



TACKLING SECURITY OF SUPPLY CONCERNS IN THE GAS CRISIS

*Empowering Mediterranean regulators for a common
energy future*

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Working Group
(GAS WG)



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ABSTRACT

Following the most recent gas crisis, the Mediterranean Region was subject to some impacts. The concern mostly highlighted during this period is the countries' apprehension of supply disruptions. Citing the utmost priority of such concerns relating to the security of supply to most of the countries in the region, a few actions had to be initiated.

This report provides a comprehensive analysis of the region's dependence on natural gas, the legal framework governing the security of supply obligations and the complications surrounding this vital energy resource. The recent gas crisis has brought to the fore some of the vulnerabilities of the countries in the region, underlining the need for a proactive strategy to address security of supply concerns effectively.

The report explores a range of measures and tools that successfully tackled these concerns, including diversifying gas sources, expanding infrastructure, promoting efficiency and exploring alternative gases and options.

National collaboration between the gas market stakeholders and the government, with the regulatory body being an intermediary party, is essential to formulate and implement a clear and adaptable strategy. However, cross-border collaborations for the security of supply are also of vital significance.

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DISCLAIMER

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ABOUT MEDREG

MEDREG is the association of Mediterranean energy regulators, bringing together 28 members from 23 countries spanning the European Union (EU), the Balkans, and the MENA region.

MEDREG acts as a platform for facilitating information exchange and assisting its members, besides fostering capacity development activities through webinars, training sessions, and workshops. Mediterranean regulators cooperate to improve the harmonisation of regional energy markets and legislations, seeking progressive market integration in the Euro-Mediterranean Basin.

Through constant cooperation and information exchange among members, MEDREG aims to foster consumer rights, energy efficiency, infrastructure investment and development by employing safe, secure, cost-effective, and environmentally sustainable energy systems.

The MEDREG Secretariat is located in Milan, Italy.

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TABLE OF CONTENTS

INTRODUCTION	6
1.1. Report Objective	7
1.2. Structure and Methodology	7
1.3. Limitations	8
STATE OF PLAY	9
2.1. Overview of the Mediterranean Gas Market	10
2.1.1. Usage of Natural Gas	10
2.1.2. Natural Gas Imports	12
2.2. Security of Supply	13
2.2.1. Legal Basis of Security of Supply Obligations	13
2.2.2. Regulator's Role	15
2.2.3. Security of Supply Concerns in the Mediterranean Region	17
2.3. The Gas Crisis	20
2.3.1. Impact on Countries	20
2.3.2. Priorities during the Crisis	23
MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS	25
3.1. Diversifying Sources	26
3.2. Infrastructure	28
3.2.1. Storage	29
3.2.2. Pipelines and Interconnections	31
3.3. Enhancements to Increase Efficiency	34
3.4. Alternative Options	35
3.5. The Way Forward	37
CONCLUSIONS	40
ANNEX	43
Annex 1: LNG Imports and FSRU Data	44
Annex 2: Miscellaneous Data	56

1.1. Report Objective

The global energy landscape has undergone significant transformation in recent years, driven by factors such as fluctuating demand patterns, geopolitical tensions and shifts towards cleaner and more sustainable energy sources. During these changes, the world faced a pressing challenge in the form of a gas crisis, characterised by a heavy price surge and fear of disruptions to the supply and availability of natural gas.

This report aims to analyse the strategies used to tackle supply security concerns during the gas crisis. By examining the consequences and exploring potential solutions, the report seeks to provide policymakers and industry stakeholders with valuable insights into mitigating the impact of the current gas crisis and any future crises and ensure a more resilient and secure energy future.

1.2. Structure and Methodology

The report sets the stage with an overview of the gas market in the Mediterranean countries, security of supply concerns, the entities responsible for framing strategies, the gas crisis and its impact on countries, as well as the priorities established by the various countries.

The following chapter investigates the immediate measures to manage crises to ensure national security of supply, highlighting the need to diversify sources while simultaneously ensuring that they remain cost-effective, the necessity to bolster storage capacities and state-of-the-art techniques of filling, the role LNG terminals and FSRUs serve compared to pipelines, the effect of efficient flows and other indices if present. Further, this chapter explores how governments and energy authorities can effectively navigate the current challenges and ensure an uninterrupted supply of gas to critical sectors and consumers.

The report is based on a comprehensive analysis compiled from the replies of the MEDREG members to a questionnaire prepared by the GAS Working Group chairs in collaboration with the MEDREG Secretariat.

The questionnaire addressed to the WG members and chairs contained the following 3 parts to address the report objectives:

1. Overview
2. Measures and Tools to Tackle Security of Supply Concerns
3. The Way Forward



Figure 1 - Countries replied to the questionnaire and assessed in the study (Map created using mapcharts.net)

Notably, under the applicable legislation in Bosnia and Herzegovina (BIH), the State Electricity Regulatory Commission (SERC) has **no jurisdiction** over gas-related issues.

Further, some countries do not have a functional gas market and their responses were provided to show their future position regarding the matter.

1.3. Limitations

While every effort has been made to ensure the accuracy and comprehensiveness of the information presented in this report, it is important to acknowledge that the issue is a dynamic and evolving one. Nevertheless, the report would offer the countries' status quo in terms of the framework for understanding and tackling the security of supply concerns during the current gas crisis.

By analysing the causes, impacts and potential solutions to the gas crisis, this report contributes to the ongoing dialogue on the security of energy supply and fosters the development of effective strategies to address the related challenges.

2.1. Overview of the Mediterranean Gas Market

The Mediterranean region has long been dependent on fossil fuels to meet its energy needs, with natural gas playing a pivotal role in its energy landscape. This dependence on natural gas can be attributed to several factors, including the region's geographical proximity to major gas-producing countries, economic growth and the need for a stable energy source. This sub-chapter provides an overview of the Mediterranean region's gas markets, in terms of their applications per country, their distribution across various sectors and the implications for the region's energy security and sustainability. Further, it sheds light on the importing countries and their quantum of imports.

2.1.1. Usage of Natural Gas

Natural gas is used across various sectors in the Mediterranean countries, each with its own set of priorities and challenges. The key sectors include the following:

Electricity Generation: Natural gas has become the predominant fuel for electricity generation in many Mediterranean countries due to its relative cleanliness vis-a-vis other fossil fuels and the flexibility it offers for peak-load generation.

Heating: In the residential and commercial sectors, natural gas is commonly used for space heating and hot water production.

Industrial: The industrial sector is a significant consumer of natural gas for processes such as steam generation, chemical manufacturing and as a feedstock for various industries.

Household: Natural gas is also widely used in Mediterranean households for cooking and heating, contributing to the overall energy consumption in the residential sector.

Transport: While the use of natural gas in the transport sector is relatively limited compared to other sectors, it does exist in some countries.

Table 1 below provides an overview of natural gas usage across different sectors in Mediterranean countries. It highlights the varying levels of utilisation of natural gas in electricity generation, heating, industrial processes, household applications and its emerging use in the transport sector.

Notably, Albania, Cyprus and Lebanon do not have a fully functional gas market.

Table 1 - Overview of Sector-wise Natural Gas Usage in the Mediterranean Region

	Electricity Generation	Heating	Industrial	Household	Transport
Albania	For Future				
Algeria	X	X	X	X	X*
Bosnia and Herzegovina		X	X	X	X
Croatia	X	X	X	X	X
Cyprus	For Future. Short-term electricity for conventional units/long-term Industrial				
Egypt	X	X	X	X	X
France	X	X	X	X	X
Greece	X	X	X	X	X
Israel	X	X	X	X	X
Italy	X	X	X	X	X
Jordan	X		X	X*	
Lebanon	X				
Malta	X				
Portugal	X	X	X	X	X
Spain	X	X	X	X	X
Türkiye	X	X	X	X	X

The table reveals that most of the countries use natural gas in all indicated sectors within their energy mix. The region's dependence on natural gas has both advantages and challenges. On the one hand, natural gas is a cleaner-burning fossil fuel than coal and oil, which can contribute to reduced greenhouse gas emissions when used efficiently. On the other, this dependence makes the region vulnerable to fluctuations in global gas prices and geopolitical tensions affecting gas supply routes. This last provision does not apply to all countries, notably Algeria, which is a gas producer and exporter.

Some specifics regarding the table above are that Algeria uses some natural gas in the transport section, as well as in CNG, while Jordan intends to use natural gas for household purposes in the future.

The use of natural gas in the transport sector is limited.

Further, as the world transitions towards more sustainable energy sources, there is growing pressure on Mediterranean countries to reduce their reliance on fossil fuels and increase the share of renewable energy in their energy mix.

Quick Look



BIH Case Study

The gas market in BIH is relatively small and follows a traditional, integrated model with state-owned companies involved in supply activities. Notably, there is no overarching legislative framework at the state level; laws and regulations primarily exist at the entity level. The Republika Srpska (RS) has the "Law on Gas" in force, allowing the Regulatory Commission for Electricity of Republika Srpska (REERS) to define eligible customer thresholds. Legal unbundling is applied between transmission and distribution in the Federation of BIH (FBiH) but not between these entities and supply activities. Tariff methodologies have been established but not fully implemented. A draft gas law has faced challenges in achieving consensus between state and entity levels, resulting in regulation remaining the responsibility of the Ministry of Foreign Trade and Economic Relations of BIH. BIH lags in compliance with the Acquis Communautaire, lacks a third-party access provision, and faces underutilised import capacity and challenges in price regulation.

2.1.2. Natural Gas Imports

The Mediterranean region's reliance on natural gas as a primary energy source leads to significant levels of imports. While some countries in the region have domestic natural gas production, it falls short of meeting their growing demand. Consequently, these nations have become dependent on gas imports to bridge the gap.

FIGURE 2 below provides an overview of the percentage of natural gas demand met through imports in the Mediterranean countries. It illustrates the extent to which these nations rely on imported natural gas to fulfil their energy needs.

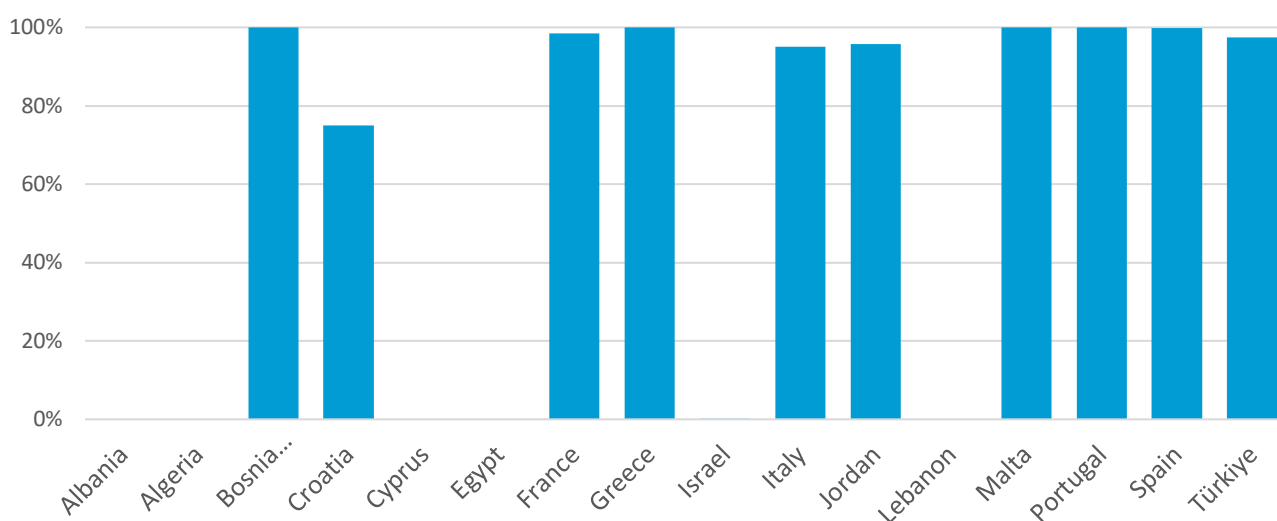


Figure 2 - Percentage of Natural Gas Demand Met through Imports

The figure shows that most of the Mediterranean Region countries are net importers of natural gas, whose import levels tend to approximately exceed 90%, except for Croatia.

Israel has almost reached self-sufficiency; however, it is considered a net-exporting country. Among the other net exporting countries are Algeria, which is the largest natural gas exporter by volume in the region, and Egypt, which seeks to be a gas hub soon.

Albania, Cyprus and Lebanon do not have a natural gas market yet and hence do not rely on imports to satisfy their needs.

2.2. Security of Supply

2.2.1. Legal Basis of Security of Supply Obligations

Security of Supply obligations, often defined by laws, first legislations or regulatory decisions, establish the legal framework through which countries in the region safeguard their energy sources. In this sub-chapter, we explore the legal basis for the security of supply obligations in selected Mediterranean countries, shedding light on the diversity of approaches and mechanisms adopted to ensure energy security.

Importantly, regulatory decisions mean that the National Regulatory Authority (NRA) plays a direct role in setting the obligations, beyond the mere technical execution of decisions taken by other entities (e.g., government, Ministry, etc.).

Table 2 below illustrates the diversity of legal instruments governing the security of source obligations in the Mediterranean region, summarising what dictates the same in each country.

Table 2 - Legal Basis of Security of Supply Obligations-Country-wise

	Laws	Primary Legislation	Regulatory Decisions	Others
Albania	X	X	X	
Algeria	X			
BIH				X
Croatia	X	X	X	
Cyprus	X	X	X	
Egypt	X		X	X
France	X	X		
Greece	X	X	X	
Israel	X	X	X	
Italy	X	X		
Jordan	X		X	
Lebanon	X			X
Malta	X			
Portugal	X	X		
Spain	X	X	X	
Türkiye	X		X	

The term “laws” encompasses a broad category of legal rules and regulations within a legal system, including secondary legislation, bylaws, common law and establishing various legal principles. Laws can also cover how to deal with disputes.

“Primary legislation” represents the highest form of legal authority in a legal system and is established by a legislative body like a parliament or congress. It serves as the foundational framework, addressing fundamental legal principles, rights and responsibilities. In a way, it can be considered the corner stone of the laws.

Notably, countries in the EU also follow the EU regulations such as (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010.

Egypt and **Lebanon** have particularities; the gas sector in Egypt is governed by the Ministry of Petroleum Rules, while in Lebanon, gas-related decrees play a role in governing the sector. Significantly, some countries consider ministerial decrees as a part of the law.

2.2.2. Regulator's Role

While regulatory bodies are tasked with various responsibilities related to the security of supply, their levels of involvement and influence vary significantly. Even though some countries have regulatory decisions that provide a legal basis for the security of supply obligations, the regulatory body might not have a binding opinion on the matter. The following paragraphs indicate the roles the NRAs of the Mediterranean Region play concerning the security of supply.

The Energy Regulatory Authority (ERE) in **Albania** plays a pivotal role in the energy sector. It is responsible for adopting and issuing rules and regulations for compliance with the Law on Natural Gas Sector of 2015. Further, the ERE issues licenses for entities involved in natural gas activities and establishes tariffs and prices as per the provisions of the said law. The ERE is also actively engaged in monitoring, controlling, and enforcing compliance with legal requirements and licenses, with a focus on ensuring consumer protection regarding tariffs. While the regulator does not take the lead in defining energy security strategies, it actively contributes to the implementation of relevant decisions and their technical execution. Additionally, ERE assumes the responsibility for monitoring the security of supply and participates in collaborative working groups with the Ministry of Energy and the Ministry of Economy, particularly within the Demand Management Working Group.

In **Algeria**, the regulator, the Electricity and Gas Regulation Commission (CREG), plays a significant role in ensuring energy security. It is legally mandated to forecast gas demand for the national market over a ten-year horizon, which is annually updated and presented to the Minister of Energy and Mining for approval. This forecast serves as a critical reference point for the national oil and gas company to plan and develop the necessary production and transportation facilities to meet both national and international gas market demands. Additionally, CREG reviews and approves the operating rules proposed by the transmission system operator (TSO), including the crucial backup plan designed to ensure gas supply continuity during unexpected events or emergencies. This plan encompasses strategies for managing and restoring the transmission system, coordinating with other operators and safeguarding gas supply reliability. CREG's validation of the backup plan ensures compliance with regulatory requirements, promotes system resilience, and protects consumer interests.

BIH have multiple regulatory commissions overseeing the energy sector, with varying scopes of authority. While three regulatory bodies handle electricity-related matters, the Regulatory Commission for Energy in Republika Srpska exclusively oversees natural gas within its jurisdiction. The Federation of BIH has yet to establish a dedicated regulatory body for natural gas, with the Federal Ministry of Energy, Mining and

Industry temporarily performing this role. In Republika Srpska, the Gas Law designates the Regulatory Commission for Energy as the entity responsible for regulating natural gas activities. However, the Federation of BiH is in the process of establishing a regulatory agency. During this transitional phase, the Federal Ministry of Energy, Mining and Industry carries out regulatory functions in the natural gas sector.

In **Croatia**, the National Regulatory Authority does not have direct authority over the security of supply strategy. Instead, the NRA focuses on approving the Ten-Year Network Development Plan (TYNDP) proposed by the transmission system operator (TSO).

The Cyprus Energy Regulatory Authority (CERA) operates under a legal framework outlined in the Laws Regulating the Natural Gas Market of 2004-2022. CERA has several responsibilities, including ensuring the safety, continuity, quality and efficiency of natural gas supply. In unforeseen crises or threats to safety or network integrity, CERA formulates and publishes necessary measures. CERA actively promotes regional cooperation among system operators to create a competitive internal market and ensure the security of supply. Additionally, CERA acts as the Competent Authority for implementing measures defined in Regulation (EU) 994/2010, guaranteeing gas supply security. The Minister may issue instructions or regulations, including those related to the security of supply. CERA also engages in long-term planning for the security of supply, energy efficiency, demand management and renewable energy targets. It can impose obligations on gas suppliers and is mandated to establish a Security of Supply Report within 24 months after natural gas arrival in the country, encompassing preventive and emergency plans to ensure gas supply security.

GASREG (Gas Regulatory Authority) in **Egypt** is responsible for implementing Ministry of Petroleum and Mineral Resources policies through its regulations and procedures, which involve managing all market activities and implementing tools and techniques for ensuring the security of supply.

In **France**, the Commission de régulation de l'énergie (CRE) does not play a primary role in defining the security of supply strategies but is involved in their implementation. CRE focuses on regulating storage facilities to ensure they are adequately filled while maintaining cost transparency. The regulation of the operator's income also aims to ensure that end consumers pay the correct price for storage to guarantee supply security. CRE stipulates storage tariff terms and conditions to maximise capacity subscriptions to ensure supply security. Additionally, CRE assisted the transmission system operator (TSO) in the process of flow reversal, necessitated during the crisis, to be able to export gas in solidarity with neighbouring countries (Germany in particular), by providing support on tariff-related matters. CRE also approves exemption requests for floating LNG terminals, ensuring compliance with access and tariff regulations. Generally, CRE ensures the transparency and effectiveness of new LNG facilities and assesses the economic viability of infrastructure projects. It also offers opinions on interruptibility orders and actively participates in inter-ministerial working groups related to energy demand management and rationing.

In **Greece**, the regulatory authority deals with various aspects of security of supply. This includes formulating a long-term strategy for storage, formulating long-term forecasts to evaluate future exports and preserve the local market and implementing regulations to ensure the stability of the gas system.

In **Israel**, the regulatory authority focuses on several aspects of supply security, including creating a long-term storage strategy, making forecasts to manage exports and protect the local market and implementing regulations to ensure system stability.

In **Italy**, the regulatory authority's role in supply security is defined by European and national laws. Its responsibilities include overseeing storage filling rules, ensuring the transparency and effectiveness of new LNG facilities, and assessing the economic viability of infrastructure projects. The authority also emphasises international cooperation with regulators from non-EU countries to facilitate energy transition and enhance the EU's security of supply.

Jordan's regulatory authority is involved in establishing storage capacities and developing relevant legislation and regulations to support energy security. Jordan's Ministry of Energy and Mineral Resources (MEMR) monitors the entire natural gas supply chain, including production, importation, storage, transmission and distribution, to assess adequacy and reliability. MEMR also promotes investment in gas infrastructure to enhance supply security.

In **Lebanon**, the institutional organisation of the petroleum sector involves multiple levels of governance. The Parliament supervises the Council of Ministers and the Minister of Energy and Water, whose powers and responsibilities are outlined in the Offshore Petroleum Resources Law (OPRL). The Lebanese Petroleum Administration (LPA) operates under the Minister of Energy and Water, managing and supervising the petroleum sector while submitting recommendations to the Minister. Cooperation and coordination among relevant ministries are crucial for implementing petroleum activities, which require licenses and permits obtained through the Minister of Energy and Water.

Malta's regulator plays a role in collecting information, drafting monthly gas supply reports, and providing advice for the assessment of gas supply security. This assistance supports the Ministry responsible for Energy in ensuring the reliability of gas supply.

In **Portugal**, the regulator does not possess explicit responsibilities in the security of supply strategy. However, it issues non-binding opinions on relevant documents and determines infrastructure operators' allowed revenues and corresponding network/access tariffs based on approved investments.

Spain's regulator issues non-binding opinions on government regulations related to supply security. It also designs certain aspects of secondary regulation, such as rules for third-party access (TPA), capacity mechanisms (CMPs) and balancing rules.

Türkiye's regulator establishes obligations for import license holders, including requirements related to gas storage, through Board Decisions. These obligations contribute to ensuring supply security.

2.2.3. Security of Supply Concerns in the Mediterranean Region

Countries heavily dependent on gas imports can be vulnerable to supply disruptions and price volatility.

Concerning supply security, the Mediterranean region faces challenges that can be categorised into three primary sources of concern: infrastructure limitations, price volatility and dependence on a single supplier.

Each country in the region has a combination of these concerns, and the specific factors contributing to their energy security vulnerabilities can vary significantly.

Infrastructure challenges could pose a threat. Possible imitations include inadequate transport and distribution networks, ageing infrastructure and insufficient storage capacities.

Price volatility is the most common source of security of supply concerns in the region. Global factors like geopolitical tensions, supply- demand imbalances, and energy transition efforts inherently affect the energy market, leading to fluctuations, such as those witnessed from the end of 2021 through 2022 (SEE PRICE SURGE LAST YEAR).

Dependence on a few suppliers has also been identified as a critical security of supply concern. Relying heavily on a single supplier for energy resources can leave a country vulnerable to supply disruptions, political pressures, and pricing manipulations.

Table 3 below illustrates the sources of security of supply concerns country-wise in the Mediterranean region. It provides a comprehensive overview of the primary challenges each country faces concerning energy security, including infrastructure limitations, price volatility and dependence on a single supplier.

Table 3 - Source of Security of Supply Concerns Country-wise

	Infrastructure Challenges	Price Volatility	Dependence on A Few Suppliers	Others
Albania				X
Algeria		No security of supply concerns		
BIH			X	
Croatia		X		
Cyprus				X
Egypt		X	X	X
France		X		
Greece		X		
Israel	X			
Italy	X	X		
Jordan	X		X	
Lebanon	X			
Malta	X			
Portugal	X			
Spain		X		
Türkiye		X		

Notably, **Albania** cannot yet identify its concerns, given that feasibility studies to set up the gas market are in progress, while, **Algeria**, being the biggest exporter in the region, has no security of supply concerns.

Some countries in the region have identified some unique concerns.

Cyprus, for instance, has no natural gas market. The primary challenges stem from the arrival of natural gas at an affordable price, primarily due to two factors: a) the absence of necessary infrastructure, such as an import facility, interconnector, and gas grid and b) limited demand driven by the country's relatively small

size. Connecting Cyprus with the broader European gas market network poses another significant challenge for the country.

Egypt is currently a net gas exporter via its LNG liquefaction facilities, having achieved self-sufficiency in gas production in 2018. Further, gas continues to drive its business goals by its availability from its extensive onshore and offshore exploration and production operations. Egypt has also offered concession agreement terms that have attracted major gas exploration companies. All endeavours and undertakings ensure a secure and ample supply of produced gas, enabling Egypt to meet its domestic and international obligations and commitments.

Quick Look



Algerian Case Study: Exports

Algeria took the lead during the energy crisis in listening to its customers, and latter increased its exports of natural gas by nearly 16 bcm of gas between 2020 and 2021 and 11 bcm between 2020 and 2022 **(+28%)**, to supply its customers the volumes they had sought. For example, Algerian gas exports to Italy reached a record level during the last months of 2022, rising by **29%** from 75 million m³/day to 97 million m³/day.

The main provisions introduced by the new law on hydrocarbons have enabled the signing of several partnership contracts with foreign partners (notably European) in the field of hydrocarbon development, which will enable an increase in national production of oil and natural gas in the short term for satisfying national and international demand.

2.3. The Gas Crisis

2.3.1. Impact on Countries

Given the region's acknowledged dependence on natural gas, the gas crisis, characterised by supply disruptions, price volatility and shifting market dynamics, has had far-reaching implications for nations across the Mediterranean. This sub-chapter delves into how individual countries were impacted by the crisis. Each nation's experience reflects its unique energy landscape, policy responses and vulnerabilities.

Notably, most of the countries did not suffer from supply disruptions, even though Russian natural gas imports diminished. The effect was mainly from a financial perspective. However, more country-wise details are furnished below.

Given **Albania's** efforts to have a functional gas market in the future, the country's security of supply concerns originated from alternate angles. In a way, the country was affected by the gas crisis but indirectly. In 2022, Albania experienced a significant impact on its electricity availability due to a severe shortage of hydropower generation. The country saw a decrease of 5.8% in available electricity, with net domestic production dropping by 21.9% to 7,003 GWh from the previous year's 8,963 GWh. Public hydropower plants

accounted for 55.1% of this production, while private ones and concessionaires contributed 44.2%. Other producers, including photovoltaics, comprised 0.7% of the net domestic electricity production.

In 2022, Albania imported an additional 35.1% of electricity (3,044 GWh) and exported 24.2% less (2,123 GWh), resulting in a negative exchange of -921 GWh, compared to a positive 548 GWh in 2021. The energy market was affected by the neighbouring countries' gas crises. To address this, the ERE introduced new tariffs on April 13, 2022, including a transmission tariff of 0.85 All/kWh until December 31, 2024, and distribution tariffs (up to 6.42 All/kWh for 0.4 kV) until December 31, 2023, to mitigate the impact of the crisis.

BIH faced a notable gas supply disruption in January 2009, primarily due to its heavy reliance on natural gas imports from Russia. This supply interruption occurred amid the Russia-Ukraine dispute, resulting in a reduced gas supply initially and a complete lack of supply for a period.

Responding to the crisis, BH-Gas secured alternative natural gas supplies from Germany and Hungary, with varying durations of seven to fourteen days. While some industrial customers and heat plants had the flexibility to switch to heating oil (mazut) due to its availability and price advantages, approximately 42,000 households, mainly urban, had to rely solely on electricity for heating. Despite the increased electricity consumption, the country did not experience significant disruptions in electricity supply during this period.

The flexibility of natural gas transport companies played a crucial role in establishing alternative supply routes. To enhance future preparedness, efforts are required to streamline collaboration between transport companies and suppliers to shorten response times in the event of another gas supply disruption.

Croatia's domestic energy market faced significant disruptions due to the soaring gas prices on European markets. These high prices affected the end prices of gas for both households and non-households, impacting the market participants' willingness to use booked storage capacities before the heating season. Consequently, some smaller gas suppliers in Croatia went bankrupt, necessitating the activation of the supplier-of-last-resort for connected gas users.

To ensure a sufficient gas supply as per EU regulations, the Croatian government adopted measures in June 2022, tasking HEP plc. with securing gas quantities for storage. Users of the gas storage system were required to fill their booked capacities, leading to increased imports and storage. Additionally, the government implemented a package of measures, including subsidising gas prices and reducing VAT on gas, to mitigate the impact of rising energy prices.

These actions resulted in reduced gas consumption in 2022 compared to 2021, along with increased LNG imports to diversify supply routes. Croatia's experience emphasised the importance of adaptability and government intervention during gas crises.

Cyprus, experiencing economic recovery and increased energy demand post-pandemic, faced indirect effects of the global gas crisis. The country lacked a natural gas market but witnessed rising prices of alternative fuels, such as heavy fuel oil and diesel, used in electricity production. Cyprus heavily relies on oil for electricity generation (85%), and the surge in fuel prices and emission allowances led to a substantial increase in electricity costs, affecting various sectors of the economy.

France, in 2022, witnessed a gradual reduction in Russian gas deliveries to Europe due to the Ukraine conflict. Despite being less affected than its Eastern European neighbours, France implemented measures to ensure gas supply continuity for the winter. Strategies included filling storage facilities, diversifying supplies with LNG, and promoting energy sobriety through initiatives like the "Ecogaz" programme.

The gas crisis reshaped European market dynamics, with reversed flow directions due to decreased Russian gas imports and increased Norwegian gas imports. France substantially raised its LNG imports, becoming Europe's top destination for US LNG exports. Gross gas consumption decreased by 9% compared to the previous year and by 11.2% in the industry (mainly due to production cuts).

However, while France experienced gas price volatility and market shifts, it managed to mitigate disruptions and secure supply continuity.

Greece did not face gas scarcity issues during the crisis, as Russian gas flows were undisturbed, and increased LNG deliveries covered domestic and export demands. However, the country encountered challenges related to soaring gas prices. Industries shifted to alternative fuels, leading to a drastic reduction in industrial gas consumption. Electricity generation, predominantly reliant on gas, saw significant cost increases, impacting the wider Greek economy.

Israel, independent in its gas consumption, experienced increased export demand during the global gas crisis. Export tariffs remained higher than domestic prices, and spot prices rose. However, concerns lingered about potential future domestic price increases due to heightened global competition for gas supply.

Italy grappled with the impact of the gas crisis on energy prices and supply security. Although gas supply from Russia declined significantly, Italy successfully managed to avoid disruptions through legislative actions at both the EU and national levels. Measures included incentivising gas storage fillings and ramping up LNG imports. Further, domestic consumers were encouraged to reduce energy consumption, resulting in a 10% drop vis-a-vis the previous year's gas consumption.

The crisis prompted Italy to redesign its gas supply routes, with a shift away from the north-western entry point and a notable increase in imports from the southern points and LNG terminals. This period also saw an acceleration in **Italy's** transition towards renewable energy sources and diversified gas supply.

Jordan experienced several potential consequences of a gas crisis, including significant increases in energy prices, economic slowdown due to reduced production, energy shortages and concerns regarding energy security. Additionally, converting to alternative fuels for electricity production could result in losses.

Lebanon, although having the capability to operate some power plants on natural gas, has not imported gas since 2010. Therefore, the global gas crisis did not directly impact Lebanon. However, it highlighted potential future challenges in securing gas imports due to increased competition among countries.

Malta did not experience disruptions during the gas crisis, as it did not purchase natural gas from Russia. However, the indirect effect of the crisis was increased energy supply costs from abroad.

Portugal did not experience any disruptions during the gas crisis. While price volatility occurred, it was managed through legal and regulatory measures such as extraordinary support (Decree-Law 30-B/2022,

April 18 and Decree Law 6/2023, January 27) for heavy industrial consumers (annual consumption higher than 10 000 m³) according to which consumers may be given a subsidy of up to half a million euros to face the rising costs of gas during 2023.

Spain did not face gas disruptions but encountered price-related challenges, including high prices and volatility. Flow patterns in interconnections with France changed direction and LNG imports increased to compensate for the closure of one of the two pipelines connecting Spain and Algeria (the main Spanish supplier at that moment) and to contribute to securing gas supply in Central Europe after the reduction in Russian gas imports. Consequently, the utilisation of LNG terminals significantly increased.

Türkiye, heavily reliant on natural gas imports, experienced indirect effects of the gas supply crisis, primarily driven by increased gas prices. While the country possesses a strong physical infrastructure and diversified gas import sources, high costs affected various sectors, contributing to inflationary pressures. However, Türkiye managed to secure gas supply without disruptions.

However, the story changes for countries that are net natural gas exporters, with countries like Algeria and Egypt not suffering from the gas crisis, not even from a financial perspective in terms of energy supply prices.

Indeed, **Algeria**, as the region's biggest natural gas exporter, remained largely unaffected by the global gas crisis. The country did not experience disruptions in natural gas supply during this period.

Egypt remained secure during the global gas crisis due to its self-sufficiency in domestic gas production. Instead of facing shortages, Egypt capitalised on the crisis by increasing its LNG exports worldwide, bolstering its foreign currency revenues. Even though energy supply costs remained unaffected, the crisis indirectly affected Egypt by disrupting international supply chains for commodities reliant on natural gas, leading to shortages and higher prices for some imported goods.

2.3.2. Priorities during the Crisis

During this study, a thorough assessment was made of the priorities established by countries of the region facing a critical gas crisis. The primary objective was to gauge how countries in the region ranked their key concerns considering the crisis, with specific reference to three crucial dimensions: Energy Affordability, Energy Security and Climate Concerns.

Energy Security emerged as the predominant concern for most countries in the region. This prioritisation underscores the profound significance of securing a reliable and stable energy supply to meet the growing demands of their economies, industries and households. The emphasis on Energy Security highlights the acute awareness of the vulnerabilities associated with external energy dependencies and geopolitical complexities that can impact energy access.

Conversely, while Energy Affordability remains a relevant issue for many Mediterranean nations, it did not take precedence over Energy Security. This suggests that, despite concerns about energy costs and accessibility, the immediate imperative for these countries was to safeguard their energy supply chains. This

prioritisation underscores the realisation that a secure energy supply is an essential foundation upon which affordability can be built in the long term.

Another interesting finding is the unanimous placement of Climate Concerns as the least important priority across all Mediterranean countries. Even though climate change remains a challenge, the region's focus during the gas crisis reflects a near-term need for pragmatic solutions to energy challenges.

More can be seen in Figure 3 below, with 12 of the 15 countries opining that energy security was the most important item.

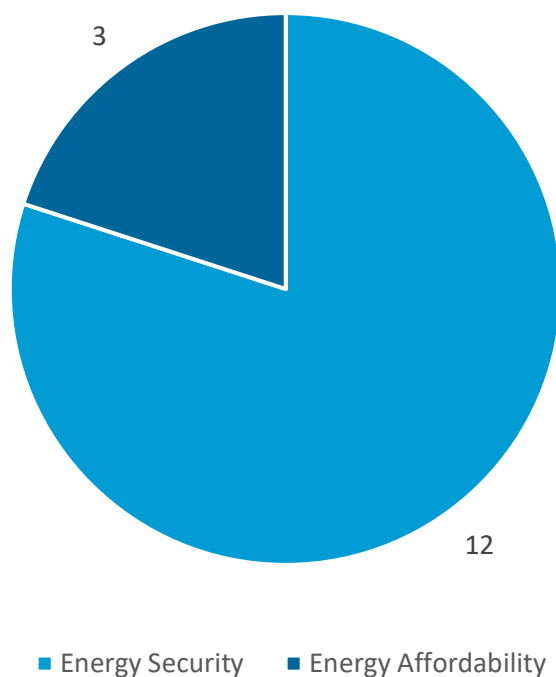


Figure 3 - Priority during the Gas Crisis (Security vs Affordability)

Remarkably, this also suggests a correlation between the priorities set by Mediterranean countries and their ability to effectively manage the impacts of the gas crisis. By aligning their actions with their identified priorities, these nations seem to have navigated the challenges more adeptly.

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

In an era of increasing energy demands, geopolitical uncertainties and environmental concerns, ensuring a secure and reliable energy supply has become paramount for all countries. The ability to meet the energy needs of industries, businesses and households is crucial for economic stability. As such, exploring and implementing effective measures and tools to enhance the security of energy supply is of utmost importance.

This chapter delves into various strategies and mechanisms that can be employed to mitigate the risks associated with energy supply disruptions. It provides insights into key subchapters that explore different facets of energy security, including diversifying sources, storage infrastructure, the role of liquefied natural gas (LNG) and pipelines, alternative options, energy efficiency and other relevant indices.

This chapter seeks to equip policymakers, energy planners and stakeholders with a comprehensive understanding of the measures and tools available to enhance the energy supply security. It emphasises the importance of adopting a multi-faceted approach that encompasses source diversification, robust storage infrastructure, efficient transportation systems, alternative options, energy efficiency measures and relevant indices. Together, these measures can create a resilient and sustainable energy landscape capable of withstanding disruptions and meeting the energy needs of societies securely and reliably.

3.1. Diversifying Sources

Diversifying energy sources is a critical component of bolstering energy security. This subchapter examines the benefits and challenges associated with the diversification of sources of gas supply, besides briefly analysing the use of other sources of energy for supply security. It explores the importance of promoting a mix of energy sources to enhance resilience and adaptability in the face of supply disruptions.

This chapter delves into the concerted efforts made by Mediterranean nations to bolster their energy security by diversifying their sources of energy supply. We examine the strategies, initiatives and policies adopted by these countries to reduce their exposure to energy supply disruptions and enhance their resilience in the face of evolving energy landscapes. The following categories offer a structured lens through which we explore their distinct approaches to source diversification.

Albania has historically relied on its abundant hydropower resources, which account for a significant portion of its energy production potential. With a hydrographic distribution exceeding its territorial area, the country has the capacity to generate substantial hydropower, estimated at 16 to 18 TWh. However, only a third of it has been harnessed to date. The country's energy system has been predominantly hydro-based for over two decades, following the discontinuation of the Fier Thermal Power Plant. This heavy reliance on hydropower has made Albania's energy production sector vulnerable, unable to meet the increasing demand, and susceptible to energy crises. Further, the energy sector faces numerous technical and non-technical challenges, including network losses and a lack of regulatory control over contract negotiations, which further impact its supply security.

Algeria, a significant natural gas producer, is taking proactive steps to diversify its energy sources. Recognising the importance of reducing its dependence on natural gas for national consumption, Algeria has initiated plans to integrate renewable energy sources into its electricity generation mix. These efforts

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

reflect a broader commitment to enhance energy security by expanding the range of available energy sources.

BIH is actively working on improving its gas infrastructure to enhance its energy supply security. The country has embarked on several initiatives for constructing new natural gas transport infrastructure and expanding distribution networks. Notably, the Council of Ministers recently approved crucial decisions regarding the Southern and Eastern gas interconnections. These decisions involve negotiations for agreements with neighbouring countries, such as Croatia and Serbia, to construct new gas pipelines, thus diversifying gas supply routes and bolstering energy security.

Croatia has taken strategic measures to secure its gas supply and ensure the stability of its transmission system. In 2022, Croatia had five distinct entry sources to its transmission system, meeting the N-1 infrastructure standard. To fortify its gas supply, the technical capacity of the LNG terminal was increased in April 2022, ensuring a more reliable source of gas for Croatia and neighbouring countries.

Cyprus is actively pursuing diversification of its gas supply sources, to enhance energy security. The "CyprusGas2EU" project involves the import of LNG through a Floating Storage Regasification Unit (FSRU), aimed at establishing a more varied and secure source of gas supply. Additionally, Cyprus is part of the "EastMed Pipeline" project, a significant regional effort to transport gas reserves from Cyprus and Israel to the European market, fostering connections between European and regional gas networks.

Egypt is diligently expanding its gas supply to meet local demand and export obligations. The country's efforts encompass upstream projects in gas exploration and production, including offshore Mediterranean fields and the west desert. Downstream projects focus on processing, transmission and distribution to ensure a stable supply to both domestic and international markets.

France has historically emphasised the importance of diversifying its gas supply portfolio. The country has taken steps to increase import capacity, enabling a broader range of supply sources. French authorities have encouraged the expansion of LNG terminals and facilitated agreements with gas-producing nations, such as Algeria, Northern Europe, and the USA, to enhance gas supplies via pipelines and LNG terminals. Additionally, France develops scenarios with increased production of biogas (which, in 2022, met 1.5% of domestic gas demand, which continues to date) to reduce gas imports.

Greece has initiated significant efforts to diversify its energy sources, aligning with its long-term strategy. The country now benefits from multiple gas sources, including gas from Russia, Türkiye, Azeri gas through the Trans-Adriatic Pipeline (TAP), and LNG from various origins delivered to the Revithoussa Terminal. Greece is also set to commence operations of an FSRU in 2023, with substantial long-term contracts already secured. These efforts have not only diversified Greece's gas supply sources but also enhanced the flexibility of its infrastructure.

Israel remains committed to investing in renewable energy sources to reduce its dependence on conventional energy. The country recognises the importance of diversifying its energy mix to enhance energy security and sustainability.

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

Italy has undertaken multifaceted efforts to diversify its energy sources, including increasing LNG import capacity, expanding pipeline supplies from countries like Algeria and Northern Europe, and inking agreements with gas-producing nations and LNG suppliers, notably from the USA. Italy is also exploring boosting domestic gas production and increasing the use of biogas to reduce import dependence. Italy is also closely monitoring developments in the East Mediterranean gas discoveries and related infrastructure projects.

Jordan has taken significant steps to diversify its gas supply sources to reduce its vulnerability to supply disruptions. The country's gas supply mix has evolved over the years, with imports from Egypt through the Arab Gas Pipeline and LNG imports at Aqaba. Recent additions, such as gas pipeline imports from East Mediterranean fields, have further diversified Jordan's gas supply, enhancing its energy security.

Lebanon is actively working to ensure a stable supply of natural gas to meet its energy needs. Efforts include negotiations for a Gas Purchase Agreement with Egypt through the Arab Gas Pipeline, with plans for a ten-year agreement that can be extended if necessary. Additionally, Lebanon is exploring the construction of a gas-fired combined cycle power plant at Zahrani to enhance energy security. The country is also arranging to procure natural gas through FSRU infrastructure, allowing fuel-switching to natural gas and improving generation costs.

Malta has secured an 18-year contract for LNG supply, providing a stable and secure source of gas to meet its energy needs. No other measures have been implemented.

Portugal is actively working on operationalising a common gas purchasing platform and streamlining the licensing process for renewable energy projects. These measures aim to enhance energy security and promote the use of renewable energy sources.

Spain, lacking local gas production and not being connected to the main European gas pipeline network, has prioritised diversification in its energy policy. The country has developed interconnection pipelines with Algeria, France, and Portugal, along with seven LNG terminals that receive gas from various origins and provide the system with the needed flexibility. Spain has also implemented regulatory measures to oblige shippers to diversify their gas supply portfolios, to reduce dependence on a single source.

Türkiye has achieved a significant natural gas discovery in the Black Sea, contributing to its already diversified portfolio. Amendments to the Natural Gas Market Law and the introduction of spot import facilities through pipeline entry points have facilitated diversification efforts. Türkiye also procures spot LNG from multiple countries through its LNG terminals and FSRUs, further diversifying its gas supply sources. These initiatives collectively strengthen Türkiye's energy security and supply resilience.

3.2. Infrastructure

A robust and well-designed storage infrastructure plays a pivotal role in ensuring energy security. This subchapter explores the significance of storage facilities, the role and status of pipelines and interconnections, as well as the growing importance of LNG in ensuring the security of natural gas supply.

3.2.1. Storage

Natural gas storage facilities play a pivotal role, offering a buffer that bridges the gap between supply and demand, thereby enhancing energy security. This sub-section discusses the benefits of adequate storage capacities and their role in managing supply-demand imbalances and mitigating the impact of unforeseen disruptions. The endeavours in terms of storage capacities can be categorised into distinct groups, each reflecting a country's approach to fortifying supply security. Figure 4 below introduces three categories.

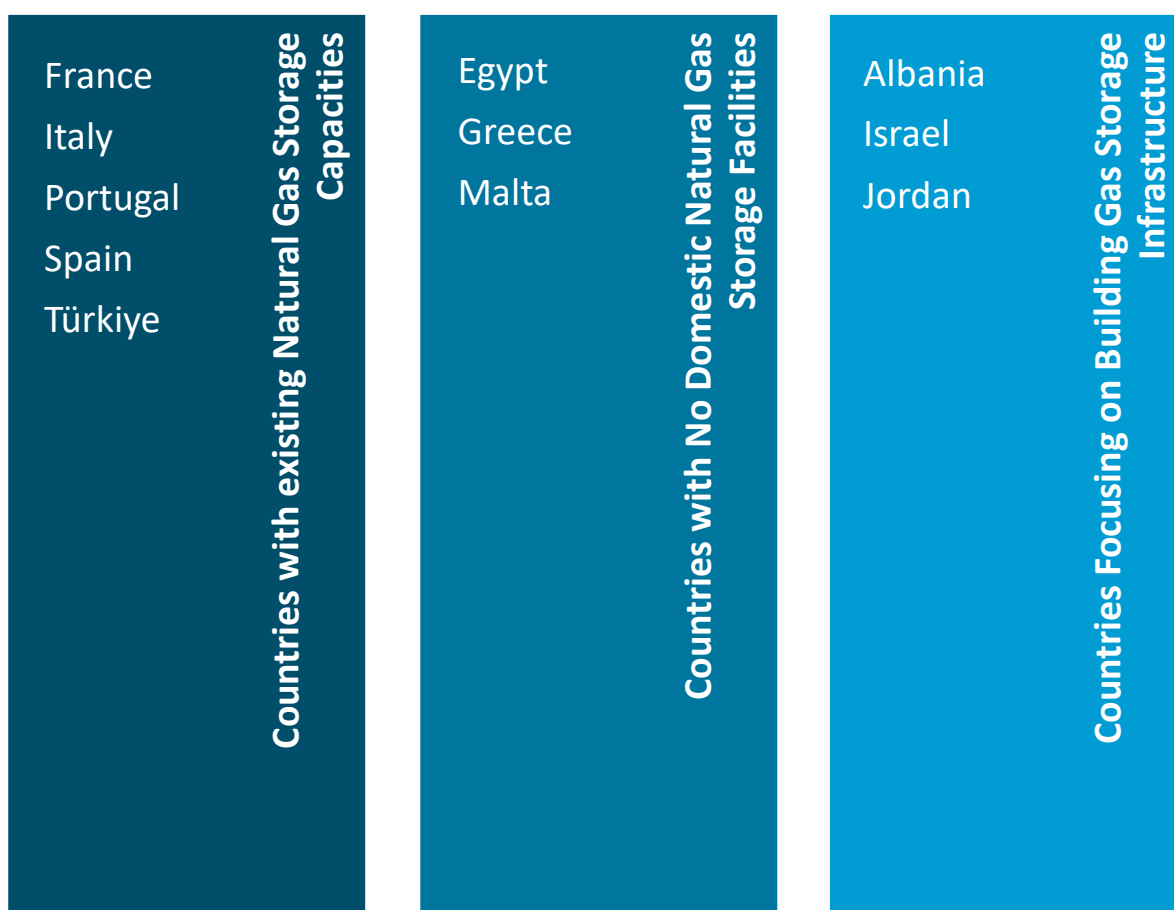


Figure 4 - Categories of Storage-Related Endeavours

The aforesaid groups are explored in depth in the following sub-chapters.

3.2.1.1. Countries with Established Natural Gas Storage

This group includes countries that have well-established underground gas storage infrastructure. They have taken proactive measures to ensure the efficient use of their storage facilities to meet energy demands and enhance supply security. Some of the countries in this group are in the process of expanding their storage capacities.

France regulated its gas storage sector in 2018, anticipating future European standards by imposing an 85% obligation for storage capacity filling before winter. After the adoption of the EU regulation, it also surpassed EU targets, achieving 100% storage capacity filling by November 1, 2022. The French Energy Regulatory Commission (CRE) simplified storage capacity commercialisation, enhancing supply flexibility. France has

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

130 TWh of underground natural gas storage capacity, representing nearly a third of its annual gas consumption of around 450 TWh.

Italy followed EU Regulation 2022/1032 by filling gas storage facilities to at least 90% capacity. The law decree of 1 March 2022, n. 17, encouraged operators to meet this requirement. The Italian Energy Regulatory Authority (ARERA) played a pivotal role in defining incentives for compliance.

Portugal expanded its LNG terminal in 2012 and envisages having

two new caverns operational in 2025, bolstering energy security and ensuring gas supply during peak demand.

Spain complies with gas storage obligations and adopts a proactive approach, aligning with EU Regulation n° 2022/1032 to enhance supply security.

Türkiye invests in the BOTAŞ Trakya and BOTAŞ Tuz Gölü Underground Natural Gas Storage Facilities, increasing the capacity of the former to 4,6 billion cubic meters (bcm) in 2022 and that of the latter to 5.4 bcm, and its daily towing capacity to 80 million standard cubic meters (Sm³), thus enhancing energy security. According to the Article in force since the Natural Gas Market Law of 2002, the EMRA Board is authorised to determine a storage obligation of up to 20% for the import and wholesale licence holders, depending on the availability of the underground natural gas storage capacity.

3.2.1.2. Countries with No Domestic Natural Gas Storage Facilities

Countries in this group currently do not possess domestic gas storage facilities and rely on alternative methods such as leasing Floating Storage Units (FSUs) or storage in neighbouring countries to manage gas supply and maintain energy security.

Egypt currently lacks dedicated natural gas storage facilities and relies on Floating Storage and Regasification Units (FSRUs) for short-term supply security, emergency conditions and market balancing activities. Long-term storage options need consideration to strengthen energy security further.

Greece currently lacks domestic gas storage facilities. Regulatory changes require gas importers to store gas in neighbouring countries. An innovative approach leases an FSU at the Revithoussa LNG Terminal, enhancing winter gas supply.

Malta lacks permanent gas storage, relying on a temporary LNG FSU of 125,000 m³ capacity.

3.2.1.3. Countries Focusing on Expanding/Building Gas Storage Infrastructure

Countries in this category are studying/investing in expanding/building gas storage capabilities. They recognise the importance of having a robust storage infrastructure to meet growing energy demands and enhance supply reliability.

In 2022, **Albania's** ERE approved crucial decisions for the natural gas sector. Decision no. 13 extended Albga company's license for operating natural gas storage facilities. Decision no. 185 approved a method for calculating tariffs, ensuring fair and transparent pricing based on cost principles. Albania has also

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

embarked on a project with SNAM to build a natural gas storage facility in Dumrea, enhancing regional energy security by enabling gas storage for winter demand.

Israel prioritises natural gas storage and plans to experiment in Rosh Zohar. Seeking guidance from MEDREG highlights Israel's commitment to innovative energy security solutions.

Jordan aims to enhance gas storage by replacing the FSRU with an FSU and constructing an Onshore Regasification Unit (ORU).

3.2.2. Pipelines and Interconnections

This subchapter examines the status of the infrastructures in the countries of the Mediterranean Region and whether the gas crisis has led to any issues. Figure 5 categorises these countries into three groups based on similarities in their infrastructure status and strategies.



Figure 5 - Categories of Infrastructure-related Endeavours

3.2.2.1. Countries with Resilient Gas Infrastructure

Countries in this group have mechanisms in place to manage supply challenges and ensure the security of gas supply. They often adapt to changing conditions and regulations to maintain a stable gas supply.

In the case of **Algeria**, the gas transmission network is continuously developed to meet demand. The gas transmission system development plan is prepared by the TSO, approved by CREG, covers ten years, and is adjusted annually. The plan contains a detailed description of the gas transmission capacity requirements and the programme that the gas TSO undertakes to implement. To meet the demand, substantial gas

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

infrastructure was developed, and special measures were taken to secure the supply for both internal and external market commitments via LNG terminals and the trans-Mediterranean pipelines.

Croatia's gas transmission system has maintained its capacity, ensuring supply security. The country has implemented mechanisms to manage congestion at interconnection points, complying with EU regulations, to address supply concerns.

Egypt employs various tools and techniques, including indigenous gas production, grid management, interconnected pipelines and demand management, to secure its gas supply in both the short and long terms.

France developed an appropriate sizing of its gas infrastructures. The gas system now has seven main interconnections and LNG terminals located on three maritime fronts providing access to diversified sources of gas (North Sea, Russia, Netherlands, Maghreb and more generally, the international LNG market). Despite infrastructure not having been originally designed for the flow patterns observed during the crisis, France has adapted to changing gas flow patterns. It successfully reversed gas flows, increased trade volumes (with, for instance, additional regasification capacity) and adopted emergency measures to ensure gas supply.

Greece witnessed shifts in its gas flows following geopolitical events. Gas imports increased, primarily through the Sidirokastro interconnection point, leading to a reversal of gas flow direction from south to north.

Israel's grid effectively ensures the security of the gas supply. Ongoing grid expansion and long-term planning are envisaged to support the country's gas market objectives.

Italy's gas infrastructure has demonstrated resilience in terms of transmission capacity. The government encourages additional regasification capacity to enhance system flexibility and import options.

Portugal, even with a resilient natural gas infrastructure, increased its underground storage extraction capacity to strengthen its gas supply infrastructure. Portugal's gas infrastructure is relatively modern, requiring minimal additional efforts to improve efficiency. This reflects the country's proactive approach to energy infrastructure development and maintenance, ensuring a robust and reliable energy supply.

Spain's gas grid is robust, with interconnection pipelines and LNG plants ensuring flexibility and diversification in gas supply. Effective gas market regulation and energy-saving measures contribute to ensuring supply security.

Türkiye's natural gas network infrastructure is well-developed and capable of meeting increasing demand, with ongoing investments. Recent legislative changes promote a more liberalised gas market and private sector participation.

3.2.2.2. Countries with Active Infrastructure Development

Countries like Albania and BIH are engaged in expanding and improving their gas infrastructure. Both countries are making strategic investments and collaborating with international partners to enhance their gas supply networks.

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

Albania aims to enhance its gas infrastructure through international cooperation, with an emphasis on technical and financial improvements. This collaboration involves the Ministry of Infrastructure and Energy and Albgaz for the construction of a gas exit point in Fier, a significant investment benefiting the country's gas supply.

BIH is expanding its natural gas infrastructure, with plans for new transport and distribution networks. Recent decisions by the Council of Ministers support the construction of Southern and Eastern gas interconnections with neighbouring Croatia and Serbia to strengthen the gas supply network.

3.2.2.3. Countries with Limited or No Gas Infrastructure

Countries in this group, **Lebanon**, **Malta** and **Cyprus**, are exploring options for future gas infrastructure development. Notably, Malta's existing infrastructure did not suffer from the gas crisis.

Role of LNG

Liquefied natural gas (LNG) and pipelines have emerged as crucial elements of the global energy landscape. This subchapter delves into the role of LNG terminals in diversifying energy supply routes and enhancing energy security.

The previous subchapters revealed the different countries' perspectives and awareness concerning the importance of having an LNG import terminal, to enhance supply security. Comfortingly, apart from being considered for the short term, where FSRUs are being deployed in the region, many countries are setting up LNG import terminals for not only their own demand but also for that of neighbouring countries, transforming the main importer into a gas hub for the sub-region.

Annex 1 provides data regarding the role of LNG and FSRUs and the evolution of terminal numbers and capacities over the last few years, relating to all countries of the region.

Quick Look



Albania Case Study

In response to the evolving energy landscape and the government's commitment to enhancing energy security, **Albania** embarked on significant initiatives in the energy sector in 2022. These initiatives focus on the establishment of an LNG distribution terminal or the construction of a natural gas pipeline from Vlora Terminal to Fier. Notably, foreign companies with extensive experience in the natural gas industry have expressed keen interest in partnering with the state-owned "Albgaz" company for various projects in this sector.

The geopolitical uncertainties surrounding gas supply have amplified the need for Albania to diversify its energy sources. This imperative, coupled with the government's determination to promote the gasification of the country, has generated momentum for the development of the Albanian gas market. To harness this opportunity, Albgaz has signed multiple Memoranda of Understanding (MOUs) and

cooperation agreements with renowned international companies. These agreements aim to explore collaborative avenues for the realisation of vital gas infrastructure projects. Albania's proactive stance in this arena underscores its commitment to bolstering energy security and sustainability.

3.3. Enhancements to Increase Efficiency

Energy efficiency is a powerful tool to optimise energy consumption and reduce reliance on external energy sources. This subchapter explores the importance of energy efficiency measures in enhancing energy security. It examines the role of energy-efficient technologies and conservation practices in minimising energy wastage and increasing the resilience of energy systems.

Notably, not all countries that participated in this study have put in place energy efficiency measures. Among them, a majority tackled the case from the perspective of ensuring an optimised flow by enhancing infrastructures, whether pipelines or LNG import terminals.

Albania is engaged in the process of enhancing energy security and diversifying its energy sources by considering the establishment of an LNG distribution terminal and natural gas pipeline. Foreign companies are evincing interest in these projects, driven by the need to reduce reliance on uncertain gas supplies, especially due to international tensions. Albania has signed MOUs and cooperation agreements with international firms to pursue these initiatives, emphasising its commitment to strengthening energy security through strategic partnerships.

Croatia has made substantial strides in enhancing its energy security and efficiency, notably through the expansion of capacities at its LNG terminal. The obligation to adhere to storage filling trajectories and the introduction of a firm day-ahead "use-it-or-lose-it" mechanism across interconnection points have significantly contributed to the improved efficiency of the national energy system. These measures reflect Croatia's commitment to ensuring a robust and resilient energy supply infrastructure, vital for safeguarding against potential disruptions and strengthening energy security.

Egypt has embarked on a comprehensive and continuous development plan for its gas infrastructure, aligning with the country's objectives of accommodating growing gas consumption, meeting export demands and fulfilling regional gas market integration mandates. GASREG plays a pivotal role in overseeing and reviewing network development plans, as mandated by law 196@Y2017 and licensees' terms and conditions. This proactive approach underscores Egypt's ambition to become a regional gas hub, emphasising the importance of meticulous planning and oversight in achieving these goals.

Amidst the ongoing energy crisis in Europe, **France** has strategically focused on bolstering its LNG imports. The French energy regulator CRE prioritised expanding LNG terminal capacities as a key measure to address energy security concerns. This entailed a 17TWh capacity increase at the Fos LNG terminal, augmenting the existing 100TWh capacity through a combination of technical enhancements and optimised unloading procedures. Further, France leveraged the Dunkerque LNG terminal's available capacity to the market, with plans to increase the send-out capacity. The introduction of an FSRU in Le Havre in October 2023 marks a pivotal step in further enhancing France's energy infrastructure and security.

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

In line with EU Regulation 2576/2022, **Greece** has taken proactive steps to bolster energy security and coordination in the gas sector. The Greek TSO, alongside operators of the Trans Adriatic Pipeline (TAP) and Interconnector Greece-Bulgaria (IGB) pipelines, has established rules for offering underutilised booked firm capacity at interconnection points. This initiative includes monthly, daily and intra-day capacity products, with continuous monitoring of their application. By optimising transmission capacities and promoting cross-border exchanges, Greece contributes to enhancing energy security and cooperation in the European gas market.

Israel is in the process of developing essential gas infrastructure to facilitate both domestic transmission and exports. A key focus is on storage solutions, which are pivotal in increasing the security of gas supply. These efforts underscore Israel's commitment to ensuring a reliable and resilient energy supply, addressing the dual goals of domestic energy security and potential contributions to regional energy markets.

The **Italian** government has taken steps to reduce total energy consumption, aligning with Regulation (EU) 2022/1369. This initiative has led to voluntary measures for demand reduction in member states. By encouraging responsible energy use and promoting energy efficiency, Italy aims to contribute to energy security while aligning with broader European sustainability objectives.

Jordan is currently finalising agreements aimed at developing its energy sector. These agreements hold the potential to significantly impact the country's energy security and infrastructure, reflecting the government's commitment to enhancing energy capabilities and meeting the nation's growing energy demands.

Portugal launched a public consultation in the second half of 2023, on a new balancing model for gas distribution grids supplied via LNG satellite plants, proposing to set up a Virtual LNG satellite plant for balancing purposes. This will allow renewable gas producers to inject into those grids and make commercial swaps in the virtual tank, enabling the virtual backhaul transport of renewable gases from LNG plants to the LNG Terminal and the possibility of receiving BioLNG and LiqH2 in LNGplants.

Spain's energy efficiency measures have played a vital role in optimising infrastructure use and improving overall energy security. Initiatives like the implementation of the new LNG access model (single tank model), congestion management procedures, capacity secondary markets and energy-saving measures in buildings have collectively contributed to enhancing energy efficiency. These measures underscore Spain's commitment to sustainable energy practices and bolstering energy security through prudent resource management.

3.4. Alternative Options

In the pursuit of energy security and environmental sustainability, countries are increasingly turning to innovative solutions to strengthen their energy resilience. This subchapter reveals the cover of the strategic initiatives of the region's countries, with a focus on the adoption and development of alternative gases, notably hydrogen and biogases, as pivotal elements of their energy security strategies. By exploring the emerging trends in alternative gases, this subchapter provides an in-depth understanding of how countries are actively navigating the path towards enhanced energy security in an evolving global energy landscape.

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

The development of biogas, specifically biomethane, is a key component of **Albania's** strategy to enhance its supply security. In the context of ensuring supply security, the support measures required need to be identified to accelerate and facilitate projects related to biogas production and other forms of renewable or low-carbon gases.

Algeria has initiated plans to invest in green hydrogen through partnerships and cooperation projects, particularly with the EU. This strategic move aims to leverage Algeria's significant potential for green hydrogen and position the country as a leading player in the global green hydrogen market. The country has actively engaged in cooperation projects to foster the development of green hydrogen to facilitate the transition to renewable energies and decarbonisation in the energy sector. Further, Algeria has also launched pilot projects in the field of biogas production as part of its national strategy for renewable gases.

As of December 2022, the total installed capacity of generation facilities with access to the **BIH** electricity market through "virtual power plants" reached 117.48 MW. This capacity includes small hydropower plants, photovoltaic plants and biomass and biogas power plants, collectively contributing to the energy mix.

Biogases and hydrogen, albeit in the project phase, are currently produced and used at the local level in **Croatia**. These emerging energy sources are under consideration as future components of the energy mix, in alignment with the National Development Strategy of the Republic of Croatia.

Cyprus has taken the initial step of publishing guidelines for developing a hydrogen value chain within the country, as a first step to establishing the regulatory framework for hydrogen. The Ministry of Energy, Commerce and Industry is concurrently working on the national strategy for hydrogen and updating the National Energy and Climate Plan accordingly.

Egypt is in the process of developing strategies for renewable gases and hydrogen. These strategies will play a pivotal role in shaping the energy mix and addressing the security of supply concerns associated with these innovative energy sources.

France is actively pursuing the development of biogas and biomethane as part of its strategy to enhance supply security. Several key instruments, such as the "right to injection" principle, regulated feed-in tariffs and guarantees of origin, have propelled the rapid growth of biogas and biomethane. France has set ambitious targets for biomethane injection into the gas network, aiming to cover a significant portion of gas consumption by 2030.

Greece does not yet have specific strategies or initiatives related to hydrogen and biogases in the context of supply security.

The **Israel** Natural Gas Authority is actively considering the role of hydrogen in ensuring supply security. They are examining developments in the global hydrogen industry and their implications for the natural gas market. The authority is also promoting the formulation of regulations, standards and safety rules to integrate hydrogen into the natural gas infrastructure.

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

In **Italy**, biomethane is currently injected into the transmission or distribution grid in various regions. However, the use of hydrogen is still in the study phase, and its integration into the energy system is being explored.

Jordan is in the process of enacting legislation for green hydrogen, reflecting its commitment to exploring and harnessing the potential of hydrogen as an energy source.

Lebanon recognises the significant potential of hydrogen in its energy sector but has not yet incorporated it into its national policies. For biogases, financing remains a primary obstacle to realising projects outlined in the national plans. The development and integration of both hydrogen and biogases into Lebanon's energy sector require dedicated policy frameworks and financial support.

Malta does not currently have specific initiatives related to hydrogen and biogases in the context of supply security.

Portugal has embraced the development of hydrogen and low-carbon gases as part of its energy strategy. These emerging energy sources are expected to have a growing role in ensuring the security of supply, particularly considering the absence of natural gas production in Portugal.

Spain has designed roadmaps for the deployment of hydrogen and biogas. Currently, their share in total gas demand is relatively low. However, with an increasing number of projects under development, these new gases are expected to play a more significant role in enhancing supply security, particularly considering the near absence of natural gas production in Spain.

Türkiye recognises the importance of reducing its dependency on natural gas imports and is closely monitoring developments in hydrogen and biogas technologies. The country possesses significant potential for hydrogen production, and the integration of hydrogen into the natural gas network aligns with both economic and carbon reduction targets. Türkiye also published its National Hydrogen Strategy and Road Map in 2023. Additionally, Türkiye's abundant biomass and waste resources make biogas production a promising area of study. Public and private sector initiatives, along with regulatory bodies, are actively involved in advancing these clean energy sources within Türkiye. The establishment of the Energy Transition Department and Alternative Fuels Working Group within EMRA reflects the country's commitment to these technologies.

3.5. The Way Forward

This subchapter explores the short- and long-term strategies of the countries to bolster their security of supply. From further diversifying supply sources and strengthening infrastructure to promoting renewable energy integration and energy efficiency measures, these strategies aim to ensure the uninterrupted availability of natural gas while aligning with broader objectives such as decarbonisation and sustainability. By examining the diverse range of tactics adopted by nations across different regions, we gain valuable insights into the evolving dynamics of natural gas security on both immediate and long-term horizons.

In **Albania**, the TAP, as the European part of the Southern Gas Corridor, plays a crucial role in ensuring reliable access to new natural gas sources from the Caspian Sea through a different route. This project

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

enhances the diversification of source and supply routes, enabling gasification in Southeast Europe, the Western Balkans and Albania. TAP also supports the EU's climate goals and decarbonisation efforts, enabling the substitution of more polluting fuels in various sectors.

Algeria has initiated upstream partnership efforts to enhance the security of its natural gas supply by exploring and producing natural gas. These efforts are as per the hydrocarbons law 19-13. Further, to enhance the country's overall security of supply, Algeria has embarked on a significant plan to invest in 15 GW of renewable energy power plants, primarily solar, to diversify its energy mix and reduce its dependence on natural gas. Additionally, adopting advanced technologies in gas infrastructure, such as smart meters and monitoring systems, is critical for optimising gas consumption and enhancing efficiency. Energy efficiency measures also play a significant role in reducing natural gas demand and improving supply security in Algeria.

Cyprus has been granted a derogation concerning the market opening. There will be only one exclusive supplier of natural gas if the market is characterised as emergent. In the short term, flexibility in upstream Gas Purchase Agreements is vital to ensure natural gas supply security. Further, Cyprus should expedite the evaluation of options for exploiting its indigenous gas resources.

Egypt's strategies for improving natural gas supply security involve market structuring and design, continuous development of gas reserves, interconnection projects with neighbouring countries, liberalisation of the gas market and the adoption of renewable gases.

France considers diversifying supply sources, implementing storage regulation and reducing consumption as effective strategies to ensure gas supply security, especially during crises. More generally and in the long term, CRE recently published a study on the future of gas infrastructures in France. The study explores different scenarios for achieving carbon neutrality by 2050. It highlights two opposing trends for gas networks: the need to adapt the network to falling demand while sizing and reinforcing it to enable the integration of decentralised gas production. Expected investments in gas infrastructure are between €6bn and €9.7bn between now and 2050, depending on the scenario. The report also stresses that the natural gas transmission network will continue to be largely necessary and that France will remain an important part of the European gas system for transiting flows to its neighbours.

In the short term, **Greece** plans to reserve capacity and store gas in neighbouring Member States, stockpile diesel fuel for power generation, and complete various national and cross-border projects. In the long term, the aim is to reduce its reliance on natural gas for electricity production and improve energy efficiency.

Israel's strategies for improving natural gas supply security involve storage, the establishment of a gas trading platform, balancing the supply, and the search for additional reservoirs.

Italy's approaches involve decarbonisation, promoting renewable energy, enhancing energy efficiency and researching innovations to achieve sustainability, security, continuity and cost-effective supply. In the long term, Italy is considering the reconversion of gas infrastructures for hydrogen and enhanced cooperation with electricity transmission operators.

MEASURES AND TOOLS TO TACKLE SECURITY OF SUPPLY CONCERNS

Jordan's short-term strategies include using an FSRU for natural gas procurement and fuel-switching in power generation. In the long term, the decommissioning of old plants and the construction of gas-fired combined-cycle power plants are planned.

Spain's short-term strategies are based on five main areas: decarbonisation, including renewable energies, energy efficiency, security of supply, EU Energy Internal Market and R&D and competition.

Portugal has a clear short-term strategy, but long-term investments are being approached prudently due to factors like decarbonisation, electrification, renewable energy and the injection of renewable gases into the market. Careful consideration is required to determine the financial responsibilities of each party involved.

Türkiye's priority is to increase the amount of domestic natural gas brought to land quickly, which is expected to meet a considerable portion of its natural gas consumption. Continuity in natural gas supply is aimed at newly commissioned FSRUs while exploration of potential new production sites will continue.

The global natural gas market finds itself at a crossroads, where the security of gas supply has emerged as a paramount concern. Focusing on the Mediterranean Region, where there are both net importers and net exporters, it is interesting to witness the dynamics. This report has undertaken a comprehensive exploration of the region, shedding light on its extensive reliance on natural gas, the legal framework governing the security of supply obligations, and the system of challenges concerning this vital energy source.

The recent gas crisis, as discussed earlier (see chapter 2.3), serves as an obvious reminder of the vulnerabilities of some countries, emphasising the need for a proactive approach to addressing supply security concerns in similar scenarios, that could be referred to as a non-deterministic scenario. It is now abundantly clear that devising an effective strategy is essential to mitigate the potential repercussions of disruptions, and, if possible, to limit the price volatility.

This report also examines comprehensively the measures and tools at our disposal to tackle these concerns head-on, highlighting how some countries employed these methods to ensure their security. Diversifying gas sources takes centre stage, ensuring that the countries in the region have a more versatile supply chain. Simultaneously, the expansion and fortification of infrastructure, including the development of storage facilities and pipelines, fostering interconnections between countries and comprehending and increasing LNG import and export capacities, depending on the country, are paramount to bolstering the region's energy security.

Focusing on Liquefied Natural Gas, it is poised to play a pivotal role in diversifying supply sources and enhancing flexibility. The establishment of LNG terminals and the use of LNG vessels for storage and transportation are indispensable components of the strategy, providing agility and readiness to respond to supply fluctuations.

Moreover, as global attention increasingly pivots toward environmental sustainability, prioritising energy efficiency assumes even greater significance. The promotion of energy-efficient technologies and practices in the gas sector not only mitigates energy consumption but also contributes to the region's sustainability goals.

However, in the quest to ensure a secure energy future, the Mediterranean region must also consider alternative options. Renewable gases such as biogas should also be considered. In addition, for the general security of energy supply, including electricity, the exploration of renewable energy sources, coupled with the deployment of energy storage solutions, would offer a means to diversify the energy mix, reducing reliance on gas during crises while advancing sustainability objectives. Apart from that, incorporating such renewable energy sources into the production of alternative fuels such as green hydrogen (whether hydrogen is used as a molecule or carried in another compound such as ammonia) envisages an even brighter future.

As we consider the future of the Mediterranean Gas Market, the region's potential for growth and transformation becomes increasingly evident. Beyond addressing immediate supply security concerns, the

Mediterranean could evolve into a hub for energy trade, capitalising on its strategic location at the crossroads of Europe, Asia, and Africa.

Further, initiatives such as new gas discoveries in the Eastern Mediterranean, the Levant Basin and Cyprus, as well as the potential exploration determinations in Algeria, Egypt, and Türkiye have the potential to reshape the region's energy landscape. These resources can serve not only domestic needs but also create opportunities for exports and cooperation between countries, fostering greater stability and collaboration.

In charting the way forward, the report advocates a clear, country-wise strategy for the future, showcasing the plans for the short-, medium-, and long terms. Further, as MEDREG is a collaborative platform for the exchange of knowledge with the key mission of harmonising regulatory frameworks in the region, this report seeks to leverage cooperation to realise a stable, free and safe Mediterranean Energy Market, which would also enhance the region's security of supply.

Annex 1: LNG Imports and FSRU Data

Algeria

	2020	2021	2022	2023 (estimated)
Number of Terminals	4	4	4	4
Maximum Capacity (bcm/y)	35,2	35,2	35,2	35,2
Number of FSRUs	-	-	-	-
Maximum Capacity (bcm/y or MTPA)	-	-	-	-
Imports				
Number of Countries	-	-	-	-
Quantum Imported (bcm/y or MTPA)	-	-	-	-
% of import	-	-	-	-
Exports				
Number of Countries	7+	9	N/A	-
Quantum Exported (bcm/y)	14	16	13	-
% of Exports	36%	29%	26%	-

Croatia

	2020	2021	2022	2023 (estimated)
Number of Terminals	1	1	1	1
Maximum Capacity (bcm/y)	-	2,6	2,9	2,9
Number of FSRUs	1	1	1	1
Maximum Capacity (bcm/y or MTPA)	-	2,6	2,9	2,9
Imports				
Number of Countries	1	7	4	5
Quantum Imported (bcm/y or MTPA)	-	1,69	2,84	3
% of import	-	72%	83%	86%
Exports				
Number of Countries	-	-	-	-
Quantum Exported (bcm/y)	-	-	-	-
% of Exports	-	-	-	-

Egypt

	2020	2021	2022	2023 (estimated)
Number of Terminals	2	2	2	2
Maximum Capacity (bcm/y)	12,2 MTPA	12,2 MTPA	12,2 MTPA	12,2 MTPA
Number of FSRUs	1	1	1	1
Maximum Capacity (bcm/y or MTPA)	5,7 MTPA	5,7 MTPA	5,7 MTPA	5,7 MTPA
Imports				
Number of Countries	-	-	-	-
Quantum Imported (bcm/y or MTPA)	-	-	-	-
% of import	-	-	-	-
Exports				
Number of Countries	EU Market, Asian Market, Türkiye, and others	EU Market, Asian Market, Türkiye, and others	EU Market, Asian Market, Türkiye, and others	EU Market, Asian Market, Türkiye, and others
Quantum Exported (bcm/y)	3,5 MTPA	7 MTPA	8 MTPA	> 12- 13,6MTPA
% of Exports	92%	94%	93,5%	-

France

	2020	2021	2022	2023 (estimated)
Number of Terminals	4	4	4	4
Maximum Capacity (bcm/y)	35	35	35	36
Number of FSRUs	0	0	0	1
Maximum Capacity (bcm/y)	0	0	0	5
Imports				
Number of Countries	4	4	7	-
Quantum Imported (bcm/y or MTPA)	16,27	14,82	27	-
% of import	34%	30,75%	48%	-
Exports				
Number of Countries	-	-	-	-
Quantum Exported (bcm/y)	-	-	-	-
% of Exports	-	-	-	-

Greece

	2020	2021	2022	2023 (estimated)
Number of Terminals	1	1	1	1
Maximum Capacity (bcm/y)	6,9 bcm/y	6,9 bcm/y	6,9 bcm/y	6,9 bcm/y
Number of FSRUs	0	0	0	1
Maximum Capacity (bcm/y)	0	0	0	5,5 bcm/y
Imports				
Number of Countries	8	5	10	10
Quantum Imported (bcm/y or MTPA)	2.8	2.1	3.39	3.5
% of import	46,18%	31,8%	44,2%	43,8%
Exports				
Number of Countries	-	-	-	-
Quantum Exported (bcm/y)	-	-	-	-
% of Exports	-	-	-	-

Israel

	2020	2021	2022	2023 (estimated)
Number of Terminals	1	1	1	0
Maximum Capacity (bcm/y)	4,8 BCM	4,8 BCM	4,8 BCM	0
Number of FSRUs	1	1	1	0
Maximum Capacity (bcm/y)	4,8 BCM	4,8 BCM	4,8 BCM	0
Imports				
Number of Countries	1	1	1	0
Quantum Imported (bcm/y or MTPA)	-	-	-	-
% of import	4%	1%	0.05%	0
Exports				
Number of Countries	-	-	-	-
Quantum Exported (bcm/y)	-	-	-	-
% of Exports	-	-	-	-

Italy

	2020	2021	2022	2023 (estimated)
Number of Terminals	2	2	2	2
Maximum Capacity (bcm/y)	11	11,5	10,8	12,3
Number of FSRUs	1	1	1	2
Maximum Capacity (bcm/y)	3,8	3,8	3,8	6
Imports				
Number of Countries	5	7	11	-
Quantum Imported (bcm/y or MTPA)	12,6	9,7	14,2	-
% of import	19%	13%	20%	-
Exports				
Number of Countries	-	-	-	-
Quantum Exported (bcm/y)	-	-	-	-
% of Exports	-	-	-	-

Jordan

	2020	2021	2022	2023 (estimated)
Number of Terminals	0	0	0	0
Maximum Capacity (bcm/y)	0	0	0	0
Number of FSRUs	1	1	1	1
Maximum Capacity (bcm/y)	160000 m3	160000 m3	160000 m3	160000 m3
Imports				
Number of Countries	3	3	3	3
Quantum Imported (bcm/y or MTPA)	1,08 bcm/y	0,031 bcm/y	0,035 bcm/y	0,028 bcm/y
% of import	31%	1%	1%	1%
Exports				
Number of Countries	-	-	-	-
Quantum Exported (bcm/y)	-	-	-	-
% of Exports	-	-	-	-

Malta

	2020	2021	2022	2023 (estimated)
Number of Terminals	1	1	1	1
Maximum Capacity (bcm/y)	0,696 bcm	0,696 bcm	0,696 bcm	0,696 bcm
Number of FSRUs	1	1	1	1
Maximum Capacity (bcm/y)	0,696 bcm	0,696 bcm	0,696 bcm	0,696 bcm
Imports				
Number of Countries	2	2	2	2
Quantum Imported (bcm/y or MTPA)	0,00060 bcm	0,00065 bcm	0,00063 bcm	0,0006 bcm
% of import	100%	100%	100%	100%
Exports				
Number of Countries	-	-	-	-
Quantum Exported (bcm/y)	-	-	-	-
% of Exports	-	-	-	-

Portugal

	2020	2021	2022	2023 (estimated)
Number of Terminals	1	1	1	1
Maximum Capacity (bcm/y)	0,0876	0,0876	0,0876	0,0876
Number of FSRUs	-	-	-	-
Maximum Capacity (bcm/y)	-	-	-	-
Imports				
Number of Countries	10	4	5	3
Quantum Imported (bcm/y or MTPA)	5,66	5,40	5,23	N/A
% of import	91,9%	93,8%	93,1%	N/A%
Exports				
Number of Countries	-	-	-	-
Quantum Exported (bcm/y)	-	-	-	-
% of Exports	-	-	-	-

Spain

	2020	2021	2022	2023 (estimated)
Number of Terminals	6	6	6	7
Maximum Capacity (bcm/y)	60,1	60,1	60,1	67,1
Number of FSRUs	-	-	-	-
Maximum Capacity (bcm/y)	-	-	-	-
Imports				
Number of Countries	13	14	18	-
Quantum Imported (bcm/y or MTPA)	19,67	19.53	27.42	-
% of import	63	54	71	-
Exports				
Number of Countries	-	-	-	-
Quantum Exported (bcm/y)	-	-	-	-
% of Exports	-	-	-	-

Türkiye

	2020	2021	2022	2023 (estimated)
Number of Terminals	2	2	2	2
Maximum Capacity (bcm/y)	28,3 bcm/y	28,3 bcm/y	28,3 bcm/y	28,3 bcm/y
Number of FSRUs	2	2	2	3
Maximum Capacity (bcm/y)	15,8 bcm/y	15,8 bcm/y	18,0 bcm/y	27,8 bcm/y
Imports				
Number of Countries	12	7	12	11
Quantum Imported (bcm/y or MTPA)	15,07 bcm	14,10 bcm	15,17 bcm	16,6 bcm/y
% of import	31,33%	24,03%	27,75%	30%-
Exports				
Number of Countries	-	-	-	-
Quantum Exported (bcm/y)	-	-	-	-
% of Exports	-	-	-	-

Annex 2: Miscellaneous Data

Albania

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	-	-	-	-
Consumption (mcm)	-	-	-	-
Import (mcm)	-	-	-	-
Export (mcm)	-	-	-	-
Pipeline Length (km)	-	-	-	-

Algeria

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	84823	105037	102000	-
Consumption (mcm)	-	-	-	-
Import (mcm)	-	-	-	-
Export (mcm)	39460	55008	50000	-
Pipeline Length (km)	-	-	-	-

BIH

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	0	0	0	0
Consumption (mcm)	0	0	0	0
Import (mcm)	0	0	0	0
Export (mcm)	0	0	0	0
Pipeline Length (km)	196.2	196.2	196.2	196.2

Croatia

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	770	663	619	638
Consumption (mcm)	3278	3062	2510	2510
Import (mcm)	2401	2516	3265	3265
Export (mcm)	30	141	1178	1178
Pipeline Length (km)	2549	2549	2544	2544

Cyprus

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	-	-	-	-
Consumption (mcm)	-	-	-	-
Import (mcm)	-	-	-	-
Export (mcm)	-	-	-	-
Pipeline Length (km)	-	-	-	-

Egypt

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	61770	67800	74600	-
Consumption (mcm)	58300	61900	65480	-
Import (mcm)	0	0	0	-
Export (mcm)	Refer to LNG Q	Refer to LNG Q	Refer to LNG Q	-
Pipeline Length (km)	7920	8000	8000	8000

France

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	181.82	363.64	636.36	-
Consumption (mcm)	40454,54	43090	39181	-
Import (mcm)	47909	48181	56090	-
Export (mcm)	9636,36	6909,09	14000	-
Pipeline Length (km)	37646	37642	37718	-

Greece

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	-	-	-	-
Consumption (mcm)	5465	6058	4904	5498
Import (mcm)	6100	6725	7461	8076
Export (mcm)	639	660	2557	2578
Pipeline Length (km)	DSOs 6848,9	DSOs 7201,59	DSOs 7861,41	DSOs 9447,24
	TSO 1465,2	TSO 1465,2	TSO 1465,2	TSO 1465,2

Israel

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	16110	19500	21920	26000
Consumption (mcm)	11800	12330	12710	13080
Import (mcm)	700	200	50	-
Export (mcm)	4250	7140	9210	10300
Pipeline Length (km)	414	575	900	-

Italy

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	4107	3343	3341	3124
Consumption (mcm)	70998	75983	68543	56137
Import (mcm)	66130	72592	72380	63188
Export (mcm)	316	1543	4587	3215
Pipeline Length (km)	34897	35037	35211	35211

Jordan

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	151	185	152	156
Consumption (mcm)	3493	3520	3558	3540
Import (mcm)	3342	3335	3406	3384
Export (mcm)	-	-	-	-
Pipeline Length (km)	400	400	400	-

Lebanon

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	-	-	-	-
Consumption (mcm)	-	-	-	-
Import (mcm)	-	-	-	-
Export (mcm)	-	-	-	-
Pipeline Length (km)	32	32	32	32

Malta

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	-	-	-	-
Consumption (mcm)	379.01	378.11	354.93	-
Import (mcm)	364.18	392.27	384.44	-
Export (mcm)	-	-	-	-
Pipeline Length (km)	-	-	-	-

Portugal

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	-	-	-	-
Consumption (mcm)	5 660	5 398	5 229	5 000
Import (mcm)	5 706	5 649	5 757	5 700
Export (mcm)	84	229	298	300
Pipeline Length (km)	1375	1375	1375	1375

Spain

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	52,95	122,61	33,19	-
Consumption (mcm)	30954,77	32545,31	31334,91	-
Import (mcm)	31384,52	35824,51	38335,89	-
Export (mcm)	1116,94	3077,47	5832,67	-
Pipeline Length (km)	94344	94784	95434	-

Türkiye

	2020	2021	2022	2023 (estimated)
Natural Gas Production (mcm)	441,27	394,44	379,81	890
Consumption (mcm)	48.261,35	59.854,17	53.521,06	56.099
Import (mcm)	48.125,51	58.703,93	54.661,67	52.000
Export (mcm)	577,52	382,89	581,43	510
Pipeline Length (km)	14924	15702	16810	-



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