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Gas Supply Diversification in the EU in light of Russia's Full-Scale Invasion of Ukraine: A Comparative Analysis of Poland and Bulgaria

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Abstract

The diversification of gas supply sources has become of utmost importance in the European Union amid Russia's full-scale invasion of Ukraine. While the EU Member States reflect different projections in the diversification portfolio, the research examines two countries in the Central and Eastern Europe, Poland and Bulgaria, in a comparative perspective. The study aims at detecting to what extent the two countries differed in their approaches and adaptations before and after Russian gas supply disruption in 2022 and which factors explain these differences. The research is guided under the theoretical framework of Historical Institutionalism (HI) and Punctuated Equilibrium Theory (PET).

The study employs qualitative research methodology, namely comparative case study strategy, and document analysis and semi-structured interviews as specific methods. The research analyzes primary and secondary sources, such as official documents, statements and reports to complement the empirical data with the insights from eight semi-structured interviews with policy makers, scholars, experts and professors.

The study suggests that Poland has taken proactive steps in gas supply diversification long before Russia's full-scale invasion of Ukraine, leading to its higher preparedness for the supply disruption. Whereas, Bulgaria, taking slower steps in investing in alternatives before the invasion, faced higher energy security challenge amid gas supply disruption. The study also outlines that despite the differences in timeline, the degree of efforts and rationale behind their strategies, both countries have ultimately pursued determined diversification paths marking either complete or initial shift away from their dependence on Russian gas, broadly aligning with the EU objectives.

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Acronyms

BCM – Billion cubic meters

CEE – Central and Eastern Europe

DG Ener – Directorate-General for Energy

EastMed – Eastern Mediterranean Pipeline

EC – European Commission

ECB – European Central Bank

EU – European Union

FSRU – Floating Storage Regasification Unit

GDP – Gross Domestic Product

GHG – Greenhouse Gas

ICGB – Interconnector Greece-Bulgaria

LNG – Liquefied Natural Gas

MS – Member State

NSGC – North–South Gas Corridor

PCI – Project of Common Interest

PGNiG – Polskie Górnictwo Naftowe i Gazownictwo (Polish Oil Mining and Gas Extraction SA)

PiS – Prawo i Sprawiedliwość (Law and Justice)

PM – Prime Minister

SEE – Southeast Europe

SGC – Southern Gas Corridor

TCM – Trillion cubic meters

TFEU – Treaty on the Functioning of the European Union

UGS – Underground Gas Storage

Table of Contents

Introduction

In 2021, 40% of the European Union's (EU) pipeline gas imports fell on Russia, whereas by 2024 this ratio decreased to 11%. By adding Russian liquefied natural gas (LNG)[1] to the gas received through pipelines, Russian energy made up to 19% of the total gas importsin the EU in 2024[2] (Consilium, 2025c). According to the Polish Economic Institute, the imports of Russian gas, including in a form of LNG, rose by 37% in the 2014-2021 period, but following Russia's full-scale invasion of Ukraine, the daily flows of Russian pipeline gas to the EU "fell sixfold within a year" (Polish Economic Institute, 2023).

Initially, both energy needs of European countries and the quest to fight climate change found a great value in Russian gas, as it was cheap and generally, gas consumption has less emissions compared to oil and coal. However, as per Trine Villumsen Berling, Senior Researcher at the Danish Institute for International Studies, "Russia's invasion of Ukraine has finally made the EU understand that Russian energy is a form of power" and within the framework of the war in Ukraine "energy has even become a weapon, putting Europe in a critical situation" (*TEPSA*, 2022).

In response to the full-scale invasion of Ukraine and subsequent "global energy market disruption", the EU's executive body, European Commission designed REPowerEU Plan with its 3 pillars: saving energy, diversifying energy supplies, and producing clean energy (European Commission, 2022b). In her March 8, 2022 statement, the European Commission President Ursula von der Leyen said: "We must become independent from Russian oil, coal and gas. We simply cannot rely on a supplier who explicitly threatens us. We need to act now to mitigate the impact of rising energy prices, diversify our gas supply for next winter and accelerate the clean energy transition" (European Commission, 2022a).

Endorsed by the Member States (European Commission, 2022c), the European Commission launched the REPowerEU Plan in May 2022 (European Commission, 2024) with the practical aim "to make Europe independent from Russian fossil fuels well before 2030, starting with gas", focusing on the importance of phasing out Russian energy imports (Abnett, 2025).

Despite the EU's goal to cut gas dependency on Russia by 2027, the situation looks different among Member States (MSs). While it is estimated that Russian fossil fuel imports have overall declined, in 2024 Russia exported "a record 16.5 million metric tons of LNG"[3] to the EU, 1.3 million more than in 2023 (Hockenos, 2025).

[1] LNG is a natural gas in a liquid form, reduced by 600 times in size, being easier for transportation. Through regasification, LNG turns back into the gaseous form to be utilized as a fuel.
[2] While the web page has been updated as of May 2025, at least by February 16, 2025 it stated that Russian pipeline gas amounted to 8% of the EU gas imports and combined with Russian LNG imports, overall dependence accounted to 15% in 2023, highlighting the slightly increased reliance on Russian gas in 2024 compared to the previous year.
[3] 1 million tonnes of LNG equal 1.379 bcm natural gas, therefore 16.5 mln metric tonnes makes up to 23 bcm natural gas.

Although the EU has banned the biggest parts of Russian oil (90%) and coal imports (Consilium, 2025a), it has repeatedly fell short from applying sanctions on the imports of gas, including LNG. In January 2025, 10 Member States[4] called the EU to sanction Russian gas and LNG imports (Abnett, 2025), but so far the call seems hard to be met (POLITICO, 2025).

While there are still ongoing efforts needed to achieve gas supply diversification across the EU, there are some interesting cases to observe. While many countries in the EU experienced the shock stemming from energy crisis caused by the Russian invasion of Ukraine since February 24, 2022, two nations in the Central and Eastern Europe (CEE)[5] region experienced first direct hit. On April 27, Russian state-owned energy company, Gazprom ceased supplying gas to Poland and Bulgaria, noting the absence of making the payments in Russian Rubles "as prescribed by the Russian President's Decree No. 172 dated March 31, 2022" (Gazprom, 2022). Notably, Poland (Strzelecki, 2022) and Bulgaria (Gotev, 2022) both had long-term contracts with Gazprom to receive Russian gas almost till the end of 2022.

The countries are noteworthy not only because they were targeted by the Kremlin in the first place among the EU Member States, but also because they represent general pattern in the EU, and more specifically, in CEE dynamics. Traditionally Poland, being part of both NATO (joining in 1999) and the EU (since 2004), has been distinguished by its strong negative sentiments to Russia, both government and population-wise, reflected in its stances in alliances, statements and foreign policy steps. Typical positions on Russia-related matters, for instance, on imposing sanctions, have often been similar to those of e.g. Baltic states (McNaughton and Łukowski, 2025) as well as of Czech Republic and Romania.

On the other hand, among CEE countries, Bulgaria has traditionally been ambiguous in its attitudes towards Russia. While the country also joined NATO (2004) and the EU (2007), amid the "disappointments" from EU membership and growing Euroscepticism, increasing pro-Russian sentiments have been observed among political parties and population, especially since 2013 (Maria Mateeva-Kazakova, 2024). Similar stances could be identified in Hungarian and recent Slovakian politics, too. Although the two post-Socialist countries, Bulgaria and Poland still have their national peculiarities concerning attitudes to Russia and dependencies on its energy supplies, they could be taken as an interesting comparison pair from the CEE region.

Apart from these, Poland and Bulgaria are more or less comparable in terms of their size and population. While Poland occupies up to 314 km^2 and has up to 38 million people (Eurydice, 2024), Bulgaria has almost three times less territory of up to 111 km^2 and almost six times less population of up to 6.5 million people (EU, 2024). Poland joined the Schengen zone in 2007, whereas Bulgaria became full member in 2024 (EU, 2025). Interestingly, none of the two countries are part of the Euro area so far, with Poland using złoty (PLN) and Bulgaria using lev (BGN). Moreover, both countries were once members of the Warsaw Pact and represented

[4] Czech Republic, Denmark, Estonia, Finland, Ireland, Latvia, Lithuania, Poland, Romania and Sweden.
[5] By the definition of Statistics Netherlands, CEE countries are those EU Member States that were once part of the Eastern bloc: Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia, Slovakia. For the map of the CEE, see Appendix 2.

Soviet satellites, which among others, laid the foundation to the energy dependence on Russia persisting even after the collapse of the Soviet Union.

According to the Eurostat (See Appendix 3), before Russia's full-scale invasion of Ukraine, share of gas supply from Russia in the gas domain was **77% in Bulgaria**, whereas in **Poland** it amounted to **40%**. With these numbers both countries fell within 'medium' dependence ratio on Russian gas, compared to other CEE countries like Latvia with 93% or Romania with 10% dependence rate (Buchholz, 2022). Whereas, according to the European Commission (See Appendixes 20 and 21), in 2021 Russian gas dependence in **Poland** accounted to much higher - up to **57%** (EUR-Lex, 2024b, p. 49), while in **Bulgaria** up to **80%** (EUR-Lex, 2024a, p. 47).

In absolute terms, **Poland** imported **around 10 bln cubic meters** (bcm) of Russian gas in 2021, 10% more compared to previous year (Afanasiev, 2022), and three times more than Bulgaria. **Bulgaria** had a contract with Gazprom for importing **up to 3 bcm** (almost whole share of imports) Russian gas annually until the latter would cut supplies in April 2022 (International Trade Administration, 2024). On a more precise scale (See Appendix 4), the share of Russian natural gas in the energy mix of the European countries was ranging from 0 (Malta) to up to 40% (Hungary) by 2020. In this context, Bulgarian and Polish scores were around or up to 10%, with slightly larger portion in Bulgarian case (Sullivan, 2022).

Poland and Bulgaria also represent good examples as EU-supported gas pipelines started operation in late 2022 in both countries. The Baltic Pipe (See Appendix 5) (CINEA, 2022) and the Interconnector Greece-Bulgaria (ICGB, also shortened as IGB. See Appendix 6) (DG ENER, 2022) arguably have both opened up new routes for gas supply deliveries not only for them but for a wider region.

According to Ursula von der Leyen during the launch of commercial operations of the Interconnector Greece-Bulgaria, following Russia's "atrocious war against Ukraine and an energy war against Europe", with ICGB "a new era for Bulgaria and South East Europe" began. Von der Leyen added that ICGB was "a game changer for Bulgaria and Europe's energy security" (Euronews, 2022b).

Whereas, as per Ditte Juul Jorgensen, Head of EU Directorate General for Energy (DG Ener), the completion of the Baltic Pipe came "at a time of Russia's brutal war against Ukraine and Russia's manipulation of gas supplies to destabilize our energy market and our economies" adding that this was "a powerful message that Russia will not succeed" (Euronews, 2022a).

Despite common exogenous shock and many similarities, the cases of Poland and Bulgaria, considering their political attitudes and distinct energy diversification history are still different, making their comparison even more relevant. The diversification does not happen overnight or even within a year. Through empirical analysis it becomes clear that over years both Poland and Bulgaria have navigated through complicated path from their gas supply dependence on Russia. Arguably, considering the subsequent literature review and empirical evidence in the following chapters, they moved on this path in different manner and achieved different results, too. This paper aims at testing this claim by comparing two countries' gas supply security before and after

Russia's full-scale invasion of Ukraine, which as mentioned, facilitated gas supply disruption for Poland and Bulgaria in April 2022 and led to EU's active steps towards energy diversification.

The **primary research question** that the study aims to answer is the following: *How did Poland and Bulgaria differ in their approaches and adaptations to gas supply diversification before and after Russian gas supply disruption in 2022?* Whereas, the **secondary research question** is: *Which factors explain these differences?*

Here it is important to outline that while the key time scope of the paper is centered on the year 2022, the period "before" denotes diversification efforts throughout previous two decades with the emphasis on major developments in fragmented time spans, while the period "after" symbolizes post-April 2022 steps to maintain gas supply security spanning till May 2025. Both dimensions will be further elaborated in empirical part of the paper, namely in the sections of historical analysis and current situation.

In the wake of EU's quest for gas supply diversification amid Russian aggression, the topic is of significant relevance. The paper presents findings on the heated issue, having both **academic and practical value**. With its specific angle and theoretical approach, to be defined below, the study brings a novelty to the scholarship, analyzing two prominent cases within the CEE region in comparison with one another. Simultaneously, from practical perspective, the study potentially can be of high interest for politicians and practitioners of the energy realm in the CEE and the EU.

The next chapter will focus on the existing scholarship highlighting the relevance of the topic in the academic domain. Subsequently, the paper will deal with theoretical framework and research design, followed by the empirical research and the summary of the findings.

Literature Review

The academic literature covers various aspects of gas supply security in the two EU Member States, Poland and Bulgaria, starting from government interventions in gas infrastructure to supply security from EU and geopolitical perspectives. However, most available literature contains separate analysis of the respective countries or in comparison with other states, and entails fragmented scope with regard to diversification paths. The scholarship below reflects relatively narrow aspects that serve as a preface for empirical analysis to meet the objectives of this research, which primarily implies identifying the differences between Polish and Bulgarian stances to diversification amid Russian gas supply disruption in 2022. The following studies are also useful for drawing historical emphasis leading up to 2022 period, reflecting the steps taken or not taken for strengthening gas supply security in either country.

The **first** important study to be examined is *"The North-South Gas Corridor in the Context of Poland's Gas Transmission System—A Perfect Opportunity to Diversify Gas Resources"* by Dr. **Wiktor Hebda** (2021) from the Department of National Security at the Jagiellonian University in Krakow, Poland. The article argues for

the need to decrease the heavy production of coal (around 50-60% in the energy mix) in Poland in favour of using more gas and green energy, while denoting the necessity to diversify from Russian gas supplies. In particular, the study analyzes gas domain in the country before Russia's full-scale invasion and the role that North-South Gas Corridor[6] could play in diversification endeavors not only for Poland but for CEE in general.

The author (Ibid., pp. 1, 2, 6) highlights that in the quest for reducing coal consumption, the role of natural gas in the next two decades will grow as attested by increasing (by over 25%) gas use in the last decade. Whereas, Russian gas accounted for around 60% of overall Polish gas consumption that posed risks for Polish security considering strained relations between the two countries. It was highly expected "the financially unfavorable" Yamal Gas Pipeline Contract with Russia, first signed in 1996 between PGNiG[7] and Gazprom, providing for the annual streaming of 8.7 bcm gas, would not be renewed in 2022. The author indicates that while Yamal pipeline was an "unprofitable investment", the North-South Gas Corridor would be helpful for diversifying gas supplies by connecting two LNG terminals in Świnoujście, Poland and Krk island, Croatia with the pipelines and interconnectors in central Europe. This would allow for gas deliveries from the Middle East, North Africa, US, Canada or Norway.

The author (Ibid., p. 2) also mentions that the Energy Policy of Poland until 2040 (EPP 2040) document that was enacted in 2021 highlights the role of natural gas as 'a bridge' in energy transition. According to the document, the annual demand of 4.2 bcm in 2020 each year would be grown by 13.4 bcm in 2036, emphasizing the need for stable supplies. Moreover, as per Hebda, Poland has to follow EU's energy strategies. For instance, approved in 2014, the European Council outlined 4 key objectives to be met till 2030. As these objectives were modified in 2018 and 2020, and are in line with the 2015 Paris Agreement,[8] they put an emphasis on decreasing greenhouse gas (GHG) emissions by 55% compared to 1990 level and expanding of the use of renewables by minimum 32% in overall energy mix, reaching energy efficiency by 32.5% as well as creating EU's internal energy market. Apart from that, the 2019 European Green Deal, approved by the European Commission, attempts to maintain zero GHG emissions by 2050. As per Hebda, Poland tries to promote the use of natural gas for achieving EU's common goals.

On the basis of EPP 2040 and Poland's Ten-Year Gas Transmission System Development Plan for 2020–2029, the author (Ibid., p. 5) outlines that in order to be less dependent on Russian gas, by 2021 Poland planned to undertake several strategic steps. The steps aimed at improving gas connection systems with neighbours by 2023 through 1. enlarging Świnoujście LNG terminal[9] capacity from 5 bcm to 8.3 bcm annually, 2.

[6] The North-South Gas Corridor – the corridor that connects the Polish LNG Terminal in Świnoujście and the Baltic Pipe with infrastructure in Central and Eastern Europe (CEE) through central and southern Poland.
[7] Polish Oil Mining and Gas Extraction S.A. is a former state-controlled oil and gas company. Although it merged with Orlen in 2023, the company continues operations under the same PGNiG name. In turn, Orlen's key shareholder (49.90%) is the Republic of Poland.
[8] Adopted at the UN Climate Change Conference (COP21) in 2015, the Paris Agreement is legally binding treaty aimed at holding "the increase in the global average temperature to well below 2°C above pre-industrial levels" and limiting "the temperature increase to 1.5°C above pre-industrial levels".
[9] The Świnoujście terminal is located on north-western part of Poland on the Baltic coast.

commissioning floating FSRU (Floating Storage Regasification Unit) in the Gdańsk region with a minimum 4.5 bcm annual capacity, and 3. finishing the construction of the Baltic Pipe by October 2022 that would bind Poland's "transmission grid to deposits on the Norwegian continental shelf" through Norway-Denmark and Denmark-Poland connections also necessitating the reconstruction of Danish and Polish transmission systems. it was expected that the Baltic Pipe would allow for importing 10 bcm natural gas every year. For these reasons, Poland would need to improve its own gas grid and storage infrastructure and gas connection systems with Slovakia and Lithuania would need modifications for increased capacity by 2022, while with the Czech Republic and Ukraine later. These would provide for supplying gas not only to local market but also countries of the region. While the gas network covered around 65% of Poland in 2021, by 2024 it would reach up to 76%. Simultaneously, natural gas storage would be grown from 3.2 bcm to 4 bcm.

As per Hebda (Ibid., p. 5), while gas was mainly utilized by industry and households especially in the "heating season",[10] in the upcoming decade gas would be increasingly used "by heat and power engineering plants" too, in line with EPP 2040 objectives. Eventually, the author argues that by increasing the capacity of interconnectors spanning from Poland to Croatia, the energy security of CEE region would be highly improved, along with contributing to decarbonization process.

The **second** study that will be reviewed is *"The Baltic Pipe and its impact on energy security in Central and Eastern Europe"* by **Oksana Voytyuk** (2022), associate professor at the Faculty of International Relations at the University of Bialystok, Poland. The article, written before the commissioning of the Baltic Pipe, aims at analyzing what short- and long-term role the latter can play in Polish and CEE energy security and whether it can help integrate "energy systems within the North-South Corridor and the Three Seas Initiative".[11]

According to the author (Ibid., pp. 94, 95) the Baltic Pipe is part of North-South Gas Corridor and Three Seas Initiative which aim at integration of CEE energy systems. The pipeline has been qualified as a PCI[12] by the European Commission, denoting its importance for achieving EU energy market objectives. As approved by Member States, the Commission provided EUR 266.8 mln funding for the project in 2018. While the pipeline, with a capacity of 10 bcm, was expected to cover demand in the Northern parts of the country, Polish company Gaz-System[13] also began building more than 2,000 km long gas pipelines in western, eastern and southern parts of Poland. Improving Polish transmission network was also thought to help diversify gas deliveries from

[10] Heating season is between October and the end of March in Poland.
[11] By self-description, Three Seas Initiative (3SI) is "a politically inspired, commercially driven platform" primarily aiming at developing infrastructure in "energy, transport and digital" domains between 13 EU MSs "allocated between Baltic, Adriatic and Black seas", namely Estonia, Latvia, Lithuania, Poland, the Czech Republic, Slovakia, Hungary, Slovenia, Austria, Croatia, Romania, Greece and Bulgaria.
[12] According to the EU Agency for the Cooperation of Energy Regulators (ACER), "Projects of Common Interest" (PCIs) are "infrastructure projects which have a significant impact on the EU electricity and gas systems, and help the EU achieving its energy policy and climate objectives". Since 2013, the European Commission publishes the list of PCIs every two year.
[13] Gas Transmission Operator GAZ-SYSTEM S.A. represents "a joint stock company, wholly owned by Polish State Treasury. It is a strategic company for Poland's economy and energy security". The company "is responsible for the transmission of natural gas, managing Poland's most important gas pipelines and the Baltic Pipe undersea gas pipeline". GAZ-SYSTEM also "owns and operates the LNG Terminal in Swinoujscie," as well as "Gas Storage Poland, a company that acts as an operator of natural gas storage facilities".

Russia in the region, including in Slovakia, Czech Republic, Lithuania, and Ukraine. Similar to Nord Stream,[14] the pipeline goes through the Baltic Sea.

As per Voytyuk (Ibid., pp. 95, 96), the Baltic Pipe was considered key for improving gas market competitiveness and providing leverage while negotiating prices and terms. It represents a strategic asset considering minor capacity to produce gas domestically. For instance, Poland produced 3.8 bcm in 2019, while the demand reached up to 18.66 bcm. It was estimated that in the last two decades, an average annual use of gas has grown by ca. 1 bcm, providing a basis for the assumption that with this dynamic, annual consumption would become around 30 bcm by 2030. It would mean that Baltic Pipe would only satisfy the need for local market in short-term. In the same 2019 Poland imported 14.86 bcm of gas. Out of that, 3.43 bcm was as an LNG mostly from Qatar, the US, Norway and Trinidad and Tobago; while 8.95 bcm came from Russia; whereas 2.48 bcm was delivered "from the west and south".

Voytyuk (Ibid., p. 96) also puts a spotlight on recent historical relations between Russia and Poland. As the Baltic Pipe was expected to be become operational by October 2022 it was seen as a replacement of the 'Yamal' contract with Gazprom that was expected to expire by the end of 2022. Signed in 1996, the deal "was very unfavorable for Poland, as the gas price was non-market, overstated and, in turn, the transit price was understated". This prompted PGNiG to file a lawsuit demanding new pricing formula. With the failure of negotiations, eventually the case was taken to the Arbitration Tribunal in Stockholm in 2016. The Tribunal decided against Gazprom, asking the latter to "refund the difference caused by overpriced prices of over PLN 6 billion"[15] in 2022. Finally, in 2018 Poland ruled out the extension of the Yamal contract after 2022. Basically, the amount imported from Russia (8.95 bcm) would be replaced by Baltic Pipe (with 10 bcm capacity).

According to the author (Ibid., p. 103), while the Baltic Pipe would help Poland get away from Russian gas dependence in short term, it would also contribute to creating a gas hub in Poland for eastern Europe and boost competition with Germany. Although it was expected that the Baltic Pipe would hardly compete with Nord Stream considering the latter's higher capacity, in long term it would help diversification for Central Europe through expanded gas infrastructure. At the same time, as Voytyuk argues, in case Poland would opt for reduction of coal use, it would necessitate increasing gas imports and if Poland would fail in the choice of stable suppliers, it would pose a risk in "medium term" for getting back to Russian gas.

What is important, Voytyuk (Ibid., pp. 97, 98) acknowledges that Poland has been "actively trying to diversify gas supplies to its market" and even achieved tangible progress. For instance, with Świnoujście LNG terminal starting operations in 2016, gas supplies have grown. As of 2022, Poland received gas from east, west and south owing to "the expansion of the interconnector with the Czech Republic (STORK)" with the annual

[14] Nord Stream - natural gas pipeline network from Russia to Germany, consisting of Nord Stream 1 (started operations in 2011 and was closed in September 2022 by Russia as a retaliation against the EU sanctions, also followed by explosions in less than a month) and Nord Stream 2 (completed in 2021, it has never received a license to operate in the wake of Russia's aggression against Ukraine since February 2022). For the map displaying Nord Stream, see Appendix 9.
[15] PLN 6 billion corresponds to over €1.3 bln at the March 2020 rates.

capacity of 0.5 bcm and "the expansion of power with Germany" with annual capacity of 1.5 bcm. However, the author notes that it was essential to "expand" the interconnectors with neighbours. Finally, as per the author, "Poland should not completely abandon the already existing infrastructure, including the Yamal-Europe gas pipeline", that can be utilized "for reverse gas supplies" towards eastern Europe.

The third important piece of literature to be reviewed is the dissertation at the University of Eastern Finland titled *"Governmental interventions in development of gas infrastructure in the 'securitized' EU and Energy Community gas sectors: The cases of Poland, Lithuania and Ukraine"* by **Mykola Iakovenko** (2023). In his study, Iakovenko analyzes the role of EU legislation and state aid in shaping gas sector in three Energy Community countries. Concerning Poland, the thesis contains interesting elements on the interplay between geopolitical considerations, Polish gas supply diversification strategies and EU involvement.

Iakovenko (Ibid., pp. 211, 212) outlines that Poland has been among those EU countries that has been pushing for elevating gas supply security high on the EU agenda, along with national level endeavours. Particularly, Poland is famous for "promoting a collective approach to the treatment of external gas suppliers" through the solidarity principle. Polish government has been aiming at reducing gas consumption and promoting gas supply diversification as reflected in strategic documents since 2020. For instance, the Energy Policy of Poland until 2040 adopted by the Ministry of Climate comprises objectives such as establishing a gas hub to supply the region, promoting diversification of gas supplies, including by renewables, as well as, expanding gas transmission infrastructure. This was exemplified by the rhetoric of the officials when framing Russian gas as a threat, naming its removal as a political objective as well as "a corporate aim" of PGNiG for the upcoming decades. The author also admits that, generally, for over a decade, Polish stance to gas security agenda was "quite stable" notwithstanding the type of government.

Iakovenko (Ibid., pp. 182, 228) outlines that following Russia's full-scale invasion of Ukraine and subsequent gas supply crisis, consumption of gas in Poland was decreased by around 16%, amounting to min. 4 bcm, prompting the government to modify national Energy strategy until 2040. Particularly, in long-term, the importance to replace natural gas with hydrogen and biogas, while in short-term, the need to diversify natural gas imports were emphasized.

The author (Ibid., p. 213) distinguishes between the two types of investment projects for ensuring Polish security of supply doctrine: 1. Regional interconnection projects, e.g. for increasing access to Baltic and Slovakian gas markets, being in line with EU goals and subsequently, being granted 'Project of Common Interest' (PCI) status and supported financially; and 2. Projects promoting deliveries from 'alternative' sources through building pipelines and LNG terminals.

Iakovenko (Ibid., p. 209) also notes that when it comes to implementing EU law in terms of gas security, Polish "Law on the reserves of crude oil, petroleum products and natural gas" and Polish Council of Ministers'[16]

[16] Council of Ministers - Central body in the Polish executive government, led by the Prime Minister.

"regularly updated decision" on gas import's minimum diversification thresholds have been one of the two key dimensions, reflecting geopolitical rationale. For instance, import level from a single source varied from 70% in 2017-2022 to 30% in 2022-2026. The author (Ibid., pp. 204, 237) marks off that the gas sector in Poland is regulated by national legislation and is also affected by EU acts of direct effect. In particular, the Energy Law adopted in 1997 has been amended many times to comprise EU energy packages. However, despite the EU provisions, the government apparently has "a significant control in stimulating necessary market demand by influencing the suppliers".

Finally, Iakovenko (Ibid., pp. 229, 237) argues that Russia's full-scale invasion in 2022 showed that Poland did not manage "to fully secure its gas supply" without EU markets' support. On the other hand, "some of the security-motivated infrastructure projects", such as LNG facilities played important role in getting additional supplies, replacing Russian gas following its disruption from April 2022. As for the Baltic Pipe, the author deems its support "minor", partially due to "the late commissioning of the project" in September 2022 as well as due to "the lack of guaranteed supply via the pipeline" considering initial lack of interest among suppliers apart from the Polish side.

The **fourth** piece of literature relevant for reviewing is *"Gas from the South, Not from Russia: The Possibility of Distributing Natural Gas from the Eastern Mediterranean to Poland and Central Europe",* another article by the above-mentioned Dr. **Wiktor Hebda** (2024). On the background of Russian gas suspension in the CEE, the study analyzes the role that the alternative gas suppliers, namely in the Eastern Mediterranean, can play in the CEE energy security.

According to Hebda (Ibid., pp. 1, 15, 16), while the CEE countries have highly relied on Russian gas, among them Poland has distinguished itself by "a complete re-evaluation of the direction of gas supplies" from east to the north owing to the Baltic Sea and LNG imported from the US. Interestingly, author frames Russia-Ukraine conflict as a key factor proving "that the expansion of an alternative gas transmission infrastructure was overdue for many CEEs". However, Poland proved resistant to the crisis thanks to preparation, but the remaining challenge is the "integration of gas transmission systems with those of its neighbours" with the North–South Gas Corridor (NSGC) having "bottlenecks" and vulnerability despite being in the construction process for years.

The author (Ibid., pp. 1, 2, 6, 11, 16), denotes that in order to reinforce the importance of the NSGC and get additional gas supplies, the CEE should partner with the South, namely Israel, Egypt and Cyprus. However, the hindering factors might be conflicts in the region and competition for energy. Still, the author highlights the positive role that Eastern Mediterranean (EastMed) gas pipeline project can have for Poland and the CEE. Signed by Greek, Cypriot and Israeli governments in 2020, the project aimed at constructing 1900 km long pipeline from Israel to Greece through Cyprus, with a potential to reach Italy, too. The EastMed's capacity was planned to be 10 bcm at first but it would increase to 20 bcm annually. Moreover, the project was eligible for EU funding. Nevertheless, Turkish objections to the project, as well as, Israel's complicated relations in the region, among others, make its realization difficult. Also, it is unclear if the project can meet short-term

needs of importers. Furthermore, as the author claims, the future of natural gas as a fossil fuel will probably count no more than two decades considering EU's quest to decarbonize.

Hebda (Ibid., p. 16), also denotes that while Israel, Egypt, and Cyprus should develop gas production and trade, the Central and Southeastern Europe also needs to develop proper gas transmission network. The author suggests that promoting LNG infrastructure instead of underwater pipelines might be a better option as the former became more and more widespread in Europe after Russia-Ukraine conflict. In this case, the CEE countries, including Poland, would need to expand LNG terminal on Krk island or have a new facility in Croatia.

The **fifth** academic piece of literature to be reviewed is *"The power of policy regimes. Explaining shale gas policy divergence in Bulgaria and Poland"* by **Andreas Goldthau**, International Relations Professor at the Royal Holloway University of London and **Michael LaBelle**, Assistant Professor of Innovation and Sustainability at the Central European University. While the article (Goldthau and LaBelle, 2016) is written long before Russia's full-scale invasion, it represents one of the fewest studies directly comparing cases of Bulgaria and Poland concerning gas sector, although without an emphasis on external gas supply diversification.

The authors (Ibid., p. 2) emphasize that producing shale gas through the US-originated fracking, which "combines deep-rock fracturing with horizontal drilling techniques" could be used for European gas source diversification reducing dependence on Russia ("a much discussed geopolitical concern") and promote competition in Europe, helping decreasing prices. What is interesting, the authors take Poland and Bulgaria as a pair of comparison displaying different approach to the shale gas. They define them as countries having "a lot in common", such as strong dependence on Russian gas supply, sharing "a common socialist regulatory past" which gives rise to "many path dependencies" up to today and being part of the EU, thus covered by "an identical supranational regulatory environment" when it comes to natural gas, namely the 2007 third energy package.[17]

According to Goldthau and LaBelle (Ibid., p. 3), "gas disputes" related to Russian supplies have been important in the CEE but do not fully explain diversification attempts. Bulgaria banned shale gas exploration in 2012 officially denoting the environmental concerns, namely "potential impact on groundwater safety and the possibility of fugitive methane emissions and seismic activities". In contrast, Poland promoted shale gas extraction through legal basis. The Bulgarian quest to protect environment and in contrast, Poland inclining to the shale gas for national security reasons, still do "not provide a sufficiently convincing explanation for the CEE shale gas puzzle".

[17] Adopted by the European Commission in 2007, the Third Internal Energy Market Legislative Package created the EU Agency for the cooperation of National Energy Regulators and established common rules for gas market in the EU, among others.

The authors (Ibid., pp. 11-12) outline that Poland has always viewed gas as a part of "national security and economic development" as exemplified by the Prime Minister Donald Tusk[18] framing gas security as "a fundamental prerequisite of sovereignty". This could be interpreted as a result of Polish "historical trauma" from its several partitions, among others, by Moscow and Berlin in 1939. In the wake of Russia's assertiveness on a geopolitical scale, as well as, the high price of Russian gas, the Polish authorities viewed shale gas as an important solution. Russian gas was also framed as a threat for the Polish industry.

When it comes to Bulgaria, according to Goldthau and LaBelle (Ibid., pp. 18-21), Boyko Borisov's conservative government[19] in 2009 "championed" shale gas exploration in view of supply security. The latter was tied with Russia-Ukraine gas dispute in January 2009 followed by gas suspension for Bulgaria putting it in a stalemate. The Bulgarian government also framed the shale gas as a path to have cheaper energy. While Bulgaria has been the least well-off EU Member State, the 2011 National Security Strategy named "energy poverty" as one of the important issues. Still, the shale gas option did not raise much interest among industry actors, such as e.g. "metalworking, pharmaceuticals, chemical industry, and fertilizer plants". Moreover, the public perceived shale gas only as a tool to bring profit for Chevron (key industry stakeholder) and its affiliates. Instead, environmental and agricultural concerns led to public protests, exacerbated by the lack of communication from the authorities. The government and energy ministry led the process in a highly centralized way, without involving other actors, preparing legislative basis or pursuing effective coordination with other relevant administrative units, failing to have "joined-up government" approach.

While NATO Secretary General Rasmussen claimed that Russian Gazprom paid the protesters in Bulgaria to advocate against the shale gas, in order to maintain "gas supply monopoly", dthe authors' (Ibid., p. 22) empirical findings did not support this claim. Eventually, following the protests in 15 cities, the Bulgarian Parliament banned shale gas extraction at the onset of 2012 (Ibid., p. 16).

Goldthau and LaBelle (Ibid., p. 23) denote that "policy regimes" of shale gas were different in the two countries. In Poland, the authorities focused on the potential impact of shale gas on economic benefits, jobs and diversification from Russian supplies and it found convincing base "among energy companies, businesses, civil society and the general public", leaving weaker position to the environmental groups. Whereas in Bulgaria, where Russian gas is arguably less perceived as "a threat" compared to Poland because of distinct historical memory, the authorities' discourse which evolved on "energy security and economic prosperity" failed to appeal the nation. As per authors, the key explanation for the failure was "top-down manner" of proposing shale gas policy, raising the perception of the shale gas "as serving vested private interests and state officials". Therefore, the "ideational uptake" among parties was "high in Poland and low in Bulgaria".

[18] Reference to Tusk's first premiership (2007-2014).
[19] Under Borisov's premiership GERB party ruled Bulgaria in 2009-2013 and 2014-2021 periods. GERB is also in power since January 2025 (as of May 2025).

According to the authors (Ibid., pp. 24-25), on the institutional side, none of the Member States had a 'joined-up' approach, with both sides lacking administrative leverage and "regulatory coherence across subsystems and governance levels". Despite deficiencies, however, institutional process in Poland was "comprehensive and inclusive". Also, "interest involvement" was "strong in Poland and weak in Bulgaria" where even the national Bulgarian energy company was not put on policy elaboration table, other stakeholders kept passive approach and local elements were not allowed to reflect their views on the matter. Overall, according to Goldthau and LaBelle, "the interplay of a convincing policy narrative", overarching "institutional process" and the involvement of key stakeholders was a backbone of Polish policy regime, creating "legitimacy for a political project", securing "institutional and actor support" on state and sub-state levels.

The **sixth** study to be reviewed is *"In Times of Pandemic and War. Security of Natural Gas Supplies to Consumers in Romania and Bulgaria (January 2020 –August 2023)"* by Dr hab. **Tomasz Skrzyński** (2023), professor at the Department of Military Security at the University of the National Education Commission, Krakow. The article evaluates the import levels of Russian gas in Bulgaria and Romania, which was high in the former, and analyzes the impact of the Covid-19 pandemic, energy crisis and Russia's full-scale invasion of Ukraine on the two countries.

According to the author (Ibid., pp. 342, 344), Bulgaria and Romania, having the lowest GDP per capita in the EU, have had limited choices for diversification considering their geography. For this reason, the gas transmission networks made them "intermediaries" for Russian supplied gas in the region. While in 2019 Romania could meet its 90% gas demand by internal "onshore fields" production (10 bcm annually) and imported only the rest from Russia, despite Bulgarian government's endeavours in 2013-2022, domestic gas production decreased, satisfying just 1% of its demand and being still expensive by 2019. This prompted Bulgaria to be far more dependent on Russia.

Concerning Bulgaria, Skrzyński (Ibid., pp. 352-353) denotes that the country expected "a reduction or suspension of gas supplies from Russia at least [since] March 2022" and was trying to seek alternatives. For instance, in April 2022 it allowed the extension of gas exploration in the Black Sea for two more years. When Russia cut supplies on April 27, Greece started exporting gas to Bulgaria from April 28. The negotiations between Bulgaria, its neighbours, Azerbaijan and European Commission took place from April 28 to May 5. On May 5, Bulgaria proclaimed plans to buy LNG jointly with Greece with the purpose "to have a better position in negotiations on the purchase of gas and to reassure its consumers". Five days later, the US LNG supplies were also promised via the Revithoussa Terminal in Greece, beginning from June. Bulgaria also tried to get LNG from Qatar and Australia, as key exporters.

As per the author (Ibid., pp. 345, 353) Following Russian gas suspension, Bulgarian authorities told the consumers that Chiren storage facility had sufficient gas in reserve. Moreover, the public upheaval was prevented thanks to media that reported the existence of important gas sources in the Black Sea. Interestingly, as Skrzyński highlights, it was because of "Russia's counteractions and the influence of pro-Russian factors" that Bulgaria did not explore shale gas in Bulgaria. While Bulgaria received gas from 7 countries in 2019, over

85% of imports fell on Russia. In March 2020, in contrast with the rest of CEE, Russia reduced prices for Bulgaria, aimed at keeping its key energy role in the country. In 2020 Russian gas imports met 76% of the demand. Still, LNG from Greece and since 2021, gas from Azerbaijan (with 25-year contract) "were merely of supplementary importance" compared to Russian gas.

Skrzyński (Ibid., pp. 353-354) argues that in its "gas war with Bulgaria", Moscow wanted to use "social and political divisions" in the country concerning "military aid to Ukraine and sanctions against Russia". This was complemented by the instability[20] in Bulgaria and the President and some part of opposition pushing for "concessions" to maintain stable Russian gas flows and the interests of the least well-off gas consumers. Some of the reasons why Bulgaria was delaying concluding deals with Türkiye and Greece were general shortage and high cost of gas, "the scale of gas imports from Russia to Türkiye and Azerbaijan", as well as the "hopes" in the part of "Bulgarian elite" to renegotiate with Moscow, the end of its war in Ukraine and "the mild winter". On the other hand, according to the author (Ibid., pp. 346-347), improved gas transmission system increased Bulgaria's role as an intermediary. However, one of the impeding factors for constructing necessary infrastructure was "widespread corruption…and managing such a large investment".

When it comes to the EU role, the author (Ibid., pp. 346, 348, 352, 354) outlines that its "reluctance to subsidise investments in gas infrastructure" led to postponement of investments that would allow diversification. However, owing to Russia's actions, EU made "preferential terms for investments in gas infrastructure" and enhanced cooperation with the US and Azerbaijan for gas imports. This framework allowed both Bulgaria and Romania to easily deal with Türkiye, Azerbaijan and Greece and to finalize LNG contracts. The commissioning of the ICGB in October 2022 as well as an approaching winter, "forced Bulgaria to fully implement its pre-war contract with Azerbaijan" and to import both US and Russian LNG. Thus, Bulgaria managed to meet its 2022 gas demand. Thanks to ICGB, which is "of special importance" among other projects, Bulgaria received 10-year flow guarantee of at least 0.5 bcm gas annually which could meet one sixth of its consumption level.

Finally, according to Skrzyński (Ibid., p. 355), the construction of FSRU[21] Alexandroupolis, beginning from May 2022, having support from the EU, Bulgaria and Romania, as well as, the FSRU in Saros, Türkiye, launched in April 2023, have important role in gas supply security for both Bulgaria and Romania. Bulgaria finally signed deals with Türkiye and Greece in January 2023. The 13-year agreement with Türkiye, for instance, refers to "1.5 bcm of gas from Turkish LNG terminals", prompting a number of politicians to argue that the deal is a gate for rerouted Russian gas.

The **seventh** piece of literature to be analyzed is *"Russia's gas weapon in Central and Eastern Europe: Diverging responses from three friendly states",* an article by **András Deák, John Szabo, and Csaba Weiner** (2024) from the HUN-REN Centre for Economic and Regional Studies. The research examines how Russia

[20] In 2021-2024 period Bulgaria underwent seven parliamentary elections and swift change of governments.
[21] Floating Storage Regasification Unit (FSRU) is a "special type of ship used for LNG transfer".

has used "gas weapon" for maintaining influence over Hungary, Bulgaria and Serbia after the full-scale invasion of 2022. The authors emphasize that gas supplies were decreased to 80% in the trio from 2021 levels and Bulgaria, in particular, experienced full disruption.

According to the scholars (Ibid., p. 8), Bulgarian dependence on Russian energy from Soviet times repeats a regional pattern. In spite of having coal reserves, considering the high demand, the country became dependent on Russian gas especially since the 1970s, importing it through Romania. Russian gas was used for industrial needs, such as production of cement, fertilizers, ceramics and glass, and to a lower degree for Sofia and its surrounding's district heating systems. While natural gas is not key in Bulgaria's energy system, "the lack of alternatives" and its use in household heating (with 112,000 households by 2020) raise political sensitivity around it. Therefore, maintaining low energy price is a political priority, as lessoned by 2013 public protests[22] leading to the resignation of the Prime Minister Boyko Borisov.

The authors (Ibid, p. 8) argue that the diversification from Russian gas supply was not a "topical" issue in the past decade in Bulgaria. At the same time, while coal was seen "uncompetitive" due to increasing costs and nuclear energy was "running at full steam", the role of renewables was having a low profile. The governments historically maintained balancing approach by keeping "close ties" with Russia and "hastily supporting Russian political objectives", e.g. Gazprom's South Stream,[23] while endorsing diversification projects supported by EU funds, such as importing gas from Azerbaijan.

According to the scholars (Ibid., pp. 8-9), Moscow took advantage of the lack of alternatives to Russian gas in Bulgaria, also population's favourable stance (58% before full-scale invasion) to Russia, as well the influential Bulgarian Socialist Party (BSP) being active promoter of pro-Russian agenda, and overall governments' instability. With these factors in mind and with newly elected Kiril Petkov's 'We Continue the Change' party that strongly supported Ukraine, Gazprom cut off supplies in April 2022, thinking that divisions in the country would put Bulgaria in line with the Kremlin's objectives. While the gas suspension eventually became one of the covert reasons for the break-up of ruling coalition and government collapse in June 2022, initially "Bulgarian leaders gambled" by referring to the EU flows that could replace Russian gas.

As Deák, Szabo, and Weiner outline (Ibid., pp. 8-9), interestingly, Bulgarian population's positive perception of Russia dropped after the full-scale invasion. For instance, while in 2021 Russia was seen as a "security threat" by no one, in 2022 the rate was increased to 30%. On the other hand, Russia was not viewed as a threat by 57%, and simultaneously 30% still thought of it "as a partner". In 2022 views against NATO and EU "strengthened" too. However, the subsequent Galab Donev's government[24] could not "fortify a pro-Russian agenda" and Russian gas imports were impeded due to "general environment". Although governments kept

[22] The 2013 protests were mostly against high electricity prices in Bulgaria.
[23] South Stream - pipeline project with a route from Russia to Bulgaria through Black Sea that would reach up to Austria. The project was cancelled in 2014. It was replaced by TurkStream in 2020 which delivers Russian gas to Türkiye and southern and southeastern Europe (See Appendix 10).
[24] Donev was the Prime Minister of Bulgaria between August 2022 and June 2023.

changing afterwards and Russian "sanction" (of cutting gas supply) could be seen as "a case of political fracture", the appearance of "alternative gas supplies" and Sofia's "normative orientation towards the EU" do not allow the Kremlin to set a pro-Russian leadership in Bulgaria.

The authors (Ibid., p. 12) conclude that Russia's 'political gascraft' by utilizing gas as an instrument of coercion was perhaps a well-calculated short-term tool. However, Bulgaria did not quite meet "the anticipated line of action" as could be expected in Moscow. Moreover, Russian supplies' problematic nature in "market realities and perceptions of supply security" is seen as a key shaper of "mid- and long-term policy choices" not only in Bulgaria, but also in Serbia, Hungary, Poland, Germany, Italy and others.

The **eighth** piece of academic literature the study will cite is the *"Russia's Use of the "Energy Weapon" and Bulgaria's Foreign Policy Alignment: Balancing Dependence on Russian Natural Gas Supplies",* an MA thesis by **Jaklin Atanasova** (2024) at the Charles University. The thesis explores Bulgarian national documents to analyze the impact of Russia's geopolitical steps and EU alignment on energy and foreign policies of Bulgaria.

According to Atanasova (Ibid., pp. 11, 12, 15, 40), Russia has traditionally utilized energy as a "political manipulation" tool against Bulgaria. However, Russia's full-scale invasion of Ukraine and disruption of gas supplies in 2022 pushed Bulgaria towards "a new path" for energy independence. Post-February 2022 EU sanctions on Russia and energy supply diversification attempt have influenced Bulgaria to turn to alternative suppliers, such as Greece and Azerbaijan. This was possible thanks to completion of interconnectors, e.g. the ICGB and its integration within the Southern Gas Corridor (SGC),[25] as well as, to the increased imports of LNG. Alignment with EU strategies also prompted Bulgaria to become natural gas transit hub for the region, promote competition on the gas market and lessen the consumption of gas in the overall energy mix dominated by coal and oil in Bulgaria.

The author (Ibid., p. 73) argues that while EU energy cooperation was highly advanced in 2015-2016, in recent years it has been less emphasized unlike other domains. Still, EU policies have conceivably affected Bulgarian energy strategies as visible in Sofia's alignment with Southern Gas Corridor project. Moreover, according to Atanasova (Ibid., pp. 69-70), there have been significant amount (48) of cases of Bulgaria being in line with EU energy cooperation indicating the strong consideration of EU in national diversification efforts. The latter denotes the supportive role of EU in achieving overall gas supply security of Bulgaria.

When it comes to the overall EU framework, as the author (Ibid., p. 27) outlines, the full-scale invasion, along with the Covid-19 pandemic and rising energy costs prompted the European Council (Versailles Declaration of March 2022 and Conclusions of June 2022) and European Commission (REPowerEU package) to push the diversification forward. In particular with the aim to reduce gas imports from Russia by 2/3 in 2022 and leave

[25] Southern Gas Corridor – pipeline project bringing gas to European markets from Caspian Sea through Azerbaijan, Georgia and Türkiye.

zero energy dependence on Russia by 2030, the Commission put a special emphasis on LNG imports and increased role of EU gas storage facilities, e.g. underground gas storage (UGS) Chiren in Bulgaria.

Finally, as Atanasova (Ibid., p. 29) marks off, Bulgaria became more assertive in EU energy domain using its important role as an artery for gas transit and have been increasingly in line with EU's strategic objectives. Generally, in more than a decade Bulgaria developed critical infrastructure, enhanced partnerships and attempted to diversify supplies from Russian gas. However, it is still unclear how the Bulgarian foreign policy shift from Russian ally to important EU gas trader occured.

The analyzed studies, except for one, address the gas supply diversification topic separately in Poland and Bulgaria. Moreover, the available literature inquires the issue in various perspectives. While some emphasize the role of EU and national perception of energy security, others explore the impact of geopolitical landscape and Russia's use of gas as a political weapon or the role of international energy projects for the gas supply security. Although it is important to recognize that the scholastic research has been conducted even after Russia's 2022 invasion of Ukraine, emphasizing the high relevance of the topic for the academic field, the available literature addresses the objectives of the given study only in fragmented manner.

On the one hand, none of the studies compare the two CEE country – Poland and Bulgaria with each other in respect to gas supply diversification amidst Russia's full-scale invasion. Additionally, the existing scholarship analyzes general patterns in historical background and diversification quests in the two countries. Whereas, this thesis aims to unveil a comprehensive image of the Polish and Bulgarian gas diversification efforts, with a particular emphasis on the role of respective Member State perspective both before and after Russian gas disruption. The originality of thesis lies in its attempt to evaluate Polish and Bulgarian comparative progress on their diversification paths in the wake of return of war on European continent. Finally, considering its theoretical framework that will be explained below, the given study has a potential to provide a valuable contribution to the scholarship regarding two prominent CEE countries' gas supply diversification outcomes.

Theoretical Framework

As denoted in the introduction, the key objective of the research is to identify differences among Poland and Bulgaria in their approaches and adaptations to gas supply diversification before and after 2022 gas supply crisis, and explain where these differences stem from. The paper, in particular, compares the gas supply diversification path of Poland and Bulgaria as a case study in the CEE region of the EU. For this reason, the research is conducted under the framework of two prominent theories or approaches: Historical Institutionalism (HI) and Punctuated Equilibrium Theory (PET).

Historical Institutionalism, although coined as a term in 1990s, has long roots starting from Plato and Aristotle emphasizing the key role of institutions in interpreting political actions. HI, in particular, explains how "institutions structure and shape political behaviour" (Steinmo, 2008. pp. 150-151). HI as an approach

highlights the concepts such as "critical junctures, path dependence, intercurrence, and modes of gradual institutional change". The "critical junctures" is understood as an important momentum in a particular period and distinct manner having an ability to give birth to specific legacy. When it comes to "path dependence", although it might have different definitions, according to Pierson, the concept refers to "the probability of further steps along the same path" that "increases with each move down that path". In simple terms, "path dependence" represents the impact of past decisions that shape the future strategies. Whereas, "intercurrence" brought in academia by Orren and Skowronek, represents the existence of different "institutions and policies created at different times", described as a creator of "'mosaics' of authority" and sometimes leading to the governance by opposing norms. Finally, the "modes of gradual institutional change", as emphasized by Thelen and Mahoney, refers to the understanding that although "critical junctures" give rise to new institutions, they might be altered to adapt to new circumstances or be changed by new rules (Fioretos, Falleti and Sheingate, 2014, pp. 12, 15, 17, 18, 19).

For the purposes of this study, the HI framework could be utilized to explain the divergence between Polish and Bulgarian institutional readiness for the gas supply crisis. Particularly, tracing the historical legacies through the prism of HI might reveal important differences in the two countries, leading to the first hypothesis (H1) stemming from the literature review, to be tested by empirical research in the main body:

H1: Poland's traditional distrust to Russia and perceived high economic, political and security costs of the reliance on Russian gas, creating path dependency to proactive diversification strategy, led to the high level of preparedness for the 2022 gas crisis. On the other hand, Bulgaria's traditional alignment with Russia's gas policies led to less institutionalized gas security strategy leading to a lower level of preparedness for the 2022 crisis leaving the country in the reactive mode.

While the HI emphasizes the stability and continuous nature of institutions affecting policy choices, in turn, Punctuated Equilibrium Theory (PET) is designed to explain both stability and change of the policy process (Baumgartner, Jones and Mortensen, 2006. p. 1). The key assumption of the PET is that following the "long periods of relative public policy stability", a "sharp" and "dramatic" change occurs (Ugyel, Givel and Chophel, 2023. p. 3). The PET examines "the policy process on a dual foundation of political institutions and boundedly rational decision-making". Particularly, it acknowledges that while the topicality of issues in the public agenda may switch from relevant to irrelevant and vice versa, respective policies might be "reinforced or questioned", with the former leading to stability and the latter to the change. One of the key concepts of the theory is "bounded rationality" pointing to "cognitive limitations" that the policy makers face in their decision making. The PET highlights that this is because governments' "attention spans are limited" (Baumgartner, Jones and Mortensen, 2006, p. 3). In other words, it refers to "the lack of ability to comprehend all the benefits and costs from a decision" (Ugyel, Givel and Chophel, 2023. p. 4).

The PET framework is useful for this study to explain the policy stance to Russian gas supplies in Poland and Bulgaria, and the impact of different crises on their divergent diversification paths. Considering the initial

"bounded rationality" that may have put the two nations under the heavy dependance on Russian gas, the observed change raises the second hypothesis (H2) which will be tested empirically in contrast with the H1.

H2: Bulgaria's alignment with Russia's gas policies, characterized with relative stability before 2022 led to slow diversification efforts, with 2022 representing an external shock necessitating quick adaptations. Whereas, Polish diversification efforts were motivated by earlier gas crises in the 2000s, further exacerbated by Russia's war in Ukraine since 2014. The key difference with the H1 is that both Poland and Bulgaria brought forward sharp changes in different times due to crisis-response logic, and not solely due to varied historical legacies vis-à-vis Russia.

With the given theoretical framework, the study can, indeed, bring a novelty into the examination of gas supply security in the two CEE countries, drawing wider implications for academic and practical domains.

Research Design and Methodology

As mentioned in the introduction, the research aims at identifying the differences between Polish and Bulgarian approaches and adaptations to gas supply diversification before and after 2022 gas supply crisis and the factors explaining these differences. Considering the theoretical perspectives and relevant hypotheses, to meet the study objectives, the thesis employs qualitative research methodology. In particular, **comparative case study strategy** is applied to examine comparison between Polish and Bulgarian cases. The comparative case study itself represents a "systematic comparison of two or more" cases by a case study method. The proponents of this approach claim that comparative case study creates "generalizable knowledge" on the success or the failure of a particular policy or actions (Sheridan *et al.*, 2014). Among the specific methods, the study makes use of **semi-structured interviews** and **document analysis**.

In total, eight semi-structured interviews were conducted with the policy makers, professors, scholars and experts on energy domain in Europe. This type of interview method was selected in order to deeply inquire specific details beyond pre-determined questions (see interview protocol in Appendix 1). The interviews were held online in April and May 2025. It must be noted that interviewees from Poland and Bulgaria answered solely the questions related to their respective countries, while two interviewees covered all questions and European Commission representatives only addressed to Commission-related matters. For simplification and clarity, the interviewees will be marked with codes. The ones who answered questions on both countries will be coded as "PB", those who answered questions only on Poland will be coded as "P" and those responding to questions only related to Bulgaria will be coded as "B", while Commission representatives will be denoted as "EC". Respective numerical numbers will be applied with each (PB1, PB2, P1, P2, P3, B1, B2, EC1).

Among the interviewees were **Andris Piebalgs** (PB1), former European Commissioner for Energy and Professor at the European University Institute (EUI); **Aura Sabadus** (PB2), senior journalist and expert in energy markets at the Independent Commodity Intelligence Services (London); **Louis Watine** and **Aleksander**

Vigne (EC1), European Commission representatives from the Directorate-General for Energy who were interviewed together; **Andrzej Sikora** (P1), President of the Management Board of the Energy Studies Institute (Poland); **Joanna Maćkowiak-Pandera** (P2), Founder and President of Forum Energii (Poland) and EUI Professor; as well as an **energy expert** (P3) from the Polish public sector who accepted to be interviewed on the basis of confidentiality; **Kaloyan Staykov** (B1), Chair of the Board at Energy Management Institute (Bulgaria); and **Miroslav Stefanov** (B2), Assistant Professor at the Logistics and Supply Chains Department at the University of National and World Economy (UNWE, Bulgaria).

The semi-structured interview is deemed as a key method in the study due the consistent chronological and comprehensive nature of the revealed insights. However, considering the subjective interpretations within the interviews on the developments in the two countries, the document analysis will have a complementary role. For this reason, the paper processes **primary and secondary sources**, including official statements and national documents of Poland and Bulgaria, European Commission reports, newspapers and articles, as well as, official statistics and data delivered from the EU, think tanks and other reliable sources.

The **dependent variable** (DV) that the study aims at explaining is the **level of preparedness** for the gas crisis. The latter in the study is understood as the availability of alternative supplies, diverse contracts and necessary infrastructure by April 2022 and subsequent adaptations to ensure gas supply availability.

Considering that there are two hypotheses in place, the study employs two **independent variables (IVs)** to follow each hypothesis distinctively. The **IV** for the H1 is **institutional legacy** which denotes historical relations with Moscow, Russian gas and past policy strategies. Whereas the **IV** for the H2 is **external shocks** that refers to gas crises and subsequent policy responses in each country.

Furthermore, considering that other factors might have played certain role in pursuing respective national policies in Poland and Bulgaria, the study introduces **Mediator Variable**, which is the **influence** from the EU and/or sub-national actors. The **influence** refers to normative, political or economic impact that either of these actors, e.g. European Commission, industry representatives or population, could have had on policies addressing gas supply security.

Among research **limitations** might be the non-availability of specific sources except for in Polish and Bulgarian languages. To address this challenge, the existing gaps are filled with the results obtained through interviews, as well as, by using online translators. Another shortcoming might be the time frame, as the research primarily focuses on the key moments (e.g. gas crises) before 2022, the year 2022 as a central period, and post-2022 reaching up to May 2025. Therefore, instead of determining long-term impact of the events on the gas security, the study will primarily analyze the short- and medium-term outcomes after 2022.

The sections below represent the main body of the paper, containing empirical research through the analysis of the insights from semi-structured interviews (See Appendix 1) complemented by the above-mentioned primary and secondary sources, such as official documents, statements, articles and statistical data. The main

goal of the following sections is to examine historical record of Russian gas dependence in Poland and Bulgaria to assess their preparedness level by 2022 and subsequent steps taken in ensuring the gas supply security.

Approaches to the Gas Supply Diversification before 2022

The literature review highlighted that historical dependence on Russian gas in Poland and Bulgaria had long been without strong alternatives. As mentioned in the introduction, Russian gas (See Appendix 3) amounted to 77% in the Bulgarian and 40% in Polish gas sectors by 2022 before full-scale invasion (Buchholz, 2022). According to the European Commission (See Appendixes 20 and 21), the dependence on Russian gas was even higher, accounting up to 57% in Poland (EUR-Lex, 2024b, p. 49) and 80% in Bulgaria (EUR-Lex, 2024a, p. 47).

In absolute terms, Russian supplies accounted to around 10 bcm in Poland (Afanasiev, 2022) and 3 bcm in Bulgaria (International Trade Administration, 2024). Whereas, concerning the share in the energy mix (See Appendix 4), Russian gas amounted to around 10% in both countries' overall energy composition with Poland demonstrating the availability of gas supplies from other sources other than Russia, while Bulgaria having major part of gas supplied from Russia (Sullivan, 2022).

As implied before, the research aims at understanding how Polish and Bulgarian approaches and adaptations to gas supply diversification differed before and after Russian gas supply disruption in 2022 and which factors explain the divergences. Therefore "level of preparedness" (DV) is the main unit of analysis that the research tries to explain. Within the theoretical framework, Historical Institutionalist (HI) logic gives rise to hypothesis (H1) that "institutional legacy" (IV) reflected in Polish distrust with Russia and high costs of dependence shaped Polish preparedness for the 2022 crisis, while Bulgaria's alignment with Moscow's energy goals and different historical experience led to dissimilar efforts before 2022. Whereas, Punctuated Equilibrium Theory (PET) may argue that different "external shocks" (IV), namely gas crises, among others, transformed the status quo in both countries' approach, but earlier in Poland and later in Bulgaria. As emphasized above, the study employs semi-structured interviews[26] as a key research method that is complemented with the document analysis.

[26] Interviewees:
Andris Piebalgs (PB1), former European Commissioner for Energy and Professor at the European University Institute (EUI);
Aura Sabadus (PB2), senior journalist and energy expert at the Independent Commodity Intelligence Services (London);
Louis Watine and **Aleksander Vigne** (EC1), European Commission representatives from the DG Ener;
Andrzej Sikora (P1), President of the Management Board of the Energy Studies Institute (Poland);
Joanna Maćkowiak-Pandera (P2), Founder and President of the Forum Energii (Poland) and EUI Professor;
Energy expert (P3) from the Polish public sector who accepted to be interviewed on the basis of confidentiality;
Kaloyan Staykov (B1), Chair of the Board at the Energy Management Institute (Bulgaria);
Miroslav Stefanov (B2), Assistant Professor at the Logistics and Supply Chains Department at the UNWE (Bulgaria).

To follow clear structure, the following subchapters will analyze insights on each country's historical gas dependence on Russia and their approaches to the diversification in a comparative perspective.

Polish Stances before 2022

Most interviewees (PB1, P1, P2, P3) that addressed questions on Poland, either solely or in combination with Bulgarian case, outlined that since the fall of Iron Curtain in 1991, Poland was fully dependent on Russian gas. Interestingly, Poland was traditionally "the most dependent" on gas deliveries from Russia among major gas markets of the European Union (Polish Economic Institute, 2023). At the same time, Poland had a strong will, one may say, obsession, to diversify its gas supplies years before 2022 and the determination was reflected in long-term efforts across governments (EC1).

Some interviewees (P1, P3) also emphasized that despite "full dependence" on Russia, Poland also produced its own gas but only meeting lesser part of domestic demand, necessitating imports. Indeed, Poland was producing only ca. 4 bcm natural gas between 2009-2020 (IEA, 2022b) and the exploitation of shale gas was eventually found expensive (P3). However, domestic consumption of natural gas was increasing from over 10 to 20 bcm (See Appendix 7) from 1991 to 2023 (Enerdata, 2025b), e.g. amounting to 20.6 bcm in 2020 (Forum Energii, 2022). At the same time, natural gas had comparatively minor portion in the energy mix with the coal dominating the sector. However, the role of gas has been increasing, being projected to reach 50% in the energy sector by 2030 (IEA, 2022b). Gas in Poland is primarily used by households and industry, especially in the area of chemicals and oil refining (P3).

Some interviewees (PB1, P3) highlighted that Poland had historically complicated relations with Russian state-owned energy company Gazprom, with the latter "bullying" less important clients, such as Poland and Baltic state, by having "take it or leave it" approach to them (PB1). Russia used gas as an instrument for applying political, diplomatic and economic pressure on Poland. The gas crises happening well before 2022 were strongly correlated with Warsaw's relations with Russia and with the EU and NATO (P3). As denoted before, the contract with Gazprom was an "unprofitable investment" for Poland (Hebda, 2021, p. 1), because the price of gas was "overstated" while "the transit price was understated" (Voytyuk, 2022, p. 96). While Poland had two contracts with Gazprom, one on gas transit (carrying gas toward Germany) and the second on gas supply, Russia often tried to negotiate them together. The gas transit gave no tangible economic benefit to Poland (P3) and unlike Western Europe, Poland and some CEE countries were paying higher price for the Russian gas (PB2).

Here an important element is to understand the impact of crises, that could have paved the way for the punctuated shock (PET) or path dependence (HI) over years. The most important gas crises or related turning points in Europe in the 21st century were in 2006, 2009 and 2014, all connected to Russia. By January 2006, the Russian gas supplies were halted for EU Member States and Poland was among them. The crises stemmed

from Gazprom's announcement of increasing gas prices from US$50[27] to $230[28] per 1000 m^3 for Ukraine, perceived as a countermeasure against the Orange Revolution[29] and subsequent pro-western path. Interestingly, in the same period, meanwhile, Belarus was paying $47,[30] Armenia and Georgia: $110[31] and the EU on average $240[32] per 1000 m^3. This highlights how Russia applied political rationale to its 'gascraft' vis-à-vis 'friends' and 'foes'. Then EU Commissioner for Energy Andris Piebalgs[33] emphasized that the dispute was concerning and might have been followed by "eventualities". Poland and Hungary, were actually first in the EU to have faced gas supply disruption. While Ukraine lost all imports at that time, imports in Hungary were reduced to 25% and in Poland to 14%, with the latter having reserves sufficient to meet the demand for only a week, reflecting the heavy reliance on Russian supplies (BBC, 2006).

In 2006 Poland proposed to establish 'energy security' treaty emphasizing the "solidarity" concept. While the suggested treaty foreseeing "various cooperation mechanisms and provisions of energy interconnections" did not materialize because of the insufficient interest of Member States and its "unclear framework", the proposal has arguably inspired "the inclusion of the term solidarity in what would become art. 194 TFEU"[34] (Vecchio, 2024, pp. 41–42).

In turn, the gas crisis of January 2009 was deemed "the worst" for Europe, with Russian gas supplies bypassing Ukraine being ceased for 2 weeks, affecting 18 European countries. The crisis stemmed again from the gas price disputes between Moscow and Kyiv. It is noteworthy that 80% of imports in Europe were through Ukraine, as it was the only path designed by the Soviet Union. Later Yamal-Europe (Europol) pipeline (See Appendix 8) through Belarus and Poland was built, too, but compared to Ukrainian route, it still had a minor role. Despite the "unprecedented" nature of the crisis (Hafner and Bigano, 2009, pp. 1–2), it did not have as harsh "impact on Polish economy" as on e.g. Bulgaria or Slovakia. This is because Poland received ¾ of its gas supplies from Yamal-Europe pipeline, while only remaining part fell on the transit through Ukraine (Marušiak, 2009).

The PGNiG noted the gas reduction by around ¼ by January 22, 2009 and with the risk of losing around 2.3 bcm annual imports, Poland started discussing the diversifications plans. Realizing that the gas consumption was 13-14 bcm, while Poland owned deposits of 100-150 bcm, there was an eventual understanding that despite costly investments, these deposits would be depleted in 10 years. Back then, the Polish authorities aimed at meeting 30% of the demand through domestic extraction, 30% through diversification and 40% by

[27] Corresponding to around €41 at the January 2006 rate
[28] Corresponding to around €190 at the January 2006 rate
[29] The 2004-2005 Orange Revolution resulted in the election of pro-western President Viktor Yushchenko in Ukraine.
[30] Corresponding to around €39 at the January 2006 rate.
[31] Corresponding to around €90 at the January 2006 rate.
[32] Corresponding to around €198 at the January 2006 rate.
[33] Who is among the interviewees within this study.
[34] Article 194(1) TFEU: "1. In the context of the establishment and functioning of the internal market and with regard for the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of *solidarity* between Member States, to: (a) ensure the functioning of the energy market; (b) ensure security of energy supply in the Union; (c) promote energy efficiency and energy saving and the development of new and renewable forms of energy; and (d) promote the interconnection of energy networks".

Russian gas (Ibid.). Following this and "very tough gas negotiations" with Moscow in 2009-2010, Poland "drew conclusions" on the need to reduce dependence on Russia (Lipiński, 2023, p. 14).

Unlike 2006 and 2009, the 2014 is not widely regarded as a year of gas "crisis". However, Russian annexation of Crimea and subsequent EU's sanctions against Russia have exacerbated energy concerns in Europe. While Russia exported 65% of its total gas to Europe, the EU received around 1/3 of the needed gas from Russia. The strained relationship prompted the EU to reevaluate its energy dependence and put forward diversification in both short and long-term perspective (European Parliament, 2014).

In March 2014, the Communication from the European Commission regarding the "Preparedness for a possible disruption of supplies from the East during the fall and winter of 2014/2015" presented recommendations for the EU MSs heavily reliant on Russian gas. Among others, the Commission recommended "the timely completion of infrastructure projects", such as "the Slovak-Hungarian interconnector and the Świnoujście LNG terminal in Poland" (EUR-Lex, 2015).

Except for Europe-wide crises, PGNiG and Gazprom had gas disputes every few years due to pricing or additional quantities, among others, prompting public discussions about the ongoing dependence on Russian gas. Apart from that, as denoted, Russian gas was not as cheap for Poland as for e.g. Germany. Interestingly, even now, gas in Germany tends to be 10-15% cheaper than in Poland (P1).

Although Poland was not between those Member States that had over 80% dependence on Russian gas, it was "expected to become more dependent" on it, being classified along with "insecure" or "red" countries, reflecting "potentially high exposure to energy supply insecurity". The CEE region,[35] after the Baltic countries and Bulgaria, was considered one of the most vulnerable in the EU toward direct gas supply cuts from Russia. At that time, Czech Republic's 99% of gas needs were met by Russian gas, followed by Slovakia with 95%, Hungary by 89% and Poland by 53%. Considering that some part of gas to the CEE was delivered via a transit route in Ukraine, in light of ongoing crisis, the risks were high.[36] In turn, the LNG terminal in Poland, back then under construction, was thought to be able to potentially replace almost 80% of Russian gas. Moreover, among others, there was a suggestion to build new pipelines, e.g. the Gas Interconnection Poland-Lithuania (GIPL) (Tcherneva and Chyong, 2015).

In the wake of Russian gas supply disruption to Ukraine in 2014, Polish PGNiG started providing gas to Ukraine in a reverse flow. Following this, in September 2014, Russia reduced its supplies to Poland by 24% "without warning" reviving "fears about Europe's reliance on Siberian gas" during the "increasing tension between Moscow and the west" (Macalister, 2014). The decrease of Russian gas supplies not only for Poland but also for other CEE countries started on September 8. By September 10, Poland received 45% less gas than requested – a "record-high" cut from Russia. Moscow's actions were arguably aimed at pressuring the EU to

[35] In the article, the author denotes only Poland, Hungary, the Czech Republic, and Slovakia as part of the CEE.
[36] For this reason, LNG terminals in Poland and interconnectors among Member States was deemed vital.

stop reverse flows to Ukraine, gain a leverage in its relationship with the EU and Kyiv, and preventing implementation of EU gas law in Ukraine (Łoskot-Strachota, 2014).

Despite these repercussions, Russian energy giant Gazprom did not face any "strong pressure" from the EU and even received "allowances" from the latter. Despite the war in Ukraine, "the EU never equated Gazprom with Russian foreign policy" and the company kept on gaining profits of $30–40 bln[37] by selling gas to Europe and building new pipelines, such as Nord Stream (Kapitonov, 2021).

As some of the interviewees (PB1, P2, P3) suggested, Warsaw has been always against Nord Stream projects (See Appendix 9), framing them as a geopolitical weapon in the hands of Russia. However, Berlin "has long dismissed concerns from Poland and other EU partners" concerning the pipelines (Fritz, 2020).

The other interviewees (P2, P3) denoted that the annexation of Crimea has particularly affected Polish stance towards Russia. Poland had "all the data on table" and Russia's invasion of Georgia (2008) and then war against Ukraine (since 2014), among many others, prompted the re-evaluation of the threats from maintaining dependence on Russia (P3).

While some MSs normalized relations with Moscow, Poland remained perhaps "most sensitive country" towards dependence on Russia (P2) and Law and Justice (PiS)[38] party under the legacy of Kaczyński, with its anti-Russian stance, strongly supported diversification projects (PB2) and pushed for the implementation of the Baltic Pipe project (P2).

In the 2000s, constructing LNG terminals were deemed rather new and expensive. However, with the development of technology and exacerbated energy security threats, Poland became more and more open to LNG (PB1) and building LNG terminal became a priority, although it was delayed "heavily" (P3).

Initially, the government decision to construct the first Polish LNG terminal in Świnoujście was made in 2006, which was backed by the 2009 legislation. However, it opened only in October 2015 and in December following more than "20-day journey from Qatar", the seaside terminal received first LNG shipment. In total, the cost of building the Świnoujście terminal was above 3 bln Polish zloty (PLN) amounting to over €700 mln (Noerr, 2015). Interestingly, while Qatar was the first country with whom Poland signed LNG deal well before the full-scale invasion, the contract is considered long-term, valid till 2034 (PGNiG, 2017) and costly, as dealing with Qatar is usually difficult (P3).

According to all interviewees addressing the Polish case (PB1, PB2, P1, P2, P3), Baltic Pipe has been an important element in the diversification efforts. In light of Gazprom's unfair policies to Poland, Warsaw saw building gas pipeline with Norway as one of the only available alternative options (PB1). The first attempt to import gas from Norway through Denmark was made by the Prime Minister Jerzy Buzek's (1997-2001)

[37] Corresponding to over €20-30 bln at the rates of 2010s.
[38] PiS was a ruling party in Poland between 2015-2023. Its office was preceded by Donald Tusk's Civic Platform (2007-2014) and followed by Civic Coalition led by Tusk once again (since 2023).

government. Although negotiations went ahead with Denmark and Norway in the 2000s, they were ultimately abandoned. In the mid-2000s, the discussions were divided between the options of importing LNG from the US, focusing on Poland's own resources or importing by pipeline (P3). The annexation of Crimea in 2014 further highlighted the need for the Baltic Pipe in Poland and it was pushed strongly by decision makers despite different stances (P2), especially since 2015 (P3).

As argued before, in 2018 Poland already ruled out the possibility for extending the Yamal contract, first signed in 1996, renegotiated several times and set to expire in 2022 (Voytyuk, 2022, p. 96). It must be noted, however, that this decision was "signaled" even earlier, in 2016, by decision makers (Kardaś, 2024). With the understanding that its extension would be difficult, Poland prepared anyhow from moving away from Russian gas. For instance, transmission networks were laid with Germany, Czech Republic and Slovakia, and through Baltic Pipe with Norway (PB1), all being part of broader diversification endeavors of Poland.

What is more, the population also played a supportive role as energy independence has strong roots in Polish society (PB1). Also, as the natural gas is essential for many households, there has been a political consensus in any government, notwithstanding the ideology, to promote gas supply security (P1, P2). Governments did not have any obstacles while pursuing diversification path. The general political climate supported integration with the EU market (PB1) and anti-Russian rhetoric helped a lot, too (PB2).

Also, in spite of several attempts by other companies, except for Orlen, to enter gas market in Poland, most of them left. There are some small private companies present though (P1). In either case, the utilities have followed what decision makers have been instructing (P2). There is also not so much NGO involvement in the energy sector (PB1). In turn, energy policy is strongly government driven process, with the latter having decisive role in taking actions (PB1, PB2, P2).

Interestingly, among distinct figures that have contributed to the gas supply diversification, one of the interviewees (P3) distinguished Piotr Naimski who was the Government Plenipotentiary for Strategic Energy Infrastructure and focused extensively on Baltic Pipe, as well as, Tomasz Szubiela, a manager who was involved in the construction of Świnoujście terminal, among others. As per another interviewee (PB2), in Poland, unlike in Bulgaria, lot more people were involved in diversification projects making it political mantra.

Bulgarian Stances before 2022

All interviewees that addressed Bulgarian case (PB1, PB2, B1, B2) highlighted the high dependence on Russian gas in Bulgaria before 2022. Bulgaria consumed approximately 3 bcm gas in 2010-2019 annually, with a minor increase in 2020, reaching 3.4 bcm in 2021 (see Appendix 14) (Enerdata, 2025a). However, Bulgaria does not have much of its own resources and over 95-98% of consumed volumes are delivered by imports, making Bulgaria highly dependent on external supply (B2). The contract signed with Gazprom in 2012 considered exporting 2.9 bcm gas to Bulgaria every year till 2022 (Gazprom, 2012). Until 2020, Russian

gas was reaching Bulgaria through Trans-Balkan Pipeline while since January 2020 through TurkStream (see Appendix 10), decreasing "Russia's dependence on transit via Ukraine" (Łoskot-Strachota, Seroka and Szpala, 2021).

Bulgaria's diversification efforts have been more limited than in Polish case partially because of geographical location which plays an important role. Bulgaria was not against diversification but was less vocal on this. As a result, while Poland was rather prepared for the gas supply disruption in April 2022, it was "more painful" for Bulgaria, with no interconnectors in place, unlike Poland which was connected to Germany (PB1). Conversely, Bulgaria could be considered an "anti-thesis" to Poland by being in mesh with Russian interests, particularly concerning gas (PB2).

Similar to most CEE countries, Bulgaria had long term supply contract with Gazprom and it was set to expire in December 2022. Before that Bulgaria did not have much incentives to diversify its gas supply portfolio, like many other countries in the EU (B1). Interestingly, however, Bulgaria also experienced the above-mentioned gas and political crises, adversely affecting gas sector and customer service. The worst among them was January 2009 when practically whole Russian gas imports to the country were suspended for a couple of weeks during extremely cold winter (B2).

In fact, Bulgaria was the most "affected" country. With the gas representing 15% of the energy mix in Bulgaria and its major part being used for district heating, the crisis had "not only economic but also a humanitarian" dimension. At that time, the interconnector with Greece was not yet built and the construction was "very slow", although if it was in place, it could help crashing "Russia's supply monopoly position" in Bulgaria (Tcherneva and Chyong, 2015).

Interestingly, it was the 2009 gas crisis that prompted the final adoption of the Third Energy Package in the EU providing the Member States with "political and legal tools" to decrease Gazprom's superiority over supply chains. The Package "encouraged" Member States to separate "the ownership of production, transit and distribution" aimed at promoting transparency (Sabonis-Helf, 2022, p. 34).

One possible factor explaining the lack of appetite for diversification in Bulgaria is political climate. While in Poland there are no pro-Russian parties, there have been some clearly pro-Russian factions in Bulgaria that put forward good relations with Russia as a precondition of getting cheap gas. Apart from that, it is interesting that while Poland and Baltic states were united in building common projects, within the CEE region, Hungary's position to Russia and its energy supplies influenced Bulgaria indirectly not to take active diversification steps. In turn, while the Interconnector Greece–Bulgaria (ICGB) represents "real diversification", it could have been built before and would be supported by the European Commission. It was a rather "late start" (PB1).

Indeed, while the 2009 Memorandum of Understanding between Greece and Bulgaria considered building the new gas route, the 'final investment decision' was taken in 2015 and it took also quite long to go through environmental impact assessment (EIA), permission and designing procedures (Fanger, 2022) spanning over

7 years (ICGB, 2023c). The project, however, received support from the Trans-European Networks for Energy (TEN-E)[39] and was co-funded by the European Energy Programme for Recovery (EEPR).[40]

Among practical problems associated with Russian gas dependence was the 2012-2022 contract which comprised mandatory quantities implying 'take or pay' principle for the 80% of the gas. This clause obliged Bulgaria to pay for the gas even when it did not receive the actual flows. According to the International Trade Administration, citing gas experts, despite the dependence on Russia, the Bulgarian state gas company Bulgargaz was actually "hindering the import of cheaper Azeri gas from Greece". With the contract expiring in 2022, however, there was a suggestion to undertake "a careful balance" while dealing with Gazprom for a new agreement (International Trade Administration, 2024).

In contrast, another interviewee (B2) argued that since the 2009 crisis, Bulgarian authorities took action to diversify gas sources and systematic work was carried out in two main directions: 1. diversifying sources through long-term contracts, e.g. with Azerbaijan; and 2. Taking number of steps to improve gas transmission infrastructure.

In light of almost full dependence on Russian gas over years, some of Bulgaria's attempts to get supplies from alternative sources can be, indeed, still highlighted. For instance, in 2013 Bulgargaz and SOCAR[41] signed a contract envisaging bringing 1 bcm gas to Bulgaria. While the gas would flow from the Caspian Sea (Shah Deniz II field) starting from 2020, it required necessary infrastructure but there was a doubt whether it would be ready by that time or not. The Azerbaijani Ambassador to Sofia argued that considering the increased interest of delivering higher quantities, Bulgaria had a potential to "become a hub for supply of Azerbaijani gas to Europe" (Assenova, 2018, pp. 6–7).

The given 25-year long contract with SOCAR would meet 1/3 of Bulgaria's gas needs. However, while it was expected that the gas from Azerbaijan would start flowing through Interconnector Greece-Bulgaria (ICGB) since the beginning of 2021, the construction was postponed because of Covid-19 pandemic. For this reason, the Azerbaijani gas started reaching Bulgaria through Trans Adriatic Pipeline (TAP, see Appendix 10) through "Kulata-Sidirokastro interconnection point" located on Bulgaria's border with Greece. According to the Bulgarian government, the deliveries would be kept in the same manner at least until ICGB would be completed by October 2022 (Trend, 2021).

At the same time, in an attempt to diversify its supply portfolio from Russia, Bulgartransgaz[42] made a deal with Gastrade (Greek energy company Copelouzos' subsidiary) for getting "20% stake in the Alexandroupolis

[39] TEN-E policy represents "a long-standing EU instrument for connecting EU countries' energy networks, strengthening cohesion and developing solidarity and cooperation across the EU".
[40] EEPR was established in 2009 under the EU with the goal to "support key investments in the context of the economic crisis and in order to promote energy transition" with the overall fund of the €3.98 bln. The objective of the fund has been to finance "44 gas and electricity infrastructure projects, 9 offshore wind projects and 6 carbon capture and storage projects".
[41] SOCAR (State Oil Company of the Republic of Azerbaijan) - Azerbaijani state oil and gas company.
[42] While Bulgargaz is "a public natural gas supplier", Bulgartransgaz is "a combined natural gas operator". Both are the subsidiaries and fully owned by Bulgargaz-Holding having 100% state participation.

LNG import terminal" (located near Turkish border) in Greece. The LNG terminal could receive 6.1 bcm gas annually from the US and Qatar. Eventually, it would allow Bulgaria to access 3 bcm gas through ICGB by connecting to TAP project and to the Revithoussa LNG terminal (close to Athens) in Greece. The amount could be increased to 5 bcm annually (Enerdata, 2020).

Acquiring the stake meant that Bulgartransgaz could reserve 20% of capacity in Alexandroupolis LNG import terminal all the time (B2). The deal was finalized in January 2021 following the authorization from Bulgaria's national competition regulatory body. The LNG terminal was expected to start operations since 2023 (Reuters, 2021).

According to one of the interviewees (PB1), it is important to note that energy was always part of political rhetoric in Bulgaria. The varied pressures marked in the country slowed down the diversification efforts. It is never easy to implement projects while encountering opposing forces. The population tended to listen to voices suggesting that keeping cheap Russian gas was a better option. As a parallel, some German politicians also started talking about Nord Stream 2 after the increased gas prices following the full-scale invasion, and even received some support. Ultimately, despite the presence of pro-Russian forces in Bulgaria, the mainstream did its job and Bulgaria has been following EU regulations.

Another interviewee (B1) also outlined that the attitudes in Bulgaria, similar to the rest of the EU, were more or less divided within the society, politics and energy stakeholders, with some claiming the importance to replace Russian sources, while others being against. Still, one important aspect is that it was Russia that stopped gas supplies and it was not national or company decision. While the society has been divided whether cheap Russian gas is better or not, there is one simple truth: it does not matter how much the resource costs when you are not sure whether you get it. So, reliability is the key.

One more interviewee (B2) emphasized that apart from the government, other actors had weaker role. While public attitudes is one factor, the leading factor has been energy security. According to one of the interviewees (PB2), among figures who contributed to the gas security of Bulgaria has been Teodora Georgieva who was in charge of ICGB and fought hard to bring this project to completion. As an ICGB Executive Officer, Georgieva even "received the special media award for inspiring and influential leader in the energy sector" at the CEENERGY NEWS Awards 2023 in Budapest (ICGB, 2023a).

Comparative Analysis of the Stances before 2022

Analyzing the individual cases makes it clear that Poland and Bulgaria took different trajectories on their diversification path before 2022. Based on the Historical Institutionalist (HI) vision, the differences could be attributed to varied "critical junctures" and "path dependencies". In the Polish case, the perception of unfair approach from Gazprom, reflected into gas disputes, unprofitable economic relations and Russia's use of gas as a political leverage far beyond energy domain, could be considered the factors that gave a strong argument

to the diversification endeavors. Furthermore, as seen before, gas security has been deemed as an important element for national security and even sovereignty in Poland, linking the case to historical partitioning traumas exacerbated by Moscow's geopolitical assertiveness (Goldthau and LaBelle, 2016, pp. 11–12).

In turn, the Punctuated Equilibrium Theoretical (PET) lense may highlight that despite historical antagonism between Polish national security and dependence on Russian gas, the former still could not consolidate efforts to take strong diversification path as exemplified in the shifting perspectives concerning Norwegian gas. In fact, taking the combination of HI and PET perspectives could mark off that it was the crises of 2006, 2009 and later in 2014 that served as external shocks making the risks of continued dependence evident, leading to the determined "path dependence" to learn from the mistakes of past decisions and shape the future strategy that could pave the way to minimizing Russian gas supplies. For these reasons, Poland could be considered a "model" country exemplifying how to build energy independence by not burning bridges immediately but working to diversify gradually (PB1, PB2).

On the other hand, Bulgarian case, as mentioned, could be seen as an opposite to the developments in Poland (PB2). While Bulgaria also attempted to reduce full dependence on Russian gas by forming contracts with e.g. Azerbaijan and Greece and by improving necessary infrastructure (B2), the efforts were apparently still limited. Interestingly, Bulgaria also experienced the external shocks and as noted, the 2009 gas crisis had one of the worst impacts on Bulgaria. By the PET logic, it should have been an important momentum for fundamental change to deviate from previous "bounded rationality" reflected in being comfortable with Russian gas. The deviation itself could turn into institutional legacy that could be translated in similar "path dependence" as in Poland. Conversely, Bulgaria remained under a relatively stronger influence of Russian gas and the country often supported Russia's energy initiatives in the region, such as South Stream (PB1). It seems the different institutional legacy (HI) vis-à-vis Russia, divided society and politics, as well as, geographical limitations kept the country in the same cycle despite certain diversification efforts.

As argued before, despite Borisov government's attempt to seek alternative in extracting shale gas, the latter did not find much support within industry and society, leading to the ban of the shale gas eventually (Goldthau and LaBelle, 2016, pp. 18–21). Moreover, in comparison with Poland, there have been a stronger presence of political parties in Bulgaria that have pursued pro-Russian agenda, hindering the diversification from Russian gas dependence (Deák, Szabo and Weiner, 2024, pp. 8–9). At the same time, while delays with the implementation of the ICGB were also characteristic to the Baltic Pipe project (Ungvarsky, 2025), Poland put forward more proactive measures especially since 2014 in search for different suppliers and building and enhancing LNG terminal and interconnectors with neighbour countries. While Bulgarian attempts were also apparent, they were less "vocal" as admitted before (PB1). Along with internal political nuances and instability, some of the reasons behind the slow diversification path could have been the high costs of alternatives and building routes (Skrzyński, 2023, pp. 353–354).

Here an important element to be considered is the overall economic situation in the two countries. While Poland has been the 6th largest economy in the EU with over €500 bln GDP (as of 2019-2020), Bulgaria ranked as the 20th with around €60 bln GDP (Eurostat, 2022). Taking into account the expenses necessary for building gas infrastructure, it can be argued that Bulgaria would face much more financial challenges to achieve progress in diversification, even if the country has been consuming around 7 times less gas than Poland.

Apart from these factors, the geographical location (PB1) could, indeed, hinder the access to natural gas from other suppliers, such as Norway, in Bulgaria's case, leaving the country within the area of Russian gas influence. Bulgaria's proximity to Russia's border can be considered a limiting factor for diversification (EC1).

Here it is interesting to outline which countries have proven natural gas reserves in the world. Based on the data of the CIA World Factbook (see Appendix 11) as of January 2020, Russia led the scene by 47.8 trillion cubic meters (tcm)[43] followed by Iran (33.7 tcm), Qatar (24 tcm), Saudi Arabia (8.6), Turkmenistan (7.5 tcm), UAE (6.09 tcm), Venezuela (5.7 tcm), Nigeria and China (5.4 tcm each), Algeria (4.5 tcm), Iraq (3.8 tcm), Indonesia (2.8 tcm), Mozambique (2.8 tcm), Kazakhstan (2.4 tcm), Egypt (2.2 tcm), Canada, (2.05 tcm), Australia (1.9 tcm), Uzbekistan (1.8 tcm), Kuwait (1.7 tcm), Norway (1.7 tcm), Libya (1.5 tcm), India (1.3 tcm), Malaysia (1.2 tcm), Ukraine (1.1 tcm), Azerbaijan (almost 1 tcm) and the Netherlands (0.8 tcm). While the list is long, the other countries with available reserves are mostly located in Asia, Latin America, Africa and also Europe, with e.g. Israel and UK having 176 bcm gas reserves each, Poland - 79 bcm and Bulgaria - only 5.6 bcm (Indexmundi, 2020).

These data indicate why Russia could have been considered as an important supplier not only for Poland and Bulgaria, but also for a wider Europe. Considering its geographical proximity to the European countries, historical energy links from the 20th century and available infrastructure were some of the key factors that kept on playing role in delivering more or less stable supplies (Bartha, 2025). However, the continued political use of gas by Moscow, subsequent disputes and crises underlined that the availability of gas did not always mean stable deliveries for the EU and first and foremost for the CEE countries that as seen were quite vulnerable to gas disruptions due to heavy dependence on Russian supplies.

It is noteworthy that the gas consumption amounted to over 20 bcm by 2020 in Poland (Forum Energii, 2022) and was around 3 bcm in about the same period in Bulgaria (Enerdata, 2025a). On a world and European scales these numbers do not seem to be of significant importance with the US consuming 937 bcm annually (as of 2023), followed by Russia (526 bcm) and China (436 bcm), while the UK (67 bcm) is leading consumer within Europe, followed by Germany (86 bcm) and Italy (62 bcm) (Enerdata Yearbook, 2024).

[43] Trillion cubic meters (tcm) corresponds to 1000 billion cubic meters (bcm).

On the other hand, the given data also suggests that there are important alternatives to the Russian gas to ensure long-term supply security. While the frequently cited Norway owns 1.7 tcm gas, Azerbaijan has up to 1 tcm which could be considered enough in both medium and long-term perspectives for Poland and Bulgaria respectively. Although Greece and Türkiye are also important actors for gas supply diversification for Bulgaria, they have only around 5 bcm and almost 1 bcm proven reserves respectively (Indexmundi, 2020), underlining their role not as a direct, but indirect suppliers of gas originating from other countries.

In summary, according to the interviewees that addressed both country cases (PB1, PB2), Poland and Bulgaria had one common denominator – dependence on Russian gas. Both countries faced monopolist supplier over years (PB1) and Russia cut the supplies in the same period violating contracts that were expiring at the same time by the end of 2022 (PB2). As for the differences, the divergences stem from where countries are located and how their internal political situation evolves. Diversification is costly even when European Commission provides funding as prices for consumers might become higher. For instance, in Latvia prices went up, but the dissatisfaction did not turn into a mainstream opposing the diversification. With the mainstream opposing, it is hard for a country to continue diversification. While Poland and Baltic states shared similar story, other central and eastern European countries have different approach and the level of consistency, resulting in different outcomes (PB1).

The 2022 Crisis and National Responses

It is interesting that according to some of the interviewees (PB2, P2), the actual energy crisis began in 2021, months before Russia's full-scale invasion. It followed Moscow's refusal to send more gas to Europe (PB2).

However, following Russia's recognition of Donetsk and Luhansk 'oblasts' of Ukraine as 'independent states', and subsequent full-scale invasion of Ukraine in February 2022, the worsening of the energy relations between the EU and Russia was inevitable. Although the EU began sanctioning Russia in 2014 after the annexation of Crimea, multiple waves of new sanctions were adopted since 2022 with the objective to weaken "Russia's economic base," strip "it of critical technologies and markets" and shrink "its ability to wage war" (EC Finance, 2025).

Putin's decree to oblige 'unfriendly' states, such as Poland and Bulgaria in the first place, to pay the gas bills in Russian currency instead of pre-agreed euros or US dollars, along with many other factors, could be seen as an attempt to "boost the rouble" that was strongly affected by the sanctions from the West. After refusing to meet the demand, Russia cut supplies for Poland and Bulgaria by the end of April 2022. The move was regarded as a starting point 'of Russia exerting economic pressure on Europe' that could have a spill-over effect on other EU Member States. For instance, while Germany was keen to remove dependence on Russian coal in 2022 and oil in the following year, its 45% dependence on Russian gas aggravated the concerns over similar disruption risks (Islam, 2022).

The Gazprom's decision was interpreted as Moscow's response to sanctions that weakened Russia's economy and Western deliveries of arms to Ukraine that met criticism from the Kremlin. The European Commission President Ursula von der Leyen outlined that the step represented 'yet another attempt by Russia to use gas as an instrument of blackmail' (Strzelecki, Tsolova and Polityuk, 2022).

While both Poland and Bulgaria seemed confident to solve the situation (Connolly, 2022), and by April the weather was already turning "warmer" decreasing the immediate heating needs (Strzelecki, Tsolova and Polityuk, 2022), the disruption led to an energy crisis in Europe by "prompting a 20% increase in the already rising wholesale gas price" and the fear that Moscow could make the same manoeuvre elsewhere (Connolly, 2022).

The following sections will break down the national responses to the crisis and highlight the factors that led to different levels of preparation among the two countries largely stemming from the developments described in the previous analysis, as well as, other elements revealed in and after 2022.

Polish Responses in and beyond 2022

In the context of Russia's full-scale invasion of Ukraine, Poland has been one of the "most vocal opponents" to Moscow's agenda, which could be one possible explanation behind Gazprom's decision except for economic rationale to strengthen rouble (Strzelecki, Tsolova and Polityuk, 2022).

As 53% of gas supplies received by PGNiG in the first three months of 2022 were from Russia, the Polish national company claimed that Gazprom violated the contract (Islam, 2022). The Prime Minister of Poland, Mateusz Morawiecki stressed that Russia's 'direct attack' equated 'putting a pistol to our heads', however, people in Poland had nothing to worry about (Connolly, 2022). According to the Polish Deputy Foreign Minister, thanks to years-long preparation, Poland could "handle" the situation by getting gas from alternative sources, e.g. the US and gulf countries (Islam, 2022).

According to the president of the board of the Polish Chamber of Chemical Industry representing around 13 businesses, following government's active work with companies for decreasing Russian dependence, Poland was "quite well prepared for this" with Polish gas storage facilities being "76% full", outbalancing the EU average (30%) or e.g. Germany (33%) (Connolly, 2022).

While dependence on Russian gas amounted to 90% in 2010, owing to diversification steps, namely investing in LNG terminals and building pipeline connections, Russia's share in gas supplies decreased to 55% in 2020 (IEA, 2022c). Concerning the importance of REPowerEU Plan framework for Poland, it was argued that "the Commission's initiative" was "of lesser importance to Polish gas storage operators" considering that storage facilities had been already filled above necessary levels and "relevant legislation has been in place for several years" (Schnell, 2022).

Summarizing what Poland had done (or contributed to) before and in 2022 that could pave the way for its relative preparedness for the complete disruption or swift recovery can be grouped in a few major categories: 1. Opening of LNG terminal in Świnoujście in 2015 that could meet ¼ of Polish gas consumption and also became a 'symbol' of Polish determination to the "*bezpieczeństwo energetyczne* (energy security)" being a new buzzword; 2. Pipelines with Germany and Czech Republic; 3. Baltic Pipe project which was commissioned by the autumn 2022, seen "as a response to the German-Russian Nord Steam 2" and capable of supplying 10 bcm gas from Norway through Denmark – meeting ½ of Polish gas needs; 4. Gas Interconnection Poland–Lithuania (GIPL) pipeline which opened in May 2022, connecting Poland with the LNG terminal in Klaipeda port of Lithuania that can be eventually utilized for transporting hydrogen, too; 5. Having gas storages filled; 6. Working on Gas Interconnector Poland-Slovakia (GIPS) project which started operations slightly late (in November 2022) and represented a "key link in the North-South gas corridor", providing the opportunity for Poland to transport gas gained through Świnoujście LNG terminal toward south and vice versa – receive gas from "LNG terminals and fields in Greece, Türkiye, Croatia, the Mediterranean, and the Caucasus via Slovakia, Hungary, and Romania" (Connolly, 2022; Kardaś, 2024).

As most interviewees suggested (PB1, PB2, P3, EC1) Poland was, indeed, largely prepared for the disruption. The preceding efforts to diversify paid off (PB2) and efficiency was one of the main factors (P1). Overall, by 2022, Russian gas only had 21% share in the Polish gas imports (representing the amounts received before April disruption), around three times less than previous year (See Appendix 12) (Kardaś, 2024).

Also, according to the European Commission's 2024 country report (See Appendix 20), while Russian gas accounted up to 57% in Polish gas imports in 2021 with 10.5 bcm, by 2022 its ratio was decreased to up to 20% amounting to only 3 bcm (EUR-Lex, 2024b, p. 49). Whereas, by 2023, Poland did not import any Russian gas, denoting a complete shift from the pre-2022 dependence (Kardaś, 2024).

From then on, Poland buys neither Russian pipeline gas, nor Russian LNG (P1) unlike other EU countries. There is a strong conviction among all political parties in Poland that the country should not come back to Russian fossil fuels (P2).

Concerning LNG, while the import volumes were very low by 2015 (the starting year of Świnoujście LNG terminal operations) and fell only on Qatar, over years Poland also partnered with Norway, the US, Trinidad and Tobago, Egypt and Equatorial Guinea (See Appendix 13). By 2022, the LNG supplies increased to over 4 million tonnes which corresponds to over 5.5 bcm natural gas.[44] The largest share by 2022 and 2023 were occupied by the LNG from the US and Qatar. Concerning the US LNG, PGNiG and Orlen had made long-term contracts with American companies in 2018-2023 period (Ibid.). Interestingly, by 2023 the Świnoujście was among only four LNG terminals in the EU that had more than 80% utilization rate (See Appendix 16), along with Porto Levante (Italy), Rotterdam (The Netherlands) and Krk (Croatia) (Food & Water Action Europe, 2024). Additionally, by January 2025, the regasification capacity of the Świnoujście LNG terminal

[44] 1 million tonnes of LNG equal 1.379 bcm gas.

was increased (as planned) from 5 bcm to 8.3 bcm that can meet up to half of Polish domestic needs (Cavcic, 2025).

According to the President of the Polish think tank Forum Energii, Joanna Maćkowiak-Pandera,[45] in spite of the "stoic" attitude shown by politicians and business in Poland which united the "polarised" society, 'the atmosphere' was still 'extremely nervous'. However, the disruption was not surprising, but something "always expected" and it was an opportunity for the country to "speed up…slow decarbonisation efforts" (Connolly, 2022). Indeed, as she emphasized (P2), while the first major transition in Poland was from phasing out coal to increasing gas consumption, the second important shift was diversifying from Russian gas, but that should be followed by energy transition - minimizing the share of fossils fuels which can serve not only climate but also security.

Interestingly, the conservative daily Rzeczpospolita's economic commentator compared Russia to 'Pablo Escobar' and Russian gas to 'drug' which was addictive as it was 'cheap, efficient and more ecological than other sources of energy' and Poland now had to 'get sober very fast' despite losing time 'defending coal' as a symbol of sovereignty (Ibid.).

As Iakovenko (2023, pp. 182, 228) highlighted, in 2022 gas consumption in Poland was lowered by approximately 16% and in light of political developments, the authorities made changes in national Energy strategy until 2040 denoting the need to pursue active diversification and also, replace gas with hydrogen and biogas in the future perspective.

Moreover, Danish and Polish gas system operators (Energinet and Gaz-System, respectively) in a memorandum of understanding signed in April 2023 reflected their commitment to ensuring "safe and continuous supplies of natural gas via the Baltic Pipe" and developing cooperation "to low- and zero-emission energy sources, including biomethane and hydrogen" (GAZ-System, 2023b).

In fact, Energy Policy of Poland until 2040 (EPP2040), the strategic document adopted by the Council of Ministers in 2021 already contained strong provisions regarding diversification (Republic of Poland, 2021). Interestingly, within the 12 years it was "the first strategic document regarding Polish energy" that was adopted and it contains "solutions" aimed at aligning with "EU climate and energy goals" by e.g. building "offshore wind capacity" or constructing "the first nuclear power plant" in Poland by 2033 (IEA, 2022a).

The document recognized that although by 2021 Polish gas supplies came from the LNG terminal and also from Germany and Czech Republic, important segment of gas derived from Russia through Belarus and Ukraine. According to the document, after the Yamal contract would come to an end by 2022, "actions" were already "taken to ensure a real diversification of supply sources before the beginning of the gas year 2022/2023". It also emphasized that the energy companies needed to keep on undertaking steps to secure "contractual diversification of natural gas supply" (Republic of Poland, 2021, pp. 34–35).

[45] Who is among the interviewees within this study.

Following Russia's full-scale invasion, on March 29, 2022, "Principles for the update of Energy Policy of Poland until 2040" were adopted. According to the Principles, "energy sovereignty" must be considered seriously by the new energy policy. Particularly, swift separation of Polish economy from fossil fuels (including gas) and their derivatives originating from Russia and "other economically sanctioned countries" was deemed essential. For this, Poland would need to promote diversification, invest in "production capacity", build "linear infrastructure[46] and storage" and "alternative fuels". Apart from that, regarding "just transformation, zero-emission energy system and good air quality" pillars, the Principles considered boosting measures that contribute the decrease of consumption for fossil fuels coming from Russia and other "sanctioned countries" that would encourage "innovation" and enhance the economy (Republic of Poland, 2022, p. 1).

However, the revision[47] has not taken place yet (as of May 2025). One of the interviewees (P1) confirmed that there is no approved document so far. As known informally, though, the role of renewables will be emphasized more seriously in the updated document.

Generally, while Poland did a lot on the diversification path, the remaining challenge is storage capacity. Poland has relatively tinier storage compared to other Member States. However, broadly speaking, for Poland gas supply security is not problem anymore, but the issue is competitiveness and gas prices (P3).

In fact, among the 'gas seven' countries[48] that, while combined, account 80% of EU gas consumption as well as "88% of LNG import capacity and 70% of gas storage capacity", it was Poland that was "the most dependent on Russian gas" and "has done the most to reduce its dependence" on Russian gas flows over years by "consistently developing the infrastructure needed to diversify supplies" (Lipiński, 2023, pp. 5, 7, 14).

Bulgarian Responses in and beyond 2022

Compared to Poland, Bulgaria "had warmer relations" with Moscow for a long time. However, under Prime Minister Kirill Petkov,[49] Bulgaria "denounced" Russia's invasion of Ukraine and supported Kyiv (Strzelecki, Tsolova and Polityuk, 2022). It was, in fact, Bulgaria that "unexpectedly" administered, among others, 40% of the fuel and one third of the utilized shells to Ukraine in the beginning of invasion when the latter had extreme shortages. However, this was done "secretly" due to the presence of pro-Russian figures in the Bulgarian government (BNR, 2023).

[46] According to the UN, Linear infrastructure is characterized by its 'straight form' and includes 'roads, railways, powerlines, and canals'.
[47] In their 2023 report, Ember and Reform Institute analyzed "government's draft plans for renewable energy expansion", arguing that with the proposed goals Poland would be "the last EU economy producing the majority of its power from fossil fuels by 2030".
[48] The 7 Member States that "dominate the gas sector" in the EU are Germany, Italy, France, the Netherlands, Spain, Poland and Belgium.
[49] Petkov was in government between December 2021 and August 2022.

As denoted before, Bulgaria's dependence on Russian gas was far higher than in the Polish case (in terms of percentage). Under a long-term contract, it was agreed that Russia would provide 2.9 bcm gas to Bulgaria annually until the end of 2022 (International Trade Administration, 2024).

After the gas disruption in April 2022, following Bulgaria's refusal to pay for gas in roubles, similar to Polish politicians, Bulgarian energy minister also emphasized that while all "obligations" were "observed" by Sofia, Russia was using gas "more as a political and economic weapon in the current war" (Islam, 2022).

As emphasized above, Bulgaria was receiving most of its gas from Russia, while the rest was delivered mostly through Azerbaijan and Greece. It is noteworthy that while Bulgaria used up to 3 bcm gas every year in 2010-2019 period (see Appendix 14), the consumption went up to 3.4 bcm in 2021, and decreased to around 2.7 bcm in 2022 and even to 2.5 bcm in 2023, in light of growing gas prices and limited deliveries (Enerdata, 2025a).

According to the European Commission's 2024 country report (See Appendix 21), while in 2021 Russian gas accounted for up to 80% of Bulgaria's gas dependence with 2.6 bcm gas imports, in 2022 it amounted to around 41% with 1.2 bcm gas (EUR-Lex, 2024a, p. 47).

As some of the interviewees (PB1, B1) noted the complete disruption of Russian gas was shocking for Bulgaria. In particular, while the gas has represented small percentage (15%) in the energy mix and on a macroscale the disruption was not a big shock, it was such on a microscale, at least in the short term. It was not about price increase but physical flows that stopped (B1).

It was one of the reasons why the European Commission introduced a regulation on a voluntary reduction of natural gas demand by 15% (compared to previous 5 years) in preparation of 2022-2023 winter, adopted by the Council in August 2022. As Member States agreed, the reduction period would cover August 2022 – March 2023 period in order to save energy in the wake of possible gas disruptions from the Kremlin (Consilium, 2022). Luckily, the winter of 2022-2023 was mild (B1), contributing to the decreased natural gas demand in Europe (Bajema, 2023, p. 14).

Among the challenges brought by the disruption was a "huge burden" for chemical and pharmaceutical companies in Bulgaria that utilized gas. Most manufacturing companies faced higher energy prices reflected in increasing production prices. Gas prices reached the peak in the summer (B1). However, the households "benefitted from regulated tariffs" (EU, 2023) and did not experience the price changes. In fact, while the gas is used for district heating in Sofia and its surroundings, Sofia's district heating is the largest single consumer of gas in whole Bulgaria. The burden experienced by the district heating companies was partially shared by the state (B1).

Interestingly, at first, President Rumen Radev's caretaker government (headed by the PM Galab Donev) attempted to negotiate with Moscow to restore the flow, but apparently, without success. Despite passivity

within the ten months, right before the change of government in June 2023, the Bulgarian Ministry of Energy declared that it was drafting an arbitration claim against Gazprom for violating the contract in April 2022 (Krassen, 2023). In summer 2024, Bulgargaz finally began the proceedings before the Arbitration Court of the International Trade Chamber (Paris) to claim compensation of €400 mln from Gazprom (Reuters, 2024) which is still ongoing (as of May 2025). In fact, Austria's oil and gas group OMV also sued Gazprom in January 2023 and received an arbitral award in November 2024 (OMV, 2024).

As per most interviewees (PB1, PB2, B1) the 2022 was an important momentum for Bulgaria to take diversification on an upper scale. Namely, the Gas Interconnector Greece–Bulgaria (ICGB) is regarded as a symbol of "real diversification" (PB1).

According to the European Commission 2023 country report, in light of "abrupt" Russian gas supply cut in April 2022, "Bulgaria showed a high level of security of gas supply" preventing the shortages. In this context, Bulgaria replaced the losses "by short-term contracts" that secured LNG from the Greek Revithousa terminal, prompting the increase of gas prices by 82% for major "industrial consumers in the first half of 2022" (EU, 2023, pp. 5, 39). Among others, alternative supplies were received from Azerbaijan and the US (Bogoni, 2024).

On the other hand, ICGB was commissioned in October 2022 allowing Bulgaria to get "the full volumes of contracted supplies from Azerbaijan" amounting to 1 bcm annually, meeting 30% of national demand, as well as, helping decreasing gas prices within regional markets. The country managed to meet the gas storage obligations amounting to over 90% by November 2022[50] which was 10% more than legally required and finished the "heating season" with around 77% by April. Bulgaria's only underground storage facility Chiren had a capacity of almost 0.6 bcm which equaled about 23% of its annual need. Apart from that, Bulgaria and Serbia launched works in February 2023 to build the pipeline (Interconnector Bulgaria-Serbia/IBS) aimed at having 1.8 bcm transmission capacity annually (EU, 2023, pp. 5, 39).

The IBS was finalized in December 2023 and first supplies were opened by the Azerbaijani President Ilham Aliyev, Bulgarian President Rumen Radev and Serbian President Aleksandar Vučić, as well as, the Head of EU Delegation to Serbia and Serbian Minister of Mining and Energy. The pipeline started delivering Azerbaijani LNG to Serbia that meets 60% of its annual demand. While the interconnector primarily serves Serbia's gas security (WBIF, 2023), it naturally increases Bulgaria's transit role and regional gas security.

Interestingly, the gas pipeline between Bulgaria and Serbia and the expansion of the underground gas storage (UGS) Chiren have been Projects of Common Interest (PCI), qualified for EU support, seen as important contributors to promoting interconnection with neighbours and increasing gas supply security not only in Bulgaria, but in the region. The European Commission emphasized that Bulgaria's gas infrastructure plays an important role for the gas security "of south-eastern Europe" (EU, 2023, pp. 39–40). Bulgaria also began

[50] According to the Regulation (EU) 2022/1032, the Member States needed to have underground gas storage filled by 80% by November 2022 and by 90% after each November starting from 2023.

seeking “hydrogen pipeline opportunities” from Greece and started exploring both oil and gas in the Black Sea from 2023 (Bogoni, 2024).

While the ICGB’s annual capacity has been 3 bcm, according to the ICGB’s Executive Officers Teodora Georgieva and George Satlas, it is planned to be upgraded to 5 bcm in order “to allow the import of larger quantities of LNG from the south via ICGB and through the Trans-Balkan gas pipeline to reach the Moldovan and Ukrainian markets, Hungary, and Slovakia” (ICGB, 2024). Interestingly, the ICGB’s shareholders are 1. Bulgarian Energy Holding (BEH) EAD (50%) owned by Bulgarian state and 2. IGI Poseidon S.A. (50%), a Greek company which, in turn, is a venture between Greek company DEPA International Projects S.A. (50%) and the Italian energy group Edison S.p.A. (50%) (ICGB, no date).

What is more, following the Russian gas disruption in 2022, apart from importing gas from Azerbaijan and Greek LNG facilities, Bulgargaz signed a 13-year contract with Turkish state energy company BOTAŞ in January 2023. The agreement allowed Bulgaria to book capacity on LNG terminals in Türkiye obliging Sofia to pay over €500,000 every day till 2035, even if the physical flows do not take place (Gigov and Vodenov, 2025). With the agreement, the Bulgarian procured LNG of around 1.5 bcm would be regasified in Türkiye and sent to it afterwards. According to Bulgaria’s Interim Energy Minister of that time, “with this agreement”, the country was “securing the opportunity to buy gas from all global producers and have it offloaded in Türkiye which best suits Bulgaria logistically” (*Türkiye-Bulgaria Gas Deal Opens Up a New Supply Route in Southeastern Europe*, 2023).

According to an energy expert Martin Vladimirov, in light of excessive dependence on gas imports from Greece, not only through LNG terminal but also through intermediaries that are reselling Russian gas to Bulgaria, the deal with Türkiye was “good news”. However, the deal was not perfect as it was against liberalizing market in the region, considering only two companies, close to the government, were involved in the agreement. Moreover, Bulgaria could not make sure whether the gas coming through the interconnector originates from Russia, among others. Also, the only way Bulgaria could import gas from Türkiye was through Trans-Balkan Pipeline in reverse mode and as Gazprom has booked capacity on Trans-Balkan Pipeline till 2030, its use by others raises legal questions. While Türkiye could become natural gas hub for Southeast[51] and wider Europe, Ankara would need to replace Gazprom as a key supplier itself. Finally, as per Vladimirov, the deal worked in favour of Pro-Russian oligarchs in Bulgaria that are linked with Bulgargaz and have been advocating for Russian gas supply over years. Although Russian economic influence is not as strong in Bulgaria as it was before April 2022, it has not vanished (Ibid.).

While the authorities called the deal with BOTAŞ a “historic” agreement, analysts have been concerned about its potential negative impact on country’s economy and a chance for Russia to use the deal as a ‘back door’

[51] Southeast Europe refers to the wider Balkan Peninsula with 6 EU candidates (or potential candidates) in the Western Balkans and 4 EU Member States - Bulgaria, Romania, Greece and Croatia.

for exporting its gas through Türkiye. As the agreement is not public, in the wake of suspicions that Bulgargaz is "the only EU-based company" that could bring gas from Türkiye, limiting others in utilizing the route, the European Commission began investigation in October 2023 (RFE/RL's Bulgarian Service, 2023). In December 2024, however, the Commission informed Bulgargaz EAD and Bulgartransgaz EAD that no breach of EU competition was found (Vodenova, 2024).

According to three interviewees (PB1, PB2, B1), it is hard to speak about diversification success in Bulgaria's case. For instance, booking long term capacity in Türkiye with an obligation to pay even while not taking gas weakened Bulgargaz position. Although while signing the deal, Turkish interest was in front, Russia arguably used this to flood Southeastern Europe with cheap gas. While officially there is no more gas contract between Sofia and Moscow, Bulgaria still receives Russian gas through Türkiye or by Greek resellers. As tracing the origin of gas molecules is difficult, in practice it is hard to say if Bulgaria is well diversified or not (PB2).

However, Bulgaria demonstrated first steps. Having some options already means an ability to strive towards independence. Avoiding one supplier is perhaps the most important element. In this regard, ICGB is "watershed" momentum. Also, as Bulgaria buys gas from Türkiye, its origin may not be that important, as it is Türkiye that decides where and how to get the gas (PB1).

Still, although in existing framework Bulgaria covers its gas demand, its gas supply portfolio does not look very diversified. The deal with Türkiye was not so helpful as it does not automatically imply the physical quantities, but refers to capacity. The hope was for interconnection deal, while the result is that BOTAŞ is at the start and end points of the trade. For instance, if Bulgaria buys the US cargo, it has to sell the cargo to Turkish counterpart first and then receive either American or different gas (e.g. from Azerbaijan, Algeria, Russia). Moreover, the contract has "take it or pay" clause which is unfavourable to Bulgaria. Interestingly, the deal was made at the height of gas prices although usually such long-term contracts are signed when prices go down (B1).

Speaking of breakthrough for diversification is difficult while not having sufficient long-term contracts. Bulgargaz organizes public tenders for both local and international gas supply traders usually on a monthly or seasonal basis which represents a passive approach to gas security. A better alternative would be long-term projections and deals. Apart from that, it is unclear whether the gas exported to Bulgaria through Turkish and Greek companies comes from Russia or not (B1).

Tracing the records, apparently the booked capacity in Türkiye has not been extensively utilized by Bulgaria. In 2023, for instance, "out of a potential 14 shipments, only one and a half were used" reflecting the economic unviability of the deal for Bulgargaz (Novinite, 2024).

As of May 2025, Bulgargaz does not get gas from BOTAŞ and in fact, it already owes more than €150 million to the Turkish counterpart. Apparently, the agreement stands high in political agenda with many critical voices over the contract. In 2024 Bulgarian parliament even asked then Energy Minister Vladimir Malinov to seek

ways to renegotiate the deal. As it turns out, if the contract is canceled, Bulgargaz would need to pay €1.5 bln as a compensation (Gigov and Vodenov, 2025).

Except for these developments, in October 2024 the Alexandroupolis LNG Terminal in Greece announced the beginning of commercial operations. Bulgaria is among the countries that the terminal has aimed at delivering gas (others being Greece, North Macedonia, Serbia, Romania, Ukraine, Moldova, Hungary and Slovakia). According to the Executive Director of Bulgartransgaz, it was 'a key milestone for ensuring diversified supplies and for guaranteeing the energy security not only for Bulgaria, but also to the South-Eastern European region', while the 2020 decision of taking "20% share in Gastrade S.A. proved to be a strategic one" (Gastrade, 2024). According to the then Energy Minister Malinov, with the new terminal Bulgaria got "real diversification". The terminal gives Bulgaria an access to LNG, among others, from the US, Qatar and Egypt (Ministry of Energy of Bulgaria, 2024).

According to one of the interviewees (B2), the prospect of energy security of Bulgaria looks safe for the near 20 years and beyond as the transmission network is well maintained, innovative know-how is used and UGS facility has now an improved capacity. With these elements, Bulgaria can play a stable transmission country role in the Vertical Gas Corridor (VGC).

The VGC, in turn, aims at creating "a north-south-oriented gas transmission infrastructure" that connects Greece, Bulgaria, Romania, Hungary and Ukraine to transport gas "from the Southern Gas Corridor (SGC), including Azerbaijani gas", as well as the American and Egyptian LNG, among others and "potentially future sources from the Eastern Mediterranean and Eastern Europe" (Ataman, 2025).

Except for these, in January 2023, Bulgarian Energy Strategy 2023-2053 was published. In the document, the Bulgarian Ministry of Energy outlined strategic vision regarding "the development of the energy sector up to 2053" in line with EU objectives and Bulgaria's energy field specificities (CMS Law-Now, 2023).

Interestingly, among negative factors for "ensuring clean and affordable energy for all consumers", the Energy Ministry named "100% dependence on natural gas imports and interrupted supplies from Russia"; while among positive factors "excellent relations with neighbouring countries and increased interest in regional projects" as well as the "new natural resources identified for green energy and gas storage". Interestingly, the Strategy emphasized that "construction of green hydrogen production capacities" would serve "as a substitute for gas and a means of balancing the energy system" (Ministry of Energy of the Republic of Bulgaria, 2023, p. 8).

Comparative Analysis of Responses in and beyond 2022

Testing the hypotheses, it becomes obvious that dissimilar to Bulgaria, for Poland the 2022 gas disruption did not represent a strong external shock that could "punctuate" dependence on Russian gas. While there was a

well-grounded expectation for such a scenario considering the lessons learnt from previous crises as well as due to historical relations with Gazprom, and Russia more broadly, the move was not quite a surprise for Warsaw. However, while disruptions might have been expected, the complete cut-off could be still unanticipated. Actually, the EU was strategically more "prepared for Algeria, Libya or Norway" to cut gas flows than for Moscow to disrupt it "completely" (Lipiński, 2023, p. 17).

The EU's approach to Russian gas failed to "take into account both the history of EU-Russia relations and Gazprom's position on the European gas market", as reflected e.g. in the building of Nord Stream 2. Moscow had been often using its fossil fuels to apply "political pressure" since the 1990s, on countries such as Georgia, Ukraine, Moldova, Estonia, Slovakia and Poland. In the 1990-2014 period, the Baker Institute counted the associated gas disruptions 17 times (See Appendix 15). The study commissioned by the European Commission in 2014 also revealed that despite the solidarity in the EU, Russian gas supply disruption would seriously impact 17 Member States, including Poland and Bulgaria (Ibid., p. 9). These developments should have been impactful enough but did not always find reflection in every EU Member State.

As argued by one of the interviewees (B1), the April events accelerated prioritization of the reduction of Russian gas dependence in the EU. At first, Poland and Bulgaria were treated as isolated scenarios, however, the understanding changed later. In fact, even though German energy company Uniper agreed with new financial rules set by Russia, Gazprom still cut its supplies. Following the submitted proceeding in 2022, the arbitration tribunal in Stockholm awarded $14 billion[52] to the company in 2024 (Euractiv&Reuters, 2024).

Also, what is noteworthy, the subsequent steps in Europe did not represent EU's proactive decisions, but were mainly driven by Russia's actions (B1). It is also important, that while Poland and Bulgaria were the first EU countries to be cut from Russian supplies, e.g. Finland, Netherlands, Denmark and Latvia were also among those that became victim to similar decisions from the Gazprom (Reuters, 2022).

The sharp contrast between gas supply portfolio diversification of Poland and Bulgaria is vivid through observing the key energy indicators (See Appendixes 20 and 21) before the Russian supply disruption. While in Bulgaria's case the main supplier of gas was Russia, followed by small proportions from Greece (starting from 2019) and Azerbaijan (from 2021), in the case of Poland, along with Russia which was also major gas supplier till 2022, one could also trace important gas amounts coming from Germany, Qatar and the US at least starting from 2016-2017 period.

The different type of preparedness between the two countries could be explained by the varied intensity of efforts taken before. Poland was faster to move, starting diversification path earlier, and asking for funding the infrastructure projects. Thus, polish stance could be assessed as proactive paving the way for becoming free of Russian gas in 2022 (EC1). So, Polish diversification endeavor could be regarded as "success", even if diversification has a price to pay, namely price volatility (PB1, P1). The increased prices compared to

[52] Corresponding to above €12 bln at the June 2024 rate.

neighboring markets might also be associated with internal problems, such as storage regulation obliging companies to book gas storage (PB2). For now, the prices came back to more or less normal though (P2).

While diversification quest was the case in Bulgaria, too, it was probably to a lesser extent. Even by looking at post-2022 developments, e.g. signing a swift agreement with Turkish BOTAŞ does not look like a strong diversification. Also, according to some interviewees, despite all the endeavors, Russian gas still reaches Bulgaria (PB2, EC1). Compared to Poland, Bulgaria has a cheaper gas, but is still dependent on the gas coming from Russia (PB2).

Coming back to historical analysis, the perceptions apparently differed among Poland, considering its different institutional legacy (HI) in a relationship with Moscow and Bulgaria, often seen as pursuing balanced approach with Russia in spite of EU and NATO membership. While Poland apparently took measures to diversify its gas supply portfolio well before 2022, and turned out to be more prepared than other EU countries for the 2022 events, Bulgaria pursued limited diversification scope till 2022 (PB1). However, Bulgaria was also quick to react and make decisions following the gas supply cut-off in 2022 (EC1). For this reason, the 2022 could be considered as a central momentum when Sofia made a shift from "bounded rationality" and experienced a "dramatic" change forced by aggravated external circumstances as PET framework would put it.

Here an important element to be highlighted is the public attitudes to Russia and Russian energy in the two countries. While in 2018, 65% of the Polish population saw Russia "as a major threat", by June 2022, the ratio increased to 94%. Furthermore, by 2022, 89% had a favorable view of the EU and NATO, which were always seen positively since 2007 by more than 60% of the nation (Poushter, Huang and Clancy, 2022, pp. 3–4). Moreover, by 2023, 85% of the Polish supported "being tough with Russia on Ukraine" while only 9% favoured "maintaining access to Russia's oil and gas reserves" (Fagan, Poushter and Gubbala, 2023).

Conversely, Bulgarian population has posed different views. Among the CEE countries, in 2023 Bulgarian population had the lowest (34%) perception of Russia as a threat, while in Poland it had the highest ratio (88%) (See Appendix 19). While only up to 14% of Bulgarians think of Moscow as "a super power", the positive outlook for Russia largely stems from "distinct cultural-historical, political and economic perceptions", namely on the "cultural/values-based proximity and a common history". This could be partially inspired by the "weaponization of history" by Russia and "distorted presentation of bilateral Bulgarian-Russian ties" as a 'brotherhood', creating a base for vulnerability in Bulgarian society "to all other types of Russian disinformation" (Filipova, 2023, pp. 3–4).

Regarding the attitudes to the west, in 2023, 71% of Bulgarian population had positive perception of the EU membership ranking second lowest in the CEE (After Slovakia), while in 2018, the ratio was 87%. As for NATO, up to 58% viewed NATO membership favourably in 2023, ranking Bulgaria lowest in the CEE along with Slovakia (Ibid., pp. 3, 5).

These nuances among the electorate further highlight the divergences in the attitudes to the Russian gas supply dependence in Poland and Bulgaria. While the energy policy is driven by the governments, public attitudes are still important as they could incline the elected politicians towards adopting certain measures or instead staying passive from adopting these measures. While it is difficult to project to what extent public attitudes shaped the discourse in the two countries, as seen from the previous analysis, they either backed the diversification path (in Poland) or hindered it to some extent (in Bulgaria).

The Role of the EU in Polish and Bulgarian Diversification Paths

Another important element to be analyzed is the role of the European Union in supporting the diversification paths of two CEE countries over years. According to one of the interviewees (PB1), while the European Commission is crucial in facilitating energy independence, the ultimate initiative is in the hands of Member States (MSs). The Commission cannot impose measures on MSs but coordinate the process (PB1, P2, EC1). For example, the Baltic region was an energy island, not connected to the EU energy system, but now it is being synchronized thanks to its will and the support of the Commission (PB1).

Indeed, according to the Article 194(2) TFEU, each Member States retains the "right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply" (EUR-Lex, 2008). However, from market perspective, it is difficult to build pipelines without having regulatory certainty (provided by the EU law and European Commission) and financial support (provided by the European Commission) (PB1).

In this regard, the Projects of Common Interest (PCIs) equalize chances and increase cooperation, considering that the infrastructure project is EU oriented and is not important just for one Member State (P2). It must be emphasized that projects are submitted by the project promoters and need to be endorsed nationally. In order to get selected, the project has to go through the assessment process which is same for everyone. Following the selection in the PCI list, they become eligible for grants or easier procedures at the EU level. So, this process could be called demand-driven (EC1).

In Polish case, following the EU accession, the country started receiving huge amount of funding for infrastructure and developing respective knowledge, and many projects continue to be funded by the EU (P1). A good number of Polish projects were in the PCI list facilitating access to funding for the country (EC1). Most gas-related investments were decided before 2022 and while they did not necessarily consider that Russia would completely stop supplies, they served EU market liquidity[53] (PB1).

[53] According to the European Central Bank (ECB), market liquidity is "a measure of the ability of market participants to undertake securities transactions without triggering large changes in their prices".

Among others, regarded as PCIs, the EU supported Gas Interconnector Poland-Slovakia (GIPS) and Gas Interconnection Poland–Lithuania (GIPL) projects. This way, the European Commission was making gas connections economically viable. At the same time, Polish-German interconnectors were impacted by the EU's third energy package prompting the shift from initial unilateral (east-west) to bilateral gas flows capacity. As a result, in the crisis situation, it made reverse flows from Germany possible even if it was Russian gas (PB1).

The Baltic Pipe, which was practically ultimate step that replaced Russian gas in Poland, was also supported by the EU. The project received grants amounting to €266.8 mln. The two companies managing the project, GAZ-SYSTEM (Poland) and Energinet (Denmark) received around €243.5 mln and €23.25 mln respectively (GAZ-System, 2023a).

In March 2023, the European Commission also approved over €124 mln investment from the European Regional Development Fund for building "253 km-long section of a gas transmission pipeline" among Polish regions, included in the PCI list and aligning with REPowerEU Plan goals, being part of over 300 km-long pipeline. According to then Commissioner for Cohesion and Reforms, Elisa Ferreira, the project was 'a concrete example of Cohesion Policy support to energy security in Europe' that could strengthen Polish energy security through diversification and would allow for exporting gas to Lithuania, Slovakia, as well as, Ukraine (DG ENER, 2023).

The infrastructure projects in Poland (PCIs) would be difficult to conceive without the European Commission. For instance, Świnoujście LNG terminal, supported by the EU, was a "gamechanger" as it allowed Poland to receive LNG from the US and Qatar (PB2). Also, in fact, following 2022, Poland has been actively helping the European Commission to overcome obstacles related to getting away from dependence on Russia (PB1).

In Bulgarian case, the European Commission also provided community funding and regulatory support for the diversification (PB1, B2). By accommodating finances and investing in feasibility studies, the Commission also helped strengthening the energy security and independence in the region (B2).

The Commission backed Trans-Adriatic Pipeline (TAP) and the Southern Gas Corridor (See Appendix 10), considered as PCIs. Moreover, Commission played an immense role in mobilizing international support, as reflected in Ursula von der Leyen's and Energy Commissioner's visit to Azerbaijan (PB1). During the July 2022 visit in Baku, the sides signed a Memorandum of Understanding, which, among others, considered increasing the amounts of gas imports from Azerbaijan to Europe from 8 bcm by that time to 20 bcm in the upcoming years, by amounting 12 bcm already in 2023 (European Commission, 2022d), through which Bulgaria could benefit too. During the 2022 crisis, replacing Russian gas was not an easy task for Bulgaria and the Commission played an important role in facilitating outreach with neighbours (EC1).

The ICGB project also benefitted from the EU funding (PB2). As a PCI, out of the total cost of €253 mln, the project received support from different institutions and instruments (European Investment Bank, European Energy Program for Recovery, Operational Program "Innovations and Competitiveness") over years,

amounting to over €190 mln (ICGB, 2023b). As noted above, Gas Interconnection Bulgaria-Serbia (IBS) and the expansion of the UGS Chiren have also been PCIs (EU, 2023, p. 40).

Apart from these, in October 2023, the European Commission allowed Bulgaria to provide state aid to Bulgargaz in the amount of €400 million. The measure was approved following Sofia's request under the Temporary Crisis Framework (adopted in March 2022) in the context of Russia's ongoing war in Ukraine. The approval was justified with "unusual liquidity needs" in securing gas supplies in the wake of increasing gas prices following Russian gas disruption (European Commission, 2023). Furthermore, Alexandroupolis LNG terminal that started operations in 2024 (Gastrade, 2024) and in which Bulgaria holds a 20% stake, has also received the EU support as the project has been in the PCI list from 2013 (CSN, 2021).

However, Despite the Commission's efforts, in the end, it is the government of the Member State that decides and in Bulgaria's case, the situation, as seen above, was more complicated than in Poland (PB1). While the Commission tried to make sure Gazprom was not abusing its position in Bulgaria, it was hard to navigate through complexities within Bulgaria considering many factors, such as excessive government interference and unpredictability. With the EU having 27 members to look for, dealing with "stubborn" attitudes in particular Member States can be difficult (PB2).

In both cases, the Commission's role was "decisive". While the right of initiative is within the Member State and companies cannot be "forced" by the Commission to buy e.g. the US gas, the Commission's support was an important instrument. Large Member States such as Germany or Italy, due their financial power, could afford bringing in alternative supplies themselves but for Poland and Bulgaria, the EU support stemming from both the Commission and other Member States, was crucial (PB1). On the other hand, considering Poland is bigger, it had more sizeable financial needs, too. Nevertheless, the EU was "generous" to both countries (PB2).

The European Commission's role as an impartial actor is also principal. Even if Member States have excellent bilateral relations with one another, implementing cross-border projects is difficult due to domestic oppositions. This is where Commission makes it easier. Also, while dealing with the third (non-EU) country, Commission has much more leverage in negotiations (PB1).

According to other interviewees (P2, B1), however, following the crisis, EU Member States were competing with each other for getting external supplies. As per former ECB President and former Italian PM Mario Draghi, this "intra-EU competition" led "to an excessive and unnecessary" price increases (Draghi, 2024, p. 43). The competition was partly prompted by setting high minimum gas storage levels by the EU (B1). In particular, according to the Regulation (EU) 2022/1032, the gas storage needed to be filled by 80% for November 1, 2022, and by 90% for November 1 of every year afterwards (EUR-Lex, 2022). Another driver of high prices was competition with Asia (B1).

Even though, the EU Energy Platform was created in April 2022 with an objective of using "collective weight to negotiate more affordable energy supplies" (EC Energy, 2023), the increased role of the European

Commission to conduct joint purchases would be desirable (P2). However, within the EU, joint supplies are not agreed easily because different countries have different positions and trade profiles with companies. Therefore, the Commission has to balance between Member States' positions that slows down the decision-making process (B1). At the same time, Commission's role has been important in developing and managing gas infrastructure (P2).

The REPowerEU, in turn, aiming at coordinating common position to Russia and replacing Russian fossil fuels, was an important statement. Although as it was a Communication, it did not have a mandatory character, it represented a plan on the strategic level. With the Polish presidency of the Council of the EU and subsequent Danish presidency, the vision is clear with regard to EU's strategy to reduce dependence on Russia, whereas, the following years' trends have yet to be observed. While the Commission needs to have a stronger role, the coordination level among Member States should increase, too, allowing to have common reserves as "we are sailing on one boat" (P2).

Strategic Outlook for Poland, Bulgaria and the EU

As seen from the available data and qualitative analysis, following Russian gas cut-off in 2022, Poland and Bulgaria faced different levels of challenges. While Poland was rather prepared for such a scenario considering the lessons learnt in the past, in line with Historical Institutionalist (HI) assumptions, Bulgaria had to adapt quickly to the external shock and start determined departure from the past dependence, as could be argued from the Punctuated Equilibrium Theoretical (PET) framework. The diversification portfolios look different among the two CEE countries.

While by the end of 2022, Russian gas was practically eliminated in Polish imports, Warsaw began a new page in the gas supply security. Thanks to years-long "diligence" (PB2) and EU support, Poland has not only opened and enlarged LNG facility in Świnoujście allowing it to receive gas from Qatar and the US, among others, but enhanced interconnectors with the neighbouring countries, and finalized the Baltic Pipe with Denmark and Norway which can be considered a "historical point" for the ultimate diversification (P1). Despite price fluctuations (PB2), Poland has managed to meet its domestic gas demand (P1).

Moreover, in the context of Poland's ongoing work for ensuring its gas supply security, the second LNG terminal in Gdańsk is set to be completed by 2028. Although there are questions about the long-term need for additional gas as the Polish gas demand is thought to reach its peak by 2030, the Gdańsk terminal is still deemed crucial. This is because Poland is primarily dependent on Świnoujście terminal (which is "reaching its limits") and the Baltic Pipe, and if the latter's operation "is even temporarily interrupted, securing Polish gas supply will be significantly hindered". Moreover, the new terminal would allow increased gas exports to Ukraine, Slovakia and even to Hungary (Walstad, 2025). While the Świnoujście LNG terminal is stationary, the Gdańsk terminal will be Floating Storage Regasification Unit. It may well serve the imports for the region. For instance, Ukraine is interested in booking capacity in it (P3).

Following the expiration of the gas deal between Ukraine and Russia, after six decades, since January 1, 2025 Ukraine stopped transiting Russian gas through its territory. Unlike 2009 crisis, the shutoff did not cause "panic" and the gas got only slightly expensive in Europe, impacting mostly Moldova. Out of 15 bcm gas passing Ukraine, 2 bcm used to flow to Moldova while 13 bcm to Slovakia and the rest of the EU. While Bratislava lost around €200 mln worth annual profit, in fact, the gas was not playing excessive role in Slovakia's economy anyway (Vakulenko, 2025). Also, generally, the gas route through Ukraine accounted for just 5% of the EU's gas imports and alternatives were already found (Macharashvili, 2025). Notably, Ukraine itself stopped getting Russian gas directly since November 2015, purchasing it from other European countries even if the gas originated from Russia (Sharples, 2025).

In its continued support for Ukraine and its energy security, Polish energy company Orlen signed a memorandum with Ukrainian national energy company Naftogaz concerning LNG deliveries. While the contract covered supplying only 100 mcm (=0.1 bcm) for the beginning, it is thought to be the first step for long-term cooperation (Interfax, 2025).

Interestingly, according to one of the interviewees (P3), for Poland one historical success was joining the EU and NATO and subsequent economic growth, while the second success was the diversification of gas and oil supplies and strong Polish involvement since 2014 in making EU energy security framework more operational.

On the other hand, there are certain theoretical risks. As implied above, in the case of possible interruptions with the Baltic Pipe considering the security threats over the Baltic Sea, Poland may face gas supply problems (P1). The same applies to the risks stemming from potential attacks on LNG terminals, as well as, possible sabotages of "gas pipelines, compressor stations and block-and-relief units" that, considering lower storage capacity, can endanger supply security (Lipiński, 2023, p. 45).

Moreover, while the current demand of around 20 bcm is met, the gas consumption is set to increase in the upcoming years. Although in the 2030s nuclear power plant is planned to be launched and the use of hydrogen might be prioritized, Poland will still need gas (P3). By 2040, the gas needs are estimated to be reduced to 13 bcm as renewable and nuclear energy are seen to be having potential to gain important share in the energy mix (Walstad, 2025). However, exact scenarios are hard to be observed.

Regarding Bulgaria, the situation has looked slightly different. As argued, despite external shocks, notably in 2009, and the sensitivity of the gas sector, Bulgaria has taken limited diversification scope over years. The latter was shaped by the political instability, mixed views, as well as economic and societal backgrounds, divided between the search of alternatives and favoring more or less stable and cheap supplies from Russia. Still, with fragmented determination and with the EU support, Bulgaria has demonstrated certain steps.

The gas supply disruption in April 2022 served as a catalyst to start putting an end to the dependence on Russia, completing the ICGB which meets 1/3 of the national demand and is regarded as a success on the diversification path (PB1, PB2). Owing to the deal with Azerbaijan, as well as, the LNG deliveries from the US, Egypt, and others via Greece, Bulgaria has managed to secure its gas needs. However, the deal with

Türkiye that implies booking capacity but not physical quantities is an ambiguous step that is considered by some as an unprofitable and unsuccessful attempt to ensure gas supply security (PB2, B1). With Bulgargaz's accumulated debts to Turkish BOTAŞ, there are still questions surrounding the deal. At the same time, as argued, it is hard to trace the origin of the gas while dealing with Greek and Turkish companies, leading to claims that Bulgaria's dependence on Russian gas has not practically stopped.

Moreover, while the frequent public tenders for gas purchases might be considered flexible, preventing similar dependence as reflected by 13-year long contract with Turkish side, they may not work in favour of Bulgaria's long-term security, necessitating comprehensive strategy. Still, the key lesson that Bulgaria received was to avoid one major supplier "not to be put in the corner" (PB1).

Apart from that, Bulgaria is a transit country for Russian gas that is directed to Serbia and Hungary through TurkStream pipeline (See Appendix 10) which "was designed to bypass Ukraine, a major transit country for Russian gas" and has an annual capacity of 20 bcm (Bogoni, 2024). In Bulgaria, "it is called Balkan Stream" (Kotseva and Nikolov, 2024).

By 2024 TurkStream was thought to be transmitting 40% Russian gas in the mix via Türkiye towards Southeast Europe (SEE). The pipeline is believed to be an example of Russia's attempt to "sidestep western" quest for diversification. Through TurkStream, Gazprom has been trying to enhance its role in Europe's energy domain (Bogoni, 2024).

In the context of the cessation of gas transit via Ukraine, TurkStream is thought to be facilitating "continued Russian gas exports", eroding EU's diversification pledge "by flooding the market with discounted gas". The latter also threatens Black Sea projects and postpones alternative LNG deliveries via Greek, Croatian and Polish terminals (Vladimirov, 2024). Despite the given deficiencies, with its infrastructure projects, Bulgaria is seen to be "gradually positioning itself as a major energy hub" throughout the SEE (Bogoni, 2024). However, there are question marks whether the given supplies are stable for the EU in long-term.

According to Vladimirov, by 2025 following the Ukrainian transit path closure, the TurkStream pipeline passing Bulgaria is "the only gas pipeline carrying Russian gas to Europe" and therefore, Bulgaria could be the central actor that can end Europe's dependence on Russian pipeline gas. This could be easier if the EU adopts a common position either "to ban Russian gas or introduce a tax to equalise the cost of buying Russian and buying alternative gas". As per Vladimirov, on the background of increasing interest into cheaper Russian gas by e.g. Czech, Italian and other European companies, the move would lower the dependence and be of high importance for EU energy security (Kotseva and Nikolov, 2024).

Interestingly, when e.g. Lithuania decided to shift towards more expensive LNG (being a pioneer through Klaipeda terminal) instead of keeping dependence on Russian gas, Moscow offered lowered gas price to the country, meeting refusal (PB2). This demonstrates how Gazprom has been using financial incentives to maintain its energy influence over the countries in Europe.

A final aspect of the strategic outlook is the future perspective. The years-long dependence on Russian gas has shown not only to Poland and Bulgaria, but also the whole Europe, that relying on a single supplier contains tangible risks and this regards not only imports from Russia (P2, P3). While the two CEE countries and the EU, in general, are increasingly looking at alternative suppliers, diversifying supply portfolio and selecting reliable partners is of utmost importance. In this context, the stability concerns associated with dealing with flawed democracies or autocracies containing large amounts of natural gas reserves (See Appendix 11) is a serious element to be taken into account.

Although the EU is on the path to promote the renewable energy sources and even nuclear energy that was once considered unpopular since the 2011 Fukushima catastrophe[54] (Lipiński, 2023, p. 12), "with no significant near-term increase in the production of EU green gas, including biogas and biomethane" (Łoskot-Strachota, Keliauskaitė and Zachmann, 2024), the role of natural gas will remain crucial.

Observing, the EU's gas imports before and after Russia's full-scale invasion (See Appendix 17) makes it clear that while imports in 2020 amounted to up to 400 bcm, in 2022 they decreased only slightly and in 2023 still did not come below 330 bcm. However, the geography of the EU imports definitely changed, with more countries being added to the supply portfolio, and increased ratio of the US and Algerian gas, among others. While in 2020 Russian imported gas amounted to 167 bcm (153 bcm by pipeline and 14 bcm as LNG), in 2022 it accounted to 86 bcm (67 bcm by pipeline and 19 bcm as LNG), while in 2023 Russia exported 45 bcm to the EU (27 bcm by pipeline and 18 bcm as LNG) (Ibid.). As denoted before, the continued Russian gas imports both through pipeline and as LNG raise concerns in ensuring EU gas security.

Compared to the 2019-2021 period, in 2022-2025 (up to January 2025) the gas demand in Poland and Bulgaria fluctuated (see Appendix 18). While the demand decreased till 2023, the 2024 saw the increase in both countries, reaching the same level as in 2019, unlike the EU on average. In the winter of 2024-2025 although the increases were obvious for Poland and Bulgaria, as well as, the EU on average, the demand was especially high for Poland, exceeding the 2019 level and slightly deviating from REPowerEU target (Jugé, McWilliams and Zachmann, 2025). Still, with all the efforts shown within the years, Poland and Bulgaria have largely aligned with the EU gas objectives and this holds true especially after Russia's full-scale invasion of Ukraine.

It Is estimated that the EU cannot meet its 2030 gas demands without imports from the 12 countries of Gas Exporting Countries Forum (GECF). The GECF, in turn, includes Russia and Iran, and its other members tend to align with Moscow's and Tehran's positions. In case the EU manages to decrease gas consumption, it could achieve "a more derisked important basket", implying dependence mainly on Norway and the US. Nevertheless, this would reduce diversification portfolio and imply "higher methane intensity from US gas". While the EU could promote "alternative energy, energy efficiency and increased EU gas production", counting on alternatives "has its own security and competitiveness" risks. Since the composition of gas imports

[54] According to Lipiński (p. 12), following the full-scale invasion of 2022, "nuclear energy was deemed a clean form of energy in the EU - one which supports the green energy transition" pushing Member States to "postpone the phasing out of nuclear power plants" or even disclosing the building of new nuclear facilities.

is primarily decided by companies (that take into account prices) and not the Member States or the EU, the "more explicit EU gas import policy" would be of great value (Ibid.). This is also true as the new Trump Administration tries to take advantage of LNG needs in Europe (P2). These elements reflect the extreme complexity of navigating between the supply sources and the preferences shaped by values, environmental concerns or price impact.

Interestingly, in April 2025 the EU approved the extension of the Member States' duty to keep "their gas storage facilities 90% full before the winter season" for 2 more years. The measure is intended to lower "EU's exposure to volatile prices, including due to the current geopolitical instability". The extension also includes flexibilities regarding the November 1 deadline (allowing wider time frame between October 1 and December 1 to meet 90% target), as well as, the possibility for deviation "by up to 10% from the filling target" to adapt to market volatility (Consilium, 2025b).

Conclusion

The key objective of the study has been to compare Polish and Bulgarian gas supply security amid Russia's full-scale invasion of Ukraine since February 2022, prompting the gas supply disruption in the April of the same year and pushing the EU to shift from Russian energy dependence. The key research question that the study addressed was *how Poland and Bulgaria differed in their approaches and adaptations to gas supply diversification before and after Russian gas supply disruption in 2022.* While the secondary research question implied the identification of *factors that could explain these differences*.

In light of the EU's determination to move away from Russian gas supply reliance, as reflected in the REPowerEU framework, the study has been relevant and timely, bringing novelty in the scholarship by comparing two somewhat similar but still different cases of gas supply diversification within the Central and Eastern Europe area of the EU, namely in Poland and Bulgaria. While the available academic literature examined within the study covers each country case individually or in comparison with other states and in multiple perspectives, the research scope complements the scholarship by analyzing specific comparative patterns in the diversification efforts of Poland and Bulgaria and the factors explaining the differences before and after the 2022 events up to May 2025.

The two particular hypotheses that the study aimed to test stemmed from two prominent theoretical approaches: Historical Institutionalism (HI) and Punctuated Equilibrium Theory (PET). Under the HI perspective, the 1st hypothesis emphasized that strained historical relations between Poland and Russia established path dependence shaping the higher level of diversification strategy well before 2022, while Bulgaria's balanced stance towards Russia and alignment with its policies led to limited diversification strategy, putting the country in a reactive mode during the 2022 crisis.

Whereas under the PET perspective, the 2nd hypothesis argued that as Russian-Bulgarian gas relations were more stable than those between Warsaw and Moscow, the 2022 disruption represented an external shock for Sofia necessitating far-reaching departure from the past strategy. As for Poland, such shocks had stronger impact in the 2000s and since 2014, leading to earlier end of perceived "bounded rationality" of dealing with Gazprom.

Within the qualitative research methodology, the study used comparative case study strategy, while semi-structured interviews and document analysis were main methods. Apart from interviewing eight experts, scholars, professors and policy makers, the primary and secondary sources, as well as, official statistics were processed to complement the interview insights.

The study marked the level of preparedness as dependent variable (DV) denoting the availability of alternative supplies, diverse contracts and necessary infrastructure by April 2022 and following adaptations. For the 1st hypothesis the independent variable (IV) was institutional legacy implying historical relations with Moscow, Russian gas and past policy strategies. For the 2nd hypothesis, the independent variable (IV) was external shocks denoting gas crises and subsequent policy responses in each state. Considering the potential role of the EU and sub-national players, the study introduced mediator variable which is the influence of the given actors.

Merging the insights delivered from the interviews and available sources, the comparative analysis of the two countries largely confirmed most assumptions of the two hypotheses, denoting the impact of both historical legacy and the impact of external shocks in shaping diversification paths and subsequent preparedness for the 2022 developments in the two countries.

Particularly, the research highlighted that Poland and Bulgaria took divergent paths because "critical junctures" (HI) that they experienced differed. While Poland elevated gas supply security high in the national security agenda, in the context of gas disputes with Russia, perception of security threats, as well as the increased use of gas as an instrument of pressure by the Kremlin, all established the compelling case for general political support for diversification. Incorporating PET perspective would emphasize that gas and political crises of the 2000s and 2014 finally shaped Polish strategy to gradually eliminate Russian gas.

While the 2022, with the Baltic Pipe, marked a final departure from Russian gas, it was due to years-long determination reflected in building LNG terminal and interconnectors with neighbours that paved the way for the gradual, yet determined shift from Russian gas dependence and the high-level preparedness for the 2022 disruption, earning Poland a role model image.

In the Polish case external shock spanned over years and did not necessarily develop under one certain historical momentum. In fact, Polish case follows a pattern of gradual institutionalization of anti-dependence strategy deeply rooted on political, industrial and societal levels.

In turn, the situation in Bulgaria was slightly different. While the country painfully experienced the 2009 gas crisis, it ultimately failed in mobilizing support for shale gas extraction. For more than a decade, despite some

attempts to diversify, e.g. pursuing limited efforts to deal with Azerbaijan and Greece while promoting energy infrastructure, and becoming the 20% shareholder for the Alexandroupolis LNG terminal, Bulgaria largely remained under the influence of Russian gas policy, supporting its initiatives. As it could be argued from the HI lense, different institutional legacy and the political climate, opposite to Poland, namely the existence of factions supporting alignment with Russian energy objectives, limited economic resources and lack of alternative sources in the region, among others, were seemingly the factors that formed the difference.

Concerning the national responses to the 2022 gas disruptions, owing to the above-mentioned path dependence differences, Poland was largely prepared for such a scenario and had most infrastructure ready, as well as, the gas storages filled, while Bulgaria had to act in a crisis mode and search immediate alternatives. Although both Baltic Pipe and the ICGB became operational in the 2022 Autumn, there was one important difference. For Poland, Baltic Pipe, in spite of its huge importance in replacing Russian gas, was complementary because the country already had internal production, an active LNG terminal as well as interconnectors and contracts with other countries in the region and beyond.

On the other hand, for Bulgaria the ICGB was practically the first and only real source of diversification. While before the full-scale invasion most gas supplies came from Russia, with insignificant internal production and small gas quantities delivered from Greece and Azerbaijan, Bulgaria was less prepared for the crisis and had limited diversification portfolio. For this reason, the ICGB was of immense importance, securing at least one third of Bulgaria's gas needs. Therefore, under PET perspective the 2022 could be considered as a turning point towards real quest for gas supply diversification.

Despite these factors, as seen from the European Commission report, Bulgaria managed to maintain gas security in the face of Gazprom's supply cut-off for the winter of 2022-2023. Also, while the opening of Alexandroupolis LNG terminal is beneficial for Bulgaria, in contrast, forming the 13 years-long deal with Turkish BOTAŞ and continued purchases of LNG from Greek companies often reselling Russian gas could be considered as remaining challenges for the country's gas supply security. Although officially Bulgaria has no more deals with Gazprom and even sued the latter for breaching their contract in 2022, Russian gas apparently still reaches Bulgaria. Also, as of 2025, Bulgaria remains the only entry point of Russian pipeline gas to Europe.

The research acknowledged that EU's role in supporting Polish and Bulgarian diversification paths was crucial and mostly played a positive role. The European Commission and EU law provided regulatory, financial and international support, facilitating the implementation of infrastructure projects benefitting both countries' gas security or their transit role. However, as the right of initiative lies within the hands of Member States, the EU could not make either Poland or Bulgaria act differently and this is where the differences stem from: the national policies largely determined the faster or slower diversification paths as seen in Polish and Bulgarian cases respectively. Finally, as certain sub-national actors had minor role in shaping diversification trajectory in each country, the energy policy has been largely driven by the governments both in Poland and Bulgaria.

Zooming out, the 2022 was a watershed moment not only for Poland and Bulgaria, by either punctuating the Russian gas reliance or starting pursuing the real diversification, but also for the wider Europe. While the gas security is a national matter, the infrastructure projects and supplies go largely beyond national borders and span across the whole continent. As natural gas is expected to continue playing vital role in the upcoming decades, evaluation of strategic consequences of the dependencies on other suppliers is of utmost importance. Before substantially switching to renewable or other forms of clean energy, the EU needs to avoid extreme reliance on a single gas provider considering the unstable geopolitical dynamics.

Another key element is to enhance solidarity across Member States and act jointly on EU level. In his well-known report on the future of European competitiveness, Draghi also recommended "reinforcing joint procurement – at least for LNG – to leverage Europe's market power and establishing long-term partnerships with reliable and diversified trade partners as part of a genuine EU gas strategy" (Draghi, 2024, p. 50).

As a final remark, while the research analyzed the two Central and Eastern EU country cases, the future studies may also address either the development of gas supply security in Poland and Bulgaria or examine different cases across Europe. While Poland and Bulgaria are important energy players in the CEE and their situation could be still generalized over neighbouring countries, considering different political, societal, economic and security considerations of other regional states, an extensive comparative investigation of gas diversification path of the whole region would be highly recommended. Alternatively, although the study widely referred to the role of public attitudes in the gas supply diversification path, conducting a specific study on the role of popular opinions on shaping gas security strategy would be of high relevance either in Poland and Bulgaria or broader CEE.

Bibliography

1. Abnett, K. (2025) 'Ten EU countries call for sanctions on Russian gas, LNG, document shows', *Reuters*, 13 January. Available at: https://www.reuters.com/world/europe/ten-eu-countries-call-sanctions-russian-gas-lng-document-shows-2025-01-13/ (Accessed: 16 February 2025).
2. Afanasiev, V. (2022) *PGNiG earnings dip but Poland is ready to end Russian gas dependency*, *Upstream*. Available at: https://www.upstreamonline.com/finance/pgnig-earnings-dip-but-poland-is-ready-to-end-russian-gas-dependency/2-1-1190455 (Accessed: 12 April 2025).
3. Assenova, M. (2018) *Bulgaria's Ambitions for a Balkan Gas Hub: Challenges, Opportunities and the Role of a New Off shore Gas Storage Project*. Washington: The Jamestown Foundation.
4. Atanasova, J. (2024) *Russia's Use of the 'Energy Weapon' and Bulgaria's Foreign Policy Alignment: Balancing Dependence on Russian Natural Gas Supplies*. (Master's thesis (Mgr). Charles University, Faculty of Social Sciences, Institute of Political Studies, Department of Security Studies. Supervisor Mgr. Jan Mazač). Available at: https://dspace.cuni.cz/bitstream/handle/20.500.11956/195292/120488117.pdf?sequence=1.
5. Bajema, B. (2023) 'POLICY PAPER', *EFI Foundation* [Preprint]. Available at: https://efifoundation.org/wp-content/uploads/sites/3/2023/08/Appendix-Case-Study-How-Europe-Made-It-Through-the-2022-23-Winter-8142023.pdf.
6. Bartha, L. (2025) 'Pipeline Politics: How Infrastructure Shapes Central and Eastern Europe's Dependence on Russia', *Atlas Institute for International Affairs*, 8 May. Available at: https://atlasinstitute.org/pipeline-politics-how-infrastructure-shapes-central-and-eastern-europes-dependence-on-russia/ (Accessed: 23 May 2025).
7. Baumgartner, F.R., Jones, B.D. and Mortensen, P.B. (2006) 'Punctuated Equilibrium Theory: Explaining Stability and Change in Public Policymaking', in C.M. Weible and P.A. Sabatier (eds) *Theories of the Policy Process*. 4th edn. Fourth edition. | Boulder, CO : Westview Press, 2017.: Routledge, pp. 55–101. Available at: https://doi.org/10.4324/9780429494284-3.
8. BBC (2006) 'Ukraine gas row hits EU supplies', 1 January. Available at: http://news.bbc.co.uk/2/hi/europe/4573572.stm (Accessed: 20 May 2025).
9. BNR (2023) *Die Welt: Bulgaria "secretly" saved Ukraine at the beginning of the war*. Available at: https://bnr.bg/en/post/101765830/bulgaria-secretly-saved-ukraine-at-the-beginning-of-the-war (Accessed: 24 May 2025).
10. Bogoni, A. (2024) 'The Energy Sector of Bulgaria: Mitigating Historical Dependence on Russia', 11 October. Available at: https://www.blue-europe.eu/analysis-en/short-analysis/the-energy-sector-of-bulgaria-mitigating-historical-dependence-on-russia/ (Accessed: 24 May 2025).
11. Buchholz, K. (2022) *Infographic: Which European Countries Depend on Russian Gas?*, *Statista Daily Data*. Available at: https://www.statista.com/chart/26768/dependence-on-russian-gas-by-european-country (Accessed: 12 April 2025).
12. CINEA (2022) *The Baltic Pipe: a subsea pipeline to transport natural gas under the North Sea - European Commission*, *European Commission. European Climate, Infrastructure and Environment Executive Agency*. Available at: https://cinea.ec.europa.eu/featured-projects/baltic-pipe-subsea-pipeline-transport-natural-gas-under-north-sea_en (Accessed: 12 April 2025).
13. CMS Law-Now (2023) *Bulgaria 2053 energy outlook: renewables, nuclear and storage*. Available at: https://cms-lawnow.com/en/ealerts/2023/01/bulgaria-2053-energy-outlook-renewables-nuclear-and-storage (Accessed: 27 May 2025).
14. Connolly, K. (2022) '"Gas was like our drug": defiant Poland vows to wean itself off Russian energy', *The Guardian*, 30 April. Available at: https://www.theguardian.com/world/2022/apr/30/gas-was-like-our-drug-defiant-poland-vows-to-wean-itself-off-russian-energy (Accessed: 24 May 2025).
15. Consilium (2022) *Council adopts regulation on reducing gas demand by 15% this winter*, *Consilium*. Available at: https://www.consilium.europa.eu/en/press/press-releases/2022/08/05/council-adopts-regulation-on-reducing-gas-demand-by-15-this-winter/ (Accessed: 24 May 2025).
16. Consilium (2025a) *EU sanctions against Russia explained*, *Consilium*. Available at: https://www.consilium.europa.eu/en/policies/sanctions-against-russia-explained/ (Accessed: 16 February 2025).

17. Consilium (2025b) *Gas storage rules: Council agrees its negotiating mandate*, *Consilium*. Available at: https://www.consilium.europa.eu/en/press/press-releases/2025/04/11/gas-storage-rules-council-agrees-its-negotiating-stance-mandate/ (Accessed: 26 May 2025).
18. Consilium (2025c) *Where does the EU's gas come from?*, *Consilium*. Available at: https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/ (Accessed: 27 May 2025).
19. CSN (2021) 'Completion of the participation of BULGARTRANSGAZ to the LNG Terminal in Alexandroupolis', *Cyprus Shipping News*, 1 February. Available at: https://cyprusshippingnews.com/2021/02/01/completion-of-the-participation-of-bulgartransgaz-to-the-lng-terminal-in-alexandroupolis/ (Accessed: 26 May 2025).
20. Deák, A., Szabo, J. and Weiner, C. (2024) 'Russia's gas weapon in Central and Eastern Europe: Diverging responses from three friendly states'. Rochester, NY: Social Science Research Network. Available at: https://doi.org/10.2139/ssrn.5126665.
21. DG ENER (2022) *Launch of the Interconnector Greece-Bulgaria - European Commission*, *European Commission*. Available at: https://commission.europa.eu/news/launch-interconnector-greece-bulgaria-2022-10-01-0_en (Accessed: 12 April 2025).
22. DG ENER (2023) *EU Cohesion Policy: €124 million for the construction of a section of a gas transmission pipeline in Poland - European Commission*. Available at: https://energy.ec.europa.eu/news/eu-cohesion-policy-eu124-million-construction-section-gas-transmission-pipeline-poland-2023-03-20_en (Accessed: 27 May 2025).
23. Draghi, M. (2024) *The future of European competitiveness Part A | A competitiveness strategy for Europe*. European Commission. Available at: https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en?filename=The%20future%20of%20European%20competitiveness%20_%20A%20competitiveness%20strategy%20for%20Europe.pdf.
24. EC Energy (2023) *EU Energy Platform*. European Commission. Available at: https://energy.ec.europa.eu/system/files/2023-07/ENE%20-%20Joint%20gas%20purchasing%20_FS_final.pdf.
25. EC Finance (2025) *Sanctions adopted following Russia's military aggression against Ukraine - European Commission*. Available at: https://finance.ec.europa.eu/eu-and-world/sanctions-restrictive-measures/sanctions-adopted-following-russias-military-aggression-against-ukraine_en (Accessed: 24 May 2025).
26. Enerdata (2025a) *Bulgaria Energy Information | Enerdata*. Available at: https://www.enerdata.net/estore/energy-market/bulgaria/ (Accessed: 22 May 2025).
27. Enerdata (2025b) *Poland Energy Information | Enerdata*. Available at: https://www.enerdata.net/estore/energy-market/poland/ (Accessed: 17 May 2025).
28. Enerdata Yearbook (2024) *Natural Gas Consumption Statistics | Natural Gas Data | Enerdata*. Available at: https://yearbook.enerdata.net/natural-gas/gas-consumption-data.html (Accessed: 23 May 2025).
29. EU (2023) *COMMISSION STAFF WORKING DOCUMENT 2023 Country Report - Bulgaria Accompanying the document Recommendation for a COUNCIL RECOMMENDATION on the 2023 National Reform Programme of Bulgaria and delivering a Council opinion on the 2023 Convergence Programme of Bulgaria, SWD/2023/602 final*, *Publications Office of the EU*. Publications Office of the European Union. Available at: https://op.europa.eu/en/publication-detail/-/publication/185573a7-fa34-11ed-a05c-01aa75ed71a1/language-en (Accessed: 24 May 2025).
30. EU (2024) *Bulgaria – EU country profile | European Union*. Available at: https://european-union.europa.eu/principles-countries-history/eu-countries/bulgaria_en (Accessed: 27 May 2025).
31. EU (2025) *EU countries | European Union*. Available at: https://european-union.europa.eu/principles-countries-history/eu-countries_en (Accessed: 27 May 2025).
32. Euractiv&Reuters (2024) 'Germany's Uniper wins $14 billion arbitration ruling against Gazprom', *Euractiv*, 13 June. Available at: https://www.euractiv.com/section/energy-environment/news/germanys-uniper-wins-14-billion-arbitration-ruling-against-gazprom/ (Accessed: 24 May 2025).
33. EUR-Lex (2008) *EUR-Lex - 12008E194 - EN*, *Official Journal 115 , 09/05/2008 P. 0134 - 0134;* OPOCE. Available at: https://eur-lex.europa.eu/eli/treaty/tfeu_2008/art_194/oj/eng (Accessed: 25 May 2025).

34. EUR-Lex (2015) *Preparedness for possible disruptions in gas supplies 2014/2015 | EUR-Lex*. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=legissum:1806_1 (Accessed: 21 May 2025).
35. EUR-Lex (2022) *Regulation - 2022/1032 - EN - EUR-Lex*. Available at: https://eur-lex.europa.eu/eli/reg/2022/1032/oj/eng (Accessed: 25 May 2025).
36. EUR-Lex (2024a) *COMMISSION STAFF WORKING DOCUMENT 2024 Country Report - Bulgaria Accompanying the document Recommendation for COUNCIL RECOMMENDATION on the economic, social, employment, structural and budgetary policies of Bulgaria*, *European Commission*. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52024SC0602 (Accessed: 27 May 2025).
37. EUR-Lex (2024b) *COMMISSION STAFF WORKING DOCUMENT 2024 Country Report - Poland Accompanying the document Recommendation for a COUNCIL RECOMMENDATION on the economic, social, employment, structural and budgetary policies of Poland*, *European Commission*. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52024SC0621 (Accessed: 27 May 2025).
38. Euronews (2022a) *Baltic Pipe: Norway-Poland gas pipeline opens in key move to cut dependency on Russia*. Available at: https://www.youtube.com/watch?v=wkJKchLRJXk (Accessed: 12 April 2025).
39. Euronews (2022b) *Greece-Bulgaria pipeline starts operations to boost non-Russian gas flows*. Available at: https://www.youtube.com/watch?v=gLxgtKAXV_g (Accessed: 12 April 2025).
40. European Commission (2022a) *Joint European action for more affordable, secure energy*, *European Commission*. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1511 (Accessed: 16 February 2025).
41. European Commission (2022b) *REPowerEU*, *European Commission*. Available at: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe_en (Accessed: 16 February 2025).
42. European Commission (2022c) *REPowerEU*, *European Commission*. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3131 (Accessed: 16 February 2025).
43. European Commission (2022d) *Statement by President von der Leyen with President Aliyev*, *European Commission*. Available at: https://ec.europa.eu/commission/presscorner/detail/da/statement_22_4583 (Accessed: 25 May 2025).
44. European Commission (2023) *State aid*, *European Commission*. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4731 (Accessed: 26 May 2025).
45. European Commission (2024) *Two years of REPowerEU: Strengthening Europe's energy resilience - European Commission*. Available at: https://commission.europa.eu/news/two-years-repowereu-strengthening-europes-energy-resilience-2024-05-17_en (Accessed: 16 February 2025).
46. European Parliament (2014) *The EU's Energy Security Made Urgent by the Crimean Crisis | Think Tank | European Parliament*, *Think Tank | European Parliament*. Available at: https://www.europarl.europa.eu/thinktank/en/document/EXPO-AFET_SP(2014)522338 (Accessed: 21 May 2025).
47. Eurostat (2022) 'GDP and main components (output, expenditure and income)'. Eurostat. Available at: https://doi.org/10.2908/NAMA_10_GDP.
48. Eurydice (2024) *Population: demographic situation, languages and religions*. Available at: https://eurydice.eacea.ec.europa.eu/eurypedia/poland/population-demographic-situation-languages-and-religions (Accessed: 27 May 2025).
49. Fagan, M., Poushter, J. and Gubbala, S. (2023) 'Attitudes toward Russian oil and gas', *Pew Research Center*, 10 July. Available at: https://www.pewresearch.org/global/2023/07/10/attitudes-toward-russian-oil-and-gas/ (Accessed: 27 May 2025).
50. Fanger, S. (2022) *CPC | Interconnector Greece-Bulgaria (IGB) Pipeline Inauguration*, *Caspian Policy Center*. Available at: https://www.caspianpolicy.org/research/energy-and-economy-program-eep/interconnector-greece-bulgaria-igb-pipeline-inauguration (Accessed: 22 May 2025).
51. Filipova, R. (2023) *Teetering on the Brink of Regional Convergence: Bulgarians' Stances on Russia's War against Ukraine, Strategic Orientation, Democracy, Media and Values vis-à-vis Central and Eastern Europe* (No 3 vol). (Briefing paper, Institute for Global Analytics). Available at: https://globalanalytics-bg.org/wp-content/uploads/2023/10/Public-opinion-trends-ENG.pdf.
52. Fioretos, O., Falleti, T. and Sheingate, A. (2014) 'Historical Institutionalism in Political Science', *The Oxford Handbook of Historical Institutionalism (2016; online edn, Oxford Academic, 2 May 2016),* [Preprint]. Available at: https://doi.org/doi.org/10.1093/oxfordhb/9780199662814.013.1.

53. Food & Water Action Europe (2024) ‘2023 EU LNG Terminal Utilization Rates Were Below 60%’, 6 February. Available at: https://www.foodandwatereurope.org/blogs/2023-eu-lng-terminal-utilization-rates-were-below-60/ (Accessed: 26 May 2025).
54. Forum Energii (2022) *The end of energy resource imports from Russia?* Available at: https://www.forum-energii.eu/en/the-end-of-energy-resource-imports-from-russia (Accessed: 17 May 2025).
55. Fritz, P. (2020) ‘A pipeline that divides: Germany, Poland and Nord Stream’, *Notes From Poland*, 25 September. Available at: https://notesfrompoland.com/2020/09/25/a-pipeline-that-divides-germany-poland-and-nord-stream/ (Accessed: 21 May 2025).
56. Gastrade (2024) ‘Commercial Operations of Gastrade’s Alexandroupolis LNG Terminal begins’, *Gastrade A.E.*, 1 October. Available at: https://www.gastrade.gr/en/2024/10/01/commercial-operations-of-gastrades-alexandroupolis-lng-terminal-begins/ (Accessed: 26 May 2025).
57. Gazprom (2012) *New long-term contract signed for Russian gas supplies to Bulgaria*. Available at: https://www.gazprom.com/about/subsidiaries/news/2012/november/article148751 (Accessed: 22 May 2025).
58. Gazprom (2022) *Gazprom fully halts gas supplies to Bulgaria’s Bulgargaz and Poland’s PGNiG due to their failure to pay in rubles*. Available at: https://www.gazprom.com/press/news/2022/april/article551660/ (Accessed: 17 February 2025).
59. GAZ-System (2023a) *EU financial support for Baltic Pipe with final settlement by CINEA*, *EU financial support for Baltic Pipe with final settlement by CINEA*. Available at: http://www.gaz-system.pl/en/for-media/press-releases/2023/december/21-12-2023-eu-financial-support-for-baltic-pipe-with-final-settlement-by-cinea.html (Accessed: 25 May 2025).
60. GAZ-System (2023b) *GAZ-SYSTEM i Energinet podpisały umowę o współpracy*, *GAZ-SYSTEM i Energinet podpisały umowę o współpracy*. Available at: http://www.gaz-system.pl/pl/dla-mediow/komunikaty-prasowe/2023/kwiecen/27-04-2023-gaz-system-i-energinet-podpisaly-umowe-o-wspolpracy.html (Accessed: 27 May 2025).
61. Gigov, L. and Vodenov, H. (2025) *‘By Agreement with BOTAS, Bulgaria is Paying Turkiye Reparations without Having Waged War,’ MP Dobrev Argued*. Available at: https://www.bta.bg/en/news/economy/891141--by-agreement-with-botas-bulgaria-is-paying-turkiye-reparations-without-having- (Accessed: 26 May 2025).
62. Goldthau, A. and LaBelle, M. (2016) ‘The power of policy regimes. Explaining shale gas policy divergence in Bulgaria and Poland’, *Review of Policy Research*, 33(6). Available at: https://doi.org/doi.org/10.1111/ropr.12204.
63. Gotev, G. (2022) *The Brief — Surrendering to Gazprom*, *Euractiv*. Available at: https://www.euractiv.com/section/global-europe/opinion/the-brief-surrendering-to-gazprom/ (Accessed: 15 April 2025).
64. Hafner, M. and Bigano, A. (2009) ‘Russia-Ukraine-Europe gas crisis of January 2009: Causes, Lessons Learned and Strategies for Europe’, *Fondazione Eni Enrico Mattei*, 1 March. Available at: https://feem-media.s3.eu-central-1.amazonaws.com/wp-content/uploads/2009115123324Policy_Brief_2009_3.pdf (Accessed: 21 May 2025).
65. Hebda, W. (2021) ‘The North-South Gas Corridor in the Context of Poland’s Gas Transmission System—A Perfect Opportunity to Diversify Gas Resources’, *Energies*, 14(21), p. 7188. Available at: https://doi.org/10.3390/en14217188.
66. Hebda, W. (2024) ‘Gas from the South, Not from Russia: The Possibility of Distributing Natural Gas from the Eastern Mediterranean to Poland and Central Europe’, *Energies*, 17(6), p. 1469. Available at: https://doi.org/10.3390/en17061469.
67. Hockenos, P. (2025) ‘Europe Somehow Still Depends on Russia’s Energy’, *Foreign Policy*, 18 February. Available at: https://foreignpolicy.com/2025/01/03/europe-russia-ukraine-war-energy-imports-oil-gas-pipeline/ (Accessed: 16 February 2025).
68. Iakovenko, M. (2023) ‘Governmental interventions in development of gas infrastructure in the “securitized” EU and Energy Community gas sectors. The cases of Poland, Lithuania and Ukraine.’, *Publications of the University of Eastern Finland*, Dissertation in Social Sciences and Business Studies; 304. Available at: https://erepo.uef.fi/server/api/core/bitstreams/1b294d6d-92a0-44c4-98ac-393b0dc88b45/content.

69. ICGB (2023a) *ICGB Executive Officer Teodora Georgieva recognized as influential energy leader for the CEE region*, *ICGB AD*. Available at: https://icgb-prod.azurewebsites.net/news/icgb-executive-officer-teodora-georgieva-recognized-as-influential-energy-leader-for-the-cee-region/ (Accessed: 27 May 2025).
70. ICGB (2023b) *ICGB utilizes in full the funding for the IGB gas pipeline*, *ICGB AD*. Available at: https://icgb-prod.azurewebsites.net/news/icgb-utilizes-in-full-the-funding-for-the-igb-gas-pipeline/ (Accessed: 25 May 2025).
71. ICGB (2023c) *Milestones*, *ICGB AD*. Available at: https://icgb-prod.azurewebsites.net/about/milestones/ (Accessed: 22 May 2025).
72. ICGB (2024) *The Vertical Gas Corridor expands through Moldova and Ukraine, strengthening IGB's crucial regional role*, *ICGB AD*. Available at: https://icgb-prod.azurewebsites.net/news/the-vertical-gas-corridor-expands-through-moldova-and-ukraine-strengthening-igb-s-crucial-regional-role/ (Accessed: 27 May 2025).
73. ICGB (no date) *Shareholders*, *ICGB AD*. Available at: https://icgb-prod.azurewebsites.net/about/shareholders/ (Accessed: 27 May 2025).
74. IEA (2022a) *Energy Policy of Poland until 2040 (PEP2040) – Policies*, *IEA*. Available at: https://www.iea.org/policies/12882-energy-policy-of-poland-until-2040-pep2040 (Accessed: 24 May 2025).
75. IEA (2022b) *Poland Natural Gas Security Policy – Analysis*, *IEA, Paris*. Available at: https://www.iea.org/articles/poland-natural-gas-security-policy (Accessed: 17 May 2025).
76. IEA (2022c) *Poland needs a stronger push to reduce emissions and ensure secure energy supplies, new IEA policy review says - News*, *IEA*. Available at: https://www.iea.org/news/poland-needs-a-stronger-push-to-reduce-emissions-and-ensure-secure-energy-supplies-new-iea-policy-review-says (Accessed: 24 May 2025).
77. Indexmundi (2020) *Natural gas - proved reserves by country - Thematic Map - World*. Available at: https://www.indexmundi.com/map/?v=98 (Accessed: 23 May 2025).
78. Interfax (2025) *Ukraine's Naftogaz buys nearly 100 mln more cubic meters of LNG from Poland's Orlen*. Available at: https://interfax.com/newsroom/top-stories/110442/ (Accessed: 26 May 2025).
79. International Trade Administration (2024) *Bulgaria Country Commercial Guide - Energy*. Available at: https://www.trade.gov/country-commercial-guides/bulgaria-energy (Accessed: 12 April 2025).
80. Islam, F. (2022) 'Ukraine war: Russia halts gas exports to Poland and Bulgaria', 26 April. Available at: https://www.bbc.com/news/business-61237519 (Accessed: 24 May 2025).
81. Jugé, M., McWilliams, B. and Zachmann, G. (2025) *European natural gas demand tracker*, *Bruegel | The Brussels-based economic think tank*. Available at: https://www.bruegel.org/dataset/european-natural-gas-demand-tracker (Accessed: 27 May 2025).
82. Kapitonov, S. (2021) *European Gas Crisis: Russia to the Rescue?*, *Carnegie Endowment for International Peace*. Available at: https://carnegieendowment.org/posts/2021/09/european-gas-crisis-russia-to-the-rescue?lang=en (Accessed: 21 May 2025).
83. Kardaś, S. (2024) *Empowering Poland: The role of international partnerships*, *ECFR*. Available at: https://ecfr.eu/publication/empowering-poland-the-role-of-international-partnerships/ (Accessed: 24 May 2025).
84. Kotseva, A. and Nikolov, K. (2024) 'Bulgaria key to stopping Russian gas to Europe, expert says', *Euractiv*, 16 October. Available at: https://www.euractiv.com/section/politics/news/bulgaria-key-to-stopping-russian-gas-to-europe-expert-says/ (Accessed: 26 May 2025).
85. Krassen, N. (2023) 'Bulgaria to sue Gazprom over suspended gas supplies', *Euractiv*, 8 June. Available at: https://www.euractiv.com/section/politics/news/bulgaria-to-sue-gazprom-over-suspended-gas-supplies/ (Accessed: 24 May 2025).
86. Lipiński, K. (2023) *Secure gas supplies for the winters to come: European path from crisis to independence*. Edited by P. Śliwowski and M. Maj. Warsaw: Polish Economic Institute (Policy paper / Polish Economic Institute, 2023, 1).
87. Łoskot-Strachota, A. (2014) *Central European problems with Russian gas supplies*, *OSW Centre for Eastern Studies*. Available at: https://www.osw.waw.pl/en/publikacje/analyses/2014-09-17/central-european-problems-russian-gas-supplies (Accessed: 21 May 2025).
88. Łoskot-Strachota, A., Keliauskaitė, U. and Zachmann, G. (2024) *Future European Union gas imports: balancing different objectives*. Available at: https://www.bruegel.org/analysis/future-european-union-gas-imports-balancing-different-objectives (Accessed: 26 May 2025).

89. Łoskot-Strachota, A., Seroka, M. and Szpala, M. (2021) *TurkStream on the diversifying south-eastern European gas market*, *OSW Centre for Eastern Studies*. Available at: https://www.osw.waw.pl/en/publikacje/osw-commentary/2021-04-08/turkstream-diversifying-south-eastern-european-gas-market (Accessed: 22 May 2025).
90. Macalister, T. (2014) 'Russia stokes tensions with the west by cutting gas exports to Poland', *The Guardian*, 10 September. Available at: https://www.theguardian.com/world/2014/sep/10/poland-russia-gas-supply-cut-gazprom-tensions-ukraine (Accessed: 21 May 2025).
91. Macharashvili, M. (2025) 'The Causes and Consequences of Ukraine Halting Russian Gas Transit to Europe', *gfsis.org*, 30 January. Available at: https://gfsis.org/en/the-causes-and-consequences-of-ukraine-halting-russian-gas-transit-to-europe/ (Accessed: 26 May 2025).
92. Maria Mateeva-Kazakova (2024) *The resurgence of the Russian dilemma on the Bulgarian political scene*, *Fondation Robert Schuman*. Available at: https://www.robert-schuman.eu/en/european-issues/751-the-resurgence-of-the-russian-dilemma-on-the-bulgarian-political-scene (Accessed: 10 April 2025).
93. Marušiak, J. (2009) 'Gas conflict between Russia and Ukraine and its impact on the energy policy of Poland', *DespiteBorders*, 9 February. Available at: https://i.despiteborders.com/gas-conflict-between-russia-and-ukraine-and-its-impact-on-the-energy-policy-of-poland/ (Accessed: 21 May 2025).
94. McNaughton, K.J. and Łukowski, M. (2025) 'How frontline states tackle sanctions against Russia: Implementation and enforcement dynamics in Poland and the Baltics', *Journal of Economic Criminology*, 8, p. 100130. Available at: https://doi.org/10.1016/j.jeconc.2025.100130.
95. Ministry of Energy of Bulgaria (2024) *The first LNG deliveries to Bulgaria arrived at the terminal in Alexandroupolis*. Available at: https://www.me.government.bg/en/news/the-first-lng-deliveries-to-bulgaria-arrived-at-the-terminal-in-alexandroupolis-3516.html?p=eyJ0eXBlIjoiYXJjaGl2ZW5ld3MifQ== (Accessed: 26 May 2025).
96. Ministry of Energy of the Republic of Bulgaria (2023) *Българската енергетика Стратегия 2023-2053*. Available at: https://me.government.bg/uploads/manager/source/NRRP/_%D0%A1%D1%82%D1%80%D0%B0%D1%82%D0%B5%D0%B3%D0%B8%D1%87%D0%B5%D1%81%D0%BA%D0%B0%20%D0%B2%D0%B8%D0%B7%D0%B8%D1%8F_2023-2053%20%20-%20%20Compatibility%20Mode_1.pdf.
97. Noerr (2015) *Poland's new gas infrastructure*. Available at: https://www.noerr.com/en/insights/polands-new-gas-infrastructure (Accessed: 22 May 2025).
98. Novinite (2024) *Bulgargaz Loses 27% Market Share Due to Contract with 'Botas*. Available at: https://www.novinite.com/articles/225475/Bulgargaz+Loses+27+Market+Share+Due+to+Contract+with+%27Botas (Accessed: 26 May 2025).
99. OMV (2024) *OMV successfully receives arbitral award in relation to its German gas supplies from Gazprom Export*. Available at: https://www.omv.com/en/media/press-releases/2024/omv-successfully-receives-arbitral-award-in-relation-to-its-german-gas-supplies-from-gazprom-export (Accessed: 24 May 2025).
100. PGNiG (2017) *PGNIG signed a strategic agreement with Qatargas - Corporate Portal*. Available at: https://en.pgnig.pl/news/-/news-list/id/pgnig-signed-a-strategic-agreement-with-qatargas/newsGroupId/1910852 (Accessed: 25 May 2025).
101. Polish Economic Institute (2023) 'Poland leads the way in Europe by reducing its dependence on Russian gas', 20 June. Available at: https://pie.net.pl/en/poland-leads-the-way-in-europe-by-reducing-its-dependence-on-russian-gas/ (Accessed: 10 April 2025).
102. POLITICO (2025) *EU lets Russian LNG slip in new sanctions package*, *POLITICO*. Available at: https://www.politico.eu/article/eu-lets-russian-gas-slip-again-in-new-sanctions-package/ (Accessed: 16 February 2025).
103. Poushter, J., Huang, C. and Clancy, L. (2022) *Spotlight on Poland: Negative Views of Russia Surge, but Ratings for U.S., NATO, EU Improve*. Available at: https://www.pewresearch.org/global/wp-content/uploads/sites/2/2022/06/PG_06.22.22_Poland.full_.report.pdf.
104. Republic of Poland (2021) *Energy Policy of Poland until 2040 (EPP2040) - Ministry of Climate and Environment - Gov.pl website*, *Ministry of Climate and Environment*. Available at: https://www.gov.pl/attachment/b1febd0c-e544-412d-a0d7-f6bff01707c1 (Accessed: 24 May 2025).
105. Republic of Poland (2022) *Principles for the update of Energy Policy of Poland until 2040*, *Ministry of Climate and Environment*. Available at: https://www.gov.pl/attachment/ae014f59-d3bb-4be2-820e-d37892a672fe (Accessed: 24 May 2025).

106. Reuters (2021) ‘Bulgaria takes 20% stake in Greek LNG terminal’, *Reuters*, 28 January. Available at: https://www.reuters.com/article/business/energy/bulgaria-takes-20-stake-in-greek-lng-terminal-idUSL1N2K30R6/ (Accessed: 23 May 2025).
107. Reuters (2022) ‘Russia’s Gazprom halts gas supplies to Latvia’, 30 July. Available at: https://www.reuters.com/business/energy/gazprom-says-it-halts-gas-supplies-latvia-2022-07-30/ (Accessed: 26 May 2025).
108. Reuters (2024) ‘Bulgaria starts arbitration against Russia’s Gazprom over gas deal’, *Reuters*, 9 July. Available at: https://www.reuters.com/business/energy/bulgaria-starts-arbitration-against-russias-gazprom-over-gas-deal-2024-07-09/ (Accessed: 24 May 2025).
109. RFE/RL’s Bulgarian Service (2023) ‘European Commission Investigating Gas Deal Between Bulgaria And Turkey’, *Radio Free Europe/Radio Liberty*, 20 October. Available at: https://www.rferl.org/a/bulgaria-turkey-gas-deal-eu-investigation-russia-back-door/32647083.html (Accessed: 26 May 2025).
110. Sabonis-Helf, T. (2022) *Georgian Energy: Sectors, Security & Strategies*. Catherine Sabonis-Bradley, Tamta Gegechkori, Rayanne Tamiko Fujimoto, Elizabeth George. Tbilisi: Georgian Foundation for Strategic and International Studies.
111. Schnell, C. (2022) ‘Schnell: REPowerEU, czyli co oznacza propozycja Komisji dla Polski (ANALIZA)’, *Portal Biznes Alert*, 21 March. Available at: https://biznesalert.pl/schnell-repowereu-czyli-co-oznacza-propozycja-komisji-dla-polski-analiza/ (Accessed: 27 May 2025).
112. Sharples, J. (2025) *The End of Russian Gas Transit via Ukraine: Immediate Impact and Implications for the European Gas Market in 2025*. The Oxford Institute for Energy Studies. Available at: https://www.oxfordenergy.org/wpcms/wp-content/uploads/2025/01/Insight-162-The-End-of-Russian-Gas-Transit-via-Ukraine.pdf.
113. Sheridan, K. *et al.* (2014) ‘Learning in the Making: A Comparative Case Study of Three Makerspaces’, *Harvard Educational Review*, 84(4), pp. 505–531. Available at: https://doi.org/10.17763/haer.84.4.brr34733723j648u.
114. Skrzyński, T. (2023) ‘In Times of Pandemic and War. Security of Natural Gas Supplies to Consumers in Romania and Bulgaria (January 2020 –August 2023)’, *ResearchGate*, Facta Simonidis 2023(2):341–361. Available at: https://doi.org/10.56583/fs.2391.
115. Steinmo, S. (2008) ‘Historical institutionalism’, in D. Della Porta and M. Keating (eds) *Approaches and Methodologies in the Social Sciences*. 1st edn. Cambridge University Press, pp. 118–138. Available at: https://doi.org/10.1017/CBO9780511801938.008.
116. Strzelecki, M. (2022) ‘Poland ends deal to receive Russian gas after rouble dispute’, *Reuters*, 23 May. Available at: https://www.reuters.com/markets/commodities/poland-ends-deal-receive-russian-gas-after-rouble-dispute-2022-05-23/ (Accessed: 15 April 2025).
117. Strzelecki, M., Tsolova, T. and Polityuk, P. (2022) ‘Russia halts gas supplies to Poland and Bulgaria’, *Reuters*, 28 April. Available at: https://www.reuters.com/world/poland-bulgaria-face-russian-gas-cut-ukraine-crisis-escalates-2022-04-26/ (Accessed: 24 May 2025).
118. Sullivan, A. (2022) *Germany resists, but Russian gas on way out – DW – 03/11/2022*, *dw.com*. Available at: https://www.dw.com/en/russian-gas-edging-toward-extinction-in-europe/a-61077614 (Accessed: 12 April 2025).
119. Tcherneva, V. and Chyong, C.K. (2015) *Europe’s vulnerability on Russian gas*, *ECFR*. Available at: https://ecfr.eu/article/commentary_europes_vulnerability_on_russian_gas/ (Accessed: 21 May 2025).
120. *TEPSA* (2022). (‘The “Double Crisis” for EU Energy Security’ | TEPSA Explainers). Available at: https://www.youtube.com/watch?v=cN9crC-m9BU (Accessed: 16 February 2025).
121. Trend (2021) *Bulgaria beging gas imports from Azerbaijan providing Sofia with diversified source of supply - S&P*, *Trend.Az*. Available at: https://en.trend.az/business/energy/3359384.html (Accessed: 22 May 2025).
122. *Türkiye-Bulgaria Gas Deal Opens Up a New Supply Route in Southeastern Europe* (2023). Available at: https://www.youtube.com/watch?v=PpsjxW4spQY (Accessed: 26 May 2025).
123. Ugyel, L., Givel, M. and Chophel, D. (2023) ‘(PDF) Punctuating “Happiness”: Punctuated equilibrium theory and the agenda-setting of the Gross National Happiness (GNH) policy in Bhutan’, *Review of Policy Research* [Preprint]. Available at: https://doi.org/10.1111/ropr.12559.

124. Ungvarsky, J. (2025) *Baltic Pipe | EBSCO Research Starters*. Available at: https://www.ebsco.com/research-starters/social-sciences-and-humanities/baltic-pipe (Accessed: 23 May 2025).
125. Vakulenko, S. (2025) *What the End of Ukraine Gas Transit Means for Kyiv, Moscow, and Europe*, *Carnegie Endowment for International Peace*. Available at: https://carnegieendowment.org/russia-eurasia/politika/2025/01/russia-ukraine-europe-gas-transit?lang=en (Accessed: 26 May 2025).
126. Vecchio, A. (2024) 'Changing the Flow: The European Response to the Russian Weaponization of Gas', *European Papers - A Journal on Law and Integration*, 2024 9(1), pp. 39–52. Available at: https://doi.org/10.15166/2499-8249/741.
127. Vladimirov, M. (2024) *Closing the backdoor: The new TurkStream is here. Can the West stop it?*, *POLITICO*. Available at: https://www.politico.eu/article/turkstream-putin-erdogan-gas-pipeline-gazprom-eu-sanctions/ (Accessed: 26 May 2025).
128. Vodenova, Y. (2024) *Energy Ministry: EC Formally Notifies Bulgaria that Investigation into Botas Agreements Is Closed with No Violations Found*. Available at: https://www.bta.bg/en/news/economy/804450-energy-ministry-ec-formally-notifies-bulgarian-side-that-investigation-into-bot (Accessed: 26 May 2025).
129. Voytyuk, O. (2022) 'The Baltic Pipe and its impact on energy security in Central and Eastern Europe', *Polityka Energetyczna – Energy Policy Journal*, 25(1), pp. 89–108. Available at: https://doi.org/10.33223/epj/145554.
130. Walstad, A. (2025) 'Poland's Gdańsk LNG on track, but peak demand approaches', *Gas Outlook*, 8 May. Available at: https://gasoutlook.com/analysis/polands-gdansk-lng-on-track-but-peak-demand-approaches/.
131. WBIF (2023) *Serbia – Bulgaria gas pipeline opened to diversify energy supplies*, *Western Balkans Investment Framework*. Available at: https://www.wbif.eu/news-details/serbia-bulgaria-gas-pipeline-opened-diversify-energy-supplies (Accessed: 26 May 2025).

Appendixes

Appendix 1: Interview Protocol

The questions in the following individual in-depth interview guide are to be addressed to the experts, professors and policy-makers proficient in the EU energy domain and familiar with Polish and Bulgarian gas supply security in recent years

Questions on Poland:

1) How did Poland approach to Gas supply imports from Russia before Russia's full-scale invasion of Ukraine?
2) How motivated was Poland to diversify gas supply portfolio before February 2022?
3) How did Polish stance to gas supply imports change after February 2022?
4) Overall, how successful has Poland been in gas supply diversification?
5) What was the role of European Union (e.g. European Commission) in the diversification efforts?
6) What was the role of other (e.g. national, regional, private, industrial, public) actors in the diversification endeavours?
7) How important has public opinion been in determining Polish stance in the last decade towards energy (namely gas) imports?
8) Has any particular party, figure or factor played a distinct role in determining Polish stance in the last decade towards energy (namely gas) imports?

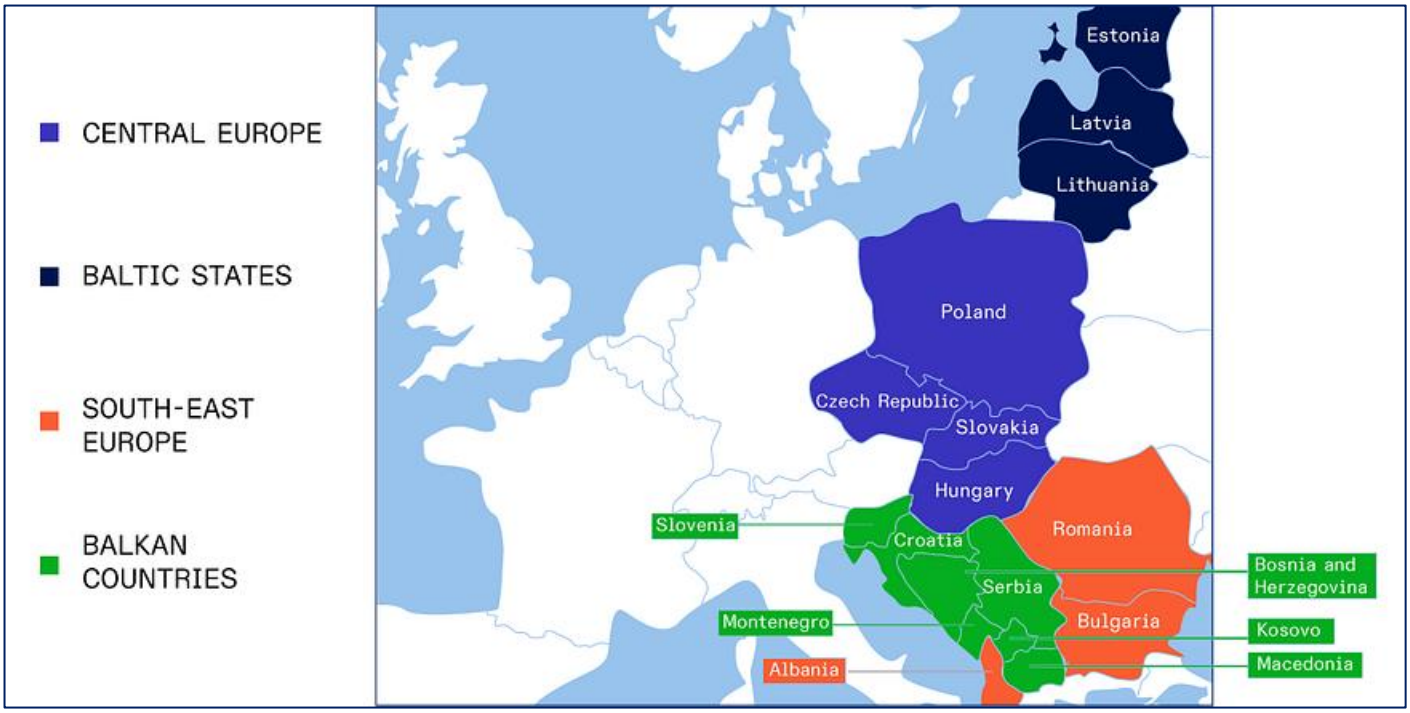
Questions on Bulgaria:

9) How did Bulgaria approach to Gas supply imports from Russia before Russia's full-scale invasion of Ukraine?
10) How motivated was Bulgaria to diversify gas supply portfolio before February 2022?
11) How did Bulgarian stance to gas supply imports change after February 2022?
12) Overall, how successful has Bulgaria been in gas supply diversification?
13) What was the role of European Union (e.g. European Commission) in the diversification efforts?
14) What was the role of other (e.g. national, regional, private, industrial, public) actors in the diversification endeavours?
15) How important has public opinion been in determining Bulgarian position in the last decade towards energy (namely gas) imports?
16) Has any particular party, figure or factor played a distinct role in determining Bulgarian position in the last decade towards energy (namely gas) imports?

Comparative Questions:

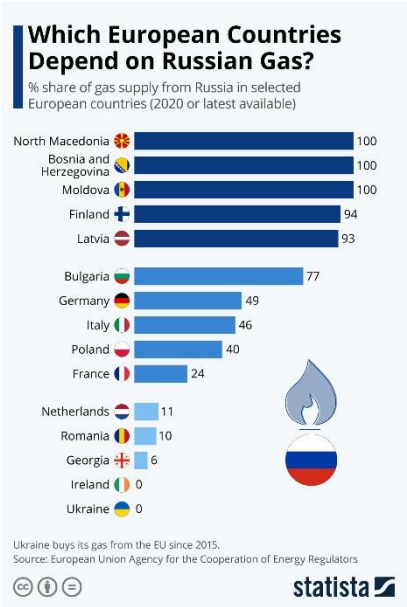
17) What key similarities and differences do you find in Polish and Bulgarian cases in gas supply security?
18) Where could these similarities and differences stem from?
19) Would you argue that European Union's (e.g. Commission) role was more visible in any of these cases?

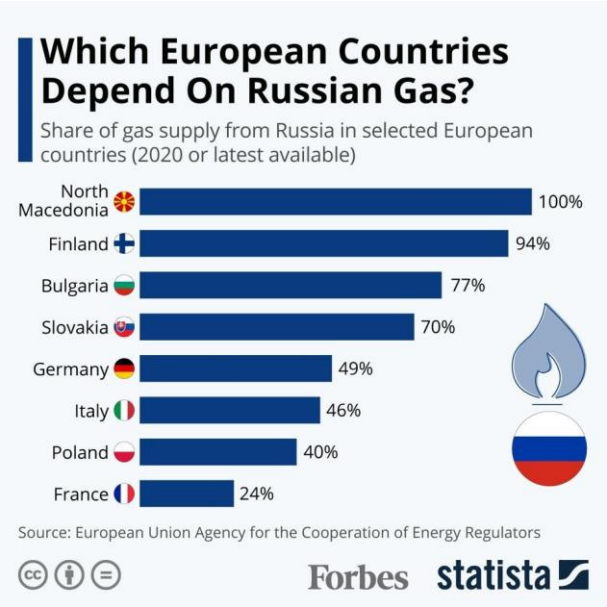
Appendix 2: Map of the CEE



Map of Central and Eastern Europe (CEE), 2023. N.B.: for the research purposes, paper refers to the EU members of the CEE – Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia, Slovakia. Source: Medium

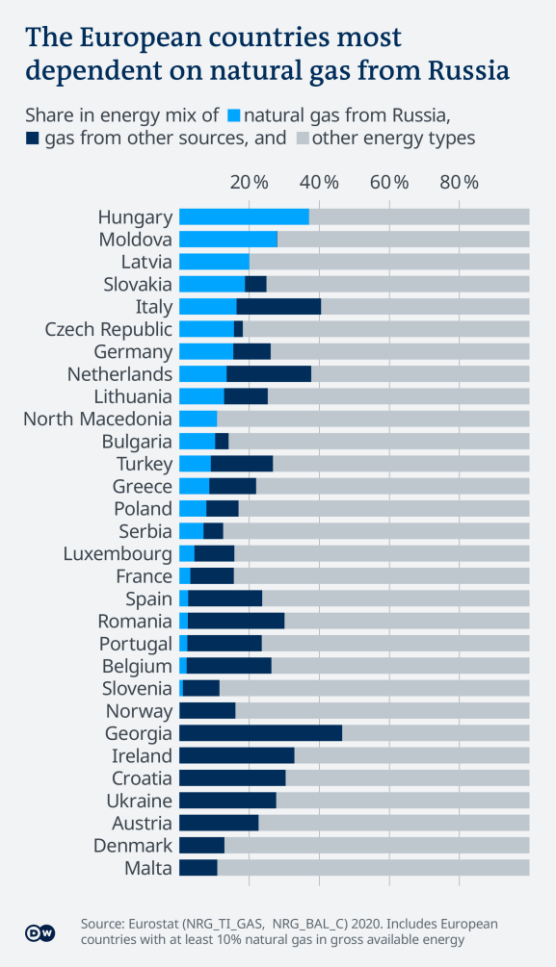
Appendix 3: Statistics of dependence on Russian Gas in Europe before 2022





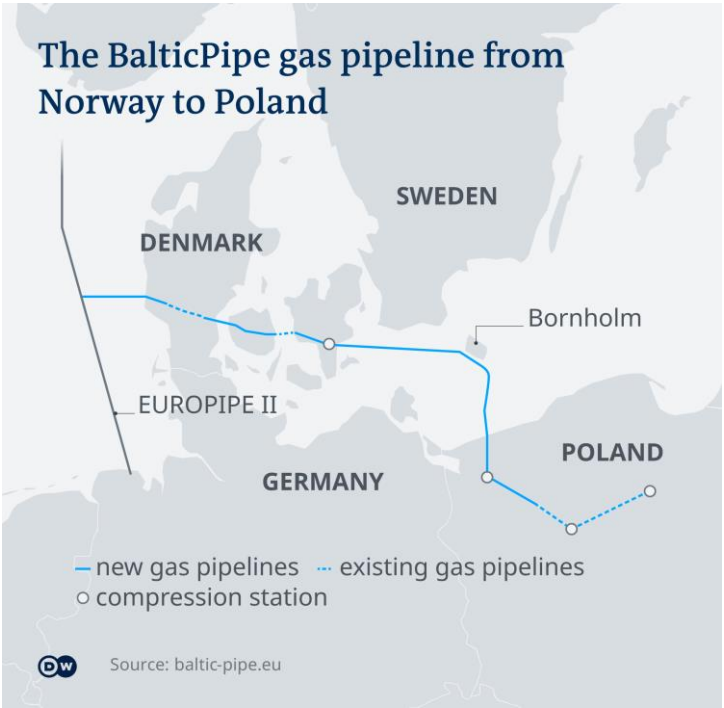
Graphs reflecting the share of gas supply from Russia in selected European countries (2020 or latest available), 2022. Source: Statista, Forbes

Appendix 4: Statistics of dependence on Russian Gas in Europe before 2022



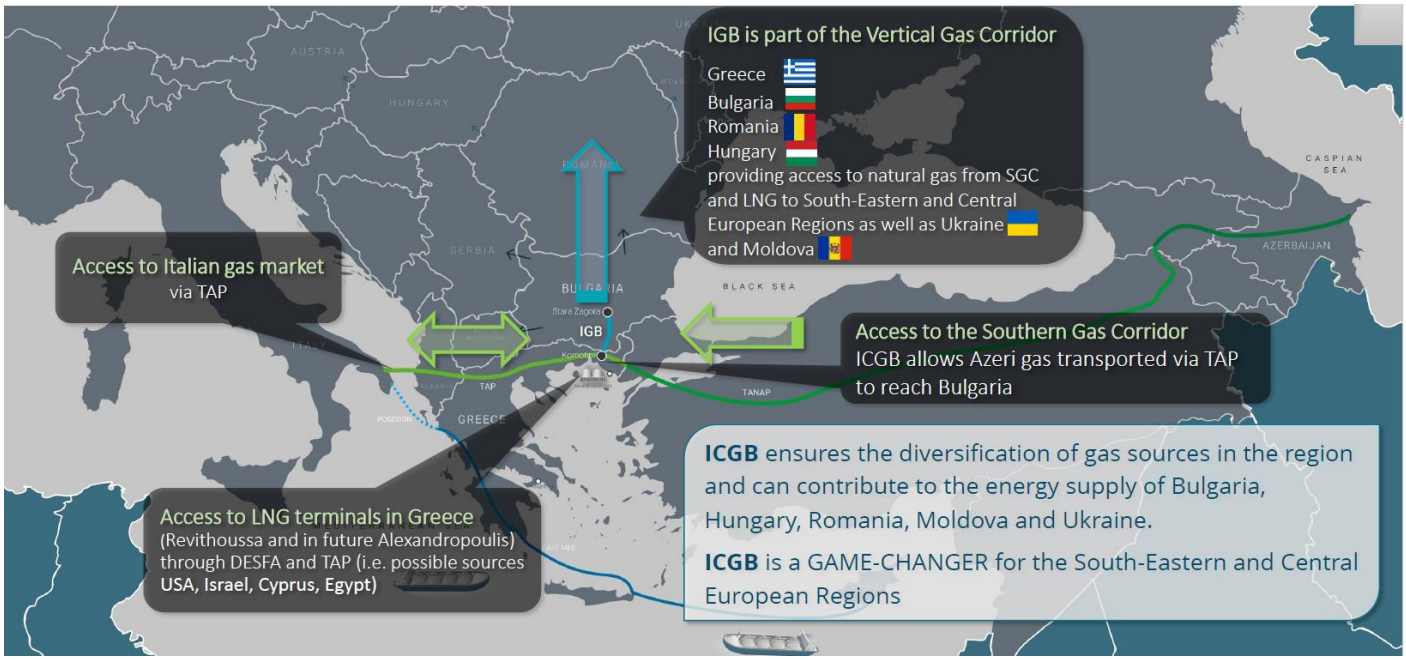
Share of Russian natural gas in the energy mix of European Countries. Data from Eurostat, 2020. Source: Deutsche Welle

Appendix 5: Baltic Pipe



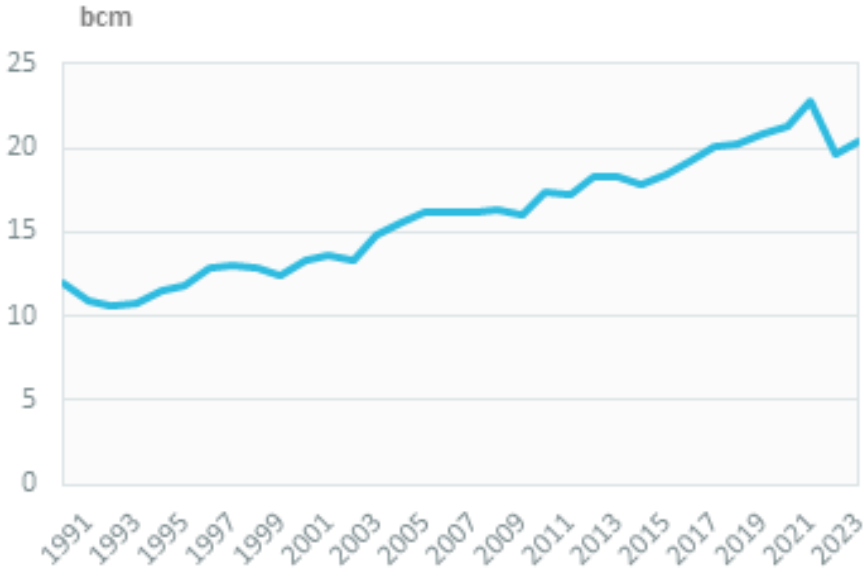
Map of the Baltic Pipe, 2022. Source: Deutsche Welle

Appendix 6: ICGB within the Southern Gas Corridor



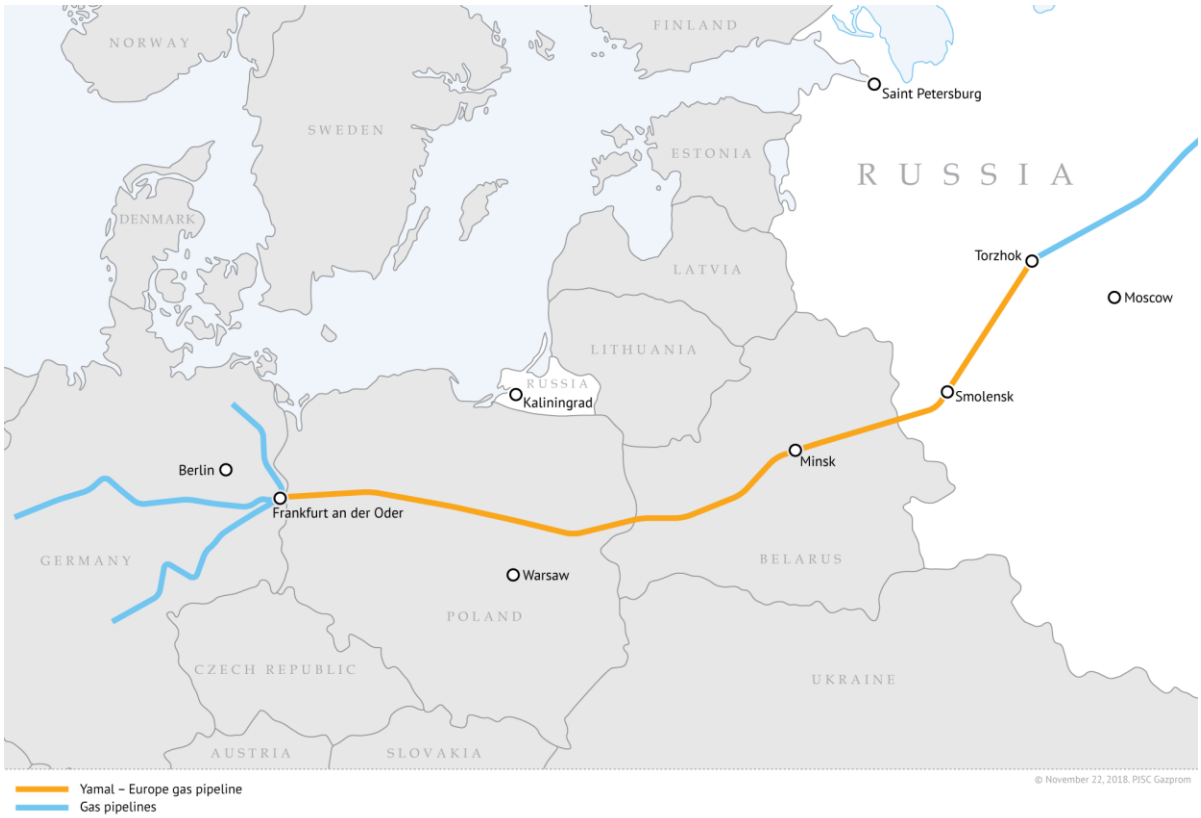
Map of Southern Gas Corridor (SGC) project, reflecting the place of the ICGB, 2023. The SGC brings gas from Azerbaijan through Georgia and Türkiye to European markets. Source: Energy Community

Appendix 7: Gas Consumption in Poland



Natural Gas Consumption in Poland between 1991-2023 measured in billion cubic meters (bcm), 2023. Source: Enerdata

Appendix 8: Yamal-Europe Pipeline

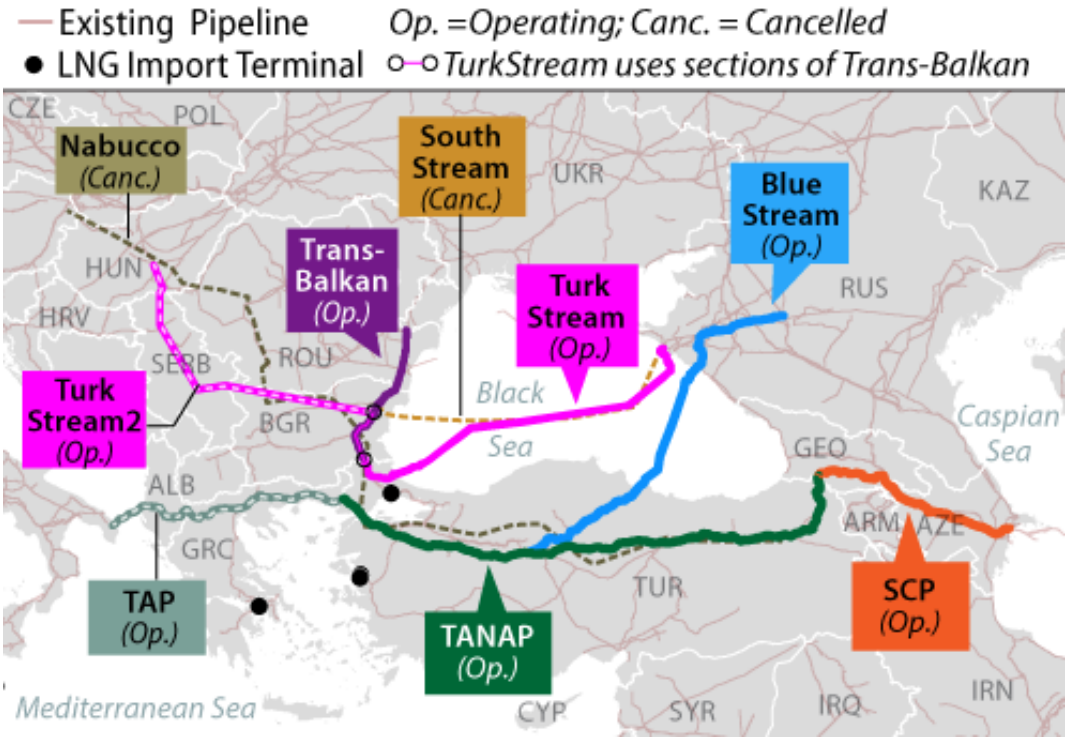


Map of Yamal-Europe Gas Pipeline. Source: Gazprom

Appendix 9: Nord Stream

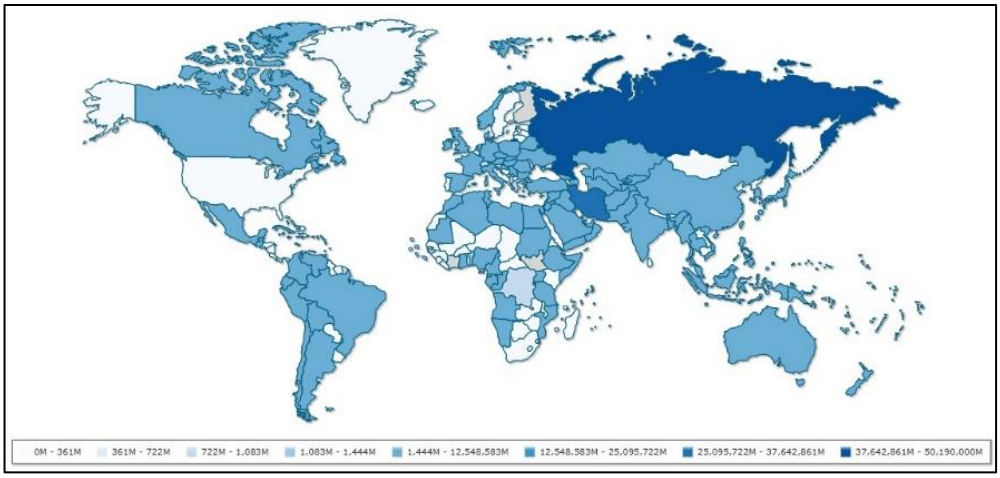
Map of Nord Stream 1 and 2 Gas Pipeline projects, 2020. Source: GIS

Appendix 10: Pipelines in the Eastern Europe



Map reflecting TurkStream, Trans-Balkan Pipeline, Trans Adriatic Pipeline (TAP) and other pipelines in eastern Europe, 2019-2021. Source: EveryCRSReport

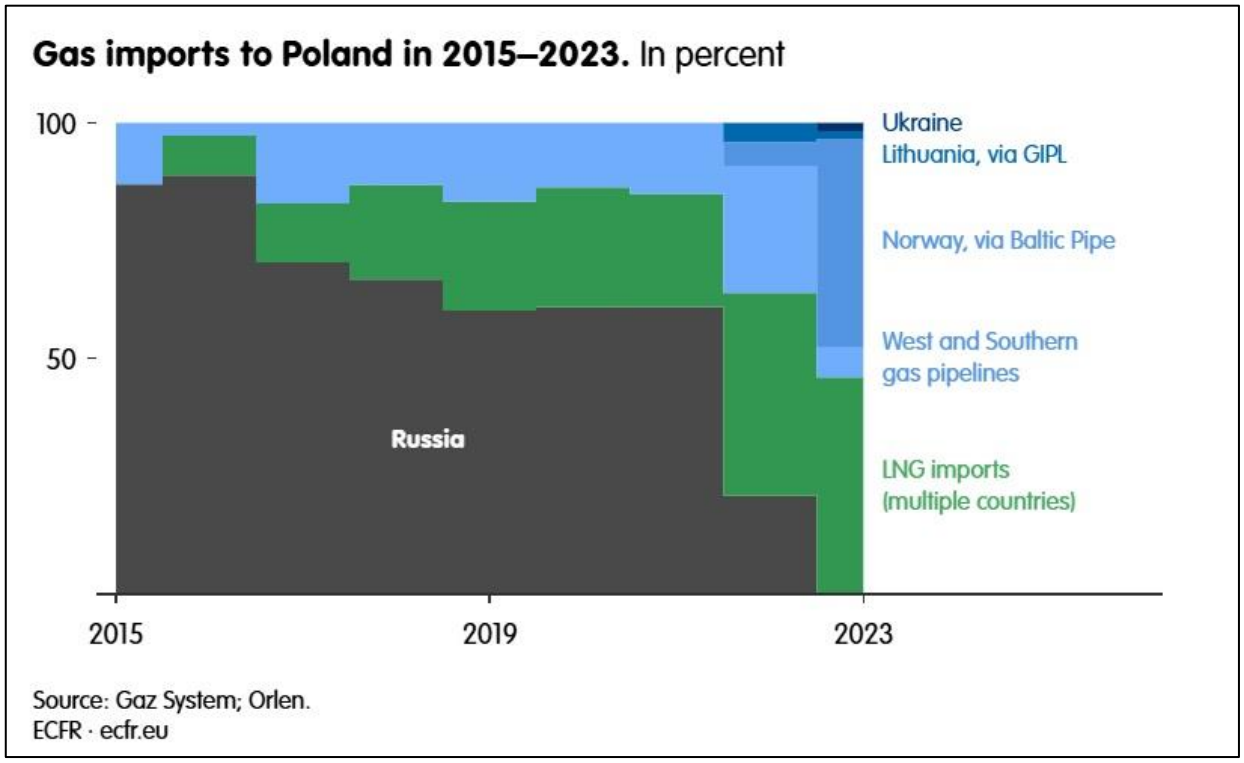
Appendix 11: Natural Gas – Proved Reserves



Country	Natural gas - proved reserves (cubic meters)	Year
Russia	47,799,999,660,032	2020
Iran	33,720,000,053,248	2020
Qatar	24,009,999,165,440	2020
Saudi Arabia	8,619,000,070,144	2020
Turkmenistan	7,503,999,926,272	2020
United Arab Emirates	6,091,000,250,368	2020
Venezuela	5,739,000,102,912	2020
Nigeria	5,475,000,123,392	2020
China	5,440,000,229,376	2020
Algeria	4,503,999,873,024	2020
Iraq	3,820,000,116,736	2020
Indonesia	2,865,999,904,768	2020
Mozambique	2,832,000,090,112	2020
Kazakhstan	2,406,999,916,544	2020
Egypt	2,185,999,941,632	2020
Canada	2,055,999,979,520	2020
Australia	1,989,000,036,352	2020
Uzbekistan	1,840,999,956,480	2020
Kuwait	1,784,000,020,480	2020
Norway	1,781,999,992,832	2020
Libya	1,505,000,030,208	2020
India	1,290,000,007,168	2020
Malaysia	1,183,000,035,328	2020
Ukraine	1,104,000,057,344	2020
Azerbaijan	991,100,010,496	2020
Netherlands	801,400,029,184	2020

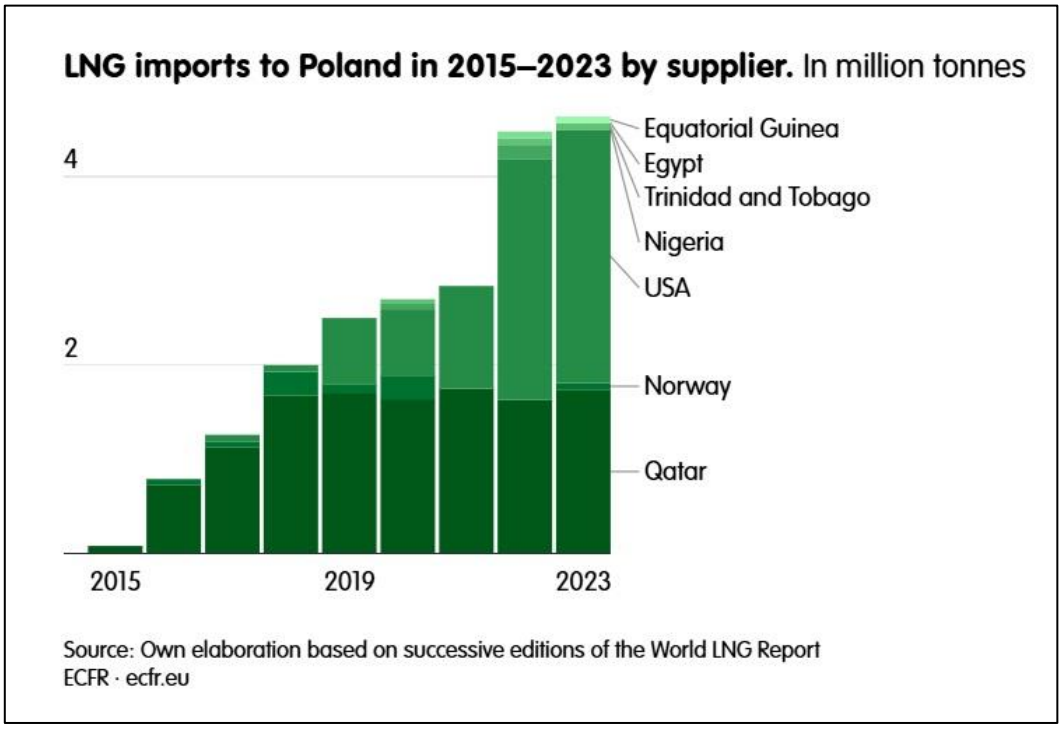
Map and Graph of Proved Reserves of Natural Gas in the World as of January 1, 2020. Based on CIA World Factbook data. Source: Indexmundi

Appendix 12: Gas imports to Poland



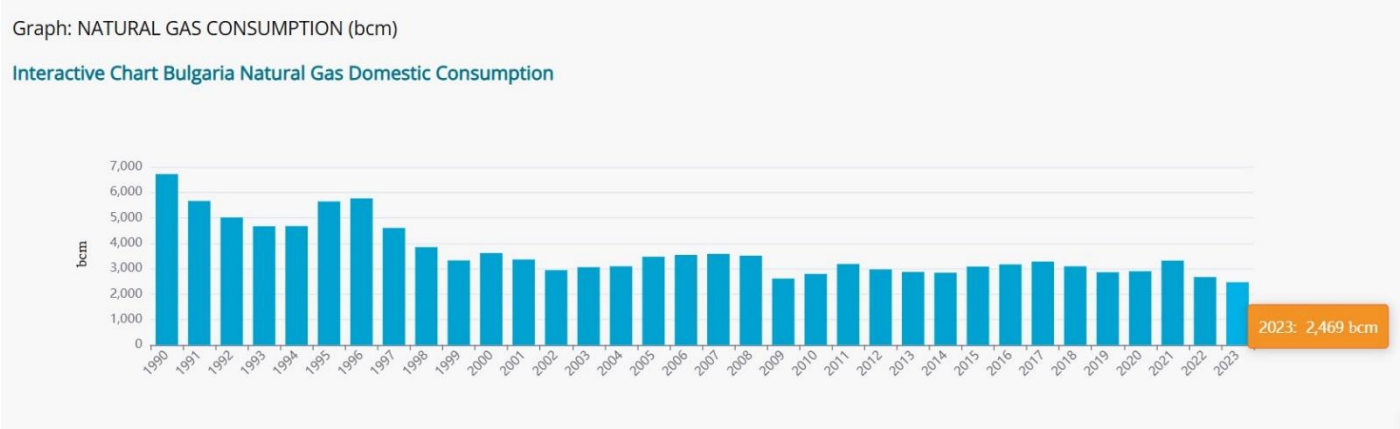
Graph of gas import percentages to Poland in 2015-2023 period. Source: ECFR

Appendix 13: LNG imports to Poland



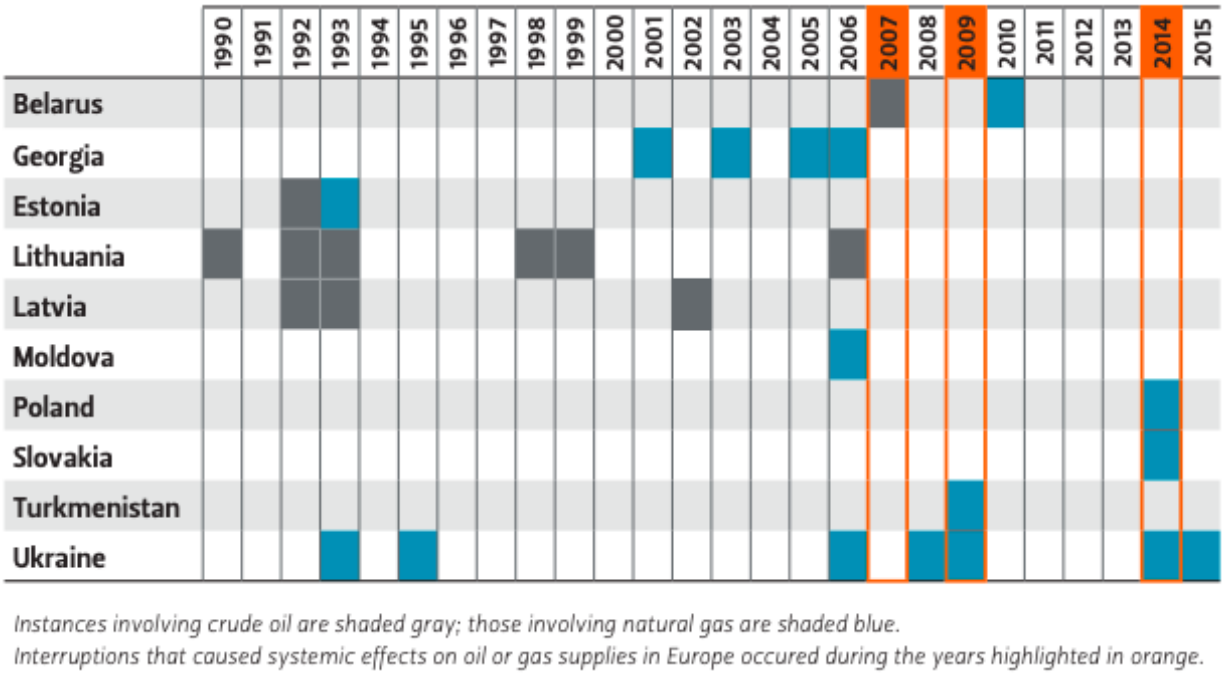
Graph of LNG imports to Poland by supplier in 2015-2023 period (1 mln tonnes LNG = 1.379 bcm gas). Source: ECFR

Appendix 14: Natural Gas Consumption in Bulgaria



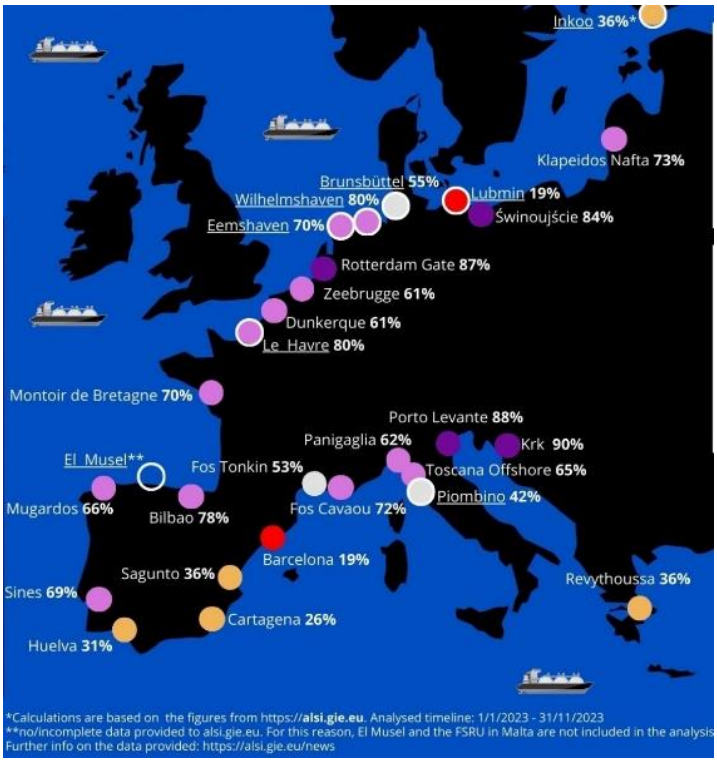
Graph Natural Gas Consumption in Bulgaria in the 1990-2023 period. Source: [Enerdata]

Appendix 15: Energy Manipulations by the Soviet Union and Russia



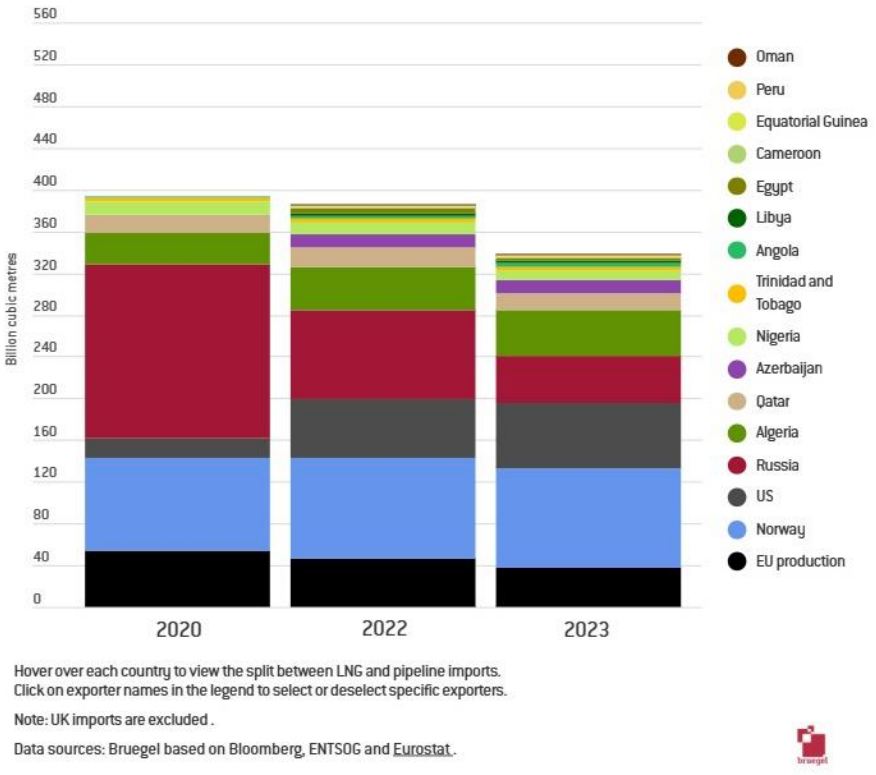
Known or Probable Politically Driven Energy Supply or Price Manipulations by the Soviet Union and Russia in the 1990–2015 period. Source: [Baker Institute]

Appendix 16: EU LNG Terminal Utilisation Rates



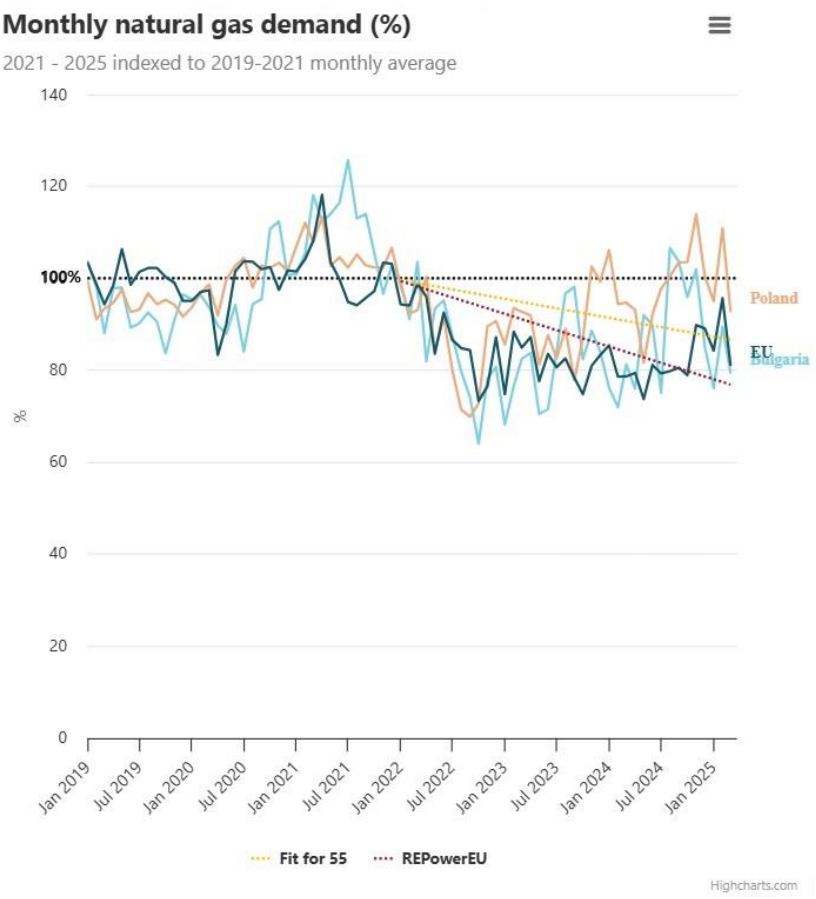
The Map of the LNG terminals in the EU reflecting their utilisation rates in 2023. Data from 2024 (map edited by the author). Source: [Food & Water Action Europe]

Appendix 17: EU's gas imports



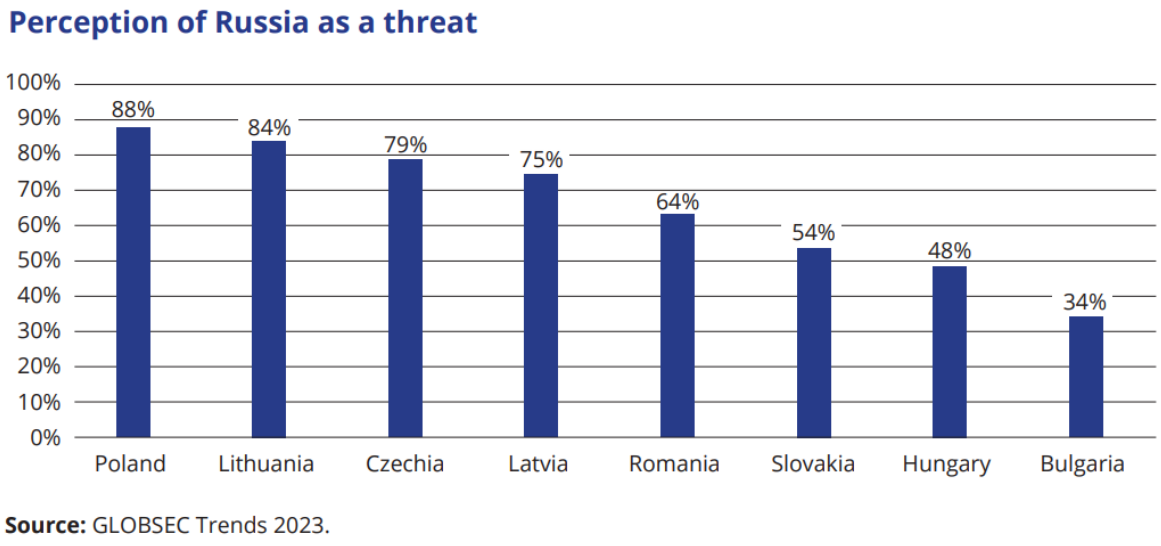
EU's gas imports in 2020, 2022 and 2023. Source: [Bruegel]

Appendix 18: Natural Gas Demand in the EU



Monthly natural Gas Demand in the EU in 2019-2025. Source: Bruegel

Appendix 19: Public Perceptions of Russia in the CEE



Public Perception of Russia as a threat in Central and Eastern European countries in 2023. Sources: Institute for Global Analytics and GLOBSEC

Appendix 20: Poland's Key Energy Indicators

		Poland				EU			
		2019	2020	2021	2022	2019	2020	2021	2022
ENERGY DEPENDNCE	**Import Dependency [%]**	**45.2%**	**42.8%**	**40.5%**	**46.0%**	**60.5%**	**57.5%**	**55.5%**	**62.5%**
	of Solid fossil fuels	6.0%	0.3%	-3.6%	8.0%	43.3%	35.8%	37.3%	45.8%
	of Oil and petroleum products	97.3%	96.9%	96.4%	98.4%	96.7%	96.8%	91.7%	97.7%
	of Natural Gas	82.4%	78.3%	83.6%	81.2%	89.7%	83.6%	83.6%	97.6%
	Dependency from Russian Fossil Fuels [%]								
	of Natural Gas	55.0%	54.9%	56.6%	19.6%	39.7%	41.3%	41.1%	21.0%
	of Crude Oil	67.9%	71.5%	63.3%	42.9%	28.8%	26.7%	26.4%	19.5%
	of Hard Coal	64.6%	73.6%	66.1%	12.4%	43.5%	49.1%	47.4%	21.5%

		2016	2017	2018	2019	2020	2021	2022
DIVERSIFICATION OF GAS SUPPLIES	**Gas Consumption (in bcm)**	**19.0**	**20.1**	**20.2**	**20.7**	**21.3**	**22.9**	**19.7**
	Gas Consumption year-on-year change [%]	4.5%	5.5%	0.6%	2.6%	2.9%	7.1%	-13.8%
	Gas Imports - by type (in bcm)	**14.7**	**15.7**	**15.8**	**17.5**	**17.4**	**18.5**	**15.2**
	Gas imports - pipeline	13.5	14.0	13.0	14.0	13.6	14.4	9.0
	Gas imports - LNG	1.1	1.8	2.7	3.5	3.8	4.1	6.2
	Gas Imports - by main source supplier (in bcm) (1)							
	United States	-	0.1	0.1	0.9	1.0	1.6	3.4
	Qatar	1.0	1.5	2.3	2.3	2.3	2.4	2.3
	Germany	2.7	3.6	3.0	3.9	3.7	3.3	4.4
	Russia	10.9	10.3	9.7	9.6	9.6	10.5	3.0

		2019	2020	2021	2022	2023
	LNG Terminals - storage capacity m3 LNG					
	Number of LNG Terminals	1	1	1	1	1
	LNG Storage capacity (m3 LNG)	320,000	320,000	320,000	320,000	320,000
	Underground Storage					
	Number of storage facilities	10	10	10	10	7
	Technical Capacity (bcm)	3.0	3.1	3.2	3.2	3.3

Graph of the Key Energy Indicators of Poland by 2024. Source: European Commission, p. 49

Appendix 21: Bulgaria's Key Energy Indicators

		Bulgaria				EU			
		2019	2020	2021	2022	2019	2020	2021	2022
ENERGY DEPENDNCE	**Import Dependency [%]**	**38.5%**	**38.2%**	**36.2%**	**37.1%**	**60.5%**	**57.5%**	**55.5%**	**62.5%**
	of Solid fossil fuels	7.5%	9.6%	10.5%	11.6%	43.3%	35.8%	37.3%	45.8%
	of Oil and petroleum products	102.6%	97.5%	97.2%	106.1%	96.7%	96.8%	91.7%	97.7%
	of Natural Gas	100.4%	96.4%	96.2%	106.1%	89.7%	83.6%	83.6%	97.6%
	Dependency from Russian Fossil Fuels [%]								
	of Natural Gas	79.4%	75.2%	79.8%	41.4%	39.7%	41.3%	41.1%	21.0%
	of Crude Oil	62.7%	2.0%	2.4%	1.4%	28.8%	26.7%	26.4%	19.5%
	of Hard Coal	99.8%	84.5%	87.9%	35.7%	43.5%	49.1%	47.4%	21.5%

		2016	2017	2018	2019	2020	2021	2022
DIVERSIFICATION OF GAS SUPPLIES	**Gas Consumption (in bcm)**	**3.2**	**3.3**	**3.1**	**2.9**	**2.9**	**3.3**	**2.7**
	Gas Consumption year-on-year change [%]	2.7%	3.4%	-5.5%	-7.6%	1.3%	14.3%	-18.0%
	Gas Imports - by type (in bcm)	**3.1**	**3.3**	**3.1**	**2.9**	**2.9**	**3.3**	**2.9**
	Gas imports - pipeline	3.1	3.3	3.1	2.9	2.9	3.3	2.5
	Gas imports - LNG	0.0	0.0	0.0	0.0	0.0	0.0	0.4
	Gas Imports - by main source supplier (in bcm) (1)							
	Russia	3.1	3.3	3.1	2.3	2.2	2.6	1.2
	Azerbaijan	-	-	-	-	0.0	0.3	0.6
	Greece	-	-	0.0	0.6	0.6	0.4	0.8
	United States	-	-	-	-	-	-	0.4

		2019	2020	2021	2022	2023
	LNG Terminals - storage capacity m3 LNG					
	Number of LNG Terminals	0	0	0	0	0
	LNG Storage capacity (m3 LNG)	0	0	0	0	0
	Underground Storage					
	Number of storage facilities	1	1	1	1	1
	Technical Capacity (bcm)	0.6	0.6	0.6	0.5	0.5

Graph of the Key Energy Indicators of Bulgaria by 2024. Source: European Commission, p. 47