence on Russian gas sources. In this field, Poland and Croatia have set a clear commitment in constructing new LNG import terminals along their coasts. Both the Polish terminal of Swinoujscie and the Croatian one in Krk are Projects of Common Interests (PCIs) and therefore are funded by the European Commission. The Polish terminal has the capacity to import 7.5 bcm per year, whereas the Krk terminal should be completed by the end of 2020 and would have a maximum import volume of 2 bcm per year[138].

Given the investments in new LNG terminals, the diversification of gas supplies in certain EU member states have increased but this has not constituted a valid means to decrease the total amount of gas that the EU imports from Moscow. As part of its 2015 Energy Union legislative package, the EU developed a LNG strategy in order to upgrade its infrastructure as well as its gas storage facilities. Many analysts predict a large increase in LNG supplies globally, especially thanks to the shale gas boom in the States, and new projects in Australia and Qatar.

Nowadays, LNG constitutes only a residual part of the overall gas imports. Whether LNG or Russian gas is the price-setting supply in Europe largely depends on Asian hub prices. Increases in Asian gas prices tend to draw LNG away from Europe, leaving Russian pipeline gas to be price-setting. The LNG market is a liquid market and does not require any pipeline. Therefore, it represents an alternative source of gas supply and has the capacity to link various regional markets together. It is interesting to notice that the LNG shipments are regulated through spot prices and are, hence, more flexible than the long-term ones applied by Gazprom. A reduction in piped gas would have a positive consequence in the development of gas prices more responsive to patterns related to supply and demand. Besides, a more integrated market together with new LNG terminals would diminish the EU energy dependence on single suppliers, since there would be new sellers and import sources.

[138] C. PATRICOLO, «Hungary set to begin buying Croatian LNG from 2019», *EmergingEurope*, 4 September 2018. https://emerging-europe.com/news/hungary-set-to-begin-buying-croatian-lng-from-2019/ (last consulted: September 2018)

Over the past few years, the American Congress voiced its support for LNG shipments to Europe, especially in light of the recent events in Ukraine. After the annexation of Crimea in spring 2014, US lawmakers urged to expedite approval of US exports of liquefied natural gas (LNG) to Europe. In June 2014, the US House of Representative voted to speed up applications for the export of American liquefied natural gas. Supporters of the bill cited positive economic impact for the country, as well as potential benefits for its allies. The bill would have allowed for liquefied natural gas (LNG) exports to non-Free Trade Agreement countries to be expedited. The legislation requires the US Department of Energy to clear applications within 30 days, following an environmental review of LNG infrastructure. Moreover, in August 2018, the US Department of Energy released two orders to clear the path for small volume exports of LNG and wind down worries about the length of its LNG export authorizations[139].

Concerns by European countries regarding energy supplies heightened as the situation in Ukraine escalated. Lithuania's energy minister, Jaroslav Neverovic, urged US lawmakers in March 2014 to allow allies to bypass what was then a lengthy federal review process by designating exports in the national interest. "It would strengthen buyers so that we don't have to attach ourselves to these long-term (Russian) contracts because there will be gas in the market," said Neverovic at the time[140].

Despite the arrival of new US LNG to Europe, LNG regasification terminals are costly investments and the prices of LNG imports are usually higher than the ones of Russian piped gas, due to the transportation, and regasification processes. Given the low production costs, Russian gas has a competitive price for European customers, and is expected to remain so also in the near future. The commitment shown by the European Commission to diversify the EU energy supplies is based on the development of new geostrategic agreements with non-EU states in order to develop energy relationships with them.

Russia is the EU most important source of gas supplies and, due to Gazprom's new pricing patterns, will remain the supplier country with the most competitive prices for European customers. Yet, the EU is definitely on the right path when it enforces energy law, builds new gas infrastructure to allow gas to flow from West to East and North to South, enhances new alternatives of energy sources, creates LNG terminals, and promotes transparency on energy contracts.

From a foreign policy perspective, a collective European bargaining position would give the EU more power vis-à-vis the Russian Federation. The European Commission could negotiate contracts with third countries on behalf of one of its member states. Yet, this would go against the principle of a liberalised energy market, where member states decide their own energy mix and policies. Therefore, this could happen only on a voluntary basis, as European treaties define energy as a shared competence.

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[139] B. EARLEY, «DOE Fast Tracks Small Scale LNG Exports and Provides Assurance on Export Orders», *Covington*, 7 August 2018. https://www.insideenergyandenvironment.com/2018/08/doe-fast-tracks-small-scale-lng-exports-and-provides-assurance-on-export-orders/ (last consulted: October 2018)

[140] A. RASCOE, «U.S. lawmakers mull speedier gas exports to help Ukraine, Europe», *Reuters*, 25 March 2014. http://www.pressreader.com/kuwait/arab-times/20140326/283016872663880 (last consulted: October 2018)

The strict enforcement of the Third Energy Package with its regulations related to third-party access, the removal of destination clauses and the quest for alternative sources allows the EU to wean itself off the dependency of Russian gas. The new legislation related to energy efficiency and energy savings represents a valid tool to streamline costs and make the European industry more competitive on the global stage. However, this would not necessarily lead to a reduction in European dependency on Russian gas. Instead, diversification and developing liberalised and integrated European energy market are the pillars so that the EU can achieve that geostrategic goal.

The current legislative dossier on the 2030 framework for EU energy and climate policies reflects the need for a boost in renewable technologies and energy efficiency (following the good practice set in the Ecodesign, Energy Labelling and Energy Efficiency Directives). The worldwide trend of a growing energy demand, which should rise by 27% by 2030, constitutes a well-grounded reason to fully comply with the proposed EU policies in the field of energy efficiency and development of renewable technologies[141]. It is clear that, if implemented correctly, the 2030 framework will not only moderate the EU energy demand but also its share of energy imports.

The shared competence between the EU and the national level over energy matters, as enshrined in the EU treaties, has hampered the establishment of an internal energy market which was expected to be achieved in 2014 according to the Third Energy Package. Despite positive developments in the integration of electricity sector in Northern Europe (Nord Pool Spot) and in Central Western Europe (Pentalateral Energy Forum), the Baltic region and Eastern European countries still do not have well-integrated energy markets.

Russia supplies the European market with three major gas pipeline systems: one through Ukraine and Slovakia, the second through Belarus and Poland, and the third runs directly to Germany under the Baltic Sea (Nord Stream 1). Two of the three major pipeline networks depend on the cooperation of transit countries in order the gas to flow freely and without interruptions and restrictions. This interdependency does not please Moscow's plans as it creates a risk for its energy exports and restricts its freedom of action in its energy policy vis-à-vis the European central market. An option to overcome this shortcoming was gaining control over the transport network, but a transit-free pipeline system would have been ideal for the Russian economic interests.

This would give Russian gas a direct access to its energy clients in central and western Europe, without the need to pay transit fees to countries in its 'near abroad'. It also ensures that Moscow can divert gas flows away from transit countries with which it has political and economic frictions. At times, Russia has felt that Ukraine and Belarus have blackmailed Moscow over its energy exports to Europe. Control over the energy network has become a key policy to solve this issue and the Russian acquisition of Beltransgaz should be enlisted in this strategy.

[141] EUROPEAN COMMISSION, «European Energy Security Strategy», 28 May 2014.

CHAPTER 3: EVOLUTION OF RUSSIAN FOREIGN POLICY IN THE ENERGY FIELD

3.1 Past cases of usage of energy resources within foreign policy objectives

With the collapse of the USSR, the foreign policy goals of the newly created Russian Federation were formally established in a presidential decree devoted on Russian foreign policy that was published in 1995. The main goal was to build an exclusive Russian sphere of influence, and thus in essence establishing a regional hegemony, while minimising foreign influence in the post-Soviet region and protecting ethnic Russians living in CIS countries. The decree mentioned three means whereby Russia can obtain this objective. Firstly, through the integration of the former Soviet states under Russian dominance. Secondly, by using its leverage in military, political and economic spheres in order to create an ever closer cooperation with its neighbours. Thirdly, Russia had to be granted an international recognition as 'guarantor of peace and stability' in the region[142].

There has already been some reference to past instances when Russia used its energy supplies as tool devised to reach a geopolitical aim. The reduction in gas supplies to Ukraine after the fall of the Soviet Union, the oil cuts to Czech Republic after Prague's decision to join the US anti-ballistic missile system and the interruption of piped oil to Lithuanian refinery, Mazeikiu, are just few examples in a long list that encompasses different countries. The usage of the energy tool as a geopolitical means is not a new feature in Russian politics.

In 1990, a month after Vilnius declared its independence, Gorbachev imposed an economic and naval blockade on the Baltic country. At the beginning, the USSR limited the supply of oil and gas to Lithuania and then restricted the export of other goods as well. However, the blockade backfired as Moscow was unable so supply by sea the Kaliningrad enclave. Nevertheless, Lithuania was unable to sustain this economic pressure and, at the end of June 1990, Vilnius decided to release a moratorium on its declaration of independence. Talks began but the stalemate remained and at the end of the year Lithuania declared again its independence. Gorbachev responded by sending more troops to the country but, in January 1991, the killing of 13 innocent protesters at the Vilnius TV tower dashed away any hope by Moscow to keep Lithuania under its influence.

Ever since Putin became President of Russia in 1999, he developed a policy of subsidised energy exports as a tool to gain political influence: 'one of the hallmarks of the Putin era was his effort, at a time of sharply rising world prices for oil and natural gas, to marshal Russia's energy wealth on behalf of the state.'[143] Russian decision to award energy subsidies to its neighbouring countries was a reaction to a common trend of different 'colour' revolutions that occurred in many Eastern European and Central Asian countries in the 2000s. Milošević fell in Serbia in 2000, then the Rose Revolution in Georgia in 2003, the Orange Revolution in Ukraine in late 2004, the Cedar Revolution in Lebanon in 2005, the Tulip Revolution in Kyrgyzstan in 2005, and the uprising in Uzbekistan in 2005. Russia's main policy aim was to restore or retain the link with those countries where the revolution could lead to a more Western oriented government[144].

[142] S. VERMAAT, «Power in the global economy: states versus firms», *Raboud University*, 2015
[143] M. KRAMER, «Russian Policy Toward the Commonwealth of Independent States», *Harvard University Press*, 2009
[144] S. VERMAAT, «Power in the global economy: states versus firms», *Raboud University*, 2015

Another example of the level of interplay between Russian foreign policy and its energy deliveries is represented by Moscow's decision to reduce oil supplies to the Czech Republic in the summer of 2008. Despite Russian assertion that the cut was due to technical failures, it is notable to underline that the disruption occurred exactly one day after the Czech Republic announced that it was going to deploy an antiballistic missile system, a move which was harshly criticized the Russians.

Two years earlier, in July 2006, Russian company Transneft abruptly interrupted the flow of crude oil to Lithuania. Also in this case the Russians justified their move with a technical leakage of the pipeline but the scenario points out to a different and more plausible explanation. In fact, few months earlier the Lithuanians had just sold Mazeikiu, their sole refinery, to a Polish company, PKN Orlen. Two other Russian companies, Lukoil and TNK-BP, participated in the bid but their offer was lower than the Polish one. The reduction in the oil supplies could have been construed as a coercive means to Lithuanian authorities to reconsider the sale of the refinery.

In 1993, the then Russian leader, Boris Eltsin, decided to cut gas supplies to Kiev in order to pressurized Ukraine to give back its Soviet nuclear arsenal. Yet, also in this case this energy 'blackmail' was officially justified by the Russian authorities as mere dispute over gas pricing.

Through these past examples of using its energy supplies as a bargaining chip towards its customers in Europe, Russia has been steadily increasing its market share in the EU gas market.

In 2004, the Russian state-owned transport monopoly, Transneft, dropped its deliveries to the Latvian oil export terminal, Ventspils. At a political level, relations between Moscow and Riga were at a really low point due to Russian criticism of the Latvian government's treatment of the Russian minority living in the Baltic state. Yet, the real rationale behind Moscow's move was the fact that Transneft wanted to gain control of the terminal: the Russians believed that through this reduction in oil supplies they could have manage to convince the Latvians to give in to their proposals. However, the move did not bring the expected outcome and the management in Ventspils remained in the hands of the Latvians.

Pipeline network in Lithuania

In the winter 2005-2006 after the election of the western-leaning President Yushchenko, Moscow cut gas supplies to Ukraine. It was a period of strained relationships between Moscow and the

West, since two anti-Moscow revolutions had took place in neighbouring countries (the Orange in Ukraine and the Rose one in Georgia)[145]. Soon after the presidential elections, the new establishment in Kiev had to face the Russian requests for a fourfold increase in the price Ukraine was then paying for its imported gas from Russia. The subsequent tensions triggered the suspension of Gazprom gas to Ukraine for few days in January 2006. Despite the reduction was solely intended to hit Ukraine, the consequences of the Russian-Ukrainian gas dispute were also felt in Czech Republic and Germany, which reported a decrease in Russian supplies by 25%. This controversy was closely followed in Brussels and many analysts urged the European Commission to start working on a truly functioning energy union with more storage capacity and reverse-flow capabilities among member states.

In January 2006, Moscow also halted its gas deliveries to Moldova, which was compelled to use Ukrainian reserves for few weeks. Here again, the official explanation for this cut was represented by Gazprom's demands that Chisinau paid more than what it paid in 2005, i.e. $80 per 1,000 cubic meters. The impasse was solved thanks to a provisional agreement between Gazprom and authorities in Chisinau that found a compromise between the two sides ($110 per 1,000 cubic meters). It is undeniable that this crisis showed Moldovans how deeply dependent their country is on Russian gas. Moscow also wanted to send Chisinau a clear warning so that politicians in Chisinau would not follow the Ukrainian and Georgian anti-Russian policies.

After the Rose Revolution in 2003, the tensions between Tbilisi and Moscow became strong and deep. The arrival to power of the western-educated, Mikhail Saakashvili, prompted fury and despair among Russian policymakers that considered Georgia a key and precious ally. Three years later, in 2006 these frosty political relations turn sour. In September 2006, the arrest of some Russian citizens by the Georgian authorities on charges of spying led to a diplomatic standoff between the two nations. Few months earlier, in January 2006, exactly at the time of Gazprom's disputes with Ukraine and Moldova, two explosions occurred on the Mozdok–Tbilisi natural gas pipeline in North Ossetia. This event also coincided with a sabotage on the power grid, located just few kilometers from the pipeline, which provoked a general blackout in many areas in Georgia. The gas spat further escalated when Gazprom demanded Georgia to pay $230 for 1,000 cubic meters of gas in 2007, up from $110 in 2006.

In 2006, the activism of Gazprom reached its zenith. The company asked different countries to pay more for the Russian gas and Armenia was not exception to this trend. In this case, authorities in Yerevan managed to obtain favourable conditions from Moscow. They were reassured that Armenia would receive natural gas supplies from Russia at prices well below European averages until 2009. Under this agreement, Armenia would pay $110 per 1,000 cubic meters of gas, less than half the then European average but twice what the country paid in 2006. In exchange, Yerevan surrendered a small but crucial section of gas pipeline to Russia.

In 2007, the energy dispute reached one of the closest Russian ally, i.e. Belarus. Moscow seemed reluctant to continue its discount policy towards its neighbour and wanted to charge market rates for the gas it sent to Minsk. Moreover, Gazprom claimed that Belarus had accumulated a $400 million debt. The energy giant also accused Minsk of siphoning oil from the Druzhba pipeline. After

[145] For a thorough account of Ukraine's recent history, please visit the devoted BBC timeline: http://www.bbc.com/news/world-middle-east-26248275

Belarus unilaterally decided to impose a new oil transit duty on the oil passing through the pipeline, Transneft interrupted the oil flow for few days in January 2007. Reductions were immediately declared in different EU member states as the Druzhba pipeline supplies crude to Poland, Germany, Ukraine, Slovakia, the Czech Republic, and Hungary. Only after few days, when Belarus caved in and scrapped the import duty, Transneft resumed its oil shipments. Just few days earlier, at the end of December 2006, Belarus and Gazprom signed a five-year supply and transit contract, whereby Belarus would buy gas from Gazprom in 2007 at $100 instead of $46.68 per thousand cubic metres it paid previously.

In winter 2008-2009 the gas dispute between Moscow and Kiev started again. Every year Ukraine and Russia were conducting negotiations over the renewal of gas supply contracts. However, by midnight on 31 December 2008 the parties were not able to reach an agreement over the price Kiev should pay in the upcoming year. Kiev offered to pay $235 per thousand cubic meter but Gazprom was demanding a price of $418. The discussions were also hindered by a controversy over the exact amount of outstanding debt and late payments to be paid by Naftogaz. Against this backdrop, gas supplies were completely halted by Russia from 7 January 2009, after Moscow accused Ukraine of siphoning off gas meant to European customers. The interruption in gas deliveries left meant that more than a dozen European countries were left without their shipments of Russian natural gas.

Some countries, like Bulgaria, Serbia and Bosnia, were almost wholly reliant on deliveries through Ukraine and so they experienced gas shortages at a time of the year when the gas demand is particularly high. On 18 January the parties reached an agreement to settle the gas dispute. Under the deal, Ukraine would get a 20% discount on the market price for 2009 gas supplies but only on the condition that, for the whole 2009, Kiev would keep the tariff for transporting Russian gas to European markets at the level of 2008. Afterwards, as of 2010 all prices and tariffs would move to European standards, without exemptions or discounts.

As already mentioned the crisis represented a real nightmare for many eastern European countries that heavily relied on the Russian gas shipments to power their economy. Macedonia, Slovakia and Bulgaria imported all their gas needs from one single supplies, i.e. Gazprom. During those weeks, these countries experienced a 100% drop in gas deliveries from Russia: the situation was so serious that Slovakia declared the state of emergency. Some nations tried to compensate the losses by importing additional gas from other suppliers, such as Norway or the Netherlands. Other states resorted to their gas storage capacities or increased their domestic production. After the 2006 crisis, this second one in 2009 sparked the awareness among European policymakers of the need to better integrate the European energy markets, diversify suppliers and bring about truly interconnected markets via scaling up storage and reverse flow capabilities. It is this traumatic experience inherited by the 2006 and 2009 gas crises that will constitute the rationale behind the introduction of the policy innovations implemented with the Energy Union package in February 2015.

In 2011, the agreement that Gazprom had signed with Belarus terminated. In 2007, Gazprom had acquired a 50% stake in Beltransgaz, Belarussian gas pipeline network. In November 2011, the parties agreed that Minsk would pay a charge of $165 per 1,000 cubic meters for the gas to be imported from Russia in 2012. This constituted a considerable reduction with regard to the price

Minsk was paying in 2011, i.e. $280. This deal was reached by Minsk thanks to its decision to sell to Gazprom the remaining 50% stake it held in Beltransgaz, bringing the total price of the acquisition of the Belarussian energy network system to $5 billion. Also in this case, one can notice Russian subtle usage of a strategy that could be dubbed “stick and carrot” in order to reach its geostrategic goals.

This pattern was reported also in Kyrgyzstan in 2014. The political and military importance of this tiny country in Central Asia should not be underestimated. The US operated an air transit centre in Manas, in the north of the country, until the first half of 2014. It was mainly used as a logistical and support centre for US operations in Afghanistan. In 2012, Moscow cancelled almost $500 million of Kyrgyz debt in exchange for a 15-year extension for the usage of the Kant air base. In 2014, Gazprom reached an agreement with Kyrgyzstan that gave the Russian company the control of Kyrgyzstan’s gas infrastructure. In July 2014, Gazprom purchased Kyrgyzstan’s natural gas network for a symbolic $1. In addition, the Russian gas behemoth also took over Kyrgyzgaz’s debts of around $40m million.

In January 2014, Gazprom also acquired the totality of the shares it owned in ArmRosgazprom, Armenia’s main gas company (which would be named Gazprom Armenia from then on). As consequence of the deal, Armenians pledged not buy any imported gas apart from the Russian one until 2043. Under the agreement, Armenians benefitted from a drop in the gas tariff from $270 to $189 per 1,000 cubic metres. It is interesting to notice that few months earlier, in September 2013 Yerevan had agreed to join the Russian-led Eurasian Economic Union. At the same time, the negotiations that had been taking place between the EU and Armenia on the

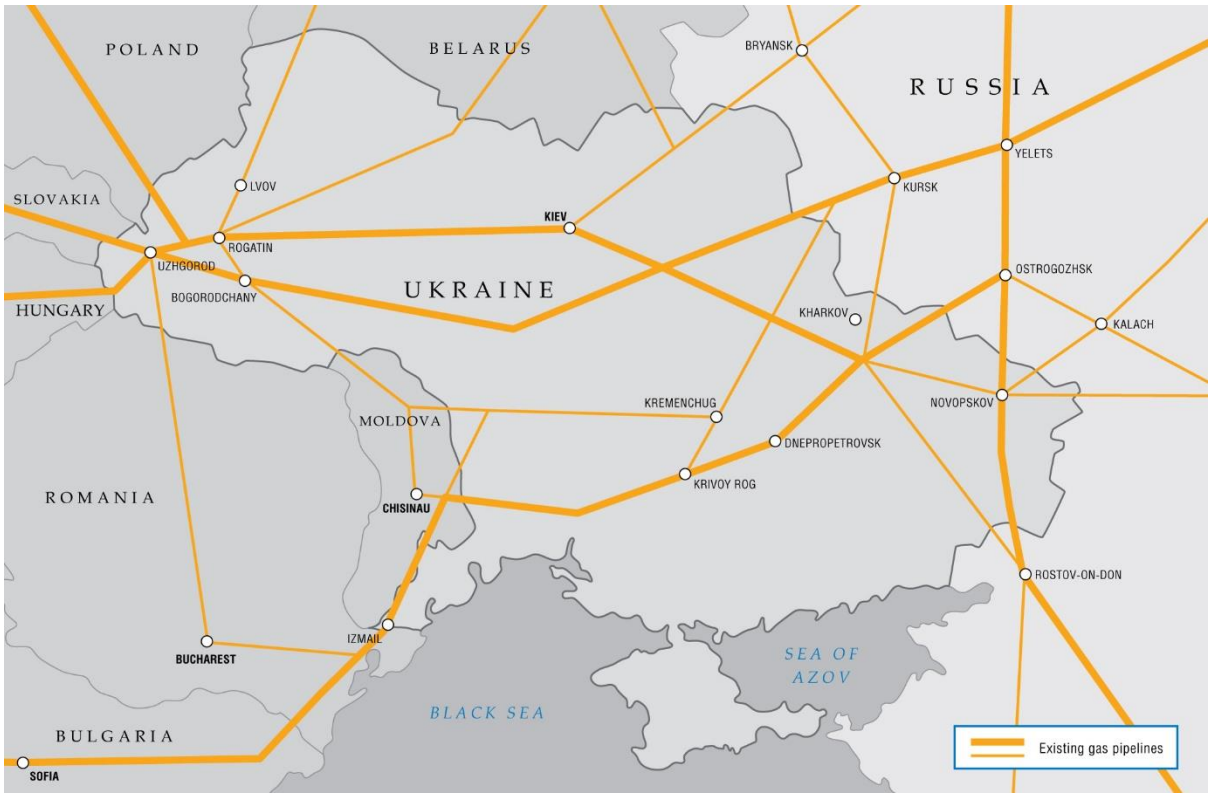
preparation of an Association Agreement were suspended. Only four years later, in November 2017 in the margins of the Eastern Partnership a new EU-Armenia Comprehensive and Enhanced Partnership Agreement (CEPA) was signed.

In 2014, relations between Moscow and Brussels became extremely tense due to Russia's annexation of the Crimea peninsula in February 2014. In September 2014, the Polish gas company, PGNiG, reported that Russian gas supplies to Warsaw had been decreased by up to 24%. The energy giant noticed that this interruption in the supplies had occurred soon after Warsaw had started exporting gas to Ukraine to make up for Russian shortfalls. Moreover, the fall in Gazprom gas deliveries to Warsaw happened at a time when the EU had imposed new sanctions against the Russian Federation. In fact, in July 2014 the EU had passed the third round of sanctions which included an embargo on weapons and dual-use technologies, restrictions to the export of certain oil technologies and financial services. The harsh stance taken by Poland against Russia with regard to sanctions and Warsaw's assistance to Ukraine through reverse flow of gas caused a strong response from Russia.

The annexation of Crimea and the conflict in eastern Ukraine had an immediate impact in the gas disputes between Gazprom and Naftogaz. In April 2014, less than a month after the Crimea crisis, Gazprom announced an 80% increase in the price Ukraine had to pay for its gas imports. Gazprom asked Kiev to pay $485 per 1,000 cubic metres, a stark increase from the previous price Ukraine was disbursing, i.e. $268. The Russian energy giant justified this upsurge by stating that Naftogaz had an outstanding debt towards Gazprom of $2.2 billion. After the two crises of 2006 and 2009 Ukraine had managed to receive Russian gas imports at a substantial discount rate, which was the result of two important concessions from the Ukrainian government vis-à-vis Russia. In 2010, Ukraine extended the lease for Russia's Black Sea Fleet in Crimea until 2042 and in December 2013, the Ukrainian President Yanukovich decided not to sign an Association Agreement with the EU. Yet, after the Maidan Revolution and the annexation of Crimea these two concessions became obsolete.

Throughout summer 2014, Gazprom warned of possible cuts in its gas flows to Ukraine and briefly did so in June of that year. Having learnt the lessons from the past gas crises, the European Union decided to intervene and conducted trilateral talks with Ukraine and Russia. At the end of October 2014, an agreement was reached. Under the terms of the deal, Ukraine agreed to disburse $378 per 1,000 cubic metres until the end of 2014, and $365 in the first quarter of 2015. With regard to the debt issue, Kiev pledge to pay $1.45bn immediately, and $1.65 billion by the end of 2014. The European Union also promised to act as guarantor of Ukraine's promises and assured Kiev that it would help Ukraine repay its debt. The new activism shown by the EU would be confirmed few months later by the announcement of the Energy Union package, drafted by the Vice President of the European Commission, Maros Sefcovic[146].

[146] Full text of Energy Union package available at https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/building-energy-union (last seen: 23 May 2018)



In the energy domain Russians have employed also different tools in order to reach their goals. In recent years, the attention of the international community has been focused on a new type of threat to global peace and security, i.e. the one from the so-called “dark net”. Cyberattacks conducted by state organisation or other semi-official entities have long been a threat to national infrastructure and security network. Already in 2007, Estonia was the target of a series of cyberattacks which lasted around three weeks. The series of malicious acts disabled the websites of government ministries, political parties, newspapers, banks, and companies. As a result, the entire country was paralyzed for almost a month. Many perpetrators of these attacks are still unknown but analysts suggest that it is likely that Russia was behind this cyber conflict.

Over a period of two years, from 2015 until 2017 experts have detected incursions into Baltic energy networks. Also in these instances, authorities believe that the culprits are entities linked to the Kremlin. However, no official proof has been produced to sustain these charges. There have been reports of cyberattacks against Baltic electricity grid that have damaged operations but have not caused any blackout. Moreover, hackers seem to have targeted also a Baltic petrol-distribution system and tried to trigger disturbances to oil deliveries in Baltic States. This new type of threat should not be underestimated as it is able to cause national, widespread damage and substantial damage to vital energy and security infrastructure. In December 2015, an unknown hacker group attacked the Ukrainian power grid and caused a power blackout to 80,000 customers in western Ukraine. Ukrainian authorities blamed the Russian security services for the attack and added that their countries had been hit by thousands of cyberattacks in the final months of 2016 as well.

In June 2016, Russia’s Transneft decided to decrease its oil shipments to Belarus by five million tonnes in the second half of that year. This decision was taken due to the fact that Minsk and Moscow had been unable to reach a compromise over the amount of the gas price paid by Minsk and the oil transit fee requested by Belarus. Energy imports from Russia represent a pivotal pillar

of Minsk's state budget. In fact, Belarus relies on Russian crude for its two oil refineries. The petroleum products Minsk produces are sold abroad, generating about a fifth of total Belarussian exports.

After months of hectic negotiations, in October 2016 a compromise was reached. Belarus pledged to strike out the 50% increase for the Russian oil transit through the Druzhba oil pipeline: an increase that had been decided just few days earlier. Minsk also promised to pay Gazprom its debt of $300 million. As consequence of these concessions awarded by the Belarussian government, Gazprom reduced the price for gas supplies and Transneft resumed the normal oil flow through the Druzhba pipeline. The compromise reached in October 2016 was finalized with a deal, which was personally signed by Lukashenka and Putin in Saint Petersburg in April 2017. Under the agreement, Belarus would pay gas deliveries $130 per 1,000 cm.

The deal marked a newly forged alliance between the two neighbouring states. Lukashenka had tried to seek alternative routes for Belarussian energy imports and had identified Iran and Azerbaijan as possible future suppliers. However, the large amount and the price offered by Russia overcame the offers that could have come from Teheran or Baku. It is not a secret that logistics and tariffs are factors that have always played in Moscow's favour with regard to the Belarussian energy market. The agreement of April 2017 also signalled the end of Lukashenko's rapprochement with the West. After the Georgian conflict in 2008, Lukashenko had not recognised the independence of South Ossetia and Abkhazia. A similar posture was held by the Belarussian government also in March 2014, after Russia's annexation of Crimea. Minsk tried to benefit politically and economically from the Russia-West split and vowed to maintain a "broker" approach as highlighted in the quadrilateral high-level meeting on the Ukrainian conflict that was held in the Belarussian capital in February 2015.

Due to Minsk's new diplomatic stance, the EU decided to lift most of its sanctions against Belarus in February 2016 (however, it kept the arms embargo). In addition, in January 2017 Minsk introduced a visa waiver for foreign visitors coming from eighty countries (EU included) and visiting the country for less than six days. Despite these positive developments in its relations with the West, the energy pact of April 2017 and the Zapad military exercise held together with Russia in September 2017 are signs of the renewed strong friendship between Moscow and Minsk. Moreover, plans for the construction of a Russian-built nuclear power plant in Belarus near the border with Lithuania in the town of Astravets have stirred alarmed reactions from the Baltic neighbour, whose capital, Vilnius, lies just 50 kilometers away from the nuclear facility.

Over recent years, the political and economic partnership between Venezuela and Russia became even stronger. In April 2017, Rosneft paid $1 billion to PDVSA, the Venezuelan state oil company, for future oil supplies. Moscow is also supporting Maduro's regime with other economic activities. In September 2017, Russia's agriculture minister announced that Russia would supply around 600,000 tonnes of wheat to Venezuela over a period of one year. Besides, at the beginning of 2018 Russia increased the amount of crude shipped to Venezuela to a rate of 335,000 barrels per day to supply PDVSA's refinery in Curacao.

In January 2016, Turkmenistan announced that Gazprom had stopped to buy Turkmen gas. The Central Asia – Center pipeline that run from Turkmenistan to Russia was built during the Cold War era and tied Ashgabat to the Russian market. Over the past few years, however, the amount of gas

bought by Gazprom from Turkmenistan was dramatically reduced. Turkmenistan is one of the key global players in the natural gas sector. The Galkynysh gas field has the second-largest volume of gas in the world, after the South Pars field in the Persian Gulf. Given the tensions with Russia over the price of gas shipments, Ashgabat tried to look for new customers for its energy exports and found a suitable one, i.e. China. The Central Asia–China gas pipeline was commissioned in 2009 and consists of three different pipelines with a maximum capacity of 55 billion cubic meters per year. This network gives the opportunity to Turkmenistan to sell its gas to the Chinese, whose gas demand is increasing due to Beijing's Made in China 2025 strategy focused on a sustained growth of domestic consumption[147].

The plans to build an offshore gas pipeline, the so-called Trans-Caspian Pipeline that would carry natural gas from Turkmenistan to Europe via Azerbaijan and Turkey, seem to be not feasible given to the international legal dispute surrounding the legal nature of the Caspian Sea. A solution to this legal matter can be achieved only if all littoral states manage to reach a compromise on this issue. Therefore, as long as the strained relationships with Russia and Iran (in this case, due to unpaid debts) persist, Turkmenistan has a very low probability to ship its gas to the European market in the coming years.

All these examples that have been recalled so far are part of a subtle strategy that has been developed by Russia over many years to pursue its national geopolitical aims. This plan involves cuts in energy supplies, disputes over the price of commodities, the application of different types of contract, acquisition of national energy companies and restriction of competition from other suppliers. The constant usage of these techniques has allowed Russian energy companies to conquer new markets, monopolize others and extend Russian geopolitical clout over many European and Central Asian countries.

Below a graphic summary of the events reported above.

3.2 Graphic summary

YEAR	COUNTRY AFFECTED	DAMAGE TO OTHER COUNTRIES	EVENT	GEOPOLITICAL VIEW	OFFICIAL EXPLANATION
1990-1991	Lithuania	The blockade limited the Soviet government's ability to supply Kaliningrad. In addition, Lithuania stopped providing	Economic and naval blockade against the Baltic state was imposed by the USSR after declaration of independence by Vilnius on 11 March 1990	Attempt by Moscow to retain Lithuania within the USSR and ward off its independence	The Soviet government affirmed that Lithuanian independence could be possible only after the adoption of a new Soviet law governing such

[147] For more information on Made in China 2025 strategy, please consult the official government website on the issue: http://english.gov.cn/2016special/madeinchina2025/ (last seen: 22 May 2018)

		electricity to Soviet army units deployed in the Baltic country			a step
1992-1993	Ukraine	Due to Gazprom's cuts to Kiev, Ukraine reduced deliveries to Europe by the same amount, effectively diverting transit gas	On three occasions (one in 1992, and twice in 1993) Russia cut off deliveries to Ukraine for a couple of days	Russia wanted to retain control of the Black Sea Fleet and Ukraine's nuclear arsenal	Disputes over non payments
2003	Latvia	Transneft's boycott of the Latvian terminal triggers a reduction in Russian oil exports to Europe	Cuts in piped oil flows to Latvia's Ventspils terminal	Moscow and Riga were locked in a row over Russian allegations that Latvia was mistreating its ethnic Russian minority. Moreover, Russia's state-owned pipeline monopoly, Transneft, wanted to become the owner of the terminal	Lack of pipeline capacity
2005-2006	Ukraine	Russian gas deliveries to Hungary and Germany via Ukraine fell by around 25%	Gazprom halted supplies to Ukraine	The crisis came soon after pro-Western Viktor Yushchenko came to power	The ex-Soviet state rejected a four-fold price rise

2006	Moldova	Despite the increase in gas prices, Moscow has allowed the Russian-leaning and breakaway region of Transnistria to consume Russian gas almost for free for a decade	Gazprom cut off gas deliveries to Chisinau for few days	Try to dissuade Chisinau from following the new western-leaning government in Kiev	Gazprom wanted Moldova to pay $160 per 1,000 cubic meters, or twice as much as the country paid in 2005
2006	Georgia	No direct impact outside Georgia	Two explosions on the Mozdok–Tbilisi natural gas pipeline in North Ossetia occurred on January 22, 2006. During the same days, a sabotage was also reported on the power grid, just few kilometers from the pipeline, which provoked a general blackout in many areas in Georgia	The events took place in a tense relationships between Moscow and Tbilisi. In September 2006, this escalated after the brief detention in Georgia of Russian officers charged with spying	Gazprom demanded Georgia to pay $230 for 1,000 cubic meters of gas in 2007, up from $110 in 2006
2006	Armenia	No direct effect on neighbouring countries	Gas price increase	Russia managed to obtain Gazprom will buy a 40-kilometer, or 25-mile, section of pipeline connecting Armenia to Iran	Adaptation to market prices
2006	Lithuania	The oil cuts caused large distress in the energy supplies to Estonia and Latvia as the only oil	Interruption of piped oil supplies to Mazeikiu refinery	Russia was irritated by the fact that Mazeikiu was sold to Polish company, PKN Orlen	Pipeline leakage

		refinery in the Baltic states is in Mazeikiu, Lithuania			
2007	Belarus	Druzhba, the world's longest oil pipeline, supplies crude to Poland, Germany, Ukraine, Slovakia, the Czech Republic, and Hungary	Transneft suspended oil shipments through the Druzhba pipeline for three days in January 2007	Gazprom tried to pressure Belarus, one of Moscow's staunchest supporters, into giving up control over its lucrative pipeline network, Beltransgaz	Gazprom demanded Belarus to pay its gas over $200 per 1,000 cubic meters in 2007, up from $46 in 2006
2008	Czech Republic	No disruption reported in other countries	Oil supplies cut	The cut occurred exactly after Prague decided to join a US anti-ballistic missile system	Technical issue
2008-2009	Ukraine	The impact was felt especially in Bulgaria, Romania, Greece, Macedonia, Croatia, Serbia, Bosnia and Turkey. It then spread to France, Germany, Italy, Austria, Poland, Hungary and the Czech Republic	Gas supplies disruptions by 25-50%	Yulia Tymoshenko became again Prime Minister in December 2007. Moreover, tensions between Moscow and Kiev were high due to President Yuschenko's support for Georgia in 2008 war	Outstanding debt plus past payments and pricing disputes

2011	Belarus	The new company, Gazprom Transgaz Belarus, operates the main natural gas transit pipelines through Belarus, Northern Lights and Yamal, two major energy networks that supply eastern and western Europe	Complete takeover of Beltransgaz by Gazprom	Full control of a key pipeline carrying part of Russian gas to Europe	Renewal of 5-year gas agreement and pricing disagreements
2014	Armenia	With this deal Armenia, which was about to sign an Association Agreement with the EU, drops any European aspiration	Gazprom, which already owned 80% of Armenia's main gas company, got the remaining 20% of the shares of ArmRosgazprom	Gazprom can control all of Armenia's gas imports up to 2043. Few months before the deal was signed, Armenia agreed to adhere to the Eurasian Economic Union	With this deal Armenians receive a drop in the wholesale gas price from 270 to 189 US dollars per 1,000 cubic metres
2014	Kyrgyzstan	Thanks to Gazprom's investment, Kyrgyzstan can repay its debt towards Uzbekistan and Kazakhstan	Takeover by Gazprom of Kyrgyzstan's natural gas network for the simbolic price of $1	Higher Russian geopolitical influence over Kyrgyzstan. In 2012, Russia had agreed to write off almost $500m of Kyrgyz debt in exchange for a 15-year extension of the lease for a Russian military air base in Kant	Debt of around $40 million by Kyrgyzstan to Kazakhstan and Uzbekistan for unpaid gas supplies

2014	Poland	The disruption appeared to affect the Yamal Europe route only, with no significant reduction reported in volumes being shipped along other routes	Reduction in the gas supplies	Pressure on Poland after the third round of EU sanction on Russia after the annexation of Crimea	Gazprom did not deny the reduction in the levels of supply and blamed it on technical feasibility
2014	Ukraine	Drops in gas supplies was also reported in Slovakia and Bulgaria	Gas supplies cuts from Russia to Ukraine. The issue was then solved with an agreement between Naftogaz and Gazprom. Under the deal, Ukraine had to pay $3.1 billion by the end of the year to clear its debts for past supplies, of which $1.45 billion had to be paid immediately	The cuts in gas supplies are an economic weapon to use to further destabilize Ukraine and damage its economy	Pricing disputes and outstanding Naftogaz's debt to Gazprom
2015	Ukraine	No known effect outside Ukraine	In December 2015 a cyber attack turned off power to 80,000 customers in western Ukraine	Need to economically damage Ukraine and expose its weaknesses in its protection of critical infrastructure	No official claim of responsibility but Ukrainian government blames the Russian security services
2015-2017	Baltic states	Disruptions to Baltic petrol-distribution system and electricity network	Suspected Russia-backed hackers have launched exploratory cyber attacks against the energy networks of the Baltic states	The Baltic states are part of the Russian power grid (BRELL Agreement) but plan to synchronize the grid with the European continental	No official explanation

				system	
2016	Venezuela	No other country involved in this deal	Rosneft increased its stake in their Petromonagas crude-processing joint venture to 40%	Extend Russian influence in South America and increase Moscow's support for Maduro	Access to new oil market
2016-2017	Belarus	Belarus relies on Russian crude for its two oil refineries. The petroleum products Minsk produces are sold abroad, generating about a fifth of total Belarussian exports	Russian oil pipeline monopoly Transneft pumped about 40% less oil to Belarus in the second half of 2016 compared to the previous year. A compromise was reached in October 2016 and a deal was forged between Putin and Lukashenka in April 2017	Exert pressure on Minsk to accept higher price for Russian gas and oil deliveries following the slump in global energy prices. Moreover, Moscow tried to curb Western influence over Minsk after the conflict in Crimea and the mediating role offered by Lukashenka	Since the start of 2016 Moscow and Minsk were unable to find an agreement over how much Minsk should be paying Russia for energy supplies
2017	Venezuela	At the beginning of 2018, Russian Urals crude was entering Venezuela at a rate of 335,000 barrels per day to supply PDVSA's refinery in Curacao	Rosneft paid $1 billion to PDVSA in April for future crude supplies. Russia expects Venezuela to pay back this debt by 2019. Alongside the Rosneft loans, in June Russia signed a contract to supply Venezuela with 600,000 tonnes of wheat a year	Increase Rosneft role in an oil-rich country and sustain Maduro's regime	Diversification of Rosneft's investments

2017	Turkmenistan	Turkmenistan has managed to find an alternative customer for its gas exports, i.e. China. The idea of the Transcaspian pipeline to Europe is still in the making	Gazprom decided not to import Turkmen gas any longer	Eliminate a possible competitor from the Russian market	Price dispute

CHAPTER 4: NEW OPTIONS OF ENERGY SUPPLIES FOR THE EU

Introductory remarks

Global cross-border pipeline capacity grew by 10% between 2010 and 2014 (190 bcm) and has not grown significantly since. The largest recent project was Europe's Nordstream pipeline, which added 55 bcm of transmission capacity from Russia to Europe via Germany when it was completed in 2012. Asian pipeline capacity has also been expanded recently, with connections between China, Myanmar and Central Asia, especially Turkmenistan. This has added a further 40 bcm to global transmission capacity. Other significant capacity additions since 2011 have included West Africa, with 5 bcm, and 10 bcm of extra capacity between Bolivia and Argentina.

Looking forward, there are four major pipeline development initiatives underway globally. First, in North America, approximately 120 bcm of pipeline capacity is either planned or under development between the US and Mexico and the US and Canada. Second, the Power of Siberia pipeline under development between Russia and China will add 40 bcma of import capacity to China in 2020. Third, components of TAPI pipeline are now under construction, which would link Turkmenistan, Afghanistan, Pakistan, and India with a capacity of over 30 bcm (although further political arrangements are required to fully complete it). Fourth, the Trans-Anatolian pipeline (TANAP), with up to 30 bcm of capacity through Turkey to Europe, is under construction and is expected to be completed by 2020, along with the Trans-Adriatic pipeline connecting supply through Greece to Italy.

Major energy prospects for the EU lie in the Eastern Mediterranean, in the Caspian Basin, in North America, in Eastern Africa and in Australia. The EU and the USA are currently hammering out a new version of the Transatlantic Trade and Investment Partnership: if signed it could create the largest free trade zone on an area that combines roughly half of the world GDP. The EU is extremely aware of the need to include an energy chapter in the agreement: in December 2015, Brussels was pleased that Washington lifted its ban on crude oil that dates back to the 1970s[148]. This opened up a new oil supply for the European market, added pressure on Russia and increased EU sway on pricing issues with the Kremlin.

The Europeans want a detailed chapter in the trade pact that lays out US commitments to energy exports, hoping to make supply more secure. An energy chapter in the TTIP would facilitate not only the crude oil trade between the EU and the US but it would also expedite the approval on LNG export terminals by the US Department of Energy (a process which usually takes some years). The issue would be extremely beneficial for the EU as current gas prices in the States (Henry Hub ones) are rather competitive if compared with the European spot ones (though, not as much as the prices of Russian piped gas).

The EU is also looking at Canada energy as a new opportunity to diversify its energy supplies. The Canadian government and the European Commission have recently agreed a Comprehensive Economic and Trade Agreement (CETA). Though, unlike the defunct TTIP the CETA does not contain any chapter entirely devoted to energy exports to Europe. Moreover, the Energy East

[148] B. WINGFIELD, «U.S. Crude Oil Export Ban», Bloomberg, 18 December 2015. https://www.bloomberg.com/quicktake/u-s-crude-oil-export-ban (last consulted: September 2018)

Pipeline project would have allowed the EU to import tar crude from Alberta. However, the project was called off in October 2017. In fact, some European countries, like Italy and Spain, had been vocal in backing the Energy East Pipeline that would have supplied tar oil from Alberta region to the Atlantic coast of Newfoundland.

As far as natural gas is concerned, for the EU the Canadian LNG prospects seem to be rather limited because up to date there is only one scheduled LNG export facility on the Atlantic Ocean (the Goldboro Project, Nova Scotia). The fact that Australia will probably become the largest LNG exporter in the world in the next few years constitutes a matter of interest for Brussels. Canberra and Brussels have agreed to a Partnership Framework in 2008.

The Partnership Framework contains an energy chapter which sets out, among other things, that "Australia and the EU recognise the importance of multilateral dialogue on energy security and climate change including in the G8 and major economies meeting processes". Though, the agreement was revised only in 2009 and no concrete action has been take to revive the bilateral relations since then. Despite the high priority to the energy security given by the Juncker Commission, the European External Action Service has not yet undersigned a Memorandum of Understanding on energy issues with Canberra.

The EU has already done so with Kazakhstan and Turkmenistan (respectively in 2006 and 2008). Both countries are part of the "EU-Central Asia: Strategy for a new partnership" established in June 2007[149]. The European Commission has been interested to broaden the cooperation with these two countries since the large gas reserves of Ashgabat (Galkynysh) coupled with the massive Kashagan oil field in Kazakhstan could have a tangible impact on new energy routes for the Europe market.

In this regard, the Trans Caspian Pipeline could deliver a pivotal result in the European quest for a diversification of its energy supplies. Though, no concrete result will ever be reached without a complete solution to the legal dispute over the status of the Caspian Sea. Until then, the Trans Caspian Pipeline will remain for the EU a mere hypothetical geopolitical scenario.

The recent discoveries of large gas fields in the Eastern Mediterranean have raised the issue of upgrading the EU relations with Tel Aviv. In fact, in 2009 and in 2011 the gas the US energy company, Noble Energy, discovered the fields of Tamar and Leviathan. The former is deemed to hold reserves of 300 billion cubic meter of natural gas, the latter a figure double that size.

Israel is part of the European Neighbourhood Policy and of the Euro-Mediterranean Partnership (EUROMED). Though, the divergent vision over the establishment of a Palestinian State has led to a tense bilateral relation between the EU and Israel. Algeria, the third largest gas supplier to Europe, is also part of the EUROMED and of the Neighbourhood Policy.

The brilliant energy opportunities opened up by the discovery of the Rovuma Basin in Mozambique and Tanzania have roused the attention of the largest LNG importers in the world. The EU is currently negotiating an Economic Partnership Agreement with Tanzania: a comprehensive trade agreement that includes trade alongside development cooperation. On the

[149] Official communiqué available at https://eeas.europa.eu/headquarters/headquarters-homepage/4890/the-european-union-and-central-asia-the-new-partnership-in-action_en (last consulted: September 2018)

other hand, an Economic Partnership Agreement (EPA) was recently concluded with the Southern African Development Community region (SADC), offering duty-free, quota-free access to the EU market: Mozambique adhered to this trade configuration in February 2018[150]. As a less developed country, Mozambique already benefits from substantial advantages when trading with the EU.

Besides, the EU has been importing LNG from Trinidad and Tobago, the largest LNG exporter in the Caribbean region as well as from the only LNG export terminal in South America, i.e. the Melchorita facility in Peru.

4.1 The central role of Turkey

Despite the regional unrest and its military involvement in Syria, Turkish economy has steadily increased over the past few years and this brought about a boost in its oil and gas consumption. With limited domestic reserves, Turkey imports nearly all of its energy demand. Ankara also plays an increasingly important role in the transit of oil and gas to Europe. It is strategically located between Russia, the Middle East countries and the European market. In addition, it is home to one of the world's busiest chokepoints, the Bosphorus, through which millions of oil barrels flow every day, coming from Russia, Azerbaijan and Kazakhstan.

A terminal on Turkey's Mediterranean coast at Ceyhan serves as an outlet for oil exports from northern Iraq and from Azerbaijan (through the Baku-Tbilisi-Ceyhan pipeline). On the other hand, the Baku-Tbilisi-Erzurum pipeline (also known as South Caucasus pipeline) brings the natural gas from the Azeri offshore gas field of Shah Deniz to the Turkish market with a maximum capacity of 25 billion cubic meters per year. Despite a Russian jet fighter was shot down by Turkish military in 2015, relations between the two countries have improved considerably since then. In 2016, after months of strong tensions between Moscow and Ankara, the two countries signed an intergovernmental agreement to build two offshore pipelines (the so-called Turkish Stream project) that would run from the Russian city of Anapa to the Turkish coastal town of Kıyıköy.

The maximum capacity of the pipelines is set to be 31.5 billion cubic meters per year: the first string of the pipeline is expected to be bound solely to the Turkish market (around 15 bcm per year), whereas the rest is earmarked for the European markets. This way Russia would manage to sell its gas directly to Turkey and circumvent Ukraine and its transit fees. The first shipment of gas is expected to flow through the Turkish Stream pipeline in December 2019. Turkey is already receiving Russian natural gas through the Blue Stream pipeline that crosses the Black Sea and currently pumps around 16 bcm per annum into the Turkish domestic pipeline system.

[150] EUROPEAN COMMISSION, «The European Union and Central Asia: The New Partnership in action», June 2009. https://eeas.europa.eu/headquarters/headquarters-homepage/4890/the-european-union-and-central-asia-the-new-partnership-in-action_en (last consulted: September 2018)

Turkey has also negotiated with Bulgaria to build a gas interconnector between the two countries. According to Bulgaria Prime Minister, Boyko Borissov, the bi-directional gas pipeline between Bulgaria and Turkey would have a maximum capacity of 16 billion cubic meters per year and should be operational in the summer of 2018. With the planned construction of Nord Stream 2 and the Turkish Stream, Ukraine's role as key transit country for Russian gas is about to be reduced dramatically. In April 2018, Gazprom CEO, Alexei Miller, stated that the volumes to Ukraine will fall from 93.5 billion cubic meters in 2017 to about 10 to 15 billion cubic meters once the current gas transit agreement between Gazprom and Naftogaz expires at the end of 2019.

Cooperation between Ankara and Moscow has been strengthened also in other field of energy policy, such as the nuclear one. In April 2018, Turkey's atomic energy authority granted Russian company, Rosatom, a construction license to start work on the first unit of the Akkuyu nuclear power plant. Rosatom is also looking to take a 49% stake in the project. The first Turkish nuclear power plant is estimated to cost around $20 billion and is part of President Erdogan's "2023 Vision" to reduce energy imports and increase Turkish domestic production. In 2013, Turkish authorities signed an intergovernmental agreement with Japan to develop a second nuclear power plant project at the Sinop site near the Black Sea. Yet, unlike the Akkuyu, the Sinop project has not yet received a building licence from the competent authorities.

After the serious incident involving the downing of a Russian Sukhoi jet fighter by Turkish army, Turkey and Russia have been mending ties also in the military domain. In December 2017, President Erdogan announced that he had reached a deal with Russia for the purchase of two S-

400 air defence systems by early 2020. This has raised many concerns from fellow NATO member states, and from the US in particular that even hinted at the possibility to impose sanctions to Turkey over this agreement with Russia.

After Russian annexation of Crimea in 2014 and the subsequent strained relations with Kiev, Russia has been actively trying to circumvent Ukrainian territory to transport its gas to European markets. As already mentioned, the new Turkish Stream project should bring to Europe 16 billion cubic meters per year, but also other pipelines bound to Europe are set to run through Turkey, thus increasing its regional geostrategic importance. The European Commission has been pursuing a strategy of diversifying EU energy supplies from Russia and wean off its gas dependence on Gazprom's imports. In this regard, the Southern Gas Corridor constitutes a pillar of this EU strategy as it envisages new pipelines carrying gas from Azerbaijan, and possibly Turkmenistan, via Turkey and then Greece and Italy.

The Trans Anatolia Natural Gas Pipeline (TANAP) project is expected to be operational as of 2018 and has a maximum capacity of 16 billion cubic meters per year. The project is owned by Azeri state energy company, Botas, the Turkish energy giant, Socar, and the English BP. The pipeline starts at the Georgian-Turkish border and terminates at the Turkish-Greek border where the Trans Adriatic Pipeline (TAP) starts. By connecting with the Trans Anatolian Pipeline, TAP will cross northern Greece, Albania and the Adriatic Sea before reaching the southern Italian coast in San Foca, where it will be linked to the Italian natural gas network. The project is currently in its implementation phase and the construction of the pipeline should be finalized in 2019. Once built, TAP will offer a direct and cost-effective transportation route opening up the Southern Gas Corridor, a 3,500-kilometre-long gas stream stretching from the Caspian Sea to Europe[151].

All of these political and strategic developments increased Turkey's importance. A possible final agreement on the Iranian nuclear programme could pave the way for a new gas supply route for the EU. If this is the case, Iran will also use Turkey as a conduit to transfer its energy resources to Europe if and when sanctions against Teheran are lifted. In addition to the transfer of Iranian and Iraq energy resources, in the long term Ankara could become a transit country with regard to deliveries of gas from Cyprus and/or Israel.

Indeed, all these new energy projects (Turkish Stream and TANAP/TAP) increase Turkish geostrategic position vis-à-vis the EU. As already mentioned, in the long run, Ankara could also become a transit country not just for energy sources from the Caspian Basin but also from the Eastern Mediterranean basin. In this case, a possible future scenario of offshore underwater pipelines from this area will depend on Ankara's ability to achieve a political solution with regard to the Cyprus dispute which dates back to 1960. Besides, given the fact that Israel is still technically at war with Lebanon, a pipeline running from Leviathan field through Beirut's exclusive economic zone (EEZ) seems to be implausible.

[151] For more information about the Southern Gas Corridor, please visit the official website available at https://www.tap-ag.com/the-pipeline/the-big-picture/southern-gas-corridor (last seen: 23 May 2018)

Turkish opposition to the Assad Alawite regime in Syria impedes any underwater pipeline bound to Turkey from Israel, running through Lebanese or Syrian EEZ. Turkey could potentially build a natural gas pipeline with the Greek Cypriot side, but the low level of political engagement between them makes this scenario highly unlikely. Given its boost in the construction of LNG terminals, Turkey seems to prefer importing LNG gas, rather than piped one: as mentioned above, this choice is justified by international political factors.

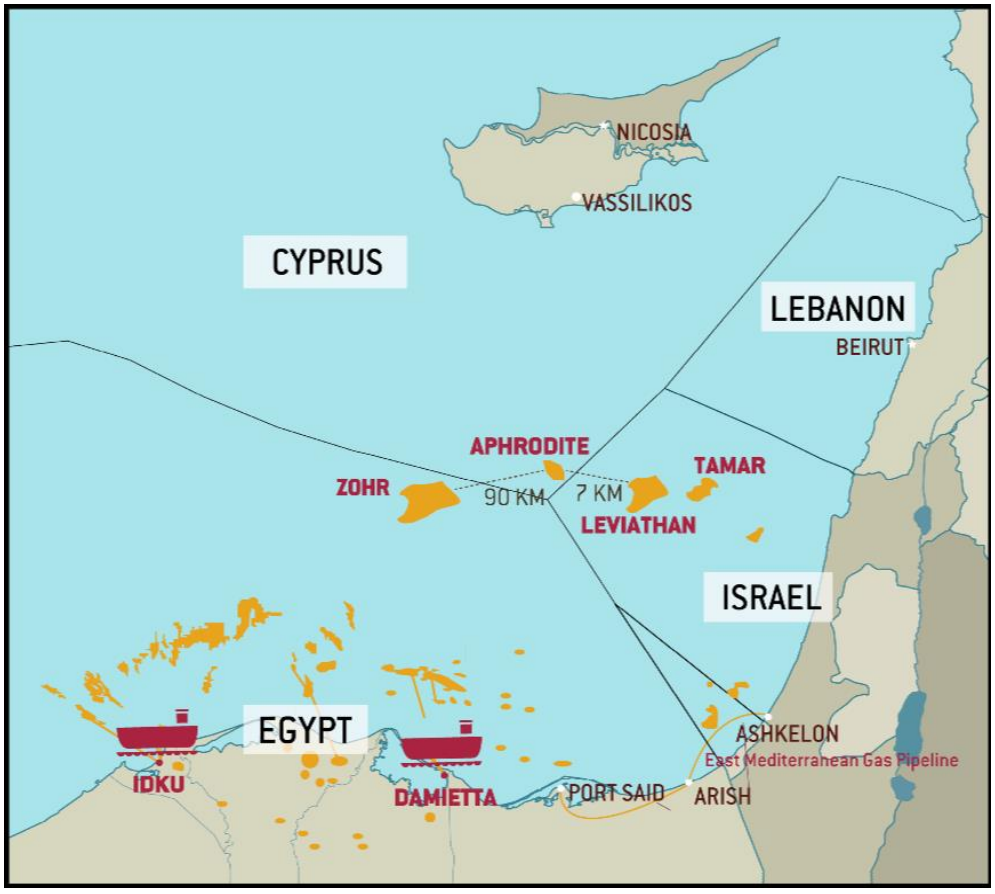
In December 2011, the discovery of the Aphrodite gas field constituted a real game changer for the future energy scenario of the Eastern Mediterranean basin. Aphrodite is an offshore gas field, located off the southern coast of the island of Cyprus. It is believed to hold 3.6 to 6 trillion cubic feet of natural gas. In February 2018, Italy's Eni and France's Total announced a "promising gas discovery" at the Calypso block off the coast of the island of Cyprus. However, the same month Turkish warships blocked Eni's drilling ship in that area. In fact, Turkey does not recognize the Greek Cypriot side's delimitation agreements of its exclusive economic zone with Egypt, Lebanon, and Israel. The Greek Cypriot side is pursuing an active energy diplomacy so that gas from the Aphrodite field can soon be export to the EU and Egypt.

In early 2018, Egypt and the Greek Cypriot side have been negotiating over the construction of a pipeline that should transport gas from Aphrodite field to the LNG terminals along the Egyptian Mediterranean coast. According to figures cited by Egypt's ministry of energy, the cost of such infrastructure would be around $800 million and $1 billion. However, no indication of when such a deal will be finalized has been so far released. As already outlined earlier, the Greek Cypriot side is also pursuing the development of the so-called EastMed pipeline, a colossal project that would bring gas from Leviathan and Aphrodite fields to Greece, and eventually Italy. According to preliminary figures, the project will have the capacity to carry up to 20 billion cubic meters of gas yearly and would start about 170 kilometers off the southern coast of the island of Cyprus and

stretch for 2,200 kilometers to reach Italian Apulia coast via Crete and mainland Greece. It is expected that a final intergovernmental deal between Israel, the Greek Cypriot side and Greece should be reached by the end of 2018: this is what the President of the Greek Cypriot side, Anastasiades, stated in May 2018 during a trilateral meeting with Greek Prime Minister, Tsipras, and Israeli counterpart, Netanyahu.

4.2 Eastern Mediterranean basin

Recent oil and gas discoveries in the Eastern Mediterranean basin have transformed Israel's strategic importance in the region. The supergiant offshore Leviathan gas field was discovered in December 2010 and it is estimated to hold around 16 trillion cubic feet of natural gas. Due to technical difficulties production is expected to begin by the end of 2019. Some analysts expect Leviathan field to be able to satisfy Israeli gas demand for the next forty years. Another vast gas field was discovered off the coast of Israel in 2009, i.e. Tamar. Commercial production from the Tamar field began in 2013 and the field is believed to hold 7 trillion cubic feet of natural gas. The discovery of Tamar and Leviathan has completely changed the Israeli gas scenario for the coming decades and it is highly likely that Israel will become a significant exporter of natural gas in the next decade.



In 2013, the Israeli government decided to earmark 60% of the country's proven reserves for domestic consumption and to export the remaining 40%. At the time, Prime Minister, Benjamin

Netanyahu, stated that Israel will receive $20 billion from taxes and royalties from energy companies operating in the countries over a period of twenty years. However, the real question around this huge energy business lies in the choice of the export market of this gas bonanza. Turkey could be a possible target of Israeli gas export as it is a large market (of 80 million inhabitants) and its energy demand is expected to steadily grow in the future. However, current political relations between Ankara and Tel Aviv are tense, especially after the Mavi Marmara incident of 2010. In 2018, President Erdogan's declarations criticising US decision to move their embassy from Tel Aviv to Jerusalem have not helped allay the political strained bonds between the two countries.

Turkey is currently expanding its LNG capacity. In February 2018, Ankara hailed the start of operations of the country's second floating storage and regasification unit (FSRU) at the port of Dörtyol, located on the country's Mediterranean coast. Turkish second FSRU, which is also the world's largest, followed the FSRU Neptune that was commissioned in Izmir in December 2017. In addition, six LNG import terminals with a capacity of 5 billion cubic meters are in the construction phase. Therefore, given this new LNG demand capacity in Turkey, Israel could start shipping LNG to the Turkish market.

Over the past few years, the prospect of a new colossal project that would link Israel and the gas fields off the coast of the island of Cyprus to Greece and then Italy have gained momentum. If finalized, the EastMed pipeline would be the longest and deepest undersea pipeline in the world and its cost should be around four billion dollars. Early estimates believe that the project could be finalized not before 2025. IGI Poseidon, a joint venture between the Greek energy company, Depa, and Italian Edison deems the project economically viable. The European Commission has already expressed its support of the project, which would fit into its long-awaited Southern Gas Corridor. If implemented, the pipeline will not have to pass through Lebanese territorial water, given the political tensions between Israel and Lebanon, two countries that are still technically at war. The pipeline should also avoid Turkish territorial water or its exclusive economic zone, due to the diplomatic standoff between Ankara and Nicosia that has been going on since 1960.

Israel is actively engaged in negotiations with other neighbouring countries, such as Jordan. In September 2016, Jordan's government-owned National Electric Power Company (NEPCO) and Noble Energy signed an agreement to import 40% of Jordanian gas demand from Israel. Noble Energy is a US-based company that owns 39% of Leviathan gas field. Amman also agreed to financially support a gas pipeline linking Israel with Jordan and, in early 2018, Amman pledged to disburse $2 million for the project.

Another country where Israel could send its natural gas is Egypt. Cairo itself has experienced a dramatic shift in its energy policies after the discovery in 2015 by the Italian energy behemoth, ENI, of the supergiant offshore gas field, Zohr. The field, estimated to contain 30 trillion cubic feet of gas and located 190 km north of Port Said, is the largest ever discovery of gas in the Mediterranean Sea. In December 2017, ENI announced it had started production at Zohr field. The

expected production capacity of this site could satisfy Egypt's gas domestic consumption for decades to come and could transform Cairo into a net gas supplier, as it once was[152].

In 2005, Israel signed a 15-year agreement with Egyptian authorities to buy natural gas. However, after the January 2011 revolution, the pipeline crossing the Sinai region was repeatedly attacked by Islamist fighters and this led to electricity outages in Israel. This was the reason whereby Cairo struck the deal in April 2012. At the time, Israel had threatened to resort to international arbitration but has not yet made any move. In February 2018, Israel's Delek Group signed a $15 billion agreement to supply Israeli gas to Egypt's Dolphin Energy for 10 years. Despite this deal, Egypt hopes to become a hub for exporting gas to Europe in the near future and plans to stop importing gas as of 2019. It is important to notice that Egypt is the largest oil and gas consumer of the African continent and in order to cope with the increasing domestic consumption, Cairo has decided to build its first nuclear power plant. In December 2017, Moscow and Cairo signed an agreement to construct Egypt's first nuclear plan with a cost of $21 billion. The plant is due to be finished by 2028-2029 and will be built in Dabaa, which is about 130km south of Cairo.

The exceptional gas discoveries in the Eastern Mediterranean basin pose a grave conundrum to Egypt and Israel, especially in terms of the choice of shipping the resources through pipelines or LNG infrastructure. The latter is a technique that converts natural gas into liquefied natural gas (LNG) and ships it in special tankers. LNG is a natural gas that is liquefied at -162 °C to decrease its volume by about 600 times. In 2012, Israeli authorities received a proposal to build a LNG terminal in Eilat so that freighters could reach Europe and even the more lucrative markets in Asia through the Red Sea.

According to the initial plan, the natural gas would have come from a gas pipeline connecting the Leviathan field with the coastal city of Ashkelon and then Eilat on the Red Sea. However, this project seems to be shelved for two reasons: LNG terminal is costly (usually $5 billion per train) and the narrow Straits of Tiran between Egypt and Saudi Arabia could pose security issues, given the proximity of the Sinai Peninsula. Another option is for Israel to liquefy its gas in Egypt, which has two LNG plants with excess capacity (Damietta and Idku). Though, at present the discovery of Zohr poses doubts over Egypt's capacity to process additional gas coming from Israel at its LNG terminals.

The Arab Gas Pipeline (AGP) was developed within the framework of bilateral discussions between Egypt and Jordan in 2001. The original Memorandum of Understanding (MoU) was afterwards expanded to include Syria and Lebanon. A side deal ensured gas supply to Israel, whereas both Turkey and Iraq signed agreements to cooperate in this regional project. The 1,200-kilometre AGP currently exports mainly Egyptian natural gas. It is divided into four segments. The first, from Arish to Aqaba in Egypt was completed in 2003; the Jordan section in 2006; the Syrian section in 2008;

[152] ENI official statement on the start of production at Zohr available at https://www.eni.com/en_IT/media/2017/12/eni-begins-producing-from-zohr-the-largest-ever-discovery-of-gas-in-the-mediterranean-sea (last seen: 22 May 2018)

and the Syria –Lebanon leg was completed in 2009. The AGP delivered its first 12 billion cubic feet (bcf) of Egyptian natural gas to Jordan in 2003[153].

In 2008, a new leg extension of the AGP was built: it run under water from the starting point in Arish in Egypt to Ashkelon in Israel. The AGP was sabotaged a dozen of times between 2011 and 2012: this resulted in gas supply disruptions to Jordan and Israel. Total exports via the AGP dropped to 19 billion cubic feet (bcf), of which the majority was sent to Jordan, with a smaller amount delivered to Israel before exports were finally terminated in 2012. This level is a substantial decrease from the gas volumes transported via AGP prior to the Arab Spring revolution, which totaled 193 bcf in 2010. Egypt has been resuming supplying piped gas to Jordan in January 2019[154].

In May 2014, US company, Noble Energy, and Israeli firm, Delek, reached an agreement on a $19.5 billion deal to export natural gas over 15 years from Israel's Tamar field to the Egyptian plant in Damietta, which is operated by Unión Fenosa Gas, a joint venture between Spain's Gas Natural and Italy's Eni. Yet, in March 2018 this deal was scrapped as it seems highly likely that natural gas from Zohr will be sent to Damietta instead. In February 2018, the Israeli energy company, Delek, and US-based Noble Energy, that are partners in the production at Tamar and Leviathan, signed a deal with the Egyptian private energy company, Dolphinus.

Under this agreement, Egypt will receive 64 billion cubic metres of gas over a decade. However, no detail was released with regard to how the gas would be transported and at what price. Commenting the agreement, Israeli Prime Minister, Benjamin Netanyahu, stated that it 'strengthen our economy [and] strengthen regional ties'. With regard to Egypt's second LNG terminal in Idku, Shell has recently conducted negotiations to buy gas from Israel's Leviathan field and the Aphrodite field, off the coast of the island of Cyprus. Shell would be interested in transporting up to 10 billion cubic meters per year for ten years to its facility in Idku[155]. If achieved, this deal could signal the beginning of a new era for the Eastern Mediterranean basin. In the coming years, LNG freighters could supply Europe with gas coming from Egypt and Israel, a scenario that until ten years ago seemed unconceivable.

There is also a new actor that could be soon involved in the Eastern Mediterranean gas venture. Recent estimates resulting from seismic surveys indicate that there is a 50% probability that 45% of Lebanese waters could contain up to 96 tcf of natural gas[156]. In spring 2018, Lebanon signed its first offshore oil and gas exploration and production agreements with the Total-Eni-Novatek

[153] M. STONAKER, «Energy Infrastructure As A Diplomatic Tool: The Arab Gas Pipeline», *Journal of Energy Security*, 2010

[154] Vv. Aa., «Jordan to resume gas imports from Egypt in January», Argus Media, 20 July 2018. https://www.argusmedia.com/en/news/1720500-jordan-to-resume-gas-imports-from-egypt-in-january (last consulted: October 2018)

[155] For more information about the Idku LNG terminal, please consult the dedicated page on Egyptian Ministry of Energy available at http://www.petroleum.gov.eg/en/ProjectsandActivities/StrategicProjects/Pages/Idku.aspx (last seen: 23 May 2018)

[156] L. BASSAM, «Lebanon says gas, oil reserves may be higher than thought», *Reuters*, 30 October 2013. https://www.reuters.com/article/us-meast-investment-lebanon/lebanon-says-gas-oil-reserves-may-be-higher-than-thought-idUSBRE99Q07L20131030 (last consulted: October 2018)

consortium. The exploration period can last up to three years and the first well was drilled in 2019[157].

4.3 The Middle East prospects

The Middle East region is currently experiencing strong geopolitical crises: the war in Syria and Yemen, the decision by the US to withdraw from the Iran nuclear deal, the blockade against Qatar by other members of the Gulf Cooperation Council. The Iranian nuclear programme was one of the reasons why Saudi Arabia has launched an astonishing plan of investments in green and nuclear energy. Riyadh's neighbors, the United Arab Emirates, are keen to develop new nuclear power plants as well as new solar installations.

The surge in domestic consumption (mainly driven by residential cooling and desalination) has led the Gulf countries to invest in green technologies (solar and wind). In spite of the Saudi's influence in the Arabic peninsula, there is a country that took an independent stance on foreign and energy relations within the Gulf Cooperation Council, i.e. Oman. The news of the agreement of a gas pipeline between Oman and Iran constitutes just the pinnacle of friendly bilateral relations between these two countries.

The discoveries of vast energy reserves in the Eastern Mediterranean region has given a strong boost to the EU quest to diversify its energy imports. In 2017, Qatar provided 5.6% of the extra-EU imports of natural gas. Given its prominence in the European and global LNG market, it is relevant here to shed some light over Qatari gas production and export.

Qatari economic transformation began in 1971, when Shell discovered Qatar's North Field, the world's largest non-associated gas reservoir. The term "non associated" refers to natural gas not in contact with significant quantities of crude oil in a reservoir. Little was done to develop the field until the country completed its first LNG plant at Ras Laffan in 1996 in partnership with Exxon Mobil.

Proved gas reserves in Qatar are the third largest in the world estimated at 25 trillion cubic meters. The offshore North Field is the main gas reserve in Qatar and accounts for nearly all Qatari production. Together with the bordering Iranian South Pars, it represents the world's largest gas field. Qatar has been the world's largest LNG exporter since 2006, with export volumes of around 77 million tonnes per year.

Over recent years, Doha has diversified its export markets, going beyond the traditional (and profitable) Asia markets and reaching out to Europe, the United States and South America. Despite the economic and political embargo against Doha carried out by Saudi Arabia, Bahrain, the United Arab Emirates, and Egypt, Qatar has been consistently the main LNG supplier of the EU in the last couple of years. In 2017, LNG from Qatar represented 44% of the overall EU LNG imports.

[157] L. BARRINGTON, «Lebanon begins offshore oil and gas exploration», *Reuters*, 29 May 2018. https://www.reuters.com/article/us-natgas-lebanon/lebanon-begins-offshore-oil-and-gas-exploration-idUSKCN1IU15F (last consulted: October 2018)

In 2005, Qatar declared a moratorium on development of the North Field, to give the country time to study the impact of such a rapid increase in output on the reservoir. The moratorium applies is valid only to the Qatari side and not to the Iranian one. At the time the decision was taken in order to ensure the reservoir's longevity. However, in early 2017 Doha announced that it was going to lift the self-imposed ban and was aiming at increasing the field capacity by about 10%. The move is a reaction to the rapidly changing LNG world market, that has seen a rapid rise of new actors, such as Australia, the US and Russia (with the Yamal project).

Indeed, Qatar's dominance in the LNG world market seems to be increasingly precarious. The greatest threat to Qatar's enormous gas wealth is competition. Other nations are challenging its LNG prowess. Australia is constructing liquefaction plants that will more than triple its annual LNG-manufacturing capacity to 74 million tons by 2019, an amount almost equal to the Qatari one.

Due to these current challenges from the other LNG competitors, Qatar Petroleum announced in October 2018 it would be increasing Doha's LNG capacity, adding a fourth train that would raise Qatar's LNG production capacity by 43 percent—from 77 million tons annually now to 110 million tons a year. The expansion of the LNG output is expected to be completed by 2023 or 2024[158].

[158] T. PARASKOVA, «Qatar To Boost LNG Capacity To Seize Market Opportunities», *Oilprice.com*, 27 September 2018. https://oilprice.com/Energy/Natural-Gas/Qatar-To-Boost-LNG-Capacity-To-Seize-Market-Opportunities.html (last consulted: October 2018)

4.4 North America unconventional resources

The boom in shale gas and tight oil has allowed the USA to become the largest world producer in oil and natural gas: this revolution has triggered a change of status in the American energy policies. Many analysts predict that Washington will also become the world's largest natural gas exporter in just few years and there is little doubt that the shale oil and tight gas from the States is already having a clear impact on the world's LNG market. US LNG exports pose a deep challenge for Qatar, as their price do not follow a longtime convention that links LNG tariffs to the price of oil.

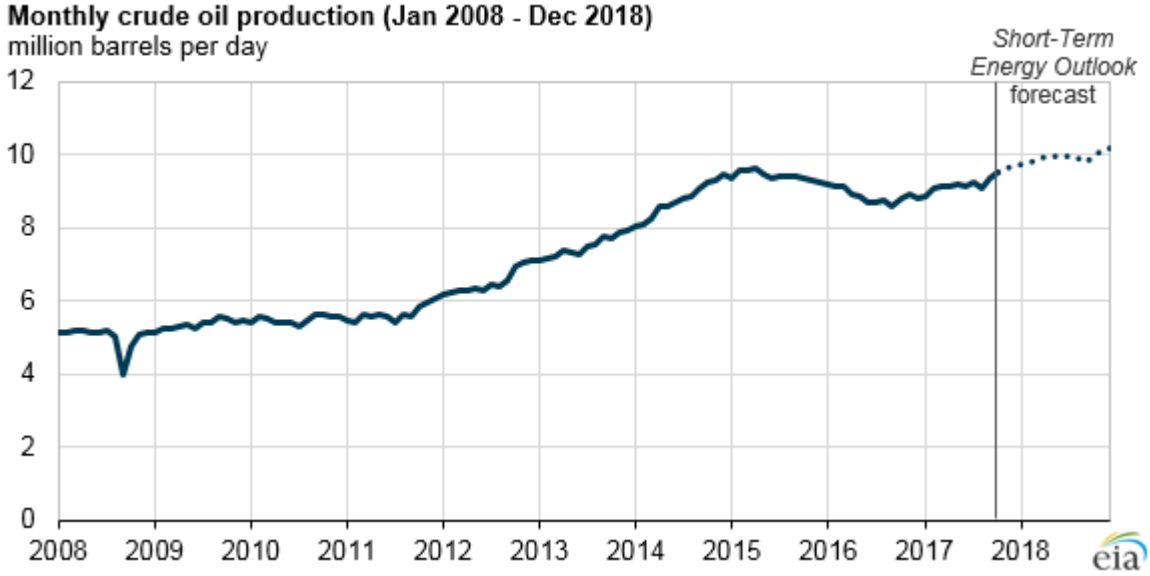
The USA currently have two LNG export projects on the Atlantic coast (Cove Point in Maryland and Sabine Pass in Louisiana) and will have several export projects operational by the end of the decade. The emergence of the United States as LNG exporter does have clear benefits for European nations but it is unlikely to be a real game changer for the European gas market. Despite this, the US became the fifth largest LNG supplier to Europe in 2017 and its market share rose sharply to more 6%, from just 0.6% in 2016. Using a Henry Hub gas price of $2.85/MMBtu as a base, Russian energy company, Gazprom, calculated that adding processing and transportation costs, the price in Europe of US LNG would reach $6/MMBtu. This would be a clear increase for European consumers since Russian gas is at present sold for around $5/MMBtu in European markets. In May 2018, the Henry Hub gas price was $2.75/MMBtu.

Gazprom had long used the practice of selling its gas to European customers via long-term, oil-indexed contracts. However, the rise of new LNG actors in the world's gas market and the European Commission legal charges against unfair practices carried out by the Russian energy behemoth in Eastern Europe have contributed to a change in Gazprom's posture in this matter. At present, Gazprom is selling gas in Western Europe on spot-based prices at auctions, but volumes are still negligible if compared with pipeline gas sales.

Russia has clearly understood the risk of Doha's spot deals in Europa. There is no doubt that Moscow would like Qatar to focus on Asia and would prefer Doha to sell its gas under long-term oil-indexed contracts, instead of feeding European spot markets. In addition, current high spot prices in Asia could become an incentive for Qatari LNG to be redirected there. The disastrous accident of Fukushima in 2011 has obviously helped increase Japanese LNG demand. South Korea, Malaysia and Indonesia have also increasingly imported large quantities of gas over the last few years. But in the longer run, the real variable is China. According to an analysis by Wood Mackenzie, LNG demand is expected to increase from 26.2 to 61.6 million tonnes per year over the period 2016-2020. However, the need to diversify theirs gas supplies away from Moscow means that some European countries are eager to strengthen their relationships with Qatar. In March 2017, the Polish company, PGNiG, announced it had clinched a side agreement to the existing long-term contract with Qatargas, whereby LNG supplies will increase to 2 million tonnes per year as of 2018.

Over the past few years the rise in oil and gas production by the United States has been remarkable due to the massive utilization of shale technologies. US crude oil production broke 10

million barrels a day in November 2017: a record as it was the first time Washington reached this target since production peaked in 1970. The US is set to surpass Saudi Arabia's oil production by the end of 2018 and nearing Russia's one, which constitutes the largest in the world with 11 million barrels of oil per day. The upward trend can be found also in American gas production. The US Energy Information Administration (EIA) recorded that US dry natural gas production averaged 73.6 billion cubic feet per day in 2017. By 2016, the total US gas production was around one-third higher than in 2005, whereas half of today's production comes from shale basins (like the Bakken in North Dakota or the Permian in Texas), or is a by-product of tight oil extraction. The EIA expects this rise to last over the coming years as well, since natural gas production should increase again to 83.3 billion cubic feet per day in 2019[159].



The shale revolution was born in 2008, when American oil production was a modest six million barrels per day. It was at this time that the hydraulic fracturing technologies became more affordable, and that the global price of oil was high enough to support the infrastructure and expensive drilling costs involved. Fracking – the process of hydraulically fracturing shale rock to release oil and gas – is a more expensive technique compared with the traditional production model. After the oil price slumped in early 2016, many experts predicted that the shale industry could not cope in this financial environment.

Doubts had been cast over the longevity of the shale oil revolution and over the resilience of US unconventional production. In this regard, productivity decline is one of the factor that needs to be taken into consideration. In fact, the average decline of a conventional oil field is about five percent per year. By comparison, the average decline of oil wells in North Dakota's Bakken tight oil field is forty-four percent per year and individual rigs can see production declines of even seventy percent after the first year. Besides, a shale well has a very limited lifespan, of around seven or eight years on average. On the other hand, a conventional oil field has a different production pattern, producing crude at a level that declines gradually after years or even decades. An example of the difference between a conventional and shale field is constituted by the fact that

[159] Vv. Aa., «Short-term Energy Outlook», *US Energy Information Administration*, 2018

the supergiant Saudi's Ghawar field, for instance, began producing crude in 1951 and is still pumping around five million barrels every day: around half of Saudi total production.

Yet, the shale industry proved to be very resilient and the decrease in production did not occur. One of the key reason behind this was represented by the fact that productivity of an individual shale rig increased by a factor of six between 2011 and 2016. The shale bonanza has also led to a change in crude export policies in the States. The oil boom in the States convinced policymakers to lift the US crude export ban, which was introduced after the first oil crisis after the outbreak of the Yom Kippur war in 1973. At that time, Opec countries reduced their production to punish the US for giving military aid to Israel. The Arab embargo against the West caused oil prices to quadruple and led to rationing at gas stations across Europe and the US. In order to protect itself from future oil volatility, Washington decided to introduce a crude export ban in 1975.

As outlined above, the US exponential increase in tight oil and shale gas production has brought about a shift in the American energy scenario. Before the ban was lifted, oil producers could not sell their crude to global customers but their sole option was to sell it to US refiners, usually at a price that was cheaper than the global one. In such a model, the only winners were US refiners that had the monopoly over US crude refining, since only refined products such as gasoline and diesel could be freely exported from the USA. Therefore, when the crude oil ban export was abolished in December 2015, they were exposed to competition from overseas refining firms.

As a result of this change in US crude export, since 2015 the EU has received more and more crude from the States and this has positively contributed to the diversification of its supplies. In 2017, Europe bought roughly 7% of US crude exports, and the proportion rose to roughly 12% in 2018. In April 2018, for instance, US supplies to Europe reached an all-time high of roughly 550,000 barrels per day[160]. Oil still represents a core pillar of the EU energy mix: in 2017, oil constituted 34% of Germany's primary energy consumption. In addition, in 2017 Russia was the largest EU oil supplier with a 30% share of extra-EU imports of oil products. There is no doubt that the lift in the US crude export ban was a positive development for the EU energy market.

In order to move away from its dependence on Russian gas, the EU has recently looked at other possible suppliers, and one of them is Canada, a key global energy actor. Canada's oil sands can play a significant contribution to the recent growth and expected future rise in the world's oil supply. The oil sands contain bitumen, which is a form of petroleum in a semi-solid state that is typically found blended with sand, clay, and water. Canada is the world's fifth-largest oil producer, and mostly of its crude oil exports are directed to the US. Canada's recent growth in its liquid fuels production has been driven by bitumen and crude oil produced from the oil sands of the Canadian region of Alberta. Canada controls the third-largest amount of proved oil reserves in the world (173 billion barrels), after Venezuela and Saudi Arabia.

Oil production in Canada comes from three principal sources: the oil sands, the resources in the broader Western Canada Sedimentary Basin (WCSB) and the offshore oil fields in the Atlantic Ocean. Production from the oil sands in Alberta accounted for almost 80% of Canadian oil output

[160] Provisional data from Reuters, April 2018

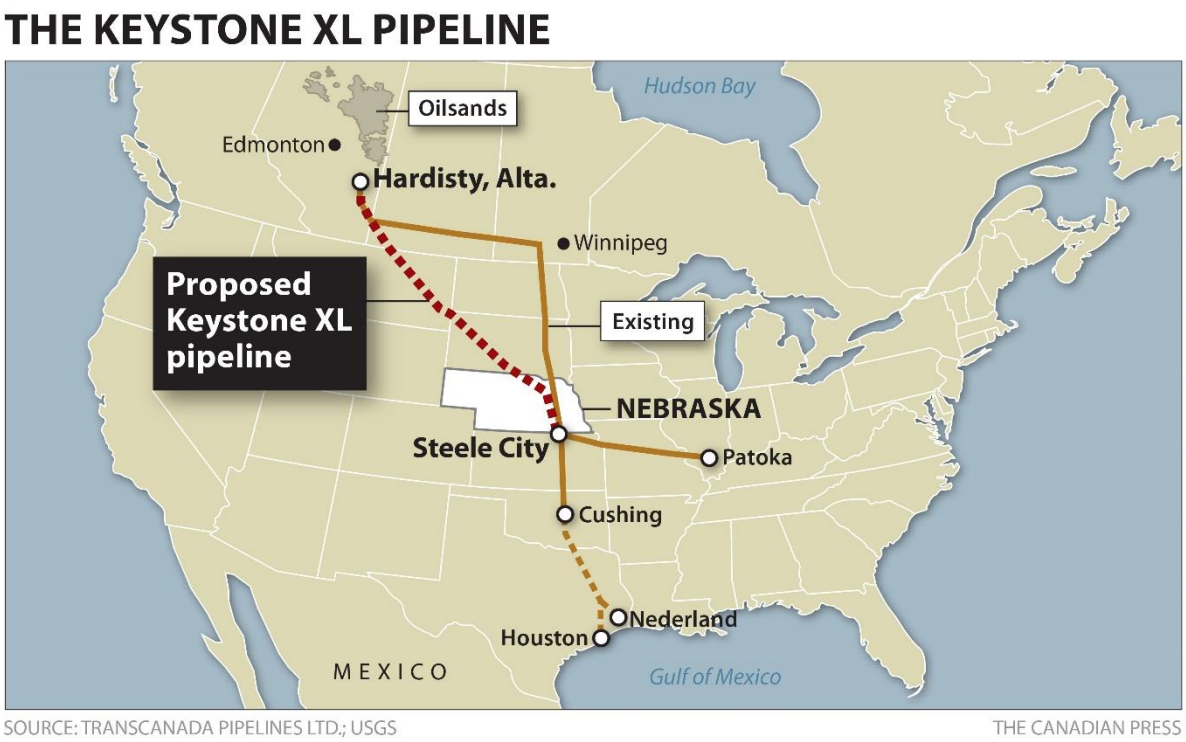
in 2016, a proportion that has steadily increased over the past decade. Other relevant producing provinces are Saskatchewan (WCSB) and offshore areas on the east coast of Canada, primarily in Newfoundland and Labrador. Production from offshore reserves off the coast of the eastern provinces comes from mature oil fields, with few opportunities to mitigate decline rates. Canada's offshore exploration and production is confined by some regulatory and legal hurdles. A 1972 moratorium restricts field development off the Pacific coast, where there are an estimated 9.8 billion barrels of recoverable resources. In 2017, the Canadian federal government announced that it would limit oil development in the Arctic, where oil companies such as Imperial Oil, ExxonMobil, BP, and Chevron has already started exploration activities, especially in the Beaufort Sea.

The traditional center of Canada's oil production has been the Western Canada Sedimentary Basin (WCSB), which stretches from British Columbia across Alberta and Saskatchewan to Manitoba and part of the Northwest Territories. This basin contains some of the most abundant supplies of oil and natural gas in the world. The WCSB remains a significant source of traditional oil production, despite the fact that it was overtaken by output from the oil sands in 2006. As recalled earlier, technological advances like horizontal drilling and hydraulic fracturing have made tight oil production from shale formations an increasingly attractive alternative to traditional production.

Almost all of the Canadian oil exports is directed to the United States and Canada is the largest supplier of foreign oil to the United States. Recently, there has been a lot of speculation regarding a new proposed oil pipeline from Canada to the States. In fact, the Canadian energy company TransCanada has proposed to build the Keystone XL pipeline. The project would run from Alberta to Nebraska in the States, with a capacity of more than 800,000 barrel per day. Since it would cross an international border, a US presidential permit must be issued and it should recognize that the project is in the US national interest. In May 2012, TransCanada reapplied for a presidential permit after the US administration denied its initial application because of environmental concerns. TransCanada's new application includes alternative routes through Nebraska.

In March 2017, U.S. President Donald Trump through an executive order approved TransCanada's Keystone XL project. According to proponents of the project, the pipeline (with a cost of $6 billion) could increase North American energy security and create more than 20,000 jobs. TransCanada also claims that along with transporting crude from Alberta, Keystone XL will also support the significant growth of crude oil production in the United States, by allowing American oil producers more access to the vast refining markets of the American Midwest and along the US Gulf Coast. Yet, environmental groups like the Sierra Club warn that Keystone XL "poses a health risk to our communities" and is a "climate disaster in the making"[161].

[161] S. MOORE, J., GRIFFITH, «Alaska's Lessons for the Keystone XL Pipeline», *Wall Street Journal*, 23 September 2014.



As far as natural gas is concerned, Canada is the world's fifth-largest producer of natural gas and the fourth-largest exporter after Russia, Qatar and Norway. Like in the oil field, also in the gas sector most of Canadian gas is sent to the US via pipelines. Most of Canada's natural gas reserves are traditional resources in the Western Canadian Sedimentary Basin, including those associated with the region's oil fields. Other areas with significant concentrations of natural gas reserves include offshore fields near the eastern coast, mainly around Newfoundland and Nova Scotia, the Arctic region, and the Pacific coast. Over the past few years, Canada has tried to develop a new strategy to send its gas overseas and avoid selling it to the US via pipeline at low prices. The largest LNG project that is currently being discussed is the LNG Canada, a $31 partnership led by Shell that includes PetroChina, Korea Gas and Mitsubishi, foresees an export facility in Kitimat (British Columbia) that could eventually ship 26 million tons a year of liquefied gas. If approved, the LNG Canada project in Kitimat will be operational in 2024 and will boost global LNG supplies by 10 per cent. A final investment decision by the partners is expected to be taken by the end of 2018. On the East Coast, two LNG projects are currently discussed: these are Both Bear Head LNG and Pieridae Energy. The latter is at a later stage of finalization and, when constructed, the facility will be able to export 10 million tonnes of liquefied natural gas per year: also in this case a final investment decision is expected by the end of 2018.

The future construction of LNG terminals on the Canadian eastern coast will represent a positive development for the European energy market and its independence. The prospects of Canadian gas shipments to Europe have raised enthusiasm in Brussels, especially from the Eastern European countries that are heavily dependent on Russian gas imports. Yet, as already outlined the only two LNG export facilities expected to be built on the Canadian eastern coast are in their study and feasibility stage and, if agreed, the projects will take few years to be built. In addition to that, Canadian companies seem to be more interested in devising LNG sites on the western coast, and

this can be explained due to the geographic proximity to the shale gas of Alberta and to higher profitability of Asian markets over the European ones.

With regard to Canadian oil shipments, EU hopes for larger supplies from its transatlantic partner were dashed when TransCanada decided to terminate the Energy East project in fall 2017. The Energy East pipeline, a 4,600-kilometre-long pipeline, was first proposed in 2013 and would have carried 1.1 million barrels of crude oil per day from Alberta and Saskatchewan regions to the harbours on the Canadian East Coast. However, in October 2017 the company pulled out from the project, citing regulatory and financial hurdles. It is highly likely that the approval by the Trump administration of the controversial Keystone XL, of which TransCanada is the owner, might have played a powerful role in the company's decision to terminate the Energy East plan. Despite this cancellation, with the completion of the Keystone XL pipeline 800,000 barrels of Canadian tar oil from Alberta will be arriving to the shores of Louisiana in few years. It will be interesting to see what percentage of that amount will be exported to Europe.

The future oil sands shipments from Canada to the EU could have also been hindered by the approval of the European Fuel Quality Directive that would have restricted or blocked imports of tar sands-derived transport fuels because of their higher carbon content. In fact, the proposed Fuel Quality Directive obliged fuel suppliers to reduce the greenhouse gas intensity of transport fuel by 6% by 2020, compared with the level of 2010. Though, in October 2014 the European Commission suggested to scrap a mandatory requirement to label tar sands oil as highly polluting, after years of industry opposition[162]. Therefore, the new proposal did not impede any present and future fuel supply by ensuring that the revised Fuel Quality Directive does not discriminate against crude imports from North America. The debate about labelling tar sands, also known as oil sands, dates back to 2009, when EU member states approved legislation with the aim of cutting greenhouse gases from transport fuel sold in Europe by 6% by 2020, but failed to agree how to implement it. In 2011, the European Union executive body ruled that tar sands should be awarded a carbon value a fifth higher than for conventional oil. However, member states could not find a common position on the matter, and the Commission has been reconsidering the proposal since then[163].

Despite the recent frictions linked to the revised Fuel Quality Directive the energy relations between Ottawa and Brussels are strong. Canada is part of the 1974 International Energy Program (IEP) Treaty. Created in response to the OPEC crisis of 1973, the IEP treaty obliges Canada to minimize its oil consumption and to optimize its oil production during a global supply crisis. Canada signed the 1991 European Energy Charter and Ottawa is an observer to the Energy Charter Treaty, a multilateral framework for cross-border cooperation in the energy industry. This 1994 treaty — which focuses on energy investments and trade, freedom of energy transit, energy efficiency and dispute settlement — was created primarily to strengthen the rule of law in EU-Russian energy relations. A ratification of the Charter by the Canadian and American governments

[162] J. CRISP, «Two thirds of European oil refineries ready for tar sands imports», *Euractiv*, 25 November 2015. https://www.euractiv.com/section/transport/news/two-thirds-of-european-oil-refineries-ready-for-tar-sands-imports/ (last consulted: October 2018)

[163] B. LEWIS, «EU proposal scraps mandatory 'dirty' label for tar sands», *Reuters*, 5 June 2014.

(Russia has not done so either) would demonstrate a tangible commitment from Ottawa and Washington regarding the European energy security.

Environmental activists point out the fact that Canadian LNG shipments to Europe will not have any significant impact in the short and medium term. First of all, they underscore that Canadian LNG exports will only commence several years from now: at the moment Canada has no export terminals. Secondly, they underline that the EU should plan new LNG import terminals and building new terminals takes at last 2-3 years. Thirdly, since Japan and other Asian countries pay much more for natural gas than Europe, North American LNG exports are more likely to go to Japan than to Europe. This is the reason why almost all the proposed Canadian LNG export terminals are located on the Pacific coast.

Despite the positive developments in the field of energy (crude ban lifted and new LNG terminals) occurred in the US over the past few years, the pace and amount of oil and LNG shipments reaching the European coasts are still negligible. Given these conditions, Europe is trying to increase its energy relations with other eastern partners, located in the Caspian and Central Asian region.

4.5 Central Asian region

Kazakhstan, an oil producer since 1911, has the second largest oil reserves as well as the second largest oil production among the former Soviet states after Russia. Most of Kazakhstan's natural gas reserves are associated gas located in just four fields: Karachaganak, Tengiz, Imashevskoye, and Kashagan. In 2016, Kazakhstan produced 19.9 billion cubic meters of natural gas and most of it was exported to Russia via pipeline, whereas a very limited amount reached China (0.4 billion cubic meters). At present, Kazakhstan exports about 30% of its natural gas production, with another 30% goes to domestic consumption and the rest is reinjected in oil reservoirs.

Oil production in the country is way more significant: in January 2018, Kazakhstan was producing 1.8 million barrels per day. A positive development in this sector was represented by the discovery of the Kashagan field in 2000. Production from this field in the Caspian Sea, one of the world's biggest oil finds in recent times, began in September 2013 but was halted one month later after gas leaks in the field's pipeline network were identified. Due to this technical failure, the total network of oil and gas pipelines of the field had to be replaced. Japan's companies Sumitomo and JFE had provided the pipes, whereas Italy's Saipem had been contracted to lay them. Only three years later the technical problems had been solved and production was restarted in 2016. At the beginning of 2018, the field was producing around 300,000 barrels of crude per day, with a maximum output target expected at around 370,000 barrels.

Astana has tried to diversify its energy customers through a multi-vector policy, a strategy strongly supported by the President Nursultan Nazarbayev. In fact, after the fall of the Soviet Union, the transportation of oil and natural gas has increasingly become a bone of contention between Moscow and Astana. As a result, policymakers in Astana identified China as a viable alternative for

its energy supplies. In 1997, China and Kazakhstan signed an agreement to build a pipeline for delivering oil from Eastern Kazakhstan to China: the project was completed in 2005 and represented the first oil pipeline directly connecting China with a Central Asian country. The pipeline has a current capacity of 20 million tons per year. Kazakhstan thus developed its relationship with China alongside its increasing cooperation with Russia, especially since Astana is one of the founding members of the Eurasian Economic Union.

It is undeniable that the conflict in eastern Ukraine and the Russian annexation of Crimea have surprised Kazakh authorities. In fact, the events in Ukraine irritated President Nazarbayev, since he rightly fears that Putin could use the vast presence of Russian-speaking citizens (that makes up around 24% of the overall Kazakh population) as a pretext for an attempt to interfere in Astana's internal affairs. Kazakhstan, along with Ukraine, is a party to the 1994 Budapest Memorandum, when both countries declined to maintain their nuclear arsenals in exchange for guarantees of territorial integrity.

The increasing tension with Russia especially over hydrocarbon trade indicates that the alliance with Moscow is just one among many vectors of Kazakhstan "multi vector" policy. Instead, China with its increasing economic clout has emerged as a significant competitor not only to Moscow but also to the West. In light of the developments in Ukraine, Kazakh leadership is trying to reduce its geopolitical links to Moscow in order to explore possible agreements with Azerbaijan and the EU.

Kazakhstan's economic cooperation with China continues to develop and Astana foresees that China will be one of the major destinations of Kazakhstan's goods and raw materials. It is relevant to underline that Kazakhstan will be one of the key logistical hubs of the China-sponsored "One belt, one road" project. Despite this, the EU-Kazakhstan relationships have become stronger and stronger over the past few years. In 2015, the Enhanced Partnership and Cooperation Agreement was signed: it constitutes the first of its kind signed by the EU with one of its Central Asian partners. In the energy field the cooperation is also at an advanced level, as Astana provides nearly 6% of EU oil imports.

For the time being, all Kazakhstan crude is exported to the EU via Russia and plans to construct an offshore oil pipeline connecting the Kashagan oil field in the Caspian Sea to Baku are still in the feasibility stage. Moreover, it is highly unlikely that the project will be developed due to the dispute surrounding the international legal status of the Caspian Sea, a controversy that has blocked the construction of the Trans Caspian gas pipeline as well.

Although the Central Asian country was initially supportive of the Trans Caspian project and is still interested in having an extra shipment route for its massive fossil fuels reserves (especially from its Tengiz field), it is strongly dependent on Russia and is unlikely to stand up against its large neighbor without a substantial backing from the European Union. Yet, the project will allow Kazakhstan to sell gas at European prices instead of complying with Russia's lower price and high transit fees. In Brussels's view, the presence of Kazakhstan's gas in the pipeline system will mitigate the risks of solely relying on Turkmenistan for gas supplies for Europe. The West have

long been unhappy with the secretive regime in Turkmenistan and found it hard to obtain any consent from the country, whereas Kazakhstan's foreign policies seem to be much more flexible.

Given these legal and political hurdles surrounding the development of offshore projects with Kazakhstan and Turkmenistan, the EU has tried to strengthen its relationships with Azerbaijan, a country which has a large potential in oil and gas production. The Shah Deniz field, discovered in 1999 in the Caspian Sea, is one of the world's largest natural gas and condensate fields. With the completion of the Baku-Tbilisi-Erzurum pipeline in 2006, gas from the Shah Deniz field managed to reach Turkey. In addition, with the construction of the TANAP and TAP network gas from the Shah Deniz field will reach Greece and Italy. This pipeline network represents one of the pillar of the so-called Southern Gas Corridor.

Turkey has always been eager to become a route supply for Azeri gas and oil to the Mediterranean and Europe. Politically, Ankara has been a staunch supporter of Baku's position over Nagorno-Karabakh, the disputed enclave controlled by Armenia since the outbreak of a war in the early 1990s. Turkey and Azerbaijan cooperated closely on the realization of the Baku-Tbilisi-Ceyhan (BTC) crude pipeline. Since Russia tried to sponsor its own alternatives for the main export line for Azerbaijani oil, in the 2000s Turkish efforts to develop pipelines circumventing Russia increased the strategic rivalry between Ankara and Moscow. The geopolitical significance of the Baku-Tbilisi-Ceyhan oil project, which became operational in 2006, was clear and the pipeline has turned out to be an essential component of Turkey's energy supplies and transformed the Mediterranean port of Ceyhan into a major oil terminal.

Azerbaijan played a pivotal role in Turkey's efforts to diversify its imports away from Russia and Iran. When the Baku-Tbilisi-Erzurum (BTE) gas pipeline became operational in 2007, it allowed Turkey to have access to cheaper gas, and also provided Ankara with a viable and concrete alternative to gas supplies from Moscow and Tehran. As highlighted above, Shah Deniz I has been

producing gas since 2006 and has a yearly production capacity of about 10 billion cubic meters of natural gas.

The next production phase, the so-called Shah Deniz II, is important for Europe in terms of providing an alternative gas supply to Gazprom imports. It is expected to produce 16 bcm per year from around 2019, with 10 bcm earmarked for Europe and 6 bcm for Turkish domestic consumption: all this new gas will feed the TANAP and TAP gas network. The European Union has also made clear that gas coming from other countries (such as Turkmenistan or Kazakhstan) could be injected into the TANAP pipeline in the future.

As far as the Azerbaijan-European Union political relations are concerned, in 2006 Brussels and Baku signed the Memorandum of Understanding on cooperation in the field of energy. The major objectives of this memorandum included the diversification and security of the EU energy supply as well as the development and modernization of Azerbaijan's energy infrastructure. In 2009 Azerbaijan entered the EU Eastern Partnership program. The implementation of the TANAP project, following the Baku-Tbilisi-Ceyhan (BTC) oil export pipeline and the Baku-Tbilisi-Erzurum gas pipeline, made a significant contribution for the EU and Turkish energy security.

Turkmenistan is the sixth largest natural gas reserve holder in the world and is the second largest natural gas producer in Eurasia after the Russian Federation. In 2006, the discovery of one of the world's largest natural gas fields, Galkynysh (Rebirth in local language), completely changed the economy of this country. The field is estimated to be the second largest in the world after the North Field/South Pars in the Persian Gulf with estimated reserves of between 4 and 14 trillion cubic metres. The gas production in Galkynysh started in 2013.

Turkmenistan's current gas production is about 75 billion cubic metres (bcm) per year, with plans to increase this amount to 230 bcm by 2030. With regard to oil, the figures are not that impressive, since at present Ashgabat produces 260,000 barrels of oil per day. Given this gas bonanza, Turkmenistan has been seen as a reliable partner by some countries that are large consumers and importer of natural gas, especially China. At present, Turkmenistan is China's largest gas partner, supplying nearly 40 percent of the country's total gas imports. With the agreement signed by the Chinese President Xi Jinping during his visit to Turkmenistan in 2013, the annual volume of natural gas supplied by Turkmenistan to China will increase from 40 bcm in 2014 to 65 bcm in 2020.

Until 2009 the country almost exclusively depended on Russia for its gas export, but Ashgabat enjoys nowadays the most diversified set of pipelines in the region, with three different export routes. The first remains the Central Asia-Center pipeline that links Turkmenistan with Russia and Europe. A second route runs to Iran thanks to the Korpezhe-Kurt Kui and, since 2010, the Dauletabad-Sarakhs-Kargan line. The two pipelines reach a combined capacity of 20 billion cubic meters (bcm) of gas per year. Yet, the third and most important gas infrastructure is the China-Central Asia Pipeline, which has the capacity of transporting up to 55 bcm per year. Its first two lines started operating in 2009 and 2010, and the third line started pumping gas in 2014.

Relations between Russia and Turkmenistan have deteriorated over the past few years. With the financial crisis, Gazprom abruptly stopped buying Turkmen gas in April 2009, before resuming to buy it at much smaller volumes. Until the global financial crisis, Russia was purchasing around 40 billion cubic meters a year from Ashgabat. In 2013, it was about 12 bcm and in 2015 around 4 bcm. Finally, at the beginning of 2016 Gazprom stopped buying any gas from Turkmenistan and it justified this move by citing the changed situation on the international gas. Given the low oil price environment after the global financial downturn, Russia claimed that it should pay less for the gas it bought, but Ashgabat refused. Turkmenistan had long lamented that Gazprom was purchasing most of its gas and sold it to Europe for more than twice the price Ashgabat received.

Before the financial crisis of 2008, Russia did not know if it would be able to produce enough gas to supply its domestic market and honor its contracts with its European customers. That is why, then, Turkmenistan was very strategic for Moscow. However, in the meantime, Russia managed to put into production various deposits and, with the decrease in European demand overall due to the financial and economic crisis starting in 2008, Gazprom no longer needed to buy Turkmen gas. That context explains why ultimately Russians did not object to the sale of Turkmen gas to China.

Moscow's main worry with regard Turkmen gas is to make sure that it will not become a competitor on the huge and profitable European gas market. For this reason, the most important aim for Moscow is to prevent the construction of the Trans-Caspian gas pipeline, which would bring Turkmen gas to European markets, where it would compete with Gazprom. The Trans-Caspian gas pipeline (TCP) project, envisaging the construction of a 300-kilometer-long gas pipeline across the Caspian Sea to the coast of Azerbaijan, constitutes one of the flagship projects to supply Europe with Turkmen gas. It would cost around $5 billion dollars and its capacity would be around 30 billion cubic meters per year.

A genuine cooperative stance between Ashgabat and Baku over the Trans Caspian Pipeline is hindered by a bilateral dispute over an energy field in the Caspian Sea. The unresolved, long-standing controversy between Ashgabat and Baku lies over the exploitation of Kapaz field, referred to as Serdar by the Turkmen side. Experts estimate that the Kapaz field could hold about 50 million tons of oil and more than 30 bcm of gas. Baku offered Ashgabat to develop the field jointly, but Turkmenistan has not replied to this proposal conclusively. In June 2012, the dispute led to a diplomatic row between the two countries and since then the question has remained a bone of contention between the two littoral states[164].

[164] G. MURADOVA, «Kapaz field awaiting determination of border states», *Azernews*, 12 December 2016. https://www.meydan.tv/en/site/politics/24620/ (last consulted: October 2018)

The Memorandum of Understanding on Cooperation in the Field of Energy, signed between the EU and Turkmenistan in 2008, provided a framework for an information exchange on energy policies and the diversification of transit routes[165]. Despite this formal document and the visit in 2015 in Ashgabat by the EU Energy Union Commissioner, Maros Sefcovic, no concrete development has been registered with regard to the Trans Caspian gas pipeline. In fact, both Russia and Iran vehemently oppose the construction of the pipeline: they stress that the project cannot be implemented without first resolving the issue of the international legal status of the Caspian Sea.

Though, in light of the 2014 agreement between Gazprom and the CNPC over the supply of Russian natural gas to China, Turkmen position over the Trans Caspian plan has been heavily influenced. The fact that Beijing has effectively diversified its gas supplies will diminish Ashgabat's leverage vis-à-vis the Chinese market and will probably affect the future gas prices requested by China. Given this economic scenario, Turkmenistan will try to open up the prospect of selling part of its gas production to the EU in order to offset the possible future price losses in the Middle Kingdom.

The prospect of a Trans Caspian Pipeline would derail the Turkmenistan, Afghanistan, Pakistan and India (TAPI) pipeline, since it is extremely unlikely Ashgabat will not be able to meet demand of both sides. Experts believe that the Trans-Caspian project will bury the TAPI scheme, considered a last hope for Pakistan to buy cheap gas and ease its energy crisis after the cancellation of the Iran-Pakistan (IP) pipeline after strong US pressure. According to analysts, the 1,735 km TAPI pipeline would cost $7 billion and would be coordinated by the Asian Development Bank (ADB). It is one of the most ambitious energy projects in the world, connecting the giant gas fields of Turkmenistan to Pakistan and India, two emerging energy-hungry markets, while crossing the dangerous valleys of southern Afghanistan that are partly controlled by the Talibans.

[165] Text of the Memorandum available at http://europa.eu/rapid/press-release_IP-08-799_en.htm (last seen: 23 May 2018)

In December 2017, after a meeting in Moscow with his colleagues from the Caspian Sea littoral states, Russian Foreign Minister, Sergei Lavrov, stated that an agreement on the legal status of the Caspian was practically ready for signing. It is expected that the text will be finalized during the fifth Caspian summit, which is going to take place in Kazakhstan in 2018. However, in another meeting in Moscow in fall 2017, Russian energy minister and his Turkmen colleague discussed cooperation in the production and sale of Turkmen gas[166]. This renewed cooperation between Moscow and Ashgabat could represent a turnaround in their energy relations and might hint to a compromise between the two countries. Moscow would let Turkmen gas to reach Europe via its pipelines, but Ashgabat would strike out its plans for the construction of the Trans-Caspian pipeline.

In January 2017, Turkmenistan halted its gas export to Iran, as it claimed that Tehran had not paid $1.8 billion in arrears. Iran disputes that and both countries have lodged legal complaints against each other at the International Court of Arbitration. Despite its large gas reserves, Iran has been importing Turkmen gas since 1997 in order to supply its northern regions, especially during winter time. The persistent stop in gas exports to Russia and Iran leaves Ashgabat with the only option of shipping its gas to China. It is relevant to underscore here that for Turkmenistan the energy sector is the pillar of its economy. In fact, the energy sector accounts for 35% of GDP, 90% of total exports, and 80% of fiscal revenues. Given the current export limitations, one can understand why Turkmenistan is really keen to start sending gas to Europe and seems ready to accept the fact that it could pass through existing Russian pipelines. This scenario would be a positive development for Gazprom and Turkmenistan but a negative one for the European hopes to build the Trans Caspian pipeline.

Over the past few years, Iran has launched naval destroyers in the Caspian Sea. It is a fact that naval militarization in the Caspian constitutes one of the drivers of tension between Iran and Azerbaijan. Tensions between Azerbaijan and Iran have been tense over the past few years, with border skirmishes: Tehran has accused Baku of being linked with Israel (Tel Aviv gets a sizable part of its oil imports from Azerbaijan). On the other hand, Baku has claimed to be the aim of Tehran-linked terror plots. There is no doubt that Astana and Ashgabat (and the EU) will try to solve the bilateral row so that the naval militarization in the Caspian will not thwart transnational energy supplies. The success in this operation will also depend on the future on the Iranian nuclear deal.

[166] Q. OVOZI, «Russia Says Caspian Legal Status Resolved, Agreement Ready For Signing», *Radio Free Europe*, 7 December 2017. https://www.rferl.org/a/qishloq-ovozi-caspian-status-resolved-russia-says/28903729.html (last seen: 23 May 2018)

4.6 Liquefied Natural Gas

An increase in the global LNG production would make the gas market more competitive by creating a new source of supply for worldwide buyers such as Japan, Europe and China. Papua New Guinea began exporting chilled natural gas in May 2014, putting the impoverished nation into the global energy market. The project is owned by US company Exxon, Australian Santos and the Japanese Nippon Oil. The two trains (units) of the LNG terminal are capable of producing 8.3 million metric tons of LNG a year, equivalent to about 10% of Japan's total LNG imports[167]. Papua New Guinea operators have an advantage over LNG developers in places such as Australia, where labour costs are more expensive. Buyers in Asia are also eager to diversify their supply sources to protect against the possible disruptions.

The fact that oil indexation of LNG prices in Asia are so far the most common type of contract and the recent upward trend of oil price (benchmark Brent crude oil price has been around 80 dollar throughout 2018) add new sources of concern for the viability of the Asian LNG market. A number of buyers, especially from Japan, are pushing proposed North American export projects to use the US benchmark Henry Hub gas price as the index for LNG. Henry Hub spot prices are generally seen to be the primary price set for the North American natural gas market. Henry Hub covers only the US domestic market, and it does not reflect the reality of LNG Asian patterns.

In recent years, the share of LNG has increased, accounting for around 14% of imports in 2017, with most of that coming from Qatar, Algeria and Nigeria. With regard to figures, in 2017, Qatar was the EU's main supplier (41%), followed by Nigeria (19%), Algeria (17%), Peru (7%), Norway (7%), the US (4%) and Trinidad & Tobago (3%). LNG imports made up 14% of total extra-EU gas imports in 2017. Spain is the EU's largest LNG importer with 31% of total EU LNG imports in 2017, followed by France (20%), Italy (15%) and the UK (12%)[168].

It is interesting to notice that despite the great efforts of China and the US to exploit their shale resources, the EU has not been able to develop its own shale reserves. Countries such as and Bulgaria have outright bans on extraction, while the Netherlands and Germany are among states that have issued moratoriums. Romania has explored some shale fields but results have been so disappointing that companies like Chevron decided not to continue their investment in the country. The U.K. government, while supportive of fracking, has faced popular opposition.

The agreement between the Chinese and the Russians will have far-reaching consequences also for the EU. Brussels is already worried that the bitter political relations with Moscow after the Ukrainian crisis and the opening up of a huge gas market in China could give Russia a upper hand in future gas price (and supply volumes) negotiations. Therefore, the EU has started hammering out a new energy security strategy aimed at diversifying its energy imports in order to reduce the dependency from Moscow.

Many European import terminals have been experiencing falling deliveries over the last few years, but the combination of growing uncertainty over Russian supply and the US shale revolution have

[167] Official data from PNG LNG. https://pnglng.com/About/Our-Operations/LNG-Plant (last consulted: September 2018)

[168] Official data from European Commission available at https://ec.europa.eu/energy/en/topics/oil-gas-and-coal/liquefied-natural-gas-lng (last consulted: September 2018)

increased demand for them: for the EU there are new future options for diversifying gas supplies. The European Commission in Brussels is considering banning the re-export of LNG cargoes that unload in its ports but a more lasting solution to rising dependency on Russian gas could come from across the pond (USA and Canada).

The problem of LNG shipments re-exported from the European ports has become a serious one, especially over the last few years. In fact, in March 2014 Spain overtook Norway to become the region's biggest exporter of liquefied natural gas. The southern European nation has never produced any of the fuel. This is a consequence of the financial and economic crisis that hit the Eurozone countries and drastically reduced the energy demand. Utilities that decided to buy LNG before the economic slump are now facing years of diminishing domestic demand: this has urged them to re-export cargoes. The trade is vindicated by the fact that prices in Asia are about 30 percent higher than in Europe. Japan is the largest LNG consumer in the world, especially after shutting down its nuclear power plants following the Fukushima Daiichi disaster in March 2011[169].

Though, there is a different attitude towards LNG capacity in Western and Eastern Europe. While terminals lie underused in the UK, the Netherlands, France, Spain and Italy, politicians in Eastern Europe are pushing for new capacity additions and outlining the energy security the infrastructure can bring them. At the end of October 2014, the FSRU (Floating Storage and Regasification Unit) Independence docked in the Lithuania harbor of Klaipeda[170]. It was the first LNG terminal in Eastern Europe and was hugely symbolic for the country, which relied on Russian supplies for 100% of its gas. The EU and many governments in Eastern Europe are encouraging these developments to expand their supply options.

A long-debated LNG terminal on the Croatian island of Krk in the Adriatic Sea has been signalled as a potential access for LNG imports into central European countries (it seems that the American company General Electric could be interested in this project). Poland's Swinoujscie terminal is another pivotal project that forms part of a wider EU strategy to offer greater security of supply to those countries heavily dependent on Russian gas.

There is no doubt that the shale gas revolution in the US has fundamentally transformed the gas industry globally. As a result, the future US LNG supplies will dramatically change the recent LNG trade patterns. With more than thirty US LNG export projects proposed, the question really becomes one of how much US LNG supply will actually proceed and by when. There is a general consensus that LNG will become an increasingly important part of the European supply story. Nevertheless, there are major uncertainties that remain such as the timing of these projects and the gas prices offered by US producers to European consumers.

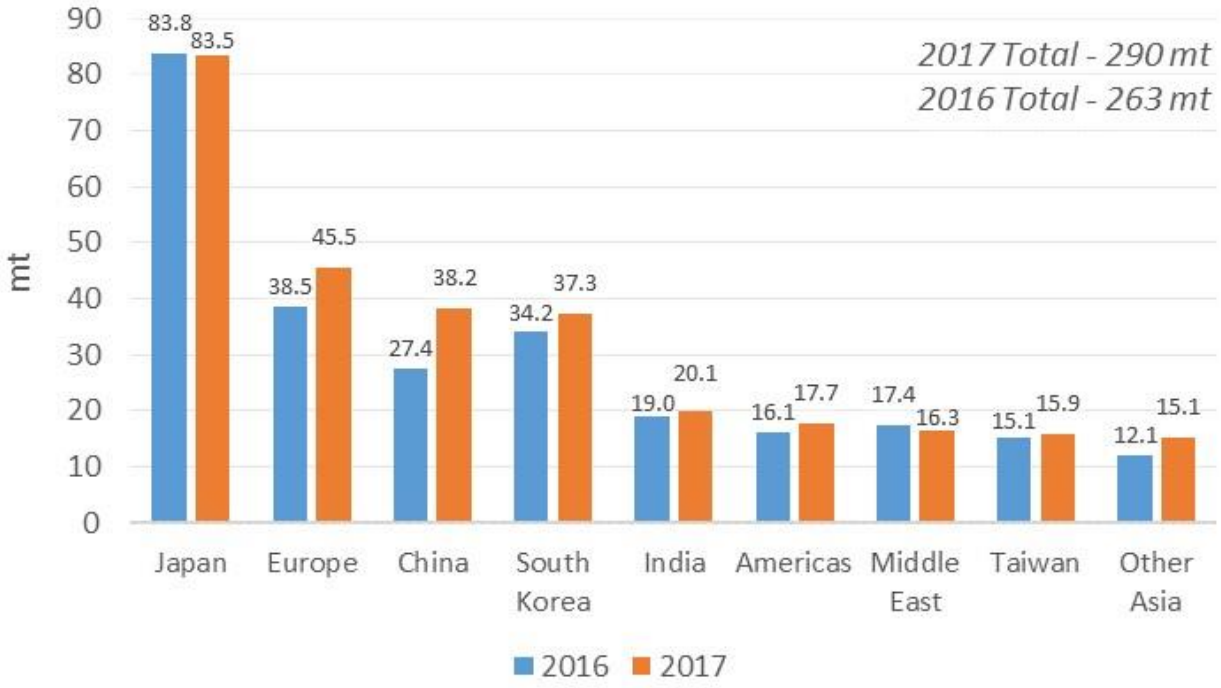
The expectations of US LNG exports entering the global gas market will give leverage to Europeans in future price negotiations with Gazprom. However, even though US LNG will help to diversify supply sources in Europe and help reduce the cost of some Russian gas, it will not drive down the

[169] M. CORKHILL, «Asian importers and exporters drive LNG industry forward», *LNG World Shipping*, 4 April 2018. https://www.lngworldshipping.com/news/view,asian-importers-and-exporters-drive-lng-industry-forward_51297.htm (last consulted: September 2018)

[170] A. GRIGAS, «U.S. Natural Gas Arrives in Lithuania», *Foreign Affairs*, 12 September 2017. https://worldmaritimenews.com/archives/140885/lithuanian-lng-terminal-to-welcome-independence/ (last consulted: September 2018)

price of gas considerably. The cost of US gas plus liquefaction, regasification and transatlantic transport fees will mean that the final price for European clients is still higher than the one offered by Gazprom.

In addition to the upcoming LNG worldwide supply surge, the UK National Balancing Point (NBP) has created additional concerns for Moscow. Not only the prices on this spot market are lower than the oil-indexed ones, but they have also become increasingly recognized in the European gas market as independent benchmarks. They have thus become a real and very attractive alternative to oil-indexed contracts. The NBP, by far the largest gas trading hub in Europe, has acquired this position by attracting large sources of alternative gas supplies. In fact, Britain has three LNG import facilities and together they are capable of meeting nearly 50% of the country's annual demand[171].



High prices in Asia driven by surging Chinese demand made Europe a less attractive destination for LNG supplies and EU LNG imports decreased by 13% year-on-year in the first quarter of 2018. In the same period of time, LNG imports from Russia's new Yamal LNG facility exceeded those coming from the US which were well below the levels of 2017[172].

Strategically, plans of constructing LNG import terminals in Europe's Southeastern region may pay huge dividends in the long run in terms of decreasing the dependence on one single energy supplier (Russia). The tremendous natural gas potential in the Eastern Mediterranean can be extremely beneficial for future European energy diversification.

[171] N. PROWSE, «LNG Market - Obstacles or opportunities?», *Norton Rose Fulbright*, November 2016.
[172] EU Commission quarterly report on European gas market available at https://ec.europa.eu/energy/sites/ener/files/documents/quarterly_report_on_european_gas_markets_q1_2018.pdf (last consulted: September 2018)

Even though most US LNG has been sold to companies wanting to ship it to high-paying Asian markets, the trading opportunity with top consumers such as Japan, South Korea and China may prove to be rather disappointing. In fact, when the new supplies from the new LNG export plants in Australia began in 2016, the effects of these shipments reined in LNG prices in Asia. Therefore, LNG exporters in the US and Canada could look at Europe as a more profitable market in the long run.

LNG imports to Europe are poised to rise almost 20 percent by 2040 from 2016 levels, according to International Energy Agency. As recalled above, while Russia has long been the region's top supplier, it is now facing significant challenges from both the U.S. and Qatar, rival countries with vast natural gas reserves.

In July 2018, in a meeting with US President Trump, the President of the European Commission, Jean-Claude Juncker, pledged that the European Union was ready to buy more LNG gas from the States. "They want very much to do that, and we have plenty of it," Trump said, referring to the U.S. shale boom. "They will be a massive buyer, and they will be able to diversify their energy supply."[173]

The comments by Trump and Juncker came as at least four new U.S. LNG export projects are expected to start up by 2020. After Cheniere began shipping gas in 2016 from its Sabine Pass terminal in Louisiana -- the first to send shale output abroad -- the U.S. became a net exporter of the fuel for the first time since the 1950s. In 2018, Dominion Energy opened the first export facility on the East Coast, providing a quicker route to European buyers.

Southeast Asia has become the focus of many territorial claims. South China Sea and its contested islands such as Spratly and Paracels as well as Senkaku/Diaoyu has become the new bone of contention of many regional countries. The geopolitical outcome of these territorial claims will have a strong sway over the economic prosperity of the area. In fact, an armed conflict between in the region could have unexpected consequences: i.e. blockage of the commercial routes from the Middle East to the Far East but also the inability to extract the energy resources that lie under the seabed. These two elements would impair the economic outlook of the whole region and would represent a blow to the overall economic prosperity of the South Asian area.

The fact that some analysts predicts that Australia will become the largest LNG exporter in the world, ahead of Qatar, by 2020 will have a powerful impact over the Asian energy markets. The future of the Japanese nuclear power plants and China's energy demand will be the two pivotal factors which will shape the future of LNG market all over the world. In fact, China's inability to exploit its deep shale resources coupled with the Japanese decision to delay the re-start of its nuclear power plants would drastically increase the global demand for energy. This would keep Asian LNG prices way higher than any other region in the world. As a result, the new LNG exporters (Canada and USA) will look at the more viable Asian LNG markets rather than at the European ones.

[173] N. MALIK, «Europe to Become 'Massive' Buyer of U.S. LNG, Trump Says», *Bloomberg*, 25 July 2018. https://www.bloomberg.com/news/articles/2018-07-25/europe-to-become-massive-buyer-of-u-s-lng-trump-says (last consulted: September 2018)

CHAPTER 5: GAS POLICIES IN THE RUSSIAN FEDERATION

Introductory remarks

Russia uses its energy resources in three different ways: to obtain economic benefits, to widen its geostrategic clout over countries that it perceives within its sphere of influence, and to express political influence over end-consumers. Russia's energy actions in Europe have both commercial and political rationales. Gazprom and Rosneft have a large political influence over the Kremlin and are run by executives who are President Putin's close aides[174].

Over the past few years, Moscow has used its energy supplies as a means to exert pressure over consumers and transit countries, that are often reliant on a single source of revenues, i.e. Russia. Despite the steps taken by the European Commission to decrease the EU dependency on the Russian Federation, the European Union keeps on relying on Russian gas imports that are a key part of European energy consumption. Given the declining production in European conventional fields, such as in the Netherlands (Groningen) or in the North Sea, the Russian gas still is the cheapest and most reliable option of gas supplies.

After the Russian annexation of Crimea and the conflict in Eastern Ukraine, the EU has imposed a series of economic restrictions against the Russian Federation. However, no measure has been taken with regard to the conventional energy field: measures only affected the exploration activities of Russian oil production in the Arctic.

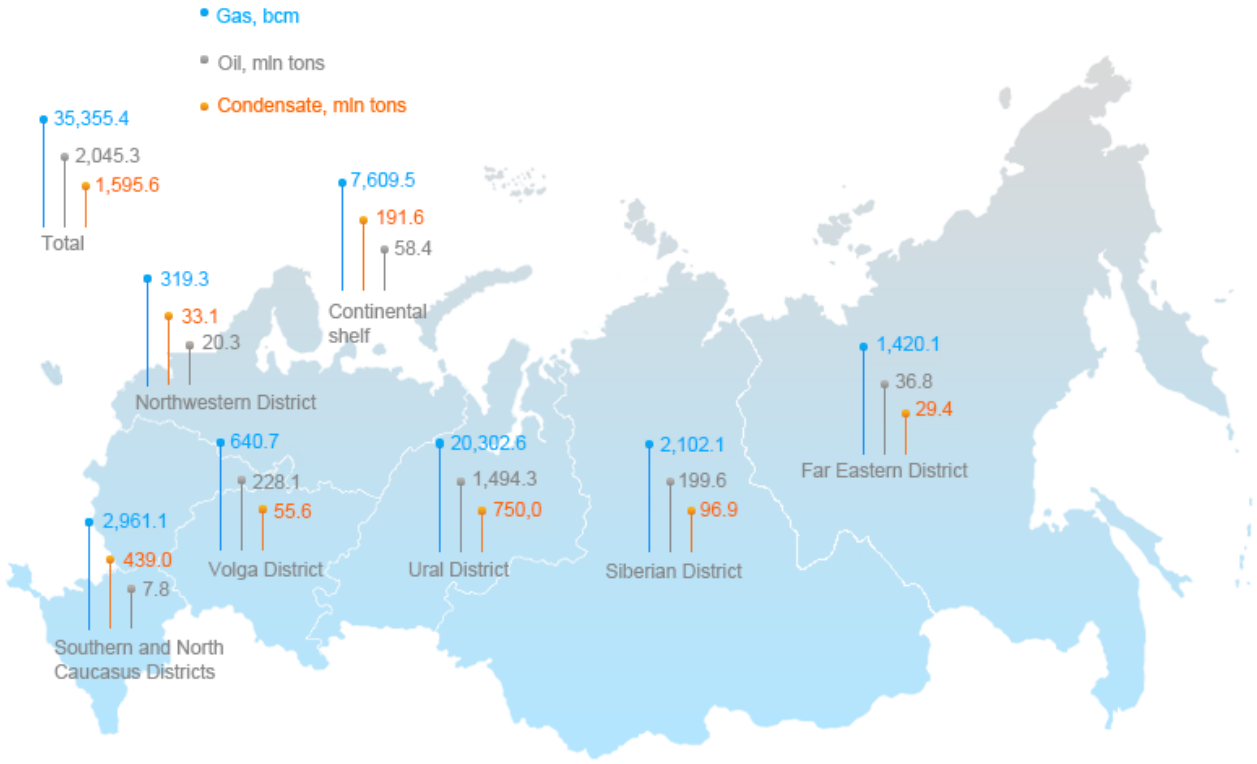
Natural gas supplied via pipelines represents a possible tool of geostrategic coercion. Whereas crude can be sold and transported by different companies and countries, pipelines can usually transport gas only from one country, due to their physical location and the nature of the infrastructure. In the past, Gazprom was not only the supplier but also the owner of some pipelines running into Europe. With the unbundling clause contained in the Third Energy Package, this has changed. Yet, there are other means whereby Moscow can still exert its geopolitical clout over Europe. These are pricing policy of energy supplies, the control of energy assets (pipelines and gas operators), disruptions in gas deliveries, imposing restrictive clauses in new contracts, and devising new supply routes to circumvent unfriendly customers or transit states.

Political decisions and geostrategic priorities underpin Russian willingness to give discounts to its energy exports. In many past instances, Russia awarded discounts to countries but also took them away, when the political scenario changed. Outstanding debt has been used to obtain geostrategic benefits as well. Petro-carrots can become petro-sticks and commercial transactions bear a larger political rationale. Transit countries have also been under Moscow's scrutiny. Countries that kept friendly relationships with Moscow, such as Belarus and Ukraine in the early 2000s, received gas and oil at discounted tariffs. After Ukrainian President, Viktor Yanukovich, in late 2013 decided not to sign the EU Association Agreement, Ukraine was awarded a discount for its gas deliveries. However, after the so-called Maidan Revolution, Ukraine faced higher prices from Gazprom and supply cuts. Already in 2004, Moscow intervened in Ukrainian presidential campaign, by

[174] R. NEWNHAM, «Oil, carrots and sticks: Russia's energy resources as a foreign policy tool», *Penn State University*, 2011.

underpinning Yanukovich's candidature with the promise of future cheap gas supplies. However, the ensuing Orange Revolution overturned the election results of the first round.

The Russian Federation has also tried to gain control over energy assets in relevant transit countries in order to diminish the transit fees it had to pay to the intermediaries. Moscow has acquired energy infrastructure (as in the case of Belarus) and has diverted its gas supply routes (like in the case of Turkish Stream and Nord Stream 2) so that the Russian gas deliveries can flow freely and circumvent countries that are considered hostile to Russian foreign policy. Once alternative pipelines are built, Russia can enforce its geopolitical pressure on the target state without the need to pay any financial fee for its transit role.



Russian recent projects of exporting more gas to non-European states, such as China with the Power of Siberia pipeline, will allow Moscow to upgrade its freedom of manoeuvre in its foreign policy. One should not forget the European dependency on Russian gas can be better described as an interdependency, as Russian gas export to Europe constitutes a large chunk of revenues for Moscow's state budget.

Despite its vast energy resources, the Russian Federation has a diversified economy with a viable manufacturing sector, as well as a burgeoning state apparatus[175]. Over the past few years, the Kremlin has pursued a very restrictive fiscal policy that has allowed Moscow to have a very low external debt. With the second war in Chechnya, Putin has managed to preserve the territorial integrity of the Russian Federation and exert further political pressure in the CSI countries.

Perhaps the most important action taken by Putin throughout his political career does not lie in international relations, but in internal politics. During the Yeltsin era, almost all of Russian oil reserves were privatized. However, these liberal policies were interrupted and reversed during

[175] P. RUTLAND, «Russia as an energy superpower», *New Political Economy*, June 2008.

Putin's presidency. The most evident example of this was the Yukos affaire. Mikhail Khodorkovsky, founder of Yukos, was considering selling a large chunk of Yukos's shares to Western investors. This angered Putin as the Russian President always considered energy resources as part of the Russian state and as a pillar of its state budget. The prospect of having one of the most prominent Russian energy giants in foreign hands did not fit Putin's political agenda. In 2003, Khodorkovsky was arrested on the basis of fraud and tax allegations and condemned to eight years of prison[176]. In an auction carried out in December 2004, the largest shares of Yukos were sold to the state-owned Rosneft. This created an international legal controversy that has not yet been solved.

As said, a key element in Russia's capability to use its resource abundance as a tool of foreign policy has been Putin's successful strategy of consolidating Russian energy sources in the hands of the state. Shortly after assuming office, in early 2000s Putin countered the privatisation of Russian energy companies and transformed Gazprom and Rosneft into state-controlled entities. After the Yukos affaire, in 2006 Shell was advised to sell its majority stake in the Sakhalin-II project to Gazprom. The concentration of Russian energy resource in few state-owned companies has been a pivotal element in allowing the Russian Federation to use energy export policy as an important pillar of its foreign policy.

Despite having signed the Energy Charter Treaty (ECT) in 1994, Russia has never ratified it. The text of the treaty was first sent for discussion to the State Duma in 1997 but since then the body has not been able to ratify it due to political, economic and legal reasons. The main ones resided in the fears among policymakers in Moscow that the ECT supported the development of open and competitive energy markets to the detriment of long-term (and for gas, oil-indexed) supply contracts with take-or-pay clauses preferred by Russian energy companies. Another rationale behind the opposition to the ECT was linked to the Russian interpretation that the Treaty purportedly sanctioned mandatory third-party access, hence giving Central Asian countries the right to flow their cheap gas to Europe through the Russian pipeline networks[177].

Despite the non ratification by the Parliament, the Russian Federation was obliged to apply the ECT on a provisional basis in accordance with article 45 (1) of the Treaty: a legal procedure recognised by the 1969 Vienna Convention on the law of treaties (article 25). The two crises of 2006 and 2009 between Moscow and Kyiv over the pricing of gas and the perception in Russia of the legal ineffectiveness of the ECT in resolving the matter (despite the dispute settlement mechanism over transit matters foreseen in article 7 of the ECT) constituted a further blow for the ratification and application by Russia of the Treaty. In August 2009, following the proviso set up in article 45 (3) (a) the Russian government informed that it had decided to terminate the provisional application of the Treaty: this decision took effect on October 2009[178].

In November 2009, an arbitral tribunal in The Hague adjudicated that Yukos majority shareholders were entitled to start the investor-state dispute settlement (ISDS) against the Russian Federation as foreseen by article 26 of the Energy Charter Treaty. The Russian Federation has ever since

[176] F. WEIR, «Russia's richest man arrested for fraud and tax evasion», *The Independent*, 26 October 2003. https://www.independent.co.uk/news/world/europe/russias-richest-man-arrested-for-fraud-and-tax-evasion-93066.html (last consulted: September 2018)

[177] A. KONOPLYANIK, T., WAELDE, «Energy Charter Treaty and its Role in International Energy», *Journal of Energy and Natural Resources Law*, Vol. 24, No. 4 (2006): 532.

[178] A. BELYI, «A Russian Perspective on the Energy Charter Treaty», *Real Instituto Elcano*, Paper No. 98 (2009): 8.

disputed this decision and still now refuses to comply with the final ruling on the case delivered in July 2014. In that decision, the court found that Russian Federation had expropriated the Yukos oil company through a practice which breached article 13 (1) of the Treaty: as a result, the Russian state was required to pay 50 billion US dollars to Yukos majority shareholders[179]. This arbitral procedure was upheld in January 2019 by the Dutch Supreme Court[180].

Putin has always condemned NATO's eastward expansion and has hit back at the US plans to set new missile defence systems in Eastern Europe. Over the past few years. Russia has deployed Iskander missiles in the Kaliningrad exclave and reacted angrily at the additional deployment of NATO troops in Poland and Baltic states, which was a reaction to Russian annexation of Crimea and the conflict in Eastern Ukraine.

Given the new affirmative role of the Russian Federation in the international geopolitical arena, Russia has shown the will to employ its energy sources as a political weapon. The annexation of Crimea, together with Moscow's new rising role in Syria and the Middle East has given Putin new popularity among his citizens. Putin has managed to restore the international prestige of the Soviet Union. Russian new dialogue with key geopolitical partners, such as China, Iran and Saudi Arabia has given Moscow a higher strategic leverage vis-à-vis the West, and the United States in particular. In addition, Putin has also been able to hire prominent international individuals to manage Russian energy projects and companies. This is the case of former German chancellor, Gerhard Schroeder, who was named chairman of board of Nord Stream AG, only few days after leaving his public office in Germany. In September 2017, he was also named President of Rosneft[181].

5.1 Russian new gas clients

The prospect of Australian and American LNG shipments to Europe has been a hot debated issue in the EU over the last few years, especially after the political and military crisis in Eastern Ukraine. The possibility of future LNG competitors in Europe has scared the Russian Federation. The Kremlin reacted quickly: in May 2014 Gazprom and CNPC signed a colossal thirty-year gas deal. The project envisages to supply China with 38 billion cubic meters (bcm) of gas per year, which is close to a third of total Russian piped exports to Europe. China has a non-conventional gas resource twice the size of that estimated for the US, but its possible extraction would require significant environmental damage and high extraction costs.

Over the past few years, Russians have tried to internationalise their energy operations. In May 2014, Gazprom signed a deal with China National Petroleum Corporation, China's largest oil company, to supply natural gas to China over a 30-year period through the so-called Power of Siberia pipeline. The Chinese and Russians had been negotiating this deal for many years but the

[179] K. WESTPHAL, «The Energy Charter Treaty Revisited», *SWP Comments Paper*, No. 8 (2011): 3.
[180] B. MEIJER, «Takeover of Dutch parts of Yukos Oil was illegal: Supreme Court», *Reuters*, 18 January 2019.
[181] O. ASTAKHOVA, «Russia's Rosneft elects former German chancellor Schroeder as chairman», *Reuters*, 29 September 2017. https://www.reuters.com/article/us-rosneft-egm-schroeder/russias-rosneft-elects-former-german-chancellor-schroeder-as-chairman-idUSKCN1C426Q (last consulted: September 2018)

EU and US sanctions imposed during the spring of that year had forced the Russians to try to break their international isolation by signing this colossal gas deal with Beijing.

Nevertheless, it is not unreasonable to suggest that Russia's pivot to Asia could also be a long-term catalyst for domestic reform as well as a key element of the country's foreign policy and geopolitical strategy, particularly in light of the U.S. and European Union sanctions on Russia imposed since 2014.

The "BP Statistical Review of World Energy" reveals that China is now the second-largest consumer of oil in the world (after the United States), accounting for 13% of the global total and with growth averaging 5% per annum over the past decade. The statistics for gas are even more impressive, as demand grew annually by a 13% average during 2007–17. With total demand of 240 billion cubic meters (bcm) in 2017, China is now the third-largest global market after the United States and Russia. Furthermore, Chinese demand is expected to continue to grow.

The foundation of Russia's oil exports to Asia is the ESPO pipeline, which connects the main Russian trunk oil pipeline system at Taishet with the port of Kozmino on Russia's east coast near Vladivostok. Importantly, there is also a spur running from Skovorodino to the Chinese border at Mohe, and from there onto Daqing, which provides exclusive exports for China. The ESPO pipeline, which has a current capacity of 58 million tonnes per annum (mtpa), or around 1.2 million barrels per day (bpd), began operations in 2011 and has been expanded to its current size in two phases[182].

Rosneft is the sole user of two of the routes for Russian crude exports to its southern neighbor, namely the China spur of the ESPO pipeline and the pipeline route via Kazakhstan, where Rosneft is using spare capacity in a 400,000 bpd system that is currently receiving only 50,000 bpd of Kazak crude exports to the east[183].

Since its takeover of TNK-BP in 2013, Rosneft has dominated Russian oil production and exports in the region, especially given that it owns the largest oil field, Vankor, dedicated to the eastern export system. The company's reliance on Chinese financing became particularly acute after the imposition of U.S. and EU sanctions in 2014 (in the wake of the Ukraine crisis), which significantly limited its ability to raise funds in international financial markets.

A large deal was reached in 2013 when China National Petroleum Corporation (CNPC) agreed to purchase 360 mt of crude oil over 25 years starting in 2016: with such a deal it is clear that Rosneft is committed to exporting a minimum of 600,000–800,000 bpd to China in the 2020s. This is equivalent to as much as 43% of its 2017 crude export sales and underlines the company's, and Russia's, increasing exposure to the Chinese market. As a result, Russia has dramatically increased its share of the Chinese oil market, displacing Saudi Arabia as China's top source of imported crude

[182] S. KARDAS, «The Eastern Partnership of Gas. Gazprom and CNPC Strike a Deal on Gas Supplies to China», *Ośrodek Studiów Wschodnich (OSW)*, 16 June 2014. https://www. osw.waw.pl/en/publikacje/osw-commentary/2014-06-16/eastern-partnership-gas-gazprom-and-cnpc-strike-a-deal-gas.

[183] V. SOLDATKIN, G. GORODYANKIN, «Russia's Rosneft Aims for Big Boost in Oil Exports to China Via Kazakhstan», *Reuters*, 6 October 2017. https://www.reuters.com/article/us-russia-china-oil-exclusive/exclusive-russias-rosneft-aims-for-big-boost-in-oil-exportsto-china-sources-idUSKBN1CB1KE

in 2016 and 2017. China effectively purchased 85% of all the Russian crude oil sold to the Asia-Pacific market in 2017[184].

The Eastern Gas Program is officially being managed by Gazprom. The company has a monopoly over Russia's gas exports by pipeline and is currently constructing a new line (called Power of Siberia) from its fields in East Siberia to the Russia-China border.

Key difference, however, is that initial plans to extend the line to the Pacific coast at Vladivostok in order to sell LNG to the entire Asia-Pacific region have stalled due to the high cost of the extra pipeline and new liquefaction facilities. As a result, Gazprom is entirely reliant on sales to China[185]. In 2014, Gazprom and CNPC agreed to a 30-year, $400 billion deal that will see peak deliveries of 38 bcm per annum after a 5-year ramp-up period beginning in 2019[186].

Another option for Russian pipeline exports—from West Siberia via the Altai region into western China (called Power of Siberia–2)—has effectively been ruled out by a lack of Chinese interest[187]. At the same time, sales via the Power of Siberia pipeline now being constructed have been accelerated to the earliest possible date in the 2019–21 window that was originally negotiated, owing to faster-than-expected growth in Chinese gas demand.

At the same time, Moscow started looking at possible new oversea markets: Venezuela was one of them. Putin was a close friend of President Chavez and he kept a friendly relationships also with his successor, Nicolas Maduro. Venezuela has been a staunch anti-American regime and has a large oil potential as its proven reserves are among the largest in the world, especially thanks to its oil-rich Orinoco basin. In February 2016, Rosneft increased its stake in the Petromonagas crude-processing joint venture in Venezuela's Orinoco Belt region from country's state oil firm, PDVSA, for $500 million. This deal represented a bold move by Rosneft to expand its operations globally and enter the South American market, which has been traditionally viewed as dominated by the USA.

The negotiations behind the gas agreement between Moscow and Beijing had been long and difficult: they were mainly focused on pricing issues. Russia did not want to sell gas to China at a price lower than the one it offered to Europe, its largest customer. At the same time, China did not want to buy gas at a higher price than it paid to Turkmenistan, by far its largest supplier of natural gas.

Even after the signing of the deal, the two sides have been treating the matter as a commercial secret. Consequently, there has been much speculation by experts about the price implied in the 400 billion-dollar contract. According to calculations, the tariff should amount to 350 dollars per thousand cubic meters, which is close to what the Chinese paid for piped gas from Turkmenistan in 2013[188]. That compares to a price range of 350-380 dollars most European utilities pay under discounted long-term contracts signed between 2013 and 2014.

[184] Based on data from Argus Media and Energy Intelligence Group.
[185] V. SOLDATKIN, «Gazprom's Investment in Vladivostok LNG Plant Seen at $13.5 Billion», *Reuters*, 21 November 2013. https://www.reuters.com/article/gazprom-lng-investment-idUSL5N0J60UD20131121
[186] J. HENDERSON, «The Leaders of Russia's Energy Pivot to Asia», *The National Bureau of Asian research special report #74,* December 2018.
[187] D. PINCHUK, «Russia Could Postpone Gas Pipe to China Touted by Putin», *Reuters*, 18 March 2015.
[188] E. DOWNS, «In China-Russia gas deal, why China wins», *Fortune*, 20 June 2014.

For Beijing, the price of Russian piped gas is crucially below the liquefied natural gas (LNG) sold in the Asian market: in fact, the prices for LNG in Eastern Asia are decisively higher than in the rest of the world. The gas will be transported along a new pipeline linking Siberian gas fields to China's main consumption centers in the north east of the country (Hebei province).

The Russia-China gas contract is a take-or-pay obligation and the price of the agreed price for the gas is still unknown. In addition to the economic impact, the agreement signed in May 2014 has an environmental side as well. Gas-fired power generation in China holds considerable promise for mitigating global climate change. Increased gas imports will also help Beijing in its declared war on pollution (especially voiced by the Chinese Prime Minister Li Keqiang) aimed at reducing its reliance on coal that contributes to the harmful smog that shrouds China’s major cities. Dirty coal now makes up about 70% of Chinese energy consumption and, despite fast growth in renewable energy technologies, gas is the only fairly clean energy source that could replace enough coal to rein in carbon emissions in the near future.

The agreement was reached after years of tense negotiations. The real breakthrough over the matter was represented not just by the Ukrainian crisis but also by the unsuccessful extraction of shale resources on Chinese territory.

Russia has made a striking debut in Northeast Asian energy markets in the first two decades of the 21st century. The construction of the Eastern Siberia–Pacific Ocean (ESPO) crude oil pipeline, in particular, rapidly increased crude oil exports from Russia’s eastern flank. Russia’s crude oil

supplies to Northeast Asia increased approximately threefold in the past decade to 73.2 million tons (mt) in 2017, accounting for 29% of Russia's total exports.

The bilateral energy relationship between Russia and China is now more robust than at any other time over the past decade. China has taken advantage of the needs of Russian energy firms for cash—both to pay down debts and to replace capital lost from the West due to U.S. and European Union sanctions—not only to secure large-volume, long-term contracts for oil and natural gas but also to pursue other national interests.

The Power of Siberia pipeline will deliver natural gas three thousand kilometers from fields in East Siberia to the Chinese border. Deliveries are scheduled to start in December 2019 and will gradually ramp up to 38 billion cubic meters (bcm) per year. Meanwhile, the first phase of Yamal LNG (liquefied natural gas) began operations in December 2017. The project is slated to reach full capacity in 2019 and will ship 5 bcm per year to China.The 43 bcm of Russian gas already contracted by China is greater than the amount that it imported from Turkmenistan (33 bcm), China's largest natural gas supplier, in 2017.

China came to Rosneft's rescue again in 2013. The Russian firm had borrowed $31 billion from international banks to finance its $55 billion acquisition of TNK-BP in 2013 and had to pay back $15.9 billion in 2014 and $16.2 billion in 2015. Rosneft had arranged for nearly $10 billion in prepayments for crude supplies with oil traders Glencore, Trafigura, and Vitol but was still short of funds to service its debt. CNPC filled the funding gap in return for more long-term crude supplies and the expansion of the ESPO spur to transport them. In June 2013 the two sides finalized a prepayment deal. CNPC agreed to provide $70 billion as prepayment for future crude supplies. In return, Rosneft agreed to deliver an additional 2.64 billion barrels over the next 25 years and to increase the capacity of the ESPO spur to 400,000 bpd by 2015 and 600,000 bpd in 2018[189].

The implementation of U.S. and EU sanctions after Russia's annexation of Crimea further deepened the Sino-Russian energy relationship. Russia's turn to China to replace capital lost from the West created another opportunity for Chinese entities to throw an economic lifeline to a Russian energy company to advance multiple national interests. This time the beneficiary was Novatek, the private Russian gas company operating Yamal LNG.

The Yamal LNG project is an example of how Western sanctions have spurred closer energy relations. Chinese financing enabled Novatek to complete the project on time and on budget, despite the fact that both Novatek and a leading shareholder, Gennady Timchenko, are under U.S. and European sanctions. Securing LNG supplies was not the only reason that Chinese financiers threw an economic lifeline to Yamal LNG. They also supported the project because it advanced other goals of the Chinese government, including creating business opportunities for Chinese firms along the LNG supply chain, showcasing China's LNG technologies, and furthering the country's ambition to be a stakeholder in the Arctic. When CNPC purchased a 20% stake in Yamal LNG from Novatek in September 2013, it agreed to help secure financing for the project. That same month, CNPC and Novatek also signed a memorandum of understanding (MOU) with four state-owned Chinese banks[190].

[189] N. SLADKOVA, «Rosneft Reveals Prepayment Deals but Questions Remain», *NEFTE Compass*, 1 August 2013.
[190] VV.AA., «Yamal LNG Financing Comes Through», *LNG Intelligence*, 11 September 2013.

The Yamal project furthers Beijing's objective of developing Arctic shipping routes, which isarticulated in a white paper released by the Chinese government in January 2018. Specifically, Yamal LNG is opening a new shipping route between China and Europe that will save time and money. During the construction, China shipped modules and other components through the Arctic's Northeast Passage, which took an average of sixteen days, nearly twenty days less than a voyage through the Suez Canal.

There had long been a clear logic for both countries to proceed with the project. For Russia, the country's dominant natural gas producer, Gazprom, has an imperative to diversify its exports away from Europe, where demand growth is sluggish and countries continue to look for alternative suppliers. For China, Russian natural gas not only would help fill the widening gap between domestic supply and demand and support the goal of increasing the role of natural gas in the national energy mix to combat air pollution; it also would diversify the country's portfolio of natural gas imports. Despite these compelling reasons, countless summit meetings between Chinese and Russian leaders had come and gone without a deal on the pipeline, with disagreements over the starting price for gas deliveries remaining a major stumbling block.

The negotiations in May 2014, however, turned out to be different. When President Vladimir Putin arrived in Shanghai for his meeting with President Xi Jinping, Russia's relationships with the United States and Europe had deteriorated, and the country faced the prospect of additional sanctions for its annexation of Crimea[191]. China was also willing to provide some sanctions relief to Gazprom in the form of capital. In 2016, for example, the Bank of China agreed to lend Gazprom $2.7 billion, which was the largest credit from a single bank ever received by the Russian company[192].

In addition to the provision of Chinese capital following the global financial crisis and Western sanctions, another factor that contributed to the growth in Russian crude oil exports to China is the emergence of China's independent refineries as buyers of imported crude oil. In 2015, Beijing granted these independent refineries—often called "teapots"—direct access to imported crude oil, a privilege that had previously been enjoyed by only a handful of state-owned companies. This move to open up the oil trading business to a much larger number of participants essentially created a new country's worth of demand for crude oil imports. Beijing awarded the independent refineries, most of which are located in Shandong Province in northeast China, import quotas totaling 1.5 million bpd in 2016 and 1.9 million bpd in 2017. Russia quickly became a preferred supplier because the short distance from the port of Kozmino to Shandong (compared with Persian Gulf ports) makes the smaller cargoes these refineries prefer more economical[193].

Despite the impressive growth in Russian crude oil exports to China over the past decade, the vast majority of the country's crude oil imports will continue to travel through major maritime chokepoints such as the Strait of Hormuz and the Strait of Malacca. To be sure, Russia has contributed more than any other country to the diversification of China's oil import routes. The 1.2 million bpd that it delivered to China in 2017 traveled either overland or only a short distance

[191] T. GUSTAFSON, «Russia-China Gas Deal: The Winding Road to an Agreement», *IHS Energy, Energy Insight*, 23 May 2014.
[192] J. FARCHY, «Gazprom Secures €2bn Loan from Bank of China», *Financial Times*, 3 March 2016. https://www.ft.com/content/ac5b1ee4-e159-11e5-9217-6ae3733a2cd1
[193] D. LEE, «Far East Russian Crudes Rally as China Shifts Focus to Low Sulfur Crudes», *S&P Global Platts*, 25 October 2016. http://www.platts.com/latest-news/oil/singapore/far-east-russian-crudes-rally-as-china-shifts-27695519

by sea. In contrast, Kazakhstan, China's other overland supplier, only exported 50,000 bpd to the country in 2017 because of production declines in the region where crude for the Kazakhstan-China oil pipeline is sourced.

The uncertainty over the future of US-China commercial relations has affected also the prospect of new US LNG being exported to China. This uncertainty about U.S. LNG exports may lead the Chinese government and national oil companies to view Russia as a more reliable supplier of natural gas and pursue additional projects to deliver Russian gas to China. Indeed, during a meeting with Putin in September 2018, Xi expressed renewed interest in developing a second cross-border natural gas pipeline from West Siberia to western China[194].

The construction of the Eastern Siberia–Pacific Ocean (ESPO) crude oil pipeline rapidly increased crude oil exports from Russia's eastern flank. Russia's crude oil supplies to Northeast Asia increased approximately threefold in the past decade to 73.2 million tons (mt) in 2017, accounting for 29% of Russia's total exports.

China's growing dominance of Asia's energy markets has further reduced Japan's weight in Russia's Asian energy policy. In other words, Russia's presence in Northeast Asian energy markets is increasingly dependent on the Chinese market. Chinese demand for oil and gas is estimated to rise by 1.0% and 4.5% per annum, respectively, from 2017 to 2040. China already became the world's second-largest LNG-importing nation in 2017 and is expected to overtake Japan in 2019. Moreover, China may well have a heightened strategic incentive to tilt more toward gas supplies from Russia because its procurement of LNG from the contiguous United States might be discouraged as a result of the escalation of the current "trade war" with the Trump administration.

As highlighted, the first gas pipeline between Russia and China (Gazprom's Power of Siberia–1) is planned for completion in December 2019. China is also one of the main markets for the Yamal LNG project, with Novatek and China National Petroleum Company (CNPC) signing a heads of agreement in October 2013 for the supply of 3 mt per annum for twenty years.

It is estimated that Russia will double its production by 2023 through the expansion of the Yamal LNG project. In June 2018 the Russian deputy energy minister suggested that the country might increase its production capacity to 100–120 mt by 2035.

Ahead of President Putin's visit to Japan in December 2016, Tokyo decided to make a commitment to financing the Yamal LNG project, despite having difficulty finding domestic buyers to symbolically underpin Prime Minister Abe's self-proclaimed good terms with President Putin. Moreover, at the Japan-Russia summit meeting during the 4th Eastern Economic Forum in September 2018, the Japanese government signed an MOU with Novatek to promote cooperation on the planned Arctic LNG–2 project, in addition to the Yamal LNG project[195].

[194] E. DOWNS, «China-Russia Energy Relations: Better Than Ever», *The National Bureau of Asian research special report #74*, December 2018

[195] S. ITOH, «Japan's Opaque Energy Policy toward Russia: Is Abe Being Trumped by Putin?», *The National Bureau of Asian research special report #74*, December 2018

5.2 LNG expansion

The development of substantial new LNG liquefaction capacity initiated in 2016 continued through 2017. Liquefaction capacity grew by 38bcma in 2017 across Australia (13bcm), the US (12bcm), Yamal in Russia (7bcm), and other locations, including Malaysia and Indonesia (4bcma). Looking ahead, a further 130bcma of liquefaction capacity was under development at the start of 2018 and expected to come online by 202148. In total, this amounts to a dramatic growth in global liquefaction capacity of more than 33% from 2016 through 2020.

The growth of new LNG receiving capacity has been largely consistent since 2010, averaging around 6% growth per year. The most substantial growth in receiving capacity in 2017 was in China, which added 7 bcm of new capacity and is developing another 30 bcm by 2021. A further 20 bcm of conventional receiving capacity came online in South Korea and France, while 10 bcm of FSRU capacity was added across Malta, Turkey, and Colombia.

Despite LNG liquefaction capacity growth, global liquefaction utilization levels fell from 94% to 77% since 2011. This has been due in part to the decline in Egyptian gas production, shifting it from an LNG exporter to importer (shift from 10 bcm exports to imports), plus a decline in supply from Indonesia (-10bcm), Yemen (-5bcm), and Trinidad & Tobago (-4bcm)[196].

Utilization of receiving capacity in countries that import LNG has remained in the range of 30-36% since 2011. At a country level, utilization rates are highly variable, which highlights the wide range of roles that LNG receiving capacity can play. On the high end, countries like Taiwan, Pakistan, and Kuwait rely on LNG for gas supply. On the low end, low utilization rates are observed in markets that have shifted from import to export (US, Canada) or where LNG import capacity is a means of ensuring gas supply security (e.g. Israel).

Moscow has responded to US LNG by developing its own LNG terminal, in the Arctic Yamal peninsula: the facility was inaugurated in December 2017[197]. The project was the result of a joint venture between Russian gas firm Novatek, French company Total and China National Petroleum Corporation (CNPC). Though, it was not the first Russian LNG project as this was developed in 2009 by Gazprom through the Sakhalin 2 plant designed in cooperation with Shell, Mitsui, and Mitsubishi.

Recently, even European countries that have been relevant energy producers, such as the UK, have used Russian gas to power their economies. In fact, in December 2017, the United Kingdom bought a LNG shipment from the new Yamal plant, a project which, at the time of its construction, was hit by Western sanctions.

The plant has reached a capacity of 16.5 million tonnes: Russian Prime Minister Dmitry Medvedev attended a ceremony marking the launch of the third train, or stage, of Yamal LNG, which expanded its annual capacity to 16.5 million tonnes.

The expansion had been initially expected at the end of 2019 and a quicker rise in output has raised questions about Yamal LNG's ability to sell the additional volumes. According to Total

[196] S&P Platts data

[197] M. SHAGINA, «Is The Yamal LNG Project Overhyped?», *Oilprice.com*, 19 February 2018. https://www.total.com/en/media/news/press-releases/yamal-lng-project-begins-gas-exports (last consulted: September 2018)

figures, it has pre-sold more than 96 percent of its LNG production under long-term contracts for the next 20 years[198].

In September 2018, Russia's Gazprom and Japan's Mitsui signed a memorandum of understanding on the Baltic LNG project, which will include building an LNG plant on the Baltic Sea coast near the Russian harbour of Ust-Luga, in the Leningrad region. The two, together with Shell and Mitsubishi, are already partner in the LNG Sakhalin 2 project. In 2017, Gazprom and Shell had set up a joint venture to construct the Baltic LNG plant. The plant should have a capacity of 10 million tonnes per year and should be operation in 2023[199]. Once implemented, it will give Russia an even stronger voice in the European LNG market and would be able to compete and probably undercut US LNG shipments.

At the same time, Novatek is moving ahead to create a new LNG facility, the Arctic 2 LNG plant. The new LNG plant, scheduled to open by 2023, has a capacity of 20 million tons per year, more than doubling Novatek's current Arctic output, and will elevate it to one of the world's largest LNG-producing companies[200]. In late 2018, Novatek discovered a significant deposit of gas in the near vicinity of the facility called the North Obskoye gas field which was the largest discovery in the world in 2018. The original deposit contains two billion cubic meters of natural gas and 100 million tons of natural gas liquids while the most recent discovery adds the equivalent of another 960 million barrels of oil. The North Obskoye gas field would improve the project's profitability as more gas can be exported over a more extended period[201].

In 2013 the Russian government decided that offshore projects controlled by state companies or gas fields with LNG plans written into the license could export gas even if not owned by Gazprom. This decision gave Novatek the chance to develop its Yamal LNG scheme and to propose a second project, Arctic LNG–2, both located in the north of West Siberia (on the Yamal and Gydan Peninsulas, respectively)[202]. Both projects rely on their ability to supply the European and Asian markets through the Northern Sea Route, which is currently open to ice-breaking tankers for twelve months to Europe and five to six months to Asia per year. This provides an opportunity for Novatek, and by default Russia, to become a global LNG player, but these ambitions appeared to be limited by the inclusion of the company on the U.S. sanctions list in 2014. This severely restricted its ability to raise financing in U.S. dollars and forced it to look elsewhere for support. With Asia already being a target market, because of the premium prices usually paid there for LNG, Novatek naturally looked toward the traditional markets of Japan, South Korea, and Taiwan, as well as the growth market of China.

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[198] K. GOLUBKOVA, «France's Total sees robust demand for LNG from Russia's Yamal», *Reuters*, 11 December 2018.
[199] V. MELIKSETIAN, «Gazprom's Bid To Maintain European Energy Dominance», *Oilprice.com*, 2 October 2018. https://oilprice.com/Energy/Natural-Gas/Gazproms-Bid-To-Maintain-European-Energy-Dominance.html (last consulted: October 2018)
[200] M. HUMPERT, «Novatek signs construction contracts for Arctic LNG 2, as Yamal project hits milestone», *Arctic Today*, 6 February 2019.
[201] V.MELIKSETIAN, «The World's Next Great LNG Project», *Oilprice.com*, 2 March 2019.
[202] T. MITROVA, «Russian LNG: The Long Road to Export», *Institut français des relations internationales*, 2013.

Novatek's plans through 2030 include the development of the 19.8 mt Arctic LNG–2 project, using new Russian-built gravity-based platforms, and the potential expansion of the region's LNG capability to 70 mt, the size of Qatar's output today. The link with Asia will be strengthened further by the construction of a transshipment facility in Kamchatka, which will reduce transportation costs and provide a potential trading hub in the Asia-Pacific.

In December 2018, the Russian firm has signed a preliminary agreement with Japan's Saibu Gas, under which the companies will consider potential cooperation in entering the end-consumer LNG market in Asia. Novatek will optimize its LNG supplies to the Asia-Pacific region by using Saibu Gas's Hibiki LNG terminal in Japan[203].

Novatek would have been unable to complete the landmark Yamal LNG project without vital support from China. China's interest in this project dates back to 2013, when China National Petroleum Corporation (CNPC) agreed to take a 20% stake in it. Two years later, in the wake of sanctions, Novatek once again turned to China when faced with difficulty in raising needed funds from Western banks. This time the Silk Road Fund, a special purpose vehicle established to advance Xi's Belt and Road Initiative (BRI), took a 9.9% stake in the project in exchange for a fifteen-year loan of $790 million.

This Chinese support saved the Yamal project from potential cancelation. Instead, it went online in December 2017 amid much fanfare, including Vladimir Putin's personal participation in the launch of the first cargo. The strategic value of this project extends beyond the 16.5 million tonnes (mt) per year of exports it is intended to provide to Asian markets between now and 2020, when the project will ostensibly reach full capacity. Yamal is viewed as a critical step in the Kremlin's strategy of developing the Arctic and is intended to jump-start the development of the Northern Sea Route, which Putin has highlighted as a priority[204].

The relationship between Russia and China is primarily underpinned by important personal relationships—not only between Presidents Putin and Xi, but also between Rosneft's Sechin and senior Chinese businessmen such as Zhou Jiping, the CEO of PetroChina, and more recently Ye Jianming, the head of CEFC China Energy. Institutions do not yet play the role that one would expect in a well-developed strategic partnership. While Russia and China sit alongside one another in the Shanghai Cooperation Organisation, Russia is increasingly uncomfortable with Chinese efforts to use the group to advance the Belt and Road Initiative and has therefore tried to broaden its membership as a way of hampering Chinese influence. Russia has also launched, with limited results, the Eurasian Economic Union, an alternative organisation that is meant to counter China's rising economic influence in Central Asia[205].

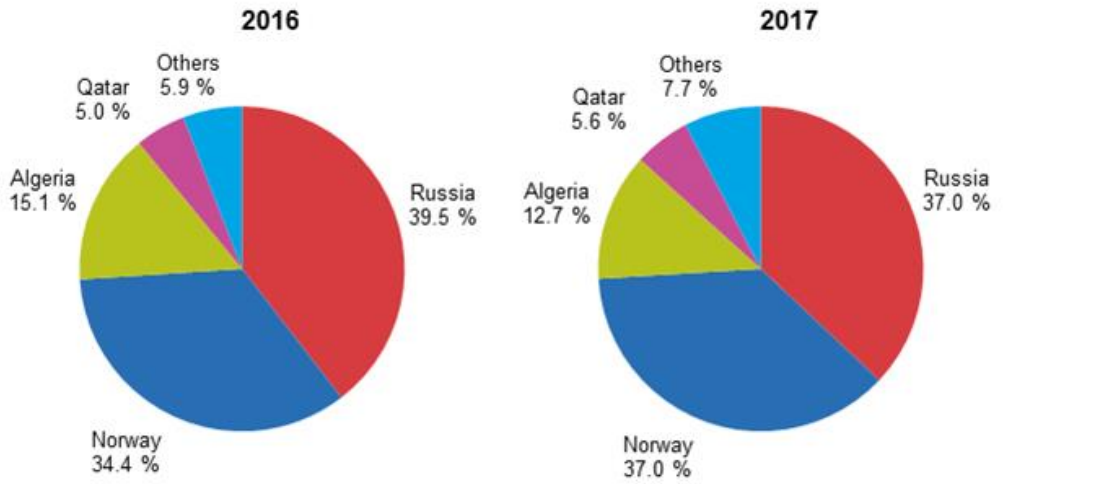
[203] T. PARASKOVA, «Russia Looks To Build 'LNG Island' To Supply Booming Asian Market», *Oilprice.com*, 15 January 2019.
[204] K. JOHNSON, «Putin and Xi Are Dreaming of a Polar Silk Road», *Foreign Policy*, 8 March 2018. https://foreignpolicy.com/2018/03/08/putin-and-xi-are-dreaming-of-a-polar-silk-road-arctic-northern-sea-route-yamal
[205] M. O'SULLIVAN, M. SKALAMERA, C. SOYLU, «Russia's Energy Foray into Asia: Implications for U.S. Interests», *The National Bureau of Asian research special report #74*, December 2018.

5.3 Legal agreements and other aspects

Russia holds the largest proved reserves of natural gas worldwide and it is the second-largest producer as well. Moscow has the eighth-largest proved reserves of crude oil, and it is the largest producer. Given its relatively little population and energy needs, Russia export most of its energy. Moscow is by far the world's largest exporter of natural gas and second-largest exporter of crude oil and refined products (after Saudi Arabia)[206].

Given the amount of energy it can export, Russia has been using its energy as a means to exert political pressure to transit countries and end consumers. This has led Moscow to mould its geopolitical sphere of influence through the subtle usage of different methods of energy 'diplomacy'. Over the past few years, Russian attitude towards the European gas markets has been shaped by a mixture of political and economic considerations. Russian state gas company, Gazprom, together with the oil giant, Rosneft (controlled by Putin's aide, Igor Sechin), have largely influenced Russian foreign policy.

Extra-EU imports of natural gas, shares in value of main trading partners, 2016 and 2017



Source: Eurostat database (Comext) and Eurostat estimates

eurostat

Russia holds a large share in the overall EU gas imports. In 2017, Russia and Norway held the same proportion (37%) in their gas supplies to the European Union. Oslo and Moscow were then followed by Algeria and Qatar, which respectively represented the 12.7% and 5.6% of EU gas supplies[207]. It is likely that in the years to come this list of countries will include new actors, such as the US and Australia, that are set to become net exporter in the global natural gas market. If conducted separately (on the basis of national deliveries), this analysis would highlight few interesting facts. In Germany, Russian deliveries of natural gas represent about 35% of the total

[206] Data from US Energy Information Administration, 2017.
[207] Data from EUROSTAT, «EU imports of energy products - recent developments», 2018.

imports[208]. However, Czech Republic, Slovakia, Finland, Lithuania, Latvia, Estonia are close to being almost 100 percent dependent on Russian gas.

The influence of energy companies over national politics is not a feature that occur only in Russia. In Italy, for instance, the energy behemoth, Eni, has driven Italian foreign policy for decades, especially with regard to Italy's relations with the Middle East and the then Soviet Union. However, the extent of cases of supply disruptions or cost controversies has reached a level that show a coherent pattern of foreign policy influence conducted through the tool of energy supplies.

The amount of possible ways to influence its energy partners is vast and varied: construction of new gas pipeline, new type of contracts (spot vs oil-indexed ones), disputes over pricing, dominant market position, supply disruptions and the purchase of national energy operators.

Share (%) of Russia in national extra-EU imports of each Member State, 2017, in value

	Share (%) of Russia in national extra-EU28 imports	
Country	Petroleum oils	Natural gas
Belgium	50-75	0-25
Bulgaria	50-75	75-100
Czech Republic	50-75	75-100
Denmark	0-25	0-25
Germany	25-50	50-75
Estonia	75-100	75-100
Ireland	0-25	0-25
Greece	0-25	50-75
Spain	0-25	0-25
France	0-25	0-25
Croatia	0-25	0-25
Italy	0-25	25-50
Cyprus	0-25	0-25
Latvia	0-25	75-100
Lithuania	50-75	50-75
Luxembourg	0-25	0-25
Hungary	50-75	50-75
Malta	0-25	0-25
Netherlands	25-50	25-50
Austria	0-25	75-100
Poland	75-100	75-100
Portugal	0-25	0-25
Romania	25-50	75-100
Slovenia	0-25	75-100
Slovakia	75-100	75-100
Finland	75-100	75-100
Sweden	25-50	0-25
United Kingdom	0-25	0-25

Source: Eurostat database (Comext) and Eurostat estimates

eurostat

A recent example of this Russian behaviour is the controversy surrounding Nord Stream 2 gas pipeline. German government believes that the pipeline represents just a commercial project and does not have a political impact. On the other hand, Poland and the Baltic states dismiss this and deem that the pipeline would have a clear geopolitical aim: to cut off Ukraine from future gas supplies to Europe. Moreover, it would concentrate the majority of Russian gas export to the EU

[208] S. AMELANG, «Germany's dependence on imported fossil fuels», *Clean Energy Wire*, 8 March 2018. https://www.cleanenergywire.org/factsheets/germanys-dependence-imported-fossil-fuels (last seen: 23 May 2018)

through a single route and hence this would diminish one of the core tenet of energy security, i.e. diversity of supplies.

CHAPTER 6: CONCLUSIONS: THE FUTURE OF ENERGY RELATIONS BETWEEN THE EU AND RUSSIAN FEDERATION

6.1 Nord Stream 2

The proposed Nord Stream 2 project fits a scenario where Moscow builds its own pipelines according to its geographical and political preferences. It is a diversionary pipeline that would drastically reduce gas supplies through Ukraine. It does not diversify the existing routes or bring new sources of gas online. On the other hand, it will enable Moscow to pressurize Belarus, Ukraine and other eastern European states, without risking any energy shortcomings to its main European client, i.e. Germany. The full capacity of Nord Stream 1 and 2 would give the pipeline system a capacity of 110 bcm per year, almost two thirds of European gas imports from Russia.

The additional gas capacity would turn Nord Stream into a new gas supply chokepoint for Europe, that would partly run counter against European efforts to diversify its energy imports. Moreover, the construction of Nord Stream 2 would allow Moscow to circumvent Ukraine as transit country for its gas supplies bound to Europe. If Ukraine completely loses its transit role, it will lose around 2 billion dollars per year in transit fees from the Russian Federation.

The recent EU attempts to diversify its energy imports have been relatively unsuccessful. In 2017, Russia's gas exports to Europe rose by 8.1% to a record level of 193.9bn cubic meters. Despite the possible gas alternatives (Eastern Mediterranean, US and Caspian Sea basin), the sheer amount of its deliveries and the competitive prices give Gazprom a competitive edge over current and future competitors. Moreover, the actual infrastructure that should bring new non-Gazprom gas to Europe are still under construction (like in the case of TANAP/TAP) or in the feasibility stage (like the East Med pipeline). Where this infrastructure is in place (like in the case of LNG facilities along the US Atlantic coast), the American gas often retains a higher price than its Russian equivalent. The US LNG gas which was shipped to Belgium and there regasified cost around $8.1 per million British thermal units (MMBtu) in the first quarter of 2018. On the other hand, the estimated Gazprom price at the Germany border in the first quarter of 2018 was $7.15 per MMBtu. In a meeting with Angela Merkel in May 2018, Russian President, Vladimir Putin, stated that American LNG was about 20 to 30% more expensive than Russian pipeline gas[209].

With the approval of the Third Energy Package in 2009, the EU tried to increase the transparency, competitiveness and liquidity of the European energy markets. The package of measures introduced new pivotal features, i.e. the unbundling of the ownership of the energy networks and the energy transit, third-party access to pipelines, stronger connection of European gas grids and higher diversification of sources of gas supplies. Gazprom was seriously affected by the unbundling clause, since it often owned the pipeline, through which it was providing gas to its European customers. The application of the Third Energy Package had a direct effect on Russia as the legal

[209] Declaration of President Putin reported in the official Kremlin website, available at http://en.kremlin.ru/events/president/transcripts/57497 (last seen: 23 May 2018)

complaint brought forward in 2014 by the European Commission against the construction of South Stream was based on the violation of this rule.

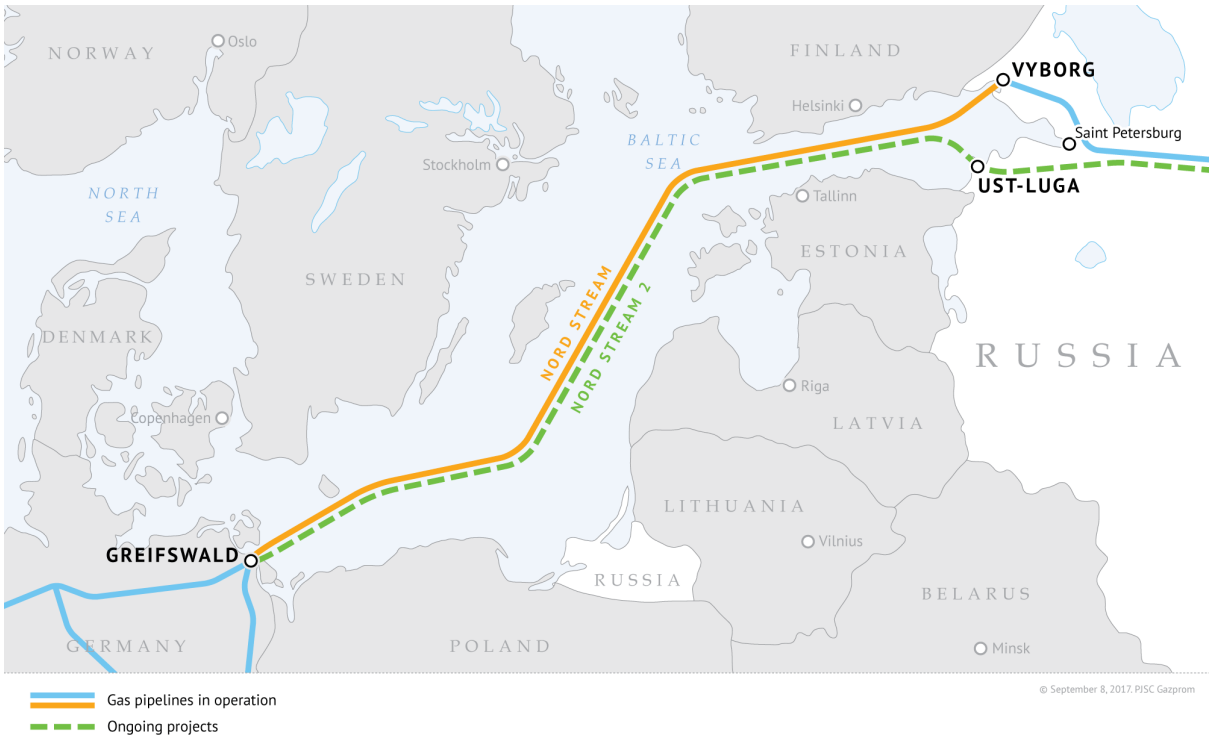
The gas disputes with Ukraine in 2006 and 2009 convinced Gazprom of the need to reduce its dependency on Ukrainian transit network. Moreover, after the Maidan revolution in 2014, Russia decided to find alternative gas routes so that Ukraine could be circumvented. Given the pro-EU stance of the new Ukrainian President Poroshenko, Moscow believes that Kyiv cannot be considered as a reliable transit country any longer and it wants to stop any transit gas running through Ukraine after the current transit deal expires at the end of 2019. In order to achieve this geopolitical goal, two new pipelines are expected to be built in the next few years, i.e. the Turkish Stream and Nord Stream 2. It is undeniable that with Russian gas no longer transiting through Ukraine, Kyiv's government will lose a considerable source of revenue: transit fees account for about 3 percent of national GDP.

In 2015, Gazprom announced the construction of a 1,200-kilometre-long offshore pipeline that will run from the Russian Baltic coast near St. Petersburg directly to Germany. With a capacity of 55 billion cubic meters per year, the pipeline will double the amount of gas that the current Nord Stream 1 project ca deliver. Nord Stream 1 project was first proposed in 2005 by different European companies such as Gaz de France, Gasunie, EON and Gazprom. The pipeline started its deliveries in 2011 and has the capacity to transport around 30% of Russian gas exports to Europe. For Gazprom the rationale behind the construction of Nord Stream 1 and 2 is to bypass transit states and supply the German and Western European market directly. One of the key impacts of Nord Stream 1 has been to reduce Russian export flows through Ukraine to the EU from up to 80% in 2009 to around 50% or less in 2015.

The impact of Nord Stream 1 on Ukraine was conspicuous, curbing the gas transit flow. After the line was inaugurated in 2011, the volume of gas passing through Ukraine shrank by 24% between the second half of 2011 and the first half of 2012. The Ukrainian route was used by 48.6% of Russian gas in 2013, and then fell to 38.7% in 2014. This figure that has been stable over the past few years[210].

Like in the case of the first project, also Nord Stream 2 encounters the opposition from Baltic states and Poland. The project diminishes the importance of the existing Yamal-Europe pipeline and gives Gazprom more bargaining power with regard to its supplies to Baltic states and Poland. Once completed, the Nord Stream 1 and 2 will have an overall capacity of 110 billion cubic meters per year, an amount equivalent to around 60% of total Russian gas exports to Europe. According to official statistics from Nord Stream company, in 2017, the Nord Stream pipeline supplied 51 billion cubic metres of natural gas. This means that the pipeline system operated at 93% of its annual design capacity of 55 bcm.

[210] K. KOCAK, P. DE MICCO, «The quest for natural gas pipelines», *European Parliament Research Service*, 2016.



Washington strongly opposes Nord Stream: it believes that Nord Stream 2 is not just a commercial project, but a political one as well. In May 2018, US Deputy Assistant Secretary of State, Sandra Oudkirk, said the new pipeline would divert gas flows away from Ukraine, which heavily depends on transit fees, and could become a means for Russia to set up surveillance cables in the Baltic Sea. The American diplomat also mentioned the fact that, if the project goes ahead, the US could impose sanctions on companies involved in the construction of the pipeline. Despite this opposition from EU and transatlantic partners, Germany has remained committed to the project and construction work on the German section of the pipeline officially started in May 2018[211].

Another legal obstacle concerning the construction of the Nord Stream 2 could be the disagreement over the OPAL pipeline's exemption from the rules of the Third Energy Package. The Nord Stream is linked to two major onshore pipelines: NEL and OPAL. NEL has been carrying 20 bcm since 2013, whereas OPAL with a capacity of 35 bcm is the main connection to the European gas market. According to the unbundling rules of the Third Energy Package, Gazprom must reserve up to 50% of the OPAL capacity for gas transportation by independent suppliers. However, In October 2016 the European Commission allowed Gazprom to bid for the remaining 50 per cent of OPAL capacity alongside third parties through an auction[212].

[211] W. WILKES, «U.S. Warns Sanctions Possible If Nord Stream 2 Pipe Proceeds», *Bloomberg*, 17 May 2018. https://www.bloomberg.com/news/articles/2018-05-17/u-s-warns-sanctions-possible-if-nord-stream-2-pipe-proceeds (last seen: 23 May 2018)

[212] C. STERN, «The OPAL Exemption Decision: a comment on the CJEU's ruling to reject suspension», *Oxford Institute of Energy Studies*, 2017

6.2 Energy policies within the EU on a political and legal level

The Treaty of Lisbon laid down for the first time a separate article on energy policy, indicating security of supply as one of its objectives. Nevertheless, defining energy security and clearly drawing the limits of the EU external energy policy has not yet been set in a coherent legal and policy document, especially given the high disaccord in the energy priorities of the member states. In 2006, the Commission, the High Representative and some Member States professed their readiness to include energy matters in the EU foreign policy. Another step in this direction came in 2011 with the first mandate given to the Commission to negotiate an international pipeline, the Trans-Caspian pipeline. EU external action in the energy field has been a bumpy road: in 2013, the EU's main diversification project from Russia, i.e. the Nabucco pipeline, was shelved when Azerbaijan decided to send its gas from the Shah Deniz II area to the Trans-Adriatic pipeline[213].

The Energy Community is not an EU institution but is a regional EU platform created to enhance the integration of energy markets in South East Europe. The Energy Community was launched in 2005 and it had the objective to oblige the contracting parties to adopt the *acquis communitaire* in different areas, such as energy, environment, oil and gas. Besides, it demanded the parties to comply with a series of regulations and 'acceptable standards' by the EU. This had to be acquired through a sort of regulatory convergence that would have linked the Energy Community signatories with the EU internal energy market.

The Energy Community could be viewed as an attempt to foster integration without achieving a full membership political process. The Community has been pursuing an extension of the EU internal energy market with those neighbouring countries (especially in the Balkans) that had not yet become EU member states. Despite the EU being supportive of this project since its foundation, there has been many legislative and structural setbacks over the recent years. First of all, many parties did not manage to fully adopt and implement the acquis and, secondly, there has been a consistent lack of investment to foster a needed modernization of energy infrastructure.

After the development of the Energy Union in 2015, the EU tried to boost its efforts in energy diplomacy. In July 2015, the Foreign Affairs Council adopted the EU Energy Diplomacy Action Plan. The Plan is composed of four pillars: hold regular strategic talks in the Foreign Affairs Council on major energy issues, set energy dialogues with relevant producing and transit states, reach joint EU approach in multilateral institutions and strengthen existing multilateral energy institutions, as well as coordinate the EU geostrategic position so that a common position can be reached on external energy issues. EU energy diplomacy has also tried to build closer cooperation with important transit countries, such as Turkey, Ukraine or Belarus.

Recently, Europe has been faced with a series of domestic gas supplies disruptions, the most notable one is represented by the Netherland's case. In March 2018, the Dutch government announced it will cut production at the Groningen gas field to 12 billion cubic meters per year by 2022, and to zero by 2030. It is interesting to notice that Groningen gas field reached its peak production in 2013, when it produced a peak of 54 bcm. However, the emergence of seismic activities in the region has alarmed authorities that decided to drastically limit the extraction

[213] A. HERRANZ-SURRALLES, «European External Energy Policy: Governance, Diplomacy and Sustainability», *Maastricht University*, 2015.

activities. This reduction in gas production in Holland is coupled with a UK dwindling production in the North Sea and a gas output that has reached its limit in Norway. Finally, one of Europe's largest gas supplier, Algeria, has steadily decreased its gas exports to the EU. In 2016, Algeria exported 15.1% of the overall EU gas imports from non-EU countries, but in 2017 this figure decreased to 12.7%[214].

With the notable exception of Norway, production across the rest of Europe has declined over the past few years. This trend is in line with a nearly 4% average annual production decline since 2010 (excluding Norway). Given that many production assets are on their way to reaching end of life, both in the North Sea and onshore, the trend is expected to continue. As already outlined, the most notable recent development was the decision by the Dutch government to further restrict production in the Groningen field to nearly half (from 21.6 bcm to 12 bcm) after a 60% reduction in 2013 (from peak of 54 bcm), with an ultimate goal of shutting it down completely by 2030.

6.3 Evolution of EU-Russia energy relations

So far various legal, economic, and political elements were laid down with regard to the energy relations between the European Union and the Russian Federation. All these factors are relevant in shedding light upon the future of this relation. There is the need to further analyse this scenario in order to understand the current factors and better measure their relative weight and importance in order to single out the different policies that should be activated by policymakers. Therefore, the answer to the pivotal question of what will be the future of the EU-Russian energy relations is of key relevance in this debate.

The current debate about new 'green' alternatives in the European energy mix will probably have a strong impact on the amount of oil that will be imported and consumed by European customers in the medium and long run. This will lead to a new impetus in the production of electricity powered by alternative energy sources, such as wind and solar. Energy efficiency is the key to successfully decarbonizing the power, heating, and transport sectors. Attempting to reach the EU's climate and future energy targets without it would not only be more expensive, but could also encounter public resistance given the additional clean energy supply that would be required.

New policies will be implemented in order to reduce the amount of CO2 released in the atmosphere: all this will give a renewed strength to natural gas as a 'cleaner' source than oil, and 'cheaper' option than most renewables. In fact, it is interesting to note that the ever lower costs of wind turbines and solar installations bring about an upper price limit for coal and natural gas, as the operators of coal and gas-fired power plants need low commodity prices to compete with renewable energy.

A crucial component of the energy transition consists in the massive deployment of renewable energy. By 2030, the share of the EU gross inland energy consumption accounted for by renewables needs to almost double to 25% (in 2015, renewables accounted for 12.4% of consumption). Natural gas could become a compromise in the eternal debate between the high costs (and intermittence in its production) of most renewables (wind and solar) and the relatively

[214] Official data from the European Commission.

cheaper but environmentally expensive oil production. In this scenario, coal will no longer be an energy option for European countries: in the EU Long Term Strategy, coal usage in the EU nearly halves by 2030 against 2015 levels and virtually disappears by 2050. This runs counter national coal 'phase out' commitments, in particular in Germany where it is expected an even faster reduction of coal usage by two thirds by 2030[215].

New LNG projects are being developed globally at great speed and there is a strong interest by businesses in this promising sector. Ensuring that all Member States have access to liquid gas markets is a key objective of the EU's energy union strategy. LNG can give a real boost to the EU's diversity of gas supply and hence greatly improve energy security. Today, the countries in western and southern Europe that have access to LNG import terminals and liquid gas markets are far more resilient to possible supply interruptions than those that are dependent on a single gas supplier.

Australia is ramping up its LNG production, and Qatar, Mozambique are following suit. All this surge in natural gas will have an impact in the liquidity of the market and thus reduce the price for it on global markets. The European Union has large idle LNG capacity and it is eager to exploit this new gas splurge: this would allow the EU to reduce its CO2 footprint and reduce its reliance from Moscow. Yet, Russians have understood the profitability of this field and are trying to compete with the US also on this level (e.g. Arctic LNG).

The incredible rise in the American shale oil and gas has led to the fact that, in recent years, the USA has become the largest oil producer in the world. This has revolutionized the energy market globally and has allowed the US to increase their oil and has shipments abroad. This has led to a new wave of LNG cargos to Europe: the Trump administration has been keen to lobby their LNG to the Europeans. Despite its price being higher than the Russian one, the Americans claim that this new LNG source allows the EU to be less reliant on gas coming from the east.

With all this new LNG coming online, the Europeans should increase their import share by buying more and more LNG from Qatar, US and Mozambique as this will give Brussels a stronger geopolitical leverage vis-à-vis Moscow. At the same time, the EU, through the 'green new deal' will further exploit its local renewable sources by committing more funding to energy research and 'clean' technologies.

On the other hand, gas will keep on flowing to Europe through pipelines: TAP is expected to be operational by 2021 and Turk Stream, recently inaugurated, will give Europe the option of receiving more Russian gas through the Southern Gas Corridor. In this regard, Turkish role in the region is destined to become more and more relevant, given its geographical position. In fact, the recent large discoveries of natural gas in the Eastern Mediterranean and the prospects for the EastMed pipelines are giving Ankara a stronger influence on the future of European gas imports from that region. According to European Commission data, initially, approximately 10 billion cubic meters (bcm) of gas will flow along this route when TAP will be operational. Given the potential

[215] M. BUCK, A. GRAF, P. GRAICHEN, «European Energy Transition 2030: The Big Picture», Agora Energiewende, March 2019.
https://www.agora-energiewende.de/fileadmin2/Projekte/2019/EU_Big_Picture/153_EU-Big-Pic_WEB.pdf (last consulted: February 2020)

supplies from the Caspian Region, the Middle East and the East Mediterranean, however, the EU aims to increase this to 80 to 100 bcm of gas per year in the future[216].

Ankara will become the most important interlocutor for Brussels with regard to Eastern and Southern gas shipments: TANAP/TAP is running through Turkish territory and the future EastMed pipeline will probably need to have the Turkish assent in order to become a geopolitically viable project. Israel, Egypt and Cyprus, because of their significant offshore gas reserve, make the Eastern Mediterranean region a strategic partner for the EU in its effort to diversify its gas supply routes. There are several options to bring natural gas from the region to the European Union and the world market either by pipeline or as LNG.

In addition, the presence of Turkish soldiers in Libya will have far-reaching consequences since Libya is one of the major oil producers in the area and it is from the Libyan shores that the Green Stream gas pipeline departs. All these elements combined make the case for a more concerted approach in the EU-Turkish relations that are going to be vital for the future of EU energy policies. Moreover, despite the new LNG being bought in larger quantities by European consumers and the higher rate of renewables in the EU energy mix, Russian gas will keep on being the cheapest and the most abundant one for the EU as a whole. The Nord Stream 2 project will give Brussels the option of having cheap and direct gas shipments from the Russian Federation, without the need of relying on third countries, such as Ukraine. All this constitutes a positive development for the European energy independence.

As its domestic fossil fuel production has declined (as stated above), the EU has become more dependent on fossil fuel imports. This makes Europe vulnerable to increasingly volatile market prices for fossil fuels and puts it at risk for supply shortages. This is particularly true of natural gas. For example, Russia provides 42% of EU gas imports and is the sole supplier to nine Member States. Yet, over the past years the EU has undertaken concrete measures to counter this trend. The EU allocated significant funds to a number of infrastructure projects. These created at least two entry points for pipeline gas in every Member State, strengthened the EU's internal gas network, enabled the reverse flow of gas, and built new facilities for processing liquefied natural gas. They also required Gazprom to sell its gas freely in the EU single market.

The EU's overall LNG import capacity is significant – enough to meet around 45% of total current gas demand. However, in the region of south-east of Europe, and central-eastern Europe, many countries do not have access to LNG and are often heavily dependent on a single gas supplier (Russia), and would therefore be hardest hit in a supply crisis. Therefore, for European policymakers it is important to make sure that such countries have access to a regional gas hub with a diverse range of supply sources, including LNG.

In order to decrease Russian clout on EU energy imports, the EU should pursue a strategy based on diversification of export markets (US, Qatar, Mozambique) and energy sources (boosting LNG imports). In addition, Brussels should increase domestic renewable production and scale up energy efficiency and foster 'clean' technologies (such as hydrogen and carbon-capture installations).

[216] EU Commission report available at https://ec.europa.eu/energy/en/topics/energy-security/diversification-of-gas-supply-sources-and-routes#related-links (last consulted: February 2020)

Therefore, also in the near future the energy relations between the EU and the Russian Federation will continue to be strong and fundamentally viable. Yet, the further evolution of this process will much depend on the EU capability to hammer out and implement new energy policies that will eventually bring down energy consumption and make the energy markets more liquid and efficient.

In the medium and long run gas will probably play a lower role in the EU energy mix and, therefore, also the Russian relevance in the European energy market is doomed to become thinner and thinner in the decades to come as the production of electricity from renewable sources is projected to increase from an annual average of 32.2 % in 2018 to 57 % in 2030[217]. The large majority of this increase will come from wind and solar: electricity from wind is projected to more than double its share in the mix while electricity produced by solar projects will almost triple. Renewables will become one of the main pillars of power generation throughout Europe. And renewable electricity will increasingly help to decarbonize the buildings, transport and industry sectors.

In conclusion, Moscow and Brussels will continue be close energy partners (also thanks to the pivotal Nord Stream 2 project): though, in the medium and longer run the energy efficiency projects, the rise in renewable production and the diversification of energy sources (LNG and hydrogen) and markets (USA becoming the world's largest oil producer) are set to change this energy paradigm. The speed of this change towards energy efficiency and usage of cleaner energy sources will depend on the political will of European lawmakers and on the political and social pressure coming from the society, and youngsters in particular.

[217] M. BUCK, A. GRAF, P. GRAICHEN, «European Energy Transition 2030: The Big Picture», Agora Energiewende, March 2019.
https://www.agora-energiewende.de/fileadmin2/Projekte/2019/EU_Big_Picture/153_EU-Big-Pic_WEB.pdf (last consulted: February 2020)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