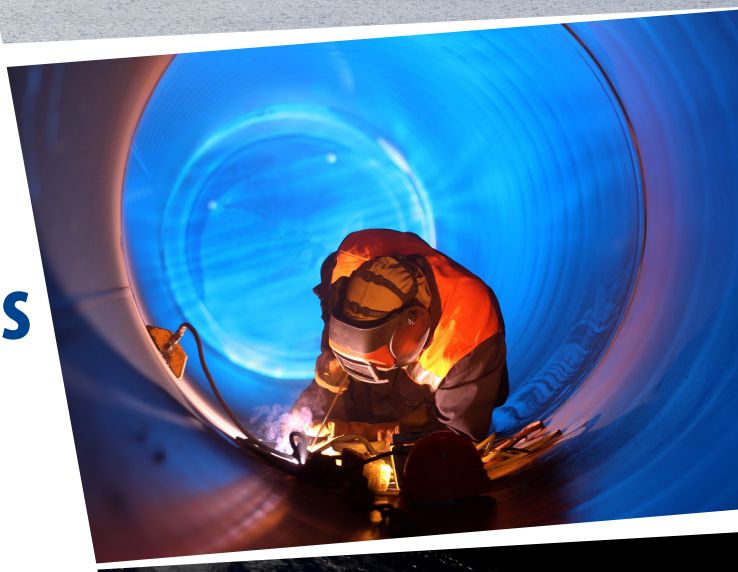
Natural Gas in Italy: Features and Perspectives in Light of Russia's War in Ukraine



by Pier Paolo Raimondi

IAI

Paper prepared in the framework of the IAI-Eni Strategic Partnership.

Via dei Montecatini, 17 – I-00186 Rome
Tel. +39 066976831
iai@iai.it
www.iai.it

ISBN 978-88-9368-265-7

Natural Gas in Italy: Features and Perspectives in Light of Russia's War in Ukraine

by Pier Paolo Raimondi

Introduction

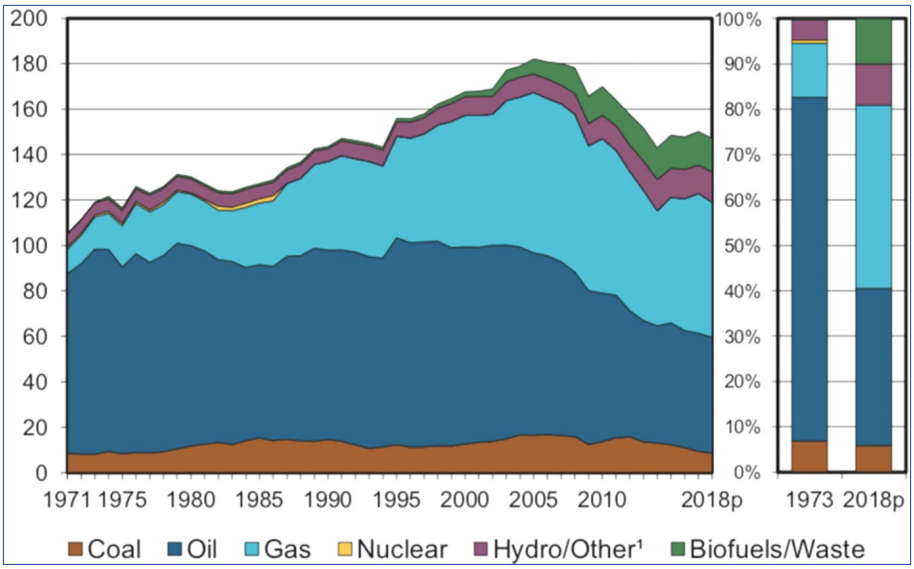
In 2011, the International Energy Agency (IEA) released a special report entitled "Are We Entering a Golden Age of Gas?"[1] Back then, the IEA recognised the potential and valuable role of gas in the future energy system. Natural gas growth was mainly driven by its positive role in replacing more polluting fossil fuels, hence natural gas was considered as "bridge fuel" within the global energy transition. A decade later, such role of natural gas is questioned, potentially undermining its future contribution to the energy system. Higher climate and environmental commitment to tackle CO_2 and methane emissions as well as the comeback of security of supply as top political priority are the major challenges that the natural gas industry is facing.

Natural gas is a key pillar of the European energy system. The evolution of its role has entailed important consequences in the sphere of politics, economy and security. Within the EU, Italy is one of the largest gas markets as it consumed around 72.5 billion cubic metres (bcm) of natural gas in 2021,[2] accounting for about 40 per cent of total primary energy supply (TPES). Since 1973 the share of natural gas has increased, displacing oil as the largest contributor to TPES, reaching 42 per cent of TPES in 2019,[3] while oil's share has fallen from 76 per cent in 1973 to 34 per cent in 2019. Two historical moments were deciding for

1 International Energy Agency (IEA), "Are We Entering a Golden Age?", in *World Energy Outlook Special Reports*, June 2011, https://www.iea.org/reports/weo-special-report-are-we-entering-a-golden-age.
2 BP, *Statistical Review of World Energy 2022*, June 2022, https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html.
3 IEA, "Total Energy Supply (TES) by Source, Italy 1990-2020", in *Energy Statistics Data Browser*, https://www.iea.org/data-and-statistics/data-tools/energy-statistics-data-browser?country=ITALY&fuel=Energy%20supply&indicator=TESbySource.

the incremental growth of the role of natural gas in the Italian energy system: the 1973 oil crisis, when gas was instrumental to diversify Italy's energy mix which was at the time heavily reliant on oil; and the 1987 referendum on nuclear energy when it became clear that gas would play a dominant role in Italy's power sector.

Figure 1 | Italy's total primary energy supply by source (Mtoe)



Source: IEA, World Energy Balances 2019.

After having enjoyed a remarkable growth in the 1990s and 2000s mainly driven by the power sector, gas demand faces some uncertainty in the future. Today, a combination of geopolitics, market features and climate policies are acting as a constraint to further gas expansion. Yet, the need to rapidly phase out imports from Russia raises the prospect for another wave of supply side investment aimed at diversification. Italy is evaluating increasing its domestic gas production (traditionally limited by strict regulatory framework), while securing additional volumes from alternative suppliers – with a specific focus on the Mediterranean energy countries. Given climate ambitions, the reconfiguration of energy flows to and within the EU needs to take into account

also decarbonised gases (e.g., hydrogen and biomethane).[4]

This paper will address all of these issues, devoting Section 1 to the evolution of gas demand in Italy and its uncharted waters especially after 2030. Section 2 is dedicated to the key features of gas supply (domestic production, gas storage, imports), while Section 3 looks into the potential contribution of Mediterranean countries to Italy's gas diversification plans. Lastly, Section 4 focuses on the reconfiguration of gas flows in Europe following the EU diversification plans (REPowerEU) and the role of decarbonised gases as well as the potential consequences for Italy as a transit country.

1. Demand side: From the golden age to uncertainty

Section 1 focuses on the demand side. Section 1.1 outlines the historical evolution of gas demand, while Section 1.2 analyses how climate policies, international affairs and market competition cause uncertainty over the trajectory of future gas demand.

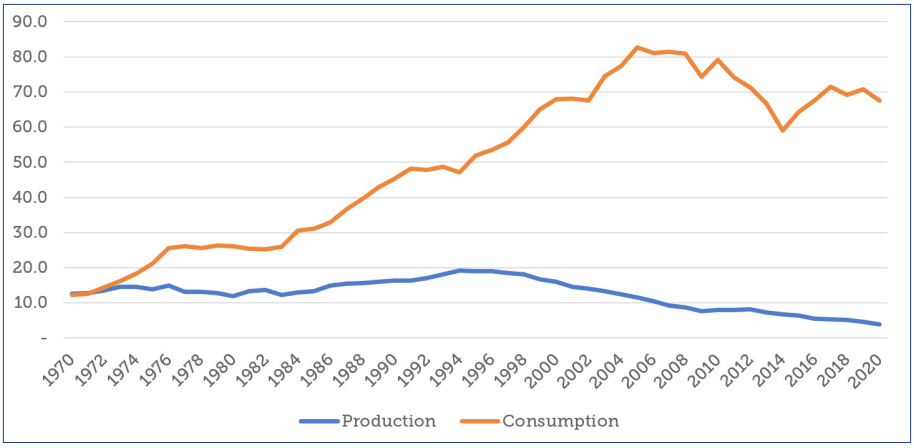
1.1 Evolution and state of the art

Natural gas demand in Italy has experienced several turning points. Although in the aftermath of World War II, natural gas was a key feedstock for manufacturing plants in Northern Italy, gas demand remained marginal at that time. The 1973 oil crisis triggered a new phase with countries, including Italy, looking for alternatives to oil. Natural gas has steadily become the preferable option for power generation particularly after the decision to halt nuclear generation in 1987 following a referendum. In the 1990s and 2000s, the rise of gas in the power sector was driven by a combination of the liberalisation process, the development of combined cycle gas turbine (CCGT) plants – particularly

4 Decarbonising of natural gas consists of different ways whereby the greenhouse gas emissions associated with the life cycle of natural gas from its source to the end user can be avoided, eradicated or mitigated.

favourable for private companies – and national policies (Law 55/02 in 2002). The 2002 law accelerated the long authorisation procedure to build new power plants (over 300 MW)[5] such that projects could obtain full permits in less than six months, and resulted in significant changes in the power sector. The CCGT capacity grew remarkably from 8.5 GW to 42.5 GW between 2000 and 2012, and has slightly declined since then (40 GW in 2019). National gas consumption rapidly increased throughout the 1990s and early 2000s, peaking in 2005 at 82.5 bcm (Figure 2).

Figure 2 | Italy's gas production and consumption 1970–2020, bcm



Source: Author's elaboration on BP.

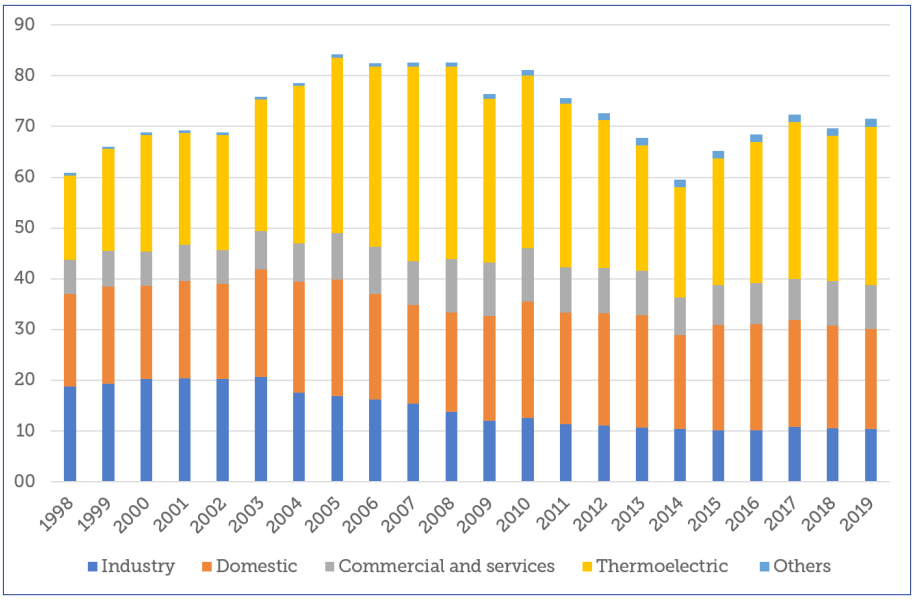
The upward trend of gas consumption was halted by the 2008 financial crisis, which led to a fall in demand in the industrial sector. Gas consumption in the industry sector declined from 21 bcm in 2003 to 10 bcm in 2019 (Figure 3) mostly as a result of stagnant growth. This decline in industrial demand has mainly driven the generalised stagnation in gas demand since 2008, except in 2010 when demand for gas grew rapidly largely driven by the power sector.[6] Besides the economic crisis, the fall in demand has been caused by the rising

5 Anouk Honorè, "The Italian Gas Market: Challenges and Opportunities", in *OIES Papers*, No. NG 76 (June 2013), https://doi.org/10.26889/9781907555756.

6 IEA, "Italy 2016 Review", in *Energy Policies of IEA Countries*, December 2016, https://www.iea.org/reports/energy-policies-of-iea-countries-italy-2016-review.

share of renewables (RES) in power production, resulting in halting gas-fired capacity, as well as enhanced energy efficiency measures. RES growth was mainly driven by a significant scheme of incentives, such as "green certificates", "*tariffa omnicomprensiva*" and feed-in-tariffs for solar PV. In 2019, power plants accounted for around 40 per cent of gas demand, while households and service used around 39 per cent and industry about 15 per cent.

Figure 3 | Italy's gas consumption by sector, 1998–2019, bcm



Source: Author's elaboration on ARERA.

1.2 Uncertainty

Natural gas demand in Italy and Europe is expected to navigate uncharted waters – especially after 2030. On one hand, European climate targets, technological developments and geopolitical tensions have been conducive to some reconsideration about future gas demand. On the other, natural gas still represents the quickest way to phase out more polluting energy sources and remains the more reliable source in selected sectors, such as "hard-to-abate" sectors, in the medium term.

The European net-zero political ambitions[7] are expected to lead to a reduction of gas demand at the European level. According to the European Commission, the volume of gas imports was expected to decline by 13–19 per cent between 2015 and 2030, while after 2030 natural gas imports are expected to drop by 58–67 per cent compared to 2015.[8] Over the past two years, the Commission has enhanced its climate targets with the "Fit for 55" package in 2021 and the REPowerEU plan in 2022, which are expected to further affect gas demand. Over the last years, rising international commitment on the negative impact of CH4 emissions, which could undermine potentially the natural gas "bridge fuel" label, has emerged. During the COP26 at Glasgow, the EU launched the Global Methane Pledge with the US and over a hundred other countries. These countries decided to commit themselves to a collective goal of reducing global methane emissions by at least 30 per cent by 2030 from 2020 levels to keep the target of limiting global warming to 1.5°C within reach.[9] Although technological developments, also induced by political commitments, are expected to contribute to the reduction of methane emissions along the entire value chain, the regulatory framework may further reduce future unabated gas demand within the European borders and beyond. Simultaneously, natural gas demand in key sectors (e.g., power sectors) is facing pressure from the uptake of cleaner options and efficiency measures also seen as security measures in the wake of Russia's war in Ukraine, as outlined in REPowerEU. Lastly, risks of supply disruptions from Russia, coupled with high gas prices, have forced member states to agree on a voluntary reduction of gas consumption by 15 per cent this winter, compared to their average consumption in the past five years, with measures of their own choice to make savings ahead of winter.[10]

Notwithstanding these regulatory, economic and technological challenges, there are several factors that leave some room for natural gas demand. Firstly,

7 Articulated in the European Green Deal launched in 2019 and enshrined into the legislation by the European Climate Law since 2021.

8 Mark Leonard et al., "The Geopolitics of the European Green Deal", in *Bruegel Policy Contributions*, No. 04/2021 (February 2021), https://www.bruegel.org/node/6428.

9 European Commission, *Launch by United States, the European Union, and Partners of the Global Methane Pledge to Keep 1.5C within Reach*, 2 November 2021, https://ec.europa.eu/commission/presscorner/detail/en/statement_21_5766.

10 Council of the European Union, *Council Adopts Regulation on Reducing Gas Demand by 15% this Winter*, 5 August 2022, https://europa.eu/!fmbcgg.

natural gas represents the quickest solution to cut CO_2 emission especially in the case of coal-to-gas switch. Furthermore, the natural gas industry is working on solutions to further enhance the role of gas within the future energy systems through decarbonised gases. Particularly, these decarbonised gases could play a decisive role in the energy transition since electricity is expected to be limited in meeting EU total final energy demand (53 per cent by 2050) in a net-zero scenario.[11] Indeed, electricity faces obstacles in decarbonising certain sectors, such as the "hard-to-abate" sectors like cement, steel and heavy transport, leaving room for future (decarbonised) gas demand. In February 2022, the European Commission decided to include natural gas, alongside nuclear, in the Complementary Climate Delegated Act of its Taxonomy, which the European Parliament approved in July 2022.[12] In order to be considered sustainable, natural gas activities need to meet strict regulatory standards.[13] Nonetheless, the inclusion of these activities in the EU Taxonomy as transition activities gives some space for gas investments. The current energy crisis has induced some governments to revise their previous pledges to end support for unabated gas investments. For example, in May 2022 G7 countries pledged to end new direct international public financing for unabated fossil fuels overseas by the end of the year. In June 2022, the Group added a caveat to that pledge affirming that investment in the gas sector can be appropriate in order to reduce dependency on Russian gas.[14] Future rationing measures are critical amid rising prices and geopolitical tensions. Moreover, in the first half of 2022 European natural gas demand in the power mix has shown remarkable resilience as it has increased due to lower nuclear and hydro generation (Figure 4). This challenging trend suggests that future rationing measures will need to address also other sectors, such as industry.

---

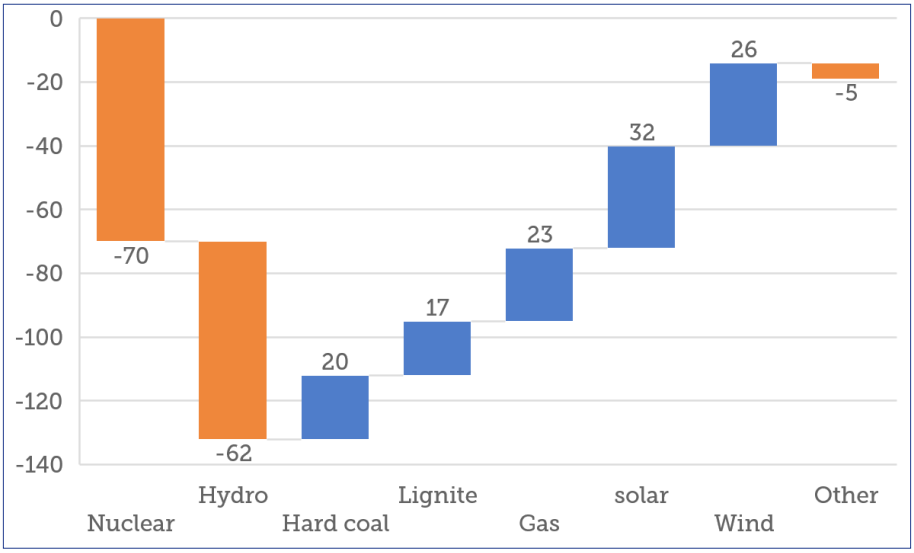
11 European Commission, *A Clean Planet for All. A European Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy* (COM/2018/773), 28 November 2018, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52018DC0773.

12 European Parliament, *Taxonomy: MEPs Do Not Object to Inclusion of Gas and Nuclear Activities*, 6 July 2022, https://www.europarl.europa.eu/news/en/press-room/20220701IPR34365.

13 "The technical screening criteria ensure that any new gas-based power/heat plant (or refurbished combined heat and power plant or heat/cool plant) is either below the technology-neutral 100g CO_2/kWh life-cycle emission threshold (i.e. using Carbon Capture and Storage technologies) or meets a number of stringent conditions and obtains a construction permit by 2030". See: European Commission, "Questions and Answers on the EU Taxonomy Complementary Climate Delegated Act Covering Certain Nuclear and Gas Activities", in *Q&A*, 2 February 2022, https://ec.europa.eu/commission/presscorner/detail/en/qanda_22_712.

14 *G7 Leaders' Communiqué*, Elmau, 28 June 2022, http://www.g7.utoronto.ca/summit/2022elmau/220628-communique.html.

Figure 4 | Year-on-year change in electricity generation in the EU countries, by fuel type, January–August 2022 (TWh)



Source: Ember for Financial Times.

The Italian government is committed to respect its climate targets. According to the latest version of its National Energy Climate Plan, Italy plans to have 50 GW of solar PV installed capacity by 2030, meaning an addition of 30 GW on top of current levels. In 2022, the Italian government has announced its intention to install 70 GW by 2030,[15] which could further reduce gas demand – especially in the power sector. Despite great efforts to secure new supplies in the short term due to the Ukrainian war, Italy has committed to reduce natural gas demand in the longer run. In addition, limited coal-fired power plants (6.8 GW[16]) and no nuclear capacity to phase out[17] reveal a modest gas demand growth potential from fuel switch in the power sector compared to

15 Italian Government, *Prime Minister Draghi's Address to the Senate*, 20 July 2022, https://www.governo.it/en/node/20312.

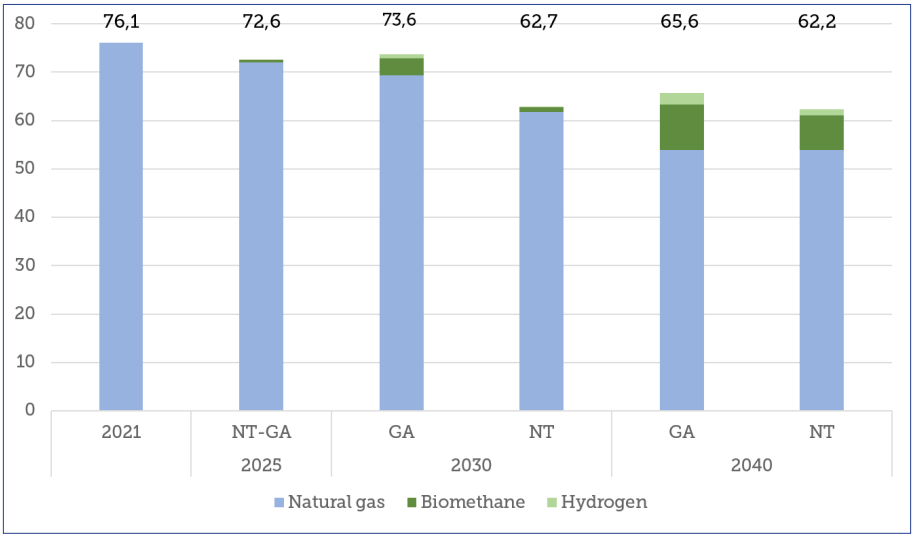
16 Europe Beyond Coal, *European Coal Plant Database*, https://beyond-coal.eu/database.

17 Italy had previously committed to phase out coal-fired generation by 2025. Nonetheless, the Italian government has announced a temporary halt of the phase-out plans due to rising energy security concerns caused by the energy crisis in 2021/22.

other European countries (e.g., Poland, Germany). Even though certain gas activities have been recognised as sustainable in the Taxonomy, the required standards for gas activities to be considered as such are extremely rigid and penalise those member states holding an already abundant share of gas-fired generation (e.g., Italy), while favouring those that currently rely more on coal (e.g., Poland and Germany).

According to Italy's transmission system operator (TSO), Snam, gas demand is expected to become more uncertain over the upcoming decades given the different pace of declining unabated gas demand and soaring green gases[18] (Figure 5).

Figure 5 | Italy's demand for natural gas and green gases, 2021, 2025, 2030, 2040, bcm



Note: NT refers to the National Trend Italy scenario elaborated by Snam and Terna; GA refers to the Global Ambition scenario elaborated by ENTSOs (for the TYNDP 2020).
Source: Author's elaboration on Snam data.

18 Snam, *Piano decennale di sviluppo della rete di trasporto di gas naturale 2022-2031*, 2022, https://www.snam.it/en/transportation/Online_Processes/Allacciamenti/information/ten-year-plan/ten_year_plan_2022_2031/consultazione.html.

Different energy scenarios, contrasting energy and climate policies (especially in the effort to find an equilibrium in the energy trilemma) as well as obstacles to full electrification in the foreseeable future, exacerbate uncertainty on future gas demand and needs, which raises questions over the viability of infrastructure projects, the length of contracts for alternative gas import volumes and the looming risk of carbon lock-in effects[19] and stranded assets.[20] Furthermore, this unclear scenario undermines infrastructure project investment, considering the decision to invest in parallel infrastructure feasible for accepting decarbonised gases.

2. Supply side: Decline of domestic output and high import dependency

Italy has experienced a progressive decline in domestic production, not followed by a similar trend in the demand side, resulting in an overdependence on imports. While gas demand has floated at around the same level between 2000 and 2020, the supply side has drastically changed. Domestic production dropped from around 17 bcm to 4 bcm over the same period due to political and regulatory constraints. This has exacerbated Italy's import dependency with imports satisfying around 93 per cent of Italy's gas demand. To receive gas imports, Italy has built several import infrastructures, mainly gas pipelines from Russia, Algeria, Northern Europe, later Libya and more recently Azerbaijan. Italy has also built three LNG facilities. Today, Italy is looking to some of its traditional gas suppliers in the Mediterranean to wean itself off Russia's gas.

2.1 Production

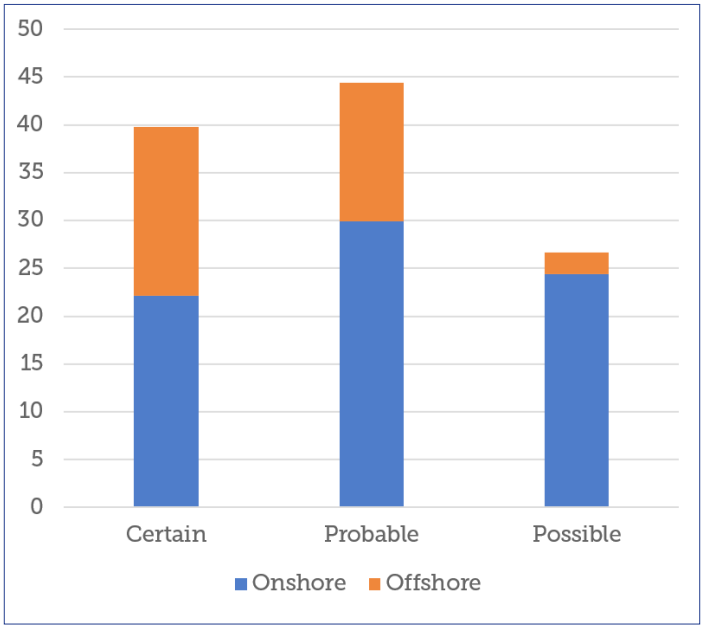
Italy currently holds about 110.9 bcm of gas reserves (Figure 6), most of which are located onshore (68.9 per cent) and the rest offshore. Among these reserves,

19 Carbon lock-in occurs when fossil-fuel-intensive systems perpetuate, delay or prevent the transition to low-carbon alternatives – a situation that can seriously imperil climate action.

20 Stranded assets are those that lose value or turn into liabilities before the end of their expected economic life.

35 per cent are certain. The domestic reserves have not been fully utilised because of regulatory constraints. These have limited their attractiveness for operators, which has resulted in a drastic decline of domestic production (Figure 2). To put this into context, in 1960 Italy was the world's third largest gas producer, the domestic production peaked in 1994 at 20 bcm (corresponding to a third of national demand at the time)[21] and since then has declined to 4.1 bcm in 2020 (about 4 per cent of national consumption) (Figure 7). The bulk of the production is located in the region of Basilicata. Moreover, Italy could benefit from depleted oil and gas fields which can represent a locational and competitive advantage for the development of carbon capture and storage (CCS).

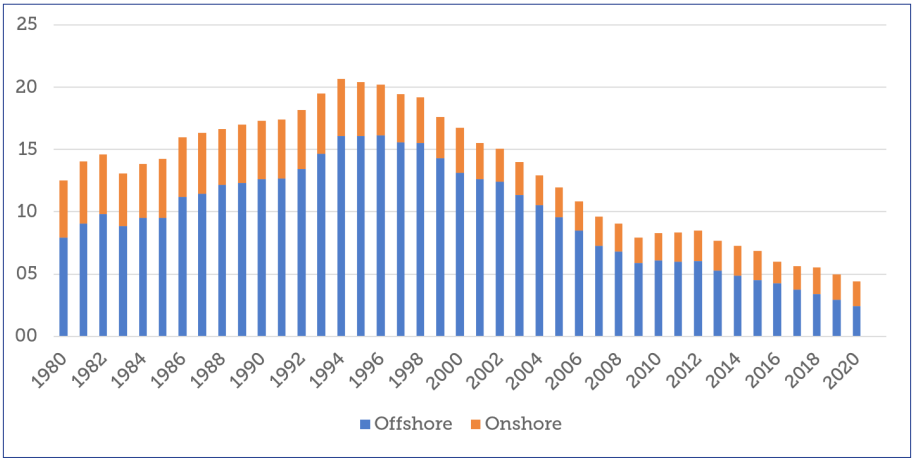
Figure 6 | Gas reserves in Italy, as of 31 December 2021, bcm



Source: Author's elaboration on Ufficio nazionale minerario per gli idrocarburi e le georisorse (UNMIG), *Riserve nazionali di idrocarburi, Anno 2021*, https://unmig.mise.gov.it/index.php/it/dati/ricerca-e-coltivazione-di-idrocarburi/riserve-nazionali-di-idrocarburi.

21 Anouk Honorè, "The Italian Gas Market: Challenges and Opportunities", cit.

Figure 7 | Evolution of gas production onshore and offshore, 1980–2020, bcm



Source: Author's elaboration on ARERA data.

The downward trend of domestic gas output was the result of legislation tightening the approval of exploration and production activities within the national territory. Following the Deepwater Horizon oil spill in the Gulf of Mexico in 2010, the government adopted more stringent environmental measures. Legislative Decree No. 128/2010 prohibits offshore gas research and exploration within 12 miles from the boundaries of coastal and marine-protected areas. In 2019, the Italian parliament approved a temporary moratorium (not renewed at the end of 2020) on offshore oil and gas exploration permits and a sharp increase in fees on upstream concessions. Lastly, market conditions (i.e., low gas prices and oversupplied market) have further discouraged companies from exploiting domestic reserves and ramping up production in the past years.

The value of domestic production for energy security and independence came back as a political issue in the wake of the gas crunch that started in summer 2021. This aspect is especially crucial for large gas consuming countries. According to the Italian government's appraisal, it is possible to increase production in the following years by more than 2 bcm through the existing concessions. New legislative measures have simplified the permitting process with the aim of

supporting domestic production.[22] Nonetheless, regulatory contradictions persist. In 2022, another legislation (PiTESAI[23]) was approved,[24] which aims to reduce by over two-thirds the areas where such activities can be carried out.[25] Although Ecological Transition Minister Roberto Cingolani affirmed that the current crisis requires a revision of the PiTESAI, this could take several months. In conclusion, even though the domestic production has some potential to improve Italy's energy security, a ramp-up of domestic gas production seems be hindered by regulatory constraints and societal opposition.

2.2 Storage

Gas storage represents a key component of Italy's energy security equation. Given its relevance for balancing gas demand and supply, the Draghi government has put in place several incentives to encourage operators to fill gas storage – despite high gas prices – in order to be prepared for the winter months and in the event of supply disruptions from Russia.

Storage is vital for seasonal gas balancing as gas storage can supply typically 25–30 per cent of gas consumed in winter in the EU.[26] Winter gas consumption in the EU (October–March) is almost double that of summer (April–September) due to additional demand for heating buildings. Thus, gas storage represents the major flexibility resource for the system and allows for increased security in a market that heavily relies on imports.

22 Article 16 of the Law Decree No.17/2022, transformed into law No. 34/2022. See: Italian Chamber of Deputies-Research Department, "Interventi per ridurre la dipendenza energetica dall'estero", in *Documentazione parlamentare*, 20 September 2022, https://temi.camera.it/leg18/temi/interventi-in-materia-di-prospezione-ricerca-e-coltivazione-di-idrocarburi.html.

23 PiTESAI: Piano per la transizione energetica sostenibile delle aree idonee. The text is available in the website: https://unmig.mise.gov.it/index.php/it/informazioni/piano-per-la-transizione-energetica-sostenibile-delle-aree-idonee-pitesai.

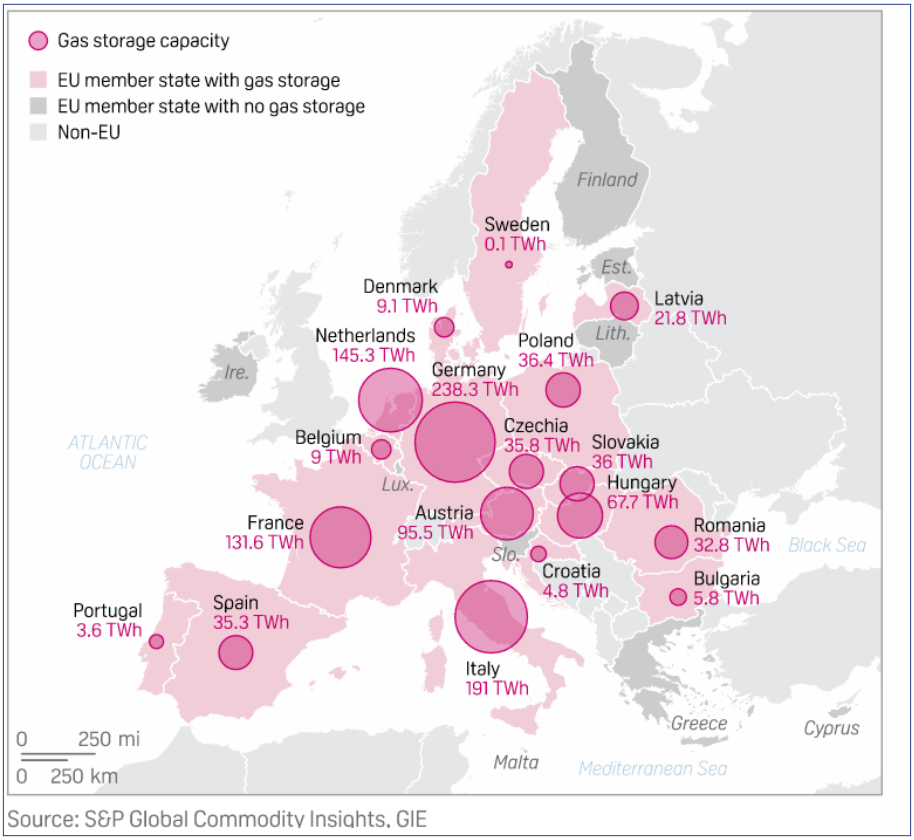
24 MiTE, *MiTE. Pubblicato il Piano della transizione energetica sostenibile delle aree idonee (PiTESAI)*, 13 February 2022, https://www.mite.gov.it/comunicati/mite-pubblicato-il-piano-della-transizione-energetica-sostenibile-delle-aree-idonee.

25 Regarding exploration activities, the PiTESAI revokes 42 titles out of 45. According to Assorisorse, over 70 per cent of the 108 gas concessions are located in areas defined as "not suitable". See: Assorisorse, *PiTESAI: l'effetto sui Titoli attuali nel contesto dell'emergenza gas*, April 2022, https://www.assorisorse.org/documenti/pitesai-valutazione-assorisorse/pitesai-impatto_ari-070422-website2.

26 Alex Wilson, "New EU Regulation on Gas Storage", in *EPRS Briefings*, June 2022, https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)729393.

Italy holds one of the largest storage capacities in Europe, with 197.7 TWh (equal to 17.8 bcm) of storage capacity, including 4.5 bcm of strategic reserves, corresponding to 17.8 per cent of EU gas storage capacity (Figure 8) distributed in 13 storage facilities and operated by three companies.[27]

Figure 8 | Gas storage capacities among EU member states



Source: Author's elaboration on European data: Council of the European Union, *Infographic - How Much Gas Have the EU Countries Stored?*, last updated on 8 September 2022, https://europa.eu/!GKpHPh.

27 Stogit (Snam) which manages a total working capacity of 12.5 bcm (plus the strategic reserves) in nine operative concessions; Edison Stoccaggio which operates three storage facilities with a total working capacity of 1 bcm (of which 140 mcm is allocated to strategic reserves); and ItalGas Storage which operates the Cornegliano Ludente site with a working capacity of 1 bcm. See Snam, *Piano decennale di sviluppo della rete di trasporto di gas naturale 2022-2031*, cit.

Traditionally, refilling gas storage has occurred during the summer period mainly driven by market forces (i.e., lower gas prices). This scheme was abruptly challenged in 2021 when high gas prices during the summer months discouraged companies from entirely refilling their storage capacity. The EU found itself unprepared for the upcoming challenges, having filled its storage capacity to just 70 per cent in October 2021 – compared to an average of 87 per cent in the last few years – which was then depleted to 25 per cent by the end of winter in March. To make sure enough gas is in storage for next winter, in May the EU passed legislation mandating a target 80 per cent of storage capacity to be filled by early November 2022[28] and 90 per cent for the following years.

However, high gas prices do not set the right market incentives for companies to adequately replenish inventories. As such, the Italian government has gradually adopted measures. Initially, it deleted service costs in March and then adopted some additional incentives[29] to encourage operators to fill storage sites ahead of winter and offset potential supply disruptions from Russia. Despite such incentives, filling activities have lagged behind the timeline, hence forcing the government to set new instruments and measures, such as the allocation of 4 billion euro for refilling of storage in order to ensure energy security.[30] This measure comes hand-in-hand with the designation of Snam in June 2022 as the responsible entity of last resort to fill storage. Italy's energy regulator, ARERA,[31] set the possibility for Cassa per i servizi energetici e ambientali[32] to allocate up to 2 billion euro to Snam for the execution of its service of filling as last resort,[33] extended *premio giacenza* also for allocation capacity between June

28 Stuart Elliott, "EU Council Adopts New Minimum Gas Storage Rules in Final Step of Approval", in *S&P Global Commodity Insights*, 27 June 2022, https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/natural-gas/062722-eu-council-adopts-new-minimum-gas-storage-rules-in-final-step-of-approval.

29 The two main measures are "*premio giacenza*" (5 euro/MWh) and "*contratto per differenza a due vie*" (CD2V) intended to achieve the target of 90 per cent by November. See: Italian Regulatory Authority for Energy, Networks and Environment (ARERA), *Disposizioni urgenti per il conferimento della capacità di stoccaggio ai sensi del decreto del Ministro della Transizione ecologica 1 aprile 2022, n.138*, Delibera 165/2022/R/gas, 8 April 2022, https://www.arera.it/it/docs/22/165-22.htm.

30 With the Decree law No. 80 at the end of June 2022.

31 Autorità di Regolazione per Energia Reti e Ambiente.

32 Its main mission is the collection of certain tariff components from operators. It also provides grants to industry players.

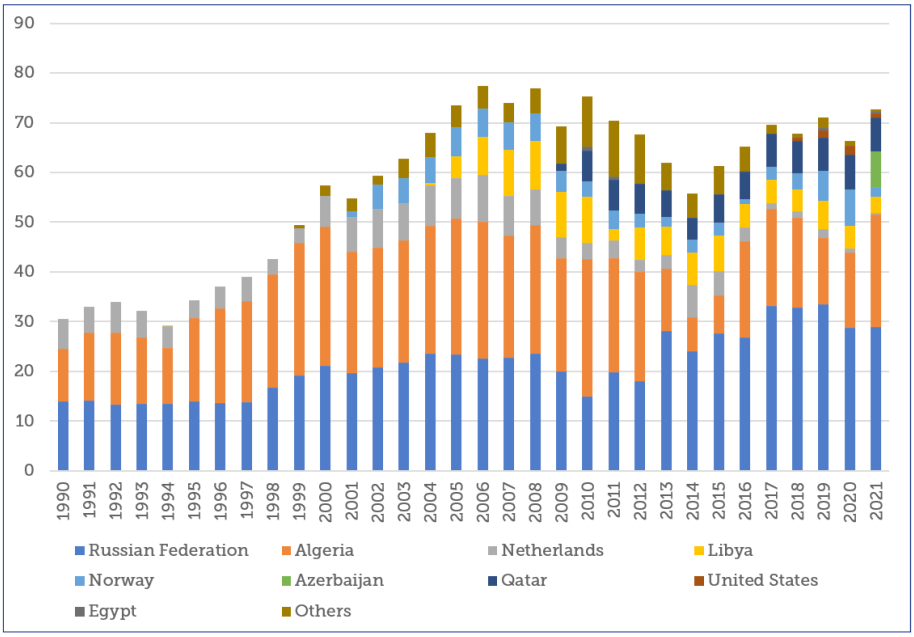
33 "Stoccaggi gas, le indicazioni Arera sull'ultima istanza Snam", in *Ansa*, 28 June 2022, https://www.ansa.it/canale_ambiente/notizie/focus_energia/2022/06/28/stoccaggi-gas-le-indicazioni-arera-sullultima-istanza-snam_08b7e6fd-f190-45cc-912a-1ba63f69a419.html.

and September as well as defining further the regulation of storage activities.[34] As gas prices remain high, governments and companies are expected to run into economic challenges to fill storage adequately.

2.3 Imports

Gas imports have been on the rise over the last two decades. Total gas imports have increased from 57.4 bcm in 2000 to 72.7 bcm in 2021[35] – especially since 2014 to meet the higher demand from the power sector. Over the past two decades, there have been major transformations of the relative relevance of each gas supplier (Figure 9).

Figure 9 | Italy's gas imports, 1990–2021, bcm



Source: Author's elaboration on data from Italian Ministry of Ecological Transition-Directorate General for Infrastructure and Security (MiTE DGSAIE).

34 See: ARERA, *Ulteriori misure urgenti per il servizio di stoccaggio di gas naturale ai sensi del decreto del Ministro della Transizione ecologica 22 giugno 2022, n.253*, Delibera 274/2022/R/gas, 24 June 2022, https://www.arera.it/it/docs/22/274-22.htm.

35 Out of which, 10 bcm of LNG.

North African countries were responsible for half of Italy's gas imports up to 2011, with Algeria being the main supplier. However, flows from Algeria and Libya declined as a result of rising domestic demand, coupled with declining production (Algeria), and political instability following the "Arab Spring" (Libya). As a result, Russia has become Italy's main supplier. In 2021, Russia supplied Italy with 29 bcm, accounting for 40 per cent of Italy's gas imports. To secure enough supply, Italy has signed several long-term contracts with multiple gas suppliers, notably Russia (expiring in 2035), Algeria (expiring in 2027, plus two additional years), Libya, Norway, Qatar and Azerbaijan. Two thirds of the existing contracts last more than 20 years.[36]

Table 1 | Italy's gas import infrastructure and entry points for gas imports

Pipeline/Terminal	Capacity (bcm)	Entry point	Mode	Country of origin
Transmed	35	Mazara del Vallo	Pipeline	Algeria
Greenstream	12	Gela	Pipeline	Libya
TAG	37	Tarvisio	Pipeline	Russia
Tenp & Transitgas (bidirectional)	22 (15 Export)	Passo Gries	Pipeline	Norway / Netherlans
TAP	8.5	Melendugno	Pipeline	Azerbaijan
Slovenia Interconnection (bidirectional)	1 (1)	Gorizia	Pipeline	Russia
Panigaglia	4	Panigaglia	LNG	
Adriatic LNG	8	Cavarzere	LNG	
OLT	4	Livorno	LNG	

Today, the country imports gas through six pipeline entry points and three LNG regasification terminals (Table 1). Given energy security risks and diversification strategy, Italy has built additional import infrastructure over the past two decades, such as Greenstream from Libya in 2004 and the TAP pipeline from Azerbaijan in 2020. It has also expanded its regasification capacity, notably in 2009 (Adriatic LNG) and in 2013 (OLT LNG Toscana). The country has however failed to further expand its LNG regasification capacity as many projects have

36 ARERA, *Segnalazione dell'Autorità di Regolazione per Energia Reti e Ambiente a Parlamento e Governo. Rapporto sul monitoraggio dei contratti di approvvigionamento destinati all'importazione di gas in Italia*, Segnalazione 252/2022/I/gas, 13 June 2022, https://www.arera.it/it/docs/22/252-22.htm.

been postponed or abandoned due to economic challenges or strong local opposition.[37]

These delays contributed to Italy's overdependence on Russian gas and the Ukrainian route. Russia's war in Ukraine and the Russian decision to weaponise its gas supplies have abruptly changed the energy and political paradigm. Russia had behaved as a reliable supplier ever since hydrocarbon volumes from Russia started to flow. Russia and Europe have built a long-lasting energy relationship, which had managed to overcome previous crises from the Cold War to the two gas crises in 2006 and 2009.[38] Russia's war in Ukraine has forced European (and Italian) policymakers to address their overdependence and consequent strategic vulnerability. Italy has immediately undertaken several diplomatic missions to reach agreements with alternative suppliers both via pipeline and LNG to replace Russian gas.

3. Italy's diversification plans: The role of Mediterranean countries

To wean itself off Russian gas, Italy has been looking for alternative gas suppliers. Italy is importing higher LNG volumes to achieve more flexibility and diversification. Furthermore, the Draghi government has signed a number of agreements with several LNG exporting countries for further and future LNG supplies.[39] Additional LNG imports will require an expansion of Italy's LNG import capacity despite being an issue due to the well-known challenges (economic costs, construction time and social acceptability). Land-based LNG import terminals take at least five years to build and are costly. As such, European

37 Among these projects, three were approved but they remained suspended: Porto Empedocle (Sicily) with a capacity of 8 bcm/y, the 4 bcm/y Falconara Marittima FSRU (Ancona) and the 12 bcm/y Gioia Tauro.

38 Thane Gustafson, *The Bridge. Natural Gas in a Redivided Europe*, Cambridge, Harvard University Press, 2020.

39 New contracts and agreements that could spur higher LNG imports have been reached with several countries such as Congo and Angola. Furthermore, Italy's Eni is part of major LNG projects in Mozambique and, more recently, in the expansion of Qatar's North Field East project through joint venture with QatarEnergy that will hold 12.5 per cent interest in the entire NFE project.

governments, including the Italian one, prefer to rely on floating storage and regasification units (FSRUs), which are cheaper and generally quicker to install.

The Italian government has granted Snam the mandate to buy two FSRUs. In June 2022 the company bought the first FSRU, Golar Tundra, which has a regasification capacity of 5 bcm/y[40] and will be located in central-northern Italy, close to the areas with greatest gas consumption and in order to avoid potential bottlenecks from the reconfiguration of gas flows (i.e., lower volumes from the North/West). Golar Tundra is intended to be deployed in Piombino, yet societal opposition[41] has emerged against the project, potentially undermining the effort to improve national energy security. The FSRU is expected to start operations during the spring of 2023. In July 2022, Snam bought a second FSRU, BW Singapore, with a regasification capacity of about 5 bcm/y, which will be deployed in the upper Adriatic Sea, close to the coast of Ravenna. The Italian TSO company affirmed that operations are scheduled to commence in the third quarter of 2024.[42]

Apart from import capacity, major challenges arise with securing additional gas from alternative suppliers under tight global market conditions. This section outlines Italy's energy diplomacy efforts with prospective suppliers with a focus on the Mediterranean countries (Algeria, Libya and Eastern Mediterranean countries) as the Italian government has largely devoted its efforts to these countries. They indeed present positive advantages such as existing infrastructure and political ties, geographical vicinity and abundant gas reserves.[43]

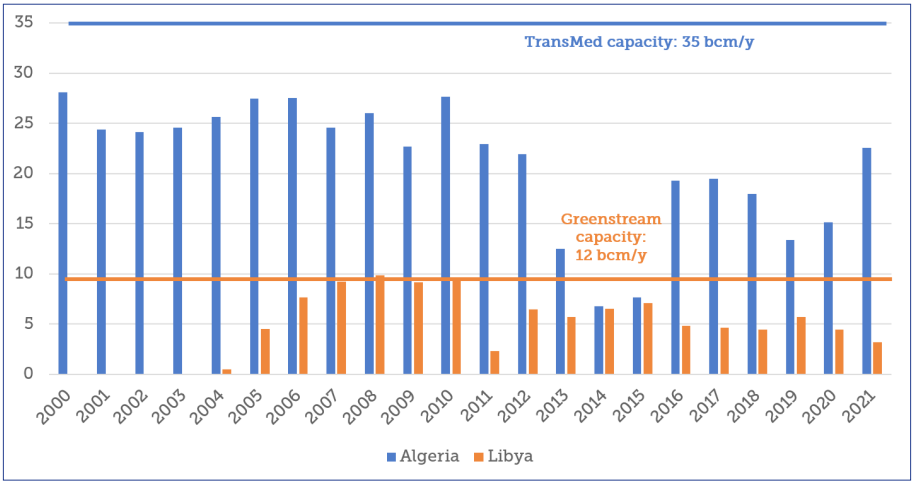
40 Snam, *Snam Purchases 5 Billion Cubic Metre Floating LNG Regasification Terminal from Golar LNG for US$ 350 Million*, 1 June 2022, https://www.snam.it/en/Media/Press-releases/2022/Snam_purchases_floating_LNG_regasification_from_Golar_LNG.HTML.

41 "Gas: manifestazione a Piombino per dire no al rigassificatore", in *Ansa*, 27 August 2022, https://www.ansa.it/toscana/notizie/2022/08/27/gas-manifestazione-a-piombino-per-dire-no-al-rigassificatore_7bfcaeb9-23c0-4284-941d-8f0dc8944653.html.

42 Snam, *Snam Purchases New Floating Regasification Unit from BW LNG to Contribute to Italy's Energy Security and Diversification*, 6 July 2022, https://www.snam.it/en/Media/Press-releases/2022/Snam_purchases_new_floating_unit.html.

43 Along with debate over higher flows from Southern Mediterranean countries, Italy is considering the possibility of doubling the capacity of the Trans Adriatic Pipeline from Azerbaijan (currently 10 bcm).

Figure 10 | Italy's gas imports from Algeria and Libya 2000–2021, bcm



Source: Author's elaboration on MiTE DGSAIE.

3.1 Algeria

Algeria has become the cornerstone of Italy's efforts to wean itself off Russian gas thanks to its geographical proximity to European markets, existing infrastructure (the 34 bcm Transmed "Enrico Mattei" pipeline via Tunisia[44]) and vast gas reserves (2.3 tcm in 2021 corresponding to 1.2 per cent of the world's proven gas reserves). In April 2022 Eni and Algeria's national oil company, Sonatrach, agreed to increase gas volumes imported through the TransMed pipeline under the existing long-term gas supply contract. The agreement envisages using the spare capacity of the TransMed pipeline (almost 13 bcm in 2021) to provide gradually an additional 9 bcm/y by 2023/24.[45] Since April 2022, Algeria has become the first gas supplier for Italy, surpassing Russia.

44 Algeria exports to Spain through the Gazoduc-Maghreb-Europe pipeline (12 bcm) via Morocco and directly through the MedGaz pipeline (8 bcm).

45 Eni, *Eni and Sonatrach Agree to Increase Gas Supplies from Algeria through Transmed*, 11 April 2022, https://www.eni.com/en-IT/media/press-release/2022/04/eni-and-sonatrach-agree-to-increase-gas-supplies-from-algeria-through-transmed.html.

Algeria was Italy's main supplier until 2011. However, the North African country has suffered from several challenges that hampered gas exports. Firstly, Algeria has to face a rising domestic gas consumption (caused by large fossil fuel subsidies, growing population and industrialisation), which has risen from 19.1 bcm in 2000 to 45.8 bcm in 2021, accounting for 45 per cent of gas output.[46] Moreover, Algeria has faced depletion in its traditional gas fields; a trend difficult to reverse given the obstacles to attracting investment and international oil companies, notably a tightened regulatory framework dominated by Sonatrach (over resource endowment and export rights) – symbolised by the 51/49 rule.[47] Algeria has also faced challenges in the international markets. Between 2014 and 2020, Algeria's gas exports to Europe – especially in its two key gas markets (Spain and Italy) – were put under pressure due to growing global competition and low gas prices reflecting the LNG supply glut. Nonetheless, Sonatrach managed to renew its gas contracts with Italy (and other key markets) that were set to expire in 2019 and 2020, which was of paramount importance given Algeria's economic and fiscal overdependence on hydrocarbon revenues. In May and June 2019, Sonatrach renewed its gas supply contract with Eni[48] and Enel.[49] However, these deals are characterised by being shorter, more flexible and involving lower volumes, reflecting the great competition in the markets. In 2020, Algeria – akin to other producing countries – faced its *annus horribilis*. Due to lockdowns, Spain and Italy drastically reduced gas demand experiencing the biggest decreases in the EU, 3.7 bcm (-10 per cent) and 3.4 bcm (-5 per cent) compared to 2019, respectively.[50] In 2020, Algeria exported 41.1 bcm.[51] On the domestic side, Algeria saw its domestic consumption reach

46 BP, Statistical Review of World Energy 2022, cit.

47 It caps foreign ownership of a company operating in "strategic" sectors to 49 per cent, although the country allows IOCs to hold operatorship up to 100 per cent especially in complex and innovative projects.

48 Nine bcm/y for the period 2019–2027 extendable for two additional years. See Eni, *Eni and Sonatrach Strengthen Their Relationship by Extending the Gas Supply Contract until 2027*, 16 May 2019, https://www.eni.com/en-IT/media/press-release/2019/05/eni-and-sonatrach-strengthen-their-relationship-by-extending-the-gas-supply-contract-until-2027.html.

49 Three bcm/y for the period 2019–2027 extendable for two additional years. See Enel, *Enel Extends Gas Supply Contract with Sonatrach*, 26 June 2019, https://www.enel.com/media/explore/search-press-releases/press/2019/06/enel-extends-gas-supply-contract-with-sonatrach.

50 European Commission, *Quarterly Report on European Gas Market*, Vol. 13, No. 4 (2020), https://ec.europa.eu/energy/sites/default/files/quarterly_report_on_european_gas_markets_q4_2020_final.pdf.

51 26.1 bcm via pipeline and 15 bcm of LNG. To Spain and Italy, Algeria exported in total 27.2 bcm (23.9 bcm via pipeline and 3.3 bcm of LNG).

a record-level 56 per cent of gas output (81.5 bcm) in 2020.

Today's energy context is quite different from the previous years for Algeria's hydrocarbon sector, representing a good turnaround for the much-stressed Algerian hydrocarbon industry. In 2021, the country managed to increased domestic production to 102 bcm, breaking the 100 bcm mark for the first time after years of struggle with natural decline and sluggish project progress. The remarkable achievement was possible thanks to several project start-ups in 2020. This coincided with higher gas exports (54 bcm in 2021) mainly because of a higher gas demand level in Algeria's main markets as well as political developments. Additionally, Algeria turned its commitment to oil-indexed contracts into an advantage (from a competitive weakness in times of low energy prices) as spot spiralled upwards starting in 2021, as this proved more attractive for importing countries than high spot gas prices. In this context, Algeria increased its gas exports to Italy in 2021 to 21.2 bcm, up from almost 12 bcm in 2020. Given the high prices, Algeria is eager to benefit from the current market situation; for example, Sonatrach's CEO announced that Algeria is negotiating with all its clients to review gas prices.[52]

Today, questions have arisen on the potential role of Algeria in the Italian gas supply mix. In the short term and volume-wise, Italy could benefit from the spare capacity of the TransMed pipeline (13 bcm in 2021), which is the least cost option because it does not require infrastructural investment. Moreover, Italy and Algeria have recently enjoyed more positive relations compared to the negative trend in Algeria's relations with Spain. The Algerian diplomatic relationships with the latter have witnessed a degradation due to Spain's alignment with Morocco on the Western Sahara issue. Since November 2021 Algeria already was not exporting gas through the 11.5 bcm GME pipeline that supplies Spain via Morocco, as the multiannual contract between Algeria and Morocco expired and the two countries failed to renew it. Spain still imports Algerian gas through the MedGaz pipeline. Yet, political disagreements and changing positions may influence gas flows. Italy could potentially benefit from this evolving scenario as Algeria could divert part of its gas exports from Spain to Italy via pipeline using the spare capacity. Spain imports rising LNG volumes

52 "Algeria to Review Gas Prices with All Its Clients – Sonatrach's CEO", in *Reuters*, 3 July 2022, https://www.reuters.com/article/algeria-oil-prices-idAFC6N2XN00F.

thanks to its vast capacity for such imports, and this could encourage Spain to import less gas via pipeline, freeing volumes for Italy. A more coordinated action could partially replace Russian gas in Italy and potentially position Italy as a bridge for continental countries, as Spain is poorly interconnected with France.

Moreover, Algeria could also export gas via LNG through its two LNG terminals[53] with a combined capacity of 38 bcm/y, partly idle because of some technical issues. Having exported 16.1 bcm in 2021, Algeria still has ample underutilised capacity for additional exports with no additional infrastructural investments needed. Nonetheless, doubts over Algerian capacity to quickly ramp up export may arise since it exported 16.1 bcm in 2021 (just 1.1 bcm more than in 2020) despite the high gas prices and the strong political will to import non-Russian gas.

To increase gas exports in the medium and longer term, Algeria needs to address its chronic challenges, such as the depletion rate of its traditional gas fields, attracting investments and addressing its environmental issues.

Algeria needs to tackle the depletion of its traditional gas fields, which could undermine exports, by launching new projects. It has recorded some positive developments with the increase of production in 2021 and the newly discovered formation at its giant Hassi R'Mel field in June 2022, which will be instrumental to provide additional 3.7 bcm/y from November 2022, according to Sonatrach.[54] To further sustain production, Algeria should attract and unleash significant investments by further improving its traditionally tight regulatory framework in order to attract foreign investments. The country revised its hydrocarbon law at the end of 2019 and new contracts have been awarded for exploration and production activities. Algeria's national oil company envisages 40 billion US dollars in investment over 2022–2026,[55] but it will need to attract international oil and gas companies (IOCs). In December 2020 Eni and Sonatrach signed

53 Skikda and Arzew.
54 Sonatrach, *Importante découverte de gaz à condensat dans le périmètre de Hassi R'Mel*, 27 June 2022, https://sonatrach.com/presse/importante-decouverte-de-gaz-a-condensat-dans-le-perimetre-de-hassi-rmel.
55 Offshore Technology, *Algeria's Sonatrach Unveils $40bn Five-Year Investment Plan*, 4 January 2022, https://www.offshore-technology.com/news/sonatrach-five-year-investment.

the first hydrocarbon contract under the aegis of the new Algerian oil law for developments in the southern area of the Berkine Basin. In July 2022, Sonatrach signed a further new contract with Occidental (operator), Eni and TotalEnergies for the contractual perimeter of Berkine (Blocks 404 and 208). The companies envisage a 4 billion US dollars plan for the implementation, and will ultimately add more than 1 billion barrels of oil equivalent of hydrocarbons.[56] The key to sustaining gas production will be how quickly Algeria will be capable of attracting investment and launching projects to boost production. Algeria is also considering turning to its untapped unconventional gas reserves (above 20 tcm). Beyond conventional gas reserves, the North African country is estimated to hold one of the largest gas shale reserves in the world, which is something of interest for IOCs. Developing these reserves could fix numerous issues for Algeria (and for Europe as well), but it is not an easy task from the socioeconomic, political, energy and environmental standpoint. In early 2015, the country faced large demonstrations in Salah and other areas caused by environmental and health-related concerns over the impact of shale gas exploration.[57] Indeed, shale gas development has a high requirement for water injection, which is particularly sensitive in a country characterised by water scarcity. Furthermore, political stability and security concerns in certain areas increase the challenges to development of Algeria's shale gas reserves.

Lastly, Algeria needs to address the environmental aspects of its gas production and exports. According to the IEA, Algeria has the third-highest methane intensity of production among selected oil and gas suppliers.[58] In 2022, according to satellite data, the Hassi R'Mel basin is acknowledged as a global methane hotspot.[59] The Algerian reluctancy to address the environmental dimensions of its upstream activities could be an impediment to future energy relations with Europe as well as long-term investment also in light the EU

56 Sonatrach, *Signature d'un nouveau contrat entre Sonatrach et Occidental, Eni et TotalEnergies sur le périmètre de Berkine*, 19 July 2022, https://sonatrach.com/presse/signature-dun-nouveau-contrat-entre-sonatrach-et-occidental-eni-et-totalenergies-sur-le-perimetre-de-berkine.

57 Tim Boersma, Marie Vandendriessche and Andrew Leber, "Shale Gas in Algeria. No Quick Fix", in *Brookings Policy Briefs*, November 2015, http://brook.gs/2bf9hxI.

58 IEA, *Global Methane Tracker 2022*, February 2022, https://www.iea.org/reports/global-methane-tracker-2022.

59 Jess Shankleman and John Ainger, "Europe Faces an Old Methane Hotspot in Rush to Exit Russian Gas", in *Bloomberg*, 30 May 2022, https://www.bloomberg.com/news/articles/2022-05-30/europe-faces-a-new-methane-problem-in-rush-to-exit-russian-gas.

Methane Emission Strategy and the European commitment to tackle methane emissions. Moreover, Italy can also cooperate with Algeria to reduce and avoid gas flaring (amounting to 8.1 bcm in 2021[60]) and gas venting in order to find additional volumes in the short term, with tangible and immediate climate benefit as stated in the latest EU External Energy Strategy.[61] Algeria's National Determined Contribution and Sonatrach have adopted a target of less than 1 per cent of total associated gas to be flared by 2030.[62]

By exploiting its great renewable energy potential, especially solar, Algeria, like other Southern Mediterranean countries, could meet rising domestic energy demand and free up additional gas export volumes.[63] Algeria has established a renewable energy target of 22 GW of installed renewable capacity by 2030. Currently, Algeria's total renewable energy capacity amounts to 686 MW, equal to 2.6 per cent of total electricity capacity.[64] The country, like other Middle Eastern and North African countries, needs to remove several barriers (e.g., fossil fuel subsidies, regulatory, infrastructure, investment) to actually harness its renewable potential. In July 2022, Italy and Algeria signed a memorandum of understanding aimed at enhancing cooperation on renewable energy.[65] By exploiting its renewable potential, Algeria could also start to work on future low-carbon product exports.

In conclusion, Algeria is set to regain its role as main supplier to Italy by 2023/24. However, despite its great potential advantages, Algeria needs to address its chronic and well-known issues (e.g., domestic consumption, regulatory constraints, environmental issues) before exploiting the current situation, in both the short and the long term. Spare capacity of Algerian export

60 BP, *Statistical Review of World Energy 2022*, cit.
61 European Commission, *EU External Energy Engagement in a Changing World* (JOIN/2022/23), 18 May 2022, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52022JC0023.
62 World Bank, *Global Flaring and Venting Regulations: 28 Case Studies from Around the World*, Washington, World Bank, May 2022, https://www.worldbank.org/en/topic/extractiveindustries/publication/global-flaring-and-venting-regulations.
63 Ali Al-Saffar and Brent Wanner, "How Producers in the Middle East and North Africa Can Free Up More Natural Gas for Exports", in *IEA Commentaries*, 25 May 2022, https://www.iea.org/commentaries/how-producers-in-the-middle-east-and-north-africa-can-free-up-more-natural-gas-for-exports.
64 International Renewable Energy Agency (IRENA), *Renewable Capacity Statistics 2022*, April 2022, https://www.irena.org/publications/2022/Apr/Renewable-Capacity-Statistics-2022.
65 Italian Government, *IV vertice intergovernativo Italia-Algeria, gli accordi e le intese*, 18 July 2022, https://www.governo.it/it/node/20286.

infrastructure means that the country has not been able to fully benefit from the current situation, more for capacity constraints than for export capacity issues, despite high gas prices.

3.2 Libya

Potentially, another North African country that could contribute to Italy's diversification strategy is Libya. Libya holds important gas reserves (1.4 tcm in 2021, Africa's fifth largest) and is already connected directly to Italy through the Greenstream pipeline (with a total capacity of 12 bcm/y). Currently, the gas pipeline is the only export route possible for the country's gas production as its only LNG terminal (Marsa el-Brega) has been idle since 2011. The Greenstream pipeline was commenced in 2004 and was instrumental for the development of Libya's gas resources. The domestic production grew from 5.6 bcm from 2000 to 7.7 bcm in 2004 (the year of the Greenstream inauguration) and up to 16 bcm in 2010 right before the revolution.[66] The domestic production prioritises supply to the domestic demand. Nonetheless, Italy's gas imports from Libya followed a similar upward trend, increasing from 0 in 2003 to 9.4 bcm in 2010. The vast majority (80 per cent) of Libya's gas production is non-associated and located either offshore (Bahr Essalam fields) or in the western onshore Ghadames Basin (Wafa field),[67] which feed the gas pipeline.

The overall insecurity context, caused by the 2011 revolution and the consequent civil (and proxy[68]) war, has deteriorated the reliability of Libya, undermining its potential role in a diversification strategy despite its favourable conditions. In the immediate wake of the revolution (during March to September 2011), gas supply from Libya came to a complete halt because of war, then slowly resumed in October and returned to full capacity in late 2013.[69] Italy imported between 6.5 bcm in 2012 and 7.1 bcm in 2015. Since then, gas imports have declined to around 4.5 bcm, dropping to 3.2 bcm in 2021 – the lowest level in a decade

66 BP, Statistical Review of World Energy 2022, cit.
67 Energy Information Agency (EIA), *Country Analysis Executive Summary: Libya*, last updated 9 May 2022, https://www.eia.gov/international/analysis/country/LBY.
68 External players have exacerbated local and national divisions through direct and indirect support to the local militias. During the post-Gaddafi period, Turkey, Russia, European countries and Gulf monarchies have given either political or military support to local militias, to different extents.
69 IEA, "Italy 2016 Review", cit.

(Figure 10). Hydrocarbon resources have little by little, but evidently, become the prize of war for opposing local militias. An all new level was reached in 2020 when Marshal Haftar decided to weaponise hydrocarbon resources and exports, imposing a blockade in an attempt to make the Libyan Government of National Accord (GNA)[70] collapse. Even though the Tripoli-based government managed to survive, Libya's hydrocarbon industry was negatively affected by the blockade with production and exports collapsing to a bare minimum.

Libya's potential contribution to the Italian diversification strategy is intertwined with the political and security conditions in the North African country. For this reason, Italy has not yet signed any further gas deal with Libya. Challenging conditions on the ground, coupled with unfavourable regulatory environment dating back to the Gaddafi era, have deterred investments in the adequate development of gas fields. This has resulted in the decline of domestic output from 13.5 bcm in 2019 to 12.4 bcm in 2021.[71] Moreover, like its neighbour, Libya has seen its gas consumption grow significantly (mainly driven by the power sector).

In March 2022, then CEO of Libya's National Oil Corporation (NOC), Mustafa Sanalla, announced that Libya aims to raise gas production rates in order to benefit from the current situation in the European market and contribute to diversification.[72] This would be pursued by reducing gas flaring (5.9 bcm in 2021[73]) and developing new fields. However, the NOC traditionally focuses on oil production and it faces some economic constraints requiring the contribution of IOCs. Eni is the largest foreign energy company present in the country. Jointly with the NOC, Eni is the main gas producer in Libya with a share of about 80 per cent. The country has significant gas potential, particularly offshore, where Eni is working on the engineering of the mega project Structures A&E which will extend the gas production plateau of Bahr Essalam to supply gas to local and European markets. Some other companies have expressed their interest in cooperating with the NOC to boost domestic gas production. For

70 The GNA, based in Tripoli, was an interim government formed under the terms of the 2015 Libyan Political Agreement, a United Nations-led initiative.

71 BP, *Statistical Review of World Energy 2022*, cit.

72 "Sanalla: We Seek to Raise Gas Production Rates to Meet the Needs of the European Market", in *Libyan News Agency*, 12 March 2022, https://lana.gov.ly/post.php?lang=en&id=236371.

73 BP, *Statistical Review of World Energy 2022*, cit.

example, Sonatrach has signed a memorandum of understanding with the NOC to resume its activities in the country after a hiatus that lasted for years.[74] Sonatrach's activities in Libya are located in the Hamada region that stretches through the Ghadames and Murzuq Basins.

Nonetheless, an increase in production and exports beyond current levels seems unlikely in the short term as Libya's ability to improve its conditions is directly linked to the precarious political and security situation in the country. Some factors offer a degree of hope for Libya's future role in the diversification strategy for Italian gas supply, such as the commitment to increase gas production, interest from IOCs to invest in gas production, and considerable spare capacity in the existing gas pipeline (in a range of 8–10 bcm[75]). However, improvement of the national political and security situation is the fundamental prerequisite for a greater Libyan role in the Italian gas supplies. In short, Libya's higher contribution could only appear only in the medium or longer term and once political stability is restored.

3.3 East Med

Another promising area for Italy's gas diversification plan is the Eastern Mediterranean given its significant gas reserves and Italy's energy and political interests in the area.[76] The area has become a gas hotspot since 2009, with several countries aiming at becoming a gas export hub, considering several export options both via pipeline and via LNG. However, output and exports remain below potential for several economic, energy and political reasons.[77] Italy's effort has focused on two of the most relevant players in the area concerning gas exports: Egypt and Israel. In April 2022, Eni signed a deal with Egyptian EGAS that will provide LNG cargoes up to 3 bcm in 2022 to Europe and Italy. In June 2022, the European Commission, Israel and Egypt signed a trilateral memorandum of understanding on the supply of Israeli gas to Europe

74 "Algerian Sonatrach Inks MoU to Resume Operations in Libya", in *The Libya Observer*, 10 February 2022, https://www.libyaobserver.ly/node/21718.

75 Given the 2021 export volumes, which were 3.2 bcm.

76 Italy's Eni is a leading player in the gas E&P activities in the area, and Italy is member of the East Mediterranean Gas Forum.

77 Pier Paolo Raimondi, "Eastern Mediterranean Energy Resources between Energy Security and Energy Transition", in *IAI Papers*, No. 22|11 (May 2022), https://www.iai.it/en/node/15482.

via Egypt's LNG export infrastructure.[78]

Both Egypt and Israel offer some opportunities yet face different challenges to successfully increase gas exports. While Egypt has been a gas producer since the mid-1990s, Israel has emerged as a gas producing country only in the past decade. Egypt's gas sector has undergone through multiple phases, being an exporter then experiencing a period as an importer (2015–2019), only to become an exporter again following the recent offshore discoveries. In 2015, the discovery by Eni of the Zohr gas field offshore Egypt (the largest ever in the Mediterranean) represented a major gamechanger for Egypt. Thanks to production from the Zohr field, Egypt has managed to solve some of its major challenges in the energy sector: offsetting the decrease in hydrocarbon production and bringing back Egyptian gas market in surplus allowing LNG exports, satisfying its increasing energy demand and overcoming its chronic electricity shortages.[79] The Zohr field has become a central component in Egypt's gas production, contributing 40 per cent of Egypt's total gas production in 2020.

The domestic gas production grew from 20.2 bcm in 2000 to 59 bcm in 2010 and 67.8 bcm in 2021. Egypt can export gas through its two LNG terminals: the Shell-operated Idku facility (with 10 bcm/y) and the Eni-operated Damietta plant (with 7 bcm/y). In 2021, Eni signed a deal to restart the Damietta plant after nine years.[80] Using these facilities is the least costly solution, given the traditional underutilisation of the two terminals. As gas prices have soared, Egypt has tried to maximise its LNG exports, especially to Europe.[81] In 2021, Egypt exported 9 bcm of LNG, a ten-year high, leaving about 8 bcm of unutilised LNG capacity to boost exports. In 2021, the North African country decided to prioritise its LNG exports and trying to benefit from high gas prices, resulting in burning more oil for the domestic market, which is environmentally damaging. In the short term, Egypt could pursue several pathways to increase gas exports.

78 Stuart Elliott, "EC Inks Trilateral MOU for Supply of Israeli Gas to Europe via Egypt", in *S&P Global Commodity Insights*, 15 June 2022, https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/natural-gas/061522-ec-inks-trilateral-mou-for-supply-of-israeli-gas-to-europe-via-egypt.

79 Pier Paolo Raimondi, "Eastern Mediterranean Energy Resources", cit.

80 Eni, *Damietta Restarts LNG Production, First Cargo Lifted*, 22 February 2021, https://www.eni.com/en-IT/media/press-release/2021/02/damietta-restarts-lng-production-first-cargo-lifted.html.

81 Tom Pepper, "Israel, Egypt Agree Future Gas Export Deal with EU", in *Energy Intelligence*, 15 June 2022, https://www.energyintel.com/00000181-6799-dc60-afe3-effb549c0000.

First, it could reduce its gas flaring (2.3 bcm in 2021[82]), although this option has more limited benefits compared to Algeria and Libya given the smaller volume of gas flared. Second, Egypt can strengthen its commitment to develop renewable energies. Currently, the country holds a total renewable capacity of 6.2 GW, which corresponds to 10.4 per cent of total power capacity.[83] In terms of power generation, Egypt is the outlier because renewables account for around 10 per cent of electricity generation whereas they produce less than 3 per cent of total electricity generation in nine of the Middle East and North Africa region's ten producer economies.[84] The country has managed to attract several foreign investments. For example, the European Bank for Reconstruction and Development (EBRD) pledged up to 1 billion US dollars for renewable projects in the country.[85]

Nonetheless, challenges lie ahead. Firstly, despite higher LNG imports from Egypt, sales are still modest in volume (compared to Russian gas supply). Then, Egypt faces some domestic challenges, such as its growing population and domestic production constraints (e.g., rapidly declining output of mature fields). The past decisions to divert gas from LNG to Egypt's domestic market raise questions on reliability. To partially overcome this, Israel represents a fruitful option to maximise Egypt's LNG capacity, as outlined by the trilateral MoU between the Commission, Egypt and Israel. Since 2020, Israel exports its gas to Egypt, contributing to Egypt's role as gas exporter in the region. This cooperation has become even more crucial with the expansion of Israeli supplies to Egypt especially during the peak of seasonal consumption. Moreover, since Egypt's LNG is mainly sold in spot markets, Europe will need to remain attractive pricewise to overcome competition vis-à-vis other LNG importing regions.

On the other hand, Israel started its gas production in 2004, increased strongly from 2013 and reached 19.4 bcm in 2021. However, the management of Israeli gas resources has enflamed strong political debate, resulting in the delay of

82 BP, *Statistical Review of World Energy 2022*, cit.
83 IRENA, *Renewable Capacity Statistics 2022*, cit.
84 Ali Al-Saffar and Brent Wanner, "How Producers in the Middle East and North Africa Can Free Up", cit.
85 Aidan Lewis, "EBRD to Help Fund Transition from Gas to Wind Power in Egypt", in *Reuters*, 11 September 2022, https://www.reuters.com/business/energy/ebrd-help-fund-transition-gas-wind-power-egypt-2022-09-11.

key investment decisions.[86] Due to its historical reliance on imports, Israel looked at its gas resources as a promising asset for increasing energy security and autonomy. Thus, the objective was to use its natural gas to meet the domestic demand and after long negotiations it set limits on how much gas could be sold abroad, earmarking nearly 60 per cent of reserves for domestic use. Moreover, in December 2021, Israel announced its intention to focus on renewables and to halt the search for offshore natural gas fields at least until the end of 2022, excluding the possibility of launching a fourth tender for permits to search for natural gas.[87] Five months later, with the worsening of Europe's energy crisis, the Israeli Energy Minister announced the beginning of the process of launching a fourth exploration for natural gas in its territorial waters.[88] To seize this opportunity, Israel should relax its current limit on gas export (40 per cent of reserves) and benefit from a higher renewables share in power generation (expected to be 30 per cent by 2030) to free up more gas for export and monetise its gas reserves, which range between 850 and 1000 bcm according to different estimates.[89] However, facing another political standoff, in June Prime Minister Naftali Bennett announced the dissolving of the Knesset and called the fifth election in less than four years, most likely due in November 2022. However, this could delay the required reforms to further increase export volumes. Lastly, Israel needs to resolve border disputes with Lebanon,[90] which add political risk, and boundary delineation of the Aphrodite gas field with Cyprus to increase further its production. Recently, the US has reaffirmed its role in the Eastern Mediterranean by mediating Israel and Lebanon's negotiations over maritime demarcation. Nonetheless, some factors, such as the lack of government cohesion and necessary international investment, have slowed Lebanon's efforts to explore its own offshore water.

86 Dario Speranza and Daniela De Lorenzo, "Toward a New Mediterranean Gas Hub?", in Manfred Hafner and Simone Tagliapietra (eds), *The European Gas Markets. Challenges and Opportunities*, Cham, Palgrave Macmillan, 2017, p. 303-313.

87 "Israel to Halt Natural Gas Search, Focus on Renewable Energy: Energy Minister", in *The Jerusalem Post*, 15 December 2021, https://www.jpost.com/breaking-news/israel-to-halt-natural-gas-search-focus-on-renewable-energy-688817.

88 "Global Energy Crisis Leads Israel to Launching Fourth Natural Gas Exploration", in *The Jerusalem Post*, 30 May 2022, https://www.jpost.com/business-and-innovation/energy-and-infrastructure/article-708050.

89 Tom Pepper, "Israel Weighs Gas Export Policy Reforms", in *Energy Intelligence*, 5 July 2022, https://www.energyintel.com/00000181-cda7-d598-a183-fdafbbdb0000.

90 The two countries have overlapping maritime claims, spanning across the Qana prospect and the Karish gas field.

Since there is currently no infrastructure in place to allow for direct Israeli gas supply to Europe, Israel could delivery its gas via Egypt's two LNG plants. Israel has already been exporting gas to Egypt since 2020.[91] Energy companies are considering the expansion of production in key gas fields. Operator Chevron and its Israeli partner Delek[92] could potentially increase production from 12 to 21 bcm in the Leviathan field, while the Energean operator is expected to deliver its first gas by the end of 2022 from the Karish field and potentially develop the closely located Tanin field. If Israel manages to increase its production, it will exceed the current Egyptian LNG capacity hence would have to consider expansion of the existing facilities as well as other potential solutions. Among these, Israel could also export directly to Europe via the 10 bcm/y EastMed pipeline, which could be potentially operative by around 2030. The project faces some challenges, yet it has the merit of allowing Europe to partially avoid future LNG competition with other gas importing regions (e.g., Asia). To overcome uncertain future gas demand and to comply with the European decarbonisation plans, the pipeline would be built hydrogen-ready.

In the East Med area, another country could strengthen energy security and diversification: Cyprus. Although the country is not yet a gas producing country, it has a great potential as it is a key component of the East Med gas saga along with Egypt and Israel. In August 2022, Eni, in partnership with TotalEnergies, announced the discovery of a reservoir of natural gas in Block 6 offshore Cyprus with preliminary estimated reserves of about 70 bcm, with significant additional upside currently under investigation. The discovery paves the way for new ambitions in production and export potential from Cyprus.

91 Following the 2016 agreement for the sale of 45 bcm of gas over a period of 15 years.
92 Now called NewMed.

4. Reconfiguration of European gas flows in Europe and decarbonisation

Russia's war in Ukraine has drastically changed the energy and political paradigm in Europe. The EU decided to respond decisively to the Russian aggression, presenting a plan (REPowerEU) in May 2022 to phase out Russian energy imports by 2027 and accelerate the energy transition.[93] To replace Russian gas, the EU seeks to increase LNG imports (exploiting underutilised import capacity) and, to a lesser extent, non-Russian piped gas. This plan will redraw the map of energy flows, determining future energy flows headed to and within Europe. In doing so, the EU needs to address several issues in the short and medium term regarding its infrastructure and regulatory framework (Section 4.1). Lastly, these transformations need to take into account also long-term objectives such as the decarbonisation of gas and its trade as well as other aspects (Section 4.2).

4.1 New gas flows in the short and medium term: Opportunities and challenges

European countries will experience an overall reconfiguration of gas flows as non-Russian gas is expected to gain more relevance in the European gas supply system. The continent is expected to see a major shift of its energy supplies with higher volumes going eastward and northward compared to the previous and opposite routes. However, such a fundamental overhaul of gas supplies will not be achieved easily. Looking in greater detail, the European gas markets face challenges in terms of both hardware (infrastructure) and software (regulatory framework).

On the hardware side, much of Europe's pipeline network is tailored to transport Russian gas from east to west. The EU has tried to address this issue since the 2009 energy crisis to improve west-to-east gas infrastructure. Nonetheless,

93 European Commission, *REPowerEU Plan* (COM/2022/230), 18 May 2022, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52022DC0230.

infrastructure limitations in the northwest and south remain unresolved. For example, domestic bottlenecks in north–south transmission within France prevent the country from transmitting to most neighbouring gas systems.[94] In addition, operation to reverse flows in pipelines from Germany may take time. Transmission from Greece and Italy into south-eastern Europe is limited in capacity in both cases. North–south bottlenecks in both Germany and Italy could limit sharing gas within these countries but especially with Central and Eastern Europe. Indeed, the Central and Eastern Europe pipeline system is tailored to transport gas from the east to final consumers. Thus, pipeline bottlenecks could prevent adequate supplies to the easternmost parts of the EU in the case of too much gas arriving from the west.[95]

Moreover, the EU seeks to import higher LNG imports to diversify away from Russia, yet it will need to overcome some other infrastructure bottlenecks as LNG capacity is not equally distributed in the continent. The Iberian case is quite illustrative. Spain holds more than a third of EU27 LNG import capacity (around 157 bcm) and it could play the role of European LNG hub. Yet, it is poorly interconnected with France by two gas pipelines with an exchange capacity of around 7 bcm/y. Europe will need to invest in new transmission capacity to solve these bottlenecks in order to receive and move non-Russian molecules in the EU along with regulatory unity. To do so, the European Commission estimates investment to import sufficient LNG and pipeline gas from other suppliers at 10 billion euro by 2030 in the REPowerEU. This figure would be required for a sufficient level of gas infrastructure, including LNG import terminals as well as pipelines to connect underutilised LNG import terminals and the EU network, along with reverse flow capacities.[96]

On the software side (regulatory), countries need to address issues such as regulation on the quality of gas, which could represent further constraints. Gas trading in the EU is based on energy content, but the physical quality of gas varies both between and within countries. For example, Germany and Belgium

94 Gabriel Di Bella et al., "Natural Gas in Europe. The Potential Impact of Disruptions to Supply", in *IMF Working Papers*, No. 2022/145 (July 2022), https://www.imf.org/en/Publications/WP/Issues/2022/07/18/Natural-Gas-in-Europe-The-Potential-Impact-of-Disruptions-to-Supply-520934.

95 Georg Zachmann et al., "Can Europe Survive Painlessly without Russian Gas?", in *Bruegel Blog*, 27 January 2022, https://www.bruegel.org/node/6557.

96 European Commission, *REPowerEU Plan*, cit.

do not accept gas that has been odorised (as is transported in France). Odorising gas is safer for consumers detecting leaks but can introduce impurities. Another issue could be the difference in quality of gas imports, as gas in the northwest European market varies in its nature: gas domestically produced in parts of Germany and the Netherlands is L-gas (low-calorific), whereas gas imports in the rest of Europe are H-gas (high-calorific). This difference means using different infrastructures. European countries should harmonise quality rules and overcome infrastructural and regulatory obstacles to fully redraw energy flows and offset Russian supply disruptions. Harmonisation of rules will be crucial regarding cross-border access to storage and demand reduction plans among EU member states.[97]

Notwithstanding these challenges, Italy is well positioned to potentially benefit from the overall reconfiguration of energy flows to and within Europe, due to several factors. Its geographical position makes the country a potential transit hub and bridge between Mediterranean energy imports and European energy demand. This would position Italy at the top of the supply chain compared to the previous order. Then, increasing imports for itself and Europe could be beneficial for market liquidity in Italian gas prices (PSV), which are traditionally higher compared to other European prices.

4.2 Issues related to the decarbonisation pathways

Moreover, Italy should take advantage of its potential role as a transit country also in a low-carbon future, characterised by higher penetration of decarbonised gases (i.e., hydrogen, biomethane and biogas). The REPowerEU has enhanced European hydrogen and biomethane targets, setting a target of 10 million tonnes (Mt) of domestic renewable hydrogen production and boosting sustainable biomethane production to 35 bcm by 2030. However, Europe will not experience self-sufficiency in hydrogen; thus, the REPowerEU has set also a target of 10 Mt for renewable hydrogen imports by 2030. The EU is considering importing from least-cost producing regions, such as North

97 Joe Miller, David Sheppard and Nathalie Thomas, "Russian Gas Crisis Will Test EU Solidarity, Warns German Utility RWE", in *Financial Times*, 24 June 2022, https://www.ft.com/content/7826bf60-8d33-4c69-9191-e8f1eafd59d8.

Africa, through the support to major hydrogen import corridors. According to the latest IRENA report, of the hydrogen that would be internationally traded by 2050, around 55 per cent would travel by pipeline. This pipeline-enabled trade would be concentrated in Europe (85 per cent).[98]

Connecting Northern African hydrogen supply with high demand regions in Europe, especially in Central Europe, has several merits both politically and economically. Politically, it would provide an alternative income source to hydrocarbon producing countries, contributing to their domestic decarbonisation and forging a new Euro-Mediterranean partnership in line with the Green Deal. Economically, producing and importing green hydrogen from North Africa would mean exploiting fully the cost advantage of solar production and land availability in the Southern Mediterranean. According to Snam, this option could reduce the cost of supply by 10–15 per cent with respect to national production.[99] In May 2022, Sonatrach and Eni signed an MoU to boost the development of gas fields and decarbonisation through green hydrogen.[100]

In this scenario, Italy shows some strengths and weaknesses to emerge as the transit hub for European decarbonised imports. Surely, its vast gas network (32,700 km) and existing interconnections with several foreign networks make Italy a credible candidate to become the bridge between the two Mediterranean shores. The main goal is to repurpose most of the existing infrastructure to foster trade and demand, while creating in parallel new dedicated hydrogen infrastructure. For example, the TransMed pipeline from Algeria would be adapted to fully transport hydrogen, while new hydrogen pipelines would be built at Passo Gries and Tarvisio allowing transit towards Austria and the northwest European industrial clusters.[101] In late 2021, Snam

98 IRENA, *Global Hydrogen Trade to Meet the 1.5°C Climate Goal. Part I: Trade Outlook for 2050 and Way Forward*, Abu Dhabi, IRENA, July 2022, https://www.irena.org/publications/2022/Jul/Global-Hydrogen-Trade-Outlook.

99 Luca Franza, *Clean Molecules across the Mediterranean. The Potential for North African Hydrogen Imports into Italy and the EU*, Rome, IAI, April 2021, https://www.iai.it/en/node/13116.

100 Eni, *New Agreement Reached by Sonatrach and Eni to Accelerate the Development of Gas Projects and Decarbonization via Green Hydrogen*, 26 May 2022, https://www.eni.com/en-IT/media/press-release/2022/05/new-agreement-eni-sonatrach-gas-development-green-hydrogen-draghi-tebboune.html.

101 Marco Giuli, *Italy in the International Hydrogen Economy*, Rome, IAI, February 2022, https://www.iai.it/en/node/14708.

bought from Eni a 49.9 per cent stake in the TransMed pipeline, which could enable potential development initiatives within the hydrogen value chain from North Africa.[102] Potentially, Italy could benefit from the EastMed pipeline in the future as it would be built hydrogen-ready.

To have a full hydrogen-ready infrastructure, sizeable investment is necessary. In a study released in July 2020, the European Hydrogen Backbone estimated the total investments needs (full CAPEX of repurposed and new lines) at 27–64 billion euro by 2040, assuming a mix of 75 per cent converted natural gas pipelines connected by 25 per cent new hydrogen pipeline segments. Still, an existing network is a key advantage, as central estimates on the cost of investment in transmissions locate the cost of repurposing at around one third of the cost of new hydrogen pipelines.[103] The EU envisages total investment needs for key hydrogen infrastructure categories to be in the range of 28–38 billion euro for EU-internal pipelines and 6–11 billion euro for storage.

According to Snam, approximately 70 per cent of its pipes can transport pure hydrogen with no or limited reductions on the maximum operating pressure, whereas around 30 per cent need more significant reductions. In its Strategy Plan 2021–2025,[104] Snam affirms that to create an H2 backbone the cost of repurposing is around 0.6 million euro per km and the cost of new build is around 2 million euro per km. Despite its infrastructural strengths, Italy's limited storage availability remains a barrier to the pursuit of regional hub status.[105] Lastly, a European legislation is required to overcome differences in regulatory and quality standards, otherwise each country would continue to apply its own quality standards and different rules on hydrogen blending levels, risking cross-border flow restrictions and market segmentation.[106]

102 Snam, *Eni and Snam Launch Partnership on Gas Pipelines between Algeria and Italy*, 27 November 2021, https://www.snam.it/en/Media/Press-releases/2021/Eni_Snam_pipelines_Algeria_Italy.html.
103 European Union Agency for the Cooperation of Energy Regulators (ACER), *Transporting Pure Hydrogen by Repurposing Existing Gas Infrastructure: Overview of Existing Studies and Reflections on the Conditions for Repurposing*, 16 July 2021, https://acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Transporting%20Pure%20Hydrogen%20by%20Repurposing%20Existing%20Gas%20Infrastructure_Overview%20of%20studies.pdf.
104 Snam, *Snam 2030 Vision and 2021-2025 Plan*, 29 November 2021, https://www.snam.it/export/sites/snam-rp/repository/file/investor_relations/presentazioni/2021/2021_2025_Strategic_Plan.pdf.
105 Marco Giuli, *Italy in the International Hydrogen Economy*, cit.
106 European Commission, *Proposal for a Directive on Common Rules for the Internal Markets in Renewable and Natural Gases and in Hydrogen* (COM/2021/803) 15 December 2021, https://eur-lex.

Finally, Italy could exploit its CCS potential for decarbonising its industry sector and leading the growth of CCS development in the Euro-Mediterranean area. Italy holds some potential in CCS, especially in the area around Ravenna given the presence of depleted gas fields. Currently, there is a project in this area, which represents the first of its kind in the Mediterranean Sea. Given the evolution of CCS industry in Northern Europe, Italy could replicate some of the lessons learnt and become a leading country, contributing to decarbonisation in the Euro-Mediterranean area amid higher climate targets and high carbon prices, and avoid fragmentation between Northern and Southern Europe pathways.

Conclusion

Italy is one of the largest gas consuming countries in Europe and is characterised by a high import dependency. In 2022, Italy found itself extremely dependent on Russian gas and the Ukrainian route. To reduce its overdependence, Italy has looked into the possibility of importing more gas from Mediterranean countries, such as Algeria, Libya, Egypt and Israel, given vast gas reserves, geographical proximity, existing infrastructures and enduring energy relations. All of these countries present some favourable conditions to help Italy in its diversification strategy. However, today they face different internal challenges, suggested by the fact that existing infrastructures are not being used at their full capacity because of lack of supply for export rather than a lack of export pipeline capacity.[107] At the same time, there have been some positive developments which could overcome these challenges. For example, Algeria is currently working on expanding and launching new projects to sustain gas output. Nonetheless, Italy should enhance cooperation with Southern Mediterranean countries on renewable projects, which could free up further gas volumes and spur energy transitions in the Southern shore countries.

europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0803.

107 Mike Fulwood, Anouk Honoré and Jack Sharples, "REPowerEU and the Short-Term Outlook for the European Gas Market", in *Oxford Energy Comments*, July 2022, https://www.oxfordenergy.org/?p=45059.

Italy could potentially benefit from the reconfiguration of energy flows to and within Europe in the wake of Russia's war in Ukraine. Once all non-Russian options are fully developed, Italy could enhance its role as hub for (Central) European energy security given its strengths such as infrastructure and international connectivity. At the same time, the EU needs to overcome several obstacles regarding both European gas infrastructure and regulatory framework and standards in order to allow the free flow of gas across the continent and offset the negative consequences of supply disruptions from Russia.

Meanwhile, Italy, together with European countries, should work on reconciling its transit role with climate ambitions. Therefore, Italy should also implement measures on future decarbonised gas trade from North African to high demand in Europe's industrial clusters. To do so, Italy needs to allocate sizeable investment to repurpose infrastructure and cooperate on renewable projects in the Southern Mediterranean countries. Nonetheless, the country's limited storage availability remains a barrier to the pursuit of regional hub status. Furthermore, a more coordinated policy and regulatory framework at the European level is mandatory to overcome quality and regulatory standards and prevent market fragmentation.

Natural Gas in Italy: Features and Perspectives in Light of Russia's War in Ukraine

Italy is one of the largest gas consumers in the European Union. Today, natural gas faces uncertainty on both the demand and the supply side. Climate policy, market competition and geopolitical developments have been conducive to some reconsideration about future gas demand. However, it still represents the quickest way to phase out more polluting energy sources and remains the more reliable source in selected sectors, such as "hard-to-abate" sectors, in the medium term. On the supply side, Italy is considering reviving its domestic production and filling gas storage facilities ahead of the winter months. Further, it has attempted relentlessly to secure new imports to diversify away from Russia – especially adding imports from Mediterranean countries. The new energy landscape caused by Russia's war in Ukraine may result in a reconfiguration of gas flows which could position Italy as a transit hub also for decarbonised gases (e.g., hydrogen).

The Istituto Affari Internazionali (IAI) is a private, independent non-profit think tank, founded in 1965 on the initiative of Altiero Spinelli. IAI seeks to promote awareness of international politics and to contribute to the advancement of European integration and multilateral cooperation. Its focus embraces topics of strategic relevance such as European integration, security and defence, international economics and global governance, energy, climate and Italian foreign policy; as well as the dynamics of cooperation and conflict in key geographical regions such as the Mediterranean and Middle East, Asia, Eurasia, Africa and the Americas.

ISBN 978-88-9368-265-7

Istituto Affari Internazionali (IAI)
Via dei Montecatini, 17 - Rome - T. +39 066976831
iai@iai.it - www.iai.it