

# MARITIME STRATEGIC EVALUATION FOR ISRAEL 2022/23

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## Maritime Alternatives to the Russian Gas Import to Europe

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Europe is one of the most significant energy markets in the world. EU countries import about 90% of energy sources they consume, with liquefied gas supplied to them by the United States.<sup>1</sup> Gas serves as an extremely important source of energy for Europe, since the continental electricity infrastructure, the heating of citizens' homes and the advancement of industry are all based on gas. Importing large quantities of gas is necessary for Europe because its stored gas capacity has significantly dropped in 2021 compared to previous years.<sup>2</sup> Figure 1 shows that while the ability to store gas in the European Union has increased, only 26% of available gas capacity was actually stored at the end of 2021, in contrast to a capacity of approximately 90% in 2020.<sup>3</sup>

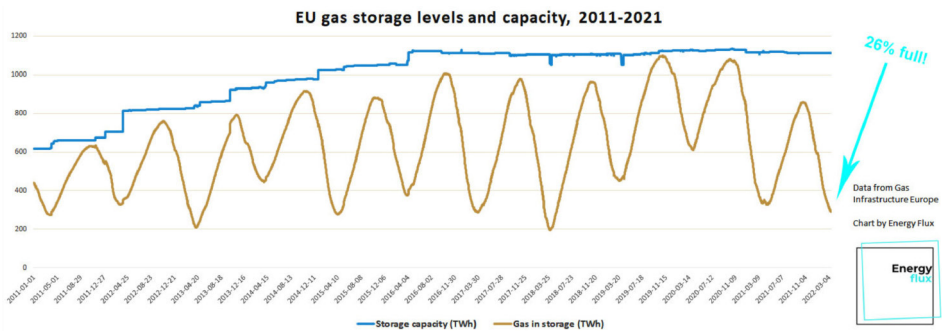


Figure 1: The average storage capacity and available capacity for natural gas in the European Union over the past decade<sup>4</sup>

Russia's invasion of Ukraine in February 2022 created a serious predicament in regard to the energy market for the whole world and for European countries in particular. Russia is the largest exporter of natural gas in the world, one of the largest exporters of liquid gas (along with Qatar and after Australia and the United States), as well as one of the largest oil exporters.<sup>5</sup> As a result, its influence on prices in the energy market is very

<sup>1</sup> Jarrett Renshaw & Scott Disavino, "[Analysis: U.S. LNG Exports to Europe on Track to Surpass Biden Promise](#)". *Reuters*, July 26, 2022.

<sup>2</sup> ABC NEWS, "[Australia has Offered to Export More Liquefied Natural Gas to Europe in Light of Ukraine Tensions. Here's Why](#)". January 27, 2022.

<sup>3</sup> Seb Kennedy, "[There's not Enough Gas to Go Around](#)". *Energy Flux*, March 18, 2022.

<sup>4</sup> *ibid.*

<sup>5</sup> Statista, "[Leading Gas Exporting Countries in 2021, by Export Type](#)", 2022.

significant. A war of this scale between Russia and Ukraine has had a dramatic effect on global geopolitics and threatens global trade and economy. In this context, energy prices have significantly risen in recent months, and in this context, some EU countries are facing a serious problem.

In 2021, Europe consumed about 500 BCM of natural gas; about 380 BCM of this gas was imported (through pipelines or liquefaction) and 45% of this gas was imported from Russia.<sup>6</sup> At the same time, Europe has imported about 76 million tons of coal and about 880 million barrels of oil, of which approximately 29% were imported from Russia.<sup>7</sup> This is a reality causing EU countries to search for alternative energy sources and to diversify their sources of import. European countries have understood for years that their energy dependence on Russia is problematic. As early as 2014, following the annexation of the Crimean Peninsula in the Black Sea, an official document entitled "The European Energy Security Strategy" was published on behalf of the European Union. The document stated that energy dependence on Russia alongside a limited number of suppliers creates one of the biggest and most dangerous challenges facing the European energy market.<sup>8</sup> The current war between Russia and Ukraine has highlighted the problematic aspects of energy dependence on Russia, and the frantic European search for alternative energy sources is now apparent.<sup>9</sup> To understand how serious this crisis is, it is enough to notice the panic that arose in Germany when the gas flow through the "Nord Stream 1" pipeline stopped for ten days in mid-July.<sup>10</sup> On March 8, 2022, shortly after the Russian invasion, the European Council stated that it aims to no longer be dependent on Russian energy and that it intends to reduce dependence on Russian gas long before 2030, so that by the end of the current year the supply of Russian gas will be reduced by approximately two-thirds.<sup>11</sup> This reduction of 101.5 BCM of natural gas can be achieved – at least theoretically – by increasing import from non-Russian sources to about 68 BCM of natural gas, as well as by locating other energy sources, cutting back on consumption and creating more energy efficiency, thus providing an alternative to the use of 38 BCM of natural gas.

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<sup>6</sup> BP, "[Statistical Review of World Energy](#)", 2022.

<sup>7</sup> Eurostat, "[From Where do We Import Energy?](#)", 2022.

<sup>8</sup> Elai Rettig and Oded Eran, "[The EU's Energy Challenges](#)", in Yotam Rosner and Adi Kantor (eds.), *The European Union in Turbulent Times: Challenges, Trends, and Significance for Israel*, Institute for National Security Studies (INSS), May 2018, pp. 103-112

<sup>9</sup> Elliot Smith, "[Europe's Plans to Replace Russian Gas are Deemed 'Wildly Optimistic' – and Could Hammer its Economy](#)", *CNBC*, June 29, 2022.

<sup>10</sup> Globes, "[Russia Renews Nord Stream 1 Gas Transfer to Europe](#)," 21 July 2022. [Hebrew]

<sup>11</sup> European Commission, "[Statement by President Von der Leyen on the 'Save Gas for a safe Winter' Package](#)", July 20, 2022.

In order to see whether and to what extent the European ambition to "abstain" from Russian gas is realistic, it is necessary to understand and analyze which non-Russian gas routes and alternatives currently exist for Europe, and what their gas capacity is. We shall begin by describing the existing Russian gas routes:

Several gas pipelines lead gas from Russia to Europe, some by land, such as those passing through Belarus, Turkey or Ukraine, and the Baltic Sea. In the case of Ukraine, passage through its territory has caused many problems in the past and even more so in the present. The 4,107 km long Yamal-Europe pipeline has a capacity of about 33 BCM of natural gas, and transports natural gas from the Russian gas fields on the Yamal Peninsula and western Siberia to Poland and Germany, via Belarus. It also transports liquid gas to European ports, such as the liquefied gas port in Rotterdam. The "Nord Stream" gas project consists of two gas pipelines that have been streaming natural gas from Russia to northeastern Germany through the Baltic Sea since 2011 and 2013, and serve as the longest maritime gas export route in the world. The "Nord Stream 2" project doubled the output of these lines, from a 55 BCM to 110 BCM capacity of natural gas. In total, Europe has imported about 155 billion cubic meters of gas from Russia, mostly through gas pipelines, including 15 cubic meters of liquefied natural gas (LNG).<sup>12</sup> Figure 2 shows the "Nord Stream" pipelines routes from Russia to Europe – the most important marine gas routes for the trade between these parties.



Figure 2: A map of the "Nord Stream" pipeline streaming gas from Russia, through the Baltic Sea, to Germany<sup>13</sup>

<sup>12</sup> IEA, "A 10-Point Plan to Reduce the European Union's Reliance on Russian Natural Gas", March 2022.

<sup>13</sup> Moshe Kassif, "Increased Risk for Gas Supply to Europe, the High Price – and the Israeli Angle", *BizPortal*, July 6, 2022 [Hebrew].

What, then, are the alternatives to Russian gas? Several major routes lead natural gas and liquefied natural gas from other countries such as Algeria, the United Kingdom, Australia and the United States to EU countries today. All of them pass through the maritime domain or depend on sea lanes.

Algeria is the third largest supplier of gas to EU countries, and in 2021 it should export about 34 BCM of natural gas to Europe.<sup>14</sup> It should be noted that the largest increase in the supply of gas imported to Europe through pipelines today is from Algeria.<sup>15</sup> Algeria has long-term gas contracts with Italy, Portugal and Spain, and transfers a high volume of gas to them through pipelines about a thousand kilometers long, from the Hassi R'Mel gas field in the heart of Algeria, across the Mediterranean Sea.<sup>16</sup> One of these pipelines, transporting gas from Algeria to Spain (the MGE line) does indeed have the capacity for 6 BCM of natural gas in addition to the 13 BCM of gas it contains, but this line passes through Morocco, and due to tense relations between Morocco and Algeria, this pipeline was closed a year and a half ago.<sup>17</sup> The "Medgaz" gas pipeline running from Algeria to Spain can increase its amount of transported gas from 8 BCM of gas to about 11 BCM.<sup>18</sup> This may help in the effort to increase gas transfer from the Iberian Peninsula to France, with the two relatively small pipelines in use today, in which the unused gas capacity is about 7 BCM of natural gas.<sup>19</sup> In the long run, it is quite possible that with the completion of the 190 km long "MidCat" pipeline, leading from the Pyrenees and Barcelona to the south of France, the transportation of gas from Spain and Portugal to France and the rest of Europe will become more significant.<sup>20</sup> There are currently six gas liquefaction plants operating in Spain, making it possible to increase the import of liquefied gas from the United States and to transfer it to Western Europe through the planned "MidCat" gas pipeline. That being said, France only receives about 17% of its gas from Russia, and its energy infrastructure is mostly nuclear-based, thus, this is not a critical solution for France, while for Central and Eastern European countries these are not effective short-

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<sup>14</sup> Francis Ghiles, "[Escalating Rivalry between Algeria and Morocco Closes the Maghreb-Europe Pipeline](#)", *CIDB*, November 2021.

<sup>15</sup> *BP*, "[Statistical Review of World Energy](#)", 2021.

<sup>16</sup> News Wires, "[Italy Signs Clutch of Deals with Algeria in Bid to Boost Gas Supply](#)", *France24*, July 18, 2022.

<sup>17</sup> Francis Ghiles, *Escalating Rivalry*, *CIDB*, 2021.

<sup>18</sup> *Enerdata*, "[Algeria will Expand the Capacity of the Megaz Pipeline to Spain by 1/3](#)", November 11, 2021.

<sup>19</sup> Rodrigo Orihuela & Alonso Soto, "[Spain Says it can Pipe More Gas to France by Fall, Easing Bottleneck](#)", *Bloomberg*, July 2022.

<sup>20</sup> Madrid (AFP), "[Ukraine War Revives France-Spain MidCat Gas Pipeline](#)", *France24*, May 11, 2022.

term solutions.<sup>21</sup> However, it is certainly possible that in the future larger quantities of liquefied gas may be transported to the liquefaction plants in Spain, and transferred to Central and Eastern Europe through France after the gas pipelines passing through France are expanded. Furthermore, it should be noted that Spain and Portugal themselves do not need all of the gas they import from Algeria, since their liquefaction plants have the capacity to receive liquefied gas from the United States, as long as the European Union compensates them for the price differences. As for increased exports from Algeria, for southern and central European countries, the Italian option is preferable, since, as mentioned, Spain and Portugal's ability to export gas to them is limited. Thus, Algeria can increase the amount of gas streamed to Italy through the "TransMed" pipeline by about 9 BCM of natural gas at most, in addition to the 20 BCM of natural gas streamed through the pipeline every year.<sup>22</sup> An increase in the amount of gas exported from Algeria to Italy is expected in the coming years, but not in the winter of 2023.<sup>23</sup> Figures 3 and 4 show the gas pipelines leading from Algeria to Italy and Spain.

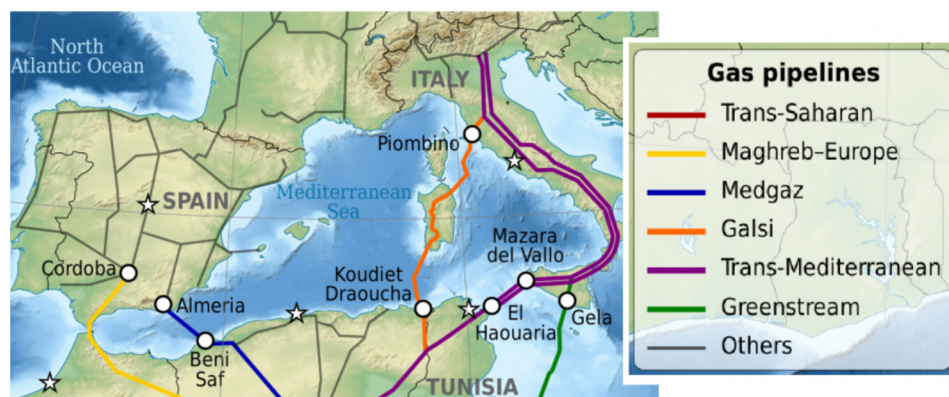


Figure 3: The gas pipeline from Algeria to Italy (in purple and orange) and the pipelines to Spain (in blue and yellow, which pass through Morocco and are no longer active)<sup>24</sup>

<sup>21</sup> *The Local*, "[France no Longer Receiving any Russian Gas Via Pipeline](#)", June 17, 2022.

<sup>22</sup> News Wires, "[Italy Signs Clutch of Deals with Algeria in Bid to Boost Gas Supply](#)", *France24*, July 18, 2022; Doron Peskin, "[A Problematic Alternative to Russia: Algerian Gas is Also a Tool of Punishment](#)", *Calcalist*, April 11, 2022 [Hebrew].

<sup>23</sup> Lain Esau, "[Algeria Agrees to Boost Annual Piped Gas Sales to Italy by up to 9 Billion Cubic Meters](#)", *Upstream*, April 13, 2022.

<sup>24</sup> *Gas to Power Journal*, "[Italian PM about to secure 4 BCM Additional Gas Supply from Algeria](#)", April 11, 2022.





Figure 4: The gas pipelines from Algeria to Italy (in orange) and Spain (in blue), and the gas pipeline from Spain to France (in yellow)<sup>25</sup>

Another option is to increase the amount of gas passing through the 325 km gas pipeline between the United Kingdom and the Netherlands (the BBL pipeline, Figure 5) with an annual capacity of 45 BCM of natural gas.<sup>26</sup>

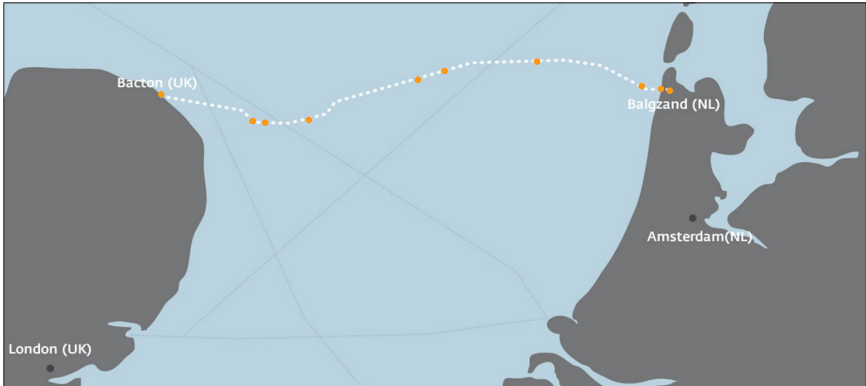


Figure 5: The BBL gas pipeline leading from the United Kingdom to the Netherlands<sup>27</sup>

<sup>25</sup> *The Corner*, "[The Iberian Solution can Offer Europe More Gas](#)", May 2, 2022.

<sup>26</sup> *BBL Company*, <https://www.bblcompany.com/about-bbl>, 2022.

<sup>27</sup> *Ibid.*

Australia is also an important liquefied gas exporter, and in 2021 will export approximately 81 million tons of liquefied gas.<sup>28</sup> Thus, it may well be part of the efforts to diversify energy supply sources for the European market, a move that will benefit it economically and politically. However, in view of the situation in the global energy market and the fear of a gas shortage, there are growing voices in Australia calling for curbing exports and prioritizing the storage of excess gas.<sup>29</sup>

Some scholars offer another, somewhat more creative, solution, which is streamlining the natural gas systems in general and in North Africa in particular, including the Algerian pipeline. Thus, by preventing fuel from igniting or leaking, Europe may save 80 BCM of gas. That is to say, the estimated wasted gas in flare-ups and leaks around the world amounts to about 260 BCM of natural gas per year, an amount 1.7 times greater than that which Europe imports from Russia, and about 7% of global gas consumption. Such efficiency-oriented changes do not require considerable financial investment or technological innovation but currently are not seriously considered in the context of official European policy. In addition, expanding the use of renewable energies in areas where this is possible may help the effort to reduce Russian gas imports.<sup>30</sup> Renewable energies have been proven to be able to reduce domestic gas consumption by up to 57 BCM of natural gas by 2028.<sup>31</sup> Furthermore, a substantial amount of gas is used for the production of more oil – using a method called "reinjection".<sup>32</sup> With this method, gas is injected into an oil reservoir to create faster oil flow, thus increasing the amount of oil. The choice of whether to use the gas for "reinjection" or to sell it as gas depends heavily on the price of these two fossil fuels. Today, several countries, including Algeria, find it more profitable to use gas to improve and accelerate oil production rather than to sell it as gas.<sup>33</sup> Due to the gas crisis in Europe, and with appropriate financing, it is possible to reach agreements with countries using this method and encourage them to sell more gas rather than implement alternative uses, such as "reinjection".

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<sup>28</sup> ABC NEWS, "[Australia has Offered to Export More Liquefied Natural Gas to Europe in Light of Ukraine Tensions. Here's Why](#)", January 27, 2022.

<sup>29</sup> Sonali Paul & Renju Jose, "[Australia Considers Curbing Gas Exports to Avert Domestic Supply Crunch](#)", *Reuters*, August 1, 2022.

<sup>30</sup> Jan Rosenow, "[Europe on the Way to Net Zero: what Challenges and Opportunities](#)", *Plos Climate*, July 14, 2022.

<sup>31</sup> Jonathan Mingle, "[How U.S. Gas Exports to Europe could Lock in Future Emissions](#)", *Yale Environment 360*, April 21, 2022.

<sup>32</sup> Mao Sheng, Haizhu Wang, Ruiyue Yang, and Bing Yang, "[Chapter Six – Experimental Methods in Fracturing Mechanics Focused on Minimizing their Environmental Footprint](#)", In: *Sustainable Natural Gas Reservoir and Production Engineering 143-182: (2022)*.

<sup>33</sup> *Rysted Energy*, "[Rebalancing Europe's Gas Supply Opportunities in a New Era](#)", September 2022.



Another solution to the problem in question is to increase the import of liquefied natural gas (LNG) from non-Russian sources. Most liquefied gas is transported in tankers on ships from liquefaction plants (where natural gas is transformed into liquid by cooling it to minus 162 degrees Celsius) to the gasification plants, where the liquefied gas returns to a natural gas state, and is then transported through pipelines to other destinations. Liquid gas has become more popular in recent years, and due to its great importance in the global energy market, it affects the growing importance of the maritime domain.<sup>34</sup> Liquefied gas has proven to be an available, sought-after and important energy source, and was among the only products to show trade growth during the Covid-19 pandemic in 2020. However, while during a normal year, global trade in liquefied natural gas grew by about 8%, in 2020 it increased by only 1%, a fact also indicating a significant slowing down of global economic activity. For Europe, the possibility arises that Germany may build a number of liquefaction plants on its northern coast, and thus be able to receive liquid gas from the United States – one of the largest exporters of LNG in the world.<sup>35</sup> However, before considering the options based on future liquefaction plants, there are several options for increasing the quantities of liquefied gas imported to Europe from various non-Russian sources and reducing dependence on Russian gas. Figure 6 presents the quantities of liquefied gas imported to European countries, as of 2021, and the available liquefied gas capacity at their terminals.

The second largest port in the world, the port of Rotterdam in the Netherlands, has an LNG terminal ("LNG Gate") that is able to receive liquid gas,<sup>36</sup> and liquid gas is transferred to it on tankers from the Yamal Peninsula in Siberia, Russia.<sup>37</sup> There is an option for increasing the quantities of liquefied gas exported to European ports, thereby partially bypassing Russian gas. According to the American Energy Research Institute, the United States may be able to supply an additional amount of about 15 BCM of liquefied gas this year (2022) and increase the amount currently exported by more than 50 BCM of liquefied gas by 2030.<sup>38</sup> See Figure 7 for the existing American LNG facilities for export.

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<sup>34</sup> Mariusz Ruszel, "[The Development of Global LNG Exports](#)", In Kari Liuhto (ed.), *The Future of Energy Consumption, Security and Natural Gas*, 1-20: (2022).

<sup>35</sup> *European Commission*, "[EU-US LNG Trade](#)", 2022.

<sup>36</sup> *Global Energy Monitor*, "[Gate LNG Terminals](#)", 2022.

<sup>37</sup> *Global Energy Monitor*, "[Yamal Energy Terminals](#)", 2022.

<sup>38</sup> Clark Williams-Derry, "[The U.S. can Increase LNG Exports to Europe](#)", Institute for Energy Economics and Financial Analysis, April 6, 2022.

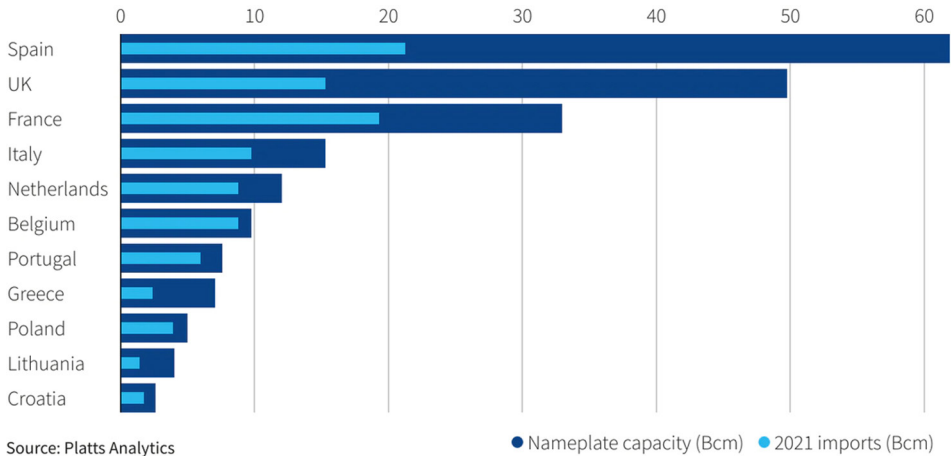


Figure 6: Import data (in light blue) and free capacity (in blue) of liquefied gas in European countries<sup>39</sup>

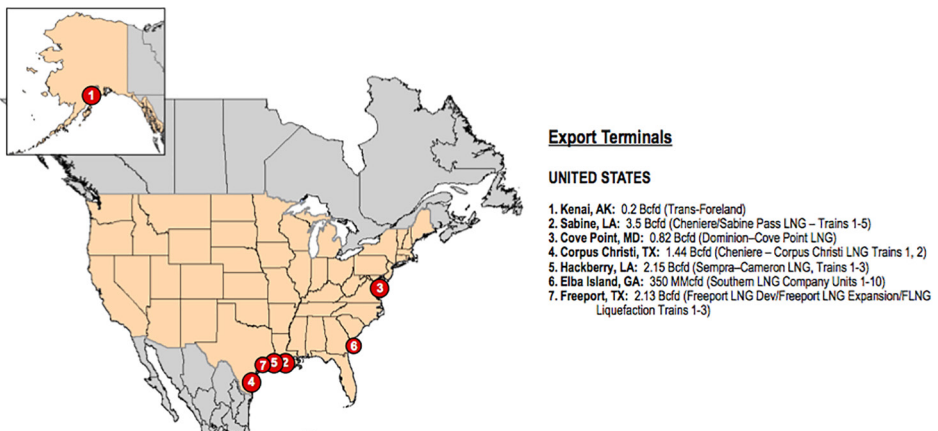


Figure 7: LNG export facilities in the United States, mainly in the southeast<sup>40</sup>

The United States is the largest exporter of liquefied gas to European countries, and since 2016 has been exporting liquefied gas to them at increasing rates from year to year.<sup>41</sup> From April 2016 to January 2022, Europe imported more than 64 BCM of liquefied natural

<sup>39</sup> Marwa Rashad & Isla Binnie, "[Brimming European LNG Terminals Lack Room for More Gas](#)", *Reuters*. February 18, 2022.

<sup>40</sup> *Global LNG Hub*, "[North American LNG Export Terminals](#)", 2022.

<sup>41</sup> Mike Schuler, "[FreePort LNG set to Restore Production at Key LNG Export Facility in October, Earlier than Anticipated](#)", *QCaptain*, August 5, 2022.

gas from the United States.<sup>42</sup> In 2021, the European Union imported about 77 BCM of liquefied gas from the US, and together with Turkey and the United Kingdom's liquefied gas imports, this amounts to about 108 BCM of liquefied gas. According to some, Europe should expand its imports of liquefied gas from the United States, since it has huge gas resources and is considered a close and stable political friend. The European Union has double the liquid gas capacity it uses today – a fact that can enable the seeking of a substitute for Russian gas. But there are several problems with this solution: most of the factories available to receive liquefied gas are located in Western and Northern Europe, on the shores of the Baltic Sea and the Atlantic Ocean, such as in the United Kingdom, Spain and Portugal. Thus, the import of liquefied gas from other maritime areas (the Mediterranean Sea, the Black Sea) is not relevant for these terminals, and for this reason, the amount of liquefied gas that can be transported to them is limited. The capacity of the natural gas pipeline between Spain and France is only 7.5 BCM, and currently uses 0.5 BCM. This means that it is possible to slightly increase the amount of liquefied gas sent to Spain, and transfer it to France, but these are small amounts compared to those needed in Europe. See Figure 8 for the existing and potential liquefied natural gas (LNG) plants in Europe.

The disparities between the liquefied gas absorption capacities of Northern and Western Europe versus Central, Eastern and Southern Europe create an internal problem within the European Union since the lack of supply of Russian gas and the lack of alternative gas and energy sources in the winter of 2022 will affect EU countries in different ways. This is another serious problem that the EU will have to face. How will it remain united and consistent in terms of its foreign policy and in its reactions to continued sanctions against Russia, in view of the differences in the ability to deal with the crisis in energy and gas sources?<sup>43</sup>

Other alternatives frequently referred to are importing more gas from Israel, Egypt, Turkey and the other Maghreb countries (Morocco and Libya). Regarding Israel and Egypt, both have greater gas reserves than they produce, consume or export (Egypt exported about 9 BCM of natural gas in 2021,<sup>44</sup> and Israel exported about 7.14 BCM of natural gas last year).<sup>45</sup> However, the EMFG gas pipeline, through which Israel exports to Egypt, has

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<sup>42</sup> European Commission, "[EU-US LNG Trade](#)", 2022.

<sup>43</sup> Georg Zachmann, Simone Tagliapietra, Ben McWilliams, & Giovanni Sgaravatti, "[Preparing for the First Winter without Russian Gas](#)", *Bruegel*, February 28, 2022.

<sup>44</sup> BP, "[Statistical Review of World Energy](#)", 2022.

<sup>45</sup> "[Review of Developments in the Natural Gas Economy](#)", Ministry of Energy, March 22, 2020 [Hebrew]; "[A New Gas Pipeline from Israel to Egypt? The Ministry of Energy is Examining the Plan](#)", *Investing.Com*, 22 November 2021 [Hebrew].

a capacity of only 5 BCM of gas per year. There is a possibility of expanding the pipeline and completing additional sites for the gas infrastructure so that the amount exported to Egypt will increase to 8 BCM of natural gas per year in the coming years, but this is a minor amount by European standards. In any case, the ability to receive the amount of Egyptian liquefied gas in Europe is very limited.<sup>46</sup> Libya has been experiencing political instability for several years due to the civil war and Morocco itself has to import natural gas, since after the shutting down of the pipeline between Algeria and Morocco, Spain started exporting to it.<sup>47</sup>



Figure 8: The existing, planned and potential liquefied gas plants in Europe<sup>48</sup>

Turkey has already begun to supply natural gas to Bulgaria, whose supply from Russia has been reduced, as part of a Russian political move to reduce gas export to European

<sup>46</sup> Marc Espanol, "[Egypt Breaks LNG Export Record with Eye on Europe](#)", *Al-Monitor*, February 16, 2022.

<sup>47</sup> Stuart Elliot & Gianluca Baratti, "[Spain Begins Gas Re-exports to Morocco via GME Pipeline: Enagas](#)", *S&P Global Commodity Insights*, June 29, 2022.

<sup>48</sup> *European Commission*, "EU-US LNG Trade", 2022.

countries, as a counter-reaction to the European Union's policy.<sup>49</sup> Turkey has discovered a huge natural gas reserve in the Black Sea, known as "Tuna-1" which contains about 400 BCM of natural gas, but its production has not yet begun, thus is not relevant for 2023. It should be noted that Central Asian countries, such as Azerbaijan, Turkmenistan, Kazakhstan and Uzbekistan have huge gas reserves which some of them export, mainly to Turkey. The TANAP gas pipeline in Azerbaijan, which currently has an annual average flow of 10 BCM, can transport 16 BCM per year and will be able to hold an additional 15 BCM of gas annually, by the end of the decade.<sup>50</sup> Theoretically, Europe can import much of this gas from Turkey;<sup>51</sup> however, many political obstacles are part of this picture.

Among all the alternatives mentioned here, the most realistic option is the increase in import of LNG from the United States to the Iberian Peninsula, and the construction of a gas pipeline transferring considerable amounts of gas to France, followed by creating an infrastructure for the leading of gas to Germany and additional countries in need of gas in southern and eastern Europe. Relations between the United States, Portugal, Spain, France, and Germany are strong and stable, and there are no diplomatic or security related tensions that may create problems in regard to this alternative. The United States has huge amounts of LNG to export, the liquefaction plants already exist on the Iberian Peninsula and can be expanded, and this region, as well as the region in question in France, is quiet and safe. It is possible that in the long run this solution will indeed be implemented, but not in 2023 or 2024. Although the United States has already stated that it will increase the quantities of liquefied gas exported to Europe, since its gas facilities are already working at almost maximum output, and any new project will only be completed after 2024, the excess amounts of LNG the United States can export to Europe today, will be deducted from its other customers, mainly East Asian countries, and it is not clear how this will be settled.<sup>52</sup> In addition, unexpected events such as malfunctions in gas infrastructures, such as in the case of the explosion of the second largest gas facility in the United States, the "Freeport – LNG" Pretreatment Facility in Texas, which is responsible for about 20% of exported liquid gas from the United States, make it difficult to increase the gas production and cause a dramatic increase in prices. Beginning in early 2022, gas prices in continental Europe have increased by more than 200%.<sup>53</sup> These problems make

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<sup>49</sup> David O'byrne, "[Turkey Looks to Import Gas from Turkmenistan, Test Exports to Bulgaria](#)", *Al-Monitor*, July 12, 2022.

<sup>50</sup> *Rysted Energy*, "[Rebalancing Europe's Gas Supply Opportunities in a New Era](#)", September 2022.

<sup>51</sup> Mardan Valhanov, "[The Work on the Transportation of Turkmen Gas to Turkey is Nearing Completion](#)", Anadolu Ajansi, July 2, 2022. (Turkish)

<sup>52</sup> Guy Tal, "[The US Wants to Replace Russian Gas – what are the Difficulties and who is Expected to Benefit from this?](#)", *bizportal*, March 27, 2022 [Hebrew].

<sup>53</sup> Moshe Kassif, "[An explosion at a Gas Facility in Texas Raises the Price of Gas in Europe and Causes it to drop in the US](#)", *bizportal*, June 14, 2022 [Hebrew].

it difficult to implement this alternative of increased gas imports from the United States as an alternative to Russian gas, certainly in the near future.

## Conclusion

What will actually happen in the winter of 2023? How will the gas market in Europe be affected and will Russia really cease to be the main energy supplier for the EU? It is difficult to answer these questions at the moment, but there appears to be a lack of effective alternatives that will fully, adequately, reliably and safely replace the supply of gas from Russia to European countries this winter. These alternatives are limited due to engineering, technological, political or budgetary difficulties. It is indeed possible, to a certain extent, to increase the quantities of liquefied gas imported to terminals with free capacity, from which available gas pipelines will lead to Central and Eastern Europe. Additionally, it is possible to increase the quantities of gas from North Africa to Italy and then to the EU, but these solutions guarantee only a small percentage of the gas that Europe consumes.

The danger arising as a result of fewer energy sources is not limited to the European fear of the freezing winter, but to real possible economic harm, since EU business activity relies on energy, and for some countries, industry, which relies on energy, is a significant foundation of their economy. For example, in Germany, gas is the second most important energy component after oil, and about a third of its economy is based on it.<sup>54</sup> In April 2022, Germany's Central Bank, Deutsche Bundesbank, announced that in the event that Russia completely cuts off gas flow to Europe, there will be a 5% hit to the German GDP, with an estimated amount of 180 billion euros.<sup>55</sup> The International Monetary Fund (IMF) has warned of a decline of up to 1.5% in the growth of the European GDP and of an option of deepening the recession.<sup>56</sup> Replacing Russian gas with imports from other sources is a complicated challenge and it is not clear how the European Union will be able to replace the huge amounts of gas it consumes.

For this reason, it seems that in the coming winter months during the end of 2022 and the beginning of 2023, Europe will continue to use Russian energy sources for heating, and in the process will attempt to find solutions by bypassing sanctions and regulating relevant issues, without any significant change to the current state of affairs.

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<sup>54</sup> Federal Ministry for Economic Affairs and Climate Action, "[Natural Gas supply in Germany](#)", 2022.

<sup>55</sup> Financial Times, "[Boycott on Gas Imports from Russia will Shrink Germany's GDP by 5%](#)", *Calcalist*, February 24, 2022 [Hebrew].

<sup>56</sup> Eloise Barry, "[Europe Relies on Russian Gas. A Tough Winter Lies Ahead Amid Fears of a Cut-Off](#)", *TIME*, July 26, 2022.



Table 1, below, presents the main points and data presented in this article, stating the advantages and disadvantages for Europe when it comes to alternatives to Russian gas.

Table 1: Summary of the data regarding gas export, as well as the advantages and disadvantages of the various alternatives to Russian gas

Countries of Origin and Destination	The amount of Gas Exported per Year	Advantages	Disadvantages
Algeria to Italy	About 20 BCM of gas through the "TransMed" pipeline.	May increase export by 9 BCM.	Not able to increase the amount per year for the next two years.
Algeria to Spain and Portugal	The transport of about 13 BCM of gas in the "MEG" pipeline was stopped in 2020.	May increase the amount exported on the EMG line to Portugal by about 6 BCM of natural gas.	The line is currently inactive due to the political disputes between Algeria and Morocco – where the pipeline passes on its way to Spain.
Algeria to Spain	About 8 BCM of natural gas in the "MedGas" pipeline.	Free capacity for about 11 BCM of gas.	A minor amount in European terms.
Spain to France	About 7.5 BCM of natural gas in the "MidCat" line.	Free capacity for about 3 BCM of natural gas.	A minor amount of gas and France is not among the countries that depend on Russian gas.
Israel to Egypt	5 BCM of natural gas per year.	A possibility of expanding the "EMFG" gas pipeline so that it may transport 8 BCM of gas.	A minor quantity by European standards that does not justify the costs of expanding the pipeline.
Egypt to Europe	3.5 BCFE of gas.	Can increase its LNG exports. The liquefaction capacity of its plants is double the amount exported.	There is insufficient capacity in the liquefaction plants on the European side of the Mediterranean Sea for large quantities of LNG from Egypt.
Turkey to Europe	Does not export itself, imported gas to Europe passes through it.	May export from the huge reservoir "Tuna-1" in the Black Sea.	The commercial production of large quantities of gas from the reservoir will not be carried out in the coming years.
United States to Europe	Exports the largest quantities of LNG that the European Union imports.	Can increase the amount.	American exports are mainly relevant for the European countries on the shores of the Atlantic Ocean. Ineffective for Central, Southern and Eastern European countries, which most need alternatives to Russian gas, since there is no efficient gas transmission infrastructure in the center of the continent.
From Azerbaijan to Turkey	10 BCM of natural gas per year through the TANAP pipeline.	This amount can be increased by 6 BCM of gas today.	The existing obstacle to increasing the amount is political.

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