

EUROPE'S NATURAL GAS SECURITY OF SUPPLY: POLICY TOOLS FOR SINGLE-SUPPLIED STATES

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Synopsis: This article will examine natural gas security of supply of a number of states in Europe that rely on Russia as a single supplier for all or most of their natural gas imports. It will assess the management and condition of these states' natural gas sectors and how these factors affect each state's gas security of supply. The study is based on case studies of Poland, Bulgaria, Lithuania, and Hungary. This article claims that states with single suppliers of natural gas can maintain sufficient security of supply through effective policies. The study shows that EU member countries have adopted diverse strategies for enhancing their security of supply, some of which do not involve adding supply sources, reducing the percentage of Russian gas supplies or in some cases, enforcing market mechanisms. Rather, many of these policies are state led initiatives to establish energy infrastructure, such as expansion of gas storage capacity; enactment of stringent emergency response policies; and enforcement of security of supply regulations, such as stockpiling of alternative fuel sources at power plants. In fact, in some cases, states have not implemented EU directives on unbundling and market liberalization in order to conduct policies that they deemed necessary to ensure adequate energy security. As part of their strategy based on the assessment that the state needed to maintain control of its main natural gas infrastructure, some EU states in Eastern Europe have enacted laws that preserve state ownership of energy infrastructure that are considered of strategic importance in terms of national security and consequently state dominance in the domestic energy sector.

I.	Introduction and Research Question	180
II.	Europe's Security of Supply of Natural Gas	182
III.	Case Studies	185
	A. Poland.....	185
	B. Bulgaria.....	189
	C. Lithuania	192
	D. Hungary.....	196
IV.	Analysis and Conclusions	199

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I. INTRODUCTION AND RESEARCH QUESTION

For the last two decades, policy makers in Washington and Brussels have devoted significant attention to the topic of European energy security. Policy attention has been especially intensified in response to the three natural gas supply crises related to Ukraine (2006, 2009, and 2014). In addition, European policy debates on its relations with its main suppliers have increased in light of the 2015 decision of the European Commission (“EC”) to send a statement notifying Gazprom of its objections to alleged market abuse as part of the EC’s ongoing investigation.¹ Further fueling the policy debate is the fact that the contracts between Gazprom and a number of European Union consumer states are set to expire in the next one to three years. Thus, many of these states are crafting new natural gas policies due to their new options as well as constraints with the expiration of the existing supply contracts. In addition, the Third Energy Package implementation exemptions also expire in the next year to three years for a number of new EU members, and thus, these states will implement new policies governing their natural gas sectors by the end of the decade.

In assessing the degree of vulnerability of various European Union members to supply disruptions, many reports have focused on the percentage of Russian gas in a state’s total natural gas consumption. Throughout each Ukraine-Russia crisis, Western media has been full of charts showing the relative portion of Russian supplied gas to each state in Europe, assuming those with high portions of Russian gas are particularly vulnerable.² However, ensuring security of supply of gas is much more complex than just diversity of supplies, and some states with multiple suppliers are relatively vulnerable, while those with one supplier can manage a high level of security of supply.

Furthermore, in assessing security of supply, it is important to also note that the relations between natural gas suppliers and consumers is nuanced and complex.³ While it is often perceived that a consumer of natural gas is dependent on its supplier, in the interplay of natural gas trade, the supplier does not necessarily possess leverage over the consumer. There are three forms of relationships between natural gas suppliers and consumers: (1) neither side is dependent on the gas trade; (2) one side is dependent—either the supplier or the consumer; or (3) the sides are interdependent in the gas trade, with its disruption causing strategic costs to both sides.⁴ Interdependent gas trade is rare and is indicative of few of the gas trade relationships between European states and their external suppliers. However, it is important to note that in relationships when one side is dependent, it can be the supplier that is dependent on the market for essential revenue, while the market may not be dependent on the supplier’s gas.

1. Press Release, European Comm’n, Antitrust: Commission Sends Statement of Objections to Gazprom for Alleged Abuse of Dominance on Central and Eastern European Gas Supply Markets (Apr. 22, 2015), http://europa.eu/rapid/press-release_IP-15-4828_en.htm.

2. See generally *Putin’s Pipelines*, ECONOMIST (Apr. 3, 2014), <http://www.economist.com/blogs/graphicdetail/2014/04/daily-chart-1>.

3. See generally Brenda Shaffer, *Natural gas supply stability and foreign policy*, 56 ENERGY POLICY 114 (2013).

4. *Id.* at 115.

This article will examine the natural gas security of supply of a number of states in Europe that rely on a single supplier for all or most of their natural gas supplies. Security of natural gas supply is a state's capability to perform the vital functions of the state on a short—and medium—term basis (public security institutions such as military and police, minimal power generation and heat to homes and vital public institutions, level of energy supply that prevents harm to public safety) even when regular gas supplies are interrupted.⁵ Accordingly, security of supply of natural gas does not necessarily entail the capacity to substitute disrupted gas supplies with alternative gas supplies, but ensuring that a variety of means (such as use of stored gas, fuel substitution, or emergency plans to shut down supplies to non-essential gas consumers) are in place to continue to insure that the vital functions can be performed. The article will assess the management and condition of these states' natural gas sectors and their effect on the states' security of supply, concluding with the subsequent lessons for energy security policies. This study is qualitative, based on case studies of Poland, Bulgaria, Lithuania, and Hungary.

In assessing the management of their energy sectors, the article will study a variety of factors: total fuel mix composition; electricity production fuel mix; natural gas consuming sectors;⁶ domestic natural gas production; structure and regulation of ownership of natural gas and electricity production, supply, and distribution infrastructure; liquefied natural gas (LNG) import capacity; fuel-switching capacity of power plants; geographic constraints and assets; climate related energy demands (heating, cooling); gas supplied via transit states; interconnections to electricity and natural gas supplies in neighboring states; emergency plans for coping with energy supply disruptions; and natural gas and oil storage capacity and maintenance.

Many academic and government studies assessing the energy security of supply of various member states in Europe have focused on the degree of import dependence and diversity of those supplies. Some studies have declined to evaluate the impact of a large number of factors that affect the security of supply of a state, in order to preserve methodological precision in quantitative studies and not because they deemed them not important. For instance, in a recent and central study of the European Commission itself that assesses the security of supply of the EU members, the authors state that in this study they left out analysis of some important indicators of energy security simply because they are “difficult to quantify.”⁷

5. In contrast to this definition, *see generally* Sachi Findlater and Pierre Noël, *Gas Supply Security in the Baltic States: A Qualitative Assessment*, 4 INTERNATIONAL JOURNAL OF ENERGY SECTOR MANAGEMENT, 236-255 (2010) (which employs a different definition of natural gas security of supply than the one employed in this article by placing greater emphasis on the economic and contractual impacts of disruptions), “For the purpose of this article ‘security of gas supply’ (or gas supply security) refers to the ability of a country’s energy supply system to meet *final contracted energy demand* in the event of a *gas supply disruption*.” *Id.* at 237.

6. The sectors that consume the gas are important in assessing the potential impact of supply disruptions: supplies to industry, for instance, are more easily interrupted than supplies to electricity generation or heating.

7. EUROPEAN COMM’N, MEMBER STATES’ ENERGY DEPENDENCE: AN INDICATOR-BASED ASSESSMENT 27 (Eur. Econ. Occasional Papers 145, Apr. 2013).

While we have tried to cover the most important elements of security of energy supply, some important issues remain outside the scope of (the study) as they are too difficult to quantify [t]hey include, for instance, the level of integration of a given country within the EU gas and electricity markets, the adequacy of interconnections and entry points for oil, gas and electricity, and the level of storage capacity for oil and gas.⁸

The study of additional factors, however, gives a much more precise view of the security of supply of a certain state.

II. EUROPE'S SECURITY OF SUPPLY OF NATURAL GAS

European energy policy is conducted primarily on two levels: the European Union (EU) institutions and the member states. Despite the fact that the initial agreements that were the precursors to the European Economic Community and the EU focused on energy, energy policy is still largely national and conducted differently by the individual states. While the EU strives to develop a united internal energy market, with no impediments of energy flows within the EU, energy policy still remains a field in which national institutions have the largest say.⁹

In recent years, European energy security policies have focused on ensuring supply of natural gas for two reasons: (1) because the security of supply of gas is more challenging than other energy sources, such as oil or coal, and (2) because Russia is the single or dominant supplier of natural gas to a number of EU member states.

Globally, for most of the past two decades, natural gas has been the fastest growing fuel due to its lesser environmental impact, particularly on climate change, than its fossil fuel competitors, and its lower price compared to other sources such as nuclear or renewable energy.¹⁰ Along with its benefits, greater consumption of natural gas has increased energy security challenges. The physical characteristics of natural gas complicate its transport and require long-term transportation contracts or permanent infrastructure as well as large and long-term investments. Europe's natural gas security of supply has become even more complicated since, while natural gas consumption has grown, its domestic production has declined in recent decades.¹¹

In recent years, European and U.S. policy makers have focused on preventing politically based natural gas supply disruptions, which have emanated mainly from Moscow's use of the "energy weapon." However, in actuality, supply disruptions can emanate from a variety of factors. This includes technical glitches and extreme weather. Politically motivated intentional disruptions are still rare

8. *Id.*

9. Press Release, European Council, European Council Conclusions on the Energy Union § 2f (Mar. 19, 2015), <http://www.consilium.europa.eu/en/press/press-releases/2015/03/conclusions-energy-european-council-march-2015/>; For the role of national institutions in EU energy policy, see generally BRENDA SHAFFER, ENERGY POLITICS 128-29 (2009).

10. INT'L ENERGY AGENCY, WORLD ENERGY OUTLOOK SPECIAL REPORT, ARE WE ENTERING A GOLDEN AGE OF GAS? 7 (2011), available at http://www.worldenergyoutlook.org/media/weowebsite/2011/WEO2011_GoldenAgeofGasReport.pdf.

11. *Id.*

events.¹² In fact, to date the most extreme supply disruption of natural gas was caused by a technical error.¹³ Thus, regardless of the identity and number of gas suppliers, policy tools that mitigate the impact of supply disruptions are important elements of ensuring security of supply.

The European Union's current common energy policy is enshrined in the Third Energy Package.¹⁴ The Third Energy Package sets common rules for energy trade throughout the EU and aims for the establishment of one European internal natural gas market governed by market based principles for energy trade throughout the European Union. A central element of the package is unbundling of electricity and natural gas networks: separation of energy supply from network operation.

When the Third Energy Package was conceived, it was not designed as a tool to promote security of supply, rather it related to market structure and rules.¹⁵ However, following the 2009 Ukraine gas crisis, EU officials started treating the package as a tool to promote energy security. Apparently, the Package's use as an energy security policy was an afterthought, and it should not be surprising that it is an open question as to where establishment of market based rules and structure of energy trade contributes to energy security.¹⁶ In fact, one can make the case that by reducing the role of the state in the energy sector this new approach deprives the state of tools to protect its energy security. Moreover, privatization of energy infrastructure, while having many advantages also creates opportunity for foreign states—which can be gas supply states—to penetrate deeper into a consumer state's energy sector by acquiring ownership stakes in energy infrastructure. One of the largest potential challenges of the new EU security of supply approach is that counter to its policy goals, the unbundling and privatization components of the current EU policy create additional opportunities for Russian and other supplier state associated companies to gain additional influence and control over gas sectors in various European states. When a European state relinquishes ownership, Russian companies have often been the main ones interested in acquiring their energy infrastructure.

Following the last European natural gas crisis centered on Ukraine beginning in 2014, the European Union formally accelerated its efforts to form a united energy policy and thus to leverage its aggregated market power. This policy established the position of EU Commission Vice President for the Energy Union, which elevated the functionary responsible for EU energy policy. Additionally,

12. See generally Brenda Shaffer, *Natural gas supply stability and foreign policy*, 56 ENERGY POLICY 114 (2013).

13. See generally *Chemical—Varanus Island Gas Explosion, Western Australia 2008*, AUSTRALIAN EMERGENCY MGMT. KNOWLEDGE HUB (June 3, 2008), <https://www.emknowledge.gov.au/resource/492/2008/chemical---varanus-island-gas-explosion-western-australia-2008>.

14. Council Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 Concerning Common Rules for the Internal Market in Natural Gas and Repealing Directive 2003/55/EC, 2009 O.J. (L 211) 94.

15. Philip Lowe, "Global Ramifications of the European Energy Union," Address at Atlantic Council Event (Apr. 21, 2015), <http://www.atlanticcouncil.org/events/webcasts/global-ramifications-of-the-european-energy-union>.

16. *Id.*

the policy led to the formulation and publication of an official strategy paper for establishment of an Energy Union.¹⁷ Despite the entailed rhetoric, the concrete policies suggested at this stage do not actually embrace aggregation of the market power of the various EU member states, nor do they go significantly beyond the principles and policies promoted in the EU Third Energy Package.

Europe has a special challenge in ensuring security of supply of natural gas to states located in the periphery of the EU. The situation of natural gas security of supply of Europe's states is quite uneven and overall statistics are not indicative of the actual situation of individual states. In European energy security, geography matters.¹⁸ States located in the center of Europe have access to more supply options and lower prices than those located on Europe's periphery. In addition, for states on Europe's geographic periphery, which are primarily small markets, it is unlikely that even if excellent market rules are established and observed, those states in the periphery will represent attractive investment destinations for additional suppliers due to commercial considerations. Thus, many markets may remain singularly supplied by Russia. Consequently, many governments strive to develop energy policies that will insure security of supply regardless of the number and identity of their suppliers.

The EU's approach to improving energy security was somewhat inspired by the United States' success in enhancing the use of market mechanisms in oil and natural gas trade. However, the U.S. energy market is fundamentally different from that of Europe and creates entirely different security of supply challenges. First and foremost, most of the natural gas consumed in the United States is domestically produced by hundreds of producers.¹⁹ In contrast, Europe's gas comes primarily from three suppliers: Norway's Statoil, Russia's Gazprom, and Algeria's Sonatrach. All three of these suppliers are external to the EU. An additional factor that challenges Europe's natural gas security of supply is the fact that Gazprom and Sonatrach are state companies. Moreover, some European companies conduct non-transparent cooperation with Gazprom that enables the company to circumvent EU legislation on gas trade.²⁰

EU and U.S. policy to improve security of energy supply of states dependent on Russian supplies has focused in recent years on two goals: bringing additional gas suppliers to these markets, and at the same time attempting to establish free markets in energy trade.²¹ While the diversification of routes and sources of gas supplies clearly enhances security of supply, these options are not always

17. See generally *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank: A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy*, COM (2015) 80 final (Feb. 25, 2015), http://ec.europa.eu/priorities/energy-union/docs/energyunion_en.pdf.

18. In the United States, geography also highly affects natural gas supply options and security of supply. New England, for instance, is not connected by pipeline to the gas producing regions in northeast United States and thus imports significant quantities of liquefied natural gas (LNG).

19. For more information, see generally *About U.S. Natural Gas Pipelines—Transporting Natural Gas*, U.S. Energy Info. Admin., http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/index.html (last visited Sept. 7, 2011).

20. SHAFFER, *supra* note 9, at 134.

21. *Id.* at 133-34.

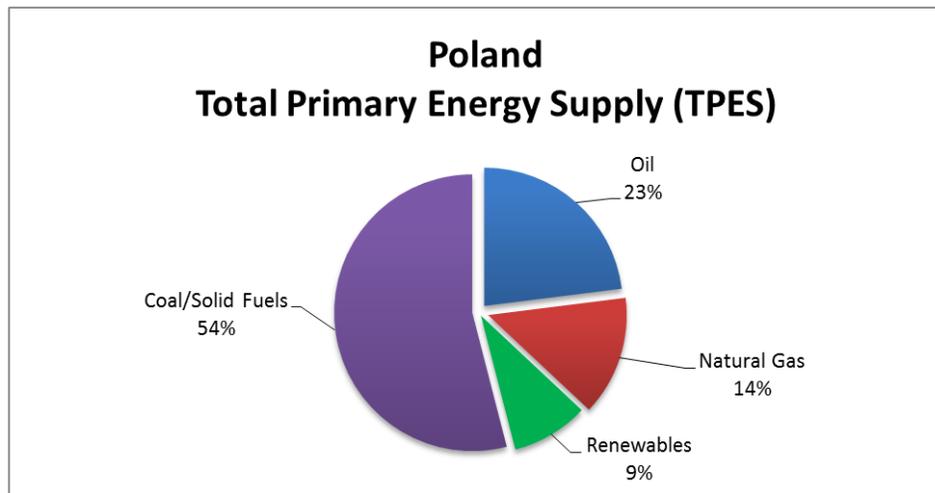
available. Policymakers have all too often neglected a more varied approach to improve energy security that would take advantage of additional potential domestic policy mechanisms, such as the establishment of additional domestic gas infrastructure. In part, this is because the prevailing approach in Europe to energy security is to seek market mechanisms for energy challenges and for the state to refrain from establishing infrastructure or ownership of energy infrastructure.

III. CASE STUDIES

To follow is an analysis of the energy sectors of four European Union member states that rely completely or almost completely on a single supplier for their natural gas imports. The case studies are Poland, Bulgaria, Lithuania, and Hungary.

A. Poland

Poland is an example of a state that relies on Russian gas for the majority of its gas imports, yet enjoys a good degree of natural gas security of supply. The advantages of Poland's gas approach was tested and proven successful during the 2009 Russia-Ukraine gas crisis, which led to significant gas cutoffs to Poland.²²



Source: IEA 2014 country overview (2013 estimates)

Poland's Total Primary Energy Supply (TPES) is not well distributed, with the share of coal at 55% (the highest percentage of the member states of the International Energy Agency).²³ Subsequently, Poland's economy is one of the most carbon intensive in the EU. Natural gas share of Poland's TPES stood in

22. For details of Poland's response to the 2009 Russia-Ukraine gas crisis, *see generally* INT'L ENERGY AGENCY, ENERGY POLICIES OF THE IEA COUNTRIES: POLAND'S 2011 REVIEW 109 (2011), http://www.iea.org/publications/freepublications/publication/poland2011_web.pdf [hereinafter POLAND'S 2011 REVIEW].

23. *Id.* at 9.

2013 at 14%. In 2012, natural gas consumption stood at 16.2 BCM annually, of which 4.4 BCM (27% of demand) was produced domestically. According to the BP Statistical Review of World Energy 2013, Poland possessed 100 BCM of proven reserves of natural gas at the end of 2012; this would be sufficient to cover a quarter of its current consumption for approximately 23 years at current production rates.²⁴ Its gas contracts with Gazprom end in 2021, and Poland hopes by then to have been able to reduce the percentage of Russian gas in its gas mix.²⁵

Almost all imported gas is supplied through pipelines, except for very small quantities of LNG transported by road in tankers. Poland is in the process of establishing its first LNG terminal, which it hopes will become operational in late 2015/early 2016.²⁶ The LNG facility is state-owned through Poland's Gas Transmission Operator (GAZ-SYSTEM S.A.). In its first stage, the facility will have the capacity to supply 5 BCM of gas annually, and the facility operators have contracted gas supplies from the company Qatargas. The contract includes take or pay commitments and extends to 2040. The investors in the LNG facility are a consortium of Western European, Canadian, and Polish companies. One is an Italian company, Saipem, which is the largest investor in the consortium. Poland hopes to turn this into a hub for gas supplies to neighboring countries and thus to expand the capacity of the facility.

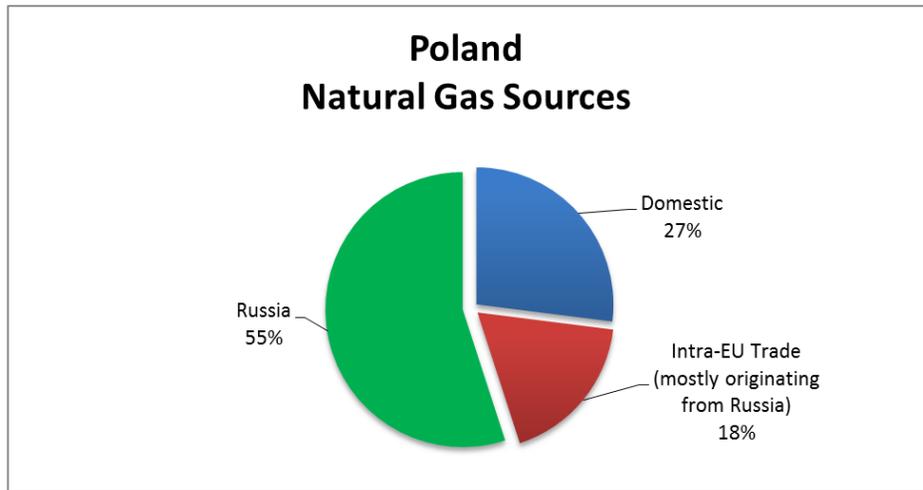
While the LNG supplies will enhance Poland's security of supply, the price of this gas will most likely be more expensive than its existing pipeline supplies; thus, it is not clear how much of its current supplies the LNG will displace in actuality and whether this policy will incentivize the increased use of natural gas. Polish officials have commented that the increased price is a premium that needs to be paid in order to ensure security of supply.²⁷

24. BP, BP Statistical Review of World Energy 2013 20 (June 2013), https://www.bp.com/content/dam/bp/pdf/statistical-review/statistical_review_of_world_energy_2013.pdf.

25. Author's interviews with a number of Polish officials, spring 2015.

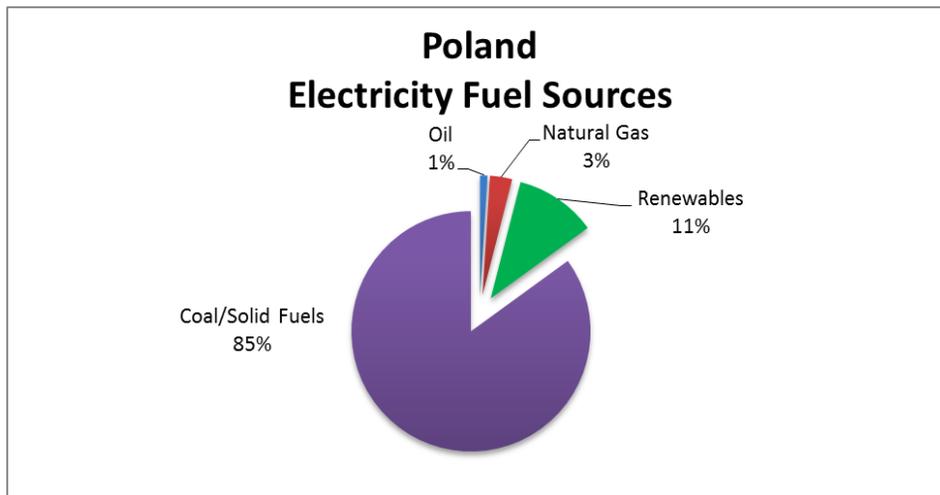
26. Finance and construction issues may further delay the project. *Italy's Saipem says needs more money to finish Poland's LNG terminal*, REUTERS (Mar. 30, 2015), <http://www.reuters.com/article/2015/03/30/poland-lng-saipem-idUSL6N0WW0NA20150330>.

27. Author's interviews with Polish officials, conducted spring 2015.



Source: Energy Regulatory Office of Poland - Annual Report (2014 data)

In 2013, Poland’s 11.8 BCM of gas imports emanated primarily from Russia (77%), with the rest coming from intra-EU trade (mostly Russian gas from Germany, thus supply disruptions from Moscow would most likely affect both sources). The lion’s share of Poland’s natural gas is consumed by the industrial sector—49% of total consumption in 2013. The residential and commercial sectors consumed 38%, while just 13% was used for transformation into electricity (9.5%) and heat (3.5%).²⁸



Source: IEA 2014 country overview (2013 estimates)

28. EUROGAS, STATISTICAL REPORT 2014 5 (2014), available at http://www.eurogas.org/uploads/media/Eurogas_Statistical_Report_2014.pdf.

Most of Poland's gas infrastructure is owned by state-owned companies. This includes the gas supply pipelines, gas transmission system, new LNG facility, and gas storage facilities. The leading entity is the Polish Petroleum and Gas Mining Company, PGNiG S.A., which is 73% owned by the Polish State Treasury. While the state ownership of the infrastructure protects it from acquisition by foreign forces that might have political agendas, a Polish representative has pointed out this policy has also inhibited the building of additional interconnectors and pipelines by the private sector.²⁹ Poland formally strives to reduce state dominance in the natural gas sector and to establish a competitive market per the EU directives. Gazprom's only presence in gas infrastructure ownership in Poland is the joint ownership and operation with PGNiG S.A. of the Polish section of the Yamal Pipeline from Russia to markets in Europe.

European Union and IEA assessments of the Polish energy sector have criticized the state of dominance of one state-owned company in Poland's gas infrastructure and encouraged the liberalization of this sector. For instance, the last IEA Review of Poland's energy sector stated: "Polish energy policy is driven to a very large extent by EU directives and requirements. In particular, Poland has to liberalize its gas and electricity markets in line with the EU directives."³⁰ EU and IEA evaluations have also critiqued the fact that Poland's gas storage infrastructure is not unbundled and is owned by the same state-owned company that owns the gas supply infrastructure. However, it seems it is precisely the Polish state dominance in this sector which has protected its infrastructure from being acquired by Gazprom and other Russian companies.

Poland maintains ample gas storage capacity and gas stocks. Poland has stringent rules on gas stocks that obligate gas traders and importers to maintain 30 days of compulsory gas stocks within Poland.³¹ There are eight underground gas storage facilities in operation in Poland. Its full capacity at the end of 2013 was 2.1 BCM, which is equal to 45 days of the average gas demand in 2013 (16.2 BCM) and 65 days of average gas imports in 2013 (11.8 BCM). PGNiG owns all the underground gas storage facilities in the country.³² Poland plans to expand the storage capacity from the current level of 2.1 BCM to 2.8 BCM by 2021.³³ The Polish government has not adopted any policy directive that would facilitate fuel switching away from natural gas in an emergency. Nor are gas-fired power plants legally required to hold backup fuel stocks on site. Poland has well-designed emergency response mechanisms for natural gas (and oil as well). The fact that most of Poland's natural gas is consumed by the industrial sector simplifies its emergency response to a gas disruption and has far less consequences than to most other sectors, such as power generation or home heating.

In contrast to most of the states of Eastern Europe, Poland has seacoast access and thus has additional energy security options, such as access to LNG as

29. Author's interviews with a Polish official, conducted spring 2015.

30. POLAND'S 2011 REVIEW, *supra* note 22, at 24.

31. "Act of 16 February 2007 on stocks of crude oil, petroleum products and natural gas, the principles of proceeding in circumstances of a threat to the fuel security of the State and disruption on the petroleum market". JOURNAL OF LAWS 23, 12 (March 2007), http://eng.arm.gov.pl/ftp/1/act_stocks__of_fuels_06.09.2012.pdf.

32. INT'L ENERGY AGENCY, ENERGY SUPPLY SECURITY 2014 372 (2014), https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Poland.pdf.

33. *Id.*

discussed. Moreover, Poland is a key transit country for Russian gas to Western Europe through the Yamal pipeline. This role as a transit state enhances its security of supply of Russian gas, and Warsaw aims to maintain this transit role and act accordingly with its policies toward Russia. The fact that Russia's gas supplies to Poland, however, go through transit states raises the likelihood of supply disruptions. Poland's gas transmission is interconnected by pipeline to Germany and the Czech Republic. Warsaw is planning on opening an interconnector to Lithuania.

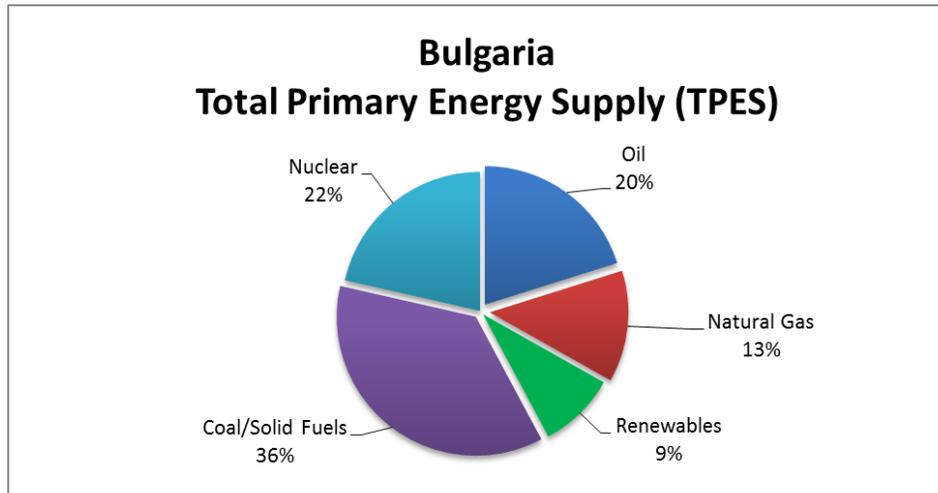
Due to Poland's climate, regular heating supplies must be available for close to half of each year, as part of its energy demands. However, since most of the heat in Poland is not generated by natural gas, this climate demand does not affect its gas security of supply.

B. Bulgaria

Bulgaria should possess substantial natural gas security of supply. After all, it uses gas for only a small portion of its power generation, overall energy consumption and even possesses some domestic gas resources. However, despite these indicators, Bulgaria's natural gas security of supply situation faces severe challenges. As evidence of its vulnerability, Bulgaria was one of the states most affected by the 2009 Ukraine related supply disruption. Nor has Bulgaria, taken major concrete policy steps to rectify its exposure since the 2009 crisis, albeit it is studying and attempting to promote expansion of storage and establishment of interconnectors. Indeed, Bulgaria also failed to take concrete policy steps after the supply crisis in 2006 related to Ukraine.

Coal comprises a large portion of Bulgaria's Total Primary Energy Supply (TPES), and thus Bulgaria has the most carbon intensive economy in the European Union. The natural gas portion of Bulgaria's fuel mix (13% in 2012) is relatively low among EU states.³⁴

34. EUROPEAN COMM'N, 2014 BULGARIA COUNTRY REPORTS 21-22 (2014), https://ec.europa.eu/energy/sites/ener/files/documents/2014_countryreports_bulgaria.pdf.



Source: European Commission (2012 data)

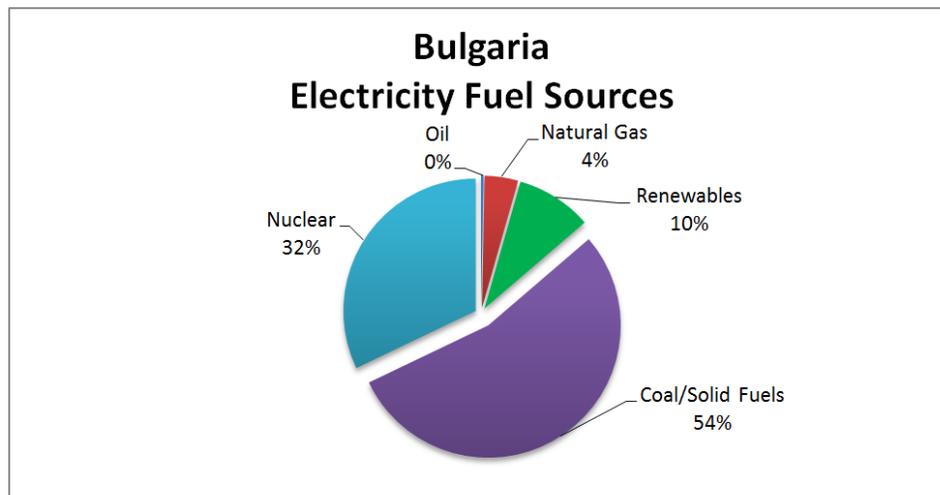
In 2014, Bulgaria consumed approximately 2.7 BCM of natural gas (2.5 BCM were imported from Russia and the remainder was domestically produced).³⁵ Bulgaria currently possesses only one underground gas storage (UGS) facility that has a small capacity of 0.55 BCM.³⁶ According to 2012 data from the U.S. Energy Information Administration (EIA), Bulgaria's proven gas reserves are estimated at 5.66 BCM and can continue to provide its current share of domestic supplies for 14 to 20 years depending on its current rate of annual production (0.3 to 0.4 BCM).³⁷

Most of Bulgaria's gas from Russia is supplied via Ukraine, exacerbating its supply vulnerability. Bulgaria is interconnected in natural gas to both Greece and Romania. Gazprom owns the pipeline to Greece, and at this point, it does not operate it with reverse flow from Greece to Bulgaria. Reverse flow on this pipeline could enable Bulgaria to take advantage of LNG supplies from Greece's Revithoussa terminal, during a supply disruption. Bulgaria does not have a LNG receiving terminal of its own.

35. STATE ENERGY AND WATER REG. COMM'N OF BULGARIA (SEWRC), ANNUAL REPORT TO THE EUROPEAN COMM'N 34 (2014), http://www.dker.bg/PDOCS/ann_rep_14.pdf [hereinafter BULGARIA COUNTRY REPORTS].

36. *Gas Infrastructure*, BULGARTRANGAZ, <http://www.bulgartransgaz.bg/en/pages/gaz-infra-54.html> (last visited Apr. 2015).

37. *Bulgaria: International Energy Data and Analysis*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/beta/international/country.cfm?iso=BGR>.



Source: European Commission (2012 data)

The natural gas supplied to Bulgaria is used mainly for heating and industrial production and forms only a small share of the fuel used for electricity generation (4% as of 2012).³⁸ Moreover, Bulgaria has an interconnection in electricity transmission with its neighbors, thus, a natural gas supply disruption would not cause a major challenge to regular power supply. However, disruption of heat production due to a gas disruption, as has happened during previous crisis associated with Ukraine, would increase demand for electricity potentially beyond supply capacity.

Close to half of Bulgaria's heating is produced from natural gas.³⁹ Bulgaria's climate demands heating for winter, thus the gas supplies are essential during winter. Bulgaria's public heating systems have fuel-switching capacity and can be replaced by and large by heavy fuel if gas supplies are disrupted. Bulgaria's heat plants are obligated to maintain two weeks of supplies of heavy fuel oil at the plants as a security measure. However, in actuality, it seems that the plants fall short in maintaining these reserve stocks. This is shown by the fact that during the 2009 crisis, it took most of the plants at least a week to switch fuels.⁴⁰

Bulgaria's natural gas transmission and storage infrastructure is owned by Bulgaria (in three subsidiaries), which is 100% state-owned under Bulgaria's Ministry of Economy and Energy. In accordance with EU legislation, Bulgaria's retail gas market is formally liberalized, allowing multiple companies to compete for market share.

38. BULGARIA COUNTRY REPORTS, *supra* note 35, at 22, 28.

39. STATE ENERGY AND WATER REG. COMM'N (SEWRC), *Bulletin on the state and dev. of the Energy Sector in the Republic of Bulgaria*, 17 (2015), http://www.me.government.bg/files/useruploads/files/eoos/buleti_-energy-_2015-eng.pdf [hereinafter *Bulletin*].

40. Florent Silve & Pierre Noël, *Cost Curves for Gas Supply Security: The Case of Bulgaria 6* (EPRG Working Paper No. 1031, Cambridge Working Paper in Economics No. 1056, 2010), <http://www.econ.cam.ac.uk/dae/repec/cam/pdf/cwpe1056.pdf>.

Russia's Gazprom has presence in the Bulgarian gas sector, through its 50% stake in the Joint Venture, Overgas Inc. Overgas is involved in natural gas exploration in Bulgaria, building pipelines and the gas transmission network, and in the retail sales of gas to end-users.⁴¹ In 2014, Overgas subsidiaries controlled 59.4% of the gas distribution market in Bulgaria.⁴²

Overgas aspires to import gas directly from Gazprom, but there is no spare capacity in the supply pipeline from Romania to Bulgaria. Overgas has lodged a complaint on the lack of access to the European Commission, which initiated an infringement procedure against Bulgaria to allow access to the pipeline.

While estimates differ as to their prospective volumes, Bulgaria possesses numerous domestic sites with potential natural gas finds, both conventional and unconventional. However, Bulgaria has not promoted adequate exploration of its potential natural gas and resources. A senior Bulgarian official stated that Russian involvement in Bulgaria's gas exploration sector through Overgas effectively blocks exploration efforts and that Bulgaria has tremendous and unexploited potential for offshore gas finds in the Black Sea.⁴³ Overgas regularly contends the legality of Bulgarian exploration tenders offered by the Bulgarian government and has succeeded to block a number of them.⁴⁴

Despite its expansive shale resources, the Bulgarian parliament initiated a ban in 2012 on hydraulic fracturing, blocking exploration of these resources, which could have increased Bulgaria's security of gas supply. Numerous publications have indicated Russian entities funded the anti-fracking campaigns, however none have provided concrete evidence.⁴⁵ Prior to stepping down as NATO Secretary General in September 2014, Anders Fogh Rasmussen stated that Moscow had funded numerous environmental groups in Europe to assure that domestic gas would not be produced, and thus Europe's dependence on Russia would be sustained.⁴⁶

C. Lithuania

Until recently, Lithuania's natural gas security of supply has been one of the most challenging in Europe. Beginning in 2014, the Lithuanian government has taken a number of forceful policy initiatives to reverse this situation.

41. *Bulgaria*, GAZPROM EXPORT, <http://www.gazpromexport.ru/en/partners/bulgaria/> (last visited April 2015).

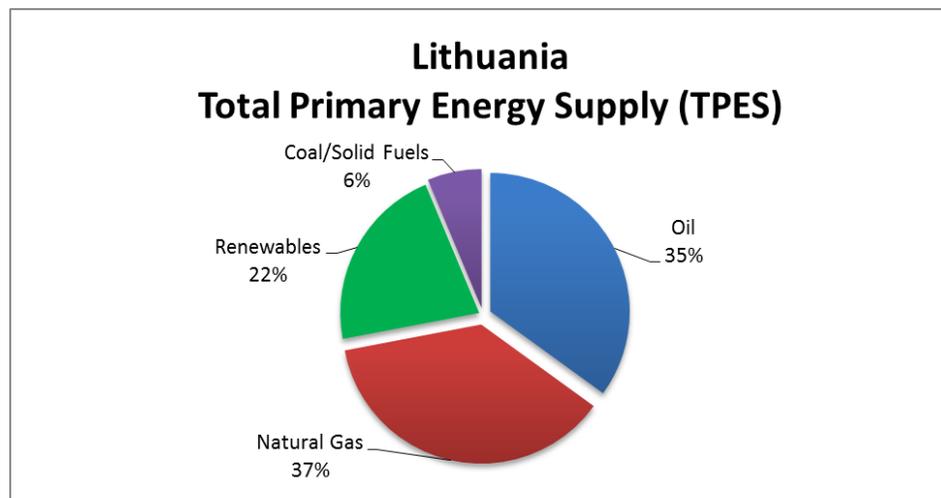
42. Bulletin, *supra* note 39, at 8.

43. Author's interview with senior Bulgarian official (2014).

44. See generally *Overgas Disputes Tender Awarding Exploration Rights to Park Place Energy*, NOVINITE SOFIA NEWS AGENCY (Dec. 17, 2010), <http://www.novinite.com/articles/123314/Overgas+Disputes+Tender+Awarding+Exploration+Rights+to+Park+Place+Energy>.

45. See generally Andrew Higgins, *Russian Money Suspected Behind Fracking Protests*, N.Y. TIMES (Nov. 30, 2014), http://www.nytimes.com/2014/12/01/world/russian-money-suspected-behind-fracking-protests.html?_r=0; Keith Johnson, *Russia's Quiet War Against European Fracking*, FOREIGN POLICY (June 20, 2014), <http://foreignpolicy.com/2014/06/20/russias-quiet-war-against-european-fracking/>.

46. Sam Jones, Guy Chazan & Christian Oliver, *NATO claims Moscow funding anti-fracking groups*, FINANCIAL TIMES (June 19, 2014), <http://www.ft.com/intl/cms/s/0/20201c36-f7db-11e3-baf5-00144feabdc0.html#axzz3X2VvfCPH>.



Source: European Commission (2012 data)

Natural gas comprises an exceptionally large portion of Lithuania's overall energy consumption, comprising a third of the state's Total Primary Energy Supply (TPES).⁴⁷ Lithuania consumes on average 3.7 BCM of natural gas annually. All of Lithuania's regular gas is supplied from Russia by pipeline. A single pipeline through Belarus, increasing Lithuania's supply risk, supplies this gas. Moscow transports gas through Lithuania to the Kaliningrad enclave as well. Lithuania is interconnected to gas transmission in neighboring Russia and Belarus. In terms of domestic interconnection, a third of the territory of Lithuania is not connected to gas supply infrastructure.⁴⁸

Lithuania's consumption of natural gas for power generation grew significantly following the closing of the Ignalina nuclear power plant in 2009 due to public safety concerns. With the closure of the nuclear power plant, Lithuania became dependent on Russia not only for all its natural gas supplies, but also for the majority of its imported electricity supplies. In 2013, Lithuania produced domestically 36% of its electricity supplies.⁴⁹ In 2012, Lithuania imported electricity from Russia (63%), electricity from Estonia (about 26%), Latvia (7%), and Belarus (nearly 4%). This situation is especially precarious because the supplies from Estonia, Latvia, and Belarus are on a line controlled by Russia.

During the 2000s, Lithuania privatized its energy infrastructure. In this process, Gazprom acquired large stakes in the Lithuanian gas transmission system, gas supply companies, electricity grid, and more. However, from approximately

47. EUROPEAN COMM'N, 2014 LITHUANIA COUNTRY REPORTS 140 (2014), https://ec.europa.eu/energy/sites/ener/files/documents/2014_countryreports_lithuania.pdf.

48. ENERGY CHARTER SECRETARIAT, IN-DEPTH REVIEW OF THE INVESTMENT CLIMATE AND MARKET STRUCTURE IN THE ENERGY SECTOR OF LITHUANIA 21 (2013), http://www.energycharter.org/fileadmin/DocumentsMedia/ICMS/ICMS-Lithuania_2013_en.pdf.

49. *The Electricity Sector*, NAT'L COMM'N FOR ENERGY CONTROL AND PRICES, <http://www.regula.lt/en/Pages/Electricity.aspx> (last updated June 6, 2014).

2012, Lithuania initiated a new set of policies designed to improve its security of supply, which included commissioning new interconnectors, building of LNG regasification facilities, and recapturing control of its gas infrastructure from Gazprom.

In an interesting twist of use on the Third Energy Package directives, in 2014, the Lithuanian government forced Gazprom (and E.On) to sell its stakes and reacquired the majority stakes in its entire gas infrastructure. Vilnius claimed that Gazprom's ownership of its infrastructure violates the EU rules on unbundling, since Gazprom is the single supplier of gas to Lithuania.⁵⁰ Essentially, Lithuania used enforcement of the unbundling principle to regain state control. Lithuanian officials have complained that Russia has attempted to punish Vilnius for its recapturing of control of the gas infrastructure.⁵¹ To further reinforce its protection of its energy and other strategic infrastructure from foreign ownership that might have a political agenda through its investments, Lithuania enacted the June 2012 *Law on Enterprises and Facilities of Strategic Importance to National Security and Other Enterprises of Importance to Ensuring National Security*.⁵² This law allows Lithuania to bar investors in its energy and other strategic infrastructure that are not in line with promotion of Vilnius's "trans-Atlantic alliance." This law can be used accordingly to bar Russian ownership and investment in Lithuanian infrastructure.

Taking advantage of its sea access, in October 2014, Lithuania began leasing a floating LNG regasification and storage facility that greatly enhances its security of natural gas supply.⁵³ In August 2014, Litgas, the gas trading arm of the Lithuanian energy holding company Lietuvos Energija (Lithuanian Energy), signed a five-year supply contract with the company Statoil for LNG for the facility.⁵⁴ Lithuania has also enacted legislation requiring that 20% of gas consumed come from LNG in order to prevent dependence on Russian supplies. Additionally, Lithuania has chosen to pay for the regasification ship to be based in the country, even if it does not need the extra supplies, as a security of supply mechanism. Lithuanian officials acknowledge these gas supplies are more expensive than pipeline gas from Russia, but this is a premium they want to pay in order to ensure their security of supply and their national security.⁵⁵ To offset the high costs of leasing the regasification vessel, Vilnius has imposed a "supply

50. *Lithuania completes buy of gas utility from Gazprom*, REUTERS (June 16, 2014), <http://af.reuters.com/article/commoditiesNews/idAFL5N0OX4KG20140616>.

51. *The Russians Tried to Punish Us*, EURONEWS (May 22, 2015), <http://www.euronews.com/2015/05/22/the-russians-tried-to-punish-us>.

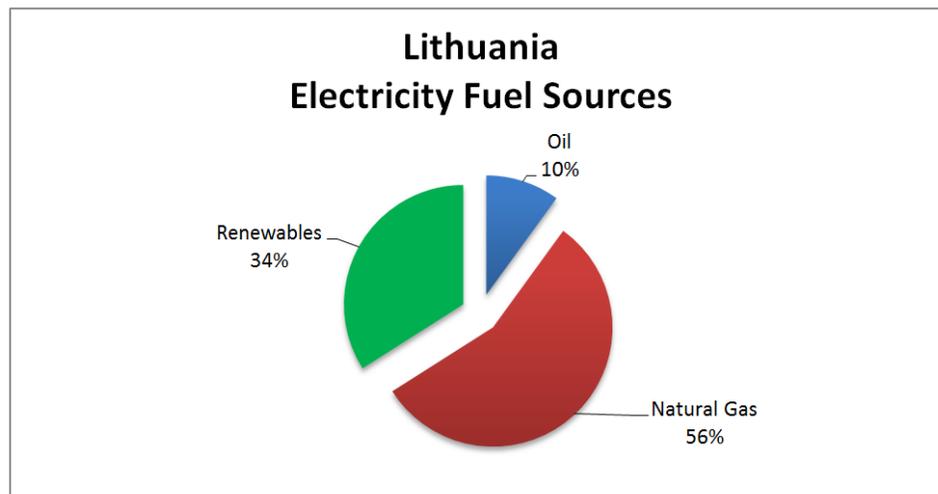
52. *Law on Enterprises and Facilities of Strategic Importance to Nat'l Security and Other Enterprises of Importance to Ensuring Nat'l Security*, Nr. IX-1132, REP. OF LITHUANIA (Oct. 10, 2002), Amended No. XI-2087 (June 21, 2012), http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_1?p_id=436571.

53. Milda Seputyte, *Lithuania Grabs LNG in Effort to Curb Russian Dominance*, BLOOMBERG BUS. (Oct. 27, 2014, 2:03 AM), <http://www.bloomberg.com/news/articles/2014-10-27/lithuania-grabs-lng-in-effort-to-curb-russian-dominance>.

54. *Id.*

55. Author's interviews with Lithuanian officials related to the energy sector, winter 2014.

security charge” on all gas consumers in Lithuania and not just on the LNG consumers.⁵⁶



Source: Lithuania National Commission for Energy Control and Prices (2013 data)

As part of its strategy to improve its security of supply, Lithuania is establishing electricity interconnection to its neighbors. Lithuania is working on establishing electricity interconnection to Poland, Sweden, and a new line to Latvia that is not controlled by Moscow.⁵⁷ Dr. Dalius Misiunas, Chairman of the Board and CEO of Lietuvos Energija, related to Lithuania's interconnector strategy, remarked in the summer of 2015 that electricity “interconnectors are sometimes better than power plants. They don't pollute and you can often get better prices by importing electricity than producing yourself.”⁵⁸ According to Lithuanian government sources, Russia has been taking steps to inhibit the laying of the line in the Baltic Sea, but Vilnius was confident the link with Sweden would become operational in December 2015.

Lithuania's gas storage capability has improved immensely with the arrival of its floating LNG facility. Prior to that, Lithuania did not have gas storage facilities on its territory. Instead, it obligated gas suppliers to keep volumes in the Latvian underground storage facility, Inčukalns, which was less secure than storage on its own territory, especially since Gazprom also owns this storage facility. Lithuanian regulations demand that all generators using gas maintain a month's stock of alternative fuel.⁵⁹ The government regularly checks these fuel stocks. In terms of emergency response to supply disruptions, Lithuania is well positioned since industry consumes more than 40% of its natural gas supplies. If

56. *Høegh LNG Turns Down Lithuania's FSRU Advanced Sale Proposal*, NAT. GAS EUR. (Aug. 13, 2015, 12:00 AM), <http://www.naturalgaseurope.com/norway-hoegh-turns-down-lithuanis-proposal-fsr-advance-sale-25006>.

57. Author's notes from briefing by Senior Lithuanian official, spring 2015.

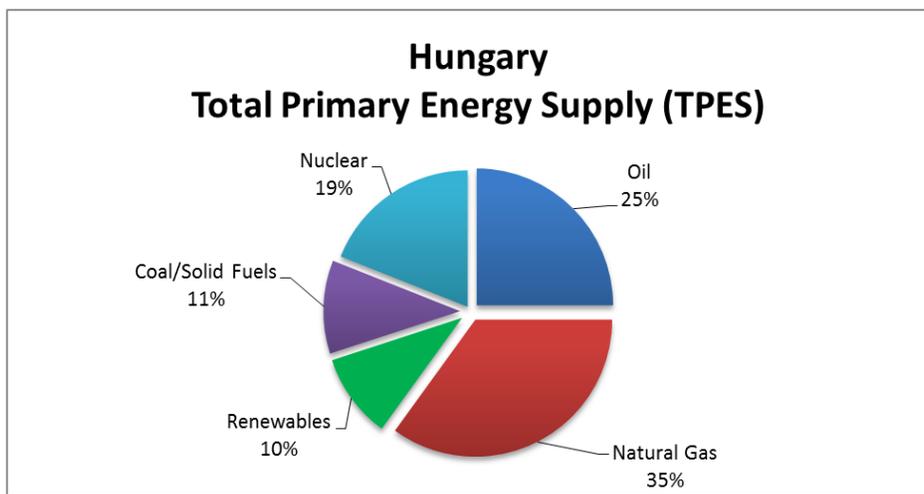
58. Author's notes from briefing, June 2015.

59. Findlater & Noël, *supra* note 5, at 12.

there is a gas disruption, it can close down heavy industry and maintain other vital functions of the economy.⁶⁰

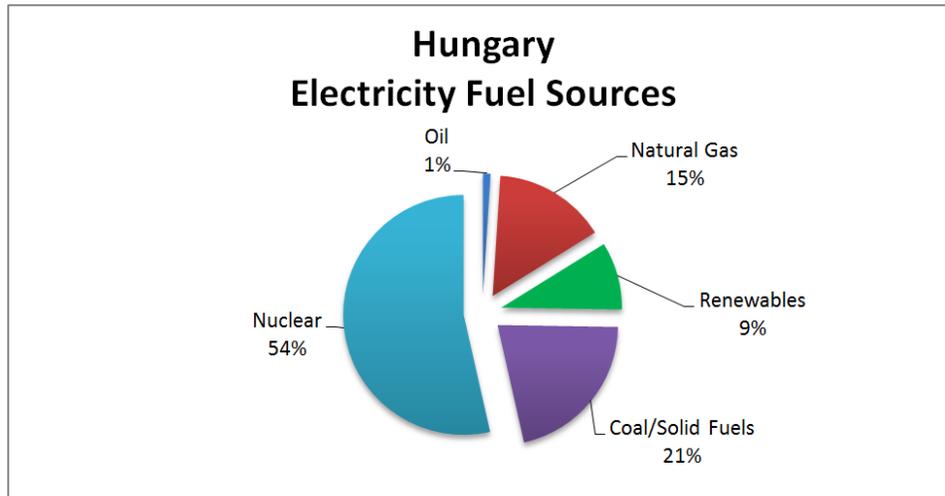
D. Hungary

Hungary's energy sector is organized in a manner that endows it with a high degree of security of gas supply, despite the fact that natural gas comprises an exceptionally high share of its TPES at 35%. Hungary has one of the highest shares of gas in its energy mix among EU countries. Consequently, the carbon intensity of its economy is close to the EU average (in contrast to most of the EU members in Eastern Europe).



Source: European Commission (2012 data)

60. *Id.* at 11-13.



Source: MAVIR – Statistical Data of the Hungarian Power System (2013 data)

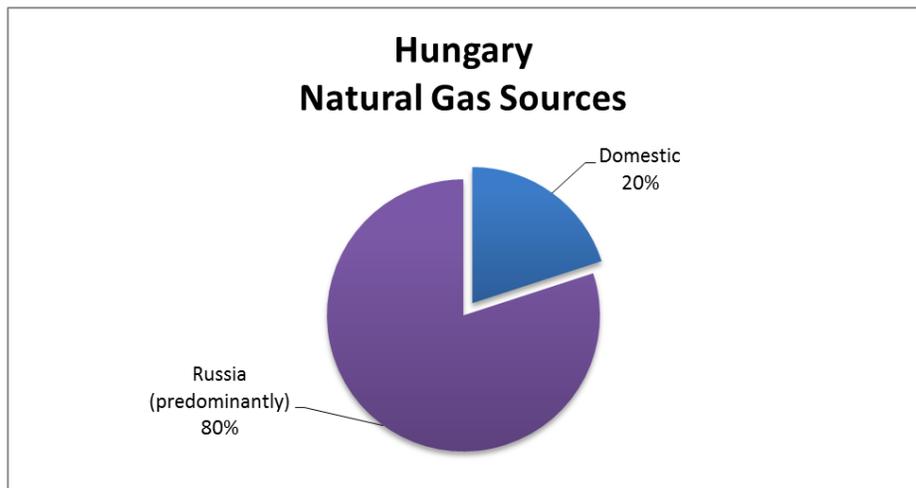
Hungary is able to mitigate the impact of potential supply disruptions and maintain good gas security of supply due to maintenance of extensive natural gas storage capacity under government control. Hungary began filling and maintaining reserves in these facilities following the 2006 Russia-Ukraine gas crisis.⁶¹ Currently, Hungary has storage capacity of approximately 7 BCM. At the end of 2014, it maintained approximately 4 BCM of gas in storage, which can cover two-thirds of Hungary's winter gas demand. Gazprom also has contracted use of Hungary's gas storage that is used as part of its supply chain to other markets in Europe.⁶²

Beyond maintaining ample gas storage, Hungary also has enacted detailed emergency response legislation to cope with supply disruptions. The emergency measure includes capacity to increase domestic production volumes. Hungary also requires large power plants to maintain emergency alternative fuel stocks. In addition, between one-fourth and one-fifth of Hungary's gas is domestically produced (from approximately 10 BCM of annual consumption). "The country has proven reserves of 95 BCM," which corresponds to approximately 40 years of continued production at the current rate of 2.4 BCM annually.⁶³ While Russia is Hungary's largest supplier, Hungary contracts at times small supplies from other sources as well (Turkmenistan gas that transits Russia, and from France and Germany transiting through Austria).

61. INT'L ENERGY AGENCY, ENERGY SUPPLY SECURITY 2014 233, 242 (2014), https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Hungary.pdf [hereinafter ENERGY SUPPLY SECURITY 2014].

62. Margit Feher, *Hungary to Store Natural Gas for Russia's Gazprom*, WALL ST. J. (Oct. 10, 2014, 1:02 PM), <http://blogs.wsj.com/emergingurope/2014/10/10/hungary-to-store-natural-gas-for-russias-gazprom>.

63. ENERGY SUPPLY SECURITY 2014, *supra* note 61, at 240; *Natural Gas Consumption in Hungary*, MAGYAR FÖLDGÁZKERESKEDŐ (HUNGARIAN GAS TRADE LTD.), <http://www.magyarfoldgazkereskedo.hu/en/Product/NaturalGasConsumption/Lapok/default.aspx>; See generally NEMZETI ENERGIASTRATÉGIA (NATIONAL ENERGY STRATEGIES) 2030 (July 2011), <http://2010-2014.kormany.hu/download/7/d7/70000/Hungarian%20Energy%20Strategy%202030.pdf>.



Source: The Hungarian Energy and Public Utility Regulatory Authority (2013 data)

At the same time, Hungary has a number of vulnerabilities in its gas security of supply. First, the residential sector is the largest consumer of natural gas in Hungary, accounting for approximately 34% of the total gas demand in 2013 and thus by and large not interruptible.⁶⁴ Furthermore, power generation accounted for 30% of demand, with industry only 15%. Thus, Hungary does not have a lot of flexibility to close down supplies during emergency periods. Next, Hungary maintains low regulated energy prices. Consequently, it has a very low rate of energy efficiency, especially in the residential sphere, creating regular, large demand. Finally, the majority of the gas supplied from Russia transits through Ukraine, increasing Hungary's disruption vulnerability.

Hungary is a key transit state for Russian supplies to other markets in Europe. In addition, Hungary has established gas interconnections with many of its neighbors, including Austria, Romania, Serbia, Croatia, and, most recently, Slovakia. However, the Romanian and Croatian interconnectors do not operate with reverse flow yet, only supplying from Hungary. Hungary is a landlocked state, thus it cannot directly access LNG supplies, but through interconnection to neighbors, it may eventually benefit from access to supplies.

Hungary has implemented EU legislation regarding privatization of energy infrastructure, unbundling and liberalizing energy markets. A crucial move was in 2007, when, with the adoption of the directives of the Third Energy Package, the government of Hungary sold its controlling stake in MOL Company. MOL is an integrated oil and gas company, which is involved in various functions in the Hungarian natural gas sector, including domestic gas exploration. Since the

64. HUNGARIAN ENERGY AND PUB. UTIL. REGULATORY AUTH., REPORT ON THE ACTIVITIES OF THE HUNGARIAN ENERGY AND PUBLIC UTILITY REGULATORY AUTHORITY IN 2013 54 (2014), http://www.ceer.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202014/NR_En/C14_NR_Hungary-EN.pdf.

government's relinquishing of the controlling stake in the company, it has been vulnerable to various attempts by foreign companies, some likely aligned with Gazprom, to gain control of the company.

IV. ANALYSIS AND CONCLUSIONS

This article analyzed the state of security of supply of natural gas in a number of European Union member states to which Russia serves as the dominant supplier of natural gas. The case studies analyzed in the article illustrate that there is great diversity in state strategies for coping with the supply challenge of relying on a single supplier: some states have implemented policies to mitigate the impact of potential supply disruptions, while others fall short of having sufficient security of natural gas. Moreover, the sector that is the primary consumer of natural gas is an important indicator of supply disruption vulnerability—if the major consumer of the gas is an interruptible sector, like industry, states that rely on a single supplier are not strategically vulnerable in cases of natural gas supply disruptions, such as those that could be initiated by Russia. Consequently, analysis of the percentage of Russian gas as part of a state's overall gas supplies is a poor indicator of the level of a state's security of supply of natural gas if taken on its own and not analyzed with all the elements of the natural gas sector.

As pointed out, in recent years, U.S. and EU policy aimed at promoting energy security among Europe's states has focused on three issues: increasing the number of suppliers to each market, reducing the extent of reliance on Russian supplies, and establishing and enforcing market mechanisms for energy trade. This article illustrates, however, that some EU member countries have come up with a third way for enhancing their security of supply, which did not involve adding supply sources, reduction of Russian gas supplies or market mechanisms. Rather, these policies include state-led initiatives to establish energy infrastructure, such as gas storage capacity; stringent emergency response policies; enforcement of security of supply regulations, such as stockpiling of alternative fuel sources at power plants and enacting legislation that barred foreign ownership of energy infrastructure based on national security considerations. In fact, at times, the states chose not to implement EU directives on privatization, unbundling of energy infrastructure, and market liberalization, in order to implement projects that they deemed necessary for their energy security.

The states established infrastructure that enhanced their security of supply, such as storage and interconnectors that the private market did not find commercially attractive. Poland is a good example—most of Poland's gas infrastructure belongs to state owned companies. This includes gas supply pipelines, gas transmission system, gas storage and the new LNG regasification facility. European Union institution and IEA assessments of Poland's energy sector have criticized the dominance of one state-owned company in Poland's gas infrastructure and encouraged liberalization of this sector. However, in contrast to EU policy, it is precisely the Polish state dominance in this sector that has protected its infrastructure from being acquired by Gazprom and other Russian companies, as has occurred in many Eastern European states that encouraged privatization of ownership of their energy infrastructure.

As an expression of their strategy that the state needed to maintain control of its main natural gas infrastructure, some EU states in Eastern Europe have enacted

laws that preserve state ownership of infrastructure and facilities that are considered strategically important for national security. Lithuania's 2012 Law on Enterprises and Facilities of Strategic Importance to National Security and Other Enterprises of Importance to Ensuring National Security is an important example of this policy.⁶⁵

The case studies revealed that various state entities, including Russian companies operating in the European Union, selectively applied the EU competition legislation based on their interests. For instance, the Gazprom affiliate in Bulgaria, Overgas, used EU legislation to challenge the legality of tenders and the lack of access to gas pipelines, while Gazprom and its affiliates in the Baltic states evidently have abused their dominant market position there in breach of EU antitrust rules.⁶⁶ Lithuania, in an interesting twist, used the Third Energy Package and EU competition legislation to essentially re-nationalize its gas infrastructure and recapture it from Gazprom's ownership.

In contrast to many traded goods, under current technologies in the spheres of natural gas trade, geographic factors still highly influence a state's market options. Most likely, most of the states of Eastern Europe will remain supplied by one dominant supplier for a long time. As seen in the analysis here, that does not imply that these states will lack security of natural gas supply or even remain vulnerable to supply disruptions as a potential tool of political coercion by their dominant supplier, Russia. However, states need to formulate strategies and enact policies in order to ensure their security of supply and reduce their vulnerability to disruptions. This may likely be led by state entities, as seen in the case studies. Investments in the type of infrastructure (such as additional supply facilities and gas storage facilities) that add robustness to a gas supply sector are not generally commercially attractive to the private sector. Policy makers in some states understand that security of supply is a public good that the public must pay for. As seen in the cases of Lithuania's and Poland's LNG regasification terminals, it is clear to policy makers in both of these states that LNG supplies will be more costly than pipeline gas from Russia, but both view this as a premium that should be paid to ensure security of supply and protect the national security of the states.

In coping with their natural gas security of supply challenges, it should be noted that the states studied here all chose to go it alone and did not establish any shared infrastructure (such as LNG regasification terminals) with neighboring countries, despite the fact that this would have significantly brought down costs. The establishment of two separate regasification terminals in Lithuania and Poland, neighboring states, instead of one terminal linked by a gas pipeline is an important example of how states in the EU still operate separately in their energy security policies and do not trust the common projects.⁶⁷ The lack of cooperation

65. REPUBLIC OF LITHUANIA LAW ON ENTERPRISES AND FACILITIES OF STRATEGIC IMPORTANCE TO NATIONAL SECURITY AND OTHER ENTERPRISES OF IMPORTANCE TO ENSURING NATIONAL SECURITY, No. IX-1132 (Oct. 10, 2002), as amended by No. XI-2087 (June 21, 2012).

66. Press Release, European Comm'n, Antitrust: Commission Sends Statement of Objections to Gazprom for Alleged Abuse of Dominance on Central and Eastern European Gas Supply Markets (Apr. 22, 2015), http://europa.eu/rapid/press-release_IP-15-4828_en.htm.

67. The Baltic states have also not coordinated policy on LNG imports. *Høegh LNG Turns Down Lithuania's FSRU Advanced Sale Proposal*, NAT. GAS EUR. (Aug. 13, 2015, 12:00 AM), <http://www.naturalgaseurope.com/norway-hoegh-turns-down-lithuanis-proposal-fsr-advance-sale-25006>.

2015] EUROPE'S NATURAL GAS SECURITY OF SUPPLY 201

is especially striking in light of the fact that all these states share a common strategic orientation as members of NATO and the EU. The lack of cooperation in establishing natural gas infrastructure in northern Eastern Europe lowers expectations that there will be regional cooperation in southern Eastern Europe or the Balkans, states that share less institutional strategic linkages than those in northern Eastern Europe.