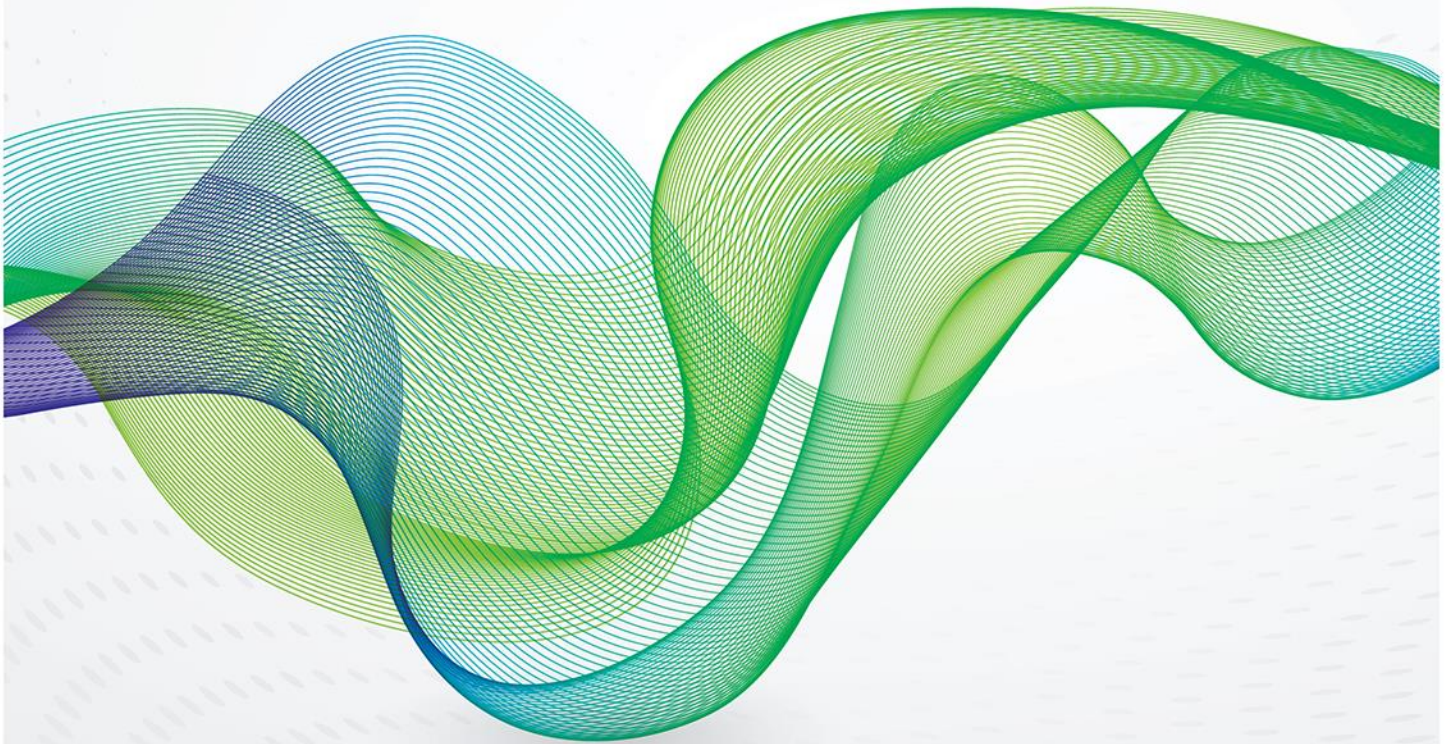


March 2023

Italy and its North African gas interconnections: A potential Mediterranean gas ‘hub’?





Introduction

Italy, one of Europe's biggest natural gas markets, has started 2023 with a remarkably active energy diplomacy. In January, Italy's new prime minister - Giorgia Meloni - undertook official visits to Algeria and Libya to strengthen Italy's energy trade relationship with its southern Mediterranean gas suppliers in North Africa.¹ Meloni's predecessor, Mario Draghi, also made two official visits to Algeria, in April and July 2022. For each of these high-ranking official visits, the Italian prime ministers led a large delegation of government officials and senior business representatives, including the head of Italy's energy company, Eni. Given Italy's large gas market, extensive gas infrastructure and its gas pipeline interconnections with Algeria and Libya, could a new natural gas "hub"² supplying Europe emerge in that part of the Mediterranean?

A relatively large gas trade infrastructure

The southern part of Italy's natural gas pipeline network is connected to two cross-border gas pipelines originating in North Africa. The Trans-Mediterranean or TransMed gas pipeline³ links Algeria's national gas dispatching centre in Hassi R'mel to Mazara del Vallo in Sicily via Tunisia. The TransMed has an annual capacity of 33 billion cubic metres (bcm) and started commercial operation in 1983. The Greenstream gas pipeline connects Libya's gas fields in the western part of the country (the Wafa onshore field and the Bahr Essalam offshore field) directly to Gela in Sicily. The Greenstream pipeline has an annual capacity of 8 bcm and started up in 2004. Recently, Libya's government put forward the idea of doubling its capacity, despite its current low capacity utilization.

In addition to the proposed expansion of the TransMed capacity, a previously abandoned project of a direct link between Algeria and Italy was revisited during Meloni's visit to Algeria.⁴ The *Gazoduc Algérie Sardaigne Italie*, or GALSI, with an annual design capacity of 8 bcm was planned during the 2000s. But it was shelved due mainly to a lack of gas demand in Italy/Europe to justify the building of an additional inter-regional gas pipeline. The recent collapse of Russian gas supplies to Europe and changing international energy market dynamics have renewed interest in this proposed new gas interconnection, which this time would be designed to transport blue or green hydrogen as well as methane.

However, the question remains as to whether there would be adequate long-term gas supply and demand commitments to fill this potential new gas trade line and the proposed capacity expansions of existing lines from Algeria and Libya? These plans, if implemented, would potentially increase North Africa's cross-border annual gas pipeline export capacity to Italy from over 40 bcm to 60 bcm, which would be the equivalent of 80 percent of Italy's gas consumption or over 10 percent of total gas use in Europe in 2021.

Incremental gas supply challenges and potential

In this new age of government intervention in Europe's energy trade transactions, closer relations between European governments and North African energy producers are important. But political declarations and memoranda of understanding alone cannot make the expansion of the existing natural

¹ Kaval, Allan (2023). "Giorgia Meloni launches her Mediterranean policy in Algiers - Eager to increase its gas imports from Africa, Italy wants to become an 'energy hub' between Europe and the southern Mediterranean." *Le Monde*, 25 January. https://www.lemonde.fr/en/international/article/2023/01/24/giorgia-meloni-launches-her-mediterranean-policy-in-algiers_6012947_4.html

² In this article, the term 'hub' does not refer to gas trading hubs that exist in mature and liquid gas markets, it simply describes a physical natural gas export/import infrastructure.

³ Also known as the Enrico Mattei gas pipeline in honour of Eni's founder, Enrico Mattei, who was a supporter of Algeria's independence movement in the 1950s.

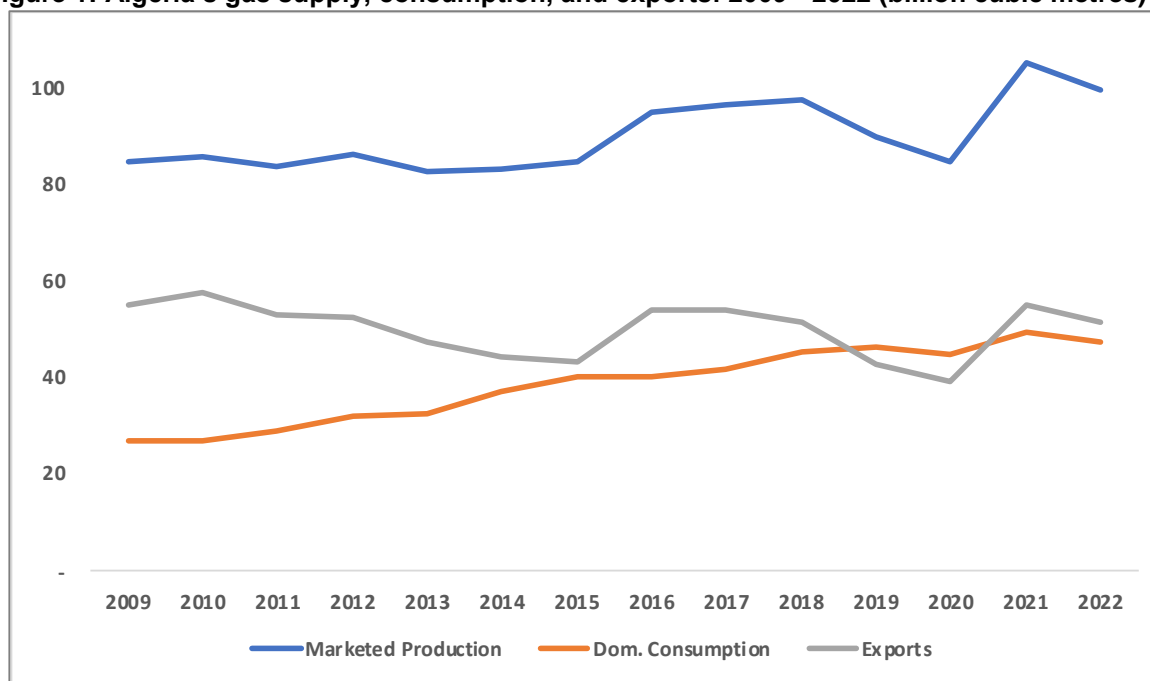
⁴ Sonatrach (2023). "Sonatrach-Eni: Signature de deux accords stratégiques portant sur l'augmentation des approvisionnements en gaz et la réduction des émissions", press communiqué, 23 January. https://sonatrach.com/wp-content/uploads/2023/01/CP-du-23-01-2023-Ar_Fr_An-3.pdf

gas pipeline trade between Algeria/Libya and Europe happen. This will critically depend on how gas supply and demand will evolve on each side of the Mediterranean and the associated risks.

Algeria and Libya have Africa’s second and fourth largest proven gas reserves, respectively. In the long-term, these two North African sources of gas supply to Europe could potentially expand their gas output, though there is no doubt that neither Algerian nor Libyan gas exports could replace the present loss of Russian gas supplies to Europe. But that is not the issue now. It is rather the question of availability of additional gas supplies over the next two or three years and up to 2030, when Europe’s future gas demand is projected to start going through a pronounced decline phase. The scenarios formulated by the International Energy Agency in its latest World Energy Outlook show a drop in the EU’s gas demand varying from about 23 to 70 percent between 2030 and 2050.⁵

Presently, Algeria’s domestic gas consumption represents about 50 percent of the country’s marketed gas production and is one of the key factors constraining Algeria’s gas exports. As shown in Figure 1, marketed gas production has been stagnant or declining over a long period. Production from new fields, as explained below, is expected to increase Algeria’s short to medium term gas output to meet domestic gas needs and provide incremental gas exports. But this additional gas production will not be enough to sustain long-term gas export levels much higher than the average 50 bcm per year achieved during the last ten to fifteen years. Thus, upstream investments, especially international investment flows, to develop new and larger indigenous sources of gas supply are critical.

Figure 1: Algeria’s gas supply, consumption, and exports: 2009 - 2022 (billion cubic metres)



Sources: GECF and JODI

As part of its \$40 billion five-year plan (2023 - 2027), Sonatrach has indicated that over \$30 billion will be allocated to exploration and production activities to increase short- and medium-term production levels and develop new projects, especially gas projects.⁶ It pointed out that in recent years several new gas fields have come on-stream and output has been boosted in some key existing fields such as Hassi R’mel. Furthermore, over the next two years, new fields in the southwest and southeast are

⁵ International Energy Agency (2022). “World Energy Outlook”, October. <https://www.iea.org/reports/world-energy-outlook-2022>

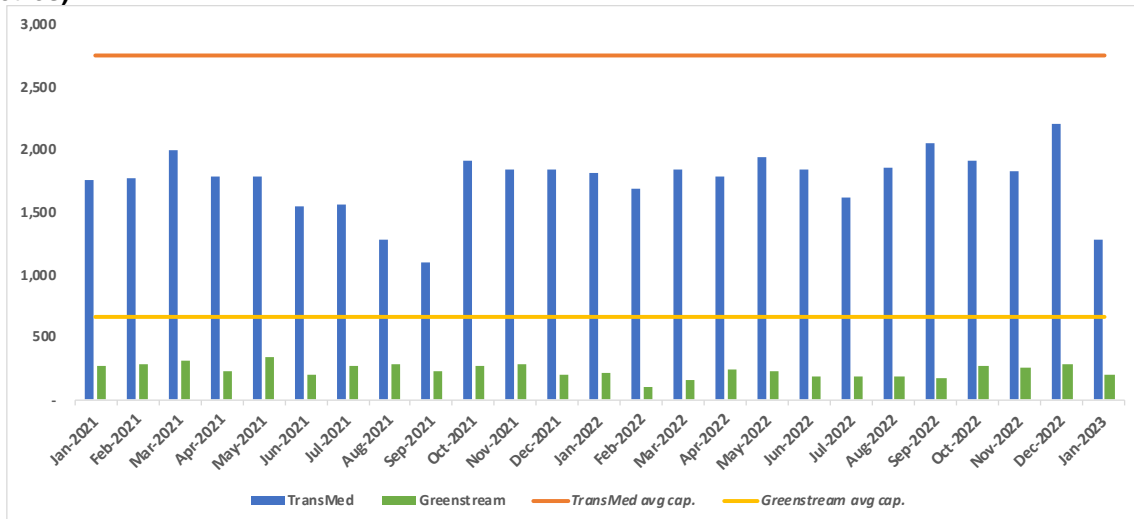
⁶ Calik, Aydin (2023). “Algeria’s Sonatrach Targets ‘Rapid New Output’: Exclusive MEES Interview with CEO Toufik Hakkar”, MEES, 06 January. www.mees.com

expected to be commissioned to meet additional domestic demand and potential gas exports to Europe, “depending on operational and commercial conditions”.⁷

The fundamental question, however, is how much more gas will be available for exports and when? Recently, Sonatrach stated that a fast-track production program starting this year for three projects (Hassi R’mel LD2, Ahnet and Ahnet Periphery) will make available an incremental volume of gas of 10 bcm per year from these projects alone.⁸ This could at least fulfil Italy’s additional gas import needs agreed last year.⁹

The situation of Libya’s natural gas balance is more complex due to the country’s on-going internal political conflict. Looking at the supply side, contradictory data are publicly available on Libya’s gas output. Natural gas production data published every year by the Gas Exporting Countries Forum (GECF) in its Annual Statistical Bulletin,¹⁰ show much higher marketed gas production levels for Libya than those presented by BP in its annual Statistical Review of World Energy.¹¹ The elucidation of this data discrepancy is beyond the scope of this short contribution. Nonetheless, there are clear indications that Libya is currently facing significant gas supply constraints. Its power plants are suffering from a shortage of gas supplies¹² and Libya’s gas exports to Italy are well below Greenstream’s pipeline capacity (see Figure 2).

Figure 2: Algeria & Libya’s pipeline gas exports to Italy: Jan 2021 – Jan 2023 (million cubic metres)



Sources: ENTSOG.

Because of Libya’s internal political instability, gas supply flows, especially associated gas output, have frequently been interrupted. Libya’s hydrocarbon infrastructure has not been properly maintained or refurbished, and some segments of this infrastructure are being sabotaged or blockaded. This instability has led to a long-lasting and severe lack of international oil and gas investments, although a very recent announcement offers some hope of new investments.

On January 28th 2023, during prime minister Meloni’s visit to Libya, Italy’s Eni and Libya’s National Oil Corporation signed an \$8 billion agreement to develop Libya’s offshore hydrocarbon Structure A and E

⁷ Ibid.

⁸ Ibid.

⁹ Ouki, Mostefa (2022). “Algeria and the new geopolitics of gas supply” in Quarterly Gas Review, OIES, May. <https://a9w7k6q9.stackpathcdn.com/wpcms/wp-content/uploads/2022/05/Gas-Quarterly-Review-Issue-17.pdf>

¹⁰ GECF (2022). “Annual Statistical Bulletin”, 26 October. <https://www.gecf.org/insights/annual-statistics-bulletin?d=2022&p=1>

¹¹ bp (2022). “Statistical Review of World Energy”, June. <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2022-full-report.pdf>

¹² Zaptia, Sami (2022). “Libya cuts gas exports to Italy’s ENI by 25 percent – gas is needed for local consumption”, Libya Herald, 05 July. <https://www.libyaherald.com/2022/07/libya-cuts-gas-exports-to-italys-eni-by-25-percent-gas-is-needed-for-local-consumption/>



(western region) “aimed at increasing gas production to supply the Libyan domestic market as well as to ensure exports to Europe.”¹³ This long-delayed gas development project is planned to start production in 2026 with an expected annual production plateau of about 8 bcm. Most of this additional gas output is expected to be exported to Italy.¹⁴ Additional annual volumes of about 1 to 4 bcm of gas could also be made available through planned associated gas flaring reduction projects at some offshore and onshore oil fields. But the speed of implementation of all these projects will depend on how soon a durable political stability could return to the country after more than a decade of political turmoil.

Over the next three to five years, both Algeria and Libya could potentially make available 10 to 15 bcm of incremental annual volumes for exports through the TransMed and Greenstream cross-border gas pipelines to Italy. The above-mentioned potential volumes include 9 bcm that would be supplied by Algeria, under the Sonatrach-Eni 2022 agreement,¹⁵ and 6 bcm from Libya’s new Structure A & E gas development project (see note 13) and possibly a gas flaring reduction project. However, any sustained large gas supply expansion from Algeria and Libya to Italy and other parts of Europe will require new long-term international gas development investments. This will mainly depend on the future gas demand situation in Europe.

Europe’s gas demand and import uncertainties

According to the EU’s REPowerEU plan, the EU is planning not only “to phase out, as soon as possible” its dependence on Russian gas imports, but also to gradually reduce its use of natural gas and other fossil fuels. A REPowerEU document states that “*In the new reality, the EU’s gas consumption will reduce at a faster pace, limiting the role of gas as a transitional fuel.*”¹⁶ The European Commission expects the EU’s demand for gas to be reduced by 30 percent by 2030 with “*a massive speed-up and scale-up in renewable energy*” planned to accelerate the EU’s move away from fossil fuels.¹⁷

There is no doubt that the EU is committed to reduce its long-term consumption of natural gas. Nevertheless, there are uncertainties about the magnitude of the drop in gas demand and how it will evolve over time. Long-run gas demand scenarios for Europe presented by various international institutions and companies suggest a declining trend starting around 2030, as indicated earlier. But even over the medium term, there are different views or scenarios about the level of European gas demand. For example, the International Energy Agency’s scenarios present a decrease in the EU’s gas demand varying from about 15 to 40 percent between 2020 and 2030.¹⁸ BP’s 2023 energy outlook, released at the end of January, has three scenarios where the fall in the EU’s natural gas demand by 2030 varies between about 20 and 50 percent compared to 2019.¹⁹

This wide variation in gas demand prospects, which reflects different EU energy transition scenarios, is a major restraining factor for the development of new gas resources and gas export projects. In addition to local barriers and risks, this level of uncertainty in European gas demand is limiting long-term international investments and project financing in Algeria and Libya’s hydrocarbon sectors.

Furthermore, even as gas continues to be consumed in Europe, the ability to import unabated gas volumes could become challenging. European regulations are likely to tighten the conditions for fossil

¹³ Eni (2023). “Eni launches a major gas development project in Libya”, press release, 28 January.

<https://www.eni.com/en-IT/media/press-release/2023/01/eni-launches-a-major-gas-development-project-in-libya.html>

¹⁴ de Souza, Olivier (2023). “Eni signe un accord de développement gazier (EPSA) de 8 milliards de dollars avec la Libye”, *Ecofin*, 30 January. <https://www.agenceecofin.com/gaz/3001-104949-eni-signe-un-accord-de-developpement-gazier-epsa-de-8-milliards-de-dollars-avec-la-libye>

¹⁵ Eni (2022). “Eni and Sonatrach agree to increase gas supplies from Algeria through TransMed”, press release, 11 April. <https://www.eni.com/en-IT/media/press-release/2022/04/eni-and-sonatrach-agree-to-increase-gas-supplies-from-algeria-through-transmed.html>

¹⁶ European Commission (2022). “REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition”, 18 May. https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3131

¹⁷ Idem.

¹⁸ International Energy Agency (2022).

¹⁹ bp (2023). “bp Energy Outlook 2023”, 30 January. <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/energy-outlook/bp-energy-outlook-2023.pdf>

fuel imports, with new restrictive measures such as the EU's Carbon Border Adjustment Mechanism (CBAM) having the potential to expand their reach beyond the current remit of products such as steel, cement and fertilisers. Italy's existing North African pipeline gas suppliers, Algeria and Libya, are unlikely to be able to address quickly the issue of unabated gas and develop carbon capture and storage capacities. This could be a key barrier for an expansion of North Africa's gas exports to Europe, but not an unsurmountable one.

Security of supply concerns and “friend-sourcing” of gas

Another level of uncertainty should be highlighted regarding the prospects for a material expansion of gas trade through cross-border gas pipelines supplying North African gas to Italy and potentially to other parts of Europe. The fallout of the Ukraine war has acutely focused the attention of Europe's policymakers on the issue of security of energy supply risks. Beside the long term planned transition away from fossil fuels, Europe is actively pursuing a gas import diversification policy involving the fast-track development of several floating, storage and regasification units (FSRUs) to import liquefied natural gas (LNG) supplies.

At some stage, could Europe start reducing its gas imports from sources categorised as risky areas and concentrate on low-risk gas suppliers from countries considered as “friends or allies” by adopting a sort of “friend-sourcing” of gas approach, like the new concept of “friend-shoring”²⁰ of supply chains? Could this accelerate the level of LNG imports into Europe and reduce or freeze the level of cross-border gas pipeline imports from North Africa, even though friend-sourcing of gas supplies does not mean that these supplies would be the cheapest and always available? This would depend on the value and impact of the geopolitical risk premium attached to sources of gas supply and also on the demand for LNG from other regions, such as Asia.

European gas importers may consider North African countries as higher risk than OECD-based gas suppliers. However, it is worth noting that these countries are nearby sources of gas supply diversification for Europe with existing gas pipeline interconnections to southern Europe that have been in operation for decades. Furthermore, North Africa's gas pipeline exporters rely heavily on Italy's market and potentially other European markets that may be accessible through TransMed and Greenstream. There are no non-European alternatives for Algerian and Libyan gas transported by these cross-border gas pipelines. In fact, it is Europe's future gas demand situation that is currently a risk concern for North Africa's gas suppliers.

Concluding thoughts

Recent high-profile visits by Italian prime ministers to Algeria and Libya have drawn renewed attention to the importance of the Italy - North Africa energy relationship. Are these recent diplomatic activities laying the ground for a new *Mattei Plan*²¹, with a green energy dimension, to transform Italy into an energy bridge between the southern part of the Mediterranean and Europe? It is difficult to comment in this note on the prospects of such an ambitious inter-regional initiative. But Eni's decision to launch a major gas development project in Libya²² and its continued involvement in project developments in Algeria's energy sector send positive signals for strengthened energy cooperation between Italy and its southern Mediterranean neighbours.

A relatively large cross-border gas pipeline infrastructure connects Italy's extensive gas network to Algeria and Libya's gas supply centres and an expansion of this gas transport capacity is being considered. Both Algeria and Libya have the natural gas reserves/resources to increase the gas supply

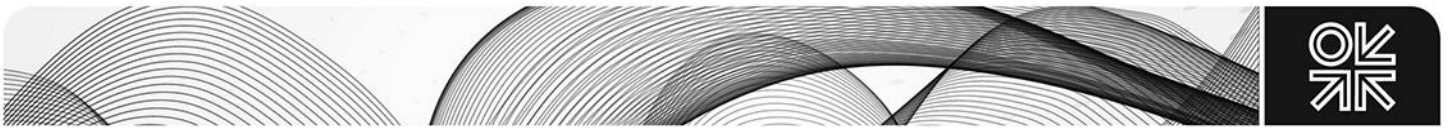
²⁰ Sarah Kessler (2022). “What is friendshoring”, *The New York Times*, 18 November.

<https://www.nytimes.com/2022/11/18/business/friendshoring-jargon-business.html>

²¹ Borrelli, Sciorilli (2023). “Italy renews its ‘Mattei plan’ to develop energy ties to Africa”, *Financial Times*, 11 January.

<https://www.ft.com/content/05d17d35-b0c3-47d2-b6b7-6f7d65d758fc>

²² See note 13.



potential for their domestic markets and exports. In the short to medium term, moderate gas supply increments will be made available for Italy's gas market.²³

In the long-term, depending on Europe's future gas demand prospects and clean energy regulations; security of supply considerations; international upstream investments and financing in Algeria and Libya; and, the resolution of Libya's political conflict, more gas could be exported to Italy and other European countries through cross-border gas pipelines. It is also important to note that given the current disruptive nature of events affecting our world and the emergence of *black swans*²⁴, like the Ukraine war, other factors may come into play and affect energy trade in this region positively or negatively.

Nevertheless, a lot of effort is being deployed by Italy and its southern Mediterranean neighbours to develop a new Mediterranean gas pipeline hub supplying larger volumes of North African gas not only to Italy, but also to other European energy markets. These would be part of a diversified energy portfolio for Europe. The potential for such a Mid-Med gas hub to emerge does exist, though with some key challenges and uncertainties.

²³ In November 2022, Slovenia's Geoplin signed a 3-year contract with Sonatrach to import a small volume of Algerian gas that will be transported through the TransMed. Slovenia previously imported Algerian gas via the TransMed from 1992 to 2012. <https://www.geoplin.si/en/news-and-reports/geoplin-signed-a-contract-for-natural-gas-from-algeria>

²⁴ Unexpected events with enormous impact. See Taleb, Nassim Nicholas (2007). "The Black Swan: The Impact of the Highly Improbable." <https://www.penguinrandomhouse.com/books/176226/the-black-swan-second-edition-by-nassim-nicholas-taleb/>