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Severing Ties: Gaz-System and Energy Security in Poland

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ABSTRACT

The purpose of this paper is to answer the research question: what are the effects of Poland's energy security needs on Gaz-System, the Polish state-owned natural gas infrastructure and transmission firm? The paper uses European Union primary data on energy use and trade, as well as academic research, corporate reports, and recent news developments to investigate the topic and provide the foundation for analysis. After providing background information on Gaz-System and establishing definitions, the paper explores Poland's energy mix and the role of natural gas within it, before going on to assess the current state of energy security and the competitive forces that shape the European natural gas industry. It then analyzes Poland's international relations with key states and organizations, and details the perceived Russian threat surrounding energy security that results from past use of Russia's gas supplies as geopolitical leverage during several gas disputes with Ukraine. Finally, the paper examines several recent Gaz-System projects and their effect on Poland's energy security, as well as Gaz-System's plans for future strategic asset development and construction pursuing the goal of increased buyer power in the natural gas market.

INTRODUCTION

Since Poland's departure from communism and participation in the 2004 enlargement of the European Union (EU), the nation has been regarded as one of post-communist Europe's most successful transition economies. Polish energy consumption, mostly of fossil fuels, has been growing with the economy. Using data from 1970 to 2014, there is a strong statistical correlation between economic and energy consumption growth, and many scholars argue that a secure supply of fossil fuels has been critical to Poland's successful transition to a market economy (Cerdiera Bento, 2017). Due to Poland's abundant domestic coal deposits, Poland has managed to maintain a relatively high level of energy independence, or the percentage of energy that comes from domestic sources, as Poland was 46% less dependent on energy imports when compared to the EU average in 2015 (Eurostat, 2016a). However, the pursuit of compliance with EU emissions regulations has put downward pressure on the use of coal, and the vast majority of alternative fossil fuels like natural gas come from abroad. Traditionally, there has been a "heavy dependence on piped natural gas from Russia and very limited technical capacity to obtain imported gas from other geographical directions" (Adamus & Florkowski, 2016, p.174). This pattern poses a threat to Poland's energy security, as Russia could potentially cut off the vast majority of Poland's natural gas supply in the case of international conflict. Fear of this happening has been exacerbated by Russia's ongoing entanglement in armed conflict in Ukraine, as well as tough retaliatory sanctions on Russia imposed by Western powers like the United States (USA) and EU (Adamus & Florkowski, 2016).

All of Poland's major natural gas infrastructure assets are owned by Gaz-System S.A., a Polish state-owned firm. The company has been granted the rights to operate all natural gas transmission in Poland through 2030 by the Energy Regulatory Office (Gaz-System, 2016). The company was formed in 2004 when PGNiG, the monopolistic Polish oil and gas firm in which the State Treasury still has a controlling share, spun off their infrastructure assets through direct transfer to the State Treasury (Gaz-System, 2016). Gaz-System effectively acts on behalf of the state to pursue their vision of ensuring "energy security and being a major integrator of the transmission system in Europe" (Gaz-System, 2016).

This paper will examine Poland's energy mix, state of energy security, international relations, perceived threats from Russia, as well as current and proposed responses to these threats, with the goal of answering the research question: what are the effects of Poland's energy security needs on Gaz-System, the Polish state-owned natural gas infrastructure and transmission firm?

DEFINITIONS AND TIME-FRAME

According to Dr. Magdalena Zajączkowska at the Cracow University of Economics, *energy security* has a multifaceted definition and is "contextual and dynamic in nature" (2016). For the purposes of this paper, a definition combining Polish law and Polish context is most appropriate; according to Polish Energy Law, energy security is "a state of the economy which makes it possible to cover the current and potential demand for recipients' fuel and energy needs in a technically and economically viable way, while maintaining environmental protection requirements" (1997). Dr. Zajączkowska continues to outline the four categories of threats to energy security: physical (supply chain failure, technical breakage), economic (ability to deliver energy in an economically viable manner), environmental (meeting the state and world's environmental protection needs), and geopolitical, or "threats arising from the global international situation and the loss of influence of some countries over the transport and distribution infrastructure of energy" (2016). While the first three threats are important, a variety of factors including the fixed and long term nature of Gaz-System's assets, the essential nature of natural gas supply (for heat in the winter and a reliable electricity grid), and current state of international relations heighten geopolitical threats to Polish energy security to a state of criticality. This necessitates focusing on geopolitical threats in particular. Therefore, this paper will use the following definition of energy security: a state of the economy in which it is possible to cover the state's future and potential energy needs in a technically and economically viable way, with minimal threats from loss of influence over energy supply and distribution (Energy Law, 1997) (Zajączkowska, 2016).

Regarding an appropriate time-frame for data analysis, this paper will focus on 2004 until 2015 or 2016, when the most recent annual data is available. It would be inappropriate to use data from 2017, the year this paper was written, due to the highly seasonal nature of energy demand and consumption. As for the exclusion of historical data before 2004, this is appropriate because of the seismic shift in Polish energy needs, demand, and goals upon their accession to the EU as part of the A8 enlargement in 2004. Being part of the EU has sparked tremendous growth in the Polish economy, increased energy demand, symbolized allegiance to Western Europe rather than Russia, and also came with certain accountabilities to EU energy policy (Adamus & Florkowski, 2016).

While the European Commission has set long term energy mix goals such as emissions reduction by 2030, the extent of how compliant the Polish government will be with these regulations is up for debate (Bauerova & Martewicz, 2016). The far more legally binding milestone that Poland has coming down the pipeline stems from the "conclusion of the negotiated intergovernmental agreement with the Russian Federation on 29 October 2010," when "the relevant protocols were signed in Warsaw" to fix Russian gas supply to Poland until 2022 (Szurlej, 2013, p. 937). For the sake of political and market stability, the supply contract will likely be renegotiated far before the current contract's end. The pivotal nature of these negotiations make them the most important overarching influence on decisions made by Gaz-System in the current decade. The fixed nature of natural gas infrastructure and contracts ensures that these negotiations will define Poland's energy policy in the 2020s and beyond. Since foresight beyond these negotiations is nearly impossible, this paper will only investigate Gaz-System's possible strategic avenues from the present until 2022.

ENERGY MIX IN POLAND

When Poland joined the EU in 2004, its energy-intensiveness, measured by a ratio of energy consumption to Gross Domestic Product (GDP), was 118% higher than the EU average. In 2015, Poland's energy-intensiveness was 89% higher than the EU average, and still nearly quadruple that of the mostly tertiary economy of Ireland (Eurostat, 2016b). While less energy-intensive tertiary industries like the information sector have been developing in Poland, the country still has a very energy-intensive economy, so access to fuels is critical for economic sustainability.

Regarding the fuel mix that powers this energy demand, approximately half of Poland's inland energy consumption came from lignite, coal, and other solid fuel sources in 2015, including heat generated from single-household furnaces. Additionally, 25% of energy consumption came from oil and other petroleum products and 15% came from natural gas. Finally, less than 10% of Poland's energy came from renewable sources (Eurostat, 2016c).

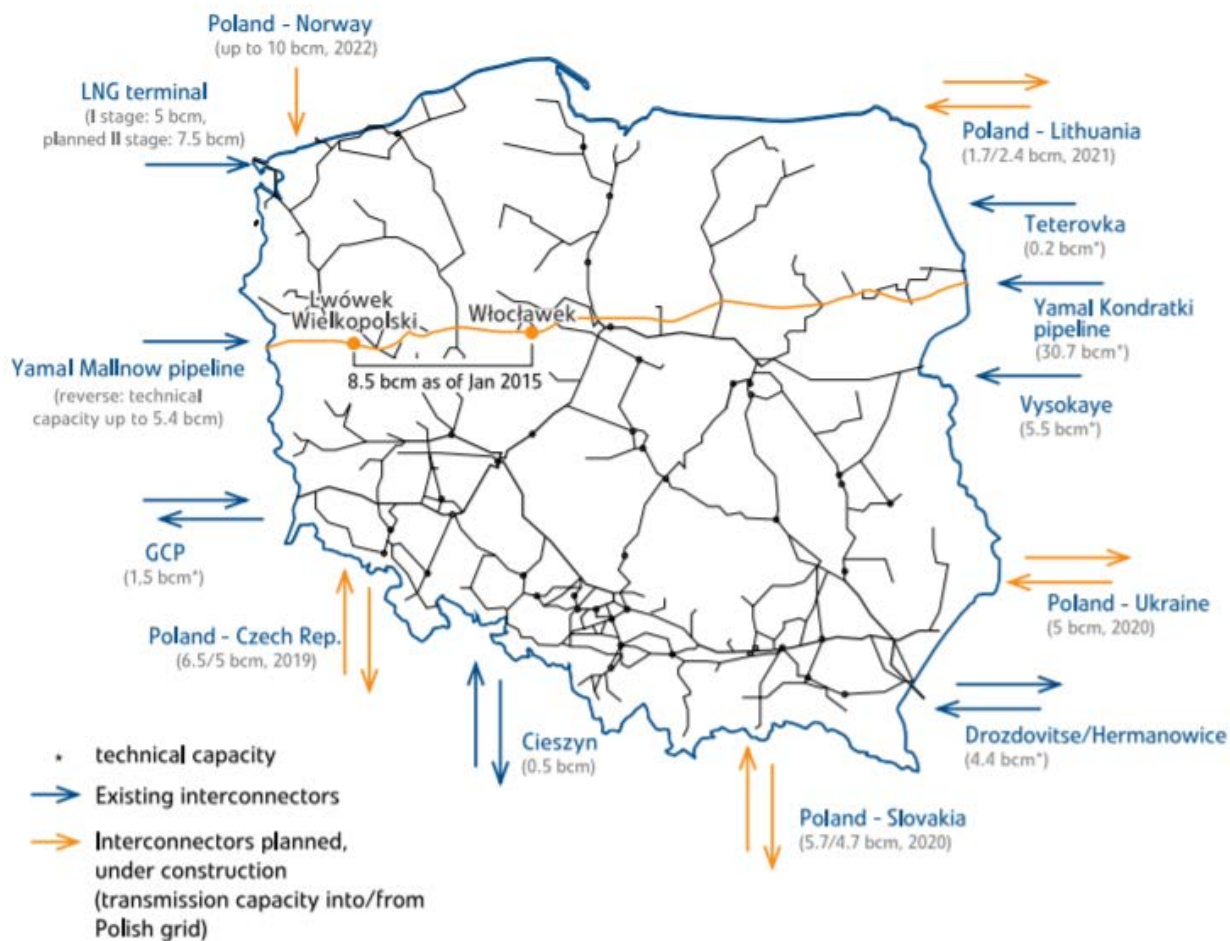
NATURAL GAS IN POLAND

Natural gas plays an especially important role in Poland's energy mix because of its importance for heat during Poland's relatively harsh winters. A 2016 study found that "a significant number of single family houses use natural gas as fuel in the heating system" in Poland, and that between 60% and 70% of energy consumption in these households goes towards heat (Krawczyk, p. 216). Therefore, a natural gas supply disruption would not only have detrimental effects on the national energy grid, but would disproportionately affect single family houses, which are usually found outside of large urban centres. If even a small percentage of suburban and rural homes were without power during a cold Polish winter, there would undoubtedly be a large temporary displacement of persons and strain on Polish social services.

Another reason natural gas is especially important in Poland is its involvement in any plausible effort to meet European Commission (EC) goals for carbon dioxide and smog reduction. Regarding carbon dioxide emissions, Poland reached an agreement with the EC that the country would reduce emissions by 40% by 2030, or to the equivalent of 1990 levels. Achieving "the EC goals requires closing all lignite-burning power plants and 90% of coal-burning power plants and replacing them with gas-burning power plants by 2030," which would cause Poland's demand for natural gas to more than double by their 2030 deadline (Adamus & Florkowski, 2016, p. 169). It is very important to note that Poland meeting these goals, or even making an effort to pursue them, is a relatively unlikely possibility under the Polish Law and Justice Party (PiS) that is currently in power, who's idea of environmental energy reform is "building more efficient coal power plants" (Bauerova & Martewicz, 2016). However, the possibility of Poland needing to dramatically ramp up natural gas supply in the coming decade due to changing domestic political tides or increased influence of the EC is important because it will act as significant leverage in favour of foreign natural gas suppliers during upcoming negotiations.

Poland is situated between Russian gas deposits and the huge energy markets of Western Europe, especially Germany. As a result, the main arteries for gas coming into Poland carry Russian-produced gas flowing east to west as part of a contract with Gazprom, the Russian state-owned gas giant (A.E., 2014).

Figure 1: Existing and Planned Polish Natural Gas Transmission Capacity



(PGNiG, 2017a, p. 27)

The blanket agreement between Gaz-System and Gazprom commonly referred to as the Yamal Contract actually covers more than the natural gas entering Poland via the Yamal-Europe Pipeline via Belarus at Kondratki (19% of total imports in 2016), but also covers imports entering Poland in Drozdovitse (32%), Vysokaye (23%), and Teterovka (<1%), as illustrated in Figure 1 (PGNiG, 2017a, p.27). However, gas entering Poland via these points all come from the same source, and constitute 75% of imported natural gas.

However, the rest of Poland's imported natural gas comes from the west; 18% of total imports in 2016 came from Germany, mostly via the reversal of the Yamal-Europe Pipeline that allows North Sea gas to flow from Poland's western neighbours, which will be discussed in more detail in the final section of this paper. Additionally, 7% of imports came in the form of Liquefied Natural Gas (LNG) into Poland's Baltic Sea LNG Terminal, for regasification and distribution (PGNiG, 2017a, p.27).

ENERGY SECURITY IN POLAND

Poland actually has very low energy dependence, as they only import 29% of their energy sources, compared to the EU average of 54% (Eurostat, 2016a). This is mostly due to the enormous importance of coal in Poland, as discussed earlier in this paper, because Poland has significant domestic deposits of coal. However, as a country that spent the better part of the 20th century officially occupied by foreign powers or having their domestic affairs effectively

controlled from the outside, Poland's desire for energy security is nothing new. It is highly likely that Poland's energy security concerns have been a contributing factor for the overdevelopment (Adamus & Florkowski, 2016, p. 168).

However, their dependence on imports for natural gas is much higher, at 72% compared to the EU average of 69% (Eurostat, 2016, Energy Dependence). While this seems to indicate that Poland is no more dependent on gas imports than the average EU member-state, the critical factor is the source of these imports. The vast majority of Poland's natural gas imports come from Russia via pipeline, traditionally providing at least 60% of Poland's total natural gas supply (A.E., 2014). This is simply due to geography and current infrastructure, as discussed in the previous section.

COMPETITIVE ENVIRONMENT

The good news is that the price of natural gas in Poland is relatively low compared to the rest of the EU. In 2016, natural gas was 37% cheaper in Poland than the EU average (Eurostat, 2017, Gas prices by type of user). While at first glance, one may assume this is because Poland produces some gas domestically, it is actually because they get cheap Russian natural gas. Piped natural gas gets more expensive as it gets further from its destination, as pipeline operators charge tolls and governments almost always get a share of the revenues. Therefore, Eastern European countries get cheaper Russian gas than Western European countries, who end up relying more on expensive LNG imports that become competitive a certain distance from Russian production (European Commission, 2014, p. 53). The only countries in the EU that get natural gas cheaper than Poland are Romania, Bulgaria, Hungary, and Estonia, who also rely on Russia for the vast majority of their supplies and are in relatively close proximity to the exporter (Eurostat, 2017). The price of gas that Poland imports is also linked to the price of crude oil, rather than a fixed price contract, which has allowed the nation to take advantage of the global decrease in energy prices since 2014 (PGNiG, 2017a, p. 126).

Even west of Poland, Russian natural gas has an advantage over industry disruptors like those in the United States due to geography and low cost of extraction. A 2016 study by the Oxford Institute for Energy Studies found that the cost for Gazprom to get natural gas to the German border was about 3.5 American dollars per million British thermal units (\$/mmbtu) at the time of publication. In contrast, the marginal cost of liquefaction of natural gas in the US, shipping to Europe, and regasification alone are at least \$4/mmbtu, which was added to the approximately \$2.5/mmbtu cost of extracting the gas at the time (Henderson, 2016, p. 4).

In 1979, Michael Porter published a landmark paper on industry competition that has become the basis of modern industry analysis, where he argued that an industry is attractive if there are weak competitive forces (threat of new entrants, threat of substitutes, bargaining power of suppliers, bargaining power of customers, and industry rivalry). The Russian state has a majority share in Gazprom and owns gas reserves, so the company essentially has no threat from their major supplier. They face low industry rivalry and threat of new entrants in the European market due to the long term nature of gas transmission contracts and the enormous fixed cost of infrastructure construction, as well as the competitive advantage of low production costs and geographical proximity. The threat of coal as a substitute is low due to pressure to reduce emissions in the EU, and the threat of renewable energy seems low for the time being due to high switching costs, though that could change.

Finally, the power of customers like Polish state-owned firms are relatively low, as they are relatively dispersed and have negotiated contracts on a country-by-country basis, face high switching costs, and have very few supplier options. However, the goal of increasing their power has been shaping Polish energy policy and Gaz-System's overall strategy. Aside from dramatically deescalating geopolitical tension with Russia, which is unlikely given the international relations explored in the next section of this paper, increasing Poland's power as a customer is the key to energy security in the nation, as it would free them from the captivity of dependence on Russian natural gas for critical energy needs.

INTERNATIONAL RELATIONS

Since Gaz-System is controlled by the Polish government, international relations play a critical role in their strategy as a firm. A privately owned company only has to be concerned with creating short term and long term financial value for a relatively small group of shareholders. Gaz-System must create shareholder value by being competitive in the international marketplace, but they are accountable to the entire Polish population and have the social responsibility to provide a quality service at low cost to the public (Gaz-System, 2017).

Polish-EU Relations

Shortly after Poland's accession to the EU, the PiS gained control of the Presidency (head of state) and Prime Minister's office (head of government), forming a minority government. They immediately established a tough-on-EU tone when they fought hard for more voting power, delaying treaty negotiations and irritating many EU member-states (BBC, 2017). While Lech Kaczyński of the PiS remained President until his death in 2010, Donald Tusk's liberal, globalist, pro-EU Civic Platform won the Parliament and then the Presidency in 2010 (BBC, 2017). They remained in power, strengthening relations with the EU until 2015, when the PiS regained control of the Parliament and Presidency, a seismic shift in Polish relations with the EU (McMillan, 2017). While Tusk is still influential as the President of the European Council, the PiS has doubled-down on their nationalist, populist, and Eurosceptic stance and is currently on the cusp of passing judicial reform which is at odds with the liberal democratic values of the EU. The parliament seeks to "dismiss and replace judges of the Supreme Court and replace judges of lower courts," and make changes to the National Council of the Judiciary, who are "responsible for maintaining the independence of the judiciary" (McMillan, 2017, p. 2).

The Polish national government has also clashed with EU governing bodies on environmental issues, magnifying their judicial reform dispute. As previously mentioned, the PiS has reaffirmed their preference for coal in the coming decades, while the EU has mandated a reduction of coal's use to meet emissions targets (Adamus & Florkowski, 2016, p. 169). The Polish government has also refused to stop logging a forest near their border with Belarus despite mandate from the EU, citing a need to cut down trees infected with an invasive species of beetle. It is thought that if Poland were to "lose the case before the European Court of Justice, it could face fines of more than \$4.7 million, plus possible penalties of around \$350,000 each day" (Nelson, 2017). This act of non-compliance has aroused fears that Poland may deviate from EU policy regarding energy security as well.

Polish-Russian Relations

Perhaps the most critical point of agreement between the ruling PiS and the EU is a mutual distrust of Russia. Collective anxiety in Poland surrounding Russia is so strong that the government invited North Atlantic Treaty Organization (NATO) troops to "enhance security following Russia's annexation of Crimea," and the PiS has been complaining of patterns like increased Russian military presence in the Baltic Sea since their election in 2015 (BBC, 2017). No stranger to Russian imperialism, the Polish government is generally uneasy about the prospect of Russian expansionism, even considering that Poland's borders are relatively far from Crimea. Key senior government figures, along with a sizable minority of citizens, seems to believe that Russia continues to violently meddle in Polish politics. Jarosław Kaczyński, head of the PiS party, former Prime Minister, and de facto leader of Poland accuses the Russian government of orchestrating the death of his twin brother Lech Kaczyński, who was President of Poland at the time and died in a plane crash landing at the Smolensk airport in Russia. A 2016 poll found that 27% of Poles believe the theory (The Economist, 2016). This political tension between Poland and Russia, when combined with Russia's history of using gas supply as a geopolitical tool, discussed in more detail later in this paper, means that Polish energy dependence on Russia is a troubling matter for the Polish government and Gaz-System.

Polish-US Relations

Poland's relationship with the United States has generally been quite warm since the fall of communism, and the emergence of socially conservative regimes in both states has acted as a catalyst for geopolitical cooperation. Both Trump and top PiS party members have sparred with the globalist, relatively centrist governments of Western Europe, and have made populist, nationalist promises to the citizens who put them in power. Polish 21st century military strategy has been characterized by strengthening ties with the US, as Poland was one of the few countries in Europe to send troops to US-led conflicts in both Afghanistan and Iraq, entering the latter of the conflicts around the time of Polish EU accession, showing that Poland valued US military support more than the opinions of states in western continental Europe (The White House, 2016). Even Obama's White House didn't forget this, as they sent Poland significant military aid through NATO. The White House reported that the "10-year, \$35 billion defense modernization program is an important investment in the country's defense capabilities and will increase the Polish military's interoperability with NATO allies—allowing us to jointly enhance NATO's collective defense, deterrence, and resiliency" (2016).

The two countries also have common energy interests, as the countries share anxiety surrounding Russian energy dominance in Europe and the US is looking to develop their natural gas industry to both boost growth and increase geopolitical influence. In 2017, Poland's Baltic LNG import facility received its first spot purchase of gas from an American company, with the support of the White House, who said that the "opening of the Swinoujscie liquefied natural gas terminal is a necessary and welcome step in Poland's efforts to improve its energy security" (2016). A confidential long-term supply deal has been reached, which will be discussed in more detail later in this paper (PGNiG, 2017b). More recently, the Trump administration has doubled-down on Polish energy independence interests, even when it doesn't directly impact US natural gas shipments or Polish consumption, regarding the Polish-led attempt to delay or block the Russia-to-Germany Nord Stream 2 pipeline which will also be discussed in greater detail later in this paper. In August, the "US Senate voted for unprecedented sanctions against energy companies which have an ownership share of more than 33%" of the Nord Stream 2 project, which may not prevent the pipeline's completion but will delay the construction as financiers shuffle contracts around (Shagina, 2017).

HISTORY OF RUSSIAN NATURAL GAS DISPUTES

Russia-Ukraine Gas Wars from 2006 to 2009

Successive disputes over Ukrainian gas supply and tolls for gas shipped on to Europe occurred between 2006 and 2009, which began shortly after Kyiv took a pro-EU political turn, as Viktor Yushchenko was elected after nullifying a supposedly fraudulent first run-off election with a series of protests referred to as "the Orange Revolution" (Stulberg, 2015, p. 117). On one hand, Kyiv "was poised to take a hardline in light of the new government's pro-Western orientation and Gazprom's reliance on transit across Ukraine to meet growing European demand" (Stulberg, 2017, p. 73). On the other hand, Moscow was "embittered by the results of the Orange Revolution, and inclined politically to punish the new pro-Western government for its nationalist rhetoric" and possibly inspiring nationalist revolutions elsewhere (Stulberg, 2015, p. 117). However, despite the "undeniable political risks that drove the parties over the brink," the "stakes were primarily commercial," beginning with a 28% price hike from Gazprom on exports to Ukraine (Stulberg, 2017, p. 73). Whether commercial or political in nature, the 2006 conflict culminated in an unprecedented four day cessation of gas shipments into Ukraine, who responded by hoarding gas destined for the EU in underground storage facilities before reaching a temporary price cut agreement with Russia. Needless to say, EU nations that were affected by a four day supply shortage of natural gas supplies were concerned about future disruptions (Baltensperger et al, 2017, p. 467).

Those concerned were correct, as successive contractual disputes between 2007 and 2009 culminated in a "protracted two-week supply disruption that imposed significant costs on all parties. Seventeen European countries were affected by the stoppage of Russian gas deliveries, with Bulgaria and Slovakia suffering complete cut-offs" (Stulberg, 2015, p. 118). This time Ukraine paid dearly, as they were forced to accept price hikes to higher rates

than their peers and pay fines to partially cover Gazprom's losses. The fiasco ultimately cost pro-EU Yushchenko his Presidency (Stulberg, 2015, p. 118). While the principal disputes during the successive gas disputes in the first decade of the 21st century were contractual in nature, the tumultuous political context that surrounded the conflicts, and Gazprom's willingness to endure significant pain in to take a tough stance in negotiations increased the perceived risk of Poland being dragged into a similar pricing dispute connected to geopolitical tension.

Crimea Crisis and Natural Gas Price Disputes

The most recent conflict between Russia and Ukraine that involved cessation of natural gas supplies was the 2014 Crimea Crisis that followed the Ukrainian revolution. The conflict burns on today in the form of armed separatist movements in eastern Ukraine, but the associated gas price dispute showed more restraint on both sides than in 2006 and 2009. However, while there was no protracted cut-off, supply disruptions and numerous threats between 2013 and 2015 "galvanized support for an EU Energy Union to harmonize, integrate, and diversify the internal market" (Stulberg, 2017, p. 71). This gas price dispute was less serious than previous ones in many respects, but was alarmingly even more connected to geopolitical conflict, as Russian-backed separatists were waging war in eastern Ukraine during the dispute.

Unsurprisingly, the newly forged connection between Russian expansionism and natural supply contracts worried adversaries of Russia across the globe, and even "prompted U.S. congressional legislation aimed at expediting U.S. liquefied natural gas exports to demonstrate immediate resolve and limit long-term damage to European energy security" (Stulberg, 2017, p. 71).

An additional source of concern for Poland was the significantly weakened hand of Ukraine during this last price dispute due to the Nord Stream pipeline, which bypasses Ukraine and Poland by shipping natural gas straight to Germany's OPAL pipeline network. While Germany shared Poland's concerns of Russia using supply as leverage, they also saw Ukraine as an unreliable intermediary who's mismanagement contributed to previous cut-offs, and the EU subsequently allowed the underwater pipeline to go online 2011 (Stulberg, 2015, p. 119). This development also weakened Poland's bargaining position, as they were no longer a required intermediary between Russia and Germany, and at the same time the Polish government was acutely aware that a significant portion of their gas supply flowed through Ukraine (as mentioned earlier in this paper) and was susceptible to future supply cuts.

POLISH RESPONSE

Given how important Poland's natural gas supply is, the nation's state of energy dependence on Russia, their state of international relations, and previous conflicts between Russia and Ukraine involving gas supply disruptions, Gaz-System's corporate strategy has focused on increasing Poland's energy independence through their competitive position in the natural gas market. To increase their power as a customer, Gaz-System has increased the number of firms in the Polish natural gas market by enabling gas from Norway, Qatar, the United States, and potentially other countries to enter Poland through fixed infrastructure (Polskie LNG S.A., 2017). These infrastructure projects have also decreased switching costs for Poland, as they represent large fixed costs that are now sunk, which means that they cannot be recovered and only the variable costs of importing natural gas via these assets should be taken into account when weighing supply options upon expiration of Poland's contract with Gazprom. Poland has several additional projects planned that will lead to contract negotiations at the same time as Poland's Yamal contract renegotiation (PGNiG, 2017b). The Polish government has also attempted to increase buyer power through keeping the concentration of buyers high, blocking attempts to fragment the EU market by bypassing Poland with a direct Russia-to-Germany pipeline under the Baltic Sea, and forming a regional alliance by developing flexible two-way pipeline routes with neighbouring countries (Porter, 1979; Munteanu & Sarno, 2016; Bouzarovski & Konieczny, 2010).

Reversal of Yamal-Europe Pipeline

As previously mentioned when discussing Gaz-System assets, the Yamal-Europe pipeline that runs laterally across Poland can now transport 5.7 bcm per year from the west, which would meet about a third of Poland's annual demand, though it pales in comparison to the 30 bcm per year that Russia can send west along Yamal-Europe. In 2015, Poland actually received 26% of its natural gas supply from the west through the Yamal-Europe Pipeline, though this figure decreased in 2016 (PGNiG, 2017a, p. 27). This was the first key asset development project in Gaz-System's supply diversification strategy and significantly increased Poland's bargaining power as they approach the 2022 contract renegotiations with Gazprom. The reversal of the pipeline not only creates a potential alternative for long term contracts, shipping Norwegian gas east to Poland, but also provides an emergency resource for Poland if their eastern gas supply were to be interrupted or reduced with little notice.

Construction of Świnoujście LNG Terminal

As previously mentioned, Polskie LNG, a wholly owned subsidiary of Gaz-System, has constructed an operational LNG terminal on the Baltic coast in Świnoujście where LNG can be imported by ship from anywhere in the world and regasified to pipeline grade, dry natural gas (Polskie LNG S.A., 2017). The terminal was constructed with the aim of increasing Polish imports from the West and Middle East to decrease natural gas dependence on Russia, a stance favoured by the EU and potential trading partners like Norway, the US, and Qatar. In fact, the terminal is provocatively named after Lech Kaczyński, the late former Polish President whose brother, and de facto leader of Poland, insists he was effectively killed by Russian operatives (Polskie LNG S.A., 2017).

As mentioned earlier in the paper, the capacity is currently 5 bcm per year and could be extended to 7.5 bcm without increasing the physical footprint, theoretically covering almost half of Poland's natural gas needs (PGNiG, 2017a, p. 27). However, this is highly unlikely, as imported LNG is very expensive due to shipping and regasification costs, even without accounting for the fixed cost of the terminal's expansion. The terminal's first contract was signed, dedicating 3 bcm per year of import capacity to Qatargas LNG shipments, leaving a sizable minority of existing capacity for other Gulf Arab States, North Sea producers like Norway, or the US (Barteczko, 2017).

When the terminal was first opened in 2014, Polish officials left the door open for negotiations with American firms, but said that LNG from US shale deposits would be too expensive for the foreseeable future (Janusz, 2014). However, since mid-2014 it has started to look more and more like the world is in for a prolonged period of depressed energy prices, especially for natural gas. As a result of these price changes and American governmental support, the first American LNG spot shipment arrived in 2017 ahead of Donald Trump's landmark early visit to Poland. This symbolic transaction was followed by the signing of a 5-year contract (2018-2022) for an undisclosed and flexible amount of natural gas, which will expire right when Russian supply contract is up for renegotiation (PGNiG, 2017b). The secretive and vague nature of this contract, timing of the first spot shipment ahead of a diplomatic visit, and timing of contract expiration signal that the deal was more about energy security than free market supply and demand for natural gas.

Proposed Baltic Pipe

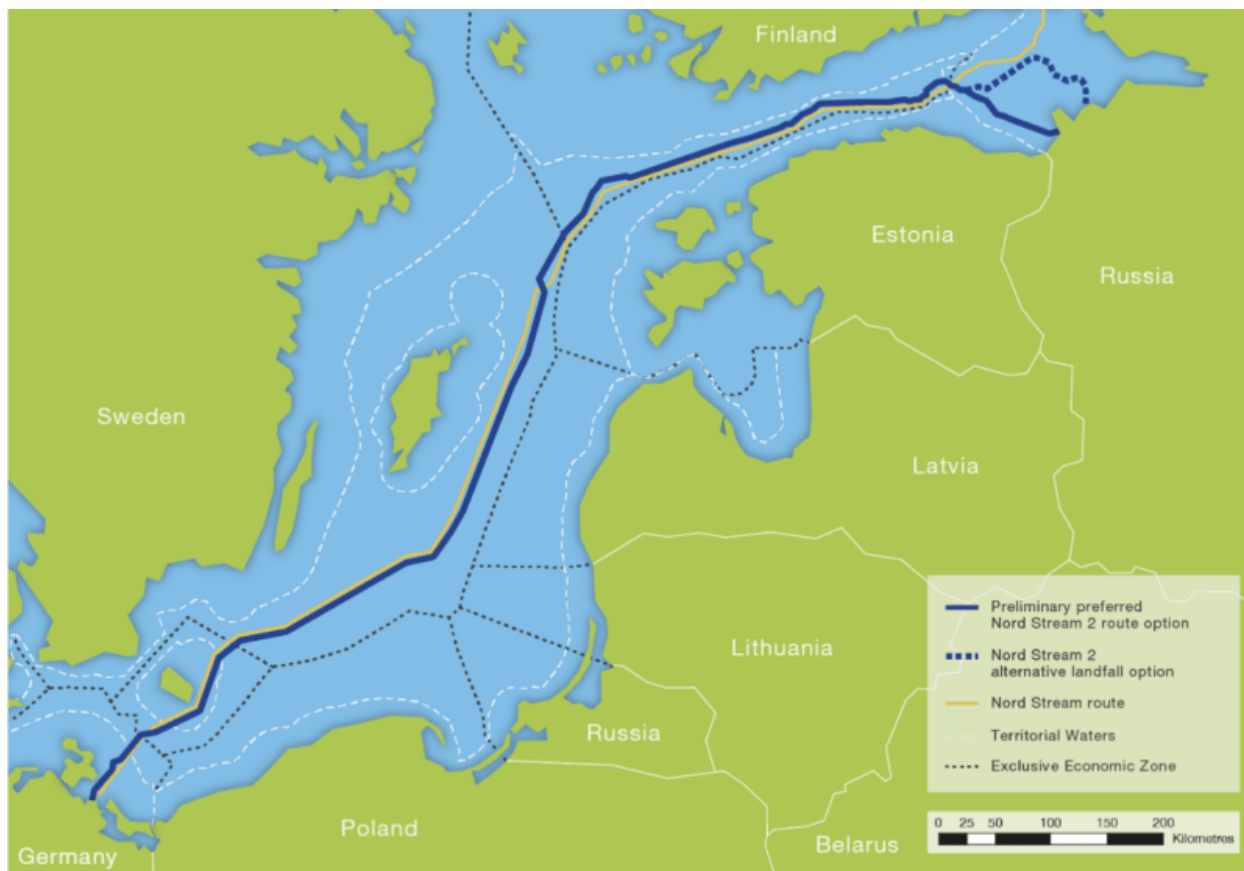
The proposed Baltic Pipe is another major potential source of natural gas imports to Poland, transporting Norwegian gas via Denmark and connecting to Gaz-System's domestic pipeline network near the Baltic LNG terminal in Poland's northwest. Unsurprisingly, Poland aims to have this project approved and completed to come online in 2022, right when the Yamal contract expires (PGNiG, 2017b). In the world of energy infrastructure, construction is far from certain, but even the possibility of this pipeline adding a formidable 10 bcm per year of import capacity significantly increases Poland's power as a customer, as it would enable the country to theoretically walk away from 2022 negotiations with Russia with the ability to cover the entirety of domestic natural gas demand

in conjunction with the new LNG terminal and pipeline gas flow from Germany, albeit at a high financial cost (PGNiG, 2017a, p. 27).

Blocking or Delay of Nord Stream 2 Pipeline Expansion

Contrary to Polish interests, Ukraine leveraging its intermediary role in Russia-Germany natural gas supply in disputes that ultimately resulted in German supply shortages has aligned Germany's interests with Russia, in the sense that neither country wants Ukraine disrupting supply. Therefore, the Nord Stream Pipeline was constructed after the 2009 gas disputes, bypassing Ukraine and Poland by connecting Russia with Germany with a pipeline along the Baltic floor. The Polish government, who "would lose its transit fees and importance in the pipelines network, sees the project as a German-Russian alliance" (Munteanu & Sarno, 2016, p. 81). More recently, an expansion of the route called Nord Stream 2 has been proposed and is making its way through the regulatory process, despite the best efforts of opponents, pitting transit countries like Poland and Ukraine, as well as the US, against the majority of the European Commission (Munteanu & Sarno, 2016, p. 67).

Figure 2: Proposed Nord Stream Route



(Gazpromesport.ru, as cited in Shagina, 2017)

Another major concern is that the proposed project "threatens the pricing power of Poland's new LNG terminal in Świnoujście" by increasing the flow of cheap Russian natural gas into Europe via the Baltic Sea (Rapoza, 2016). Poland has even warmed up to the idea of increasing the westerly-flow capacity of the Yamal-Europe Pipeline, proposing this Yamal 2 option as an alternative to Nord Stream 2, so that Poland can at least maintain its intermediary status (PGNiG, 2017a, p. 27).

As mentioned earlier in this paper, the US has exerted influence in favour of their access point of Poland's LNG terminal by levying sanctions on financiers of the project, causing delays for legal maneuvering, but has stopped short of passing legislation harsh enough to deter partners from actually going through with the project. The Polish government also temporarily blocked the European Commission project proposal (Shagina, 2017). Gaz-System hopes that the risk of increased US sanctions or Polish action within EU governing bodies will help in 2022 Yamal renegotiations with Gazprom, but the projects gradual progression will likely be a big blow to Poland.

Construction of Two-Way Pipeline Routes

Finally, but by no means unimportantly, the Polish state-owned energy firms have also committed funds to build two-way pipelines to Lithuania, Ukraine, Slovakia, and Czech Republic to strengthen their power as customers in the natural gas market, essentially creating a flexible network of countries traditionally dependent on Russian natural gas that can potentially share easterly-flowing gas (PGNiG, 2017a, p.27). The outgoing and incoming capacities on these pipelines are shown back in Figure 1. If Gaz-System is able to continue their increase of imports from the west while reducing imports from Russia, or dramatically increase their imports by maximizing the capacity of all westerly import infrastructure and ceasing all gas imports from Russia, Poland would once again increase their competitive position as a transit state, offering an alternative supply source to other EU countries and EU-associated Ukraine (PGNiG, 2017a, p. 27). At the very least, the two-way nature of these planned pipelines protects Polish natural gas supplies to a certain degree by potentially enabling neighbouring countries to supply Poland with an emergency supply, meaning that significantly disrupting Poland's gas supply would require Russia declaring an all-out gas war with multiple Central European and Baltic nations.

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