The EU's Energy Challenges

Elai Rettig and Oded Eran

In recent years, the EU has set for itself a number of long term objectives to increase its members' energy security. First and foremost is the desire to reduce dependency on Russia as Europe's main energy supplier. However, not all EU countries view Russia as a threat to their energy sector, and some, particularly Germany, are actively promoting Russia's continued energy dominance in Europe. The biggest challenge facing the EU's quest for higher energy security is how to reconcile the conflicting energy interests and needs of different European countries and create a joint European energy sector that will provide greater bargaining power against Russia and other external energy suppliers. This challenge will only grow once Turkey becomes a significant transit state for European-bound oil and natural gas from Central Asia and the Middle East, thus increasing its political power with respect to the EU.

Dependence on Imports from Russia

In May 2014, the EU published an official document entitled "European Energy Security Strategy," which concluded that the main challenge to European energy security stems from its growing dependence on a small number of suppliers, primarily Russia.[1] In 2015, Europe (EU-28) imported about 54 percent of its energy resources (compared to 40 percent in 1990) at an estimated cost of over 1 billion euros per day.[2] This dependence is particularly high in the case of oil (90 percent), coal (67 percent), and natural

gas (66 percent), which the EU consumes at an annual rate of some 480 billion cubic meters (BCM).[3] Russia is Europe's dominant supplier of these three energy sources. In 2015, Russia supplied 27.7 percent of Europe's oil imports, 25.8 percent of its coal imports, and 29.4 percent of its natural gas imports.[4] Norway is the second largest supplier of both oil (11.4 percent) and natural gas (25.9 percent). In contrast to popular perceptions, Saudi Arabia is only the fourth ranked supplier of oil to Europe (7.5 percent), after Nigeria (8 percent). Together, the Middle East countries (mainly Saudi Arabia, Iraq, and Algeria) account for only about 20 percent of Europe's oil imports, while the Caspian Sea nations (Azerbaijan and Kazakhstan) account for about 11 percent. Likewise in the case of natural gas imports, the Middle East countries (primarily Qatar, Algeria, and Libya) account for less than 17 percent. In both cases, the Middle East collectively accounts for a much smaller share than Russia alone. In the case of coal imports, about 61 percent arrive from only three countries – Russia, Colombia, and the US – while the rest comes primarily from Australia, South Africa, and Indonesia.

These figures do not provide a complete picture of the extent of European dependence on Russia, since they reflect only the overall imports of the entire continent. In reality, many countries in Eastern Europe are almost completely dependent on imports from Russia, particularly in the case of natural gas.[5] These include Bulgaria, Estonia, Finland, Hungary, Lithuania, Latvia, Slovenia, Slovakia, and the Czech Republic. This dependence has made them highly vulnerable to supply disruptions, whether due to political, commercial, or technical factors. A tangible reminder of this risk occurred in the winter of 2009, when a commercial\political dispute between Russia and Ukraine left Ukraine and several other Southeast European countries without gas for heating for 13 days.[6] In contrast, West European countries – including France, Spain, Portugal, Britain, Switzerland, Belgium, Sweden, and Denmark – are hardly dependent on Russian gas. Somewhere in the middle is Germany, which imports about 40 percent of its natural gas from Russia but also enjoys greater diversity in its fuel sources (including domestic production of coal and the widespread use of renewable energy), and benefits from pipeline interlinks to all nine of its neighbors for backup purposes. Consequently, Germany is less concerned about a disruption in supply from Russia.

The assumption that the drive to reduce Russia's energy dominance in Europe leads the agenda of all EU countries needs to be reexamined. For many countries in Central and Western Europe, the price of gas is what determines their market preferences. In contrast, countries like Lithuania and Poland are prepared to pay a "security premium" for natural gas if its source is not Russia. To this end, they have built intake facilities for liquefied natural gas (LNG) from tankers by sea, which is much more expensive than gas delivered by pipeline. They are also trying to strengthen joint frameworks, such as the "Energy Union" initiative, for the coordination of a uniform energy policy among all members of the EU. The gaps between Eastern and Western countries in the EU therefore constitute a source of conflict that makes it difficult to formulate a joint energy policy for the Continent.

The clearest example of the conflict of interests between East and West is the growing dispute surrounding the Nord Stream 2 pipeline project. The project is meant to increase the amount of gas that Russia will be able to transport directly to Germany by laying an additional undersea pipeline in the Baltic Sea. Donald Tusk, the President of the European Council (who is Polish in origin), announced that the new pipeline will harm the long term interests of Europe since it will increase the continent's dependence on Russian gas. His argument was supported by the leaders of nine countries in Eastern Europe, led by Poland and Hungary.[7] Nonetheless, Germany is resolutely proceeding with the pipeline as a response to the diminishing supply of gas from the North Sea, and has even convinced the US to limit its sanctions on Russia so that they do not harm the feasibility of the project.[8] Germany's preference of ensuring domestic gas supply at the expense of Eastern Europe enables Russia to create further divisions among EU members. This is reflected in a number of East European countries that have increased or extended their gas contracts with Russia in exchange for lower gas prices. The fact that they ignored EU principles of reducing dependence on Russia expresses a lack of confidence among Eastern European countries in the joint front the EU is seeking to present in the energy domain. In order to arrest this trend, the EU is setting up an enforcement mechanism that will require every European government to approve their external energy supply contracts with Brussels before authorizing them.[9]

Consequently, Russia will presumably remain Europe's dominant gas supplier in the coming decades, despite the efforts of the EU. Russian gas is cheaper and more available than most alternatives, and it is connected by

thousands of kilometers of pipeline to the heart of the continent. In addition, many countries are tied to long term contracts with Russia, and Russia has already shown willingness to significantly reduce the price of its gas at the point of renewal in order to maintain its market share. It is important to note that cheap and available gas from Russia is not in and of itself bad for EU countries. The problem is that in contrast to the European oil market, in which there is plenty of competition between suppliers, some European countries do not have any alternative to Russian gas, giving Russia potential leverage in political matters unrelated to energy. Nonetheless, apart from the peripheral damages caused by the gas dispute between Russia and Ukraine, there are no clear-cut examples of Russia's direct use of gas as a political tool against an EU member, and therefore from Europe's point of view this is only a potential danger at the moment.

De-politicization of Russian Gas

The goal of the EU is therefore not to reduce the amount of gas flowing in from Russia, but rather to increase its bargaining power by presenting alternatives to Russian gas and thus removing it from its political context. To this end, Europe must work on a number of levels simultaneously. It must diversify its import sources (in part by means of LNG, pipelines from the Caspian Sea and the Mediterranean, and perhaps later also from Iran); improve existing connections of electricity and gas infrastructure between EU countries; allow for domestic exploration and extraction of oil shale and shale gas, despite the opposition of environmental activists; and increase the share of renewable energy in the overall energy mix. There are both internal and external barriers to each of these channels and the EU must reach joint decisions in the immediate run in order to make them a reality.

The first challenge facing the EU is to find new gas suppliers and deal with the political implications that accompany each one. The first alternative is gas from the Caspian Sea. In 2020, construction of the Southern Gas Corridor Pipeline will be completed, a system of pipelines that will transport natural gas from the Shah Deniz field in Azerbaijan to Italy by way of Georgia, Turkey, Greece, and Albania.[10] Initially the pipeline is expected to transport only 10 BCM of natural gas to Europe each year, but later this can be expanded to about 100 BCM. The pipeline can also be used as a route for additional gas exports from the Middle East (Iran and Iraq) and perhaps also from the Eastern Mediterranean (Israel, Cyprus, and Egypt) by way of an undersea

pipeline to Turkey. The advantage of the pipeline is that it bypasses Russia, but it does not provide an immediate solution for East European countries since the chosen route bypasses them as well.[11] However, the Turkish option for conveying East Mediterranean natural gas to Europe has lost its political feasibility as tensions between Turkey and Israel mount. That increases the prospects for conveying the Israeli, Cypriot, and Egyptian gas to Europe through the off-shore Egyptian liquefaction installations.

The pipeline from the Caspian Sea involves new political challenges for the EU, since it allows Turkey to become an important conduit for gas on its way to Europe. In contrast to Ukraine, which is also an important conduit for gas to Europe, Turkey under Erdogan will be in a much better position to bargain with the EU. From a political perspective, Turkey has essentially abandoned its aspirations to join the EU. In terms of infrastructure, Turkey has sufficient alternatives to ensure the continued supply of gas to its domestic market even if the pipeline that passes through it to Europe is disrupted. These alternatives include gas from Russia, Iran, Qatar, and Lebanon (assuming that gas is found in its waters). Therefore, Turkey can, in theory, threaten Europe with blocking the gas that flows through its territory without harming supply to its domestic economy. In contrast, Ukraine is still seeking to ally itself with Europe to whatever extent possible, and is not able to cut supply of gas to Europe without also cutting its own supply, since it is dependent on Russian pipelines. Therefore, if Turkey becomes a conduit for gas to Europe it would have much greater political leverage over the EU than Ukraine ever did.. In addition, if Iran also becomes a significant exporter of gas to Europe, this could make it difficult to impose sanctions on it for violations of the nuclear agreement. Europe must take these considerations into account when dealing with Turkey and Iran in the future.

Another alternative to Russian gas is to import more LNG by way of sea. The increased amounts will arrive from the US, Australia, Qatar, Nigeria, and Algeria, and in the future perhaps also from Israel by way of existing gas liquification facilities in Egypt and/or potential facilities in Cyprus. A number of European countries with direct access to the Mediterranean and the Baltic Sea have already taken advantage of this option and have begun or recently completed construction of LNG-intake facilities. These include Germany, Lithuania, Poland, Greece, and Spain. Additional countries, including Ukraine, Croatia, and Latvia, have declared their intention to build LNG-intake facilities in the near future. In theory, this is a good solution

that exploits the significant increase in supply of LNG in recent years and its lower prices (primarily due to increased LNG exports from the US and Australia). But even with the recent drop in prices, the import of LNG is expected to be significantly more expensive for European countries than the import of dry gas through pipelines from Russia. In addition, many countries in Europe do not have access to the sea, particularly in Eastern Europe (Belarus, the Czech Republic, Hungary, Moldova, Serbia, and Slovenia), and therefore are dependent on neighboring countries to transport the gas to them through interlinking pipelines. This raises the price of the gas even more and will require the upgrade of existing infrastructure connections between the countries in order to handle the larger quantity of gas flowing between them. Despite these obstacles, the construction of LNG-intake facilities has already proven itself a capable bargaining tool against Russia. As was the case in Lithuania, which in 2016 obtained a significant discount on the price of gas it receives from Russia after it finished building an LNG-intake facility.[12] Even without the Lithuanian example, the very fact that East European countries are constructing LNG import terminals is evidence of their willingness to pay a "security premium" for the gas they consume, showing that price is not always the main consideration.

At this stage, Israel can play only a modest role in any of these alternatives, which is true for both the export of LNG by sea and the construction of a gas pipeline to Turkey or directly to Europe. According to estimates from September 2017, Israel has relatively small proven amounts of gas designated for export – about 430 BCM over the next 30 years. For purposes of comparison, this is the amount exported by Russia to Europe in less than two and a half years. On the assumption that Cyprus also takes part in a large Israeli export project to Europe, this will add no more than about 100 BCM for export. This is still no more than about 16 billion cubic meters per year (about 3.2 percent of Europe's gas consumption). Furthermore, the gas will be substantially more expensive than Russian gas, due to the high costs of transportation (about $6-8 per heat unit as opposed to an average of $4.5 from Russia). Therefore, Israeli gas may have an effect on only a small number of Southeast European countries that will be prepared to pay a security premium on their gas imports (Greece or perhaps Bulgaria).

Creating a Common and Cleaner Energy Sector

Beyond the diversification of external gas suppliers, there are additional ways of increasing Europe's energy security. Foremost among them is the creation of an internal energy market for Europe.[13] Contrary to conventional wisdom, a "European energy sector" does not currently exist. Each country in the EU is responsible for its own national energy sector, and a large number of countries are not sufficiently interconnected to enable the backup of energy supply and electricity in case of an emergency. Bulgaria and Portugal are the most isolated from this perspective, but Croatia, Hungary, Romania, and Greece also need to improve their connections with each other.[14] Improving the interconnection of gas pipelines and electricity infrastructure is likewise in the interest of LNG suppliers such as the US, since this will facilitate the sale of gas to European countries without access to sea. To this end, the EU has defined a target of 10 percent interconnectivity for electricity transfers between EU countries by 2020, and 15 percent by 2030. It has also issued directives for the upgrade of existing gas interconnections in Eastern Europe.

The creation of common electricity and gas networks is also meant to achieve other EU long term goals, such as more internal competition in the European energy sector and the reduction of greenhouse gas emissions. Theoretically, infrastructure interconnections will enable each country to compete in the electricity market of its neighbors, and thus the consumer will benefit from a more competitive price. In addition, the common network will facilitate better integration of renewable energy within the European electricity market by allowing transmission of electricity between neighboring countries during hours when solar and wind plants produce more electricity than is needed and may overload the local electricity network. More importantly, the creation of an internal energy market will increase the power of the EU immensely with respect to external suppliers, since it will provide them with a "single voice" during negotiations; however, the path to that outcome is a long one.

At this stage, Europe is moving very slowly in its quest to connect the EU countries to a common energy infrastructure, particularly with respect to electricity. According to an EU estimate from early 2017, there are 11 countries that will not meet their connectivity goals for 2020 – including Germany, Italy, France, Spain, Poland, Portugal, and Romania (as well as Britain, which is leaving the EU).[15] Despite the major security benefits in creating these connections, the local electricity companies in each country

are not rushing to construct interconnections since they have no interest in increasing the competition they face in their respective markets. Also politically, the idea that each country will commit to helping its neighbors during a gas or electricity shortage (a policy that the EU calls "energy solidarity") does not gain much support in many European countries. For example, in 2017 Romania refused Bulgaria's request for electricity to get through an unexpected cold spell. Romania did not want to take a risk that it itself would need the extra electricity in case the cold spell reached it.[16] In addition to the political stumbling blocks, the promise of reduced electricity prices in Europe as a result of the liberalization and privatization of markets has not proven itself so far, and in some cases the prices of electricity and gas to the end user have even risen following privatization.[17]

In contrast, European policy has proven itself in two areas – energy efficiency and renewable energy. With regard to energy efficiency, Europe has so far met the targets set by the EU for 2020 and has lowered total energy consumption from year to year.[18] There are estimates that the demand for gas in Europe will even start to decline in 2025.[19] In addition, the use of renewable energy sources during the last decade has grown by 73 percent, and in 2014 they accounted for about 16 percent of total energy consumption in the EU countries. The target is 20 percent by 2020.[20] These developments have helped reduce Europe's dependence on external suppliers. Germany is leading in these two areas. In 2015, 30 percent of German electricity was produced by renewable energy, with a target of 80 percent by 2050.

In contrast to the growth in solar and wind energy, the use of nuclear energy has declined in Europe, despite the fact that it also helps reduce greenhouse gas emissions and increases Europe's energy independence. Germany intends to close its nuclear plants by 2022 due to the high price of their day-to-day maintenance and the drop in the prices of gas and coal. France is still promoting nuclear energy, but problems in nuclear power plant equipment produced by the Areva company were revealed recently, and the image of this technology is becoming increasingly tarnished.[21]

Europe has so far also met its commitments in the fight against climate change. It intends to cut greenhouse gas emissions by 20 percent by 2020 and by 40 percent by 2030, relative to 1990. Though most countries are meeting their targets, a number of them are falling short – including Britain, Ireland, Belgium, and Malta. The effect that Europe has on the global effort to combat climate change is relatively small, since it produces only 10

percent of the global carbon dioxide emissions (as opposed to China which produces 30 percent). Nonetheless, Europe's leading role in the process has an important political function in the absence of cooperation on the part of US President Trump and the uncertainty regarding his intention to follow the Paris Agreement directives without actually taking part in them.

Notes

1 "European Energy Security Strategy," European Commission, May 28, 2014, https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/energy-security-strategy. Other EU objectives include reducing the prices of natural gas and electricity and reducing the emissions of greenhouse gases by 2050. The main document on the subject that brings together all of the topics was published by the Energy Union in 2015. See "A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy," European Commission, February 25, 2015.

2 "Energy Production and Imports," Eurostat, European Commission, June 2017, http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy_production_and_imports.

3 Europe currently consumes less energy than a decade ago, but its dependency on imports has increased due to the decline in domestic sources. The local production of natural gas has dropped by 40 percent since the 1990s. The Netherlands, which is the largest gas producer in the EU, has significantly reduced its rate of production due to fear of causing earthquakes. The local production of coal has also fallen by 40 percent. Poland, the largest coal producer in Europe, even started to import coal in 2014 in order to meet local demand.

4 "Energy Production and Imports."

5 "Monitoring Progress towards the Energy Union Objectives – Key Indicators," European Commission, February 1, 2017, https://ec.europa.eu/commission/sites/beta-political/files/swd-energy-union-key-indicators_en.pdf.

6 Ukraine is not completely free of responsibility for the disruption. It often exploited its status as an important transit hub for Russian gas and routed more gas to its economy in the winter than what was agreed upon in its contract with Russia. See Jeffrey Mankoff, "The Business and Politics behind the Russia-Ukraine Gas Dispute," Council on Foreign Relations, January 8, 2016, https://www.cfr.org/interview/business-and-politics-behind-russia-ukraine-gas-dispute.

7 Andrius Sytas, "EU Leaders Sign Letter Objecting to Nord Stream-2 Gas Link," *Reuters*, March 16, 2016, https://reut.rs/2IJxssX.

8 David Francis, "Germany Hits Back at Possible New U.S. Sanctions on Russia," *Foreign Policy*, June 15, 2017, https://bit.ly/2s5p4L8.

9 "EU Nations Agree to Let European Commission Vet Gas, Oil Deals," *Reuters*, December 7, 2016, https://reut.rs/2rO1KRD.

10 "Gas and Oil Supply Routes." European Commission, https://ec.europa.eu/energy/en/topics/imports-and-secure-supplies/gas-and-oil-supply-routes
11 There is also a plan to transport gas directly to Greece and Italy by way of an underwater pipeline from Israel (the "East-Med Pipeline") but according to most opinions such a project is not economically feasible and therefore will not be carried out without an additional major discovery of gas in Israel's economic waters.
12 Georgi Kantchev, "With U.S. Gas, Europe Seeks Escape from Russia's Energy Grip," *Wall Street Journal*, February 25, 2016, https://on.wsj.com/2IpeWCF.
13 Dependence on Russia is not in itself a sufficient measure for determining to what extent a particular state in Europe is vulnerable to disruptions in the supply of gas. Brenda Shaffer has shown that a number of countries in Eastern Europe are more immune to a disruption despite their dependence on Russia, in part as a result of the diversification of sources, the maintenance of emergency stores, the creation of redundancy in the system, and the infrastructure connection with neighboring countries. See Brenda Shaffer. "Europe's Natural Gas Security of Supply: Policy Tools for Single-Supplied States," *Energy Law Journal* 36, no. 2 (2015): 179.
14 "Energy Production and Imports."
15 "Energy Production and Imports."
16 Anca Gurzu, "EU Energy Solidarity Left Out in the Cold," *Politico*, January 23, 2017, https://politi.co/2kaPFEf.
17 During the years 2008-15, the average prices of electricity and gas to the European consumer rose by more than 20 percent, according to a 2016 report commissioned by the European Commission. See Katharina Grave et al., *Prices and Costs of EU Energy: Final Report*, European Commission, April 29, 2016. https://ec.europa.eu/energy/sites/ener/files/documents/report_ecofys2016.pdf.
18 2016 was an exception from this point of view. During that year the demand for natural gas increased by about 6.1 percent.
19 "European Natural Gas Demand to Show No Growth in Medium to Long Term: Cedigaz," Platts, July 11, 2017, https://bit.ly/2v8bfuj.
20 See footnote 3.
21 Michael Stothard, "French Watchdog Deepens Probes into Areva Nuclear Parts," *Financial Times*, January 4, 2017, https://www.ft.com/content/2baf6270-c36a-11e6-81c2-f57d90f6741a.