

Scenarios for Diversification of EU Natural Gas Supplies from Algeria

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Abstract: The Russian-Ukrainian war contributed to significant turbulence in the European energy market. The existing energy relations with Russia have been almost destroyed. The European Union found itself in a difficult situation and quickly began to look for ways to replace Russian gas. Naturally, Algeria was found on the list of countries of special European interests. Rich oil and gas potential and proximity to the European energy market were the main reasons to strengthen energy relations with Algeria after February 24, 2022. This article examines how Algeria's gas policy towards the EU has changed since the start of the Russian-Ukrainian war and the main scenarios for its implementation in the future. The following hypotheses are adopted in the article: after the Russian invasion of Ukraine, Algeria and the EU changed their approach to gas policy by trying to resuscitate long-forgotten projects, such as the Trans-Saharan gas pipeline (NIGAL) or Galsi, and to increase imports. The chances of building the Galsi pipeline are high. The main tools of Algeria's gas policy are political and economic instruments. Algeria's gas policy has a significant impact on the EU's energy security. The main research methods used are synthesis and analysis, comparison, statistical analysis, and forecasting approach.

Key words: Algeria, European Union, gas supplies, energy security, pipelines

Introduction

The Russian full-scale invasion of Ukraine significantly influenced the entire European continent and disrupted the existing geopolitical balance of power. Changes took place not only on the strategic level but also on many other levels—political, economic, social, and environmental. The energy sector creates a lot of worry for the European Union (EU). In 2021, natural gas imported via pipelines to the EU amounted to 269.8 billion cubic meters (bcm), of which 132.3 bcm were imported from Russian Federation, 80.9 bcm from Norway, 34.1 bcm from Algeria, 11.2 bcm from Azerbaijan and 3.1 bcm from Libya. The largest exporters of liquid natural gas (LNG) to the EU in 2021 were the United States of America (26.3 bcm), Qatar (22.2 bcm), Russia (17.4 bcm), Nigeria (11.5 bcm) and Algeria (9.3 bcm).¹ Statistical data show that Russian natural gas in the EU's energy balance accounted for approximately 49% of gas via pipelines and 19% of LNG. In turn, the demand for Algerian gas accounted for 13% via pipelines and 10% of LNG. The armed aggression against Ukraine has forced many countries to

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review their energy strategies and look for alternatives to Russian gas at a very rapid pace in order to reduce energy dependence on Moscow. The difficult situation of the European energy market has led the EU to actively look to the African continent and the Middle East to redefine energy alliances. Despite already existing suppliers, such as Algeria, Nigeria or Qatar, a willingness to supply natural gas to the EU was also expressed by Angola and the Republic of Congo.²

The Russian invasion of Ukraine carries many threats not only to the European continent but also to other regions of the world, including Africa. Among the threats that could have a destabilizing impact on the African continent are a) rising prices for energy resources such as natural gas and oil, b) numerous crises—food, migration, political, and c) social unrest in the most vulnerable regions and countries (e.g. Sahel region). In the new geopolitical reality in which Europe and the world find themselves, strengthening the partnership between European and African states is in the interest of both the former and the latter. Firstly, it will help replace Russian oil and gas and accelerate the disruption of Russian gas imports to the EU. Secondly, it will encourage the inflow of foreign investments into strategically important sectors of African economies (energy, transport, infrastructure, industry) and thus accelerate economic growth and improve social conditions. Thirdly, European-African energy cooperation may contribute to strengthening geopolitical relations.³ Not less important in this context will be South-South cooperation, which could contribute to the balance of power on the African continent and encourage the integration of African states. Within the North-South axis, partnership—rather than exploitation—should become the main element of cooperation between the EU and Africa.

The geographical proximity of the two continents is of strategic importance and may contribute to the reconstruction of economic relations between Europe and Africa, which have been somewhat damaged since the migration crisis. The Maghreb is closest to Europe but is one of the most disintegrated regions in the world. Relations between the EU and the countries of this region are different. One main issue is Western Sahara—not only Algeria and Morocco are involved but also EU countries, mainly Spain and France, whose positions differ significantly. The issue of Western Sahara may shape the future partnership between the EU and the Maghreb as well as the rest of Africa in the near future, as evidenced by the energy disputes in the Morocco-Spain-Algeria triangle.

Literature Review

Scientific articles by Bouckaert, Dupont, and Aissaoui, were an important source for more detailed and complex analysis on the security of natural gas supplies. Ali Aissaoui focuses on the problems and challenges related to Algerian natural gas.⁴ Reinhilde Bouckaert and Claire Dupont show that Algeria does not hesitate to use gas as a political tool.⁵ Thanks to the new gas agreements with Italy, Algeria is willing to redirect gas supplies to the EU on the condition that there is no interference in its relations with Russia and its political priorities. Jennifer Ogbogu raises an especially significant issue, namely how Middle East terrorism affects the situation in North Africa which translates, among other things, into energy security.⁶ Eckart Woertz emphasizes that shortly energy geopolitics will change, and the West (NATO and EU) will increasingly move away from fossil fuels.⁷ Future energy markets will be more regional and less global than today, putting further pressure on Europe and the MENA region to connect through

energy infrastructure. The acts of sabotage on the Nord Stream I and II pipelines have demonstrated the vulnerability of seabed infrastructure. The EU will need to create better reception and transmission infrastructure across its territory.⁸

Information obtained from energy companies (British Petroleum, Eni, Snam, and Sonatrach) provide up-to-date data and analyses on the energy market and natural gas supplies from Algeria to the European Union. These are key players in the gas sector and can provide insight into the current situation and future trends. News agencies (Bloomberg, Reuters, Deutsche Welle, Al Jazeera) provide up-to-date coverage crucial in the context of dynamic events related to gas supplies from Algeria. Think tanks and research centers (Oxford Institute for Energy Studies) provide objective analysis and data that help understand complex energy issues. It is worth noting that security of natural gas supplies from Algeria to the EU and their future is a dynamic and current topic with limited availability of scientific articles. Therefore, using a variety of sources, including energy companies, news agencies, think tanks, research centers, and scientific articles, is essential to create a comprehensive and reliable assessment. These diverse sources provide different perspectives and data that help fully understand the issue at hand.

The Algerian Gas Sector in the Shadow of the Russian Invasion of Ukraine

Russia's armed invasion of Ukraine has caused unrest in Africa. Algeria has found itself in a very difficult situation. The country's civil and military leadership has been forced to make complex international calculations in order to guarantee the internal and external security of its citizens. Russian aggression against Ukraine has pros and cons for Algeria. Algeria effectively sits between two powers—the EU and Russian Federation—and has political and economic relations with both.

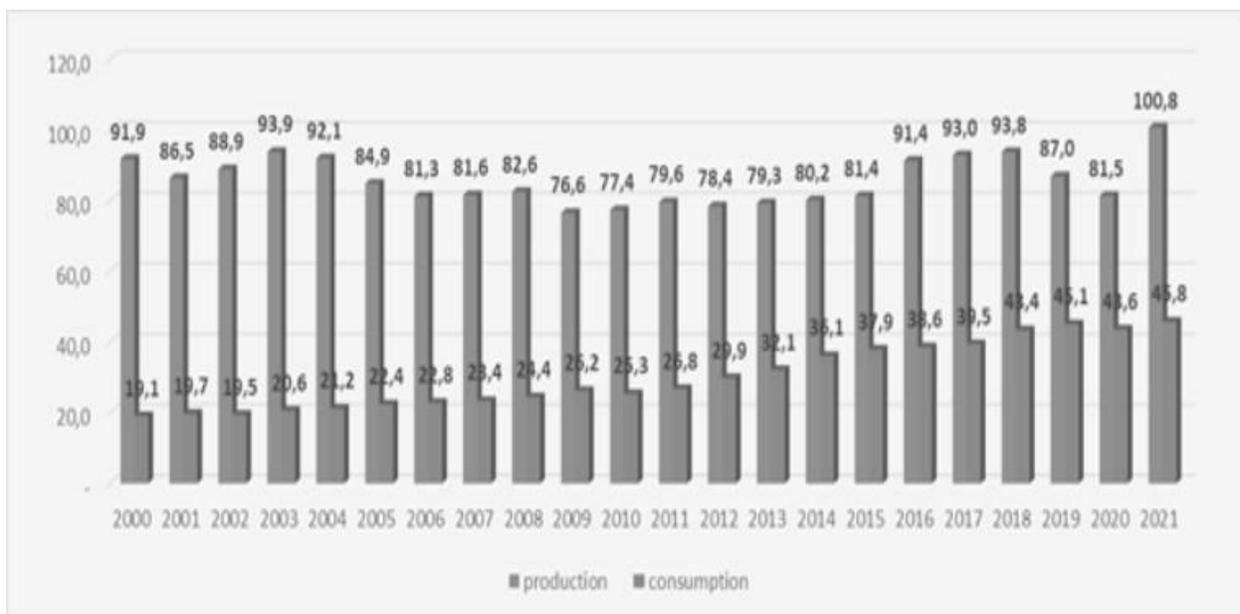
The war became an opportunity for Algeria to build solid bridges of cooperation with the EU to solve many socio-economic problems and repair good-neighborly relations. In recent years, Algerian-European relations have been strained for many reasons: a) the unresolved issue of Western Sahara; b) the problem of illegal migration of both Algerians (the *Harraga* phenomenon) and citizens of Sub-Saharan Africa; and c) tension in relations with France (issues concerning historical past and problems with visas for Algerian citizens) and Spain (the issue of rapprochement with Morocco). All this resulted in a deterioration of cooperation between the EU and Algeria. This was particularly noticeable in the energy sector. In recent years, gas exports to the EU from Algeria have been declining and were often replaced by Russian gas. The main reasons for the decline in Algerian production were both economic and technological factors: a) a decline in gas prices on world markets; b) increased domestic demand for gas due to the increase in the country's population; c) outdated transmission infrastructure requiring modernization and expansion; and d) low level of investment in the energy sector due to monopoly of the national energy company Sonatrach.

Regardless, Algeria remains the third largest natural gas supplier to Europe. Algeria's economy is heavily dependent on hydrocarbon exports. The country is a rentier state which means that its prosperity greatly depends on the volume of oil and gas sold on world markets. In 2021, energy resources accounted for 93% of exports, 60% of tax revenues, and 30% of GDP.⁹ Algeria's economic problems began as the Ukrainian crisis of 2014 contributed to the fall in

prices for hydrocarbons. The Covid-19 pandemic slowed the dynamics of trade relations and caused Algeria's foreign exchange reserves to shrink by half over three years (2018-2021). The rise in energy commodity prices triggered by the post-pandemic recovery and the Russian armed invasion of Ukraine was certainly 'good news' for the Algerian government, which could count on significant foreign investment in the expansion of the energy sector, thus improving the economic situation that might result in a quieting of social protests.¹⁰

According to British Petroleum statistics, documented natural gas reserves have shrunk by half from 4.3 trillion cubic meters to 2.3 trillion cubic meters. In 2021, Algeria exported around 34 bcm of gas to the EU or 8% of total EU imports.¹¹ Natural gas production in Algeria in 2021 reached its historical maximum and amounted to 100.8 bcm. The increase in the country's population is also associated with an increase in internal demand for natural gas, and Algeria should also take this into account (Chart 1).

Chart 1: Natural gas production and consumption in Algeria in 2000-2021, bcm



Source: own study based on BP Global 2022.

The lack of new discoveries due to the shortage of investments and modern technologies leads to a reduction in resources. In addition, the unstable political situation in the country, as well as the monopoly of the state-owned company Sonatrach for the exploration, production, and distribution of energy resources discourages investors. Algerian energy legislation also needs to be improved. Shrinking resources, rising production, and the growing domestic demand for natural gas in Algeria mean that the country is not able to approach replacing the 130 bcm of Russian gas imports, but it can help individual European countries offset winter shortages. Algeria is ready to use its spare capacity and pipelines to increase exports to the European continent through the implementation of several new energy projects in the main Hassi R'Mel natural gas field. However, in the medium term, the European Union must look for new sources of gas supply, as several reasons could weaken Algeria's export capacity,

including: a) increase in internal gas consumption; b) political instability; c) insufficiently developed energy infrastructure; and d) the impact of external factors.

Platts Analytics estimates that over 2022 Algeria could supply an additional 7 bcm of gas to Europe, mainly through increased pipeline supplies.¹² Currently, there are two pipelines from Algeria to the European Union—Transmed to Italy with a capacity from 8-9 bcm and Medgaz to Spain with an estimated capacity of 810.7bcm.¹³ In addition, Algeria exports gas to the EU in liquefied form. There are plans to increase the capacity of the Medgaz pipeline to 16 bcm per year in the medium term if Algeria's national oil and gas company Sonatrach signs additional long-term natural gas contracts with European customers. The reopening of the Maghreb-Europe gas pipeline, which had a capacity of 10 bcm of gas per year, could improve the European energy market. However, by November 2021 gas supplies via this pipeline had been halted as a result of a political dispute. Other North African gas producers are unlikely to be able to help alleviate the European gas crisis. Libya is plagued by political instability and security commitments and has no additional gas export capacity. Egypt has reached its maximum level of LNG exports. Outside the region, Qatar has also largely contracted all its volumes already though some cargoes may be diverted to Europe provided Asian customers are open to negotiation. Likewise with LNG customers from the United States which is already shipping record cargoes to Europe. Norway could provide Europe with the largest volumes, Platts Analytics estimates an increase in production of around 13 bcm¹⁴. This makes Algeria the second largest source of incremental volumes for the EU, but due to the crisis the country has faced since 2014, Algeria's economy has yet to stabilize.¹⁵

After years of isolationism, the war in Ukraine contributed to Algeria's pursuit of a more assertive foreign policy. High energy prices help strengthen Algeria's economy through a sharp increase in revenues from sales. The growth of the country's budget gives the possibility to ensure internal stability and greater involvement in the international arena.¹⁶ Moreover, the rapprochement with the EU has not contributed to Algeria's separation from Russia. Algeria's policy in the international arena is inconsistent. On the one hand Algeria promotes an anti-imperialist attitude, defending Western Sahara and Palestine. Yet, it abstained from voting at the UN General Assembly on the resolution condemning the Russian invasion of Ukraine on 2 March 2022. On 7 April 2022, Algeria voted against the resolution to suspend Russia from the Human Rights Council. The position of Algeria is explained by the long history of cooperation between the two countries dating back to the times of the USSR. Moreover, Russia is a major arms exporter to Algeria, with 2020 data showing that around three-quarters of the weapons purchased by Algeria come from Russia. Algeria and Russia also cooperate closely in the energy sector.

In 2006, a Memorandum of Understanding was signed between Sonatrach and Gazprom which defined the main areas of cooperation in the oil and gas industry. On 7 June 2023, Presidential Decree No. 23-218 was issued regarding the introduction of amendment No. 3 to the agreement of 18 September 2006, for the exploration and exploitation of hydrocarbons in the circuit called "El Assel" (blocks: 236b, 404a1 and 405b1). An agreement on this matter was concluded in Algiers on 27 March 2023, between the National Agency for the Development of Hydrocarbon Resources (ALNAFT), the national company SONATRACH-S.P.A, and the company GAZPROM International Limited ILLC.¹⁷ In February 2022, Algeria showed that it

does not hesitate to use gas as a political weapon. The signing of a new gas agreement with the Italian Eni for the extraction of hydrocarbons in the Berkine, In Salah, and In Amenas regions indicates that Algeria is ready to send additional volumes of gas to the EU but will do so on the condition that the EU does not interfere in its relations with Russia and its political priorities.¹⁸ Let's look at possible scenarios for the development of Algeria's gas policy in the future.

Possible Scenarios for the Diversification of Supply from Algeria to the EU

Assuming that European-Algerian relations will develop based on mutual benefits, four scenarios for the development of energy cooperation in the gas sector can be forecast (Fig. 1). The following factors will overlap with these scenarios: a) the domestic political situation in Algeria; b) the security on Algerian borders (primarily Libya and Mali but also others); c) the course of the war in Ukraine; d) Russia's strategy in Africa, especially in the Sahel and the presence of Wagner group; e) general development of the situation in Sahel region; f) the current situation in the Middle East (Israel & Palestine); and g) changes in Algerian-Russian and Algerian-EU relations.

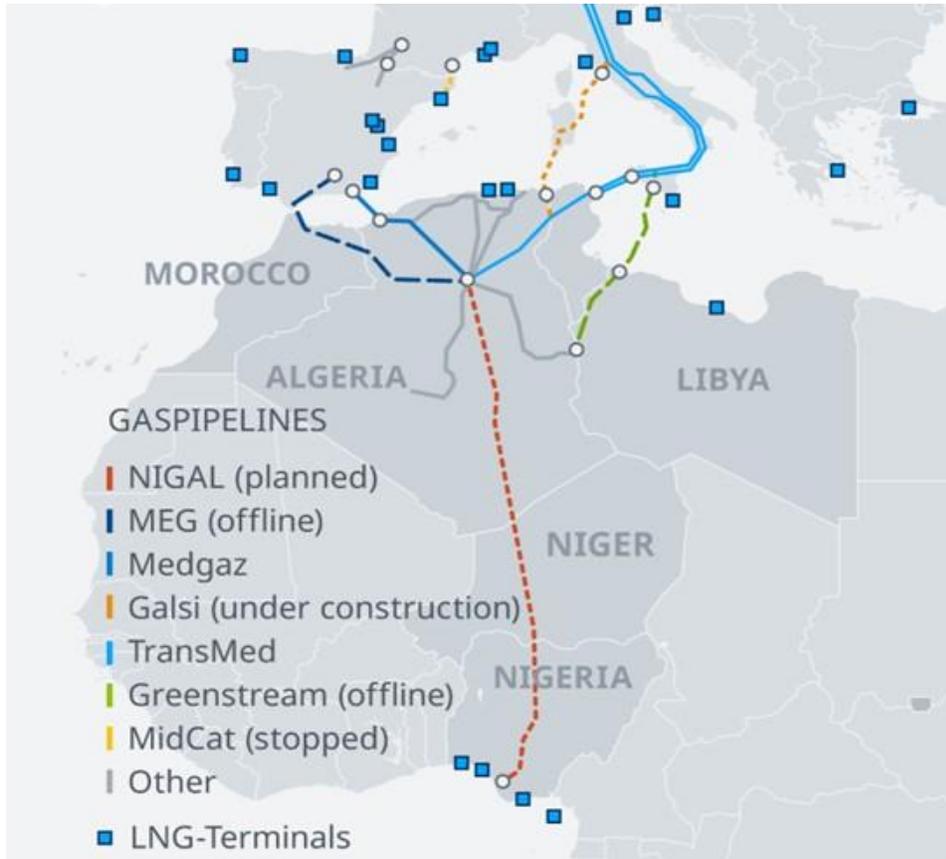
The political situation in Algeria will have a direct impact on the security of natural gas supplies to Europe. A relatively calm situation on its external borders will help Algeria to focus on domestic problems which may favor investment growth, the emergence of new jobs, reduced social discontent and unemployment (and hence illegal immigration of Algerians), expanding energy infrastructure and developing other sectors. All this may minimize social tensions and the possibility of further anti-government protests. The protracted war in Ukraine has increased food prices. As the war continues, Russia will seek ways to involve other international actors. Moreover, in order to divert attention from Ukraine and weaken its international support, it may attempt to destabilize the situation in other regions (Africa in this respect, and especially the Sahel, is very vulnerable). As shown in Figure 2, Algeria has the potential to increase its own gas supplies to the EU and may involve other African countries such as Nigeria and Niger. However, in order for all initiatives to be implemented, political will, political stability in the West African region, and diplomatic skills (energy diplomacy and more) as well as financial and logistic capabilities are necessary.

Short-term scenario - Transmed, Medgaz, LNG

This scenario is currently implemented with the available potential and energy infrastructure. Gas exports to the EU are carried out via two gas pipelines Transmed to Italy and Medgaz to Spain. The Medgaz gas pipeline directly connects the coasts of Algeria and Spain, while Transmed, in turn, runs from Algeria to Italy through Tunisia. Transmed runs by transit through a third country, but at the moment it does not raise much concern, as Algeria and Tunisia have a friendly relationship. However, Tunisia, like the rest of North African countries, is struggling with a political crisis and protests inside the country and also has a dilemma over cooperation with Morocco, all of which may worry European gas consumers. Algeria is one of the largest exporters of LNG to the EU: France (39.51%), Spain (22.8%), Italy (13.7%), Great Britain (10.85%), Greece (3.2%).¹⁹ Due to the EU's decision to abandon Russian gas supplies following Russia's armed invasion of Ukraine, these gas volumes are not sufficient to cover the gas demand of European consumers. This scenario is very significant in terms of supply.

Algeria has the necessary gas infrastructure, and its proximity to the European market makes it attractive. The danger behind this scenario is the EU's increased dependence on this source, as was the case with Russia until 2022.

Figure1: Existing and potential gas pipelines from Algeria to the EU



Source: Holleis and Schwikowski 2022.

The main challenges for the EU in implementing this scenario are economic, political, and technical. Firstly, it should prevent high dependence on one source of supply (Algeria) and diversify gas supplies as much as possible. Secondly, increasing demand for gas both in the EU and in Algeria may limit supply. Thirdly, an unsettled political situation in Algeria (or Tunisia) may disrupt supplies through existing infrastructure. Lastly, diversified gas prices could change depending on the geopolitical situation in North Africa and other regions (for example, war in Ukraine or unrest in the Middle East).

The EU faces a lack of quick alternatives to replace Algerian gas which increases its risks in energy security. Ongoing political crises in Algeria may affect the production and export supply of natural gas. The EU also faces competition for Algerian LNG supplies by other markets such as Asia. This may affect the availability and increase in prices of LNG in the European market. Algeria's variable energy legislation, regulations, and agreements may change over time so the EU must be flexible and able to adapt to changing trade conditions. Impacts on this relationship in the context of the escalation of the situation in the Middle East from October 2023 remain

tense and attacks on underwater energy infrastructure in the Mediterranean region create uncertainty.

Medium-term scenario - Transmed, Medgaz, LNG, NIGAL

The development and expansion of Algeria's energy infrastructure may occur with the involvement of Nigeria and Niger. One of the elements to expand Algerian gas export possibilities to the EU is the NIGAL gas pipeline. It is not a new initiative—it was established 40 years ago—but for various geopolitical and economic reasons, this project has not been implemented. A few days before Russia's invasion of Ukraine, Algeria signed an agreement with Nigeria and Niger to resume work on the NIGAL gas pipeline. The Russian invasion of Ukraine only accelerated this process. The 4,400 km onshore Trans-Saharan gas pipeline (Trans-Saharan Gas Project, (NIGAL) with a capacity of 30 bcm of gas annually will connect Nigeria with Algeria. It is the longest planned gas pipeline in Europe, the Middle East, and Africa. The gas pipeline aims to improve gas supplies within individual countries of ECOWAS and the Maghreb as well as increase exports to the EU.²⁰ If this project is successfully implemented, the EU will be able to directly tap into Nigeria's significant natural gas reserves.

The NIGAL gas pipeline will be of great importance, above all, to African countries, as it will contribute to the integration of the region and African gas markets. It is expected that the gas pipeline will be put into operation at the end of 2028.²¹ The launch of NIGAL will greatly expand the geography of natural gas supply to Europe, but should also foster cooperation and integration among African countries and raise their prosperity. In addition, Russia's Gazprom has started negotiations with Nigeria on possible participation in the project. Experts have described this interest as a strategic business move to guard and control the flow of gas from Africa to Europe. Russia would be interested in tactically delaying the project. Its aim is to be the leading supplier and any other competitor must be subjected to close monitoring and control. Algeria's energy minister also spoke on the issue, saying that “only those partners who can bring something to the project, not just money, should participate.” According to the minister, “if things go well, there will be no need to bring international oil companies into the project” and “if the need for partnership in the project arises, not every partner will be welcome in the project.”²²

It is clear from these words that Algeria—which has an otherwise very close relationship with Russia—here considers the Russian Federation as a rival potential threat and is not interested in Russian participation in the project. Similarly, one of the reasons for the delay in construction of this pipeline was Algeria did not want to facilitate Nigeria to enter the European market because it saw this country as competition. Now that the demand for natural gas is increasing not only in Europe but also in Algeria, the role and importance of Nigerian gas is gaining importance for all parties.²³

When implementing this scenario, the following challenges and threats should be considered. Firstly, the complicated geopolitical situation in the Sub-Saharan African region, especially in the Sahel zone, has a significant impact on relations between countries. The spread of Russian influence in this region may complicate original plans. Russia, which shows interest in the NIGAL project, may attempt to influence the implementation of the project and this may lead to international tensions. Secondly, the political interests of Algeria and Nigeria differ

significantly, for example, in their approach to cooperation with Russia or the war in Ukraine. Establishing a partnership with Russia or other international oil companies may be complicated and require negotiations. Very often the interests of the parties are contradictory. Algeria and Nigeria must strike a balance between securing their interests and ensuring the accessibility of the NIGAL project. Thirdly, construction and maintenance of such a long gas pipeline as NIGAL involves technical and logistical challenges. It is necessary to ensure the safety, reliability, and efficiency of gas supplies.

Various obstacles exist for implementing this scenario. Although NIGAL would increase the diversification of EU gas supply sources, there would still be significant dependence on Algeria and Nigeria. In the event of production or supply problems, the EU could continue to face energy security problems. Infrastructure projects of this scale often encounter construction delays and budget difficulties which may increase costs and financial risks of the NIGAL project. The military and political situation in the Sahel will have an impact on the implementation of the project. The construction of the gas pipeline may affect local communities and the environment. It is necessary to monitor and manage these impacts to avoid conflicts and negative impacts on local populations. Moreover, the gas pipeline route will run through the northern regions of Nigeria, where Boko-Haram, AQIM, and ISIS have been active in recent years, which is hardly conducive to the successful implementation of the pipeline and carries a risk to people involved in laying the pipeline.²⁴ These risks increasingly extend beyond northern Nigeria. The NIGAL parties must take into consideration the risk of market changes that may affect the profitability of the project. The market for natural gas and fossil fuels is dynamic, and demand and prices may change under the influence of the geopolitical situation both in the region and globally.

Long-term Scenario - Transmed, Medgaz, LNG, NIGAL, Galsi

This scenario may be realized on the condition that, apart from the aforementioned gas pipelines and projects, another one currently in "shelved" status becomes a reality. The Galsi gas pipeline could directly connect Algeria with Italy with its route from the Hassi R'Mel gas field via Koudiet Draouche to Sardinia and then via the Tyrrhenian Sea to Tuscany near Piombino.²⁵ The length of this pipeline would be 830 km² with a throughput capacity of 8-10 bcm per year. The main advantage of Galsi is a direct gas pipeline that connects the two countries. However, many obstacles stood in the way of implementing this project on both the Algerian and Italian sides. One was the risk of depletion of natural gas resources in Algeria, due to the lack of significant upstream discoveries evidenced by the decrease in natural gas production from 93.9 bcm (2003) to 79.3 bcm (2013).²⁶ Contract terms for international oil companies remained unattractive from the efforts of the Algerian company Sonatrach to increase budget revenues and maintain control over natural gas resources. Lack of a consistent position regarding the involvement of international oil companies in the upstream process, gas import prices, as well as the division of financing for various sections of Galsi.²⁷ The Italian government initially declared its support for the project to prevent potential supply shortages from critical areas such as Libya and Ukraine and to make Italy a European gas hub.²⁸ It also needed comply with the European Commission's (EC) requirements to end Eni's monopoly on the supply of natural gas to the Italian energy market.²⁹ The EC initially included Galsi in projects of common interest

(PCIs) with €120 million.³⁰ Moreover, the implementation of the Galsi project was largely stalled by factors of a purely political nature, including the lobbying of Gazprom in Italian political circles that caused a real 'offensive' against the Galsi project in order to maintain Russian gas quotas in Europe. As well, Tuscany did not agree to the construction and did not issue the necessary permits.³¹

The pipeline was intended to contribute to two EU energy policy objectives, namely breaking Eni's monopoly on gas imports to the Italian market and improving European energy security. However, the project would not only meet the EC's requirements in terms of reducing Russian gas imports, it would also connect shipper and buyer of gas directly, bypassing transit countries. However, Galsi would not contribute to the diversification of existing energy supplies, as Algeria is already the third largest exporter of natural gas to the EU. By the time there were disputes about the viability of the project, its investment attractiveness had begun to decline, although it was still seen as socially desirable. Protracted disputes and subsequent delays in the project schedule played a significant role in driving up costs. This made the project unfeasible. In 2010, market conditions deteriorated due to a decline in demand and an increase in supply from competing projects (e.g. Nord Stream I).³²

The result was a lack of agreement between the parties and lack of strong interest in the project from a European energy diplomacy perspective. The Algeria-Sardinia-Italy Gas Pipeline (Galsi)—part of the 2010 European Economic Recovery Plan (EERP) and having a grant of €120 million—failed to make the necessary progress. In 2014 the grant was withdrawn and the funds returned to the EU budget.³³ At this point it seemed that the concept of building this pipeline had fallen into ruins. With the Russian invasion of Ukraine on 24 February 2022, the energy map of Europe unexpectedly and immediately became obsolete. All this forced not only Europe but also the USA and other countries of the world to rewrite their scenarios and re-prioritize. The EU's energy security was at once at risk, and along with it the entire western economy.³⁴ In 2022, the Galsi gas pipeline was not in the REPowerEU plan but this does not mean that Italy will not return to it in the future due to the changing geopolitical situation and the changes that Algeria made in its own energy legislation at the end of 2020. In December 2022, the Minister of Energy Mohammad Arkab noted that if the Galsi project is implemented according to the revised energy policy of Algeria, the pipeline will be built to a technical standard suitable for future exports of hydrogen and ammonia to Europe.³⁵

In addition, 2021 was a breakthrough for the Algerian energy sector. After years of declines, the production of natural gas for the first time exceeded 100 bcm and exports increased to the highest in eleven years.³⁶ This state of affairs removed a significant aspect why the gas pipeline was not completed. Will Algeria be able to maintain production at such a high level, and if so, for how long? The concerns remain the same: a natural decline in aging fields and rising domestic demand.³⁷ New planned projects are optimistic and Algeria's slightly greater opening to foreign investors may contribute to the discovery of new deposits in the future.³⁸ All this indicates that the Galsi gas pipeline may still come back into favor. However, the construction and maintenance of the Galsi gas pipeline will involve substantial technical and logistical challenges. Ensuring reliable sources of supply requires a stable political situation in North Africa as well as the discovery and exploitation of new deposits. Moreover, to supply gas to the coast, Algeria must connect its existing energy infrastructure with new fields where

gas extraction is planned. Of course, one of the components of the Galsi pipeline is its subwater pipes that have higher financial costs. It will be necessary to identify the sources of financing and ensure the profitability of the project for the entire period of its implementation.

In the past, the lack of political will led to delay of the Galsi project. There are fears that due to the Russian lobby in Italy, the issue of suspending the gas pipeline construction may return. The situation will depend on EU and Algerian energy policy priorities. As in the case of the NIGAL project, there is a risk of delaying the investment and construction. These delays may impact project costs and profitability. The Galsi pipeline could significantly increase gas supply volumes to the EU, but the dependence on Algeria as the leading supplier still would exist and this poses risks in the event of production or supply problems. Market changes may of course affect the efficacy of the project. Gas pipeline construction affects the natural environment and local communities. In this situation, it is essential to comply with environmental regulations and monitor the influence of the project on local areas. Changes in government or energy policy may affect the fate of the Galsi project, requiring flexibility in the approach to project implementation. Unfortunately, sabotage and terrorist attacks on energy infrastructure remain a threat.

Optimal Scenario - Transmed, Medgaz, LNG, GME, NIGAL, Galsi

This last scenario is unlikely to be implemented in the existing geopolitical situation and tense relations of the Spain-Algeria-Morocco triangle. Here, the main brake is the Maghreb-Europe gas pipeline (Pedro Duran Farell) with a length of 1620 km and a capacity of 12 bcm per year operating since 1996. Gas from Algeria transited through Morocco for delivery to Spain and Portugal. About 5.5 bcm per year was taken up by Morocco in exchange for transit fees. Tensions between Rabat and Algiers over the Western Sahara intensified in July 2021, resulting in Algeria not renewing its contract with Spain for supply through this pipeline. On 1 November 2021, Algeria stopped natural gas supplies.³⁹ Due to the deterioration of relations between Spain, Morocco, and Algeria, the route of the planned NIGAL gas pipeline has been changed. Initially, it was supposed to supply gas to the EU via the Maghreb-Europe gas pipeline. However, in 2022 it was decided that Nigerian gas would be delivered to European consumers via the Transmed gas pipeline, or perhaps in the longer term via Galsi. At present, it is unlikely that Algeria will resume deliveries via this pipeline through Morocco.

The optimal scenario considers the maximum use of Algerian gas potential with the existing and planned energy infrastructure in supplying natural gas to the EU. The main challenges that the EU faces on this path are several and similar to other scenarios. The political and geopolitical situation in the Maghreb region may change and affect decisions regarding the building of energy infrastructure. Political conflicts or tensions can complicate project implementation. Secondly, pipelines such as Transmed, NIGAL, and Galsi involve high construction and maintenance costs. It is necessary to source the financing and ensure the profitability of projects. Thirdly, the natural gas market is exposed to volatile prices and demand that may affect the profitability of projects.

Also, existing disputes or potential regional conflicts may lead to disruptions in gas supplies from Algeria. The suspension of gas supplies via the Maghreb-Europe Gas Pipeline due to tensions is an example of such a threat. Political changes in the region may affect energy

priorities and infrastructure projects. Any expansion of gas infrastructure involves technical and operational risks. The construction and operation of gas pipelines may affect the natural environment so it is necessary to comply with environmental protection regulations and be able to resolve possible ecological conflicts, especially in Algeria which has scanty water resources necessary for shale gas extraction. EU energy policy and political priorities may change, affecting support for infrastructure projects and requiring adaptation to changing EU regulations. Sabotage or terrorist attacks must of course be prevented.

Conclusions

The Russian invasion of Ukraine exacerbated the European energy crisis and forced the EU to desperately seek alternative sources of oil and gas to reduce its dependence on Russian supplies. Algeria is a promising source of additional natural gas supplies in many respects—geographical proximity, relatively extensive infrastructure, and long-term cooperation in the energy sector. Many factors impact the development of Algeria-EU relations. In recent years, these relations have experienced crises of diplomacy (France and Spain) as well as migration policy (Spain). Due to current events in the Middle East, it cannot be ruled out that Algeria may use energy to pressure the EU in solidarity with Palestine.

The future of gas supplies from Algeria to the EU is influenced not only by crises but also by a number of other factors. Algeria is an authoritarian state that faced mass anti-government protests starting in 2019 and only suppressed due to the Covid-19 pandemic.⁴⁰ It can also use natural oil and gas resources as a political weapon, an example is the closure of the Maghreb-Europe gas pipeline. Algeria remains a friend and ally of Russia, so it may succumb to Russian pressure, as happened with Belarus. Russia may also use instruments of political pressure, toward Algeria, for example, by limiting the export of contracted armaments. Algeria may also face decline in natural gas production due to legislative restrictions, depletion of strategic oil and gas deposits, and underinvestment or mismanagement in the energy sector. Domestic political instability in the country, insecurity across the Sahel region, and tensions on Algeria's borders could also negatively affect Algerian-European energy relations.⁴¹ All of the above factors limit, or may limit, Algeria's ability to increase natural gas production at a rapid pace and call into question the reliability of supply.⁴²

Algeria's gas policy in the context of supplies to EU markets began to slowly change even before Russia's full-scale invasion of Ukraine, and the events of 24 February 2022 only accelerated this process. Algeria is trying to maintain a balance in relations with the EU and Russia. The relationship between Russia and Algeria remains strong and it cannot be overlooked.⁴³ On the one hand, with its rich energy potential, Algiers is trying to help some European countries withdraw Russian gas from their energy balance. On the other, it is trying to maintain a status quo in relations with Moscow. Still, Sonatrach announced that it will remain a reliable gas supplier to Europe and is ready to support its European partners in the event of a "difficult situation."⁴⁴

There are also concerns that taking advantage of the situation, Algeria may use gas as a diplomatic tool, requiring political and economic concessions on Western Sahara, which has recently gained momentum.⁴⁵ Ultimately, Algeria is a country that prioritizes foreign policy independence, trying to maintain a delicate balance in increasing energy exports to the EU

while maintaining defense relations and a strategic partnership with Moscow.⁴⁶ Algeria and the EU should jointly seek agreements and compromises on the most difficult issues—access to the Algerian energy market, the Western Sahara problem, irregular migrants, visa issues, and many others.

The situation in Ukraine may affect the position of Algeria's ruling elite over the medium and long term. Failure of the Algerian government to deal with a number of problems could lead to a further weakening of its position and the revival of protests. This state of affairs, to some extent, prompted Algeria to return to the long-forgotten NIGAL project. Even if Algeria succeeds in increasing its gas production, there is no guarantee that exports will grow rapidly as the country will first have to meet rising domestic demand. The government is once again making efforts to increase domestic gas production through fracking. The first attempts to extract shale gas sparked mass protests in the areas of their production in 2015 and 2020. The protests forced government to postpone these projects. Local communities are concerned about water scarcity and worsening desertification. Government plans to meet the country's renewable energy needs are in their infancy and are developing slowly. EU demands for increased natural gas imports threaten to delay both the EU and Algeria's transition to green energy. The continued focus on energy exports at the expense of other sectors could aggravate Algeria's dangerous over-reliance on hydrocarbons, leaving it vulnerable to future market fluctuations and unprepared to deal with other shocks, whether political or climate change.⁴⁷

The expansion of Algerian transport capacity alone is not sufficient to ensure a stable gas supply to the EU. No less important in terms of increasing supplies from Africa to the EU is expansion of European transmission networks. If Italy's gas pipeline system is reasonably developed and connected to other European pipelines, Spain and Portugal to some extent form an energy island due to the lack of adequate infrastructure capable of transporting Algerian or other gas further into the continent. There are possibilities to connect Medgaz to the French pipeline network via Midcat, but the realization of this project depends on the political will of both countries. Another way to improve the European infrastructure is to develop regasification plants, but the price of gas will then be much higher.

The EU should be cautious in strengthening economic relations with Algeria, lest it falls into the trap of energy dependence as it did with Russia. The EU's urgent desire to free itself from Russian fossil fuels may result in over-hasty friendships with alternative suppliers. Reliance on Algerian gas would be inconsistent with the EU's broader goals of promoting democratic values and implementing an external dimension of the European Green Deal. The real answer to replacing fossil fuels from Russia must be to accelerate the transition to renewable energy sources.⁴⁸ In the first weeks of the Russian-Ukrainian war, it seemed to inhibit the implementation of the European Green Deal, due to the impossibility of quickly replacing fossil fuels such as oil and coal or (in individual countries) nuclear energy with natural gas. However, the EU has not changed its strategy but rather slightly modified ways implementation by extending the lifetime of individual coal mines, thermal power plants, or nuclear power plants (each country individually). Very importantly, the EU realized that cooperation with authoritarian regimes will always threaten its security and therefore redoubled its campaigns to introduce renewable energy sources and reduce dependence on authoritarian regimes.⁴⁹

The EU is now switching to gas supplies from nearby regions but authorities in European capitals should remember that diversification of sources is the key to Europe's energy security. As far as Algeria is concerned, if it will pursue a balanced and wise policy towards European countries it has much to gain from European investment in various sectors of its economy. This will improve its socio-economic situation and allow it to return to the international arena where it has been less active in recent years and to re-establish its influence, particularly on the African continent. The biggest concerns that could significantly disrupt the EU-Algeria relationship could be the Western Sahara issue, destabilization of the Sahel zone, and the Israeli-Palestinian crisis destabilizing the entire MENA region. Development of the Brussels-Algiers relationship but also the Algiers-Moscow relationship will depend on this.

Fragmentation of the Mediterranean region remains a serious problem for the diversification of gas supplies to the EU. Cooperation with Mediterranean countries in the energy sector could to some extent reduce political tensions on the Maghreb-Europe axis. Libya, Egypt, Israel, Cyprus, and Greece have significant energy potential capable of enhancing the security of natural gas supply to the EU. Cultural proximity, long-standing ties, mutual understanding, and the art of diplomacy can help maximize the Mediterranean's contribution to EU energy security, but this requires a great deal of time and effort on both sides of the sea.⁵⁰ As the above analysis shows, the realization of the above-mentioned scenarios will depend on geopolitical, economic, ecological, and technical factors. Some challenges and threats will be similar for all projects, for some they will be different. Current events in the Middle East may contribute to changing Algeria's energy policy. If the situation worsens, Algeria, as Palestine's 'advocate' in the international arena, may use energy as diplomatic tool looking to alter EU support for Israel. In such circumstances, the EU may again find itself in the same situation as after 24 February 2022—it will again have to look for alternative sources of gas supplies which seems much more difficult in the current situation.

To sum up, Algeria finds itself in a difficult situation. On the one hand, increased energy exports to the EU provide a chance to improve the economic and investment situation after the protests of 2019 and the impact of the pandemic. Algeria is also trying to return to active participation in international politics. The country, which outwardly supports the self-determination of nations, supports the independence of Western Sahara and Palestine. Yet, it is very reserved on the issue of the Russian-Ukrainian war. It is difficult to predict what strategy Algeria will choose toward the West if the Israeli-Palestinian conflict expands. Will Algeria choose its prosperity? Or will negotiate with the EU or announce a reduction in gas exports to the EU as a sign of solidarity with Palestine? We do not know the answer to this question yet.

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