ENERGY POLITICS IN THE MENA REGION
FROM HYDROCARBONS TO RENEWABLES?

edited by **Valeria Talbot**
introduction by **Paolo Magri**

ISPI

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Introduction

2022 has been a rough year for European energy markets. And it has been a bumper year for energy exporters all over the world.

Even before Russia invaded Ukraine, oil prices had been on a recovering trajectory (almost doubling in 2021, from 50 to 80 dollars per barrel) and natural gas prices in Europe were going through the roof (from 20 to 120 €/MWh). After the invasion, this trend consolidated: today, oil trades between 80 and 90 dollars, having touched a 130-dollar maximum in March. Natural gas in Europe trades at 110 €/MWh, having reached 350 €/MWh this August, and is set to rise again as a mild autumn leaves place to winter temperatures on the Continent.

Losing progressively more than 85% of Russia's gas flows has thrown Europe into crisis and deprived the whole world of 15% of its pre-invasion natural gas supply. For comparison, the 1973 oil shock generated by OPEC's embargo removed 'just' 7% of global oil supplies at the height of the crisis. The swift disappearance of Russian gas has brought back energy security as one of the top priorities in Europe, after a few decades of relative complacence, due to very low natural gas prices. At least in the short-term, it has also put the green transition at stake, with more coal burnt in Europe and in Asia – the latter a result of Europe 'stealing' LNG cargoes from the Asian continent.

On the other hand, oil and gas producers in the Middle East and North Africa (MENA) region are enjoying a bumper year. When the International Monetary Fund published its latest economic projections in October 2022, the expected

economic growth for the European continent had been revised downwards by 2%. On the contrary, Saudi Arabia's economic growth had been revised up by close to 3%, Algeria's by 2.5%, and the UAE's by 2%.

As energy exporters enjoy a bonanza period in economic terms, they are also becoming strategically more important for Europe. The EU needs to rapidly adapt to a 'N-1' world that was its worst-case scenario: that of moving from a time when Russian gas represented 45% of all natural gas imports to the European continent, to one in which Russian gas completely disappears. This makes all other natural gas suppliers to Europe become even more critical. Throughout this winter – and, even more importantly, the 2023-2024 winter – non-Russian supplies will be of crucial importance to secure Europe's gas needs in the absence of rapidly developed supplies from elsewhere (not supposed to be available before Summer 2024).

In the MENA region, these suppliers are the 'usual suspects': Algeria (exporting to Europe around 30-35 bcm per year, or 8% of total consumption in the EU), Qatar (23 bcm last year) and, marginally, Libya (5 bcm). Meanwhile, as the EU's oil embargo is set to enter into force in early December, Middle Eastern oil exporters acquire a significance of their own.

This is why this Report comes at a perfect time. As Europeans are scrambling for alternatives, the Report sets out to analyse the different implications for a number of Middle Eastern exporters of fossil fuels. As these countries have become even more central to Europe's energy security, it is of paramount importance to assess their prospects, including not only their short-term role as suppliers of fossil fuels, but also their possibility to accelerate along the path of the green transition. Their stability, and their future, will directly affect Europe's own capacity to withstand the gravest energy crisis in fifty years.

In the first chapter, Manfred Hafner looks into the energy crisis that the European Union (EU) is currently experiencing. After years dominated by sustainability concerns, EU countries have made energy security and affordability a top priority. In

the wake of the Ukraine war, European governments have tried to further diversify their energy supplies, in an attempt to diminish their dependence on imports from Russia. In this context, MENA countries have assumed an even more important role in the European energy market. Still, in the medium to long term, decarbonisation remains a priority for the EU, as reaffirmed by the REPowerEU plan proposed by the European Commission in May 2022. In turn, the MENA region may still maintain its pivotal role in European markets even in the long run, by investing in its enormous potential for clean energy production.

Moving to the first of our case studies, Michael Hochberg and Samy Boukaila analyse Algeria's current energy policies and the country's potential as a renewable powerhouse. Energy exports have historically constituted the backbone of Algeria's financial stability. For this reason, the rise in global oil and gas prices over the past few months has been a shot in the arm for Algeri, especially after the dire economic consequences of the Covid-19 pandemic. Yet, oil and gas cannot serve as the country's financial foundation forever. As the EU slowly moves towards decarbonisation, Algeria will need to tap into its striking potential for renewable energy production to maintain the key role it plays in the European market. At the moment, high energy prices might make investments in renewables less appealing for Algerian authorities, but this shift seems inevitable. For the authors, the EU and the US can play a pivotal role in assisting this North African country in the long path towards energy transition and economic diversification.

Michaël Tanchum's chapter shifts our attention to the Eastern Mediterranean. Starting from the consequences of the Ukraine invasion, Tanchum reflects on the potential of this region for European energy security. For long, Eastern Mediterranean gas has been seen as a commercially uncompetitive alternative to cheap Russian supplies, while geopolitical rivalries have contributed to making these resources less appealing to European countries. However, much has changed since February 24, and

in the new international environment, Mediterranean gas fields may assume greater importance for European energy security. In the past few months, the EU has taken steps to increment its energy imports from the Eastern Mediterranean. Even if the region is still characterised by geopolitical tensions, win-win solutions based on commercial pragmatism might bring further stability and development to this part of the Mediterranean.

In her contribution, Noura Y. Mansouri unravels Saudi Arabia's complex role in the current energy crisis. In the past year, Riyadh has benefited from the rise in global oil prices, enjoying record revenues and high GDP growth rates. Being one of few countries worldwide with spare capacity, Saudi Arabia could potentially boost production to lower prices whilst stabilising the oil market. However, so far, the country has been keen on preserving its working relations with Russia and the rest of OPEC plus, refusing to increase its oil output. In a global arena that is becoming increasingly multipolar, strengthening partnerships with other global and regional powers and keeping oil prices as high and stable as possible are at the core of Riyadh's strategy.

Two other key players, the United Arab Emirates (UAE) and Qatar, are the focus of Naser Al-Tamimi's chapter. Looking into the consequences of the Ukraine war, Al-Tamimi argues that the current energy crisis has strengthened the role of the two countries in the global energy landscape, but also in the international arena. For instance, the EU has made it clear that it is serious about revising its energy strategy whilst reshaping its relations with the Gulf Cooperation Council (GCC). This intention opens up new avenues of cooperation with Qatar and the UAE, with mutual benefits both in the short- and long-term. Since the financial revenues the two countries are currently reaping will not last forever, Abu Dhabi and Doha should seize this opportunity to accelerate their energy transition and economic diversification plans.

Valeria Talbot's conclusions focus on the double challenge the EU has to face to both secure its energy security and to reach its decarbonisation targets. While the MENA region may play a prominent role in Europe's current energy crisis, it is still unclear to what extent MENA energy producers will be able to meet Europe's energy requirements in the short- and long-term. At the same time, the EU should also engage to avoid that its energy need may divert investment and attention from the green transition in the MENA countries.

Paolo Magri
ISPI Executive Vice President

1. EU Energy Policy and the MENA Region in the Wake of Russia's Invasion of Ukraine*

Manfred Hafner

The European Union is facing the most serious energy crisis since 1973. Following years of low energy prices, especially between 2014 and 2020, the EU has been experiencing skyrocketing energy prices since mid-2021, which are jeopardising economic recovery, stoking inflation and potentially destabilising European unity and derailing its green transition. The current energy crisis has made energy security and affordability a top political priority after years dominated by climate policies and sustainability concerns. Since the beginning of the Russian invasion of Ukraine on 24 February 2022, European governments have been looking for ways to diversify their energy supply away from Russia. Meanwhile, governments have reinforced and reaffirmed their climate ambitions. Renewable energy and energy efficiency are relevant not only from a climate perspective. They also increase European energy security by reducing dependency on Russian imports. In this scenario, the Middle East and North Africa (MENA) region is expected to become more relevant to European energy policy both in the short-term (security of oil and gas) and in the longer-term (energy transition through sustainable energy trade).

* The author wishes to thank Pier Paolo Raimondi (Istituto Affari Internazionali) for his substantial contributions to this chapter.

The Evolving Energy Paradigm

For European policymakers, the energy system entered a new phase in 2021, mainly driven by market fundamentals. After 2020, the *annus horribilis* for energy, where lockdowns and restrictions aimed at limiting the Covid-19 pandemic dramatically and artificially reduced energy demand, energy demand rose very strongly in 2021. Economies started to rebound dramatically, partly as a result of massive recovery plans launched by governments in the aftermath of the pandemic. Energy supply, however, was unable to keep pace with this strong demand growth, resulting in the energy price spike of 2021. A combination of causes, such as a longer winter, technical issues and lower wind and hydro generation across the world, incentivised higher global gas demand. The 2021 rise in energy prices was therefore initially motivated by market fundamentals.[1] Geopolitics then kicked in and the rise in energy prices, especially for natural gas, has been inexorably exacerbated in Europe by political and military tensions linked with the Russia-Ukraine conflict. Already in 2021, Russia decided to only comply with its contractual terms avoiding selling above contract gas on the spot market,[2] as it had done in previous years, despite high prices. Also, unlike in previous years, Russia did not fill its European storage capacity in 2021. All these factors drove energy prices higher. In addition, high gas prices discouraged European gas companies from filling their storage capacity during the 2021 summer months, leaving the EU vulnerable in the winter months as Russian troops were being amassed along the Russian-Ukrainian border ready to wage the war that started in February 2022 and to which the West responded with the strongest economic sanctions

[1] ACER, "High Energy Prices, European Union Agency for the Cooperation of Energy Regulators", October 2021.

[2] "IEA chief accuses Russia of worsening Europe's gas crisis", *Financial Times*, 12 January 2022; International Energy Agency (IEA), "IEA closely monitoring Russia situation and its implications for energy markets", 22 February 2022.

(including on energy) on Russia in order to weaken Russia's economy and its capacity to wage the war, while Russia reacted using energy (in particular gas) as a weapon against Europe.

These dramatic events have abruptly reversed the paradigm that has ruled energy and political relations between Europe and Russia for over five decades. Russia had behaved as a reliable supplier ever since hydrocarbon imports from Russia started and both Russia and Europe have built a long-lasting energy relationship based on the belief that such a relationship would enjoy the positive benefits of interdependence. This energy relationship has overcome previous crises from the Cold War to the two gas crises in 2006 and 2009.[3] Nonetheless, while the Russian war in Ukraine calls the previous EU liberal mantra ("change through trade") into question, it has certainly put European overdependence on Russian energy imports in the spotlight.

EU Energy Policy in the Wake of the Invasion of Ukraine

Following Russia's invasion of Ukraine in February 2022, European policymakers outlined new strategies and plans to address the evolving energy and political landscape. The EU responded in March 2022 with the REPowerEU plan,[4] outlining a strong political commitment to reducing Europe's overdependence on Russian energy imports through diversification of supply, energy efficiency and boosting renewables and other low-carbon solutions (i.e. hydrogen and biomethane). The REPowerEU plan consists of two pillars: *i)* the complete phase-out of Russian energy imports by 2027, under which pipeline gas imports from Russia are supposed to be reduced by two-thirds by the end of 2022; and *ii)* drastically

[3] T. Gustafson, *The Bridge. Natural Gas in a Redivided Europe*, Harvard University Press, 2020.

[4] European Commission, REPowerEU Plan, COM(2022) 230 final, 18 May 2022.

accelerating the energy transition in order to meet higher renewables targets by 2030. The first task is extremely ambitious because of European overdependence on Russian energy imports. In 2021, Russia accounted for about 30% of the EU's total oil imports and 45% of its total gas imports, corresponding to a total of 155 bcm.[5] The challenge facing the EU is to wean itself off all Russian energy imports simultaneously, in a very short timeframe, and at a time of tight markets. Indeed, Russia plays a pivotal role in the current global energy system, accounting for 12.7% of world oil production (12.3% of world exports), 17.4% of gas production (19.8% of world exports) and 5.3% of coal production (17.9% of world exports) as well as being a critical supplier of several other commodities[6] in 2021.

The first and foremost objective is to diversify gas supply and ensure enough supply for the upcoming months and years, as Moscow has inexorably weaponised its gas supply by fully halting and tightening supplies to several European countries. On this issue, the European Commission (EC) has assigned a key, short-term role to liquefied natural gas (LNG), which could replace up to a third (50 bcm) of Russian gas by the end of 2022. A more limited contribution is expected to come from non-Russian pipelines (10 bcm). Countries have been working to expand and install their LNG import capacity. Germany, which until today has no LNG capacity, has managed to secure 10-year time charters for four Floating-Storage-Regasification-Units (FSRUs), despite the constraints in the global supply of them, with a combined capacity of around 20 bcm (maximum 29 bcm).[7] In the summer of 2022, Italy bought two FSRUs with 5 bcm/yr capacity each, in order to increase its LNG import capacity.[8] The European thirst for LNG has transformed the

[5] Around 140 bcm of gas by pipeline and around 15 bcm of liquefied natural gas, LNG.

[6] BP, *Statistical Review of World Energy*, 2022.

[7] "Will Germany have to cut nat gas consumption beyond 15%?", KPLER Blog, 29 July 2022.

[8] SNAM, "SNAM purchases 5 bcm floating LNG regasification terminal from

global gas markets, making the continent the hottest gas market in the world and no longer the market of last resort. The EU has been able to attract increasing LNG volumes due to its high gas prices and premium compared to other regions (i.e. Asia).

The second pillar of REPowerEU aims to boost renewable energy. To do so, the Commission proposed to increase the target share of renewable energy in the overall energy mix of the Renewable Energy Directive to 45% by 2030, up from 40% in the "Fit for 55" package proposed in 2021. The 45% share would bring the total renewable energy generation capacity to 1,236 GW by 2030 (compared to 1,067 GW by 2030 envisaged under Fit for 55). Solar PV is considered one of the fastest technologies to roll out. For this reason, REPowerEU envisages a target of over 320 GW newly installed by 2025 – over twice today's level – and almost 600 GW by 2030. Meanwhile, REPowerEU has also increased its Fit for 55 targets for hydrogen and biomethane, which are expected to play a pivotal role in the decarbonisation of those sectors where electricity is not a feasible option – known as "hard-to-abate" sectors.[9] It set a target of 10 million tonnes (Mt) of domestically produced renewable-based hydrogen and an increase in sustainable biomethane production to 35 bcm by 2030. The role of decarbonised gases is set to be particularly relevant for decarbonisation given the challenges that electricity faces in "hard-to-abate" sectors.

Furthermore, the EU has addressed the issue of gas storage, which is vital for seasonal gas balancing as gas storage can supply 25-30% of the gas consumed in the winter in the EU.[10] In the early phase of the energy crisis, the EU found itself unprepared

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Golar LNG for US$ 350 million", Press Release, 1 June 2022; and SNAM, "SNAM purchases new floating regasification unit from BW LNG to contribute to Italy's energy security and diversification", Press Release, 6 July 2022.

[9] Heavy industry (e.g. steel, cement, glass) and long-distance transport (e.g. heavy trucks and maritime).

[10] European Parliament, "New EU Regulation on gas storage", BRIEFING EU Legislation in Progress, June 2022.

for the upcoming challenges, having filled only 70% of its storage capacity in October 2021 and drawn them down to 25% by the end of winter in March 2022. Bearing in mind the challenges of the past winter and forecasting growing constraints on the supply side, the EC drafted a regulation, adopted by the Council in July 2022, stipulating that underground gas storage must be filled to at least 80% of its capacity by early November 2022 and to 90% in subsequent years.[11] For 2022, the EU will collectively attempt to fill 85% of the total underground gas storage capacity in the EU.

To reach these targets, governments have provided financial support to the operating companies and encouraged some fuel switching in order to save gas volumes for storage. Moreover, fuel switching is set to become instrumental to offset potential supply disruptions. Some governments have reconsidered their previous energy plans by delaying the phase-out of coal and nuclear plants (e.g. Italy with coal and Belgium with nuclear). The EU sees gas-to-coal switching as only a necessary and temporary solution in line with its climate ambitions.

Until recently, the majority of efforts have focused on the supply side. But the demand side is crucial in facing the current energy crisis and high energy prices. In order to avert a dramatic supply shortage, the EU is increasingly turning to demand-side measures. The most relevant is the decision to curtail gas demand, initially proposed by the European Commission and then revised by national governments. Member States have reached an agreement on a voluntary reduction of natural gas demand by 15% this winter compared to their average consumption in the past five years, with measures of their own choice to make savings ahead of winter.[12]

To fully achieve the REPowerEU objectives, Europeans could face higher prices for longer and competition with other major

[11] European Council, "Council adopts regulation on gas storage", Press Release, 27 June 2022.

[12] European Council, "Council adopts regulation on reducing gas demand by 15% this winter", Press Release, 5 August 2022.

energy importers (i.e. Asian countries) in the medium-term. Nonetheless, Europe will need to enhance and build energy relations with alternative suppliers in order to secure new stable and affordable energy supplies, while putting in place social measures to reduce the high price-burden to the most vulnerable groups (citizens and companies) through targeted subsidies. Furthermore, European governments will need to find a balance between the three components of energy policy and governance (i.e. security, affordability and sustainability).

Lastly, the European Union has also updated its external energy strategy, which aims to strengthen its energy security, resilience and open strategic autonomy by diversifying the EU's energy supply and boosting energy savings and efficiency; accelerate the global green and just energy transition and build long-lasting international partnerships.[13]

In the Short-Term, Security Triumphs: MENA Hydrocarbons for Europe

In this scenario, the Middle East and North Africa could play a key role in assisting Europe's quest for non-Russian energy, given the MENA region's vast hydrocarbon reserves, existing export infrastructure and energy relations, as well as its proximity to European energy markets. The region has always been a cornerstone of the existing European energy system, but now it has gained a newfound strategic value for Europe as it is one of the few world regions capable of filling the energy vacuum caused by Russia's war.

The new energy order may result in a redrawing of global energy flows, with more US and MENA energy volumes coming to Europe compared to the past and Russian energy volumes moving towards Asian markets. North African countries have

[13] European Commission and High Representative of the Union for Foreign Affairs and Security Policy, "EU external energy engagement in a changing world", JOIN(2022) 23 final, 18 May 2022.

always exported most of their hydrocarbons to Europe (about 58% for oil and 78% for gas in 2019), while the Gulf countries normally export mainly to Asia (about 76% for oil and 82% for gas in 2019).[14] The new energy and political relevance of MENA countries for the EU could also spur opportunities for these countries in the long-term as Brussels has reiterated its commitment to decarbonisation.

The new energy order is also expected to result in a reconfiguration of energy flows to and within Europe – even though some minor Russian energy imports could remain in place in the long run. Southern and Western supplies (i.e. MENA, North America) are expected to become more and more relevant in comparison to the previous flow map dominated by eastern supply (i.e. Russia).

In the short-term, European countries will need to find enough alternative supplies to replace Russia's energy to avoid and prevent any energy disruption. So far, the European response has been characterised by autonomous actions, given the fact that energy is a shared competence between national governments and European institutions under the Article 194 of the Treaty on the Functioning of the European Union (TFUE). European countries have moved autonomously, preferring to increase their energy ties with existing or promising energy partners. In the short-term, some MENA countries are set to be instrumental for European energy security. Particularly, Southern Mediterranean countries (i.e. Algeria, Libya, Egypt and Israel) have emerged as valuable options for EU gas diversification plans thanks to their geographical vicinity, vast resources and existing infrastructure. Naturally, Italy has been at the frontline of European efforts to increase energy cooperation with Southern Mediterranean countries.

[14] Authors' calculation on BP, *Statistical Review of World Energy*, 2020.

Algeria

Italy has focused on the area as it can benefit from good relationships, existing infrastructure and a historical presence of its energy companies. It has particularly prioritised its effort on Algeria as the North African country presents many favourable factors: geographical proximity to European markets, existing infrastructure (the 34 bcm Transmed Enrico Mattei pipeline via Tunisia[15]) and vast gas reserves (4.5 tcm in 2021, corresponding to 2.3% of the world's proven gas reserves). Already in 2021, Italy increased its gas imports from Algeria to 21.2 bcm, up from almost 9.7 bcm in 2019. The increase in imports was attributable to political and market reasons: Italy had expressed a growing political commitment to reducing its dependence on Russian gas and oil-indexation of Algerian gas became cheaper than high spot gas prices (reversing Algeria's competitive weakness experienced in previous low gas price periods).

Despite rising gas imports, the existing pipeline still has a significant amount of spare capacity (almost 13 bcm in 2021). This has led the Italian government to identify Algeria as a key pillar of its diversification strategy. In April 2022, ENI and Sonatrach signed an agreement to increase gas volumes imported through the TransMed pipeline. Under the agreement, Algeria would use its spare TransMed pipeline capacity to gradually increase the volume of gas its supplies, with effect from 2022, to as much as 9 bcm/yr by 2023/24,[16] thus becoming the first gas supplier to Italy.

As well as benefiting from spare capacity, Italy enjoys more positive political relations with Algeria than Spain. Indeed, Spain and Algeria have seen a degradation in their bilateral relations due to the shift of Spain's position on Morocco and

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

[16] Eni, "Eni and Sonatrach agree to increase gas supplies from Algeria through Transmed", Press Release, 11 April 2022.

Western Sahara. In late 2021, Algeria halted its gas exports through the Maghreb-Europe Gas pipeline (GME) that connects Algeria with Spain via Morocco as the multiannual contract between Algeria and Morocco expired and the two countries failed to renew it due to political disagreements. Spain still imports Algerian gas through the MedGaz pipeline, as well as substantial quantities of LNG thanks to its vast LNG import capacity. European countries could also coordinate and divert some Algerian gas from Spain to Italy via pipeline using the spare capacity of TransMed: since Spain has no dependency on Russian gas but has a large LNG receiving capacity, it could maximise LNG imports and thus leave additional Algerian pipeline gas for the Italian market, which needs to reduce its Russian gas dependency. Coordinated action could position Italy as a bridge for continental countries, since Spain is poorly interconnected with France, while Italy is well connected to Northern and Central Europe thanks to the Transitgas pipeline across Switzerland and to the Trans Austria Gas pipeline (TAG) across Austria, which traditionally pumped gas from North to South, but which can also function in reverse flow. In addition, Algeria can increase its exports to European markets through its two LNG terminals (Skikda and Arzew), which have a combined capacity of 34 bcm/yr. Algeria has 17.9 bcm of spare capacity in these plants, as it exported 16.1 bcm in 2021. However, Algeria's export capacity bottleneck is not its export infrastructure capacity but rather its gas production capacity, combined with strongly increasing domestic demand. Algeria, therefore, urgently needs to attract investments that could increase domestic output. A promising sign occurred in July 2022, when Sonatrach signed a new contract with Occidental, Eni and TotalEnergies for Blocks 404 and 208 in Berkine under the new hydrocarbon law. The companies envisage a $4 billion plan for the implementation and will ultimately add more than 1 billion barrels of oil equivalent of hydrocarbons.[17]

[17] Sonatrach, Signature d'un nouveau contrat entre SONATRACH et Occidental,

Eastern Mediterranean

Another promising area for the EU's gas diversification plan is the Eastern Mediterranean, given its significant gas reserves. Some European countries have close political and energy ties with the area.[18] The area has become a gas hotspot since 2009, with several countries in the region aiming at becoming gas export hubs, considering several export options both via pipeline and via LNG. However, the area has not managed to fully achieve this goal for various economic, energy and political reasons.[19] The quest for non-Russian gas inevitably puts the area under the spotlight once again. Europe's effort has focused mainly on Egypt and Israel, which are the two biggest gas exporters in the area. In April 2022, ENI signed a deal with the Egyptian EGAS that will provide LNG cargoes for up to 3 bcm in 2022 to Europe and Italy. Indeed, Egypt is already exporting LNG to Europe from its two LNG terminals (Idku and Damietta, with a combined capacity of 17 bcm/yr). As gas prices have soared, Egypt has tried to maximise its LNG exports, especially to Europe.[20] In 2021, Egypt exported 9 bcm of LNG, a 10-year high, resulting in having about 8 bcm of unutilised LNG capacity to boost exports. However, Egypt faces domestic challenges that could hinder its efforts to boost LNG exports, such as rising energy demand and gas production challenges. For this reason, Israel has become a crucial component for Egypt's gas exports to Europe. Israel has already been exporting gas to Egypt since 2020.[21] In June

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Eni et TotalEnergies sur le périmètre de Berkine, 19 July 2022.

[18] For example, Italy's Eni is a leading player in the gas E&P activities in the area and Italy is member of the East Mediterranean Gas Forum (EMGF).

[19] P.P. Raimondi, *Eastern Mediterranean Energy Resources between Energy Security and Energy Transition: A Regional Perspective*, Istituto Affari Internazionali, IAI Paper 22, 11 May 2022.

[20] "Israel, Egypt Agree Future Gas Exports Deal With EU", *Energy Intelligence*, 15 June 2022.

[21] Following the 2016 agreement for the sale of 45 bcm of gas over a period of 15 years.

2022, the European Commission tried to promote a triangular arrangement of this type by signing, alongside Israel and Egypt, a trilateral memorandum of understanding on the supply of Israeli gas via Egypt's LNG export infrastructure to Europe.[22] This solution represents the least costly solution, given the spare capacity of Egypt's LNG terminals. Nonetheless, Israel is working on expanding its production in key gas fields, such as the Leviathan field (potentially from 12 to 21 bcm) as well as from the Karish and Tanin fields. If successful, Israel's export potential could exceed Egypt's available LNG capacity, which means that other solutions will need to be considered. One of the options is the 10 bcm/yr EastMed pipeline, which would connect the Leviathan basin directly to Europe (through Cyprus, Greece and Italy). Potentially the project could be operative by around 2026. The pipeline has some merits as it could protect the EU from rising LNG competition with other regions. The main doubts relate to Europe's future gas demand and the risk of potential carbon lock-in. To overcome this obstacle, the pipeline would be built hydrogen-ready in compliance with European decarbonisation plans. That is why the Commission added the project to the EU Project of Common Interest (PCI) list in 2013 and reconfirmed it in the fifth EU PCI list at the end of 2021.

Libya

By contrast, Libya has been on the sidelines because of its political instability and lack of security, despite its otherwise favourable conditions, including substantial gas reserves (1.4 tcm in 2021, Africa's fifth largest) and existing infrastructure (the 11 bcm/yr Greenstream pipeline) that connects it directly to Italy. Italy has not explicitly considered Libya as a key pillar for its further diversification plans due to the profound instability that the country faces. The Greenstream pipeline was commenced in

[22] "EC inks trilateral MoU for supply of Israeli gas to Europe via Egypt", *S&P Global Platts*, 15 June 2022.

2004 and it was instrumental for the development of Libya's gas resources. Over the years, Italy's gas imports rose from 0 in 2003 to 9.4 bcm in 2010, just before the revolution.[23] Following the onset of instability, gas imports fell to around 6.5-7 bcm and since 2015, gas imports have declined to around 4.5 bcm and even dropped to 3.2 bcm in 2021 – the lowest level in a decade. Rising domestic consumption has eroded export volumes, which may even decline further given the limited investment in the upstream sector due to instability. The Libyan National Oil Company has announced its intention to help Europe by increasing its exports, but political uncertainty poses a serious challenge in the short-term.

Gulf Cooperation Council

Meanwhile, the current crisis has also reinvigorated the potential energy cooperation between the EU and the Gulf Cooperation Countries (GCC). The new emphasis on the GCC has been illustrated by the newly adopted European communication on "A Strategic Partnership with the Gulf".[24] The Communication, combined with REPowerEU, aims at forming a renewed partnership based on sustainable energy security. Compared to North African producers, these countries have traditionally been more focused on Asian rather than European markets.

However, since the beginning of the energy crisis, the main producing countries in the Gulf – Saudi Arabia, United Arab Emirates (UAE) and Qatar – have shown different degrees of political readiness to satisfy the wishes of Western countries. This development shows a divergence between the Gulf countries, but also reveals how these countries are increasingly pursuing their own national interests.[25] While there has been

[23] BP, *Statistical Review of World Energy*, 2021.

[24] European Commission and High Representative of the Union for Foreign Affairs and Security Policy, "A Strategic Partnership with the Gulf, Joint Communication to the European Parliament and the Council", JOIN(2022) 13 final, 18 May 2022.

[25] P.P. Raimondi, "Crisis Resistance", *World Energy*, no. 53, July 2022.

a certain reluctance on the part of Saudi Arabia and the UAE to increase oil production, despite holding most of the spare capacity, Qatar has expressed its political readiness to help Europe diversify its gas supplies.

Numerous European officials have asked Saudi Arabia and UAE to increase their production in order to calm oil prices and offset negative consequences of international sanctions on the Russian oil output. As Russia seeks to redirect its volumes to Asia, the Gulf's importance in the European market is expected to rise. Notwithstanding these opportunities, OPEC countries have opted to preserve the unity of the OPEC Plus deal with Russia and other non-OPEC countries. The Saudis and Emiratis have strengthened their relationship with Russia, especially since 2020, because of its significance for the management of energy supply. Moreover, the Gulf countries have increasingly preferred to prioritise their national interests over those of their traditional allies (US and EU).

Regarding gas supplies, while the UAE can contribute only very modestly to the EU's gas diversification in the short-term because it exports all of its LNG to Asia, Saudi Arabia has neither the infrastructure nor the capacity to export since it consumes its entire limited output domestically for power generation. Both countries have announced ambitious gas expansion plans by 2030 but seems unlikely to be able to significantly contribute to the EU's diversification plan in the medium term. By contrast, the state of Qatar has expressed its willingness to contribute to improve European energy security on several occasions. It could emerge as a favourable partner of the EU's diversification strategy, which emphasises the role of LNG. The small emirate is one of the world's largest LNG exporters, with a highly centralised industry – unlike those of other major LNG exporting countries, such as the US and Australia – which implies that the government enjoys greater control over the sector and its export policies. Nonetheless, the possibility of Europe receiving additional Qatari LNG volumes

in the short-term remains remote[26] as Qatar lacks spare LNG export capacity. Exporting mainly to Asian buyers (over 70% of its LNG exports) through long-term contracts (LTCs), in the short-term, the EU's ability to import additional LNG volumes from Qatar depends thus on the willingness of Asian buyers to divert part of their imports. However, Qatari oil-indexed contracts are currently more favourable than gas spot prices, which are soaring. For this reason, Qatar's LNG exports to the EU have not significantly increased compared to other LNG suppliers, in particular the US.

The real contribution could be made in the longer-term as Qatar is massively expanding its LNG export capacity, a decision taken well before the present gas crisis. In fact, Qatar is working on the expansion of its North Field, which will expand its export capacity from 77 million tonnes per annum (Mtpa) to 110 Mtpa in 2026 and ultimately to 126 Mtpa by 2027. The first new volumes are expected to be available by late 2025. The decision to further develop its gas resources, lifting its 2005 self-imposed moratorium, was taken in 2017, despite low oil and gas prices, driven by the ambition to harness its numerous competitive advantages to respond to mounting competition from other LNG export countries. Furthermore, Qatar has also invested in the Golden Pass LNG project in Texas in collaboration with ExxonMobil, which has a capacity of around 16 Mtpa of LNG and exports are expected to commence in 2024, although it is unclear whether these will be destined for Europe. The EU will need to ensure some of these additional volumes through commercial agreements and by putting in place the required infrastructure to receive and distribute any additional imports throughout the continent.

For Qatar, securing gas deals with Europe is a strategic move as it could increase the European share of its total exports (today around 25%), thus balancing its current LNG export

[26] P.P. Raimondi, *A Scramble for Gas: Qatari LNG and EU Diversification Plans*, Istituto Affari Internazionali, IAI Commentary 22, 18, April 2022.

portfolio. Since it exports most of its LNG to Asia, Qatar is vulnerable to higher competition from other LNG exporters, which is expected to rise. Notwithstanding the potential value of European markets for Qatar and its willingness to cooperate, Doha expects to sign new contracts under commercially attractive terms for the country and not motivated by political reasons. Doha has requested a number of conditions for its exports to the EU: avoiding the resale of its LNG outside the EU, the closure of an EU probe into Qatar's market behaviour[27] and the preference for LTCs over spot trading. Qatar has already achieved the expected result insofar as the European Commission has halted its probe (which began in 2018) into LTCs signed with QatarEnergy in March 2022.[28] The current tight gas market has shifted market power to the suppliers after a period of low prices and a buyer-dominated energy market. This shift is illustrated by Qatar's current negotiations for gas deals with European countries, notably Germany. Since Germany, in order to get rid of its overdependence on Russian gas, is poised to become a large LNG importer, it has approached Qatar. The two countries have established an Energy Partnership Roadmap composed of two working groups (one on LNG and hydrogen, and the other on renewables, energy efficiency and demand-side management). However, despite a general agreement over future gas supply from the Golden Pass LNG project from 2024, the two countries have not yet agreed on the length of the gas contract; while Qatar seeks to have 20-year LTC, Germany would prefer a shorter contract since a 20-year contract would extend into the 2040s beyond Germany's net-zero target by 2045. Qatar has signed contracts of 10 years or less, meaning that this should not represent a deal-breaker. However, it highlights once again the market power that producers have gained in today's crisis.

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[27] "EU Regulators close antitrust investigation into Qatarenergy", *Reuters*, 31 March 2022.

[28] P.P. Raimondi, *A Scramble for Gas: Qatari LNG and EU Diversification Plans*…, cit.

Reconciling Energy Security with Climate Objectives: MENA Renewables and Hydrogen

European countries have looked to MENA countries as valuable partners for enhancing their energy security. Nonetheless, the EU has also reiterated its commitment to preserving and enhancing its climate ambitions as outlined in REPowerEU. Thus, the EU needs to reconcile energy security with its climate objectives.

Reconciling energy security with climate objectives can be achieved both in the short-term (oil and gas) and long-term (decarbonisation). Regarding fossil fuel supply, one solution should be to encourage gas producers to address venting and flaring, thereby creating additional liquidity on global markets, while ensuring significant climate benefits as stated in the EU external energy strategy.[29] The EU is willing to provide technical assistance to partners to set up such mutually beneficial "you collect/we buy" schemes. On this issue, the EU-MENA cooperation is particularly promising, as some of MENA countries are among the top flaring countries in the world. For example, in 2021 Iran flared 18.5 bcm and Iraq 17.7 bcm, while Algeria flared 8.1 bcm, Libya 5.9 bcm and Egypt 2.3 bcm.[30]

Regarding decarbonisation, MENA countries could become particularly valuable as clean energy providers through renewable electricity and decarbonised gases. The MENA region holds one of the highest renewable energy potentials worldwide thanks to its high solar irradiation rates as well as wind potential in selected areas. The EU acknowledges this potential in its new agenda for the Mediterranean: "Renewed partnership with the Southern Neighbourhood", adopted in 2021, stating that it can present unparalleled opportunities for clean energy cooperation.[31]

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[29] European Commission and High Representative of the Union for Foreign Affairs and Security Policy, "EU external energy engagement in a changing world…", cit.

[30] BP (2022).

[31] European Commission and High Representative of the Union for Foreign

MENA countries have themselves set several renewable energy targets for their domestic power sectors. These are also instrumental in meeting rising domestic power demand, freeing up additional oil and gas volumes for export, and improving climate and environmental conditions. Furthermore, MENA countries could also export clean electricity, thus gaining a major role in a low-carbon future, as Europe faces several issues on renewable deployment, though it must be said that dependence on electricity – which cannot be stored – presents much higher security-of-supply risks than dependence on molecule-based energy, which can be stored.

The idea of clean electricity trade between MENA and the EU also needs to take account of other challenges. First and foremost, MENA countries have generally lagged behind on renewable deployment despite the great potential. Renewables currently produce less than 3% of total electricity generation in 9 of the region's 10 hydrocarbon-producing economies, except for Egypt where renewables account for around 10% of electricity generation[32]. This is due to fossil fuels subsidies, combined with political, regulatory and infrastructural constraints, which ultimately undermine investment attractiveness. While Gulf countries could potentially finance their renewable projects by themselves, North African countries face more financial constraints. In this sense, European countries could play a significant role in mobilising capital and investment, for example through the EU's Global Gateway initiative. The Initiative will be delivered through a Team Europe approach, bringing together the EU in its Member States with their financial and development institutions, including the European Investment Bank (EIB) and the European Bank fo Reconstruction and

Affairs and Security Policy, "Renewed partnership with the Southern Neighbourhood A new Agenda for the Mediterranean", JOIN(2021) 2 final, 9 February 2021.

[32] International Enegy Agency (IEA), "How producers in the Middle East and North Africa can free up more natural gas for exports", Commentary, 25 May 2022.

Development (EBRD) in order to leverage up to €300 billion of investment in 2021-27.

There are also external challenges for rising EU-MENA power trade, notably the lack of interconnectivity. Indeed, the EU is poorly interconnected with the MENA region at present in terms of electricity interconnections. Currently, the electricity interconnection between Spain and Morocco (1,400 MW capacity) is the only electricity link between North Africa and the EU. To partially overcome this obstacle, the EU has added the 600 MW submarine interconnector between Italy and Tunisia to its EU projects of common interest (PCI) list. In May 2022, Italy also revived discussions with Algeria on the possibility of building an electricity interconnection through a 1-2GW submarine cable between Algeria and Italy's Sardinia.[33]

Nonetheless, electricity trade faces challenges from the efficiency standpoint. In terms of large-scale energy transport, molecules can be transported more easily and cost-efficiently than electrons. This is one of the reasons why a new EU-MENA energy cooperation could emerge based on hydrogen as it can be transported by existing pipelines with some infrastructural adjustment (i.e. coating). Furthermore, new momentum to a renewed cooperation based on hydrogen is driven by the fact that Europe will not experience self-sufficiency in hydrogen even though it has updated its targets for domestic hydrogen and biomethane production. REPowerEU has therefore also set a target of 10 Mt of renewable hydrogen imports by 2030. Of these imports, 6 Mt are envisaged to be imported by pipeline as hydrogen, while the rest in the form of ammonia or other hydrogen derivatives, which can be imported by ship.[34] The EU is certainly considering importing from regions with the lowest production costs, such as North Africa, by supporting major hydrogen import corridors. This, combined with some MENA countries' aspirations to become leading exporters, will open

[33] "Submarine cable to link Algeria, Italy", *ArabNews*, 24 May 2022.

[34] M. Lambert, *RePowerEU: Can Renewable Gas help reduce Russian gas imports by 2030?*, The Oxford Institute for Energy Studies (OIES), Comment, July 2022.

up new avenues for EU-MENA cooperation. For these reasons, the EC is working on a Mediterranean Green Hydrogen Partnership (MGHP) and will explore with Gulf countries opportunities for concluding Green Hydrogen Partnerships in order to create win-win solutions and establish new sustainable energy cooperation. The MGHP will start with the EU-Egypt Hydrogen Partnership.

Both oil-rich and oil-poor MENA countries, in particular Morocco, Saudi Arabia, the UAE and Oman, have been working on their hydrogen ambitions, considering both blue and green hydrogen projects. Morocco, an importing country, is among the leading hydrogen players in the region as it aims to use its great solar and wind potential to develop hydrogen for export. The country has set an ambitious renewable target of 52% of installed electricity capacity by 2030 and has attempted to forge partnerships with European countries, notably Germany, for the development of hydrogen projects.[35] The Gulf countries are committed to exploiting both their hydrocarbon and renewable resources to develop hydrogen.[36] Compared to their peers in North Africa, Gulf countries have more domestic financial capabilities to invest in the development of a hydrogen economy.

Conclusion

The MENA region is emerging as one of the most important areas for the EU's diversification strategy, because of its vast hydrocarbon and renewable resources, existing infrastructure and geographical location.

The region has attracted particular attention in relation to energy security, as European countries are struggling to substitute Russian gas. The great political commitment to

[35] P.P. Raimondi, *The Scramble for Mediterranean Hydrogen: Energy or Geopolitics?*, ISPI, Commentary, 21 May 2021.

[36] D. Ansari, *The Hydrogen Ambitions of the Gulf States*, Stiftung Wissenschaft und Politik (SWP), Comment no. 44, July 2022.

increase the use of non-Russian energy will drive the EU closer to the MENA region. MENA countries are expected to become more significant in the European energy markets, as Russia is expected to be driven out. Thus, MENA countries could benefit from the reconfiguration of global energy flows. However, MENA countries have expressed different degrees of willingness and capability to contribute to the EU's diversification strategy.

Meanwhile, the EU has also reiterated its commitment to decarbonisation, which requires it to reconcile its security goals with its climate targets. Through renewables, especially hydrogen, the EU could pursue both goals by proposing long-term contracts for increased imports with investments in additional import capacities that are also hydrogen-compatible. For example, Italy has signed an agreement with Algeria for additional gas imports, while also expressing its intention to work on hydrogen and renewables in Algeria.

This would also represent an alternative for MENA countries to secure income streams as decarbonisation progresses. On the other hand, the EU could also incentivise these countries to pursue decarbonisation while enhancing its geopolitical projection to a key neighbouring region, which is witnessing growing influence from other countries (e.g. China and Russia).

2. Algeria's Potential as an Integrated Energy Nation

Michael Hochberg, Samy Boukaila

Historically, Algeria has been an oil and gas nation. The path to a hydrocarbon-dominated economy began nearly 70 years ago when the first commercially viable oil fields were discovered in 1956, six years prior to Algeria's achieving independence from France in 1962.[1] Hydrocarbons have persisted as the mainstay of the Algerian economy ever since, accounting for about 20% of GDP, 40% of the national budget and more than 90% of export revenues from 2015 to 2020[2] and similar proportions today.

Yet Algeria's potential in renewable energy is at least commensurate to its hydrocarbon prowess. The current high oil price environment furnishes near-term fiscal relief to the Algerian government, which is particularly welcome following the pandemic-induced oil price collapse and economic shutdowns. Even so, the nation's long-term incentive to maximise its renewable energy resources and to begin its transition to an integrated energy nation has never been greater.

Beyond its oil and gas foundations, some of the world's greatest renewable energy resources have existed in a state of prolonged dormancy in Algeria. The nation enjoys more than

[1] Organization of Petroleum Exporting Countries (OPEC), *Algeria facts and figures*, 2022.

[2] World Bank, *Algeria*, 2021.

3,000 hours of sunlight per year in many regions,[3] facilitating favourable conditions for large-scale and low-cost solar power projects. With almost 8,000 gigawatts of estimated wind generation capability, Algeria's wind power potential is one of the greatest on the continent.[4] There is also significant opportunity associated with battery storage, hydrogen production, tidal energy, shale gas, and mining to support the battery industry and clean energy supply chains.

Given the nation's proximity to Europe, renewable energy presents a massive avenue from which Europeans and Algerians could collaborate on investment, technology, knowledge sharing and emissions reduction initiatives. The United States, with its own renewable energy and shale gas expertise and aim to maintain regional influence, is also well-suited to implement its know-how via US-Algerian partnerships. Yet both the deployment of renewable energy and that of unconventional gas resources in Algeria to date have been miniscule relative to the country's potential.

Algeria's Place in the World

Despite the nation's reclusive disposition since emerging from a violent civil war in the 1990s, what happens in Algeria does not stay in Algeria. The country is the second largest gas supplier to Europe (after Russia) and the third largest to the European Union (after Russia and Norway).[5] Algeria is also Africa's biggest producer and exporter of natural gas.[6] The largest country on

[3] MDPI, "Measures to Promote Renewable Energy for Electricity Generation in Algeria", 2020.

[4] International Finance Corporation, "New Analysis Shows Onshore Wind Potential Across Africa Enough to Power the Continent Many Times Over", 2020.

[5] "As Europe seeks alternatives to Russian gas, Algeria has pipeline capacity to spare", *S&P Global Platts*, 28 January 2022.

[6] C. Nakhle, "North Africa's natural gas: No panacea for the EU", Geopolitical Intelligence Services AG (GIS), 19 July 2022.

the continent by land area and the tenth largest in the world,[7] Algeria enjoys 1,600 kilometres of coastline,[8] part of which sits just a few hundred kilometres south of Spain and Italy across the Mediterranean. Algeria borders Mauritania, Niger, and Mali to the south, Morocco to the northwest, and Libya and Tunisia to the east, linking the MENA-region with both Southern Europe and Sub-Saharan Africa. The country is also Africa's third largest emitter of C02,[9] and the third most populous MENA-nation, after Egypt and Iran.[10] The development of Algeria's energy sector therefore has global implications for energy security, power politics, and climate change.

The geopolitical tectonic shifts rooted in growing tensions between east and west triggered by the rise of the Chinese economy and Russia's perverse ambition to advance its influence through violent conquest have put Algeria in a new spotlight as a viable and reliable energy partner. The perception of an Algerian moment in geopolitics is evidenced by the uptick in recent visits to Algeria from senior diplomats and politicians, including US Secretary of State Anthony Blinken (the first visit by a US Secretary of State since 2014),[11] European Union Council President Charles Michel,[12] Russian Foreign Minister Sergey Lavrov, French President Emmanuel Macron, French Prime Minister Elisabeth Borne,[13] and former Prime Minister of Italy Mario Draghi.[14]

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[7] World Bank, Land area, 2022.

[8] A.G. Farrand, *Against the Flow: Europe's role in kickstarting Algeria's green transition*, European Council on Foreign Relations (ECFR), 2022.

[9] MDPI (2020).

[10] World Bank, Population total, 2022.

[11] A.G. Farrand, *Algeria has been isolated for years. Now it's making a shaky return to the world stage*, Atlantic Council, 2022.

[12] Council of the European Union, Press statement by President Charles Michel, 2022.

[13] "French Prime Minister Elisabeth Borne Leads Delegation to Algeria", *France24*, 9 October 2022.

[14] Farrand (2022).

Recent visitors have also included the foreign ministers from France, Italy and Portugal, and Venezuelan President Nicolas Maduro.[15] The nature of some of these visits could be characterised as energy diplomacy; former Prime Minister Draghi's visit facilitated the announcement of a $4 billion deal to export additional natural gas from Algeria to Italy. As Algeria wrestles with its own path into the future in a world emerging from the pandemic amid new international alliances and geopolitical realities, global powers are paying attention.

Electricity Sector Dynamics

Gas is the source of more than 96% of Algeria's power generation, with the remainder produced by a combination of oil and renewable energy, including hydro, wind and solar.[16] Solar and wind are now the cheapest sources of electricity generation globally. Yet until recently, Algerian leadership was unhurried in its attitude toward taking advantage of these cost declines.

Institutional inertia combined with complacency around hydrocarbon revenues have contributed to lack of progress on renewable energy development. Following the painful history of French colonisation, which culminated in the Algerian War of Independence, wariness of perceived foreign-led interventions helps preclude progress on new technology development. Reluctance to accept and accelerate new energy technologies could also be tacitly supported by the notion of the eventual phasing out of fossil fuels and the prospect of stranded assets. Yet Algeria's incentive to develop renewable resources has never been greater.

Growing at an average rate of 7% annually over the last six decades, electricity demand continues to rise rapidly, and

[15] Ibid.

[16] M. Hochberg, *Algeria charts a path for renewable energy sector development*, Middle East Institute, 20 October 2020.

is projected to increase by 8.5% annually through 2025. To support demand growth through 2030, up to 7,000 megawatts (MW) of additional electric generation capacity will be required in Algeria,[17] representing more than 25% of the present installed capacity of roughly 25,000 MW.[18] Demand has been driven by industrial, commercial, and residential segments, and buoyed by demographics. The nation's population has increased by about 18% over the last decade.[19] In the absence of substantial energy efficiency measures, Algeria's demographic evolution coupled with a rising standard of living will continue to apply upward pressure on electricity demand.

Renewable Energy Development

While power demand is increasing, so too is Algeria's need to diversify its electric generation fleet. Advancement of energy transition measures has shifted from an environmental imperative to a broader issue, impacting geoeconomics and international energy security. In Algeria, augmenting renewable deployment to meet domestic power demand would be a boon for the nation in terms of fiscal account balances, geopolitical influence, economic development, and long-term reliability of the electric grid.

As a result, Algeria has launched Solar1000, its flagship national renewable energy scheme to competitively award 1,000 MW of solar capacity to private sector bidders each year for the next 15 years.[20] If successful, the tender programme would result in an additional 15,000 MW of solar capacity addition, sufficient to make a dent in the levels of gas currently utilised

[17] United States International Trade Administration, Algeria – Country Commercial Guide, 2021.

[18] International Renewable Energy Agency (IRENA), "Algeria Country Indicators and SDGs", 2022.

[19] World Bank, *Population total*, 2022.

[20] Government of Algeria, Terms of Reference, Solar1000 Tender.

for domestic power generation. Discussions are underway to augment the programme to offer additional solar capacity, and the Ministry of Energy also has a target to deploy between 5,000 and 7,000 MW of wind.[21] Bids for the Solar1000 programme were initially due in Spring of 2022 but have been delayed without an official announcement of an updated tender deadline.

Algeria's first renewable energy tender, which was not part of the abovementioned Solar1000 initiative, took place in 2019. Calling for 150 MW of solar capacity, the tender was ultimately undersubscribed, receiving only 90 MW worth of offers.[22] This underwhelming result was partially due to the novelty of the process in Algeria and the nascent state of the renewable energy industry in general. Yet the result also reflected investor interpretation of tender stipulations and rules.[23]

The process in 2019 required participants to be at least 51% Algerian. This 51/49 rule presents a significant constraint for new entrants and international investors, considering the incipient nature of the renewable energy ecosystem in Algeria.[24] Local content rules and local financing requirements further increased the barrier for investors given the limited local manufacturing capacity for renewable energy equipment and the limited experience of Algeria's lenders and financing parties in the renewable energy space.

In the updated tender, several key provisions have been amended to help increase the scheme's attractiveness. The 51/49 rule has been eliminated, and local financing stipulations along with local content rules are likely to be less stringent. This reduces friction for investors, thereby increasing the potential investor pool, which should lead to a more competitive process and better pricing outcomes. Additionally, the increase in the

[21] Ministère de l'Energie et des Mines, *Energies Nouvelles, Renouvelables, et Matrise de l'Energie*, 2022.
[22] Hochberg (2020).
[23] Ministère de l'Energie et des Mines (2022).
[24] Hochberg (2020).

overall capacity offered from 150 MW total to 1,000 MW annually sends a signal that Algeria is a place for investors who hope to achieve scale within a single market.

Yet, uncertainty around the tender remains. The submission deadline has been delayed several times, creating a moving target for businesses seeking to participate in the tender. This creeping notion of a false start situation is unhelpful to organisations hoping to orchestrate cross-sectoral expertise to submit a successful bid.

Beyond the submission deadline, one key item that will require further definition is the power purchase agreement (PPA). The PPA is the document that governs the terms and conditions around the purchase and sale of electricity from the bidders, to Sonelgaz, the power purchaser. The terms and conditions within the PPA, which will likely be released upon announcement of an updated tender submission deadline, will be a critical in determining the investor pool and competitiveness of the process.

Another critical item is the partnership between the private sector bidder and Shaems, the joint-venture company formed by Sonatrach and Sonelgaz, the nation's two state-owned energy companies. Under the tender, Shaems has the right to an ownership stake of up to 34% in the tendered projects. Direct Algerian participation in the projects presents an opportunity for expanded collaboration, incentive alignment and knowledge transfer between Algerian entities and international stakeholders. Yet international joint-ventures are involved and complex in nature, and even more so under this unique arrangement, in which Sonelgaz acts as the power purchaser (through a subsidiary called SADEG) and a part-owner of the project (via Shaems). Terms that avoid conflict of interest and meet an international market standard will help facilitate competition by encouraging diverse bidder participation.

Europe's Energy Crisis

Meanwhile, Europe must cope with a gas dynamic that was unthinkable before Russia's invasion of Ukraine. In 2021, prior to the invasion, Europe received about 45% of its total gas imports from Russia (155 billion cubic meters), representing 40% of total European gas demand.[25] Since the beginning of 2022, Russia has reduced its gas exports to Europe by around 50% of normal levels.[26] The significance of this shift cannot be overstated.

Europe had come to depend on the supply of relatively inexpensive Russian gas at the residential, commercial, and industrial levels for power consumption. European industries had learned to become competitive on the back of low-cost gas from Russia. Some of these industries are now curtailing production in response to the crisis, which helped lead to a 10% decline in European gas consumption over the first eight months of 2022, relative to the same timeframe in 2021.[27] During the same period, liquefied natural gas (LNG) imports increased by 65%, helping to compensate for the shortfall of Russian gas.

The liberalisation of the European gas market introduced a highly competitive and well-functioning market for the procurement and delivery of natural gas. Price discovery through a competitive marketplace often elicits the best price for consumers, yet it disregards fundamental questions around security of supply, diversification of energy resources, and overall energy security. The reality of war in Europe and Russia's role as an aggressor has caused a rethink of competitive markets and economic efficiency, with a broad understanding that

[25] International Energy Agency (IEA), "How Europe can cut natural gas imports from Russia significantly within a year", 3 March 2022.

[26] "Europe is growing complacent about its energy crisis", *The Economist*, 13 October 2022.

[27] International Energy Agency (IEA), "Natural gas markets expected to remain tight into 2023 as Russia further reduces supply to Europe", 3 October 2022.

non-economic factors around energy security hold far greater importance than previously considered.

In response to reduced gas imports from Russia, Europe has been stockpiling gas in an attempt to fill the continent's gas storage capacity prior to winter of 2022. As of October 2022, the EU's gas storage facilities had reached more than 90% of capacity,[28] largely as a result of LNG imports.[29] With storage nearing full capacity, gas forward prices in Europe for December delivery have halved relative to summer pricing. Yet even if the continent manages to avoid worst-case outcomes in the winter of 2022, Europe's precarious position is likely to persist.

While the gas supply flexibility afforded by the LNG market has helped Europe manage the crisis, the gas reserves that Europe expends in the winter of 2022 will need to be replaced for 2023, and perhaps without the benefit of any pipelined gas from Russia. The continent must be assertive and enterprising in its efforts to procure ample gas to ensure the security and stability of its electric power sector. Algeria already plays a role in Europe's energy security, with scope to expand this role further.

Increasing Gas Availability to Europe

Algeria consumes approximately half of the gas it produces.[30] Algerian gas represented about 10% of the European Union's total imported gas from 2020 to 2021.[31] More than 80% of the country's gas exports are delivered to Europe. Yet there is still scope for expansion. The availability of additional Algerian gas for export depends on both demand reduction and supply augmentation.

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[28] Council of the European Union, Infographic – How much gas have the EU countries stored?, 2022.

[29] International Energy Agency (IEA), "Natural gas markets expected to remain tight into 2023 as Russia further reduces supply to Europe"…, cit.

[30] R. Mills, "Why can't Algeria solve Europe's gas woes?", *Euractiv*, 18 August 2022.

[31] Ibid.

One key measure for gas demand reduction is the installation of efficient combined-cycle gas power stations, to replace older inefficient ones that use up to 50% more fuel to produce the same amount of electricity. Algeria is in the process of installing higher efficiency plants, which are estimated to make up 55% of installed electric generation capacity by 2028, representing an increase of 37% since 2018.[32] Another critical component to reduce gas demand within Algeria is renewable energy deployment. Each megawatt hour of electricity that Algeria produces from renewable sources represents incremental natural gas for export. Algeria is pursuing an ambitious renewable energy programme in the form of Solar1000 (as described above).

In terms of increasing gas supply, primary levers include full utilisation of existing LNG and pipeline capacity, new export capacity rollout, and upstream (exploration and production) activities with the aim of discovering more gas within Algerian territory. To this end, Sonatrach announced the discovery of LD2 in June of 2022. The discovery may be the largest in the nation in the last two decades. LD2 production is slated to be fast tracked, with gas potentially delivered to market as early as year's end 2022.[33]

There is also potential to expand upstream activities, with as much as two thirds of Algerian territory currently unexplored or underexplored for hydrocarbons.[34] As for existing gas fields, utilizing best practices and new technologies to ensure that these fields are fully exploited creates opportunity for supply increases. An additional key lever for increasing supply is the development of Algeria's shale resources, which represent a massive opportunity to expand the nation's domestic gas production. Largely untapped, Algeria's shale resources are the third largest globally, and are a major strategic opportunity.

[32] "Middle Eastern countries are sitting on an ocean of natural gas", *The Economist*, 13 October 2022.

[33] International Energy Agency (IEA), "Gas Market Report Q-4-2022", 2022.

[34] United States Energy Information Administration, *Background reference: Algeria*, 2019.

Maintaining Momentum for Renewables

While hydrocarbon initiatives enjoy widespread support in Algeria, renewable energy runs the greatest risk of losing momentum. The current high oil and gas price environment is a threat to renewable energy deployment in Algeria. Elevated hydrocarbon prices diminish the imperative of the Algerian authorities to act quickly and decisively to deploy renewable energy resources. Sonatrach expects to earn record revenues of $50 billion this year, up 30% from 2021.[35] The price of Algeria's Sahara Blend was over $100 per barrel in early 2022,[36] allowing the Algerian state to earn high revenues without increasing expenditure or deploying resources for new energy infrastructure.

Conversely, renewable energy investment is often viewed with a degree of skepticism in Algeria and requires a high upfront investment cost (albeit with zero fuel cost and low operation and maintenance costs), with benefits that are perceived as uncertain. This dynamic, coupled with Europe's urgent need to import more gas, collective anxiety regarding an accelerated energy transition and the concern of future stranded hydrocarbon assets, helps shift attention away from renewable energy deployment toward further expansion of hydrocarbons.

Roles of Europe and the United States

Europe is party to Algeria's inaction in accelerating its green energy rollout. As the importer of more than 80% of Algerian gas, with significant domestic renewable energy deployment and host of energy and environmental targets, Europe has a role to play in the future of Algeria's green economy. Since the Russian invasion, in addition to the effort that European powers have made to secure new supplies of Algerian gas,

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[35] "Middle Eastern countries are sitting on an ocean of natural gas"…, cit.

[36] A.G. Farrand, *Against the Flow: Europe's role in kickstarting Algeria's green transition*, European Council on Foreign Relations (ECFR), 2022.

Europe's leadership should concurrently champion initiatives that encourage Algeria to maximise its vast renewable resource potential.

Milestone announcements within the hydrocarbon space, such as the $4 billion gas deal announced in summer 2022 between Italy's Eni and Algeria's Sonatrach, should be accompanied by equal or greater efforts for renewable energy. Significant shifts and transitions in infrastructure often begin with concessional financing measures. Concessional financing in the form of low-cost debt, grants and equity investments from Europe's development banks should be deployed. To be effective, Europe's effort also should consider the perception of renewable energy within Algeria. European banks, engineering firms and construction companies experienced in renewables should work with educational organisations to offer technical assistance on the viability and benefits of renewable power.

The EU should also act as a unified force, defining and communicating its own energy plans and demand projections in the context of Algerian participation in the EU's energy future. Algeria's perception of EU-wide alignment would be a strong signal to drive action and help reduce the role of geopolitics in negotiations between Algeria and EU member states. Demand aggregation within the EU could also serve to mobilize investment more efficiently within Algeria. The EU and individual member states have established targets around renewable energy, specific technologies, green hydrogen imports, and other climate technology initiatives. Ensuring adequate communication around these targets and how they relate to Algeria in particular may help inspire action.

The United States, while less directly intertwined than Europe in Algeria's energy future, should also work with the Algerians to drive energy transition initiatives. The United States enjoys the second most renewable energy installed capacity and generation globally,[37] in addition to what is likely the world's

[37] International Renewable Energy Agency (IRENA), "Country Rankings", 2022.

greatest expertise in the development of shale gas resources. Algeria's vast development prospects in renewable energy and shale gas represent an opportunity for US firms seeking to internationalize. Such efforts could be coupled with support from the US government in the form of low-cost debt, equity investments, risk insurance, and capacity training related to the regulatory and commercial frameworks for renewables and shale gas. These and similar initiatives would help the United States to gain a stronger foothold in a region of vital importance to American interests.

Both the EU and the US now recognize the perils associated with both Russia as a primary gas supplier, and China as primary clean energy supply chain manufacturer. Reassessment and reordering of the natural gas and clean energy supply chains are now top priority. With the appropriate measures, Algeria could play an important role in this shift. Both European-Algerian and US-Algerian collaboration on climate infrastructure could include initiatives such as:

1. Collaboration to deploy new renewable energy capacity, through Algeria's Solar1000 programme and additional opportunities for wind and other renewable technologies.
2. Joint-proposal development for subsea cable deployment to export renewable energy produced in Algeria directly to Europe.
3. Development of business clusters around the renewable energy and shale gas industries, including mining, manufacturing, carbon capture and hydrogen.
4. Partnerships to capture and utilize flared gas, which is currently burned off as a result of limited or non-existent gas gathering and transport infrastructure.
5. Technology sharing and investment to increase the deployment of efficient natural gas technology, through the refurbishment of older plants or their replacement with new ones.

6. Investment to expand existing pipeline capacity from Algeria to Europe, and to build new LNG export facilities on Algerian territory or expand capacity at Algeria's two existing LNG facilities.
7. Co-investment opportunities in Algeria's hydrocarbon sector, to engage in new exploration and production, exploit the nation's shale potential, and to ensure that production from existing gas fields is maximised.

Each of the above-mentioned initiatives are multi-value in nature, representing opportunities for Algeria, Europe and the United States in terms of energy security, revenue, economic development, human capital development and technology sharing, grid reliability, and geopolitics. Initiatives that boost well-being for citizens and international energy security should be pursued in parallel to maximise synergies and opportunities for interrelated business clusters. Yet any such list of potential opportunities should be carefully evaluated on the basis of a future scenario analysis to understand the costs, risks and benefits of proposed solutions under a range of sensitivities, to ensure that optimal solutions are pursued.

The Road Ahead

The world's energy order is reshaping more rapidly than ever, leaving sun-drenched Algeria at a crossroads. Algeria can maximise the opportunity of the moment to begin transitioning towards an integrated energy powerhouse with a diversity of energy resources, or it can proceed on a path dominated almost exclusively by hydrocarbons. While the energy sector cannot resolve the myriad social and economic issues facing the country, it can provide an impetus for material change. Capitalising on the nation's potential as a renewable energy power would engender economic diversification and development, improve the nation's fiscal health, and afford newfound geopolitical power to the Mediterranean nation of 45 million inhabitants.

The occasion presents a tremendous opportunity for collaboration between Algeria and Europe, as well as between Algeria and the United States. At a minimum, Algeria should move forward expeditiously with the Solar1000 tender, to inspire confidence that the country is open for business and climate infrastructure investment. More broadly, the country should develop an integrated clean energy plan. This plan should outline the different technologies it aspires to deploy, the sectors that stand to benefit, and the proposed frameworks that would facilitate investment. The plan should also focus on improving the broader business climate, beginning with the new investment law that the Algerian government passed in July of 2022.[38] At the same time, European and American leaders should work with Algeria on energy diversification while maintaining pragmatic expectations regarding the pace and depth of change.

[38] International Trade Administration, *Algerian Investment Law*, 2022.

3. An Eastern Mediterranean Poised between Escalation and Cooperation*

Michaël Tanchum

Europe's urgent interest in Eastern Mediterranean natural gas resulting from its conflict with Russia presents an unprecedented opportunity for a comprehensive transformation of the Eastern Mediterranean's energy geopolitics from conflict to cooperation. Failure to do so could mean that the territorial sovereignty disputes between Greece, Cyprus, and Turkey – now bound up with the production and marketing of Eastern Mediterranean natural gas – could escalate and erupt into an armed confrontation much more severe than the 2020 naval stand-off between Greece and Turkey. The 2018-20 escalation cycle in the region arose out of the prior ruptures in Turkey's respective relations with Egypt and Israel and the resulting exclusion of Turkey from the marketing of Eastern Mediterranean natural gas. As the Eastern Mediterranean's two current natural gas producers, Egypt and Israel will play a pivotal role in whether the region moves closer to escalation or cooperation. How the triangle of energy relationships among Egypt, Israel, and Turkey is managed will set the broad geopolitical contours for the region. While renewable energy presents new opportunities for cooperation across political fault lines, current major projects in the Eastern Mediterranean follow the pattern of natural gas cooperation, in which engagement with Turkey is absent.

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The future course of the Eastern Mediterranean's transition to green energy will also be influenced by the triangle of energy relationships between Egypt, Israel, and Turkey. This will impact the degree to which regional cooperation in renewable energy will overcome old political divides or simply reinforce them.

An Energy Turning Point: The Rise in European Demand Resulting from the Russia-Ukraine War

The economic war of attrition between the Russian Federation and the European Union following Moscow's 24 February 2022 invasion of Ukraine has altered the commercial outlook for Eastern Mediterranean natural gas. Prior to the invasion, the EU relied on Russian imports for about 40% of its natural gas supply. Russia's stopping of natural gas flows to several EU member states starting in late April 2022 has prompted the Union to turn to Egypt and Israel to help fill the supply gap. On 15 June 2022, European Commission President Ursula von der Leyen signed a memorandum of understanding (MoU) with the energy ministers of Egypt and Israel that created a five-year framework for expanded Eastern Mediterranean gas exports to the EU in exchange for the EU facilitating European firms to invest in exploration and production in Egypt and Israel.[1]

The EU agreement with Egypt and Israel constitutes an extraordinary commercial turnaround for the marketing of Eastern Mediterranean natural gas. Prior to the Covid-19 pandemic, Eastern Mediterranean gas was deemed commercially uncompetitive in the EU market compared to the significantly cheaper supplies from Russia, casting doubt on whether Eastern Mediterranean natural gas actually had a market that would warrant further investment in exploration and production. Needing to replace 155 billion cubic meters (bcm) of Russian

[1] D. Zaken, "Israel, Egypt sign gas supply pact with EU", *Globes*, 15 June 2022.

natural gas, the EU theoretically could consume all of the Eastern Mediterranean's surplus production, including the output of the Republic of Cyprus, which holds the region's third-largest known recoverable reserves. Ankara is unwilling to tolerate the prospect of Cyprus joining the EU-Egypt-Israel agreement and receiving significant foreign investments while the grievances of Turkey and Turkish Cypriots remain unaddressed and Turkey continues to be excluded from the marketing of Eastern Mediterranean gas.

In contrast to the escalation cycle of 2018-20, Turkey's 2021 rapprochement initiatives towards Egypt and Israel, especially Turkey's restoration of full diplomatic relations with Israel, give Turkey an opportunity to exploit Europe's eagerness to purchase Eastern Mediterranean gas to boost its role in distributing this resource to Europe. Giving Ankara stakeholder interest in the marketing of Eastern Mediterranean gas would then have positive spill-over effects for resolving the Cyprus problem and Greek-Turkish maritime boundary dispute. The continued exclusion of Turkey in the face of unprecedented market demand from Europe will only provoke Turkey to use all means at its disposal to preclude further natural gas exploration and production, affecting its disputes with Greece and Cyprus. Turkey's development of deeper economic ties solely with Egypt and Israel could possibly constrain their strong support for Greece and Cyprus in the event of a future confrontation with Turkey, creating an incentive for a new cycle of escalation in the Eastern Mediterranean.

To the Brink and Back: Eastern Mediterranean Energy Geopolitics 2010-21

The discovery and development of offshore natural gas deposits in the Eastern Mediterranean occurred in tandem with the emergence of interlocking security relationships between Egypt, Israel, Greece, and the Republic of Cyprus. The evolution of this alignment began with the 2010 rupture in

security relations between Turkey and Israel, compounded by new shared interests between Israel and Cyprus arising from the first discoveries of Eastern Mediterranean offshore natural gas in Israeli and Cypriot waters in 2010 and 2011, respectively. Sharing a heightened threat perception of Turkey's regional intentions, Israel developed strong tripartite security relations with Greece and Cyprus, featuring regular joint military exercises. By 2015, Israel and Greece had signed a status of forces agreement (SOFA), the first such agreement Israel signed with any nation other than the United States. Israel subsequently signed a SOFA with Cyprus in 2016.

Egypt concurrently developed a strong tripartite security relationship with Greece and Cyprus, starting in 2014 after the 2013 rupture in relations between Cairo and Ankara. Since 2014, Egypt has held over nine tripartite summits with Greece and Cyprus and also conducts regular joint military exercises with each. Within the same timeframe, the Turkish-Egyptian rift also brought Paris and Cairo into a close partnership to oppose the expansion of Turkish influence in Libya, the rest of the Middle East and North Africa, and Sub-Saharan Africa. The Franco-Egyptian partnership also served as a platform for the UAE in its systemic competition with Turkey and Qatar, giving rise to a Franco-Egyptian-Emirati entente whose activities expanded from Africa into the Eastern Mediterranean.[2]

Against the backdrop of this emerging alignment, it was the marketing of the Eastern Mediterranean's offshore natural gas resources that transformed the territorial sovereignty disputes between Greece, Cyprus, and Turkey from a primarily local issue to a major fault line in the strategic conflict between Turkey on the one side and Egypt and Israel on the other. Although Turkey's relations with Israel and Egypt became strained in 2011 and 2013, respectively, the transformation of Eastern Mediterranean energy geopolitics started with the game-changing discovery of

[2] M. Tanchum, "Turkey Advances in Africa against Franco-Emirati-Egyptian Entente", *The Turkey Analyst*, 24 August 2020.

the Zohr natural gas field off the coast of Egypt in August 2015, the Eastern Mediterranean's largest natural gas find to date. Italian energy major Eni, which discovered the Zohr field, is also the lead operator in Cyprus' natural gas development and the lead stakeholder in one of Egypt's two liquefaction plants. Following the Zohr find, Eni began promoting a plan to pool Egyptian, Israeli, and Cypriot gas and use Egypt's liquefaction facilities to cost-effectively market the region's gas to Europe as liquefied natural gas (LNG).[3]

The Egypt-based LNG marketing plan ran afoul of Turkey's plan to use the Trans-Anatolian Natural Gas Pipeline (TANAP) to transport Eastern Mediterranean gas to the EU. TANAP runs across the length of Turkey and is the main pipeline of the Southern Gas Corridor, which transports natural gas from Azerbaijan's offshore Shah Deniz field to Turkey's domestic gas market and the EU. For Turkey, TANAP, as the transit route for new sources of natural gas for the EU, forms the foundation of Ankara's strategic policy to become an international energy transportation hub. Thus, Ankara had been in discussions with Israel to construct an undersea pipeline from Israel's offshore Leviathan gas field to Turkey's coast where it could theoretically feed into the TANAP pipeline via reverse flow. By excluding Turkey and its pipeline infrastructure from the marketing of Eastern Mediterranean gas, thwarting Ankara's own ambition to become an energy hub for Middle Eastern and Caspian basin natural gas to reach Europe, the Egypt-based LNG plan was tantamount to a geopolitical timebomb.

From Turkey's viewpoint, Eastern Mediterranean's *de facto* maritime boundaries unjustly and illegally deny Turkey part of its rightful maritime territory. As such, the region's arrangements for offshore natural gas development that depend on these *de facto* boundaries, particularly as regards Cyprus, are equally illegitimate. The dispute goes back to the so-called

[3] S. Stefanini, "Eni chief: Egypt's gas gain won't harm Israel", *Politico EU*, 16 September 2016.

Seville map, upon which are based the region's commonly accepted maritime boundaries. The EU-commissioned map study prepared by the University of Seville made the arbitrary decision to define maximal boundaries for Greece and Cyprus at Turkey's expense.

The Seville Map, following a very strict interpretation of the United Nations Convention on the Law of the Sea (UNCLOS), used the coast of every inhabited Greek island, no matter how small and no matter how close to Turkey's shores. Turkey's Mediterranean coastline is longer than the driving distance between Paris and Moscow. Yet, some of the nearby small Greek islands – most notably the 9.3 sq. km island of Kastellorizo lying less than two kilometers from Turkey's coast – unfairly diminish Turkey's maritime zone. Under the UNCLOS principle of equity and the international case law based upon it, Turkey is likely entitled to a larger maritime zone on account of its extensive coastline. However, Turkey refuses to become an UNCLOS signatory, closing off an avenue of legal recourse. Ankara also objects to the ongoing exclusion of Turkish Cypriots living in the northern half of the ethnically divided island from the development of Cyprus's offshore natural gas, despite their being the legal co-owners of Cyprus's natural resources. Moreover, Turkey does not recognise the legitimacy of the government of the Republic of Cyprus.

Finding no diplomatic recourse on these issues after Eni's subsequent 2018 find in Cyprus' waters – the Calypso field – gave further impetus for the implementation of the Egypt-based LNG marketing scheme, Turkey opted for gunboat diplomacy to express its displeasure. In February 2018, Turkish naval vessels blocked an Eni drill ship from reaching its intended drill site in Cypriot waters, forcing the company to withdraw it.[4] Contrary to Ankara's desired outcome, the actions served to push Egypt and Israel into closer cooperation with Greece and Cyprus. To mitigate its risks, Eni partnered with

[4] "ENI Ship blocked off Cyprus leaves", *ANSA*, 23 February 2018.

France's energy giant TOTAL (now TotalEnergies) in all of its operations in Cyprus, providing Paris an economic perch to more deeply entrench its opposition to Ankara in the region. Feeling even more severely constrained in its ability to defend its interests, Turkey doubled-down on its gunboat diplomacy in the disputed waters around Cyprus throughout 2018 and 2019. France consequently deepened its military cooperation with Cyprus and Greece, as did Egypt and the UAE. A third gas find in the waters off Cyprus, the Glaucus-1 field, by ExxonMobil in February 2019 confirmed Cyprus's role in the export of Eastern Mediterranean natural gas.

Multilateral energy cooperation between Turkey's regional antagonists was formalised with the 2020 inauguration of the Eastern Mediterranean Gas Forum (EMGF), an international organisation for developing the region's natural gas founded by Italy, Egypt, Greece, Cyprus, Israel, the Palestinian Authority, and Jordan. France was subsequently admitted as a member in the Cairo-headquartered EMGF in March 2021, and the US was granted permanent observer member status. To this day, Turkey remains excluded from the so-called OPEC of Eastern Mediterranean natural gas.

At the same time, Turkey sought to break its isolation by concluding a maritime boundary agreement in late 2019 with divided Libya's then-Government of National Accord based in Tripoli. Turkey intervened militarily on behalf of the embattled Tripoli government, successfully reversing the course of the Libyan civil war by June 2020. Despite Turkey's specious method for drawing the Ankara-Tripoli maritime boundary map, Greece decided to answer Turkey in kind on 6 August 2020, by signing a maritime delimitation agreement with Egypt.[5]

[5] N. ElHennawy, "Egypt, Greece sign maritime deal to counter Libya-Turkey one", *AP News,* 6 August 2020.

After two years of unsuccessful gunboat diplomacy around Cyprus' waters and buoyed by its success in Libya, Turkey pushed the envelope in early August 2020 and responded to the Greece-Egypt agreement by extending its maritime tactics against fellow NATO member Greece. Ankara sent an oil and gas exploration vessel, escorted by a group of five naval warships, to the contested waters near the Greek island of Kastellorizo, despite the fact that Kastellorizo itself was not directly impacted by the Athens-Cairo accord. Turkey's action led to a full-blown stand-off between the Hellenic and Turkish navies and resulted in the collision between a Turkish and a Greek warship on 12 August 2020. In support of Greece, France dispatched warships to the contested waters, eventually sending its *Charles de Gaulle* nuclear aircraft carrier. Subsequently, Egypt conducted joint naval exercises with France and Greece while the UAE sent its F-16 fighter jets to conduct joint air force exercises with Greece and France in the air space over the conflict zone.

The striking demonstration of Middle Eastern solidarity with Greece during the August 2020 naval confrontation caught Ankara off guard and was soon followed by the additional factor of the signing of the "Abraham Accords" on 15 September normalising relations between the UAE and Israel. The Accords profoundly reshaped the Eastern Mediterranean-Middle Eastern strategic architecture by closing a circle of strategic partnerships broadly aligned to offset the expansion of Turkey's "coercive diplomacy" in the region. That circle was further tightened on 18 November 2020, when Greece and the UAE signed a security pact that included an Article V-type mutual defence clause.[6] In January 2021, Israel signed a $1.68 billion 20-year agreement with Greece – the largest defense deal between the two countries – under which the Israeli defense company Elbit Systems is establishing and operating an air combat training facility in Greece, helping to narrow the gap

[6] "Security, investments on the agenda as Mitsotakis visits UAE", *Kathimerini*, 18 November 2020.

between the Hellenic Air Force and its Turkish counterpart.[7] In September 2021, Greece inaugurated the Hercules multilateral joint military exercise conducted with Egypt, the United Arab Emirates, and Saudi Arabia.

In light of these developments, Turkey realised the ineluctable need to recalibrate its policy toward its Eastern Mediterranean and Gulf state neighbors to ease its isolation.[8] After eight years of fierce antagonism toward Egypt, Turkey engaged in a diplomatic outreach effort during spring 2021 that resulted in landmark rapprochement talks in Cairo on 5 and 6 May 2021, the first visit to Egypt by senior Turkish government officials since 2013.[9] While the final outcome of discussions between Turkey and Egypt remains unclear, the acrimonious tone of the rivalry between the two major Mediterranean powers has been muted. Moreover, Egypt became one of Turkey's principal LNG suppliers beginning the fourth quarter of 2021.[10] Coming on the heels of the 5 January 2021 resolution to the Qatar blockade, Turkey's spring 2021 outreach to Egypt was soon followed by a parallel effort[11] to the UAE in late summer 2021 that has resulted in a comprehensive rapprochement that has seen multibillion dollar Emirati investments in Turkey and Turkish drone sales to the UAE.

Concurrent with Turkey's outreach to Egypt and the UAE, Ankara engaged in a similar rapprochement process with Israel, and the two nations restored full diplomatic relations on 17

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[7] S.J. Frantzman, "Israel, Greece sign $1.7 billion deal for Air Force training", *Defense News*, 5 January 2021.

[8] M. Tanchum, "The Logic Beyond Lausanne: A Geopolitical Perspective on the Congruence between Turkey's New Hard Power and its Strategic Reorientation", *Insight Turkey*, vol. 22, no. 3, Summer 2020, pp. 41-55

[9] "Turkey-Egypt talks 'frank and in-depth': Turkish Foreign Ministry", *Daily Sabah*, 6 May 2021.

[10] S. Elliot and D. O'Byrne, "Egypt Emerges as Key LNG Supplier in Q4", *S&P Global Platts*, 9 December 2021.

[11] "UAE, Turkey intensify quest for new chapter in relations as leaders talk", *The Arab Weekly*, 1 September 2021.

August 2022.[12] The prospect that Israel's natural gas could be sold to Turkey and exported to Europe via Turkey's pipelines was mentioned repeatedly during the rapprochement process, including by Turkey's President Recep Tayyip Erdoğan. On 4 February 2022, when he made the landmark announcement that Israel's president would soon be visiting Turkey, Erdoğan reaffirmed Turkey's desire for natural gas cooperation with Israel saying "We can use Israeli natural gas in our country, and beyond using it, we can also engage in a joint effort on its passage to Europe".[13]

The Outlook for Eastern Mediterranean Natural Gas Exports: Egypt, Israel, and Cyprus

When European Commission President von der Leyen signed the 15 June 2022 MoU on expanded EU natural gas cooperation with Egypt and Israel at EMGF headquarters in Cairo, she called the agreement "a big step forward in the energy supply to Europe".[14] For Egypt and Israel, the agreement is potentially transformative. The two countries depend upon each other for their exports of natural gas to Europe. Without an undersea Eastern Mediterranean pipeline that can reach European markets, Israel relies on Egypt's liquefaction facilities to reach those markets. Egypt, in turn, is concerned with meeting its own domestic demand and relies on Israeli gas imports provide a sufficient surplus for export.

In 2019, Egypt's LNG exports totaled 4.8 bcm equivalent, representing a 151% increase over the previous year.[15] Amidst

[12] A. Obel, "Israel and Turkey to restore ambassadors in full renewal of diplomatic ties", *Times of Israel*, 17 August 2022.

[13] "Erdogan Says Turkey, Israel Can Cooperate on Bringing Gas to Europe", *Haaretz*, 4 February 2022.

[14] S. El Safety and A. Rabinovitch, "EU, Israel and Egypt sign deal to boost East Med gas exports to Europe", *Reuters*, 15 June 2022.

[15] S. Elliott, "Egyptian LNG exports more than double in 2019 to 4.8 Bcm despite autumn lull", *S&P Global Platts*, 14 January 2020.

the post-Covid-19 supply shocks in 2021, Egypt exports reached 8.9 bcm.[16] In the first five months of 2022, which includes the first three months of the Russia-Ukraine war, Egypt's LNG exports amounted to 4.7 bcm.[17] Egypt can increase its export volume to 15-20 bcm, depending on supplies from neighbouring Eastern Mediterranean countries, and is likely to do so by 2025 or 2030 at the latest. At present, Egyptian domestic demand consumes over 90% the country's domestic production,[18] and over the next ten years Egypt will be reliant on Israel and possibly Cyprus to create larger exportable surpluses.

Israel's Leviathan field, the Eastern Mediterranean's second largest offshore gas field, started supplying Egypt in 2020 at a rate of total 2.1 bcm annually, increasing to an annual rate of 4.7 bcm in 2022.[19] Expanding Leviathan's annual output from 12 bcm to 24 bcm annually would produce more gas for export via Egypt. Additionally, Israel's Tamar field started to supply Egypt in July 2020 at an annual rate of 1 bcm, which doubled to 2 bcm annually in 2022.[20]

Israel's Karish and Tanin fields could also supply more gas to Europe. The Karish field, located within Israel's EEZ but subsequently claimed by Lebanon as part of its maximalist boundary demarcation, contains 40 bcm. Energean, which operates the Karish field, plans to produce 8 bcm per year, 2 bcm of which is slated for export.[21] Energean has positioned a Floating Production Storage Offloading (FPSO) unit at the Karish field, in anticipation of the successful conclusion of negotiations between Israel and Lebanon on an agreement

[16] A. Kandil, "East Mediterranean Gas Forum can play pivotal role in resolving global energy crisis: Sisi", *Al-Ahram*, 15 June 2022.
[17] Ibid.
[18] S. Tarek, "Egypt: Cairo's ambitions to become a major gas exporter", *The Africa Report*, 18 January 2022.
[19] M. Iden, "Israel Begins Shipping Gas to Egypt via a Subsea Pipeline", *Pipeline Technology Journal*, 11 May 2020.
[20] S. Elliott, "Israel's Delek sees Egypt gas supply at minimum take-or-pay level through 2021", *S&P Global Platts*, 23 July 2020.
[21] "Karish", *Energean*, n.d.

resolving their maritime boundary dispute. The agreement, signed at the end of October, draws the demarcation line on a pragmatic win-win basis that allows Israel to operate the Karish field while enabling Lebanon to solely manage exploration and production in the Qana prospect, which extends into Israeli territorial waters.[22] Karish went into production immediately,[23] and Energean plans then to develop the Tanin field, which holds 27 bcm.[24]

Cyprus' Aphrodite field, the country's first gas find, which contains an estimated 124 bcm, also extends into Israel's EEZ. In September 2022, Cyprus' Energy Minister Natasa Pilides hosted her Israeli counterpart for talks, which concluded with a joint pledge to quickly arrive at a unitisation agreement that would clear the way for production.[25] Concurrently, Aphrodite partners Chevron (35%) and Israel's NewMedEnergy (30%) agreed to invest $192 million in drilling and other development costs to pave the way for production to begin in 2023.[26]

On 22 August 2022, Eni and TotalEnergies announced Cyprus' fourth significant gas discovery in the Cronos-1 field. Estimated to hold about 71 bcm, the Cronos field combined with the three previous finds gives Cyprus about 391 bcm of in-place reserves. This total volume accords Cyprus a significant position in its energy partnerships with Egypt and Israel and accordingly greater geopolitical importance for the EU. Despite its increased reserves, Cypriot Energy Minister Pilides affirmed Cyprus' intention to export to the European Union via the Egypt-based LNG marketing plan. Stating that "for the time being, transporting natural gas to Egypt is the most prevalent

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[22] D. Zaken, "US hands Lebanon draft maritime border agreement with Israel", *Globes*, 2 October 2022.

[23] "Karish Start-Up. Increases Israel Gas Competition", *MEES*, 28 October 2022.

[24] "Tanin", *Energean*, n.d.

[25] M. Hadjicostis, "Cyprus, Israel pledge quick deal in gas field dispute, after progress in talks", *Times of Israel*, 19 September 2022.

[26] "Partners in Cyprus' Aphrodite gas field approve $192 mln investment", *Reuters,* 18 September 2022.

scenario and even following the recent discoveries, no changes to the plans are in sight" Pilides added "given the current situation and the EU's need to stop relying on Russian gas, the new discoveries allow us to move more freely and join the bloc's new programming".[27]

With the addition of natural gas supplies from Cyprus, Eastern Mediterranean surplus supply for export could total 40 bcm by 2030, or even earlier with expedited completion of the required infrastructure.[28] Without any significant new discoveries, the Eastern Mediterranean's surplus supply could increase slightly but would not exceed 50 bcm. Thus, Eastern Mediterranean natural gas exports to the European Union could theoretically replace 26% to 32% of the natural gas supplies the EU received from Russia prior to its war against Ukraine.

Turkey's Natural Gas Outlook: Prospects for Eastern Mediterranean Cooperation

Turkey is the largest natural gas importer in the Eastern Mediterranean and a natural market for exports from its neighbors. Without any current domestic production, Turkey ranks as the world's 6th largest natural gas importer. Purchasing 58.5 bcm in 2021, Turkey's natural gas imports are the largest contributor to the country's ballooning current account deficit.[29] In August 2020, Turkey announced the discovery of offshore natural gas in its Sakarya field in the Black Sea. Current estimates now place Turkey's known Black Sea gas reserves at 540 bcm.[30] In June 2022, Turkey's Energy Minister Dönmez

[27] J. Shkurko, "'Significant' gas discovery in Cyprus' block 6 (Updated)", *Cyprus Mail*, 22 August 2022.

[28] D. Butter, "Egypt's Energy Ambitions and its Eastern Mediterranean Policy", in M. Tanchum (Ed.), *Eastern Mediterranean in Uncharted Waters: Perspectives on Emerging Geo-Political Realities*, Konrad Adenauer Stiftung, 2020.

[29] "Natural gas balance of trade", *Enerdata*, 2021.

[30] M. Temizer, "Bakan Dönmez: Karadeniz'deki gaz rezervi, konutların 30 yıl ihtiyacını karşılayacak büyüklükte", *Anadolu Ajansi*, 8 March 2022.

announced that the Sakarya field will begin annual production of about 3.7 bcm in 2023 and reach about 14.6 bcm by 2026.[31] Thus, Ankara is expecting to meet about 25% of its domestic gas consumption through its Black Sea production. However, even with new domestic production coming online, Turkey still faces the twin challenges of ensuring the security of an affordable supply natural gas for domestic consumption and increasing the volume of natural gas for export to the EU through the TANAP pipeline.

Despite its substantial network of inter-regional pipelines, Turkey started turning to LNG in 2019 to diversify its sources of supply to ensure its domestic energy security.[32] By the end of 2021, Turkey ranked as the fourth largest importer of LNG in Europe, with an increasing amount of LNG coming from Egypt following the spring 2021 rapprochement between the two countries.[33] By Q1 2022, Turkey had become the largest purchaser of Egyptian LNG.[34] The increase in LNG sales to Turkey demonstrates that Turkey could also potentially be included in LNG marketing to Europe. While Egypt has two major liquefaction plants, it lacks adequate storage facilities, whereas Turkey traditionally has underutilised gas storage capacity. By incorporating Turkey into the regional marketing and delivery mechanisms, the marketing of Eastern Mediterranean gas could function more efficiently and replace geo-political antagonisms with stakeholder cooperation.

Of even greater impact would be the construction of an undersea Israel-Turkey gas pipeline that would supply Turkey's domestic market and TANAP. While the TANAP pipeline

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[31] "Enerji Bakanı Dönmez: 2026'da ülkede kullanacağımız gazın yüzde 25-30'unu Karadeniz'deki sahadan karşılayacağız", *BBC Turkce*, 14 June 2022.

[32] N.E. Kaya, "Turkey's gas imports from Russia and Iran fall sharply", *Anadolu Agency*, 24 August 2020.

[33] "Turkey 4th biggest LNG importer in Europe as global trade jumps", *Daily Sabah*, 6 May 2022.

[34] "Turkey top importer of natural gas from Egypt in Q1-2022: CAPMAS", *Egypt Independent*, 19 July 2022.

began transmission with an initial annual capacity of 16 bcm – with 6 bcm slated for Turkey's domestic market and 10 bcm for exports to Europe – the pipeline can ultimately accommodate up to 60 bcm annually with capacity expansion. However, Azerbaijan alone does not have sufficient reserves to utilise this potential and TANAP will require gas from additional suppliers to significantly boost gas exports to Europe.[35]

With Russia likely to continue to block the construction of the Trans-Caspian Pipeline project to connect Turkmenistan's vast natural gas reserves to TANAP, and the Iraqi government in Baghdad likely to block gas exports by the Kurdish Regional Government in northern Iraq, obtaining Eastern Mediterranean gas imports via an undersea pipeline from Israel's offshore fields is presently the most attractive and viable option for boosting export volumes and a strategic desideratum for Turkey. The Israeli gas may not even need to reach Europe directly via TANAP. By using a swap mechanism in which Israeli gas is distributed in south-eastern Turkey near its landfall, an equivalent amount Azerbaijani gas used for Turkish domestic consumption can be freed up for export to Europe.

An undersea natural gas pipeline from Israel's Leviathan field to Turkey would span 500-550 km depending on the landfall on Turkey's coast and would cost approximately $1.5 billion to construct.[36] According to Gökhan Yardım, the former general manager of Turkey's state-owned transmissions operator BOTAŞ who was involved in prior negotiations with Israel, an Israel-Turkey pipeline would require at least 8-10 bcm per year to be transported in order to be commercially viable.[37] A pipeline with this inititial capacity formed the basis of negotiations

[35] M. Tanchum, *A Post-Sanctions Iran and the Eurasian Energy Architecture: Challenges and Opportunities for the Euro-Atlantic Community*, The Atlantic Council, 25 September 2015.

[36] O. Coskun and A. Rabinovitch, "Israel-Turkey gas pipeline discussed as European alternative to Russian energy", *Reuters*, 29 March 2022.

[37] "Eski BOTAŞ yöneticisi: İsrail-Türkiye boru hattının en az beş yılı var", *Diken*, 21 March 2022.

in 2016. Since BOTAŞ is Turkey's largest gas purchaser, the transport of such volumes of Israeli gas would require a purchase agreement with a consortium that includes the state transmissions operator. Aside from renewed political tensions, the 2016 negotiations between Turkey and Israel stumbled on BOTAŞ's demand for a price lower than Israeli producers could offer. However, market conditions based on the accessibility of inexpensive Russian gas have fundamentally changed. On 19 September 2022, President Erdoğan announced that he plans to visit Israel after its 1 November national elections.[38] The visit by Erdoğan would greatly advance the necessary political confidence required for the construction of an undersea gas pipeline.

Eastern Mediterranean Renewables

The Eastern Mediterranean possesses abundant renewable energy resources, with solar energy resources being the most prevalent. Parts of Egypt, Israel, and Jordan form a continuum with the Sahara Desert and possess some of the world's largest solar resources, with direct normal irradiation levels reaching or exceeding 2,300 kWh/m2.[39] Egypt's massive Benban solar park outside of Aswan is one the world's largest, with an installed capacity of 1.8 GW, preventing the annual emission of two million tonnes of carbon dioxide.[40] Combined with the 262.5 MW Ras Ghareb wind farm near the Gulf of Suez[41] and the addition of cleaner cogeneration gas-fired power generation

[38] R. Kampeas, "Turkey's Erdogan tells US Jewish leaders he plans to visit Israel", *Times of Israel*, 20 September 2022.
[39] World Bank, "Middle East and North Africa", *Global Solar Atlas*, 23 October 2019.
[40] "Strategic Environmental and Social Assessment – Final Report Benban 1.8GW PV Solar Park", The New and Renewable Energy Authority (NREA), February 2016.
[41] N. Nhede, "Egypt's largest wind energy farm is now operational", *Smart Energy International*, 5 November 2019.

capacity, Egypt successfully reversed its deficit in electricity production into a surplus capacity that now reaches 15 GW.[42] Although much smaller than Egypt, Israel is a global leader in the development of solar technology and ranks seventh in the world for the use of solar power, with 11% of its electricity generated from solar resources.[43]

Egypt and Israel are each in the process of building 2 GW undersea electricity interconnectors to sell surplus power to Europe. The power initially transmitted via these interconnections will be derived from electricity generated from natural gas, known as gas-by-wire, as well as from renewable energy sources. Important for green energy transition, this infrastructure for the export surplus electricity commercially provides an offtake mechanism to European electricity markets, incentivising further investment in the development of new Egyptian and Israeli renewable energy power production capacity. However, the pattern of interconnection mirrors the configuration of the Egypt-based LNG marketing scheme. The Egypt-based Euro-Africa Interconnector and the Israel-base Euro-Asia Interconnector will each transmit electricity via undersea cables to Cyprus, Crete, and then mainland Greece, from where it can be traded in the European system but cutting Turkey and North Cyprus out from participating in the architecture.

The problem is more egregious on Greece's small and more distant islands, which are not connected to the Greek national electricity grid. To ensure the security of their supplies, these islands have prioritised developing their renewable energy resources. The two leading Greek island projects are the EU-financed Tilos Project,[44] which seeks to power the island

[42] M. Farag, "Could Egypt make Use of Its Energy Surplus?", *Daily News Egypt*, 27 July 2022.

[43] N. Ferris, "The world's top ten solar superpowers", *Energy Monitor*, 22 September 2022.

[44] European Commission, *Technology Innovation for the Local Scale, Optimum Integration of Battery Energy Storage*, n.d.

entirely with utility-scale batteries recharged by wind and solar power,[45] and the Volkswagen-financed project to similarly transition the island of Astypalaia entirely to renewable power generation integrated with the widespread adoption of electric vehicles.[46] While these projects are serving as proof of concept, the investment costs for most of the islands close to Turkey's coast are formidable given the small size of the local markets.

A way to overcome this problem for Greece's remote islands is to build electricity interconnections across the short distances to neighboring Turkey. A win-win solution, such electricity interconnectors to Turkey would create an offtake mechanism for the Greek islands' exportable surpluses and thereby incentivise investment in the development of their renewable energy power generation capacity, while Turks on the coast would have access to more power, reducing electricity costs. Similar forms of cooperation on renewable energy power production, electricity interconnection, and power trading can be conducted between North and South Cyprus even prior to the resolution of the Cyprus problem,[47] creating greater confidence in cooperation and stakeholder interest in an equitable settlement.

Egypt and the Future of Green Hydrogen

As an alternative to electricity interconnection and batteries, green hydrogen holds great promise as both a carrier and storage system for renewable energy. Green hydrogen is produced by using electricity generated from renewable energy to split water into its hydrogen and oxygen components. Green hydrogen is therefore carbon-free, in contrast to conventional hydrogen,

[45] I. Mier, "A small Greek island will become the first in the Mediterranean to run solely on wind and solar power after its businesses have been hindered by blackouts", *Business Insider*, 19 August 2018.

[46] Volkswagen, "Volkswagen Group and Greece to create model island for climate-neutral mobility", 4 November 2020.

[47] "Two practical proposals to solve eastern Mediterranean energy and boundary disputes", Heinrich Böll Stiftung (HBS – Istanbul), 10 October 2020.

referred to as "grey" hydrogen because it is produced from natural gas in a process that releases a considerable amount of carbon dioxide into the atmosphere. Green hydrogen can be converted back into electricity using a fuel cell, making green hydrogen a medium for the storage and transport of energy generated from renewable sources. The least expensive way to store green hydrogen is in the form of its derivative green ammonia. Green hydrogen's analogue to LNG, green ammonia can be transported for export by ship instead of undersea natural gas pipelines that require expensive adaptation to make them suitable for hydrogen gas transmission.

Egypt is the engine of the Eastern Mediterranean's green hydrogen development, being the only country currently with utility-scale green hydrogen production capacity under construction. Egypt is the world's seventh largest ammonia producer,[48] and the country's embryonic green hydrogen industry is primarily oriented around the production of green ammonia. While grey ammonia is used in several manufacturing processes, it is primary use is as a basic constituent in the production of fertilisers. Egypt's leading green hydrogen project is a plant being constructed by the consortium of Norwegian renewable energy company Scatec, the Dutch-Emirati Fertiglobe producer of fertilisers and the Sovereign Fund of Egypt. The plant is slated to use a 100-MW polymer electrolyte membrane electrolyser for the production of green hydrogen.[49] Located in Ain Sokhna near Fertiglobe's subsidiary Egypt Basic Industries Corporation (EBIC),[50] the Scatec operated plant will supply green hydrogen to EBIC for its green ammonia production.[51]

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[48] "Ammonia production worldwide in 2021, by country", *Statista*, January 2022.
[49] Ibid.
[50] Scatec, "Scatec's Green Hydrogen Consortium in Egypt selects Plug Power for delivery of 100 MW Electrolyser", Press Release, 24 November 2021.
[51] Scatec, "Scatec partners with Fertiglobe and the Sovereign Fund of Egypt to develop green hydrogen as feedstock for ammonia production in Egypt", Press Release, 14 October 2021.

Egypt has also engaged the German conglomerate Siemens to construct another green hydrogen plant with a similar electrolysing capacity.[52] Under a broader mandate to help Cairo develop an export hydrogen industry, Siemens' plant is also intended to help developing Egypt's partner landscape – establishing off-take relationships and logistics.[53] As a major grey ammonia producer, Egypt can utilise part of its existing ammonia storage and transportation infrastructure for green ammonia. The question arises as to the geography of Egypt's green ammonia exports and whether the Eastern Mediterranean's green hydrogen connectivity will reflect the configuration of the Egypt-based LNG marketing scheme, which currently reinforces the region's political fault lines through the exclusion of Turkey. In 2021, Israel was the world's twelfth largest exporter of fertilisers exporter, closely followed by Egypt.[54] In addition to Europe, Egypt could export its green ammonia to Israel. For Greece's islands seeking to rely on green energy, Egyptian green hydrogen imports could be potentially used as an alternative energy storage mechanism instead of developing energy cooperation with the nearby coastal areas of Turkey.

In the short-term, it will be a formidable task for Egypt to construct sufficient green hydrogen production infrastructure to entirely replace natural gas in its ammonia industry. To do so, Egypt would need an electrolyser capacity about 100 times the combined capacity of Scatec and Siemens projects,[55] along with the required additional renewable energy power generation capacity While expanding its green hydrogen capacity, Cairo will likely develop its "blue" hydrogen capacity – i.e. producing hydrogen from natural gas through a carbon

[52] Siemes Energy, "Siemens Energy supports Egypt to develop Green Hydrogen Industry", Press Release, 24 August 2021.
[53] Ibid
[54] D. Workman, "To Fertilizers Exports by Country", *Worlds Top Exports*, 2022.
[55] A. Habib and M. Ouki, "Egypt's Low Carbon Hydrogen Development Prospects", Oxford Institute for Energy Studies, November 2021.

capture process minimising the amount of carbon dioxide released. In July 2021, Eni and Egypt signed an agreement to assess the feasibility to produce both green hydrogen and blue hydrogen.[56] The latter is likely to be the higher priority, as Eni could potentially use Egypt's depleted natural gas fields for the storage of carbon dioxide produced by carbon capture. Egypt is currently the world's sixth largest producer of urea, also used in nitrogen-based fertilisers, and could relatively easily use the captured carbon dioxide for urea manufacture.[57] Blue hydrogen is also attractive to Eni, as carbon dioxide can be used for enhanced oil extraction in aging fields, which Eni manages throughout North Africa and in nearby regions.

The pace and extent of Egypt's development of green hydrogen will ultimately depend on foreign investment partnerships and on the robustness of export markets. The economic viability of blue hydrogen in Egypt for ammonia and urea production means that natural gas will continue to be a prominent factor in the energy geopolitics of the Eastern Mediterranean during this decade.

Conclusion: Charting a New Course for Eastern Mediterranean Energy

The Eastern Mediterranean is precairously poised between escalation and cooperation over the region's natural gas resources, as new demand from EU markets is likely to attract foreign investment in further exploration and development. Cyprus has been attempting to build its own LNG terminal at its Vasilikos port with EU financing,[58] and under the present

[56] "Eni signs an agreement to produce hydrogen in Egypt", *Eni,* Press Release, 8 July 2021.

[57] "Egypt 6th in world in urea production, produces 7.8M tons of nitrogen fertilizers", *Egypt Today*, 28 December 2021.

[58] E. Hazou, "LNG project: Problems from the outset", *Cyprus Mail*, 7 February 2022.

circumstances may receive an FSRU in 2023 with European Union assistance.[59] Aside from expanded exploration and the start of natural gas production, Cyprus' development of its own liquefaction facility in Vasilikos to manufacture LNG from Cypriot and Israeli gas supplies would fundamentally change Cyprus' status and be viewed as provocative by Turkey. In April 2022, Energean and the oil and natural gas trading gaint Vitol proposed to bring an FLNG unit to be moored at Vasilikos for the annual production of LNG from 4 bcm of Israeli and Cypriot gas.[60]

In August 2022, Turkey inaugurated a new drill ship to operate in the Eastern Mediterranean, expanding its fleet in the region to four drill ships and two seismic exploration ships, each accompanied by naval escorts.[61] Initially avoiding provocation, Turkey's new state-of-the-art drill ship began operations 55 km off the coast of Gazipaşa in Turkey's southwestern Antalya province.[62] Nonetheless, Turkey has resumed an increasingly strident and antagonistic posture toward both Greece and Cyprus, which is likely to intensify throughout 2022 and into 2023, in the absence of new measures to include Turkey in the marketing of Eastern Mediterranean energy.

The renewed prospect of the construction of an Israel-Turkey undersea natural gas pipeline offers a unique opportunity for the transformation the Eastern Mediterranean's energy geopolitics. When approached in a comprehensive regional manner, the arrangements for an Israel-Turkey natural gas pipeline could offer transit revenue to Cyprus – which could be apportioned to both North and South Cyprus – while a specifically designated

[59] G. Kakouris, "Nicosia in waiting game for LNG supply and distribution", *Kathimerini Cyprus*, 31 May 2022.

[60] P. Stevenson, "Energean & Vitol Eye Israel-Cyprus FLNG Tie-Up", *MEES*, 6 May 2022.

[61] "We have an offshore drilling fleet that is rare in the world", Directorate of Communications, 9 August 2022.

[62] A. Kehale, "Yörükler-1 kuyusu kavga çıkarmayacak", *Cumhuriyet Gazetesi*, 10 August 2022.

quantity of gas could be diverted through an auxillary pipeline to a liquefaction facility in Vasilikos involving revenue-sharing for Turkey and North Cyprus as well. Under such an agreement, Turkey could become part of the Eastern Mediterranean Gas Forum. Egypt and Israel could be the driving forces behind an initiative that could be incentivised by the European Union, which both needs the natural gas and is keen to find new approaches toward a solution to the Cyprus problem and the Greece-Turkey maritime boundary dispute.

Until Turkey is admitted into the EMGF, a parallel platform for the promotion of win-win regional renewable energy cooperation should be established with Turkey as a founding member. An Eastern Mediterranean Renewable Energy Forum could facilitate the cross-boundary cooperation in renewable power production and electricity interconnection, bridging political fault lines and potentially creating a new map for Eastern Mediterranean energy cooperation. Turkey's private sector energy industry owns significant minority shares in three Israeli power plants.[63] An all-weather relationship based on commercial pragmatism, Israeli-Turkish private sector energy cooperation could potentially be leveraged to facilitate greater regional electricity interconnection cooperation between Turkey and Greece as well as North and South Cyprus. The advance of the Israel-Lebanon maritime boundary negotiations has shown that win-win solutions based on commercial pragmatism and flexibility offer the best possibility for the Eastern Mediterranean to chart a new course toward region-wide cooperation. Without such an approach, the conditions for a new cycle of escalation remain.

[63] Zorlu Enerji owns a 42% stake in Ashdod's power plant, a 25% stake in the 840 MW Dorad power plant in Ashkelon and a 42% stake in the 120MW Ramat Negev cogeneration plant; N.A. "Energy", *Zorlu Holding*, n.d.

4. The Emerging Saudi Power Momentum: How the Conflict in Ukraine Shapes Saudi Energy Policy*

Noura Y. Mansouri

Saudi Arabia continues to play its role as a global oil supply "safety valve" among other OPEC (Organization of the Petroleum Exporting Countries) Plus members. Historically, Saudi Arabia's oil production has played a critical role in balancing global energy markets. It is the world's swing producer, acting primarily to balance oil markets and meet oil demand. It can scale up oil output, thanks to its agile infrastructure, bolstered by continued upstream investments, some of the lowest costs per barrel and its spare capacity. Furthermore, it does so in a relatively environmentally friendly way, as the country has one of the lowest carbon intensities per barrel globally.

Through OPEC and OPEC Plus, Saudi Arabia and its partners managed to cushion supply disruptions in the post-Covid-19 period. It is also likely to continue to play an important role in the period to come. Against this backdrop, the conflict between Russia, a major gas exporter and the world's third-largest oil producer and grain exporter, and Ukraine, an important grain exporter, has given rise to global energy and food crises, and one of the worst security crises in modern Europe. Disrupted energy supplies, which caused energy and food prices to rise further,

* The views expressed are those of the author and do not necessarily reflect the views of KAPSARC or Saudi Arabia.

coupled with monetary easing during the pandemic, have led to rising inflation, and will eventually lead to "stagflation" across the globe.

However, even before the outbreak of the conflict, the global order was shifting. Russia was actively increasing its footprint in the Middle East and North Africa region, and China's growing economy and rising importance and influence appear to have prompted the MENA to pivot eastward. The United States' increased energy independence due to the shale revolution, as well as its weakening presence in the MENA region, had created a vacuum that other players quickly attempted to fill. This has perhaps diminished the historic relationship between the US and its Gulf allies. The resulting multipolar global order is diluting the US dominance, thus impacting, expanding and reshuffling alliance strategies in the MENA region.

The world is relying on Saudi Arabia and its ability to alleviate the worsening energy crisis by pumping more oil to cushion supply shortages. However, Saudi Arabia continues to focus on ensuring the international oil market is kept out of international politics and remains adequately supplied. Saudi Arabia's ongoing upstream investments have made it one of the last reliable sources of spare capacity, but its capacity is a precious resource to be used in case of extreme events.

Given this context, energy security has risen to the top of the global agenda. In particular, European countries, suffering from their dependence on Russian oil and gas, are now reverting to consuming more coal to replace Russian imports. This is in strict opposition to the COP26 pledge to "phase down unabated coal". The Russia-Ukraine conflict is a grave reminder of the reality of our world today, where climate change concerns lose their salience when countries are faced with a growing need for energy security. Although attaining energy security may speed up the long-term global energy transition and Europe's transition away from Russian hydrocarbons, energy transitions do not happen overnight. Investments in all forms of energy (coal, oil, gas, renewables and nuclear), as well as critical

minerals for renewables and electric vehicles, must keep up with global demand growth to ensure an orderly and smooth energy transition.

The conflict in Ukraine has highlighted Saudi Arabia's position at the centre of global affairs, owing to its energy-superpower status as the world seeks relief during the energy crisis. Saudi Arabia can help ease the international oil market disruptions causing Europe's energy crisis, and thus any direct spillovers to the world economy. Today, Saudi Arabia enjoys unprecedented geopolitical power and has well-diversified multi-vector strategic partnerships that have been made more robust due to current affairs.

Global Impacts of the Conflict in Ukraine

In an already fragile world recovering from Covid-19 and its implications, the outbreak of the Russia-Ukraine conflict on 24 February 2022, amplified the adverse consequences of the pandemic. The outbreak instigated a series of multifaceted disruptions across different sectors globally, as both warring countries are leading exporters of energy, food and fertilisers. These disruptions have caused a global economic slowdown, energy and food crises, inflation and "stagflation" – all of which continue to unfold.

Since the onset of Covid-19, the global economy has been grappling with the effects of the pandemic, which restricted travel, closed businesses, and enforced lockdowns on populations. With the slowdown in global economic growth, energy demand fell rapidly, causing an oil glut and an unprecedented collapse in oil prices. Before the outbreak of the conflict, many of these pandemic-induced impacts were dissipating, and global economic growth was set to recover in 2023, returning to pre-pandemic levels. In fact, many economies have rebounded and demand for energy, food and fertilisers picked up pace and, in some cases, exceeded supply, driving prices upward.

However, the outbreak of the conflict appears to have set back the global recovery, with global growth projected to slow once again from an estimated 6.1% in 2021 to 3.6% in 2022 and 2023.[1] Some economists have even warned that such a "negative dynamic could trigger a new global financial crisis".[2] Global geopolitical risks have soared,[3] inflation rates are skyrocketing, reaching around 9%, a 40-year high in the United Kingdom and the US,[4] and economic recessions are already hitting major regions, including Europe, the US and China. The rest of the world, especially vulnerable regions, is at risk from economic spillovers caused by soaring living costs. The United Nations Conference on Trade and Development's Commodity Price Index has recorded massive increases globally since January 2020: a 37% rise in food prices, a 22% rise in crude oil prices and a 17% rise in shipping prices.[5] These hikes are expected to push the most vulnerable into food insecurity and extreme poverty by the end of 2022.

Russia and Ukraine are among the top five producers and exporters of wheat and other grains globally, accounting for 29% of wheat exports. In addition, the global agriculture industry is greatly dependent on fertilisers, 20% of which are supplied by Russia. Another 20% is blocked by sanctioned Belarus, putting the world at risk of a prolonged food crisis.[6] The unfolding crisis is particularly alarming for the MENA region, which is home to over 20% of the world's acutely food-insecure people, despite

[1] International Monetary Fund (IMF), *World Economic Outlook April 2022. War Sets Back the Global Recovery,* Washington, DC, April 2022.

[2] K. Rogoff, "Growing Threat of Global Recession", *Project Syndicate*, 26 April 2022.

[3] D. Caldara, S. Conlisk, and M. Iacoviello, "The Effect of the War in Ukraine on Global Activity and Inflation", Federal Reserve, Notes, 27 March 2022.

[4] "UK inflation hits 40-year high amid Russia's war in Ukraine", *AP News*, 18 May 2022; A. Phillips, "Ukraine war: US inflation reaches highest rate since 1981 as conflict pushes up energy prices", *Sky News*, 12 April 2022.

[5] UNCTAD, *Global impact of war in Ukraine: Energy crisis*, Geneva, 2022.

[6] J.K. Bourne, "Global food crisis looms as fertilizer supplies dwindle", *National Geographic*, 23 May 2022.

accounting for only 6% of the world's population. For example, in Yemen alone, the number of people experiencing acute food insecurity rose from 15 million to over 16 million in just three months.[7] About 70% of Russian and 40% of Ukrainian exports of wheat, maize and sunflower oil go to the MENA. Lebanon imports 95% of its wheat, maize and sunflower oil, Sudan 90%, Egypt 85%, Tunisia 50%, Yemen 40% and Jordan and Morocco 25%.[8]

Food insecurity can trigger political instability and social unrest and was one of the major underlying factors that sparked the "Arab Spring" revolts in 2011. Today, Egypt battles record high grain prices to feed its population of 100 million. In March 2022 Saudi Arabia pledged $15 billion in economic assistance to Egypt to ease some of the price pressures it is experiencing. Along with contributions from Qatar and the United Arab Emirates (UAE), a total of $22 billion was offered to Egypt,[9] mitigating the potential for disruptive social unrest and instability in the country. Nonetheless, the MENA region is prone to compounding negative effects of food security and commodity prices. Such shock-waves will thus have dire socio-economic impacts on people, reducing the appetite for investment inflows and tourism. This may hamper investment and economic growth in the region.

As crude oil prices were pushed to over $130 per barrel following the start of the conflict in Ukraine, threats to energy security have prompted actions by many countries. On 1 April 2022, International Energy Agency (IEA) countries collectively released 120 million barrels, 60 million of which were released by the United States. This action was the second coordinated release of emergency oil since the conflict began,

[7] F. Belhaj, "Compounded stress: The impact of the war in Ukraine on the Middle East and North Africa", World Bank Blogs, 7 March 2022.

[8] *The impact of the Ukraine war on the Arab region: Food insecurity in an already vulnerable context*, The Arab Reform Initiative (ARI), 11 March 2022.

[9] N. El Sawy, "Gulf countries pledge $22bn to help Egypt avoid economic crisis amid Russia-Ukraine war", *The National News*, 5 April 2022.

and the fifth and largest stock release in history.[10] As a result, the IEA confirmed that over the next six months, around 240 million barrels of emergency oil stocks (1 million barrels per day [MMb/d]) will be made available to the global market.[11] Despite this temporary supply boost, increased sanctions on Russia and undersupply from some OPEC Plus members indicate a persistent upside risk to oil prices.

In another action triggered by the conflict's global economic impact, the US recently enacted the $750 billion Inflation Reduction Act (IRA), a scaled-down version of the Build Back Better Act. In the IRA, $369 billion is dedicated to energy and climate policies. This includes a bundle of incentives for the fossil fuel industry and low-carbon technologies, including carbon capture, utilisation and storage (CCUS), hydrogen development, renewable energy, nuclear energy, sustainable fuels and energy efficient home insulation. The IRA is thus addressing both energy security and climate change. This puts the US on a path towards reducing greenhouse gas emissions (GHG) by 40%, lowering households' energy costs by 10% and creating 1.5 million new jobs by 2030.[12]

While the impacts of the Russia-Ukraine conflict have affected the global economy adversely, oil exporting countries have enjoyed surging profits owing to record oil prices. In Q1 of 2022, Saudi Arabia recorded year-on-year real gross domestic product (GDP) growth of 7.6%. This increase was the world's highest recorded growth and more than double the global average.[13] Saudi Aramco has also become the world's most valuable company and is worth $2.43 trillion.[14]

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[10] B. Cronin, "31 countries plan a big release of emergency oil to ease gasoline prices at the pump", NPR, 6 April 2022.

[11] "IEA confirms 'unprecedented' 120 million barrel stock release", *S&P Global Platts*, 7 April 2022.

[12] *Summary: The Inflation Reduction Act of 2022*, 11 August 2022, retrieved from Senate.

[13] International Monetary Fund (IMF), "GDP per capita", Washington, DC, 27 July 2022.

[14] M. Toh, "Saudi Aramco eclipses Apple to once again become the world's most

Indeed, Saudi Arabia has reaffirmed its oil dominance in the region and in OPEC Plus, enjoying all-time high oil revenues and a greater global market share. Saudi Aramco made a record $48.4 billion profit in Q2,[15] after revenues rose 80% to 562 billion Saudi riyals (approximately $150 billion). Hence, the Ukraine-Russia conflict has highlighted Saudi Arabia's role in energy markets and global politics.

Global Power Shifts and Middle East Allies

The shift in the global power balance has affected alliances in the Middle East, and prompted MENA countries to pivot towards the East,[16] signalling a post-Western world.[17] The US has partially retreated from the global stage,[18] beginning with the Obama administration's military withdrawal from the region. This foreign policy has continued under the Trump and Biden administrations. For example, the US has withdrawn from Iraq, Afghanistan, and partly from Syria, and has reduced its involvement in the Palestinian-Israeli conflict. Several rising powers have attempted to fill this vacuum on the global stage, including Russia and China. Other global actors, such as Japan, South Korea and India, albeit with lesser powers, are also gaining a foothold.

The US role as the long-time security guarantor of the Gulf Cooperation Council has declined considerably over time. Many believe that "oil-for-security is now in the past".[19]

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valuable company", *CNN Business*, 12 May 2022.

[15] "Oil behemoth Aramco beats forecasts with record Q2 profit of $48.4bn", *Arab News*. 14 August 2022.

[16] C. Layne, " The Global Power Shift from West to East", *The National Interest*, 2012, pp. 21-31.

[17] L. Sanders IV, "'A post-Western age': Munich Security Report details fragile world order", *DW*, 13 February 2017.

[18] T. Piccone, "Opinion: 5 Ways The U.S. Retreated From The World Stage Under Trump This Year", *NPR*, 26 December 2018.

[19] R.B. Alsaud, "New Shape for US-Saudi Relations", *Politico*, 14 July 2022.

Although the US and Saudi Arabia still enjoy a strategic alliance, it is not as robust as it once was. The US does not need as much Middle East oil as it did previously, partly because of its growing energy independence, powered by its revolutionary use of hydraulic fracturing technology to reach and unleash its non-conventional hydrocarbon sources. The US now diversifies its oil imports from countries in South and North America, Europe, and the Middle East. Clearly, the bilateral relationship between Saudi Arabia and the US was built on trade in oil and arms, but that portfolio has diversified significantly.

Diminishing US unipolarity implies the rise of multipolarity. The rise of China and the Shanghai Cooperation Organization (SCO) in recent decades, plus the Belt and Road Initiative, have rendered China's infrastructure projects purely transactional. For example, while China has grown its partnerships and infrastructure projects in the MENA region, yet it does not intervene in countries where it does business based on their political or humanitarian record, unlike other Western powers in the region. As a result, Middle Eastern countries have an attractive alternative to the Western powers' approach of long-term infrastructure projects and security deals that often come with pre-conditions, political interventions and humanitarian interference.[20] China has become Saudi Arabia's largest oil consumer and their bilateral relations are warming. This is in part owing to the former's increasingly significant infrastructure projects in the region.

As relations between Riyadh and Washington reached their nadir, it was reported that the Kingdom was even considering selling crude oil in Chinese yuan.[21] Later, the Saudi Aramco Chief Executive Officer described the reports as "speculation".[22]

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[20] Y. Liu, "On the Great Power Intervention in the Middle East Upheaval and Political Trend in the Middle East", *Journal of Middle Eastern and Islamic Studies*, 2013, pp. 1-34.

[21] S. Said and S. Kalin, "Saudi Arabia Considers Accepting Yuan Instead of Dollars for Chinese Oil Sales", *Wall Street Journal*, 15 March 2022.

[22] "Aramco CEO says news on Saudi oil sale in Yuan is speculation as Capital

Economist Jason Tuvey of Capital Economics also noted that "the dollar peg has been the fundamental anchor of macroeconomic stability in Saudi Arabia for decades," and that even if Saudi Arabia received Chinese currency for its oil sales to China, it would still need to trade in US dollars.[23] Kuwait was the first Gulf country to de-peg from the US dollar in favour of a currency basket in 2007, in reaction to a decline in the US currency.[24]

Saudi Arabia has recently shifted toward multi-vector partnerships with global powers, partly driven by the main importers of its oil, which are now mainly in the East – China ($24.7 billion), Japan ($15.1 billion), South Korea ($12.8 billion), and India ($11.1 billion). They are followed by the US as the fifth-largest consumer ($6.59 billion).[25]

Moscow is aiming to capitalise on the friction in the US-Saudi relationship and pursue Riyadh more actively. The creation of OPEC Plus in 2016 has cemented the budding Saudi-Russian bilateral relationship, arguably creating a new oil order.[26] Created in response to the adverse market conditions through the Declaration of Cooperation in December 2016 (Algiers Agreement), OPEC Plus brought together OPEC members and 10 non-OPEC oil-producing countries to rebalance and stabilise the market. OPEC's original 14 members controlled 35% of global oil supplies and 82% of proven reserves. With OPEC Plus, those proportions have increased to 55% and 90% respectively.[27] This has provided OPEC Plus with a greater

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Economics rules it out", *Arab News*, 20 March 2022.

[23] "Economist rules out complete Saudi shift to yuan in oil deals", *Arab News*, 20 March 2022.

[24] N. Ismail and F. MacDonald, "Kuwait Currency Peg in Spotlight With State Unable to Borrow", Bloomberg, 11 February 2021.

[25] "Crude Petroleum in Flag Saudi Arabia", Observatory of Economic Complexity (OEC), 11 August 2022.

[26] Bradshaw, T. Van de Graaf, and R. Connollyc, "Preparing for the new oil order? Saudi Arabia and Russia", *Energy Strategy Reviews*, 2019.

[27] Organization of the Petroleum Exporting Countries (OPEC), "OPEC Share of World Crude Oil Reserves", 26 August 2022.

influence over world oil markets and the global economy, and is credited as Saudi Arabia's signature foreign policy achievement.

Russia is actively increasing its political, diplomatic, military and economic footprint in the MENA region. Its annual trade with the GCC has now reached $5 billion,[28] owing to steadily increasing arms sales and infrastructure and nuclear energy projects. Russia's Rosatom is building nuclear power plants in Turkey and Egypt, which portend the creation of long-lasting institutional relations between the three countries for at least another century and firmly secure Russia's foothold in the region. Russia's establishment of military bases in Syria is also worth noting. Saudi Arabia and Russia do not agree on the conflict in Syria, but unlike the US, Russia is aligned with Saudi Arabia on the conflict in Yemen.

Since the start of the Russia-Ukraine conflict, OPEC Plus has maintained a unified position on the conflict and adhered to the fundamentals of the 2016 Algiers Agreement. Saudi Arabia has maintained a neutral stance towards the conflict; it has focused on oil market mechanisms and refused to politicise oil markets to maintain their reliability and stability. At the United Nations Security Council, the UAE (joined by China and India) abstained from voting on a resolution condemning Russia's aggression in Ukraine. The Arab League also called for diplomacy, consideration of the humanitarian situation and avoidance of escalation, without necessarily condemning Russia's actions.[29]

Saudi Arabia has focused on oil market mechanisms through OPEC and OPEC Plus and reiterated that "the oil market should not be politicised".[30] UAE Energy Minister Al Mazrouei also reiterated that "We need to decouple politics from

[28] M. Alami, "Political concerns shape Russia's economic relations with the GCC amid the Ukraine crisis", *Arab News*, 21 March 2022.

[29] E. Salah, "Arab League urges 'diplomatic' resolution to 'crisis in Ukraine' without mention of Russia", *Mada Masr*, 28 February 2022.

[30] M. El Dahan, R. Alkousaa, and Y. Saba, "UAE, Saudi say OPEC+ should not play politics", *Reuters*, 29 March 2022.

energy availability or else the result is poverty and economic stagnation".[31] When asked about Saudi-Russian relations during the St. Petersburg International Economic Forum in mid-June, the Saudi energy minister replied that they were "as warm as the weather in Riyadh".[32]

Hard geopolitics, however, often tests the strength of discourse. Both Saudi Arabia and the UAE voted on the United Nations General Assembly resolution against the use of force in Ukraine. They have demanded an "immediate halt to Moscow's attack on Ukraine and the withdrawal of all Russian troops", reaffirming their respect for the sovereignty of nations.[33] Saudi Arabia has clarified that it respects countries' sovereignty and the sanctity of international borders, urging Russia and Ukraine to reach a ceasefire settlement peacefully.

Regionally, Saudi Arabia has focused on strengthening governance and alliances. At the Al Ula 41st Gulf Summit (GCC Summit 41 2021) in January 2021, it re-emphasised GCC unity, which effectively ended the Gulf crisis, namely the three-year Qatar blockade. Saudi Arabia is broadening its focus to its regional neighbours, including Egypt, Jordan and Iraq, who are all being connected to the Gulf Cooperation Council Interconnection Authority (GCCIA) electricity grid. This will create a pan-Arab market that will eventually connect to Europe.[34] Egypt has started an interconnection project with Saudi Arabia to exchange 3,000 megawatts (MW) of electricity. Jordan has signed a memorandum of understanding with the GCCIA to connect to the GCC-Egypt grid for a 2,000 MW electricity exchange. Finally, Iraq recently signed a deal

[31] R. Husari, "Gulf oil producers feel vindicated, but don't expect them to turn on Russia", Middle East Institute (MEI), 31 March 2022.

[32] "Russia-Saudi relations 'as warm as the weather in Riyadh', Prince Abdulaziz says", *Arab News*, 17 June 2022.

[33] "MENA majority votes for UN resolution to end war in Ukraine", *The Arab Weekly*, 3 March 2022.

[34] F. Abujadayel and N. Narayanan, "GCC grids aim to connect with Europe once Egypt, Jordan, and Iraq interlinked", *Arab News*, 27 June 2022.

to connect to the GCCIA electricity grid (total transmission capacity of 1,800 MW), with construction expected to take about two years.[35]

Moreover, at the Jeddah Security and Development Summit on 16 July 2022, the assembled leaders from the GCC, the US, Iraq, Jordan and Egypt declared a joint vision for regional peace and prosperity, marking a solid alliance in the region during these uncertain times.

The visit of US President Joe Biden to Saudi Arabia aimed to re-strengthen and reaffirm US-Saudi bilateral relations. Although the historical "oil for security" era may have ended, their partnership can continue in areas such as security, energy, climate, space and investment, as announced in the Jeddah Communiqué.[36] However, even after President Biden's visit, Saudi Arabia's position on increasing oil supplies remains the same (i.e., allowing market dynamics to determine output). The only concession was that OPEC Plus, at its first meeting after Biden's visit to Saudi Arabia, committed to producing an additional 100,000 barrels a day in September.[37]

The US has therefore revived its efforts to proceed with Iran's Joint Comprehensive Plan of Action (nuclear deal) and revisited the possibility of lifting economic sanctions against Iran to increase its oil supply. The nuclear deal was not welcomed by Saudi Arabia and others in the region, as it is perceived as ineffective, "kicking the can down the road" instead of restricting Iran's enrichment plans post-2026. It is also suggested that the deal does not tackle Iran's ballistic missiles and proxy support in the region. Therefore, the US must not rush the deal's negotiations and sign a bad deal solely to secure more oil in the market.

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[35] "Saudi Arabia, Iraq sign electricity interconnection agreement", *Saudi Gazette*, 16 July 2022.

[36] The White House, *The Jeddah Communique: A Joint Statement Between the United States of America and the Kingdom of Saudi Arabia*, 15 July 2022.

[37] J. Gross, "OPEC Plus members agree to a small increase in oil production", *The New York Times*, 3 August 2022.

Saudi Arabia as a Global Oil Supply Safety Valve

Saudi Arabia's oil production and spare capacity play an important role in global energy security. The Kingdom is the world's third-largest oil producer and second-largest holder of proven crude oil reserves, which amount to 267,192 million barrels or 17% of the world total.[38] Saudi Aramco's continued upstream investment – even when oil prices plunged to $30 per barrel in 2016 – has supported building oil production capacity to meet demand. According to Saudi Aramco's President and CEO Amin Nasser, "While global market volatility and economic uncertainty remain, events during the first half of this year support our view that ongoing investment in our industry is essential – both to help ensure markets remain well supplied and to facilitate an orderly energy transition".[39]

Investments in the oil and gas industry are constantly facing challenges. Oil investments have fallen considerably, particularly during the last eight years. Four key challenges to the industry's investment attractiveness were identified by Arboleda Larrea and Al Sadoon (2022):[40] first, price volatility; second, uncertainties around significantly divergent long-term forecasts; third, increasing climate change concerns; and fourth, the lack of regulation on environmental, social and governance (ESG) frameworks, making them unclear. Moreover, Julio Arboleda Larrea, a fellow at KAPSARC, noted that "despite higher oil prices, shale production has not bloomed as before due to financial discipline, i.e., the prudent financial behaviour of shale oil producers, which aims to recover investment or to pay loans as soon as possible, rather than increase production and borrow beyond the producer's payment capacity".

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[38] OPEC (2022).

[39] *Saudi Aramco CEO says record Q2 results reflect higher demand for products*, Argaam, 14 August 2022.

[40] J.M. Arboleda Larrea and H. Al Sadoon, "Investment Challenges Affecting the Oil and Gas Industry", KAPSARC Commentary, 22 August 2022.

Further, the secretary general of the International Energy Forum warned that new factors triggered by the Russia-Ukraine conflict "are all holding back new investment in upstream oil and gas at a time when the world needs it most".[41] The future of investment in the hydrocarbons industry is therefore troubling, as markets were already tight before the conflict, due to the investment crisis and rising energy demand post-Covid-19. To ensure market balance, upstream oil and gas investment would have to increase to and be sustained at pre-Covid levels ($525 billion) until 2030.[42] Saudi Aramco plans to spend $300 billion singlehandedly in upstream investments over the next decade.[43]

Saudi Arabia and the UAE have the lion's share of OPEC's readily available spare capacity, and virtually all the world's remaining spare capacity,[44] at roughly 2.5 MMb/d. This capacity could stabilise the oil market by increasing the available supply. The two could replace part of Russia's oil in the European market by increasing production relatively quickly due to their low production costs. However, they have publicly committed to retaining the previous oil targets of OPEC Plus. Moreover, when the European Union's ban on Russian oil becomes effective,[45] this could lead to a shortfall of 2.2 MMb/d of crude oil and 1.2 MMb/d of petroleum products, according to the IEA.

Other MENA producers could help cushion supply disruptions in Europe. For example, Qatar is sitting on the world's third-largest natural gas reserves, although it has agreed long-term liquefied natural gas (LNG) contracts with India and South Korea. Nonetheless, with billions invested in expanding

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[41] International Energy Forum (IEF), "New Factors Hold Back Energy Investment When World Needs It Most, Warns IEF", 21 June 2022.

[42] *The IEF Oil and Gas Investment Outlook*, A report by the International Energy Forum (IEF) and IHS Markit, Riyadh, 2021.

[43] "Aramco plans to spend $300 billion over 10 years in upstream oil and gas: CEO", *Reuters*, 13 November 2017.

[44] J. Gnana, "Saudi Aramco to raise output capacity to 12.3 million b/d by 2025", *S&P Global Platts*, 14 August 2022.

[45] European Council, "EU sanctions against Russia explained", 16 August 2022.

production, more gas can be expected to flow into Europe in the coming years. Algeria is already a major natural gas supplier to Europe and has been increasing its upstream investments. Even Iran could contribute up to 1.2 MMb/d if US sanctions were lifted.

Saudi Arabia and MENA producers must consider a number of factors before increasing the supply of oil to the market. First, stepping up production capacity requires time (up to two years, but even three to five years for new conventional developments) and investment. Second, long-term contracts with Asian partners and others will have to be honoured. Third, OPEC Plus agreements and their respective ceilings must be accounted for. Fourth, international relations with multi-vector partnerships, including with Russia and China, must be maintained. Therefore, increasing oil production is a complex situation.

During the US-Arab Summit in Jeddah, the Kingdom's Crown Prince HRH Prince Mohammed bin Salman bin Abdulaziz Al Saud reiterated that after increasing its oil production capacity to 13 MMb/d by 2027, Saudi Arabia "will not have any additional capacity to increase production". The same statement was given in May by Saudi Energy Minister HRH Prince Abdulaziz bin Salman bin Abdulaziz Al Saud. Hence, the message was not influenced by President Biden's visit. In its first meeting after Biden's visit to Saudi Arabia, OPEC Plus said it would produce an additional 100,000 barrels a day in September.[46] However, this was reversed a month later when OPEC Plus decided to cut production by 100,000 barrels a day.[47]

Most recently, OPEC Plus in their early October meeting, decided to cut oil production by 2 mbpd starting from November.[48] Some commentators explained the decision as

[46] "OPEC+ Answers Biden's Diplomacy With 'Minuscule' Output Hike", *Bloomberg*, 3 August 2022.

[47] S. Reed, "OPEC Plus Agrees to Cut Production by 100,000 Barrels a Day", *The New York Times*, 5 September 2022.

[48] S. Meredith, "OPEC+ to cut oil production by 2 million barrels per day to shore up prices, defying U.S. pressure", *CNBC*, 6 October 2022.

a pre-emptive measure for maintaining stability of global oil markets, avoiding a collapse of oil prices, reversing a deepening recession and changing market sentiment. This was re-emphasised by the Saudi foreign minister, who said Saudi Arabia's ties with the US are strategic and have advanced security and stability in the region, and that the oil cut was made purely for economic reasons and was taken unanimously by OPEC Plus members.[49] Some have credited the US with playing the role of a new swing producer,[50] though others believe this role is short-lived and that shale oil will, in fact, contribute to future price instability.[51] The dominance of OPEC has faded with the growth of non-OPEC producers, particularly shale producers. Many commentators have asserted that Saudi Arabia remains an important swing produce.[52] This has remained especially true since the creation of OPEC Plus in 2016.

Saudi Efforts Towards Energy Diversification

The Kingdom has been using its oil revenues to maintain the strength and excellence of its oil industry to ensure the reliability and stability of the international oil market. However, Saudi Arabia has also used its oil revenues to diversify its energy mix and economic base, as well as to meet its climate targets. Among several important initiatives, it has ushered in a new era of meeting net-zero emissions by 2060.

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[49] "Saudi FM defends OPEC+ decision, says ties with US are strategic", *Al Arabiya English*, 11 October 2022.

[50] R.G. Newell and B.C. Prest, *Is the US the New Swing Producer? The Price-Responsiveness of Tight Oil,* Washington, DC, Resources for the Future, 2017.

[51] McNally, "US output is too small, too slow, and too competitive to play swing producer", *Financial Times,* 20 February 2018.

[52] "Saudi Arabia remains the world's swing producer despite higher US oil exports: ClipperData", *CNBC*, 15 January 2020; M.A. El-Erian, "Saudi Arabia Is Swinging Again – But for How Long?", Project Syndacate, 7 June 2022; F. Faeq, "Saudi Arabia: The world's swing producer and most reliable oil supplier", *Arab News*, 10 August 2022.

The Kingdom has formulated the circular carbon economy framework, launched during the Riyadh G20 Summit and endorsed by all G20 countries. It offers a new way of approaching climate targets that utilises all energy technologies for carbon circularity and neutrality. Technologies such as CCUS and hydrogen offer cleaner uses of hydrocarbons and allow the participation of hard-to-abate sectors in energy transition.

In addition, it has put in place plans to diversify its electric power mix to include 50% renewables and 50% gas by 2030. The Kingdom plans to gradually develop over 35 parks across the Kingdom using solar photovoltaic, concentrated solar power and wind power. Last year, the Kingdom launched the first ever utility-scale solar and wind energy projects, namely, the 300 megawatt (MW) Skaka plant and the 400 MW Dumat Al-Jandal plant respectively. Today, 700 MW of renewables are connected to the grid, and 3 gigawatts are under construction. Saudi Arabia also recently launched the Saudi Green Initiative and Middle East Green Initiative to plant 10 billion trees in the Kingdom and 40 billion across the region. The country has also launched several giga projects, including NEOM, Red Sea Global, Amaala and Qiddiya, to further diversify its economy. Further, Saudi Arabia has sought cooperation on clean energy projects with partners in the East and West.

In addition, Neom has made notable progress toward its green hydrogen plans, which will produce 1.2 million tonnes of green-hydrogen-based ammonia per year. Saudi Aramco is also investing in blue and green hydrogen, exporting the world's first shipment of blue ammonia to Japan in 2020. The Kingdom has also established the Saudi Nuclear Energy Holding Company, aimed at developing nuclear power plants to produce electricity, desalinate seawater, and power thermal energy applications.

Finally, Saudi Aramco has announced its decarbonisation targets to reach net-zero by 2050 as well as plans to invest heavily in hydrogen, renewables and CCUS projects. Aramco's inaugural Sustainability Report set interim targets for the company, alongside detailing its plans to achieve net-zero

Scope 1 and Scope 2 GHG emissions by 2050 across its wholly owned operated assets. The targets presented in the report include capturing, utilising or storing 11 million metric tonnes of carbon dioxide-equivalent annually by 2035, and investing in renewables with an aim to generate 12 gigawatts of solar and wind power by 2030.[53]

Conclusion

Current events are a grave reminder of the costs of an abrupt and disorderly energy transition. In the words of the Saudi energy minister "the current crisis should be a reality check"[54] for countries that have not paid enough attention to energy security. Europe's energy dilemma raises energy security to the top of the agenda. However, this must be balanced against such short-term goals, such as weaning itself off Russian hydrocarbons, securing energy supplies before the winter and taking sufficient steps to meet its long-term net-zero targets under the Green Deal.

Saudi Arabia has reaffirmed its position as the world's *de facto* leader of the oil industry and its role as the global oil supply "safety valve", ensuring the international oil market is adequately supplied. It is also enjoying all-time high oil revenues and a greater global market share. Through its regional efforts and multi-vector partnerships strategy, the Kingdom has built strong relationships with regional and global partners. The current climate has created unprecedented momentum behind the Kingdom's increasing geopolitical power.

[53] Saudi Aramco,"Saudi Aramco Sustainability Report 2021: Energy security for a sustainable world", Dhahran, 2021.

[54] H. Wang and R. Perkins, "Europe rankles Gulf countries with energy transition push, while seeking oil, gas supplies", *S&P Global Platts*, 18 May 2022.

5. UAE and Qatar: A New Road to the EU Energy Market

Naser Al-Tamimi

The European Commission and the European Council recently published two significant documents. The first was the REPowerEU plan to reduce the bloc's dependence on Russian gas, envisaging a phaseout by 2027, if not before.[1] The second was the Joint Communication on a "Strategic Partnership with the Gulf" aimed at broadening and deepening the European Union's collaboration with the Gulf Cooperation Council (GCC) and its member countries.[2] These two documents confirm that the European Union is seeking to eliminate its dependence on energy imports from Russia once and for all. If this scenario plays out, it will have profound repercussions on the global energy map.

In this context, an EU-wide end to most fossil fuel imports from Russia brings opportunities and challenges for the United Arab Emirates (UAE) and Qatar. Short-term policies in the EU to subsidise fossil fuel consumption could ultimately help both states to reap geopolitical benefits and significant financial gains due to rising global energy prices. Yet the Ukraine war has shown how energy security and climate mitigation are intertwined. This concern, high-energy prices, and Europe's

[1] European Commission, "REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition", 18 May 2022.

[2] European Commission, "GCC: EU unveils Strategic Partnership with the Gulf", 18 May 2022.

quest to reduce its reliance on Russian energy could accelerate the EU's energy transition in the medium to longer term.

This chapter argues that, on the one hand, the Russian invasion of Ukraine has placed many Arab energy-exporting countries (including the UAE and Qatar) in an unenviable political position. On the other hand, it has also strengthened their centrality in the global energy landscape. This may eventually lead to geopolitical and economic gains in their relations with European countries and the West in general.

Fossil Fuels: Emerging Opportunities

The war in Ukraine has fundamentally altered the outlook for the gas market, compelling the EU to try to shift away from Russian pipeline gas towards liquefied natural gas (LNG). EU Member States imported about 344 billion cubic metres (bcm) of natural gas in 2021, 155 bcm of which came from Russia (mainly by pipeline, but also including LNG), accounting for about 40% of the continent's total gas demand.[3]

Qatar was the world's largest LNG exporter in 2021, supplying 77 million tonnes (mt) and accounting for almost 21% of global LNG supply.[4] In 2021, global LNG imports reached 372.3 mt or approximately (~) 495.2 bcm,[5] increasing by 16.2 mt (~21.5 bcm) over the previous year.[6] Replacing Russian gas (155 bcm) with LNG from other countries would therefore raise Europe's LNG demand by less than a third of the global LNG market for 2021.

Should Europe's gas imports from Russia be cut off (due either to new EU sanctions or Russian retaliation), Qatar's ability to

[3] "Global LNG supply crunch will last for years", Economist Intelligence Unit (EIU), 24 May 2022.

[4] "GIIGNL Annual Report 2022", International Group of Liquefied Natural Gas Importers (GIIGNL), 5 May 2022.

[5] One million tons of LNG = 1.33 billion cubic meters (BP calculations)

[6] GIIGNL (2022).

supply Europe soon is limited due to contractual commitments. Qatar's LNG industry predominantly targets the Asian market, which imported 55.8 mt (~74.2 bcm) from the Gulf state in 2021. In comparison, only 16 mt (~21.3 bcm) of LNG went to Europe.[7] Last August, Qatar sent Europe only 2 mt of LNG. This was only a fifth of the total it shipped that month. Qatar's energy minister, Saad al-Kaabi, said in a recent interview that this was "as much as could be managed ... because the rest is tied into long-term contracts, mostly with Asia".[8]

Qatar typically exports over 70% of its LNG to Asia under long-term oil-linked contracts. Last year, Qatar sold only 11% of its exports on a spot basis, according to the International Group of Liquefied Natural Gas Importers (GIIGNL), and that volume is liable to fall further.[9] Qatari officials ultimately estimate that only 10-15% of its LNG exports could be made available for Europe. This percentage implies less than 12 mt (~15.5 bcm) in extra supply or about 10% of what EU needs to replace Russian gas imports.[10]

Over the next few years, Europe's demand for natural gas may fall, but demand for LNG is likely to rise. This projected decline in Europe's gas demand is due to a significant decrease in Russian gas imports through pipeline, demand destruction (i.e. reductions in energy use), rationalisation of consumption and rising efficiency, in addition to the expected higher usage of renewable and nuclear energies over time. A recent International Energy Agency (IEA) report noted that EU's LNG imports may hover at around 120 bcm/year between 2022 and 2025, 55% higher than their 2021 levels.[11]

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[7] "Can the Middle East and Africa meet Europe's energy needs?", Economist Intelligence Unit (EIU), 17 May 2022.

[8] "The war in Ukraine has reshaped the world's fuel markets: The Gulf will be a big winner", *The Economist*, 24 September 2022.

[9] "Qatar & Germany Sign Energy Partnership Roadmap", *MEES*, 27 May 2022; GIIGNL (2022).

[10] Can the Middle East and Africa meet Europe's energy needs?"…, cit.

[11] International Energy Agency (IEA), "Gas Market Report, Q3-2022", July 2022.

In contrast, Russian gas supplies to the EU could fall by over 120 bcm/year from their 2021 levels to just 30 bcm by 2025. This situation would effectively reduce Russia's share of total EU gas demand to below 10%, putting it on a pathway to zero by 2027.[12] Eventually, Europe's demand for LNG (without Russian pipeline gas) is projected to increase by 150% over the period 2021-2040, and LNG to meet approximately 50% of Europe's natural gas demand through 2030, before growing to 75% of demand by 2040.[13]

Tab. 5.1 - Natural gas demand by region (2021-2025)

Region	2021 demand in billion cubic metres (bcm)	2022 P* (bcm)	2025 P (bcm)
Africa	169	172	188
Asia Pacific	895	907	990
Central and South America	153	147	153
Eurasia	634	619	632
Europe	604	549	536
Middle East	564	582	627
North America	1,084	1,108	1,116
World	4,103	4,083	4,243

Source: International Energy Agency *P= Projection

[12] Ibid.

[13] American Petroleum Institute (API), "New Study: U.S. LNG to Meet Europe's Energy Needs in Short- & Long-Term", 26 September 2022.

Qatar stands out as one of the few suppliers able to make a real difference for Europe in the medium and long-term. Qatar is also one of the world's largest gas producers and has plans to massively expand its LNG export capacity from 2025 through its North Field Expansion (NFE). Indeed, the majority of capital expenditure (capex), projected by QatarEnergy at around $59 billion over the next five years, will be used to raise gas production and increase LNG export capacity.[14]

The NFE project is an expansion of the North Field, the world's biggest single non-associated natural gas field, offshore the north-east Qatar peninsula, covering an area of more than 6,000 square kilometres. The expansion will increase Qatar's liquefaction capacity by 49 mt or more than 65 bcm by 2027-28, (see Figure 5.1). It could also boost Qatar's position as the world's top LNG exporter and help to guarantee long-term gas security to the EU as it seeks alternatives to Russian supplies.[15]

QatarEnergy is spearheading the launch, between 2024 and 2027, of 67 mt/yr of LNG capacity. There will be 33 mt/yr from Phase 1 of the NFE, known as North Field East, and another 16 mt/yr from Phase 2, or North Field South.[16] QatarEnergy (70%) and ExxonMobil (30%) are also developing the 16 mt/yr (~21 bcm) Golden Pass LNG export facility in the US, with an anticipated start-up in 2024-25.[17]

[14] "GCC Players Get A Head Start In The Race To Decarbonise", Fitch Solutions Group, London, 30 March 2022.

[15] "QatarEnergy signs deal with TotalEnergies for North Field South expansion", *Reuters*, 24 September 2022.

[16] "QatarEnergy Rewrites the Rule Book", *Energy Intelligence*, 23 September 2022.

[17] See: Golden Pass LNG website, https://www.goldenpasslng.com/newsroom/fact-sheets

Fig. 5.1 - Qatar's North Field Expansion (NFE)

Source: Energy Intelligence

If Europe can increase its capacity to import LNG by then, Qatar will be able to materially reduce European dependence on Russian gas. Total LNG import capacity in EU member states is currently just over 170 bcm/year, meaning that there is room to boost imports significantly.[18] Germany plans to build five new floating storage regasification units (FSRUs) with up to 30 bcm annual capacity, the first of which is expected to be operational by the fourth quarter of this year.[19]

Germany also plans to start importing LNG by early 2023 and to stop all Russian gas imports (which totalled 46 bcm in 2021) by the end of 2024.[20] Other European countries

[18] "Global LNG supply crunch will last for years", Economist Intelligence Unit (EIU), 24 May 2022.

[19] "German government announces fifth floating LNG terminal", *Euractive*, 2 September 2022.

[20] "Qatar Energy seeks to benefit from dearth of LNG in Europe", Economist Intelligence Unit (EIU), 18 May 2022.

(including France and Italy) are likewise aiming to curb such dependence. Qatar has also invested in terminals to receive LNG in Belgium, Britain, and France.[21] In this regard, Doha has suggested that volumes from its US Golden Pass liquefied natural gas plant in Texas in the US could supply Germany (or other EU countries) following its 2024 startup.[22]

This situation could increase Europe's share of Qatar's LNG supplies over the coming years, though Europe's low-carbon energy ambitions will keep a lid on growth in regional LNG demand over the long-term[23]. That said, Europe's share of Qatar's LNG supplies has been dwindling over recent years. Europe accounted for 20.7% of Qatar's LNG exports in 2021, with the UK and Italy ranking among the continent's top importers. This is a much lower share than in previous years: 28.4% and 30.2% of Qatar's LNG exports went to Europe in 2020 and 2019, respectively.[24] European imports from Qatar have also stayed more or less flat over the first half of 2022 (around 11 bcm) compared to the same period last year.[25]

Against this backdrop, most European countries have ongoing ambitions to reduce their dependence on fossil fuels and transition to renewable energies. Thus, the extent of this anticipated increase will depend on the willingness of European governments to cede to Qatar's penchant for long-term supply contracts, which can last for as long as 20 years or more, should they be demanded.

Securing contracts with Qatar could prove challenging for those wary of committing to long-term LNG supply agreements in light of growing climate change concerns. Certainly, Germany and other European countries worry that 20-year

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[21] "The West's Scramble for Gas Could Enrich and Empower Tiny Qatar", *The New York Times*, 16 May 2022.

[22] "Qatar & Germany Sign Energy Partnership Roadmap"…, cit.

[23] "Gas Diplomacy To Remain Prominent Within Qatar's LNG Trade", Fitch Solutions Group, London, 26 May 2022.

[24] Ibid.

[25] "Europe's Gas Crisis: No Help Coming", *MEES*, 29 July 2022.

contracts would prove incompatible with their ambitious decarbonisation targets and desire for flexibility in meeting future energy demand.[26] In addition to contract duration, Qatar's insistence on destination clauses prohibiting resale and its demand for the price to be indexed to crude oil rather than a European gas benchmark are other sticking points.[27]

However, there is no reason to believe a compromise is not achievable, given that Qatar has entered into contracts of ten years and Germany has recently signed a 20-year US LNG supply agreement.[28] Qatar may also be more willing to accept shorter and more flexible contracts if they are linked to attractive investment opportunities for its sovereign wealth fund and more European investments inside Qatar itself. That said, Asia will remain at the heart of Qatar's LNG trade policy over the long-term, as most future projected growth is expected to be in the region. Indeed, Qatari Energy Minister Saad al-Kaabi recently told *Energy Intelligence*, "10-to-15-year deals are probably what are most acceptable to both sides. But for us, the long-term deal, it is not just about duration, it is about price".[29]

Opportunities for the UAE

The current crisis is dramatically changing the behaviour of European oil consumers, who are trying to reduce their dependence on Russia at any cost. The European Union has confirmed its intention to ban the import of Russian crude oil from 5 December 2022 and refined products from 5 February

[26] "Qatar & Germany Sign Energy Partnership Roadmap"…, cit.; "Qatar Energy seeks to benefit from dearth of LNG in Europe", Economist Intelligence Unit (EIU), 18 May 2022.
[27] Ibid.
[28] "Qatar to Demand EU Sign Long-Term LNG Deals If It Wants More Gas", *Bloomberg*, 23 June 2022.
[29] "Qatari Minister: No 'Quick Fix' to EU Gas Crisis", *Energy Intelligence*, 22 September 2022.

2023.[30] If this embargo goes ahead, it could leave the EU seeking alternatives for almost 1.3 million barrels per day (mb/d) of Russian crude and 900,000 b/d of products.[31]

Such a situation may provide the UAE with the option of gradually increasing its presence in European energy markets while avoiding tensions with Russia. Indeed, energy investments could put the UAE in an even stronger position as a big supplier: its low-cost, low-carbon output gives the country a competitive advantage over most rivals in the medium and long-term.

Sanctions on Russian energy create opportunities for the UAE to secure market access and political goodwill in European capitals. As Opec's third largest producer with the second largest spare capacity behind Saudi Arabia, the UAE is in a fortunate position to expand its energy ties with the EU.[32] Speaking ahead of the visit of Sheikh Muhammad (president of the UAE) to France last July, Anwar Gargash, a key advisor to the presidency, highlighted this new dynamic: "We have sold our oil to the Far East for 40 years, and now we are directing it toward Europe in this time of crisis".[33]

Within this context, Abu Dhabi National Oil Co. (ADNOC) is leveraging elevated oil revenue to invest heavily in its $127 billion 2022-26 plan (covering oil and gas and upstream and downstream investments). The drive to increase gas supplies has become the UAE's top priority for increasing its export potential, restoring domestic self-sufficiency amid growing global concerns about energy security, and feeding local industrial expansion.[34]

Abu Dhabi had shipped no crude to Europe this year until May, and volumes in June were just 31,000 b/d. July's exports

[30] "Traders See Only Supply Risk from Price Cap", *Energy Intelligence*, 7 September 2022.
[31] Ibid.
[32] "UAE & France in New Energy Entente", *MEES*, 22 July 2022.
[33] Ibid.
[34] "UAE's ADNOC will continue to invest heavily in gas", Economist Intelligence Unit (EIU), 2 August 2022.

to Europe remain just a tiny portion of total crude exports of nearly 2.9 mb/d, but volumes of more than 211,000 b/d are certainly considerable.[35] Looking forward, ADNOC has accelerated its efforts to expand its oil production capacity from around 4 mb/d to 5 mb/d within the next five years.[36] The UAE's actual oil output now stands close to 3.2 mb/d, in line with quotas set by the Opec Plus agreement.[37]

ADNOC is also moving swiftly forward with plans to build new gas liquefaction capacity in the emirate of Fujairah as it seeks to bolster its position as LNG exporter at a time when European Union countries are looking to reduce their dependence on Russian gas and import large quantities of LNG. The 9.6 million tonnes per annum (mtpa) Fujairah project benefits from an advantageous position on the Gulf of Oman, outside the Strait of Hormuz, and has the potential to be among the world's lowest-carbon LNG export facilities.[38]

The UAE was the world's 12th largest LNG producer in 2021 and currently has three liquefaction trains with a combined capacity of 5.8 mtpa at Das Island in the Gulf.[39] The Fujairah expansion would boost ADNOC's LNG capacity to 15.4 mtpa, likely by around 2026.[40] That would see the UAE move ahead of neighbouring Oman, which has around 11 mtpa, to become the second largest LNG producer in the Gulf region. It will nevertheless remain well below Qatar's liquefaction capacity of about 77 mtpa.[41]

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[35] "Mideast Crude Oil Pivot To Europe Advances Gradually", *MEES*, 5 August 2022.

[36] "Abu Dhabi's Adnoc Eyes Faster Capacity Expansion", *Energy Intelligence*, 6 September 2022.

[37] Ibid.

[38] "Adnoc Readies for LNG Era in Fujairah", *Energy Intelligence*, 21 June 2022.

[39] "UAE to More Than Double LNG Export Capacity with Fujairah Plant", *Bloomberg*, 17 May 2022.

[40] "Adnoc Readies for LNG Era in Fujairah"…, cit.

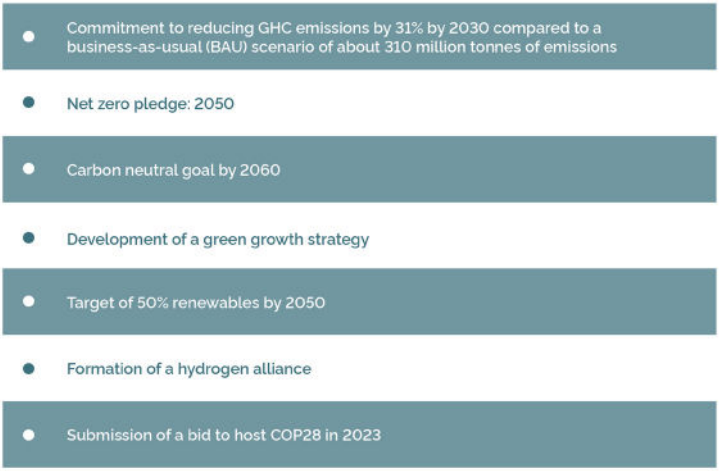
[41] Ibid.

Renewable Transition: Potential Complementarity

Despite this optimistic view of increasing fossil fuel production in the UAE and Qatar, the World Bank warned recently that Gulf states face twin challenges: on one side, moving to a more sustainable growth model that is less dependent on hydrocarbons and able to provide valuable jobs for their citizens; on the other, managing the transition to a global low-carbon economic environment that could significantly reduce energy revenues in the long-term.[42]

The GCC states are committed to a future of cleaner energy, with ambitious new climate targets announced recently by several Gulf countries, including pledges by the UAE to achieve net-zero carbon emissions by 2050, and by Saudi Arabia and Bahrain to achieve the same by 2060.[43]

Tab. 5.2 - UAE climate change commitments



Source: The World Bank

[42] World Bank, "Gulf Economic Update May 2022", 23 May 2022.

[43] "Meeting the climate crisis: The GCC can be a global leader in the decarbonization of power", *Utilities Middle East*, 7 November 2021.

Tab. 5.3 - Qatar climate change commitments

Update to Nationally Determined Contributions (NDC), 28/8/2021
Commitment to reducing GHC emissions by 25% by 2030 compared to BAU.
Introduction of a rapid mass transit system and airport upgrade to level 3.
Introduction of electric vehicle charging infrastructure and gradual adoption of Euro 6 emissions standards for regular vehicles
Carbon capture and storage of 11 million tonnes/yr by 2035
5 GW solar power by 2035
25% reduction in carbon intensity (LNG) by 2030
15% reduction in carbon intensity (upstream) by 2030
0.2 wt% methane emissions by 2025

Source: The World Bank & QatarEnergy 2020 Sustainability Report

Meanwhile, as the EU revises its energy strategy, it also aims to reshape relations with GCC states. The EU sees Arab Gulf countries as offering solutions to the twin issues of energy security and energy transition.[44] In this context, last May, the European Commission unveiled a "Strategic Partnership with the Gulf" which seeks to broaden and deepen EU ties with the GCC. This announcement came on the same day the European Commission unveiled its REPowerEU plan "to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition".[45]

A central premise of this proposed partnership with the Gulf is the strengthening of energy ties: the two documents point toward the potential for a renewed partnership based

[44] "EU Sees Middle East as Key Partner For Sustainable Energy Security", *MEES*, 27 May 2022; "GCC: EU unveils Strategic Partnership with the Gulf"…, cit.

[45] "REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition"…, cit.

on sustainable energy security. This includes essential topics such as increasing LNG supplies, measures to stabilise oil markets, cooperation on hydrogen, energy efficiency, and faster deployment of renewable energy.[46]

One of the promising areas in energy cooperation between the EU and GCC states, especially the UAE, is green hydrogen production. The EU notes that "the Gulf partners' aspirations to become lead exporters, will bring new avenues for EU-GCC cooperation ... An integrated gas and hydrogen infrastructure, hydrogen storage facilities and port infrastructure are necessary in both the EU and the Gulf countries".[47]

Currently, European firms fill 60% of roles in hydrogen projects globally, including sponsors, financiers, operators, manufacturers, constructors, and consultants, highlighting the existing expertise of these firms in the sector.[48] Demand for hydrogen in Europe alone is projected to double to 30 million tonnes yearly (mt/y) by 2030 and 95 mt/y by 2050.[49] There are currently at least 46 known green hydrogen and ammonia projects across the Middle East and Africa, worth an estimated $92 billion, almost all of which are export oriented.[50]

European firms have the technology and expertise to help Arab Gulf countries achieve their low-emissions goals and develop hydrogen infrastructure. At the same time, the Gulf region has some of the world's lowest solar tariffs and enjoys access to supportive local and international financial institutions as a result of preferential government policies as well as strong credit ratings that facilitate access to competitive financing and loans. The GCC states are also well positioned to supply

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[46] "EU Sees Middle East as Key Partner For Sustainable Energy Security", *MEES*, 27 May 2022; "GCC: EU unveils Strategic Partnership with the Gulf"…, cit.

[47] Ibid.

[48] "Europe And Asia Edging Ahead In Global Race To Green Hydrogen Technology Supremacy", Fitch Solutions Group, London, 16 February 2022.

[49] "Solving Europe's energy challenge", *MEED*, 13 September 2022.

[50] Ibid.

Europe, which will be a crucial market for green hydrogen. By the mid-2030s, green hydrogen could compete globally with fossil-fuel hydrogen.[51]

Yet, there are doubts that hydrogen will play a significant role in the GCC's energy mix over the long-term. Its production and export projects will likely cost billions of dollars, requiring substantial commitment from investors. In addition to logistic obstacles and complexity of transport, hydrogen must be stored and transferred to the consumer cost efficiently. The cheapest way to transport green hydrogen from MENA to Europe is by subsea pipeline, meaning that GCC producers will be in a less competitive position than North African countries such as Algeria and Libya or even Egypt.

Tab. 5.4 - Installed renewable energy capacity, 2021–2030 (MW)

	2021			2030		
Country	Installed renewable capacity	Total installed capacity	% of total	Installed renewable capacity	Total installed capacity	% of total
Bahrain	61	8,824	0.7	475	10,713	4.4
Kuwait	106	20,247	0.5	2,123	26,344	8.1
Oman	186	12,505	1.5	2,592	15,287	17.0
Qatar	55	12,716	0.4	1,901	19,762	9.6
Saudi Arabia	608	94,905	0.6	31,364	129,947	24.1
UAE	3,228	45,189	7.1	14,598	68,223	21.4

Source: MEED Note: Installed renewable capacity values excluding small hydro power

[51] "Driving economic diversification in the GCC with sustainable infrastructure and a digital future", Standard Chartered, 6 June 2022.

UAE and Renewables

The UAE is positioning itself as a global clean energy leader despite actively increasing hydrocarbon production capacity. The UAE was the first country in the Middle East to sign and ratify the Paris Agreement and was also selected to host COP28 in November 2023[52]. Abdullah bin Zayed, Minister of Foreign Affairs and International Co-operation said not long ago the UAE would lead "an ambitious, inclusive and solutions-oriented approach" to hosting the COP28 climate conference next year[53].

The United Arab Emirates announced the UAE Net Zero by 2050 Strategic Initiative in October 2021. This commitment makes the UAE the first country in the Middle East and North Africa (MENA) region to announce the intention to achieve net-zero emissions by 2050.[54] The plan involves an investment of over $163 billion in clean energy. The Ministry of Climate Change and Environment (MOCCAE) will lead efforts to execute the initiative and ensure collaboration at a national level[55].

Suhail bin Mohammed Al Mazrouei, the UAE's Minister of Energy and Infrastructure recently outlined the country's strategy to accelerate the adoption of renewable energy: "We need to move in a multifaceted [way]. One is reducing our consumption as a country and as individuals. Second, we need to diversify our energy mix and diversify quickly towards cleaner forms of energy. We need to invest in technology and create a business case for hydrogen at a scale that allows transformation to happen".[56]

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[52] "UAE to lead 'ambitious, inclusive and solutions-oriented approach' to Cop28", *The National*, 13 September 2022; "Gulf Economic Update May 2022"…, cit.

[53] Ibid.

[54] General Electric, "White paper: Pathways to faster decarbonization in the GCC's power sector", October 2021.

[55] Ibid.

[56] A.R Cabral, "Multifaceted approach needed for smooth energy transition,

Renewable energy, mainly solar, accounted for 7.4% of the UAE's total installed electricity capacity in 2021. Full clean energy capacity, including the 1,400MW capacity from the first reactor of the Barakah nuclear energy plant, takes this to 11.2%.[57] The UAE aims to generate 21% of power from renewables by 2030.[58] In the longer term, it targets 50% of electricity generated from carbon-free sources (44% from renewables) by 2050 compared to about 10% last year.[59]

The UAE will also increase renewable energy investment abroad as part of the broader use of its financial weight to build international influence and cement relations with key strategic partners. The country has invested in green infrastructure and clean energy projects worldwide worth of almost $17 billion in 70 countries, including European states.[60]

The UAE renewables sector is the largest in the Middle East, with roughly 3.7 GW online in 2021, generating nearly 8.6 TWh of renewable electricity. These factors, along with robust growth forecasts and greater market renewables penetration, make the UAE the most capable market in the region for developing its green hydrogen industry.[61] In this context, it intends to build its renewables company Masdar into one of the world's largest clean energy firms.[62] In November 2021, at COP26, the UAE set a target to supply 25% of the global low-carbon hydrogen demand by 2030, estimated to reach between 50 and 75 million tonnes.[63]

UAE minister says", *The National*, 27 June 2022.

[57] "Energy transition ramps up with $220bn of projects", *MEED*, 25 May 2022.

[58] "UAE will continue renewables expansion despite rising costs", Economist Intelligence Unit (EIU), 19 May 2022.

[59] UAE set to continue renewables drive at home and abroad", Economist Intelligence Unit (EIU), 20 July 2022.

[60] "Gulf Economic Update May 2022"…, cit.

[61] "Low Carbon Hydrogen: Global Pathways to Multi Sector Opportunities", Fitch Solutions Group, London, 2021, p. 42.

[62] C. Ellinas, "Saudi Arabia, UAE and Egypt pivot towards hydrogen export", *Natural Gas World*, 20 June 2022.

[63] "MENA Power Regional Overview: Green Hydrogen Poses Upside Risk to

The UAE has announced its Hydrogen Leadership Roadmap, mapping out its ambition for green hydrogen and ammonia production and exports. Last year, the UAE Ministry of Energy and Infrastructure launched a new Hydrogen Alliance with three of the country's biggest government-backed firms (Abu Dhabi National Oil, Mubadala Investment Company, and ADQ) to produce blue and green hydrogen.[64] Since the UAE's Hydrogen Alliance was formed, several partnerships have been established between UAE-based companies and international companies, including TotalEnergies, Siemens Energy, and, more recently, BP.[65]

The UAE commissioned its first green hydrogen plant at the Mohammed bin Rashid Al Maktoum Solar Park earlier last year.[66] In December 2021, Engie and Masdar signed an agreement to "explore the co-development of a UAE-based green hydrogen hub" with an electrolyser capacity of 2,000 MW, backed up by a $5 billion investment.[67] Fertiglobe, a joint venture between Abu Dhabi National Oil Company and OCI, signed an agreement with Masdar and Engie to co-develop a 200.0 MW green hydrogen facility for the production of ammonia in the UAE.[68] The UAE's Khalifa Industrial Zone Abu Dhabi has announced plans to build a green ammonia production facility powered by 800 MW of solar power.[69] ADNOC is also designing a one million tonnes a year (mt/y) ammonia plant in Ruwais powered by blue hydrogen, with a target start-up date of 2025. It is already producing over 0.3

Long-Term MENA Renewables Growth", Fitch Solutions Group, London, 8 July 2022.

[64] "Low Carbon Hydrogen: Global Pathways to Multi Sector Opportunities"…, cit., p. 98.

[65] "Could the Mideast Gulf Become a Clean Energy Powerhouse?", *Energy Intelligence*, 28 June 2022.

[66] "United Arab Emirates Power Report Q3 2022", Fitch Solutions Group, London, 2022, p. 12.

[67] "Saudi Arabia, UAE and Egypt pivot towards hydrogen export"…, cit.

[68] "United Arab Emirates Power Report Q3 2022"…, cit.

[69] Ibid.

mt/y of hydrogen and plans to increase this to 0.5 mt/y. As a result of these deals, ADNOC announced in September 2022 that its first shipment of low-carbon ammonia has left the UAE bound for Hamburg, Germany. This is the first ever cargo of low-carbon ammonia to be shipped to Germany.[70]

However, global supply chain problems stemming from the pandemic, lockdowns in China (the main supplier of panels) and the war in Ukraine are driving up input costs at a time of rising demand, particularly for photovoltaic (PV) modules. That has interrupted a long downward trend in solar and wind pricing.[71] Additionally, despite economic diversification efforts and substantial reserves, the UAE remains vulnerable to oil price fluctuations given that mineral products accounted for nearly 60% of total goods exports in 2021.[72] Importantly, a consistent push for nuclear and high efficiency coal will curb the scope for a renewables-driven power mix diversification away from natural gas.[73]

Qatar and Renewables

Qatar has the world's third largest reserves of natural gas. It has invested heavily in the industry, becoming the world's largest LNG exporter. The country's oil and gas sector accounts for more than 80% of total goods exports and 50% of GDP.[74] This dependence on fossil fuel resources makes the country highly vulnerable to price fluctuations in global energy markets.

As per its latest communication to the United Nations

[70] "ADNOC sends first low-carbon ammonia shipment from UAE to Germany", *WAM*, 1 September 2022.

[71] "UAE will continue renewables expansion despite rising costs"…, cit.

[72] "PEST Analysis: The United Arab Emirates Country Report", Euromonitor International, 5 July 2022.

[73] "United Arab Emirates Renewables Report Q3 2022", Fitch Solutions Group, London, p. 6, 2022.

[74] "PEST Analysis: Qatar Country Report", *Euromonitor International*, 21 June 2022.

Framework Convention on Climate Change (UNFCCC), Qatar's Nationally Determined Contributions plan (NDC12) aims at a 25% reduction in greenhouse gas (GHG) emissions by 2030 compared to the baseline scenario of 2019.[75] Qatar's NDC will focus on the energy industry including transport & downstream sectors, building & construction, water management, waste and infrastructure as modalities to achieve its declared NDCs.[76]

Renewable energy is still in the early stages of development in Qatar, accounting for less than one percent of the country's total capacity in 2021.[77] The government is almost entirely focused on solar power and plans to increase this to 20% of the energy mix (10 GW) by 2030. There have been significant developments in the last two years.[78] One of Qatar's significant solar investments, the "Siraj Solar Energy" project, which has a 700 MW capacity, is scheduled to become fully operational in 2022.[79]

In January 2020, a consortium formed by France-based Total and Japan-based Marubeni won the bid to build an 800 MW solar plant in the Al-Kharsaah area of Doha.[80] Last August, QatarEnergy awarded an engineering, procurement, and construction contract (EPC) to Samsung C&T to build two solar plants with the capacity to generate 875 MW of electricity. This solar project, along with the Al-Kharsaah PV plant now under construction, will scale Qatar's renewable energy generation capacity up to 1.675 GW by 2024.[81]

QatarEnergy has also signed a contract for a 1.2 million tonnes a year plant, with the aim of starting operations early

[75] "White paper: Pathways to faster decarbonization in the GCC's power sector"…, cit.
[76] Ibid.
[77] "Energy transition ramps up with $220bn of projects"…, cit.
[78] "Qatar Power Report Q3 2022", Fitch Solutions Group, London, 2022, p. 8.
[79] Ibid, p. 5.
[80] Ibid.
[81] "QatarEnergy picks Samsung C&T to build solar plants to power its LNG expansion", *S&P Global Platts*, 23 August 2022.

in 2026. The contract for the one-billion-dollar plant to make blue ammonia for conversion into hydrogen, the largest of its type in the world, was awarded to a consortium of Germany's Thyssenkrupp and construction firm Consolidated Contractors Company.[82]

Nevertheless, Qatar faces several challenges in the development of solar power. They include the following: lack of price competitiveness with natural gas, lack of renewable energy policy framework, and solar power projects requiring vast land areas.[83] Most importantly, the availability of gas resources in large quantities and the need for significant investments in renewable energy represent an obstacle to rapid growth.

Energy Geopolitics: A Complex Environment

The Ukraine war and the consequent oil and gas price shock may accelerate some global energy transition initiatives and could eventually lead to the erosion of the shares of oil and gas in the worldwide energy mix. However, short-term policies in the West to subsidise fossil fuel consumption or support its production, combined with the damage that the conflict in Ukraine and tensions over Taiwan could cause to collaboration between the United States and China, could ultimately undermine the international response to climate change.[84] We witnessed this when China suspended cooperation with the United States on climate change and drug trafficking after Nancy Pelosi visited Taiwan last August.[85]

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[82] "Qatar to build world's largest blue ammonia project", *The Petroleum Economist*, 31 August 2022.

[83] "Qatar Power Report Q3 2022"… cit., p. 24.

[84] "How the Ukraine Crisis Will Impact Global Climate and Clean Energy", *Stratfor*, 22 April 2022.

[85] E. Xie, "China's decision to halt climate change cooperation with US over Taiwan row sparks questions over how low relations can fall", *South China Morning Post*, 6 August 2022.

The UAE and Qatar may reap geopolitical benefits and significant financial gains from rising global energy prices. The UAE's Industry and Technology Minister, Sultan al-Jaber, warned recently that the world must include oil and gas in its energy transition planning or risk eroding energy security and economic stability.[86]

In this context, Doha seeks to deepen its energy partnership with European states following Russia's invasion of Ukraine. By providing energy security to Europe, Qatar will benefit from increased gas export revenues and stronger defence cooperation with the West, notably the United States. Indeed, President Biden designated Qatar last March as a major non-NATO ally – a status that includes military and financial benefits.[87] The fact that big western energy companies were so keen to join Qatar's LNG expansion project is a testament to Qatar's growing importance as a gas superpower (see the deals with the UK's Shell, ExxonMobil, the US's ConocoPhillips, France's TotalEnergies, and Italy's Eni).[88]

However, the current situation also carries a few risks for Qatar. The sharp decline in Russian gas exports to Europe through pipelines is keeping LNG prices in Asia at historical record highs. Soaring prices and tight supply also contribute to shortage fears across Asia, as hard-hit and import-dependent markets in South and Southeast Asia face the worst backlash, prompting their governments to reconsider LNG imports.

With continued price hikes and volatility over the next few years, downward pressures on Asian LNG demand may accelerate, permanently dampening long-term growth in regional demand and prompting countries to search for cheaper

[86] "UAE's Al-Jaber: Drop Self-Defeating Energy Policies", *Energy Intelligence*, 19 August 2022.

[87] "Risks to Global Gas Supply Will Boost Qatar's Foreign Policy Efforts", Fitch Solutions Group, London, 18 May 2022; "Gas Diplomacy To Remain Prominent Within Qatar's LNG Trade"…, cit.

[88] "Russia's war helps Qatar boost its influence over global energy flows", *Financial Times*, 6 July 2022.

alternatives like coal. Such a scenario is unwelcome news for all LNG exporters, including Qatar, particularly in light of expectations that ample new supplies of LNG will flood the market in the next five years.

Meanwhile, the UAE's position as a major oil producer (with additional capacity coming on stream) will continue to play a significant role not only in funding domestic economic diversification but also in building diplomatic ties and commercial partnerships, advancing the country's economic interests and boosting its reputation as a business, logistics, and tourism hub. The UAE will also continue to prioritise expanding its footprint as a commercial partner across the world by ensuring freedom of navigation through the region's leading maritime routes and by expanding its port infrastructure. This will allow the UAE to expand its political influence abroad, limit vulnerability to supply chain disruption and attract more foreign direct investments.[89]

Despite its close ties to the US and many European countries, the UAE has been cautious in its criticism of Russia's actions. Abu Dhabi said that its position is neutral in the conflict between the West and Russia, as demonstrated by recent visits of UAE's President to Europe and Moscow. There is the hard-won Opec Plus oil production agreement to consider and various long-term implications of any deterioration in ties with Russia, including concerns over Russian armed engagement in conflicts in Syria, Libya, and Yemen.

Economically, the UAE has not joined the sanctions imposed by the West as the country still sees economic benefits from maintaining ties to Russia. The UAE remains a notable trading partner and investor for Russia; the country is also proving a vital travel hub and Russia is one of the top sources of visitors to Dubai this year. Given the country's strategic location, established financial and investment institutions, and relatively

[89] "UAE: Sheikh Khalifa Passing Will Not Pose Risks To Policy Continuity", *Middle East Monitor*, July 2022, vol. 32, no. 7, p. 4.

liberal social life, more than 4,000 Russian investors and companies have registered in the UAE this year.[90]

Importantly, with oil markets facing a supply crunch and the long-term health of Russia's oil sector increasingly in doubt, upstream and downstream investments could put the UAE in an even stronger position as a long-term supplier, thanks to its low-cost, low-carbon production. This gives the UAE a competitive advantage over most rivals in the long-term, even in a world where the energy transition increasingly constrains demand.[91] Certainly, the market share of Opec Plus Russia is forecasted to rise from 45% to 57% by 2040, giving the nations involved (including the UAE) greater influence.[92]

Yet, in the medium to longer-term, high energy prices, and Europe's quest to reduce its reliance on Russian energy will accelerate the energy transition. The European Union, the United States, and other OECD countries are calling for an accelerated energy transition in response to the Ukraine war and the resultant energy shock.[93]

Conclusion

The repercussions of the Ukrainian crisis continue to cloud the global economy, including the economies of the Gulf region. Of course, it is currently difficult to predict the full scale of the effects of the crisis as this depends on the length of the war, the direction that sanctions against Russia will take, and the relations between China and the West.

The UAE and Qatar could reap significant financial revenues from higher energy prices and increased exports. Nevertheless,

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[90] "UAE sees economic benefits from maintaining links to Russia", Economist Intelligence Unit (EIU), 4 May 2022.

[91] "Mideast Gulf NOCs Striking Tricky Balance"…, cit.

[92] "Why energy insecurity is here to stay", *The Economist*, 26 March 2022.

[93] "How the Ukraine Crisis Will Impact Global Climate and Clean Energy"…, cit.

the situation may be unsustainable in the medium and long run. This should motivate Abu Dhabi and Doha to accelerate their economic diversification plans, reduce their dependence on fossil fuels to finance the economy, diversify their energy mix and support the revival of GCC integration plans.

Conclusions

Valeria Talbot

Russia's invasion of Ukraine has highlighted Europe's urgency to diversify its energy supply and reduce its overdependence on Russia energy imports. In such context, energy security has become a top political priority for European countries that have been striving to obtain alternative energy supply since the outbreak of the conflict. In their search, European states have acted almost entirely bilaterally, both strengthening existing ties and/or making efforts to establish new relations with energy producers.

For its part, the EU launched in March the REPowerEU plan, its new, ambitious energy strategy relying on the diversification of energy supply, on the one hand, and an acceleration of the green transition on the other hand. While the phase out of energy imports from Russia is expected to be completed by 2027, the horizon for accelerating a transition to renewables, energy efficiency, and energy savings is fixed by 2030. Although today the focus on securing additional and alternative energy supplies prevails on energy transition concerns, the EU's energy security mainly depends on its ability to address these two closely intertwined challenges at once in the next few years. Yet, much also depends on the willingness and capacity of energy producing countries to satisfy Europe's energy needs, to compensate declining Russian oil and gas exports.

Against this backdrop, the vast hydrocarbon resources of the Middle East and North Africa have drawn European countries' renewed attention. With 52% of the world's proven oil reserves

and 43% of proven gas resources,[1] mostly located in the Gulf, the MENA region will likely play a prominent role in Europe's current energy crisis. However, replacing lost Russian gas flows – around 155bcm in 2021[2] – is an enormous challenge for Europe. To what extent MENA energy producers will be able to meet Europe's requirements remains to be seen. In fact, in the short-term, the ability of MENA exporters to increase supply is limited, as they are currently producing at, or close to, maximum capacity. While in some countries new investments would be required, both to upgrade the existing infrastructure and develop new projects, other producers are stuck in long-term contracts that do not allow to divert energy flows to Europe. This is, for instance, the case of Qatar, the world's top LNG exporter, which is locked into long-term contracts, mainly with Asian countries, and has recently signed a 27-year gas deal with China.[3] Not only is Qatar unlikely to divert gas from Asia to Europe in the short-run,[4] but it will probably not even have surplus gas to export before 2024. In fact, the country is planning to increase its LNG export capacity through the expansion of the North Field, which will raise its liquefaction capacity by 2027-28.

Looking for alternative energy supplies, European states have firstly turned to North African countries, longstanding suppliers of Europe thanks to their geographic proximity and the existing infrastructure. In this context, Italy's intense diplomatic activity to secure additional provisions from energy producers, especially Algeria, is noteworthy. After the signature of several energy agreements between April and July, Italy has turned into Algeria's top customer of gas. At the same time, Algeria has replaced Russia as Rome's main gas supplier.

[1] BP, *Statistical Review of World Energy*, 2021.

[2] "Algeria Gas Exports Fall Short Amid Europe's Supply Crunch", *Mees*, 14 October 2022.

[3] "Gas deal strengthens Qatar-China ties", *Al-Monitor*, 21 November 2022.

[4] "Qatar will not divert gas from Asia to Europe this winter, QatarEnergy CEO says", *Reuters*, 18 October 2022.

However, although Algeria has reserves and infrastructure to significantly boost exports, increasing its production capacity will require time. Actually, exports from Algeria, connected to Italy and Spain through subsea gas pipelines, fell 12% year on year to 36 bcm in the first nine months of 2022, according to MEES calculations.[5] This means that, in the past months, extra gas supply to Italy was not the result of additional domestic production, but rather of the interruption of gas flows to Spain since October 2021. The start of production from Eni's South Berkine oil and gas project to increase gas supply to Italy via the Trans-Mediterranean pipeline and LNG shipments is a first, although narrow, step forward.

Beyond North Africa, Eastern Mediterranean's energy reserves have attracted Europe's growing interest, as they could offer options both in the short and long term. Looking at Egypt and Israel's gas resources in particular, the EU signed in mid-June a Memorandum of Understanding for a stable delivery of natural gas to Europe from these two countries. This year, Europe has already become the top destination of Egyptian LNG,[6] which – albeit small – may make a crucial contribution to compensate for the additional losses of Russian gas in 2023. European energy companies, already among the main operators in the Eastern Mediterranean, have been encouraged to invest in gas exploration and production projects. Concurrently, an ambitious infrastructure project has come again to the EU's fore: the EastMed Pipeline. The almost 2,000-km gas pipeline project, linking Israel and Cyprus gas discoveries to Greece and the rest of Europe, has got renewed support in the EU official discourse after suffering a blow in early 2022, when the Unites States questioned the project's economic and environmental viability. As dependent on technical aspects and economic sustainability, as well as regional geopolitical tensions, the realisation of the project (which will take at least four years

[5] Ibid.

[6] "East Med Power Politics. As US &EU Officials Fly In", *Mees,* 17 June 2022.

and could not start operating before 2027-28)[7] has raised questions about the need for a new natural gas pipeline to Europe, considering the decarbonisation goal and a declining gas consumption over the longer term. Nevertheless, the transition from natural gas to hydrogen transport makes this pipeline project more attractive, and also more aligned with EU green transition policy. In this way, it may convey Eastern Mediterranean countries' hydrogen production – with Egypt at the forefront in the development of green hydrogen in the area – and, in prospect, hydrogen production from the Gulf countries as well, once the interconnection projects are implemented.

Gulf's energy resources are particularly attractive to European countries. Yet, in recent years, Gulf's energy production has been mainly exported to Asian markets, hence the amount of hydrocarbons that can be redirected to Europe is limited. While in the short run European countries will hardly obtain extra supply, Gulf-Europe energy cooperation offers a great potential in the long-term. Not surprisingly, the EU presented in May its first "Strategic Partnership with the Gulf", in order to widen and deepen bilateral cooperation with the GCC member states, including cooperation in traditional fossil fuels and renewables sectors. Gulf monarchies – Saudi Arabia, Bahrain, UAE, Oman, Kuwait, but not Qatar – are the only MENA countries (along with Israel and Turkey) to have fixed their carbon neutrality targets between 2050 and 2060. Here, more than in other parts of the region, governments have invested in renewables and low-carbon gases, such as green and blue hydrogen, mainly to satisfy increasing domestic power demand and to make more fossil fuels available for exports.

In prospect, Europe's energy needs might contribute to redefining world energy flows from the MENA region in the future. MENA countries' renewed centrality in energy dynamics may also lead to geopolitical and economic gains in their relations with European countries.

[7] https://www.edison.it/it/il-progetto-eastmed-poseidon

The challenge for the EU will be to pursue energy security in the wider framework of its carbon neutrality targets. At the same time, the EU should also engage to prevent its energy need from diverting investment and attention from the green transition in the MENA countries. As a matter of fact, the transition from hydrocarbons to renewables is crucial for a region among the most affected by climate change, global warming and water scarcity. However, the way ahead is still not clearly traced. Instead, what appears clearer is that geopolitical, economic and energy dynamics in the MENA region can directly affect Europe. Also, the EU, along with its member states, should be aware that investing in the MENA region's stability and prosperity is an investment for the future of Europe.

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