European dependence on Russian gas: a study of risks and prospects

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Abstract : *This research aims to highlight on the position of Russian energy in the European economy and its national security, and whether the European party can develop other alternatives to Russian gas, especially the Nord Stream 1 and 2 pipelines, in order to achieving this goal we adopted a scientific methodology that focuses on the use of the descriptive approache,At the end, we reached a set of results, the most important is that Russian gas is a vital issue for the European economy and political stability there, and its total compensation will be almost impossible in the short and medium term.*
Key words *: russia, gaz,europe,energy,pipelines,*
Jel classification *: Q2, Q3, Q4, Q5, Q56, P28*

ملخص: *يهدف هذا البحث إلى تسليط الضوء على مكانة الطاقة الروسية في الاقتصاد الأوروبي وأمنها القومي، وما إذا كان بإمكان الطرف الأوروبي تطوير بدائل أخرى للغاز الروسي، وخاصة خط أنابيب نورد ستريم 1 و2، ومن أجل تحقيق هذا الهدف اعتمدنا منهجية علمية تركز على استخدام المنهج الوصفي، وفي النهاية توصلنا إلى مجموعة من النتائج أهمها أن الغاز الروسي قضية حيوية للاقتصاد الأوروبي والاستقرار السياسي هناك، وسيكون تعويضه الإجمالي شبه مستحيل على المديين القصير والمتوسط على الاقل.*
الكلمات المفتاحية: *روسيا، الغاز، أوروبا، الطاقة، الأمن الطاقوي، الشراكة.*
تصنيف جال: *Q2, Q3, Q4, Q5, Q56, P28*

1. Introduction :

After it was one of the most important factors in developing relations and ties between Russia and Europe, it seems that the “Nord Stream” line will be one of the most important factors in not only tension in relations, but perhaps peremptory ones as well, after it was used as a card or even a strategic weapon in the war in Ukraine. Russia cutting gas supplies that pass through this vital pipeline to Europe is a dangerous development from Europe's point of view, not only because it loses its (Russia's) credibility as a reliable trading partner, but because it may lead to changing the geostrategic map of gas in Eurasia and perhaps the whole world as well.

With the intensification of the conflict and its entry into a more complex phase, and the decline in the prospects for peaceful solutions, especially after Russia annexed four Ukrainian regions, there is indeed a possibility that these lines in which much has been invested in will become in the wind, especially if the Europeans adhere - as is now clear - to a strategy Complete abandonment of Russian gas.

The study Quetion :

What is the economic and geostrategic importance of Nord Stream? Will Europe be able to actually dispense with Russian gas? What are the possible alternatives?

Hypothesis :

Before arriving to answer this problematic we suggest the following hypothesis :

- Nord Stream is vital to European national and economic security ;
- The United States of America has a key role in trying to get European countries to reduce their dependence on European gas imports ;
- Europe cannot compensate for Russian gas in the short and medium term ;

The objective of the study :

This study aims to examine the importance of Russian gas for the European economy and national security, and the ability of the European party to compensate for Russian gas supplies from other sources around the world, and thus weaken the gas card that Russia uses towards the West in general and Europe in particular.

Methodology :

This research paper followed the descriptive approach in order to clarify the difference concepts relevant to the topic under study,along with the analytical approach to fully understand the issue.

The importance of Russian gas for Europe :

In this chapter, we will discuss what the Nord Stream pipeline is, its importance to Europe, and the potential repercussions if cut off from Europe.

Definition of the Nord Stream pipeline :

The name "Nord Stream" is given to the network of natural gas pipelines that transport gas from Russia to Europe. Nord Stream is the longest pipeline network under the sea, and it is mainly owned by the Russian company “Gazprom”, and its main control center is located in the town of Zug in Switzerland. The Nord Stream route passes through the exclusive economic zones of Russia, Finland, Sweden, Denmark and Germany (ellori, 2022).

To the territorial waters of Russia, Denmark and Germany. The name “Nord Stream” sometimes refers to a wider network of pipelines, including the onshore feed-through pipeline in Russia, and other links in Western Europe.

Nord Stream consists of two main lines: the first is called “Nord Stream 1” (NS1) and has a length of 1,222 km (759 miles). It in turn consists of two sub-lines. The first was launched on November 8, 2011; The second was on October 8, 2012. The line runs from Vyborg in northwestern Russia near Finland, and reaches Lubmin in the state of Mecklenburg-Vorpommern in northeastern Germany (sijelmassi, 2022).

The second line is “Nord Stream 2” (NS2), with a length of 1,234 km (767 miles), which is the longest in the world, and it also consists of two sub-lines: work on the first branch ended in June 2021, while the second was completed in September of the same year. The line extends between Ust Luga in northwestern Russia near Estonia, and Greifswald in northeastern Germany, and aims to deliver natural gas to central Europe via the Baltic Sea (ellori, 2022).

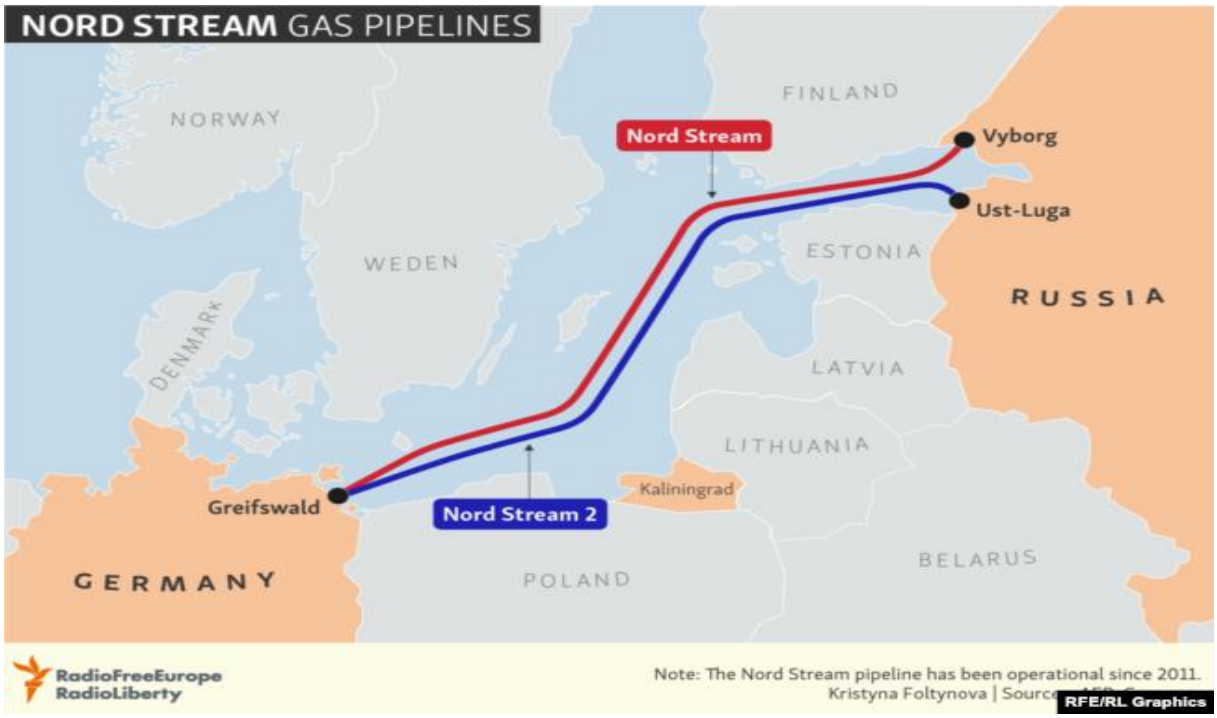
Both (Nord Stream 1 and 2) have the capacity to handle 55 billion cubic meters of fuel annually, which is enough to meet the energy demand of more than 52 million European households. Together, the two lines can transport 110 billion cubic meters of fuel per year to Europe for at least five decades, as the company has designed the pipelines to operate for at least 50 years (sijelmassi, 2022).

Europe relies heavily on Nord Stream 1 to ensure energy supplies, as it needs more than 100 billion cubic meters of pure fuel annually, 40% of which comes from Russia through this pipeline. While it was considered one of the most important rapprochement projects between Russia and Europe, the line has now become a point of contention and a bargaining chip after the West imposed unprecedented economic sanctions on Russia in response to its invasion of Ukraine that began on February 24, 2022. Russia rose in response to the sanctions and the West's generally very supportive position By reducing the quantities of gas by 40% before cutting it off from some countries, especially Germany, which harmed the energy-intensive industries and led to an increase in gas prices, and then pushed the prices of basic commodities to an unprecedented rise (vakulenko, 2022).

Of course, the Russian state-owned company “Gazprom” provided other reasons for the interruption of supplies, as it attributed it to the argument of maintaining the pipelines, but there is a prevailing belief among observers that this is nothing but an attempt by Russia to blackmail Europe.

The following is a geographical map highlighting the geographical regions and countries through which Nord Stream 1 gas lines crossed and from Russia towards the countries of the European Union

Map n° 1 : Nord stream gaz pipelines 1 and 2 :



Source : krystina foltynova,the north stream pipeline has been operational since 2011,(2022),https://www.rfe/rl/graphics/the-north-stream-pipeline-has-been ope rational-since-2011.html, accessed february 05,2023.

As for the "Nord Stream 2" line, whose construction was completed in 2021, it was not approved by the German government, due to the Russian military intervention in Ukraine, Therefore, the future of this pipeline and the entire "Nord Stream" project may be in jeopardy if the war continues in Ukraine and Russia continues to use gas as a pressure card on Europe. This is in addition to the position of the United States, which opposed the line from the ground up and imposed sanctions on companies operating in it (vakulenko, 2022).

The economic importance of Nord Stream pipelines :

The "Nord Stream" pipeline is of great economic importance to both Russia and Europe alike. For Russia, it guarantees a huge consumer market that is difficult to replace and saves it a lot of money, as the "Nord Stream 1" pipeline alone transports 55 billion cubic meters of gas annually. From Russia to Europe. As for Europe, it is essential to achieving energy security in the continent, and is even described as its "umbilical cord" because it provides it with a large and essential part of the energy it needs. In 2021, Russia has supplied

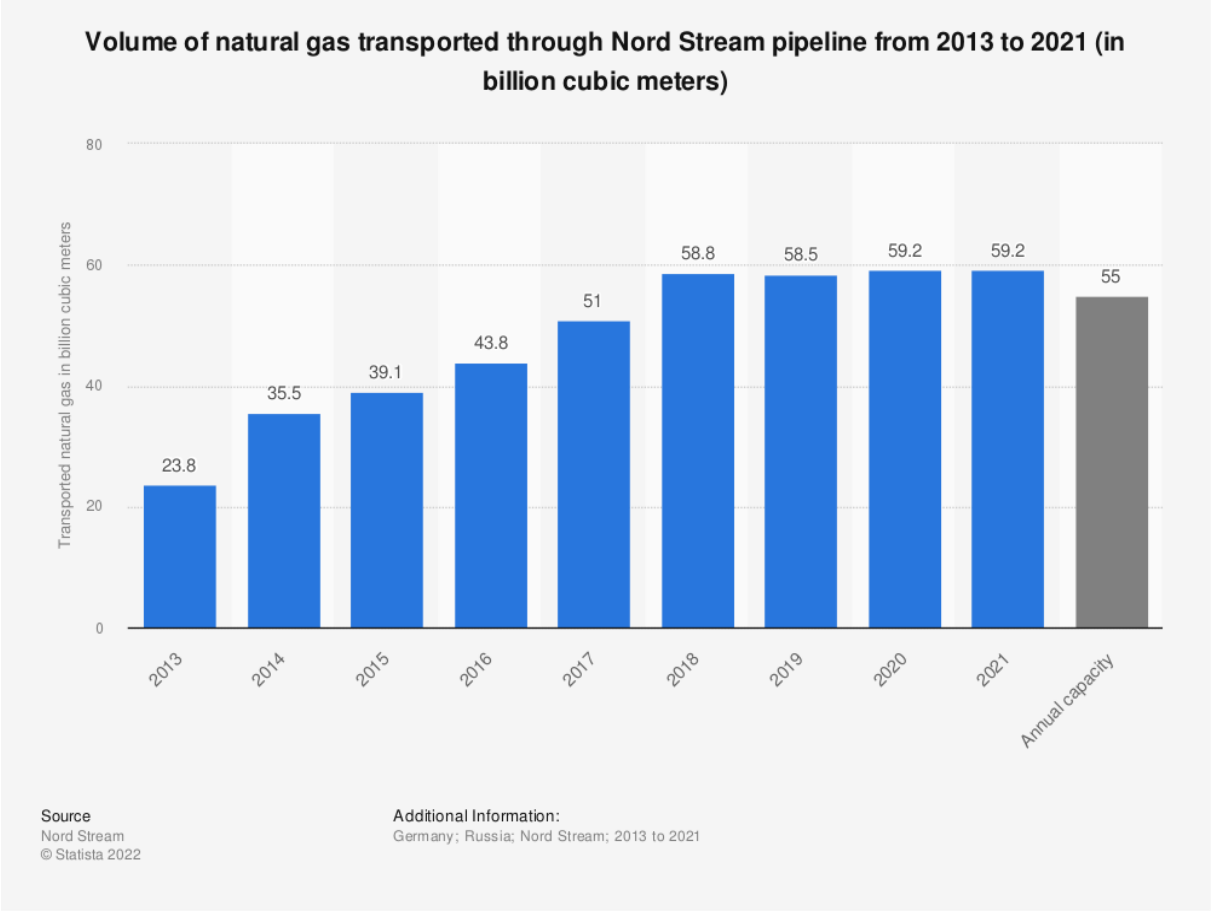
the European Union with 40% of its natural gas needs through Nord Stream1 (anderson, 2022).

The details here are necessary because they give a more comprehensive and accurate picture of the vitality of the line for the Europeans. There are countries that depend entirely on Russian gas, namely Macedonia, Bosnia and Herzegovina and Moldova, while the percentage of dependence on Russian gas supplies for other countries such as Finland and Latvia exceeded 90%, while it reached 89% for Serbia. As for Belgium, its dependence on Russian gas reached 77%, Germany 49%, Italy 46%, Poland 40%, and France 24%. The dependence of the Netherlands and Romania is relatively small compared to other European countries, as each of them depends on 11% and 10%, respectively, while Georgia's dependence on Russian gas is only 6%. There are countries that do not depend at all on Russian supplies, namely Ireland and Ukraine, which have been receiving natural gas from the European Union since 2015, after Russia annexed Crimea in 2014 (russel, 2022).

The path of dependence is characterized by an ascent, as the volume of natural gas imported by European Union countries from Russia since 2015 increased from 124.3 billion cubic meters to 152.6 billion cubic meters in 2020, Germany accounted for almost a third of it, and for this reason, stopping Russian gas and disrupting pipelines represents a real challenge. For energy security in the largest European economy and the fourth largest in the world.

And The following is a table of statistics showing the volume of natural gas that Russia exports to Europe through the Nord Stream gas pipeline between 2013 and 2021 (anderson, 2022).

Fig n°2 : volume of natural gaz transported through nord stream pipeline from 2013 to 2021 (in billion cubic meters)



Source : statista, (2013, january 07), Physical flows of natural gas via the Nord Stream pipeline from 2013 to 2021, https://www.statista .com/statistics /1331710/nord-stream-physical-flows/, accessed february 2,2023.

Through the table above, we conclude that the volume of Russian gas that was exported to Europe via this pipeline has taken an upward trend from 2013 until 2018, when the volume of exported gas reached about 58.0 billion cubic meters, which means that the energy dependence of Europe from Russia in terms of natural gas has taken a growing turn,

Starting from 2019, we witness the beginning of the decline in the volume of Russian gas exported to Europe, which fell from 58.5 billion cubic meters down to 55 billion cubic meters in 2021.

This is due to several political and economic factors, the most important of which is the desire of the European side to reduce its excessive dependence on Russian gas, in addition to the start of war harbingers in Ukraine and Russia's use of the gas card to pressure politically and diplomatically on NATO through the European need for gas.

In addition to the above, Nord Stream 2 (NS2), which follows a similar route to the Nord Stream 1 pipeline, would double the total volume to 110 billion cubic meters per year, so it has been described as vital to enhancing the energy security of the EU as well (eppinga, 2022).

This situation pushes Europe to find radical solutions, foremost of which is, of course, the search for alternatives to Russian gas, especially since Russia has become, from their point of view, an unreliable party, and the future of the continent and its urgent need for gas cannot be mortgaged to Russia. But reducing dependence on Russian fuel, at least, in the foreseeable future is difficult and without challenges, as securing sustainable alternatives will not be an easy task. There is no infrastructure to import LNG from the two major exporters; The continent, for example, does not have specialized ports with sufficient capacity or facilities to import liquefied natural gas. Construction will take time and is not possible before the onset of winter (sijelmassi, 2022).

Moreover, the problem of Europe will not be solved by finding temporary alternatives; Because the countries that are candidates to compensate for the shortage and dispense with Russian gas are located in areas with security challenges and their permanent stability is not guaranteed, and therefore securing the gas pipelines will not be easy. This increases the importance of Nord Stream and makes it difficult for Europe to actually and practically compensate (anderson, 2022). His current plans to find alternatives may come under pressure on Russia, in the hope that the situation will change and Russia will retreat, which seems unexpected, or even the government will change, which seems unattainable at least in the foreseeable future, and the West cannot realistically count on it, so In fact, Europe is facing a real dilemma with regard to energy that may require it to retreat, or if it insists on moving forward in the rupture with Russia, to change the general approach to dealing with the candidate regions as an alternative, which are the Middle East and Africa by virtue of their geographical proximity and the possibility of obtaining gas at reasonable prices, unlike what This is the case for imports from North America, which cost a lot (sgaravatti, 2021).

Europe and Russian Gas : Risks and Challenges :

We will discuss in this second axis of this study two main points, the first is the dangers of Russia cutting off gas to Europe, and the second point is the challenges posed on the European side in this regard.

Impact of supply cuts on Europe :

In view of the previous figures indicating the degree of broad European dependence on Russian gas, there is no doubt that the sudden cutoff of gas supplies will greatly affect Europe, especially countries that depend heavily on Russian gas. Natural gas imports through Russian pipelines to the European Union are set to drop by 45% in 2022 (flanagan, 2022). This significant decline has dangerous repercussions for the Europeans, as it raises the cost of the energy bill to a record, and exposes many industries and companies to the risk of stopping or reducing their production, exacerbating inflation and even raising it to record levels, and as a result it may lead to a general recession in Europe. Hungary, Slovakia, the Czech Republic, Italy and Germany are likely to lose between 2%-4.2% of GDP next year. If the European Union manages to come up with a simultaneous response to find alternative supplies and make them available to all member states, the decline in GDP can be mitigated to between 0.5% - 1% (flanagan, 2022).

Europe's available alternatives to Russian gas :

The Nord Stream problem for Europe was not the result of the current conflict in Ukraine, and Russia's decision to reduce or cut off gas supplies to it. He has other problems. In fact, the project is a fundamental point of contention between the United States of America and Europe, as Washington objected to it on the pretext that it would make Europe dependent on Russia, which would increase Moscow's political influence on European countries. The United States has previously expressed concern that Russia might use gas as a geopolitical weapon, which seems to have convinced the Europeans recently.Since the beginning of the crisis and even before the invasion of Ukraine, “Nord Stream 2”, worth $11 billion, has emerged to be at the heart of the conflict between Russia and the West. Under American pressure, and in response to Russia’s intervention in

Ukraine, Germany announced the suspension of approval on the pretext that it does not comply with German legislation (eppinga, 2022).

The line has also faced objections from environmentalists who argue that it is inconsistent with European efforts to reduce reliance on fossil fuels and address local weather changes.

The issue of energy has always been a concern for Europe because it lacks vital resources, namely oil and gas. The search for fixed sources represented a vital matter, and perhaps Russia was that source that was considered the closest, least expensive, and perhaps considered the most permanent, especially since the gas pipelines to and from Europe came in the context of the development of relations between the two sides after the collapse of the Soviet Union (service, 2022). There were also doubts about this approach to Europe from within Europe itself as well. As for the American position that has always refused to import gas from Russia, it seems to be related to Washington's fear that this will contribute to reducing dependence on it more than it is afraid of Europe's dependence on Russia, the argument that the Americans always use to justify their position on the "Nord Stream 2" pipeline and impose Penalties for companies operating in it.

Regardless of all these arguments, there is no doubt that Europe's dependence on one major source of gas is fraught with risks, and there is no need for many arguments to confirm this. What happened after the outbreak of the war in Ukraine, and what Russia cut off gas supplies to Europe, even if the official reasons were technical or technical, is the biggest proof of that. Hence, it is not surprising that the Europeans are rushing to search for alternatives to Russian gas. Indeed, this may be a historic opportunity for Europe not only to give up Russian gas, but to search for sustainable alternatives as well. In this context, the European Commission has adopted since the beginning of the crisis a plan to reduce dependence on Russian gas by increasing imports of liquefied natural gas from other countries and the gradual operation of alternative gases such as hydrogen and bio-methane. Europe is now working on two tracks: near and far (ellori, 2022).

Europe is racing against time in order to provide alternatives to Russian gas in the short term, before the onset of winter. In this

context, there are continuous efforts to obtain gas from some African countries, the Middle East and the United States of America.

The International Monetary Fund recently estimated that alternative sources could replace up to 70% of Russian natural gas in the short term, for about six months. The substitution includes higher imports of LNG, particularly from the United States, which sent 64% of its total exports to the European Union and the United Kingdom during the first half of 2022 (compared to 30% in the first half of 2021). There are efforts to provide gas from European countries such as Norway, and negotiations are underway with other countries outside Europe to fill the shortfall in the short term, as European and German efforts in particular continue to obtain gas from the Middle East and African countries. Germany has already signed agreements to obtain liquefied gas from the United Arab Emirates and the State of Qatar (vakulenko, 2022).

Great efforts are being made to fill natural gas reserves before October, as the European Union has set a target of 80% of storage capacity by November 1. The European Union currently stands at 67% of its capacity, although the figures vary greatly from one country to another. For example, Bulgaria has a storage rate of 46%, Germany 68%, and Poland 99% (flanagan, 2022).

But of course there are challenges and difficulties in this context, as the producing countries do not have large reserves that can be easily transferred to Europe; In addition to the poor infrastructure in many European countries that do not have ports and ready capabilities to deal with the liquefied gas that is needed quickly.

There are, of course, other alternatives other than importing liquefied natural gas in the short term. It may be the simplest option in the short term, for example, operating nuclear power plants, but it is not a final solution either, because it requires uranium, which comes in part from Russia as well, or power plants that coal-fired, of which Germany has a number; This is in addition to measures to rationalize consumption.

It is clear that Europe does not only want to fill the shortage or reduce dependence on Russia in the field of energy, but also seeks to completely abandon Russian gas. The European Union has already talked about plans to phase out Russian gas by 2030. And there are countries that have already reduced their dependence on it even before

the crisis, such as Hungary, Poland, the Czech Republic, Slovakia, Spain, Greece and Bulgaria. In 2020, for example, Portugal bought 56% of its liquefied gas from Nigeria and 17% from the United States, while Spaniards bought.

More than 35% of gas resources from the United States. Italy and Greece also obtained gas resources from the United States and Qatar in 2020[20]. In the same context, Lithuania's liquefied natural gas terminal began operating, not only to achieve independence in the field of energy, but also for export to nearby countries such as Finland, Sweden and Poland as well (anderson, 2022).

But the main problem will not be solved by such deals. Rather, it needs sustainable solutions, which are permanent alternatives to Russian gas. This is what Europe seeks. In fact, there are many alternatives, whether from Africa or the Middle East, as well as the eastern Mediterranean. This European approach will intensify global competition for gas, and will make it more abundant in the long run and will enable Europe to obtain gas supplies from various sources.

But this is not easy. The issue of finding permanent alternatives requires strong partnerships and the construction of pipelines or pipelines to transport gas from its sources to Europe (russel, 2022). Which may be economically feasible, as there are great opportunities for investment in this lucrative field. But the main problem lies in the reason that prompted the Europeans to search for alternatives, which is reliability and ensuring the flow of gas permanently and without being affected by political or security conditions. It seems that this is also not possible given the state of instability in the regions where there are major gas producing and exporting countries, whether in the Middle East, the eastern Mediterranean or Africa. The situations of stability are volatile in these regions due to the internal crises experienced by some of their countries, and the bilateral disputes for various reasons, in addition to the persistence of hotbeds of historical conflicts. But does this mean that Europe should abandon these plans?

The answer is no. The existence of other alternatives to Russian gas has become a strategic matter for Europe if it wants to achieve energy security in a sustainable manner. However, it must consider the causes of tensions and instabilities in the Middle East and Africa as well. the search for real solutions to it through cooperation with these countries

in sustainable development projects and generous support so that they can achieve sustainable stability; Not continuing the old approach of dealing with it as a dependent or as an exporter of resources and a consumer of exports; Otherwise, there is no guarantee that Europe will not experience the same thing and be vulnerable to energy shortages again (mearsheimer, 2022).

There is no doubt that Europe will not be satisfied with providing energy from gas through many possible alternatives to Russia, but it will pay increasing attention to diversifying energy sources, especially alternative ones. As it will have to double the investment in finding clean energy alternatives; There are, of course, several options, including, for example, green hydrogen extracted from sustainable energy, as it is a promising alternative, while green gas or biogas are potential alternatives. But all of these sources will, of course, need time to become a realistic and practical alternative to fossil energy (vasquez, 2022).

Conclusion :

At the end, we conclude through this research that Nord Stream is vital to energy security in Europe ; It represents the best option for it in terms of cost, by virtue of its proximity and passage through European territorial land and waters.

However, it seems that in light of the tension between Russia and Europe over the war in Ukraine and Moscow's suspension of supplies, it will be a decisive factor in changing the course of Russian-European relations, as the Europeans are looking for permanent alternatives to Russian gas from other countries in the Middle East, Europe and North America, especially the United States.

However, ensuring sustainable alternatives to Russian gas will not be easy. Where it will require a change in strategies and building new partnerships on fair grounds with regions that can be a real alternative, whether in the Middle East or Africa, through development and real sustainable projects. With regard to other sources of alternative energy, there is no doubt that they are vital and will increase interest - the Europeans and others - in them, but they are possible solutions in the very long term and will need many decades before they become alternative sources of fossil energy.

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