Éva CSÁKI-HATALOVICS* – Zsolt CZÉKMANN** – Gyula Balázs CSÁKI-HATALOVICS***

Impact of the Nord Stream Gas Pipeline Sabotage on the Energy Security of Germany and the V4 Countries

Abstract

The Nord Stream pipelines have long played a pivotal role in Europe's natural-gas supply, symbolising both strategic interdependence and geopolitical tension. The 2022 sabotage, which disabled most of the system, triggered unprecedented supply-security challenges and market volatility. This study adopts a multidisciplinary qualitative approach, combining legal analysis, geopolitical assessment, and systematic evaluation of energy-security data. Primary sources include EU legislation, Court of Justice case law, environmental assessments, and comparative data on V4 and German natural-gas systems. Findings show that the sabotage accelerated Europe's shift toward diversified gas sources, including LNG and alternative pipeline corridors. V4 countries display varying resilience: Poland has markedly reduced Russian dependence, while Hungary, Slovakia, and Czechia remain more structurally constrained. Legally, the analysis of case T-526/19 confirms the EU's authority to apply internal-market rules to pipelines from third countries. Nord Stream exemplifies the intersection of infrastructure, law, and

* | Assistant professor, Károli Gáspár University of the Reformed Church in Hungary, Faculty of Economics, Health Sciences and Social Studies, Institute of Economics and Management, e-mail: csakihatalovics.eva@kre.hu, ORCID: https://orcid.org/0009-0009-8584-9815.

** | PhD, associate professor, University of Miskolc, Faculty of Law, Department of Public Administration, e-mail: zsolt.czekmann@uni-miskolc.hu, ORCID: https://orcid.org/0000-0002-5611-3878, – The creation of this scientific communication was supported by the University of Miskolc with funding granted to the author Zsolt Czékmann within the framework of the institution's Scientific Excellence Support Program. (Project identifier: ME-TKTP-2025-097).

*** | PhD, associate professor, Károli Gáspár University of the Reformed Church in Hungary, Faculty of Law, Department of Public Administration, e-mail: jogcsaki@gmail.com, ORCID: https://orcid.org/0000-0003-0603-305X.

Éva CSÁKI-HATALOVICS – Zsolt CZÉKMANN – Gyula Balázs CSÁKI-HATALOVICS: Impact of the Nord Stream Gas Pipeline Sabotage on the Energy Security of Germany and the V4 Countries. *Journal of Agricultural and Environmental Law* ISSN 1788-6171, 2026 Vol. XXI No. 40 pp. 499–534

https://doi.org/10.21029/JAEL.2026.40.499

geopolitics, underscoring the need for diversified supply routes and adaptable regulatory frameworks.
Keywords: Nord Stream, Nord Stream 2, Baltic Sea pipeline, gas pipeline sabotage, European energy security, EU energy law, EU internal energy market, diversification of energy sources, gas import dependency, energy transition, Energy Policy Triangle, supply security, sustainable energy, energy diversification

1. Introduction

More than three years have passed since 26 September 2022, when unknown perpetrators[1] carried out an act of sabotage against four Nord Stream gas pipelines[2] in the depths of the Baltic Sea near the Danish island of Bornholm, resulting in the destruction of three of them, seriously damaging one of Europe's most important energy infrastructures. In this study we will attempt to explore the legal and political lessons that can be learned from what happened.

Energy security has become one of the most complex and pressing strategic challenges for the European Union in the 21st century. Natural gas, as a transitional energy source, plays a key role in achieving the EU's climate policy objectives and maintaining its industrial competitiveness. To support these efforts, in the summer of 2022, the European Commission adopted, under certain conditions, supplementary legislation to the EU Taxonomy,[3] which classifies natural gas and nuclear energy as sustainable, and which subsequently entered into force on 1 January 2023, thus promoting economic stability and a sustainable transition.[4]

In this context, the Nord Stream pipelines – especially Nord Stream 2 – were not just technical facilities, but became symbols of geopolitical significance. The construction of the pipelines and their subsequent physical damage as a result of the 2022 sabotage operation brought the issue of European security of supply into a new dimension. It also highlighted the strategic importance of international and EU law in protecting energy infrastructure.

Energy security, as an important factor influencing international energy supply and demand, is closely linked to geopolitics and has always been the subject of widespread global attention. Energy crises not only have a significant impact on the national economy but also alter the structure of supply and demand in the energy market, especially amid rapid economic development. In a study on the

1 | Proceedings have been initiated against the alleged perpetrators, which were still ongoing at the time of finalising the manuscript of this study.
2 | Nord Stream 1 and Nord Stream 2 pipeline pairs.
3 | Commission Delegated Regulation (EU) 2022/1214.
4 | European Commission, EU taxonomy: Complementary Climate Delegated Act to accelerate decarbonisation, 2022.

Nord Stream project, Goodell W. John and his research colleagues highlighted that risks of geopolitical significance some times have irreversible effects on energy market prices and the development of supply and demand.[5] Therefore, energy security objectives remain a fundamental element of every country's long-term strategy. Political factors influence a country's access to energy, which is why it is particularly important to study energy security from the perspective of geopolitical conflicts.[6] Energy security is one of the three pillars of the Energy Policy Triangle, alongside environmental sustainability and economic competitiveness. Within this framework, energy security refers to ensuring a reliable, uninterrupted, and affordable supply of energy for a country or region – both in the short and long term.[7]

The aim of the study is to present the licensing and implementation conditions of the Nord Stream pipeline pairs in a factual and descriptive manner, with particular regard to their impact on European energy security. During the research, we used qualitative document analysis methods, supplemented by the examination of legal cases, to enable a deeper understanding of the relevant legal conflicts and decision-making mechanisms. Due to the significant geopolitical weight and ongoing relevance of the topic, in addition to the available articles and studies, daily monitoring of the international press proved essential, effectively supporting the tracking of dynamic developments and keeping the analysis up to date. For readers with a deeper interest in the relevant regulatory background and the development of the gas industry, the literature cited in the study's footnotes serves as a starting point.[8]

The aim of the research was to present the legal and implementation aspects of one of the most divisive energy investments of our time, the Nord Stream project, which is controversial from both an environmental and geopolitical perspective due to its high methane emissions. The study focused not on the historical development of the regulatory environment, but on a specific legal case and its environmental, political and economic implications. In this way, the study aims to contribute to the professional discourse on energy security and sustainability.

5 | Goodell et al. 2023.
6 | Qingjun et al. 2024.
7 | For details on energy security in the V4 countries, see: Łoskot-Strachota et al. 2024.
8 | See, for example: Czékmann 2020; Csáki-Hatalovics 2026; Rátky & Tóth 2022; Fazekas 2022; Szuchy 2019.

2. Challenges related to the construction and operation of the Nord Stream pipeline pairs

2.1. About the Nord Stream pipeline in general

Nord Stream 2[9] is a 1,224-kilometre-long natural gas pipeline with an internal diameter of 1,153 mm, which runs from Russia through the Baltic Sea to Germany.[10] The project was led by Gazprom, which held a 51% stake, while the remaining financing was provided by several European energy companies, including Germany's Wintershall Dea AG and PEGI/E.ON each with a 15.5% stake, and the Netherlands' N.V. Nederlandse Gasunie and France's ENGIE each with a 9% stake.[11]

The 7.4 billion EUR Nord Stream AG project aimed to create a stable link between the European gas network and Russia's world-leading natural gas reserves for the next 50 years.[12] The pipeline pairs ran through the territorial waters of Russia, Finland, Sweden and Denmark before reaching the north-eastern coast of Germany.[13]

Although the pipeline route avoided the chemical warfare agent (CWA) disposal sites located in the depths of the Baltic Sea near the island of Bornholm, which were sunk after World War II,[14] serious environmental concerns arose during the planning stage. Experts feared that disturbing the contaminated sediments[15] and stirring them up could pose a risk to the marine ecosystem.[16] One of the starting points for the geopolitical disputes surrounding the Nord Stream 2 gas pipeline was environmental risk. Nord Stream 2 was one of the most

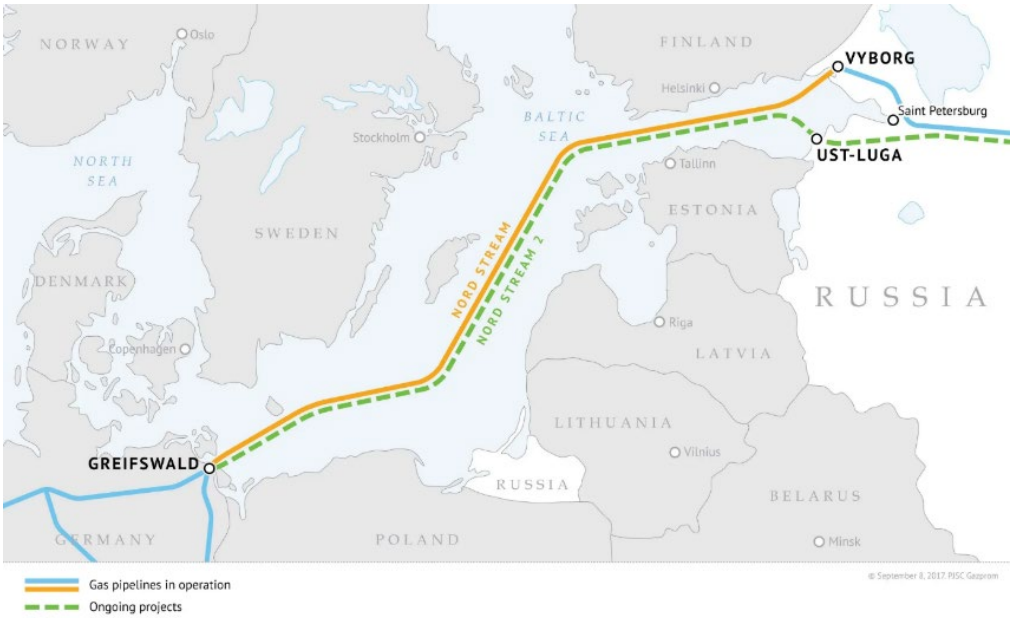
9 | Larsson 2007.
10 | Poursanidis et al. 2024.
11 | Nord Stream AG.
12 | Sanderson et al. 2012, 217–226.
13 | Farmer 2021.
14 | Chemical Warfare Agent (CWA) disposal sites are used to store or destroy chemical weapons and their residues, playing a key role in safe handling. After World War II, thousands of tonnes of such substances were dumped in the Baltic Sea, which still poses a significant environmental and safety risk today. For more information, see: Liu et al. 2024.
15 | The deep-sea basin known as the Bornholm Deep, located in the Baltic Sea near the Danish island of Bornholm, became a dumping ground for large quantities of chemical warfare agents after the Second World War. According to historical sources, around 32,000 tonnes of German chemical weapons were dumped in this area, containing a total of approximately 11,000 tonnes of highly toxic active ingredients. This disposal practice, which involved dumping at sea, was later banned internationally by the 1973 London Convention on the Prevention of Marine Pollution, as it posed serious environmental risks to marine ecosystems. For details, see: https://www.imo.org/en/about/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-%28MARPOL%29.aspx [08.10.2024].
16 | Liu et al. 2024, 559.

divisive energy investments of the past decade.[17] It not only affected the economic interests of the countries directly involved, such as Germany and Russia, but also had broader geopolitical implications. The controversies surrounding the project clearly demonstrated that the issue of energy supply is not merely economic but also strategic and political.[18] While Germany had previously supported the project, in 2021, the then German Foreign Minister, representing the Green political position, stated on several occasions that he did not wish to support the issuance of the final permit required for the pipeline to become operational. The German federal government ultimately did not approve the permit, citing environmental and geopolitical considerations. Geopolitical and environmental considerations also influenced Denmark's attitude towards the controversial project. The concerns raised significantly delayed the granting of the pipeline construction permit in the maritime area affecting Denmark. Ultimately, Denmark also granted the permit required for construction.[19] In response to strong protests from various environmental organisations, Nord Stream AG launched five comprehensive environmental monitoring programmes. The aim of these programmes was to investigate and document the environmental impact of the construction and operation of the pipelines in the countries concerned, such as Russia, Finland, Sweden, Denmark and Germany. According to the company, more than twenty independent research companies participated in the programme, analysing the impact on the Baltic Sea's wildlife.[20] The research results ultimately confirmed that the project met the environmental conditions required by national licensing procedures.[21]

The aim of the Nord Stream 2 project was to further increase the security of Europe's gas supply and diversify import routes. According to the original plans, the Nord Stream 1 pipeline's annual capacity would have been doubled, enabling the transport of 110 billion cubic metres of natural gas to Europe per year. Accordingly, the newly built pipeline pair would have transported 55 billion cubic metres of natural gas to Europe annually,[22] provided it was not sabotaged.

17 | Csáki-Hatalovics 2026.
18 | Fetisov et al. 2021, 413–425.
19 | Wood & Henke 2021.
20 | Sampling tests were carried out in Russia, Finland, Sweden, Denmark, and Germany along the entire route of the planned pipeline at approximately 1,000 designated points. This was done because the offshore section passed through the exclusive economic zones of the countries concerned – 118 km in Russia, 374 km in Finland, 510 km in Sweden, 147 km in Denmark and 85 km in Germany – and also affected the territorial waters of Russia, Denmark and Germany. The purpose of the sampling was to map environmental conditions and identify potential ecological risks associated with the pipeline's construction and operation.
21 | Fetisov et al. 2021.
22 | Larsson 2007.

Figure 1: The route of the Nord Stream pipeline[23]



Nord Stream AG, registered in Zug, Switzerland,[24] is an international consortium of six large companies, established in 2005 to plan, build and operate two natural gas pipelines in the Baltic Sea, Nord Stream 1 and 2.[25]

The project was led by Russia's Gazprom, while the other members of the consortium were European energy companies Uniper, Wintershall Dea, OMV, Engie and Shell. Under international environmental agreements, it was mandatory to consult with several other affected states, including Poland, Estonia, Latvia, and Lithuania, during the preparation of the project to assess potential environmental impacts. Consultations on Nord Stream 1 began in 2006, and although the project was already controversial at that time, construction progressed steadily, and the pipeline pair entered service in 2011. According to the original plans, this would have ensured a reliable supply of Russian natural gas to Europe for 50 years. The Nord Stream 2 project was officially launched in the same year, but it took several years for[26] to obtain the necessary construction permits.[27] Construction finally began in 2018 and was completed in September 2021. The project generated political tensions from the outset, as several countries feared

23 | Euromaidanpress, 2021.
24 | Nord Stream AG.
25 | Ibid.
26 | Farmer 2021.
27 | Nord Stream AG.

that Russia would use the pipeline to gain geopolitical influence over Europe, particularly Ukraine. Although the pipeline was technically completed and pressurised, the German authorities did not issue the final permit required for commissioning.[28] Ultimately, due to sabotage in 2022, the Nord Stream 2 pipeline pair never became operational. The attack on Nord Stream in the Baltic Sea can be considered one of the most serious acts of sabotage in the history of European energy infrastructure.

2.2. The sabotage

On 26 September 2022, the Danish and Swedish authorities reported several explosions on the Nord Stream 1 A and 1 B, and Nord Stream 2A gas pipelines, causing significant gas leaks.[29] At the time of the leak, none of the pipelines were officially transporting natural gas, yet they contained large amounts of methane under high pressure, which was expelled and created large bubbles on the sea surface. Between 26 September and 1 October, bubbles with a diameter of nearly 0.7 km were observed at the explosion sites on various satellite platforms. On 2 October, the Danish Energy Agency announced that, based on their measurements, the gas leak from the pipelines had stopped.[30] The European Union classified the incident as sabotage against key European energy infrastructure. This incident resulted in the most serious methane gas emission in human history.[31] The Copernicus Atmosphere Monitoring Service (CAMS), the Laboratoire des Sciences du Climat et de l'Environnement (LSCE) and the Norwegian Institute for Air Research (NILU) have carried out several computational experiments to estimate the amount of methane released into the atmosphere from the Nord Stream pipelines. According to analyses, approximately 478,000 tonnes of methane gas were released from the three affected pipeline sections,[32] making this the largest methane leak event to date.[33] This emission exceeded even the environmental impact of the 2015 Aliso Canyon incident in California.[34] The explosions occurred near the Danish island of Bornholm, where the pipelines turned towards the north-eastern coast of Germany. Two of the four leak sites were in Sweden's exclusive economic zone and two in Denmark's.[35]

28 | Csallóközi 2022a, 59.
29 | There were four explosions in total. On the Nord Stream 1 A and B and Nord Stream 2 A pipelines.
30 | Jia 2022. The Nord Stream pipeline gas leaks released approximately 220,000 tonnes of methane into the atmosphere.
31 | Mathiesen & Weise 2022.
32 | Poursanidis et al. 2024.
33 | Jia 2022.
34 | Conley, 2016.
35 | Poursanidis et al. 2024.

2.3. Investigations on sabotage

The 2022 sabotage of the Nord Stream gas pipelines triggered three separate national investigations: Germany, Sweden and Denmark launched criminal proceedings within their own jurisdictions. The German Federal Public Prosecutor's Office took action because the pipelines had previously been a strategic pillar of the country's energy supply. As the pipeline landed on German territory, the authorities had direct legal and criminal jurisdiction. Although the explosions took place in international waters in the Baltic Sea, Berlin could not ignore the case due to Germany's involvement. Three years after the sabotage, the German authorities identified several suspects, including Ukrainian citizens. As a result of the investigation, a European arrest warrant was issued, leading to the arrest of a Ukrainian man in Italy. The German public prosecutor's office considers him to be one of the organisers of the explosions and has requested his extradition. Following the conclusion of the extradition proceedings, the Berlin court began hearing the case.[36] Given that some of the explosions took place in Sweden's exclusive economic zone, the Swedish authorities also launched a separate investigation. The Swedish authorities concluded their investigation into the explosions of the Nord Stream gas pipelines relatively quickly. According to their report, they found traces of explosives on the damaged pipelines and concluded that sabotage had taken place. The investigation found that the Swedish prosecutor's office lacked jurisdiction to proceed with the case, as no Swedish citizens had been harmed. The Swedish prosecutor's office closed its investigation in October 2023, but did not name any perpetrators or share detailed information with the public. The other explosions took place in Danish territorial waters near Bornholm, and the Danish authorities also conducted their own investigation. The Danish investigation also did not lead to any public charges, but it did cooperate with the other countries involved. The aim of the investigations was not only to identify the perpetrators, but also to strengthen the protection of critical infrastructure.

In October 2022, Russia officially confirmed that the Nord Stream 2 gas pipeline's B pipe had not been fatally damaged in the explosions, and Moscow offered to resume gas deliveries to Europe through it, but Germany immediately rejected this, primarily for geopolitical reasons.[37]

36 | Rugli 2025.
37 | de Jong 2023.

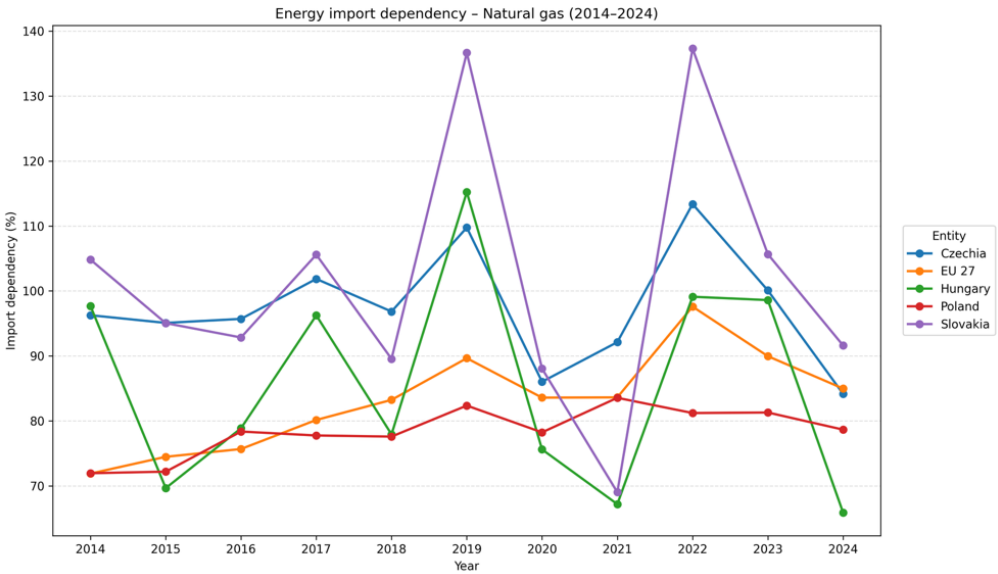
3. The geopolitical impact of Nord Stream 2 on Germany and the V4 region

The intense conflicts of recent years have had a particularly severe impact on energy supplies throughout Europe, jeopardising the security of the European Union's primary energy supply. It should be noted that Europe consumes more than 14% of the world's natural gas production but accounts for only 5.7% of total production; it therefore imports a significant proportion of its annual natural gas consumption.[38] The available data for 2018 clearly showed that almost three-quarters of the EU's natural gas imports came from Russia, followed by Norway and Algeria. According to 2020 data, 82% of imported natural gas to European countries arrived by pipeline, with 48% coming from Russia, 24% from Norway and 10% from Algeria.[39] This ratio has changed today. Before the Ukrainian-Russian conflict, Algeria was Europe's third-largest supplier of natural gas after Russia and Norway.[40] According to the October 2023 report of the Gas Exporting Countries Forum[41] (GECF), Algeria has become almost the second-largest supplier of gas to Europe after Norway,[42] regarding gas arriving via pipeline. In 2024, Norway retained its position as the largest supplier, making up 53% of the region's pipeline gas imports, with Russia and Algeria each contributing around one-fifth.[43]

Relevant literature reviews clearly show that Europe, especially the Visegrad countries, is heavily dependent on energy imports due to its limited domestic energy resources. This structural exposure results in considerable strategic vulnerability, as demonstrated by recent geopolitical events, particularly the Russian-Ukrainian conflicts and the associated supply disruptions, in terms of security of supply and energy policy autonomy. The figure below clearly shows how hectic natural gas import dependency grew between 2014 and 2024 in the EU and, within it, in the V4 countries.

38 | Magyar Földgázszállító Zrt., Statistical data 2020.
39 | Csallóközi 2022a.
40 | Csáki-Hatalovics 2019.
41 | GECF Annual Gas Market Report 2023, 90.
42 | Tahchi 2024.
43 | GECF Annual Gas Market Report 2025, 77.

Figure 2: Natural gas import dependency of Europe and the V4 countries[44]



Regarding the natural gas supply of the V4 countries, it can be concluded that although their energy structures share many similarities, they also exhibit significant differences. A major common challenge is excessive dependence on a single supplier, which has become one of the most critical risk factors for security of supply in recent years. The table below shows the development of gas consumption in each country, the extent of import exposure, and the expiry dates of long-term natural gas contracts with Russia, based on 2020 data.[45] In light of the data below, it is particularly interesting to see how the provisions of the 19th sanctions package[46] adopted by the Council of the European Union in October 2025 will affect the security of supply of the countries concerned and the legal consequences of contractual obligations. After all, under previously planned EU measures, Member States must terminate their long-term contracts for Russian natural gas by 2027. This raises exciting questions about maintaining the security of supply in the countries concerned and may also necessitate a rethinking of the boundaries between national and EU competences.

44 | Data source: Eurostat.
45 | Csallóközi 2022b.
46 | Council Implementing Regulation (EU) 2025/2035 of 23 October 2025 implementing Regulation (EU) No 269/2014.

Figure 3: Natural gas consumption in the V4 countries and long-term Russian natural gas contracts[47]

Country	Long-term contract with Russia[48]	Gas consumption in 2020 (billion m³)	Gazprom gas exports in 2020 (billion m³)	Share of Russian gas in annual consumption in 2020 (%)	Gas consumption in 2024 (billion m³)[49]	Share of Russian gas in annual consumption in 2024 (%)[50]
Poland	1996–2022	22	9.7	44.1	21	0
Hungary	2021–2036	10	8.6	84.7	8.3	60
Czech Republic	1998–2035	9	7.8	91.8	6.7	2–5
Slovakia	2008–2032	5	5.0	99.0	4.3	50

Based on the above, it is clear that Russian natural gas imports to the V4 countries fell sharply after 2022, but the pace and depth of the decline varied significantly across countries. The shutdowns of transport routes in 2022 (see, for example, the Yamal pipeline) and the failure of the Nord Stream pipeline pairs fundamentally redrew the long-term contractual structures and created extremely strong diversification pressure on European countries. As a result, Poland has implemented the fastest and most complete decoupling among the V4 countries. The Czech Republic reduced its dependence on Russian gas to almost zero by 2024 through the establishment of alternative supply routes. Within the V4, Slovakia and Hungary continue to import Russian fossil fuels, but the share of natural gas has decreased compared to previous years.

Over the past 15 years, the European energy market has witnessed profound events and changes, particularly in the natural gas sector. This is mainly due to the mutual disputes between Russia and Ukraine.[51] The year 2022 brought significant changes, with the shutdown of the Nord Stream pipeline and the Yamal gas pipeline supplying natural gas to Europe. These pipelines accounted for more than 50% of Russian gas imports to Europe.[52] It is important to note that in December 2021, Russia halted westbound gas deliveries via Poland on the Yamal-Europe gas pipeline. The official reason was unclear, but geopolitical tensions and contractual disputes were behind the move.[53] The pipeline's operation was 'reversed', with Germany beginning to export natural gas to Poland. Finally, in February 2022, deliveries via the Yamal-Europe pipeline were completely halted in both directions. This marked the end of Russian gas imports to Poland

47 | Csáki-Hatalovics 2026.
48 | Csallóközi 2022b.
49 | Energy Institute – Statistical Review of World Energy 2025.
50 | Jarocińska 2024.
51 | Jirušek, 2020.
52 | Dajkó 2022a.
53 | Russia has warned Europe that if it refuses to pay for Russian natural gas in roubles, it risks having its supplies suspended or cut off altogether.

via the Yamal-Europe pipeline. This pipeline was responsible for 20% of Russian natural gas arriving in Europe. The Yamal-Europe gas pipeline transported natural gas from Western Siberia through Poland to Germany over a length of 4,107 kilometres. The pipeline has an annual capacity of 33 billion cubic metres and is still suitable for transport in terms of its physical condition.[54] Finally, in May 2022, Poland officially announced that it did not wish to extend the long-term gas contract signed with Gazprom in 1993.[55] By then, Poland was already relying on alternative sources, such as LNG terminals and the 115 km long Baltic Pipe pipeline, which was still under construction at the time and also runs under the Baltic Sea.[56] The pipeline was handed over on 27 September 2022, the day after the explosions that hit the Nord Stream pipelines. This gas pipeline connects Norway, Denmark and Poland.[57]

With regard to Russian natural gas supply routes to Europe, it should be noted that from October 2021, Hungary will no longer be sourcing a significant portion of its natural gas needs via the Brotherhood pipeline, but rather via the Turkish Stream pipeline coming from the south. Given that the Russian transit agreement for the Brotherhood pipeline was not extended at the end of 2024, the Nord Stream 1,[58] the Yamal-Europe, and the Brotherhood pipelines have resulted in a total loss of approximately 100 billion cubic metres of transport capacity in the European supply chain. Although Russian natural gas supplies did not disappear completely, the reallocation of lost capacity to other routes significantly altered not only the infrastructure structure but also the actual volumes received. This change has created new supply patterns that will have a long-term impact on European energy security and market adaptability.

The map below shows the routes of the pipeline networks from Russia to Europe, without claiming to be exhaustive. The map is also intended to provide a visual reference for later sections of the article.[59]

54 | Csallóközi 2022a, 55.
55 | Csallóközi 2022a, 80–82.
56 | Following construction work that began in 2019, the pipeline finally began operating at full capacity on 30 November 2022. With an annual capacity of 10 billion cubic metres, the pipeline can supply 50% of Poland's natural gas needs. This, together with 3.9 billion cubic metres of annual domestic production and 5 billion cubic metres of gas from the LNG terminal built on the Baltic coast, has secured Poland's natural gas supply.
57 | Csallóközi 2022a, 59.
58 | In this regard, since the Nord Stream 2 pipeline pair was never put into operation, we cannot include it in the calculation of lost volumes.
59 | Although the dotted lines on the map indicate routes that are still under construction, it is important to note that the route from the south, via the Turkish Stream to Hungary, through Bulgaria and Serbia, already provides a stable supply of natural gas to the region.

Figure 4: Network of natural gas pipelines from Russia to Europe[60]

The construction of Nord Stream 2 sparked significant international debate. According to its supporters, the pipeline would have increased Europe's security of supply and offered economic benefits, while according to the staff of the Regional Energy Economics Research Centre (hereinafter REKK), the investment was primarily motivated by geopolitical considerations.[61]

Several Central and Eastern European countries, including the V4, expressed concerns about the geopolitical consequences of Nord Stream 2 as early as 2016. Poland was particularly active in opposing the project, arguing that bypassing the region would increase dependence on Russian gas and threaten European energy security. According to the Polish competition authority, the launch of the pipeline would also have undermined the stability of Poland's gas supply.[62]

60 | Bailey 2009.
61 | REKK report on energy markets 2015.
62 | Rácz 2020.

In response to Polish and Ukrainian concerns, in July 2021, US President Joe Biden and German Chancellor Angela Merkel agreed[63] that the United States could impose sanctions if Russia used the Nord Stream 2 pipelines as a 'political weapon'. The agreement[64] also aimed to prevent Poland and Ukraine from losing transit revenues and gas supplies by bypassing their countries in the project.[65]

In one of his studies, Martin Jirušek analysed the Visegrad countries' attitudes towards the Nord Stream 2 project, with particular regard to energy security and foreign policy preferences. The study concluded that the V4 member states had primarily shaped their positions in line with their national interests, largely determined by economic considerations and long-standing foreign policy orientations. The study found that Russia and Germany would have been the main beneficiaries of the project. As part of the European integration process, the Visegrad countries gradually shifted to a market-oriented approach to energy policy.[66] The estimates in the study also show that Slovakia faced the greatest energy security risks, while Poland and Hungary were and still are in a more favourable position and are expected to be able to adapt more flexibly to further disruptions in European gas supplies. Poland has invested in a number of infrastructure projects to diversify its supply, including the Świnoujście LNG terminal, which opened in 2016, and the Balti Pipe pipeline, commissioned in 2022. Poland completely switched away from Russian natural gas supplies in 2022, demonstrating its commitment to reducing geopolitical risks. In contrast, Hungary continues to regard the Russian supplier as a reliable strategic partner and emphasises maintaining long-term, stable bilateral cooperation in its energy policy decisions.[67]

Like Poland, Slovakia initially considered the Nord Stream 2 project disadvantageous, as it feared a decline in transit revenues through Ukraine and an increase in Russia's influence in Europe.[68] However, the geopolitical realignment after 2022 and the end of Ukrainian transit at the end of 2024 presented the country with new challenges. Slovakia has historically been an important transit country for the transport of Russian gas to Central and Western Europe, but its role has declined in recent years as Russia has preferred non-Ukrainian routes. At the same time, temporary agreements before the sabotage concluded with Gazprom indicated that Slovakia could remain a transit country even after the handover of Nord Stream 2, which mitigated initial resistance. Since then, the country has been seeking to strengthen multidirectional gas flows and regional cooperation, as its geographical location limits its access to alternative supply routes. As a result, its future supply

63 | U.S. Department of State 2021.
64 | Euronews 2021.
65 | Farmer 2021.
66 | About the EU's energy policy in a Hungarian perspective see detailed: Mádl 2025.
67 | Jirušek 2020.
68 | Sziklai et al. 2020.

may depend to a large extent on the capacities and available resources of Austria, Hungary and the Czech Republic.[69]

The Czech Republic and Hungary were initially cautious but concerned about the Nord Stream 2 project. However, they later recognised that the pipeline could offer indirect benefits, such as diversifying energy supplies and stabilising energy prices, thereby increasing economic competitiveness.[70] In the 1990s, the Czech Republic demonstrated an extraordinary ability to mitigate the consequences of its energy dependence on the USSR/Russian Federation. Specifically, the Czech Republic built new energy infrastructure, diversified its supplies, and took steps to join key international organizations, such as the IEA, WTO, or the EU.[71] The Czech Republic's attitude towards the construction of the Nord Stream 2 pipeline gradually became more pragmatic and supportive. This was partly due to the country's successful integration into the Western European gas infrastructure, which had already significantly mitigated the effects of the 2009 supply disruption. The Gazelle gas pipeline, commissioned in 2012 and running from north to south across western Czechia, enabled the Czech Republic to connect directly to gas flows from northern Germany, in particular via the Nord Stream 1 pipeline. Although the gas crises of 2006 and 2009 drew attention to the need for diversification of supply, the Czech Republic's stable supply position did not justify a significant change in its energy policy strategy, nor did it have a significant impact on Russian-Czech relations. This situation was further reinforced in 2017 when Gazprom signed long-term gas transit framework agreements with the Czech Republic and Slovakia, which would have secured the two countries' dominant role in the European gas transmission network until 2040 and 2050, respectively. All this contributed to the Czech Republic acting as an interested party rather than an opponent in the Nord Stream projects.[72] At the same time, the Czech Republic significantly reduced its imports of Russian gas after the events of 2022. The Czech government has set the diversification of energy supplies as a strategic goal. It is seeking to reduce its dependence through indirect access to LNG terminals and by increasing the share of renewable energy sources.

It can be said that Hungary is also confident about its future role as an unavoidable transit hub in Central Europe.[73] Since October 2021, Hungary's natural gas supply has been provided via the Balkan Stream,[74] which starts from the Turkish Stream and passes through Bulgaria and Serbia to reach the country. This route currently ensures a stable supply to the country and region, and its loss would pose

69 | Vakulenko 2024.
70 | Volkonsky & Kuzovkin 2021.
71 | Svec 2025.
72 | Jirušek 2020.
73 | Ibid.
74 | The Balkan Stream was opened in 2021 as a continuation of the Turkish Stream, transporting natural gas through Bulgaria to Serbia, and from there to Hungary and other Balkan countries.

a risk to the regional security of supply.[75] To manage this risk, it would be advisable to retain the option to use the Brotherhood, Nord Stream 2B, and Yamal pipelines in the future. In the long term, it is essential that Hungary and the region have access to further alternative transport routes, thereby increasing security of supply and reducing unilateral dependence.

As far as Germany is concerned, we have seen that it long considered the Nord Stream 2 project to be of strategic importance, which, alongside Nord Stream 1, would have played a key role in strengthening the country's energy security and economic stability. The pipeline pair would have made Germany an indispensable player in Europe's natural gas distribution. However, for geopolitical reasons, the new pipeline pair never received final commissioning approval, so commercial operation did not commence. German energy policy had already undergone a so-called energy transition in 2011, as Berlin began the gradual phase-out of nuclear energy and coal after the Fukushima disaster, thereby promoting the transition to a climate-neutral economy.[76,77] In light of these decisions, the Nord Stream 2 project could have played a particularly important role, as the pipeline could have significantly strengthened Germany's natural gas supply security and supported the energy transition.

In the summer of 2022, Gazprom significantly reduced gas deliveries via the Nord Stream 1 pipeline due to maintenance work. Finally, according to official communications, gas deliveries on the Nord Stream 1 pipeline were completely halted at the end of August for an indefinite period due to a faulty Siemens turbine. At that time, based on the previous year's data, Germany sourced approximately 55% of its natural gas imports from Russia, so the pipeline shutdown caused a serious supply crisis for the country. Energy prices rose dramatically, multiplying several times over in both the natural gas and electricity markets. The situation caused supply disruptions in several countries. It also meant a serious loss for Germany, which was forced to turn to LNG imports, build new infrastructure, and seek alternative supply routes to maintain a stable supply. In 2023, more than 80% of Germany's LNG imports came from the United States.[78] In January–November 2025, 94.7 per cent of the total volume came from the US, up from a full year 2024 percentage of 91.9 per cent for US origins.[79] Increasing LNG imports helped diversify energy sources and reduce Germany's dependence on Russian gas, albeit at a much higher price.[80] In 2025, Russia was still the second-largest supplier of liquid fuels to Europe, after the United States.[81] In light of the geopolit-

75 | Csallóközi 2022a, 88.
76 | Staudenmaier 2017.
77 | NESA Centre for Strategic Studies 2021.
78 | Zaretszkaja 2023.
79 | Baird Maritime 2025.
80 | Hancock & Tani 2023.
81 | Eurostat 2025.

ical conflicts that have arisen in recent years, liquefied natural gas has emerged as a new player in the European gas market, while liquefaction is an alternative method with a very different and varied cost structure. The infrastructure required for transport, gasification, and liquefaction is very costly and environmentally damaging.[82] The European Union has given priority to expanding LNG imports and encouraging the development of renewable energy sources, which, in the long term, will strengthen security of supply and reduce dependence on fossil fuels. While the energy crisis is growing in scale in European markets, LNG exports from the United States have already reached historic levels. The EU has set itself the goal of becoming completely independent of Russian gas by 2027.[83] In order to achieve this goal, it is turning away from cheaper Russian gas in favour of premium-priced American LNG, placing a heavy burden on individual countries' economies.

In addition, it is important to note that, according to Robert W. Howarth,[84] a professor at Cornell University, American LNG can be up to 33% more polluting than coal, especially given methane leaks and the type of ship engines used for transport. Based on the research results of Vadim Fetisov et al.,[85] it can be stated that Russian natural gas arriving via the Nord Stream pipelines would have been more economical for the European Union than LNG due to its low production costs, as the regasification of LNG causes a further increase in the price of gas.[86]

Overall, the European natural gas market has undergone profound structural and geopolitical changes since the energy crisis began in 2022. The drastic decline in Russian natural gas supplies has fundamentally reshaped European supply chains and the gas market system. As a result of these developments, EU Member States have turned to new supply routes and sources, while intensive pipeline development and LNG infrastructure expansion have begun in Central and Eastern Europe. The previously dominant eastern supply route has gradually been replaced by southern and western alternatives, creating a new dynamic in the triple objectives of security of supply, competitiveness and sustainability. The continuous construction of new infrastructure, solutions that promote source diversification, and efforts to achieve technological diversity are not only technical responses to the crisis but also reflect profound political and economic restructuring that may create new points of equilibrium in the European gas market in the long term. Today, the issue of security of supply has become a priority for almost every country, especially for the member states of the European Union, including the V4 countries.[87]

82 | Sziklai et al. 2020.
83 | REPowerEU plan.
84 | Howarth 2024.
85 | Fetisov et al. 2021.
86 | Ibid.
87 | Pinto 2024.

4. Description of the Nord Stream 2 project based on case T-526/19

The above provides an overview of the Nord Stream pipeline system, with particular regard to the situation surrounding the construction, licensing and sabotage of Nord Stream 2, as well as the differing positions and attitudes of individual countries. Below, we will examine the controversial project in more detail through the analysis of a legal case, which will allow us to explore the security of supply and legal aspects in greater depth.

The European Court of Justice has heard several cases relating to the Nord Stream 2 project. One of the most significant and protracted cases concerned the EU Gas Directive, part of the third energy package. This case was concluded just under two years ago, when the General Court of the European Union dismissed the action in 2024 and ruled that the amendment to the directive did not violate legal certainty and that the EU had the right to extend the rules of the internal market to infrastructure from third countries. The 2019 amendment to the EU Gas Directive[88] changed the internal market rules to apply to new gas pipelines that had not yet been put into operation, which adversely affected the Nord Stream 2 project.[89] With this amendment, EU rules were extended to pipelines to and from third countries, including, for example, pipelines arriving by sea. This meant that Nord Stream 2 also had to comply with EU internal energy market rules, including ownership unbundling and third-party access. This change made the project more complicated, as from then on, the main owner and operator of Nord Stream 2 could not be both the owner of the gas pipeline and the gas supplier. In addition, under the new rules, part of the pipeline's capacity had to be made available to other suppliers. The project's financiers felt these changes unfairly restricted them and therefore took legal action. The project also faced several other legal challenges due to the new EU gas directive, which affected its regulatory framework. According to a study by REKK, the pipeline pairs were projected to reduce wholesale prices in the target countries and cause a slight increase in prices in Central Europe and the Balkans. It was shown that Germany, France and Switzerland would have been the biggest beneficiaries of the project, while Slovakia and Poland would have lost transit revenues. According to the study, the project would likely have further increased price differences between Western Europe

88 | Council of the European Union 2019.

89 | Directive 2009/73/EC entered into force on 3 September 2009 and contains common rules for the internal market in natural gas in the EU, with the aim of liberalising the EU natural gas market. Directive 2019/692 amending it entered into force on 23 May 2019, extending EU gas market rules to pipelines from third countries, such as Nord Stream 2. Under this directive, gas production and transmission activities cannot be carried out by the same entity.

and South-Eastern Europe.[90] Below, we will describe the case pending before the General Court of the European Union under number T-526/19,[91] Nord Stream 2 AG v European Parliament and Council, in which the plaintiff challenged the 2019 amendment to the EU Gas Market Directive.[92]

On 25 July 2019, Nord Stream 2 AG lodged an action with the General Court of the European Union under case number T-526/19, requesting the annulment of Directive 2009/73/EC as amended by Directive 2019/692, on the grounds that it adversely and discriminatorily affects the Nord Stream 2 project. Nord Stream 2 AG argued that the amendment violated the principles of legal certainty and legitimate expectations, as it could be applied retroactively to pipelines that had already been built or were under construction. In March 2020, the European Parliament and the Council filed a counterclaim requesting that the action be dismissed on the grounds that the applicant was not entitled to bring the action because, pursuant to the fourth paragraph of Art. 263 of the Treaty on the Functioning of the European Union (hereinafter: TFEU),[93] the legal act did not affect it individually and directly.

By order of 20 May 2020 in Case T-526/19, the General Court dismissed the action brought by the applicant as inadmissible on the grounds that the amended directive was of general application and did not concern the applicant exclusively or specifically. The applicant lodged an appeal against that decision under case number C-348/20 P. In its judgment of 12 July 2022 in case C 348/20 P, the Court of Justice annulled point 4 of the operative part of the order of 20 May 2020. However, the Court found that the applicant's action was admissible insofar as it was directed against Art. 36[94] and 49a,[95] which were incorporated into the original legislation. The applicant initially sought the annulment of the directive in its entirety, with the alternative annulment of Art. 49a. The General Court found that the annulment of the directive in its entirety was not justified, since the contested provisions, namely Arts. 36 and 49a, could be separated from the rest of the directive. It found that the action for annulment of Art. 49a was admissible and that its substance could be examined. Accordingly, the Court referred the case back to the General Court for it to rule on the substance of the annulment action. The Court found that these provisions have a direct

90 | REKK report on energy markets 2015.
91 | Curia, Nord Stream 2 v. Parliament and Council, Case T-526/19 RENV.
92 | For a detailed analysis of the case, see: Csáki-Hatalovics 2026.
93 | Art. 263(4) TFEU.
94 | Art. 36, competition condition (1)(e): exemption may only be granted if it does not distort competition in the relevant markets, does not jeopardise the efficient functioning of the natural gas market, the functioning of regulated systems or the security of natural gas supply in the EU.
95 | Art. 49a concerns derogations applicable to transmission pipelines to and from third countries. Under this article, the Member State concerned may derogate from certain EU rules if the transmission line was built before 23 May 2019 and the derogation is based on objective reasons, such as the return on investment or security of supply, provided that this does not distort competition, the functioning of the internal market or security of supply within the Union.

effect on the appellant's legal situation. In other words, Nord Stream 2 AG's action against certain provisions of Directive 2019/692 is admissible and can be examined on its merits. However, the request to annul the entire directive was unfounded.[96]

The General Court delivered its judgment in the case on 27 November 2024 under case number T526/19. RENV. and made the following main findings.[97] The request for an exemption under Art. 36, as amended, was rejected because the applicant failed to prove that it had taken its investment decision before the application of EU legislation was foreseeable. The investment took place in a legal and political environment in which the EU institutions had already indicated their intention to apply the rules of Directive 2009/73 to gas pipelines between Member States and third countries. The Nord Stream 2 project had already received significant attention at that time, so the exemption was not justified.

The request for derogation under Art. 49a was also rejected because the pipeline was not fully completed by 23 May 2019 and therefore did not meet the conditions for derogation. The Directive is clear, objective, and legally sound, and does not undermine legal certainty or the principle of protecting legitimate expectations.

In examining the principle of equal treatment, the General Court found that pipelines already built and those still under construction do not belong to the same legal category, so the different rules are objectively justified. According to the applicant, Nord Stream 2 is comparable to existing pipelines. However, it was found that the applicant had failed to demonstrate that the regulation was disproportionate or unlawful.

On the basis of an examination of the principle of proportionality, the objectives of the directive – such as legal certainty, protection of competition[98] and security of supply – are lawful and proportionate. The regulation applicable to Nord Stream 2 does not go beyond what is necessary, and the investment can still be recouped.

The examination of the misuse of powers did not reveal any evidence that the directive served political objectives or was specifically directed against the applicant. The directive pursues legitimate objectives under Art. 194 TFEU, and there was no misuse of powers during the legislative process.

The examination of the procedural rules did not reveal any evidence of a breach of the principle of subsidiarity. Although no specific impact assessment was carried out, the Commission's prior consultations and analyses provided sufficient information for decision-making. Following the submission of the

96 | Judgment of the Court of Justice, Case C-348/20.
97 | Judgment of the General Court, Case T-526/19 RENV.
98 | On the competition law of central and eastern European member states see: Miskolczi & Szuchy 2017.

proposed directive, the Commission held a public consultation and hearing. The General Court found that the applicant had access to a number of relevant documents but did not make substantive use of them during the proceedings. Ultimately, the application for interim measures was rejected.[99]

This case highlighted that the European Union is entitled to extend its internal energy market rules to infrastructure connecting third countries with Member States, even if such infrastructure is linked to international investments. This decision reinforced the EU's sovereignty in protecting the internal market.

It is noteworthy that although the European Court of Justice closed the EU legal proceedings initiated by Nord Stream 2 AG in 2024, the company had already initiated investor-state dispute settlement proceedings against the European Union before the Permanent Court of Arbitration (PCA) on 26 September 2019. The proceedings are taking place under case number 2020-07, pursuant to Article 3 of the UNCITRAL Arbitration Rules[100] and Art. 26(4)(b) of the Energy Charter Treaty,[101] in connection with an investment in the oil and gas sector. The seat of the arbitral tribunal is Toronto.

The investment arbitration proceedings are currently ongoing at the time of writing this article. Nord Stream 2 AG argues that the regulatory changes adopted by the EU in 2019, in particular Directive 2019/692, have adversely affected the investment, which was already at an advanced stage. The claimant believes that the new rules were applied retroactively, thereby violating investment protection guarantees, in particular the principles of fair treatment and legal certainty. This raises the question of the extent to which EU legislation takes into account the legal protection of cross-border investments that are already underway.

The arbitration tribunal is examining the EU measures from an investment protection perspective. A favourable decision for Nord Stream 2 AG can be expected if the court finds that the EU regulation was indeed retroactive and violated investment protection principles, and that it was specifically disadvantageous and did not meet the requirement of proportionality. Such a decision would undoubtedly generate tension between EU regulations and the international investment protection system.

This case is a good example of how a legal dispute can be heard in parallel before an EU court and an international arbitration tribunal. It raises questions about the coordination of jurisdictions, the handling of parallel proceedings and

99 | Curia, Judgment of the General Court in Case T-526/19 RENV.
100 | UNCITRAL Arbitration Rules.
101 | The purpose of the Energy Charter Treaty is to protect international energy investments. Art. 26 regulates dispute settlement mechanisms. Paragraph 4(b) states that investor-state disputes may be brought before an arbitral tribunal, for example, under the UNCITRAL Rules.

the interaction of judgments. In addition, the decision could set a precedent for other energy investors seeking redress in similar legal disputes.

Based on the above, we believe the EU should establish clearer rules in the future on how to handle investments already underway in the event of legislative changes. A uniform procedural protocol would be needed to manage jurisdictional parallelism between the EU and international arbitration tribunals. Detailed impact assessments should be made mandatory during the legislative process, especially for regulations with significant economic implications.

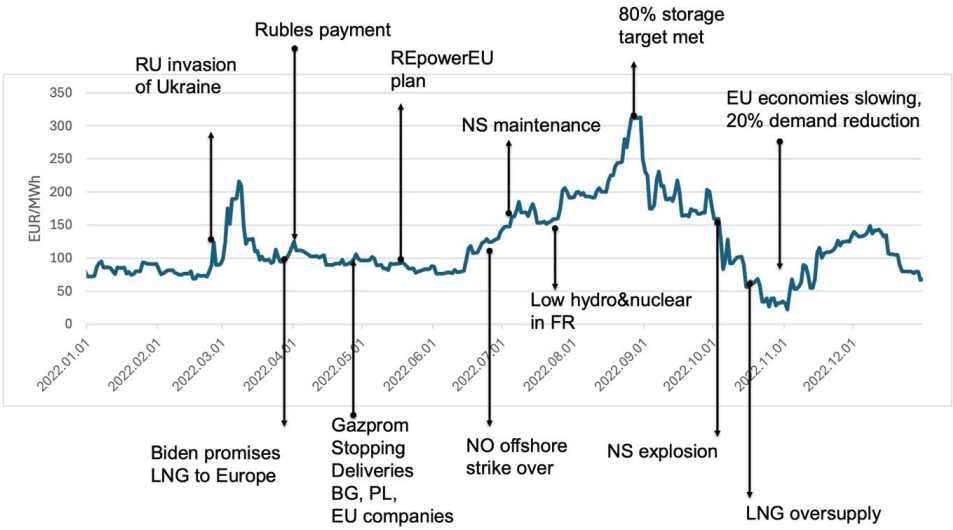
We have seen that one of the key points of legal and economic tension in the Nord Stream 2 case was the determination of the temporal scope of Art. 49a. Under the current rules, only gas pipelines built before 23 May 2019 can obtain an exemption. But even though this criterion is legally objective, it's not necessarily fair to the players who took the investment risks. Based on the principles of legal certainty and protection of legitimate expectations, it would have been justified to amend Art. 49a in such a way that the exemption is not linked exclusively to physical construction, but also takes into account the actual start of the investment. Projects that were already based on irreversible investment decisions and involved significant financial commitments could also legitimately have expected not to be adversely affected by new regulations. This approach would not only protect the legitimate expectations of economic operators but would also contribute to the predictability of EU legislation and the stability of the investment environment. Construction as the sole criterion is too rigid and does not reflect the real-time and financial risks of investments. In our opinion, a more flexible regulation taking into account multiple criteria, such as the date of commencement of the investment or the documentation of the final investment decision, would have resulted in a more balanced legal solution.

5. Future prospects for strengthening domestic natural gas supply

The combination of legal, political and physical events surrounding the Nord Stream 2 gas pipeline has shown that the supply of Russian natural gas to the European market has been deliberately obstructed for many years. The legal proceedings affecting the project, including the cases before the Court of Justice of the European Union, and the sabotage that resulted in the physical destruction of the pipeline, together give the impression that the infrastructure was rendered unusable not only for legal or economic reasons, but also for strategic reasons. The rise in energy prices following the explosion not only weakened Europe's economic competitiveness but also had a global impact. Geopolitical risks had an immediate and direct impact on global market prices,

as reflected in energy market exchange listings. In particular, the Dutch Title Transfer Facility (hereinafter: TTF) reference prices experienced an extraordinary increase, reaching unprecedented levels due to geopolitical conflicts and supply uncertainties.[102] While prices did rise temporarily due to the incident, they did not reach unprecedented levels and shortly thereafter continued to decline:

Figure 5: The evolution of natural gas prices on TTF in 2022, EUR/MWh[103]



The disruption of supply security, market uncertainty and limited access to alternative sources had a global impact. In our opinion, reusing pipeline pairs could be a forward-looking approach. Converting them to transport natural gas or hydrogen could significantly improve European security of supply and help achieve climate-neutrality goals. Putting such a technological and political re-evaluation on the negotiating table would require not only economic rationality but also diplomatic maturity. In our view, objective, calm intentions and dialogue based on mutual trust are essential for future solutions. The experience of the Nord Stream 2 project highlights the need to treat energy infrastructure not only as a technical but also as a strategic tool – in a responsible and transparent manner and with a view to mutual cooperation. This case also highlighted that energy policy is not just a technical or commercial issue, but also a cornerstone of international stability.

There are a number of future opportunities to further stabilise Hungary's natural gas supply, which could not only strengthen domestic security of supply

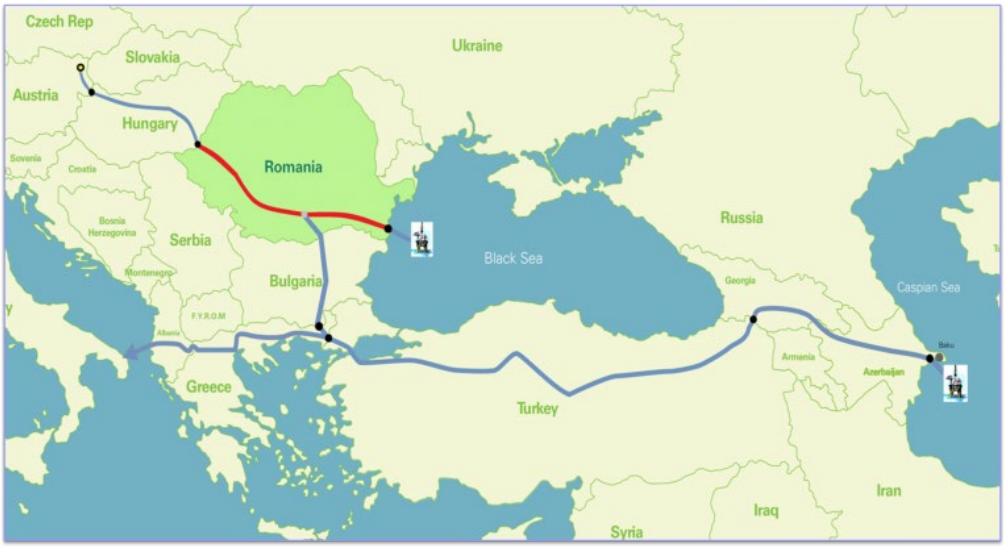
102 | Goodell et al. 2023.
103 | Loskot-Strachota et al. 2023.

but also contribute to strengthening the energy supply of the Visegrad countries at the regional level. With regard to security of supply, it is important to note that Hungary already has significant gas storage capacity, which has exceeded 90% in each of the last three years before the start of the heating season.[104] In June 2022, the European Parliament and the Council of the European Union issued a regulation stipulating that available storage facilities must be filled to 90% capacity before the winter months.[105] Of the V4 countries, Hungary has the largest storage capacity, which can fully cover the natural gas supply of the Hungarian households and more than half of the total domestic supply.[106]

Regulation (EU) No 994/2010 of the European Parliament and of the Council concerning measures to safeguard security of natural gas supply and repealing Council Directive 2004/ 67/EC of the European Parliament and of the Council requires Member States to develop cross-border capacities ensuring bidirectional flow. As a result, Hungary already has bidirectional interconnectors with all its neighbours except Slovenia, which could provide a solution for either party in the event of a supply disruption.[107] The construction of the Hungarian-Slovenian natural gas cross-border pipeline is of strategic importance and has been given priority in the domestic network development plan.[108] The aim of the project is to give Hungary access to Italian LNG terminals and, via the Trans-Mediterranean[109] (hereinafter: Trans-MED) pipeline, to natural gas resources in the MENA (Middle East and North Africa)[110] region, while Slovenia will have access to storage capacities in Hungary.[111] Trans-MED is a 2,475 km long natural gas pipeline,[112] built to transport natural gas from Algeria to Italy via Tunisia and Sicily, with a branch to Slovenia. Built in 1983, the system is one of the longest international gas pipeline systems and has a capacity of 33.5 billion cubic metres of natural gas per year.[113] The pipeline route is shown on the map below. Thanks to its significant oil and natural gas production, the MENA region is an important part of global energy resources. According to OPEC data, the Middle East and North Africa region holds more than half of the world's oil reserves and two-fifths of its natural gas reserves.[114] Physical access to the reserves in this region would help improve the security of supply.

104 | Council of the European Union 2024.
105 | Regulation (EU) 2017/1938.
106 | REMIT storage data.
107 | Csallóközi 2022a, 88.
108 | Hungarian Energy and Public Utility Regulatory Authority 2025.
109 | Offshore Technology 2024.
110 | Chen 2025.
111 | Dyduch & Skorek 2020.
112 | Csallóközi 2022a, 54.
113 | Offshore Technology 2024.
114 | Chen 2025.

Figure 6: The Southern Gas Corridor, the BRUA pipeline, and the Neptun Deep and Shah Deniz 2 natural gas fields[115]



Further diversification includes, for example, the long-term energy agreements concluded between Hungary and Azerbaijan, which will enable the Hungarian market to receive up to 2–3 billion cubic metres of Azerbaijani natural gas per year. However, the necessary infrastructure developments must be implemented in a timely and efficient manner. The expansion of Azerbaijani production and European export capacities could help reduce the region's dependence on Russian natural gas, thereby strengthening security of supply and resource diversification.[116]

Another alternative is the natural gas from Azerbaijan mentioned above, which has outstanding production capacity. The Shah Deniz 2 field in the Caspian Sea[117] provides sufficient quantities to significantly alleviate Europe's supply problems. The transport of natural gas to Europe is expected to be facilitated by the Southern Gas Corridor, which, through future developments, will be able to transport Azerbaijani and Romanian resources via the BRUA gas pipeline through Bulgaria and Romania to Hungary and then on to Austria and Slovakia. Hungary also has a stake in the project, recognising the field's future strategic importance and elevating Hungary's energy security to a new level, as it is interested in production not only as a buyer but also as an investor.[118] It is clear that there are several alternative options for strengthening the region's energy security in the future. One promising source is the Neptun Deep natural gas field in the Romanian Black Sea region,

115 | Karimli 2018.
116 | Dajkó 2022b.
117 | British Petroleum.
118 | Government of Hungary 2024.

which has significant potential.[119] Production would not only meet Romania's own needs, but would also facilitate supply to the wider region. However, the project has been delayed for years and, according to current forecasts, is not expected to start until 2027 at the earliest.

Through the development of transport routes and ongoing capacity expansions, Hungary has the potential to become the natural gas distribution hub of Central Europe.[120] The country is already a significant exporter and transit station for, particularly to Slovakia and Ukraine,[121] thereby contributing to the security of supply in neighbouring countries.

Regarding domestic natural gas production, Hungary is encouraging a revival of extraction amid the energy crisis. It has set a target to maximise production, currently between 1.5 and 2 billion cubic metres. Despite its modest scale, it is an important cornerstone of our country's secure and affordable energy supply.[122]

The North-South Gas Corridor is of paramount importance for Hungary's security of supply, connecting the Baltic and Adriatic LNG terminals and ensuring the Central European region's access to alternative gas sources. The corridor does not represent a new route, but rather the interconnection of existing national pipeline networks, particularly between Poland, Slovakia, Hungary and Croatia. The expansion of cross-border interconnectors, including the Polish-Slovak and Hungarian-Slovak connections, will enable flexible gas transport in both directions, facilitating further independence from Russian gas if necessary.[123] Access to the Krk and Świnoujście LNG terminals and the operation of the Drávaszerdahely-Donji Miholjac interconnector further strengthen Hungary's regional role. The strategic importance of the North-South Gas Corridor is also reflected in the Three Seas Initiative, which aims to promote regional economic integration and energy stability.[124]

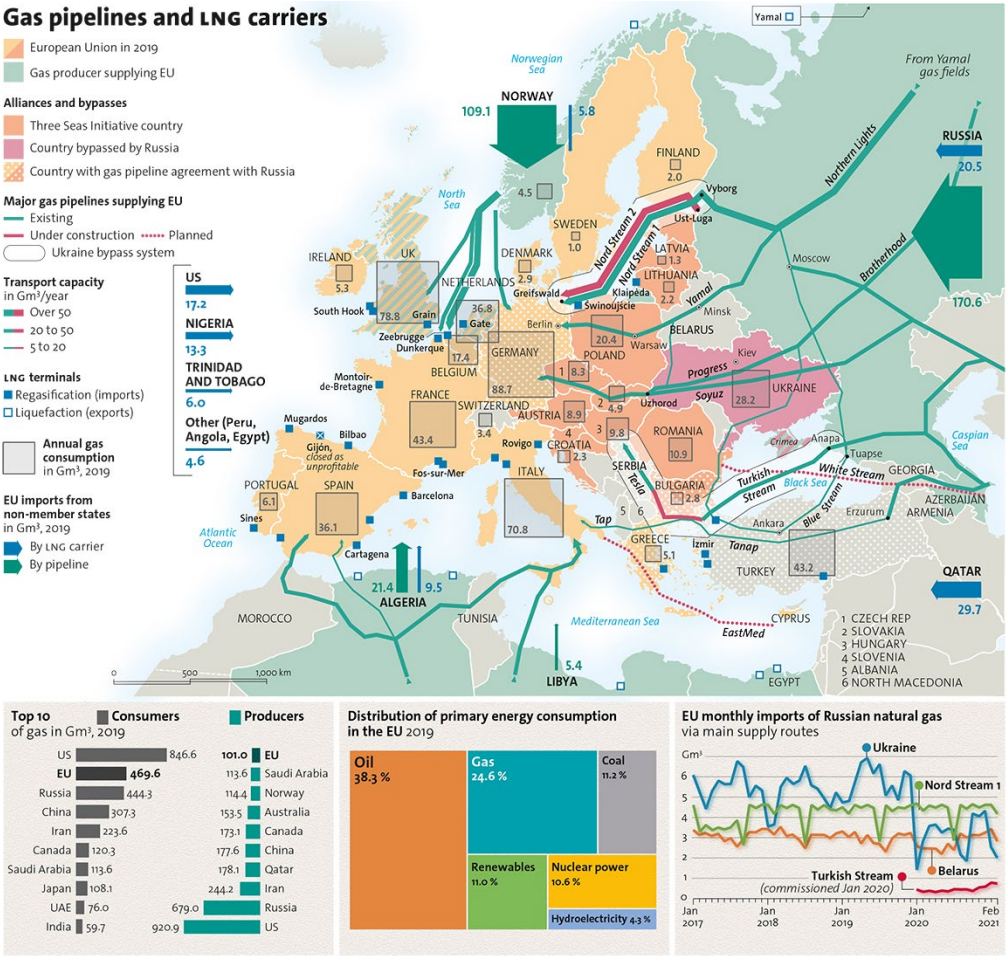
It is important to note that the expansion of the Southern Gas Corridor, which serves to diversify the European Union's natural gas supply, is also paramount for the security of supply. Hungary is indirectly connected to the Southern Gas Corridor due to its geographical location. In April 2025, in Baku, the EU and Azerbaijan reaffirmed their commitment to the further development of the project, treating the increase in Azerbaijani gas export capacity as a priority. The expansion of the corridor will allow Azerbaijani resources to have a greater presence on the European market, contributing to long-term energy security. This is particularly important for Hungary, as gas supply negotiations with Qatar and Oman also aim to diversify and complement supply options from Azerbaijan.[125] The Southern Gas Corridor offers a

119 | Neptun Deep 2024.
120 | Litkei 2023.
121 | Hungarian Natural Gas Transmission Ltd.
122 | Ibid.
123 | Csallóközi 2022a, 92.
124 | Countries participating in the cooperation: Austria, Bulgaria, the Czech Republic, Estonia, Croatia, Hungary, Poland, Latvia, Lithuania, Romania, Slovakia and Slovenia.
125 | Directorate-General for Energy 2025.

strategic alternative from an energy and geopolitical perspective, supporting the EU's energy security, market stability, and climate-neutrality goals.

The map below clearly illustrates potential transport routes that could help diversify natural gas supplies in our region in the short term. In addition, the map clearly identifies existing LNG terminals, which are playing an increasingly important role in strengthening security of supply.

Figure 7: Major natural gas pipelines and LNG terminals affecting Europe[126]



Based on the studies examined, we can conclude that natural gas remains the second most widely used energy source in the V4 countries.[127] Despite all sanctions

126 | Marine 2021.
127 | Németh 2022, 1–3.

against Russia, the country remains one of the leading exporters of fossil fuels.[128] In recent years, Hungary has taken numerous steps to reduce its dependence. Despite continuously expanding its supply structure and related transport routes, Hungary remains heavily dependent on Russian gas. Between 75% and 85% of Hungarian natural gas consumption still comes from Russia, as it is currently impossible to replace this volume entirely from other sources.[129]

In our opinion, based on the above, the future of European energy security will be decided at the intersection of geopolitical realities and strategic rationality. The current situation, in which several key pipeline systems – including Nord Stream, Yamal and Brotherhood – have ceased to operate or become uncertain, underscores that security of supply is not just a technical or economic issue but a deeply political and diplomatic challenge. The diversification of sources advocated by the European Union is not sufficient on its own if, at the same time, existing infrastructure is neglected or rendered unusable for political reasons.

In our opinion, a forward-looking global energy policy lies not in ruling out the possibility of maintaining existing routes, but in developing southern and western alternatives alongside them. A dynamic, scenario-based regulatory framework – capable of responding to geopolitical changes across multiple scenarios – can ensure that energy sovereignty is not made a hostage to political sanctions, but serves the triple objectives of affordability, reliability and sustainability. Strategic flexibility, diplomatic dialogue and the development of transparent conditions can not only strengthen security of supply but also contribute to the development of a long-term European energy system based on trust. The question, therefore, is not whether to abandon the infrastructure of the past, but whether we are capable of integrating it into a future-oriented, diverse and adaptive energy policy. This decision may not only be technical and technological, but also of historical significance.

6. Summary

The study highlighted that although numerous established natural gas transport routes exist, geopolitical factors have rendered many of them inactive, posing a challenge to the secure energy supply of several countries.

To ensure security of supply, several countries have launched long-term infrastructure development programmes that, given the industry's specific nature, are expected to last 5–10 years. One proposal worth considering is the reactivation of existing routes, which could contribute to diversification and strengthen the security of supply. The concluding section of the study presents cooperation efforts

128 | Németh 2022, 5–6.
129 | Dajkó 2022b.

in the region aimed at developing existing infrastructure, building new transport routes, connecting pipelines and diversifying source contracts.

The analysis of the legal case examined in the study highlighted that the European Union has the legal authority to take decisions that directly affect the investment processes of Member States. This finding highlights the links between EU regulation and national economic interests and shows that EU decision-making mechanisms can have not only indirect but also direct economic consequences for Member States. The case is a good example of how a legal dispute can be heard simultaneously before an EU court and an international arbitration tribunal, raising issues of jurisdictional coordination, procedural parallelism, and interaction between judgments. The decision may set a precedent for other energy investors seeking redress in similar legal disputes.

The concluding section of the study presents cooperation efforts in the region aimed at developing existing infrastructure, building new transport routes, connecting pipelines and diversifying source contracts. In conclusion, Hungary has a favourable opportunity to further strengthen its transit role in Central and Eastern Europe, which could not only enhance the domestic security of supply but also contribute to the regional stabilisation of energy supply in the Visegrad countries.

Reference list

1. Bailey S (2009) Map of major existing and proposed Russian natural gas pipelines to Europe, *Wikimedia Commons*, https://commons.wikimedia.org/wiki/File:Major_russian_gas_pipelines_to_europe.png [23.09.2024].
2. British Petroleum (n.d.) *Shah Deniz Stage 2*, https://www.bp.com/en_az/azerbaijan/home/who-we-are/operationsprojects/shahdeniz/shah-deniz-stage-2.html [13.09.2024].
3. London Convention on the Prevention of Marine Pollution, 1973: https://www.imo.org/en/about/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-%28MARPOL%29.aspx [08.10.2024].
4. Chen J (2025) Middle East and North Africa (MENA), *Investopedia*, https://www.investopedia.com/terms/m/middle-east-and-north-africa-mena.asp#citation-529 August 2024.
5. Commission Delegated Regulation (EU) 2022/1214.
6. Conley S, Franco G, Faloona I, Blake D R, Peischl J & Ryerson T B (2016) Methane emissions from the 2015 Aliso Canyon blowout in Los Angeles, *Science* 351(6279), pp. 1317–1320, DOI: https://doi.org/10.1126/science.aaf2348.
7. Council Implementing Regulation (EU) 2025/2035 of 23 October 2025 implementing Regulation (EU) No 269/2014 concerning restrictive measures in respect of actions undermining or threatening the territorial integrity, sovereignty and independence of Ukraine.
8. Council of the European Union (n.d.) *How much gas have EU countries stored?* https://www.consilium.europa.eu/hu/infographics/gas-storage-capacity/ [23.09.2024].
9. Council of the European Union (2019) *Press release: Council adopts amendment to the Gas Directive: EU rules now cover pipelines to and from third countries*, https://www.consilium.europa.eu/hu/press/press-releases/2019/04/15/council-adopts-gas-directive-amendment-eu-rules-extended-to-pipelines-to-and-from-third-countries/ [22.10. 2025].
10. Council of the European Union (n.d.) *REPowerEU plan: energy policy in the recovery and resilience plans of EU countries*, https://www.consilium.europa.eu/hu/policies/eu-recovery-plan/repowereu/ [23.09.2024].
11. Csáki-Hatalovics É (2026) *A Magyar energiaszabályozás kihívásai és lehetőségei az energiaszuverenitás tükrében, európai kontextusban*, PhD Thesis, Károli Gáspár University of the Reformed Church, Faculty of Law and Political Sciences, Budapest.

12. Csáki-Hatalovics É & Gyula B (2019) Állami tulajdonú vállalatok rendszere és jogi szabályozása Norvégiában, in: Szikora V (ed.) *Állami vállalatok nemzetközi összehasonlításban*, Magyar Közlöny Lap- és Könyvkiadó, Budapest, pp. 223–230.
13. Csallóközi Z (2022a) Európai földgázszállító rendszerek, in: Fazekas O (ed.) *A magyar földgázszektor működése és szabályozása*, 2nd edn., ORAC, Budapest.
14. Csallóközi Z (2022b) Jelentős változások Magyarország gázellátásában, presentation, in: *28. DUNAGÁZ Konferencia*, 7 June 2022, https://dunagaz.hu/uploads/documents/gazipari-konferenciak/2022-Konferencia-eloadas-anyagok/DunagazKonf-Csallokozi.pdf [16.09.2024].
15. Court of Justice of the EU, Case C-348/20, Reports of Cases before the Court of Justice, 12 July 2022, https://eur-lex.europa.eu/legal-content/HU/TXT/PDF/?uri=CELEX:62020CJ0348.
16. Court of Justice of the EU, Judgment of the General Court, Case T-526/19 RENV, 27 November 2024.
17. Court of Justice of the EU, Case T-526/19 RENV, Nord Stream 2 v Parliament and Council, Case T-526/19 RENV, 12 July 2022.
18. Czékmann Zs (2020) Certain steps in regulating the gas market model change in Hungary, *Agricultural and Environmental Law* 15(28), pp. 149–164, DOI: https://doi.org/10.21029/JAEL.2020.28.149.
19. Dajkó F D (2022a) Honnan jön a földgáz Európába? – térképen mutatjuk a gázszállítási útvonalakat, Növekedés, *Analysis*, 11 May, https://novekedes.hu/elemzesek/honnan-jon-a-foldgaz-europaba-terkepen-mutatjuk-a-gazszallitasi-utvonalakat [14.09.2024].
20. Dajkó F D (2022b) Térképen mutatjuk, hogyan juthat azeri földgázhoz Magyarország, Növekedés, *Növekedés*, 23 November, https://novekedes.hu/elemzesek/terkepen-mutatjuk-hogyan-juthat-azeri-foldgazhoz-magyarorszag [14.09.2024].
21. de Jong M (2023) Tracing the downfall of the Nord Stream 2 gas pipeline, *Wires Energy and Environment*, 21 September, https://doi.org/10.1002/wene.502.
22. Directorate-General for Energy (2025) *Press statement of European Commissioner for Energy and Housing and Minister of Energy of the Republic of Azerbaijan*, 4 April, https://energy.ec.europa.eu/news/press-statement-european-commissioner-energy-and-housing-and-minister-energy-republic-azerbaijan-2025-04-04_en [10.11.2025].
23. Dyduch J & Skorek A (2020) Go South! The Southern Dimension of the Energy Policy Strategies of the V4 Countries – An Assessment of Viability and Prospects, *Energy Policy* 140/2020, pp. 1–11, DOI: https://doi.org/10.1016/j.enpol.2020.111372.

24. Energy Charter Treaty signed 17 December 1994, https://www.energycharter.org/process/energy-charter-treaty-1994/energy-charter-treaty/ [28.10.2025].

25. Energy Institute – Statistical Review of World Energy (2025) – with major processing by Our World in Data. *Gas consumption*, January 19, https://archive.ourworldindata.org/20260119-065148/grapher/gas-consumption-by-country.html [20.02.2026].

26. Euromaidanpress (2021) *Two keys to defeating Nord Stream 2 lie in Poland*, https://euromaidanpress.com/2021/07/24/poland-emerges-as-ukraines-partner-in-opposing-nord-stream-2/ [02.09.2024].

27. Euronews (2021) *Nord Stream 2: Ukraine and Poland slam deal to complete controversial gas pipeline*, 21 July, https://www.euronews.com/2021/07/21/ukraine-poland-slam-insufficient-deal-struck-by-germany-and-u-s-on-nord-stream-2 [29.07.2024].

28. European Commission (2022) *EU taxonomy: Complementary Climate Delegated Act to accelerate decarbonisation*, https://finance.ec.europa.eu/publications/eu-taxonomy-complementary-climate-delegated-act-accelerate-decarbonisation_en [19.11.2025].

29. Eurostat (2025) *Drop in petroleum imports in 2025*, 19 December, https://ec.europa.eu/eurostat/en/web/products-eurostat-news/w/ddn-20251219-2 [20.02.2026].

30. Farmer M (2021) *Nord Stream 2: What is the controversy, why the politics, what next? Offshore Technology*, July 29, https://www.offshore-technology.com/features/nord-stream-2-pipeline-construction-deal-summary/?cf-view [13.09.2024].

31. Fazekas O (ed.) (2022) *A magyar földgázszektor működése és* szabályozása, 2nd edn., Orac Kiadó, Budapest.

32. Fetisov V, Tcvetkov P & Müller J (2021) Tariff approach to regulation of the European gas transportation system: Case of Nord Stream, *Energy Reports* 7(6), pp. 413–425, DOI: https://doi.org/10.1016/j.egyr.2021.08.023.

33. GECF (2023) *Annual Gas Market Report*, https://www.gecf.org/Publications-Data/Annual-Gas-Market-Report [16 September 2024].

34. GECF (2025) *Annual Gas Market Report*, https://www.gecf.org/Publications-Data/Annual-Gas-Market-Report [20.02.2026].

35. Baird Maritime (2025) *German gas usage rises in 2025 as it moves away from Russian supply: US supplied bulk of LNG landed in Germany*, 17 December, https://www.bairdmaritime.com/shipping/tankers/gas/german-gas-usage-rises-in-2025-as-it-moves-away-from-russian-supply [20.02.2026].

36. Goodell J W, Gurdgiev C, Paltrinieri A & Piserà S (2023) Global energy supply risk: Evidence from the reactions of European natural gas futures to Nord Stream announcements, *Energy Economics* 125(2), DOI: https://doi.org/10.1016/j.eneco.2023.106838.

37. Government of Hungary (2024) *Részesedésünk lesz a világ egyik legnagyobb földgázmezőjében*, 6 June, https://kormany.hu/hirek/reszesedesunk-lesz-a-vilag-egyik-legnagyobb-foldgazmezojeben [19.11.2025].

38. Hancock A & Tani S (2023) EU imports record volumes of liquefied natural gas from Russia, *Financial Times*, https://www.ft.com/content/1e70ff72-52d8-46b6-a8f4-fcc86fb88a6d [13.09.2024].

39. Howarth R W (2024) The greenhouse gas footprint of liquefied natural gas (LNG) exported from the United States, *Energy Science & Engineering* 12(11), pp. 1–17, DOI: https://doi.org/10.1002/ese3.1934.

40. Hungarian Energy and Public Utility Regulatory Authority (2025) *Decision No. FFAFO/79-2/2025 on the approval of the 10-year development proposal*, https://mekh.hu/download/8/23/91000/10vesfejlesztsijavaslatjvhagysa.pdf [19.11.2025].

41. Hungarian Natural Gas Transmission Ltd., *Statistical data,* https://fgsz.hu/# [15.12.2025].

42. Jarocińska P N (2024) Russian Disinformation and its Influence on the Energy Sector in V4 Countries, *Warsaw Institute*, https://warsawinstitute.org/russian-disinformation-and-its-influence-on-the-energy-sector-in-v4-countries/ [20.02.2026].

43. Jia M, Li F, Zhang Y, Wu M, Li Y, Feng S et al. (2022) The Nord Stream pipeline gas leaks released approximately 220,000 tonnes of methane into the atmosphere, *Environmental Science and Ecotechnology*, 12/2022, pp. 1–5, DOI: https://doi.org/10.1016/j.ese.2022.100210.

44. Jirušek M (2020) The attitude of the Visegrad Group Countries towards Russian Infrastructural Projects in the gas sector, *Energy Policy* 139/2020, DOI: https://doi.org/10.1016/j.enpol.2020.111340.

45. Karimli I (2018) Caspian Natural Gas to Be Sent to Central Europe Via SGC, *Caspian news*, https://caspiannews.com/news-detail/caspian-natural-gas-to-be-sent-to-central-europe-via-sgc-2018-2-27-11/ [20.02.2026].

46. Larsson R L (2007) Nord Stream, Sweden and Baltic Sea Security, *Swedish Defence Research Agency*, https://www.foi.se/en/foi/reports/report-summary.html?reportNo=FOI-R--2251—SE [15.12.2025].

47. Litkei M (2023) Felértékelődő útvonal: a Török Áramlat, *Eurasia* 2023/1, https://eurazsiamagazin.hu/felertekelodo-utvonal-a-torok-aramlat.

48. Liu Y, Zhao S, Li Y, Huang J, Yang X, Wang J & Tao C (2024) Mechanically Enhanced Detoxification of Chemical Warfare Agent Simulants by a Two-Dimensional Piezoresponsive Metal–Organic Framework, *Nanomaterials* 14(7), pp. 1–15, DOI: https://doi.org/10.3390/nano14070559.

49. Łoskot-Strachota A et al. (2023) V4 in Times of Unprecedented Challenges and Changes on the Gas Market: V4ETTP Working paper, *OSW*, https://rekk.hu/downloads/academic_publications/V4_Gas%20challanges_final.pdf?utm_source=copilot.com [20.02.2026].

50. Łoskot-Strachota A et al. (2024) *Energy Security in V4*, https://rekk.hu/downloads/academic_publications/energy_securityin_V4_web.pdf [20.02.2026].

51. Mádl M V (2025) The EU's Energy Policy From the Perspective of a Central-Eastern European Country: Hungary, in: Szilágyi J E & Marinkás Gy (eds.) *Maastricht 30: A Central European Perspective*, Central European Academic Publishing, Miskolc–Budapest, pp. 653–677, DOI: https://doi.org/10.54237/profnet.2025.jeszgymmcep_26.

52. Magyar Földgázszállító Zrt. (2020) *Statistical data*, https://fgsz.hu/a-foldgazrol/a-foldgaz-szerepe/statisztikai-adatok [23.09.2024].

53. Marine C (2021) The battle over Nord Stream 2, Gas pipelines and LNG carriers, *Le Monde Diplomatique*, https://mondediplo.com/maps/gas-pipelines#&gid=1&pid=1 [20.02.2026].

54. Miskolczi Bodnár P & Szuchy R (2017) Joint and Several Liability of Competition Law Infringers in the Legislation of Central and Eastern European Member States, *Yearbook of Antitrust and Regulatory Studies* 10(15), pp. 85–110, DOI: https://doi.org/10.7172/1689-9024.YARS.2017.10.15.5.

55. Németh V (2022) Visegrádi országok energiabiztonsága, *Oeconomus Gazdaságkutató Alapítvány*, https://www.oeconomus.hu/wp-content/uploads/2022/01/A-visegradi-orszagok-energiabiztonsaga-Nemeth-Viktoria_2022_januar.pdf [04.04.2024].

56. NESA Centre for Strategic Studies (2021) *Nord Stream 2 interim white paper: Implications and Outcomes for US-German Relations and the NATO Alliance*, https://nps.edu/documents/114698888/125818449/NESA-NS2-Interim-White-Paper-29-January-2021.pdf/b0bbee24-fd64-abd1-9d8d-b4828993974a?t=1613173073391 [13.09.2024].

57. Nord Stream AG (n.d.), https://www.nord-stream.com/ [23.09.2024].

58. Offshore Technology (2011) *Trans-Mediterranean Natural Gas Pipeline*, 12 April, https://www.hydrocarbons-technology.com/projects/trans-med-pipeline/: [23.09.2024].

59. OMV Petrom (n.d.) *Neptun Deep – A stronger Romania. With the energy from the Black Sea*, https://www.omvpetrom.com/en/our-business/exploration-and-production/neptun-deep [23.09.2024].
60. Pinto R (2024) Russian gas flows via Ukraine in 2025 and beyond: What CEE countries can expect, *Kpler*, 12 September, https://www.kpler.com/blog/no-russian-gas-flows-via-ukraine-in-2025-what-are-the-options-on-the-table-for-cee-countries [13.09.2024].
61. Poursanidis K, Sharanik J & Hadjistassou C (2024) World's largest natural gas leak from Nord Stream pipeline estimated at 478,000 tonnes, *iScience* 27(1), pp. 1–9, DOI: https://doi.org/10.1016/j.isci.2023.108772.
62. Rácz G (2020) Történelmi bírságot kapnak az Északi Áramlat-2 kivitelezői, *Economx Club*, https://www.economx.hu/nemzetkozi-vallalatok/eszaki-aramlat-lengyelorszag-birsag.715149.html [09.11.2025].
63. Rátky M & Tóth M (2022) *A magyar energiaszektor tanulságai*, Budapest, Akadémiai Kiadó, DOI: 10.1556/9789634547648.
64. Regulation (EU) 2017/1938 of the European Parliament and of the Council on measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010.
65. REKK Energiapiaci Tanácsadó Kft. (2015) *REKK report on energy markets*, 2015/4, https://rekk.hu/downloads/publications/Rekk_jelentes_2015_4.pdf#page=21 [07.10.2024].
66. REMIT natural gas storage data, https://agsi.gie.eu/#/ [10.11.2025].
67. REMIT storage data, 3 November 2025, https://agsi.gie.eu/#/ [16.09.2024].
68. Rugli T (2025) Előzetes letartóztatásba helyeztek az Északi Áramlat felrobbantásának ügyében egy ukrán férfit, *24Extra*, https://24.hu/kulfold/2025/10/01/elozetes-letartoztatasba-helyeztek-az-eszaki-aramlat-felrobbantasanak-ugyeben-egy-ukran-ferfit-volodimir-z-t/ [10.11.2025].
69. Rystad Energy & Kpler data analyses, https://www.rystadenergy.com/ [08 10.2025].
70. Sanderson H, Fauser P, Thomsen M, Larsen J B (2012) Weight-of-evidence environmental risk assessment of dumped chemical weapons after WWII along the Nord-Stream gas pipeline in the Bornholm Deep, *Journal of Hazardous Materials*; 215–216/2012, pp. 217–226, DOI: https://doi.org/10.1016/j.jhazmat.2012.02.057.
71. Staudenmaier R (2017) Germany's nuclear phaseout explained, *Deutsche Welle*, https://www.dw.com/en/germanys-nuclear-phaseout-explained/a-39171204 [13.09.2024].

72. Svec M (2025) EU Membership: Implications for Czech Energy Security, in: Szilágyi JE & Marinkás Gy (eds.) *Maastricht 30: A Central European Perspective*, Central European Academic Publishing, Miskolc–Budapest, pp. 615–632, DOI: https://doi.org/10.54237/profnet.2025.jeszgymmcep_24.

73. Sziklai B R, Kóczy L Á & Csercsik D (2020) The impact of Nord Stream 2 on the European gas market bargaining positions, *Energy Policy* 144/2020, DOI: https://doi.org/10.1016/j.enpol.2020.111692.

74. Szuchy R (2019) Az energiajog és az energetikai szabályozás aktuális kihívásai, in: Ed.: Glavanits J (ed.) *A gazdasági jogalkotás aktuális kérdései*, Dialóg Campus, Budapest, pp. 231–238.

75. Tahchi B (2024) Algerian gas to strengthen energy security of the European Union: Policy, capacity and strategy, *Energy reports*, 11/2024, pp. 3610–3613, DOI: https://doi.org/10.1016/j.egyr.2024.03.022.

76. U.S. Department of State (2021) *Joint Statement of the United States and Germany on Support for Ukraine, European Energy Security, and our Climate Goals*, 21 July, https://2021-2025.state.gov/joint-statement-of-the-united-states-and-germany-on-support-for-ukraine-european-energy-security-and-our-climate-goals/ [08.10.2025].

77. UNCITRAL (2010) *Arbitration Rules, Article 3*, https://uncitral.un.org/en/texts/arbitration/contractualtexts/arbitration [28.10.2025].

78. Vakulenko S (2024) The Final Countdown: Will Russia and Ukraine Renew Gas Transit Deal?, *Carnegie*, https://carnegieendowment.org/russia-eurasia/politika/2024/02/the-final-countdown-will-russia-and-ukraine-renew-gas-transit-deal?lang=en [16.09.2024].

79. Volkonsky V A & Kuzovkin A I (2021) Advantages and Disadvantages of the Nord Stream 2 Gas Pipeline for European Countries: A Review of Estimates by Scientists and the Energy Industry, *Studies on Russian Economic Development* 32(6), pp. 689–694, DOI: 10.1134/S1075700721060162.

80. Wood S & Henke O (2021) Denmark and Nord Stream 2: A small state's role in global energy politics, *Energy Policy* 148/2021, DOI: https://doi.org/10.1016/j.enpol.2020.111991.

81. Zaretszkaja V (2024) The United States remained the largest liquefied natural gas supplier to Europe in 2023, *U.S. Energy Information Administration*, https://www.eia.gov/todayinenergy/detail.php?id=61483 [13.09.2024].

82. Zhang Q, Chen R, Ma S & Liang A (2024) Nord Stream 2, geopolitical conflicts and energy security: Evidence from EU regions, *Energy*, 313/2024, DOI: https://doi.org/10.1016/j.energy.2024.133836.