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MENA Natural Gas Markets During a European Energy Crisis



Energy Research Paper

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The Middle East and North Africa (MENA) region has always been a strategic cornerstone of the European energy mix, but now it has gained newfound value for the continent as it adapts rapidly to a "Russia-less" energy world. In the short-term, these MENA countries are set to be instrumental to European energy security.

How has the current European energy crisis impacted MENA natural producers and exporters? What is the impact on European energy relations with North Africa, Eastern Mediterranean, and GCC gas exporters? How has this affected the prospects for the green transition across these countries?

ENERGY RESEARCH PAPER

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- The Middle East and North Africa (MENA) region has always been a strategic cornerstone of the European energy mix, but it has gained a newfound value as Europe adapts rapidly to a "Russia-less" energy world, after a time when Russia accounted for 45% of Europe's total gas imports.

North African Gas Markets

- Southern European countries such as Italy will continue to prioritise gas supplies from Algeria as they reduce their dependence on Russia.
- Algeria is trying to capitalise on the opportunity to increase gas exports through efficiency improvements in gas-based electricity generation, domestic demand reduction, and an increase in upstream production.
- Libya has also announced plans to increase gas exports to Europe, but its uncertain domestic political setting and lack of security pose a serious challenge.

East Mediterranean Gas Markets

- The need for non-Russian gas supplies to Europe has put the East Mediterranean region under the spotlight, with various countries aiming to become export hubs. However, a trilateral energy relationship between Egypt, Israel, and Europe could set the broad contours for regional supplies.

GCC Gas Markets

- Additional short-term Qatari LNG volumes to Europe remain very limited because of long-term contracts with Asian buyers. However, Qatar could increase its long-

term LNG exports to Europe, contribute to Europe's gas diversification strategy, and strengthen its role in the European market.

Implications

- The European energy crisis is not a new "energy spring" for MENA gas exporters: they should not forget that gas / LNG supplies from the MENA region are part of a short-term European natural diversification strategy that looks to enhance energy security. However, in the long-term, Europe is on the path to decarbonisation.
- Hydrogen exports from the MENA region to Europe is a likely area of durable cooperation between the regions since Europe is unlikely to achieve self-sufficiency in hydrogen, even though it has updated its domestic hydrogen and biomethane production targets.



The critical challenge facing European energy markets is their dependency on Russian gas supplies, which are yet to be eradicated entirelyⁱ. The outlook for alternative gas supplies remain uncertain. Many countries across Europe were forced into an energy crisis last year when imports of Russian gas were severely reduced, leading to wholesale prices of electricity and gas surging by as much as 15-fold since early 2021ⁱⁱ.

The MENA region has always been a strategic cornerstone of the European energy mix, but now it has gained a newfound strategic value for Europe as it adapts rapidly to a "Russia-less" energy world, after a time when Russian gas supplies accounted for 45% of Europe's total gas importsⁱⁱⁱ.

Over the upcoming 2023 – 2024 winter season, MENA gas suppliers will continue to be critical in the absence of rapidly developed supplies from elsewhere.

In 2021, Europe imported in total 108.2 BCM of LNG, of which 17.4 BCM was from Russia, 30.8 BCM from the US and 40.4 BCM from MENA; and 269.8 BCM of pipeline gas of which 132.3 BCM was from Russia and 37.2 BCM from MENA. MENA's pre-war role was thus secondary to Russia's, but still highly material.

Across the MENA region, these suppliers are primarily Algeria, which in 2021 exported 49 BCM / year of LNG and pipeline gas to Europe, Qatar with 22.5 BCM / year of LNG, Libya with 3.1 BCM / year by pipeline, and Egypt with 2.5 BCM / year as LNG^{iv}. Oman and the UAE are LNG exporters, and though they did not send any to Europe in 2021, they did supply Europe in 2022 to cover for some of the lost Russian volumes.

In the short-term, MENA countries are set to be instrumental to European energy security.

They are valuable parts of European gas diversification thanks to their geographical proximity, vast gas resources, and existing export infrastructure.

However, in the long-term, the new energy and political relevance of these MENA countries for the European Union could also spur opportunities across the new energy industry, given the European Union's commitment to decarbonisation.



Southern European countries such as Italy will continue to prioritise gas supplies from Algeria to eliminate dependence on Russian gas.

The significance of the Algerian gas industry comes from its geographical proximity to Southern European gas demand centres, three major existing pipelines, and large reserves that currently stand at 2.3 TCM in 2022 (accounting for 1.2% of the world's proven reserves)^v. The 34 BCM / year TransMed Enrico Mattei Export Pipeline runs via Tunisia, Maghreb-Europe (GME) with 12 BCM capacity runs via Morocco to Spain, and Medgaz (10.5 BCM) goes to Spain directly.

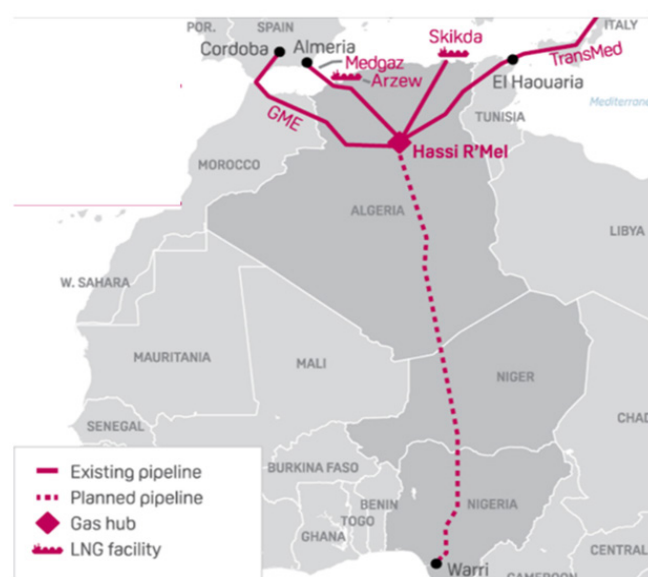
In 2022, Italy increased its gas imports from Algeria to 25 BCM / year (up from 21 BCM / year in 2021), mainly driven by Italy's growing political commitment to reducing its dependence on Russian gas and its preference for cost-competitive oil-indexed Algerian gas, compared to high spot or hub-linked gas prices^{vi}.

In 2021, despite increasing gas imports, the TransMed Enrico Mattei Pipeline still had 13 BCM of spare capacity, which led the Italian government to identify Algeria as a key pillar of its diversification strategy. In April 2022, ENI and Sonatrach agreed to increase export volumes through TransMed, allowing Algeria to use its spare capacity and gradually increase its gas exports by a maximum of 9 BCM / year by 2024^{vii}.

In addition to benefitting from spare pipeline capacity, Algeria also enjoys more positive bilateral political relations with Italy than with Spain, which has seen a degradation due to Spain's position on Morocco and the Western Sahara territory^{viii}. The hostility and the long-time rivalry between Morocco and

Algeria have been a long-running issue, with tensions intensifying in 2020 when Morocco normalised its relations with Israel in exchange for the United States' recognition of Morocco's sovereignty over the Western Sahara territory^{ix}.

Figure 1: Pipelines Connecting Algeria and Europe



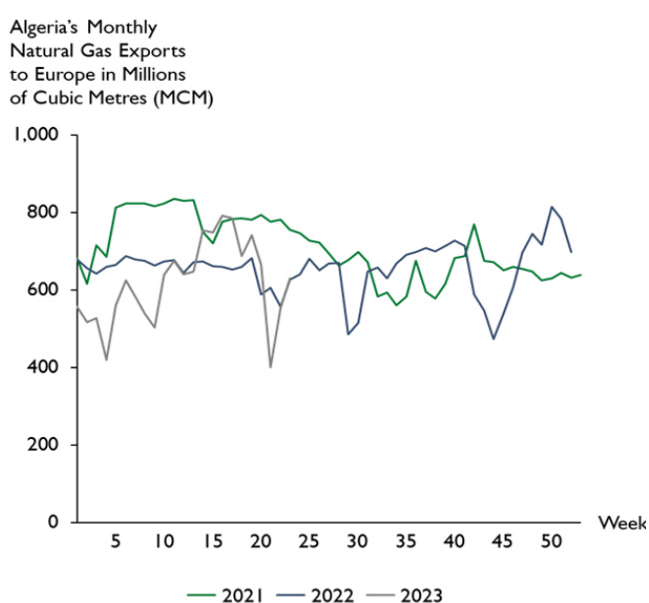
In 2021, Algeria halted gas exports through the Maghreb-Europe Pipeline via Morocco as the multiannual contract between Algeria and Morocco expired, and the two countries failed to renew it due to ongoing political disagreements over the Western Sahara^x.

Spain continues to import Algerian gas through the MedGaz Pipeline, in addition to LNG, due to its spare receiving capacity. Nonetheless, Southern European markets could coordinate and partially divert Algerian gas supplies from Spain to Italy, using TransMed's spare capacity.

Spain (which did not receive Russian pipeline gas even pre-war) has a large LNG receiving capacity of 60 BCM that could be used to maximise LNG imports from other sources, which effectively frees-up Algerian supplies for the Italian market^{xi}.

This coordination between Italy and Spain will also benefit Western and Central European markets. Italy's connecting gas infrastructure could be a bridge for other European markets through the TransitGas Pipeline via Switzerland and the Trans Austria Gas Pipeline (TAG) via Austria.

Figure 2: Algerian Gas Exports to Europe



Algeria is capitalising on the opportunity to increase gas exports through efficiency improvements in gas-based electricity generation, domestic demand reduction, and an increase in upstream production.

Algeria is installing efficient combined-cycle technologies, estimated to make up 55% of the installed electricity generation capacity by 2028^{xii}. Implementing these technologies across the power sector will free-up 50% of the gas used to produce the same amount of electricity^{xiii}.

The country is also freeing-up domestic gas consumption for exports through renewable energy deployment. As part of its Five-Year Development Programme, Algeria aims to install 16 GW of renewables by 2035^{xiv}.

In terms of upstream activity, Sonatrach announced the discovery of LD2 in 2021, the most significant discovery in Algeria over the last two decades. Along with other projects, such as Ahnet and In Amenas Periphery, LD2 could expand gas production by 10 BCM / year^{xv}. Algeria could also tap into its shale resources, which is undeveloped but estimated at 277 TCM^{xvi}.



Algeria can also increase its gas exports to Europe through the Skikda and Arzew LNG Export Terminals, which have a combined export capacity of 34 BCM / year and are currently operating at 40% capacity^{xvii}.

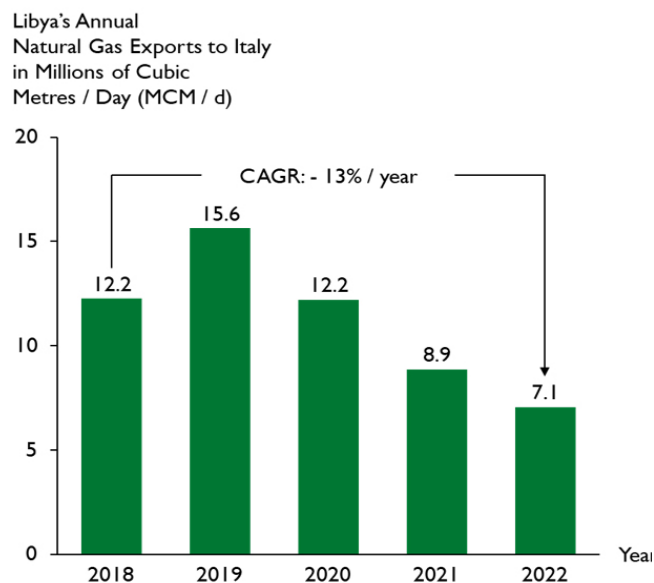
While Europe is ready for additional Algerian gas supplies, Algeria's current production capacity is limited and any meaningful increases in Algerian gas production will require years of exploration and development and importantly, further energy industry reforms to attract new investments.

Algeria's internal ability to invest in its gas industry is also diminishing as the country's available capital has decreased due to high domestic spending on social programmes and generally low oil prices over the last decade. The country has very little foreign debt but has traditionally been reluctant to borrow.

Libya has announced plans to increase gas exports to Europe, but its uncertain domestic political setting and lack of security pose a serious challenge.

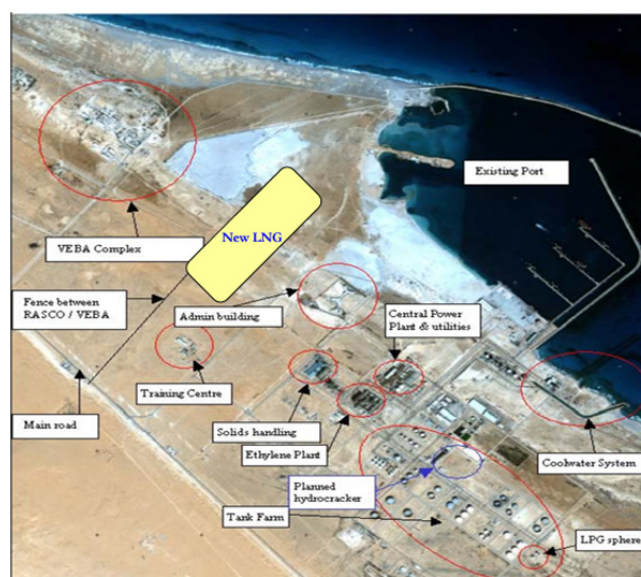
Libya's gas reserves stand at 1.4 TCM in 2022 and it exports via the 11 BCM / year Greenstream Pipeline, which is connected to Italy^{xviii}. The pipeline was commissioned in 2004 and was instrumental in developing Libyan gas resources. In 2010, Italy imported 9 BCM / year via Greenstream, but since the Libyan Revolution, exports to Italy have significantly dropped to 4 BCM / year in 2022^{xix}. The 4.7 BCM / year Marsa El Brega LNG export project has not operated since 2011 and it is unclear whether it could be restarted. It is old (built in 1970), and in 2005 Shell had plans to rejuvenate it and to construct a new plant^{xx}. Currently, Libya suffers from gas and power shortages itself.

Figure 3: Libya Gas Exports to Italy



Despite Libya not being part of the Italian diversification strategy, in 2023 Eni and the Libyan National Oil Corporation signed an US\$ 8 billion gas production deal, which aims to boost supplies to Europe despite the continuing insecurity and political chaos in the country^{xxi}. Through the agreement, ~7.7 BCM / year of gas will come to market in 2026^{xxii}.

Figure 4: Layout of the Marsa El Brega LNG Plant and Possible Site for a New Plant





The need for non-Russian gas supplies to Europe has put the East Mediterranean region under the spotlight, with various countries aiming to become export hubs. A trilateral energy relationship between Egypt, Israel, and Europe could accelerate such exports.

Europe's effort in the East Mediterranean is mainly focused on Egypt and Israel, the region's biggest gas exporters. Egypt currently produces 68 BCM / year, and Israel produces 11 BCM / year^{xxiii}. However, Israel currently only has capability to export to Jordan and Egypt itself, while Egyptian exports depend on the under-utilised Idku and Damietta terminals.

In April 2022, Egyptian EGAS entered into an agreement with Eni to supply 3 BCM / year of LNG to Europe, particularly Italy^{xxiv}. Even before the energy crisis, Egypt had been exporting LNG to Europe for several years from Idku and Damietta, which have a combined capacity of 17 BCM / year^{xxv}.

As gas prices increased, Egypt tried to maximise its LNG exports. In 2021, it exported 9 BCM / year of LNG, which was a 10-year high but still left 8 BCM of unutilised LNG capacity.

However, Egypt faces challenges that hinder its efforts to boost LNG exports, namely rising domestic demand and gas production declines. And for this reason, Israel has become a key player in Egypt's gas exports to Europe. Egypt's domestic gas demand currently stands at 62 BCM / year and has increased by 3% / year between 2011 – 2022^{xxvi}.

In 2022, the European Commission introduced a triangular arrangement by signing a trilateral memorandum of understanding on the supply of Israeli gas via Egypt's LNG export terminal to Europe^{xxvii}. This arrangement is the lowest-cost option to bring some Israeli gas to European markets.

For Egypt and Israel, the trilateral agreement is mutually beneficial such that both countries depend on each other for their gas exports to Europe. Israel relies on Egypt's liquefaction facilities to reach European markets. Egypt, in turn, is concerned with meeting its domestic demand and relies on Israeli gas imports to provide a sufficient export surplus.

In 2022, Egypt exported 11 BCM / year of LNG, an increase of 14% y-o-y^{xxviii}. Egypt can increase exports to ~20 BCM / year, depending on supplies from neighbouring Eastern Mediterranean countries, and is likely to do so by 2025 – 2030^{xxix}. Currently, Egypt's consumes ~90% of its production, which if not managed, could lead to Egypt's reliance on Israel and possibly Cyprus to create a larger exportable gas surplus^{xxx}.

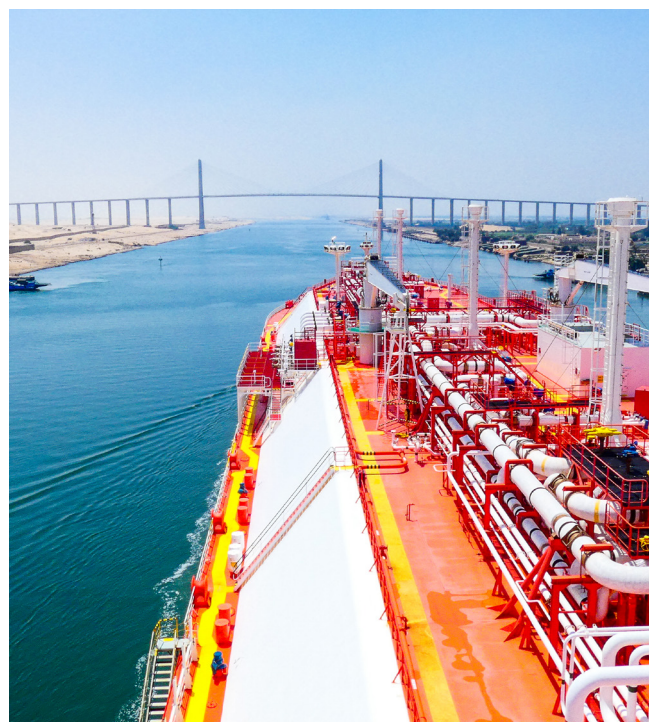
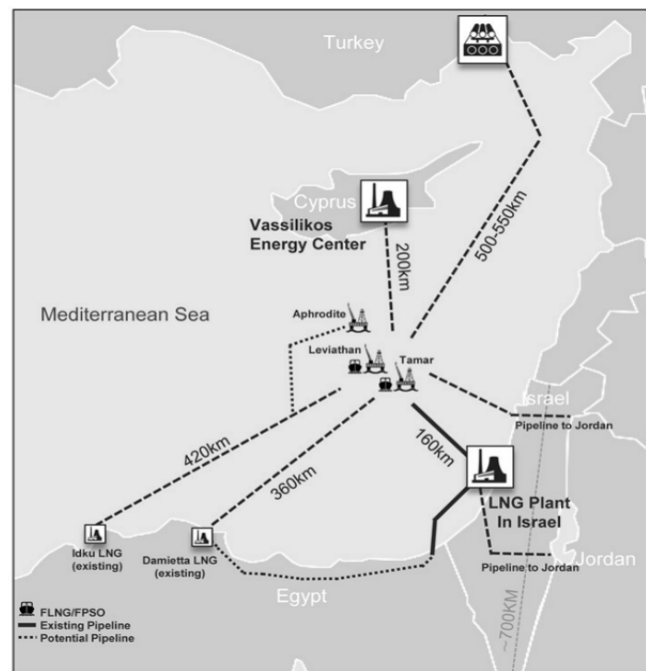
Israel is currently expanding gas production across key fields such as Leviathan, Karish, and Tamar. The Leviathan field is the second largest offshore gas field in the Eastern Mediterranean region and currently produces 12 BCM / year of gas^{xxxi}.

The Leviathan expansion project will result in additional supplies of 9 BCM / year that are expected to come online in 2026. And when they do, Israel's gas exports could exceed Egypt's available LNG capacity, allowing it to export via a proposed 10 BCM / year EastMed Pipeline, connecting the Leviathan field directly to Europe (via Cyprus, Greece, and Italy (or even Turkey))^{xxxii}.

Given Turkey's problematic relations with its Eastern Mediterranean neighbours – if the European Union and the United States help advance political resolutions, these would ease the development of gas fields around Cyprus as well as potential exports from Cyprus and

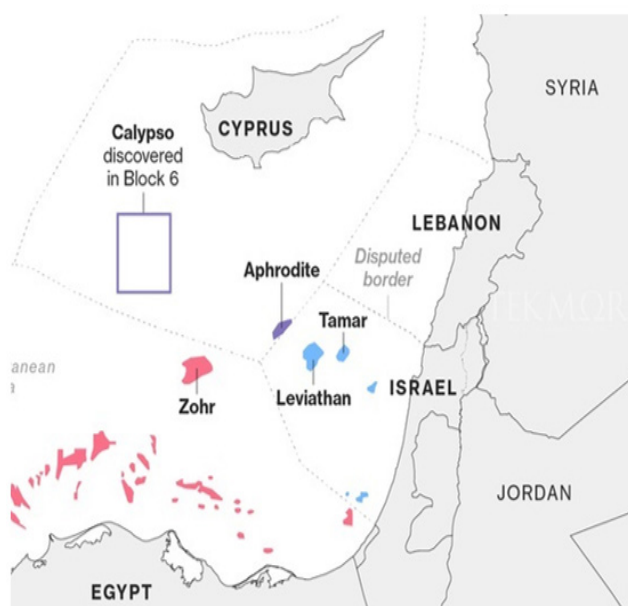
Israel to Turkey and onward to Europe. A direct pipeline to Turkey would be quicker and cheaper to build than the second-best route to Greece and could therefore make a timelier contribution to replacing Russian gas^{xxxiii}.

Figure 5: Leviathan Project



In addition to the Leviathan expansion, Israel's Karish and Tanin fields could supply additional gas to Europe. The Karish field is located within Israel's EEZ and was claimed by Lebanon, whose maximalist boundary demarcation was estimated to hold 40 BCM^{xxxiv}.

Figure 6: Aphrodite, Tamar, and Zohr Project



In 2022, Lebanon and Israel agreed to solve their maritime border dispute with the mediation of the United States. Under the agreement, Israel will operate the Karish field, enabling Lebanon to solely manage the exploration and production operations on the Qana prospect, which extends into Israeli territorial waters. Following the agreement, production has begun on Karish in October 2022^{xxxv}.

Another gas field in the East Mediterranean is Cyprus's Aphrodite field, which is estimated to contain 124 BCM reserves^{xxxvi}. A small part of the field extends into Israel's EEZ. In 2022, talks between Cyprus and Israel concluded with a joint pledge to unlock the potential of Eastern Mediterranean gas resources fully^{xxxvii}.

Chevron and NewMed Energy agreed to invest US\$ 192 million for production in 2023^{xxxviii}.

In the same year, TotalEnergies and Eni announced Cyprus' fourth significant gas discovery with the Cronos-1 well, estimated to hold ~71 BCM of reserves, boosting Cyprus' resources to 391 BCM. The finding gives Cyprus a significant position in its energy partnerships with Egypt (as it intends to export to Europe via Egypt's LNG infrastructure) and Israel.

With additional gas production from Cyprus, the East Mediterranean surplus for export could increase to 40 BCM / year by 2030^{xxxix}. Hence, gas exports from the East Mediterranean to European markets could potentially replace ~30% of pre-war Russian pipeline supplies to Europe^{xl}.





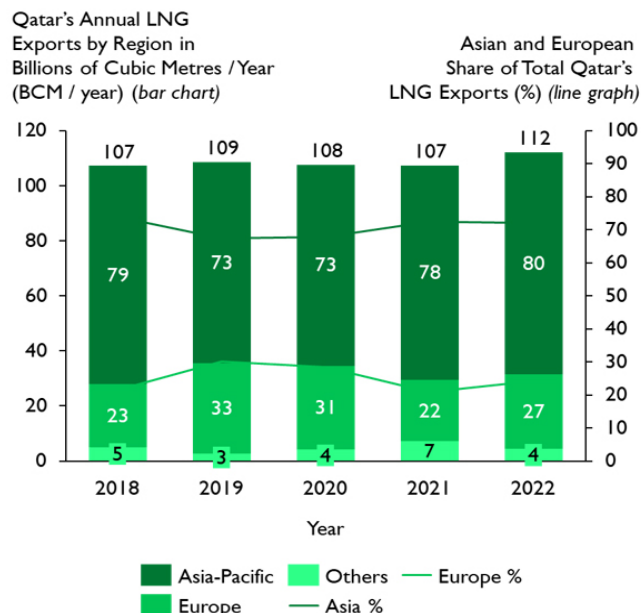
The availability of more Qatari LNG for Europe in the short-term is small, given its existing long-term contracts with Asia. However, from 2027, Qatar could increase its LNG exports to Europe, contributing to Europe's gas diversification, and strengthening its medium-term strategic role in the European market.

The ongoing energy crisis has reinvigorated the potential energy cooperation between Europe and the GCC countries, underpinned by the European Commission's announcement of "A Strategic Partnership with the Gulf."^{li} The announcement, combined with the REPowerEU Programme, aims at forming a renewed partnership based on sustainable energy security. In recent years, the GCC countries have been more focused on Asian markets than Europe.

Qatar has emerged as a favourable partner and stakeholder in Europe's gas diversification plans. It has also expressed willingness to contribute to European energy security through LNG exports on several occasions. Advantageously for Europe, the country's gas and LNG industry is centralised, in contrast to global LNG exporters such as the United States and Australia, allowing the Qatari government greater control over the sector and its export policies, and conversely in securing European energy security.

In 2022, Qatar exported 112 BCM / year of LNG, accounting for 21% of global supply^{lii}. Additional Qatari LNG volumes in the short-term would be small. Qatar lacks spare LNG export capacity, and 72% of its LNG sales are directed to Asian buyers through oil-indexed long-term contracts in 2022, whereas 10% of the exports are on a spot basis^{liii}.

Figure 7: Qatari LNG Exports



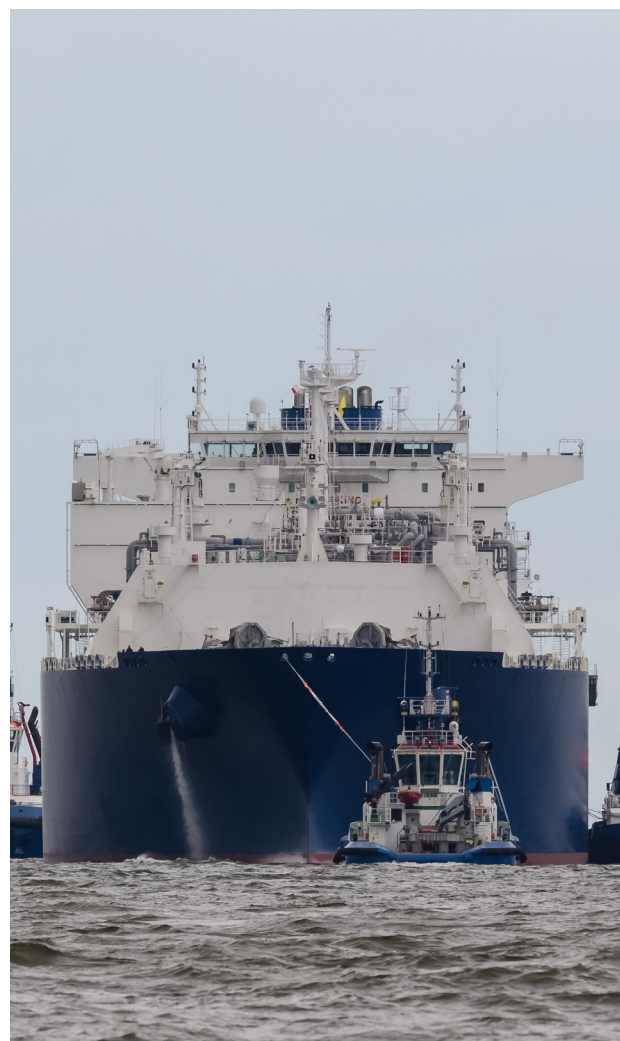
Qatari oil-indexed long-term LNG supply contracts have been more favourable than LNG spot prices over the past two years, and because of this, Qatar's LNG exports to Europe have not significantly increased compared to North American suppliers.

In the short-term, Europe's ability to import additional Qatari LNG cargoes depends on the extent to which Asian buyers can divert their imports. This was favoured in 2022 when Chinese LNG imports fell because of COVID-19 lockdowns and high prices. From 2027, new volumes will become available as existing long-term contracts begin expiring^{xliv}.

However, Qatar's important contribution in the medium and long-term is in expanding its LNG export capacity. Qatar aims to expand North Field production and increase LNG export capacity to 153 BCM / year by 2026 and 176 BCM / year by 2027. The first set of volumes is expected to come online by late 2025. The North Field expansion will propel Qatar's position

as the world's largest or second-largest LNG exporter^{xlv}. The US will be its main competitor and will probably overtake it in volumes, but American capacity is fragmented across numerous projects and companies.

To achieve its target, Qatar lifted a 2005 self-imposed moratorium in 2017 to harness its competitive advantages in responding to rising competition from other LNG exporters. In addition to this, the country has also invested in the 22 BCM / year Golden Pass LNG Export Project in Texas, United States, with ExxonMobil^{xlvi}. The project is expected to come online in 2024, but it is still being determined if supplies will be directed to Europe.



Europe is increasing its LNG receiving capacity by 2024 – 2025, so from 2026 onwards, Qatari LNG will be materially able to reduce European dependence on Russia. Europe's LNG import capacity currently stands at 169 BCM / year^{xlvii}. Germany is building five new floating storage regasification units with a total capacity of 30 BCM / year^{xlviii}.

The first two units have a capacity of 5 BCM / year each and are expected to be operational by the end of this year^{xlix}. Croatia is expanding its Krk terminal from 2.9 to 6.1 BCM / y by early 2025; the terminal can serve central European markets such as Hungary and Czechia, which historically relied mostly on Russia. Qatar has also invested in LNG receiving terminals in Belgium, the United Kingdom, and France.

Against the backdrop of energy relations between Qatar and Europe are the latter's ambitions to reduce fossil fuel dependence and expedite the transition to a renewables-dominated energy mix. The extent to which this transition unfolds depends on the ability of European governments to push back against Qatar's preference for long-term LNG supply contracts that can be as long as 20 years or more.

Europe prefers short-term contracts because its energy transition plans mean gas use by the 2040s should have fallen to low levels (although these projections appear quite unrealistic).

Over the last two decades, gas supplies to Europe have mostly been based on hub pricing rather than oil-indexation^l. In 2021, 77% of the gas volumes to Europe were based on hub pricing, dominated by supplies to north-west Europe, in contrast to some Mediterranean gas supplies that continued to be based on oil-indexation^{li}.

For Qatar, securing a twenty-year deal with Europe is strategically preferred, as it wants to underpin long-term markets and keep its export portfolio diversified. Its share of exports to Europe currently stands at 25%^{lii}.

Currently, Qatar's sales are dominated by Asian buyers, making it vulnerable to economic shocks there, competition from coal in markets such as China and India, maturity of its traditional east Asian markets (Japan, South Korea, and Taiwan), and increased competition from other LNG exporters.

Qatar has signed recent long-term contracts with Sinopec and CNPC (China) and PetroBangla (Bangladesh); however, in November 2022, it did conclude a 15-year deal with ConocoPhillips for 2.7 BCM / year of LNG to be delivered to Germany.

In addition to the contract duration, Qatar's preference for destination clauses on European contracts prohibits the re-sale of its LNG supplies. It prefers prices to be oil-indexed rather than against gas indices such as the main European marker, the Dutch TTF^{liii}.

However, there is scope for compromise. In 2018, the European Commission led an inquiry into Qatar's anti-competitive market behaviour and its preference for long-term contracts over spot trading^{liv}. The investigation was halted in 2022 with QatarEnergy entering into the fifteen-year LNG supply agreement with Germany^{lv}.

On future LNG supply deals, the argument for signing new long-term LNG contracts to meet Europe's increasing LNG requirements through predictable pricing terms competes with counterarguments about long-term demand uncertainty amid Europe's decarbonisation goals^{lvi}.



Hence, Qatar may be willing to accept shorter and more flexible contracts if they are linked to attractive European investment opportunities in the renewable / new energy industry for Qatar Investment Authority.

Despite the potential value of Europe for Qatari LNG and its willingness to cooperate, Qatar's decision will primarily depend on commercially attractive contractual terms and not on political reasons. And Asian markets will remain the core component of Qatar's LNG export policy in the long-term, with South Korea, India, China, Japan, and Pakistan driving most of the projected growth.

Qatar's contribution to European energy security allows it to benefit from both increased gas revenues and stronger defence cooperation with the West, notably the United States. In 2021, the United States designated Qatar as a major non-NATO Ally, which included military and financial benefits^{lvii}.

Europe, which had relatively neglected the Gulf strategically, has been much more diplomatically engaged from 2022, with visits from leading politicians from Germany, France, Italy, and the UK. The fact that sizeable western energy companies are keen on joining Qatar's North Field expansion is also a testament to the country's continuing importance as a gas superpower.

However, there are risks for Qatar. The decline in Russian gas exports to Europe pushed LNG prices in Asia to historical highs. These exceptionally high prices contributed to gas supply shortages across Asian markets, with South and Southeast Asian governments reconsidering LNG imports, and seeing coal, renewables, and sometimes nuclear power as more attractive.

The risk of downward pressure on Asian LNG demand from continued price hikes and volatility over the next few years could destroy long-term regional demand growth.

This scenario is suboptimal for all LNG exporters, including Qatar, particularly in light of other new LNG supplies coming to market over the next five to ten years from the US, Canada, Australia, east and north-west Africa and Russia.

Moreover, the UAE's ADNOC is leveraging its elevated oil revenues for its capital spending plan of US\$ 127 billion between 2022 – 2026. The capital spending plans will drive upstream growth, advance downstream expansion, and allow ADNOC to strengthen its marketing and trading capabilities.

The need to increase gas supplies has become the UAE's top priority for increasing its export potential, restoring domestic self-sufficiency, given growing global concerns about energy security, and promoting domestic industrial expansion.

The UAE currently has three LNG liquefaction export trains with a combined capacity of 8 BCM / year. ADNOC is also moving forward with plans to boost its LNG export capacity by developing the 13 BCM / year Ruwais Low-Carbon LNG Project^{lviii}. It is intended to come to market around 2026 although given the recent relocation from Fujairah, 2027 may be more realistic^{lix}.

Earlier this year, the UAE delivered the first shipment of LNG to the Elbehafen floating LNG receiving terminal in Brunsbüttel, Germany^{lx}.

Oman has two LNG liquefaction trains with a total production capacity of 11 BCM / year. Earlier this year, Oman LNG and TotalEnergies signed a 10-year deal beginning in 2025 through which Oman LNG will export 1.1 BCM / year to France^{lxi}.

Since 2015, production at the 9 BCM / year Balhaf LNG plant (operated by Yemen LNG, a consortium of TotalEnergies, Hunt Oil, South Korea's SK Innovation, Hyundai, and KOGAS, plus Yemen state interests) has been halted because of conflict in Yemen and security concerns, including recurrent attacks on the gas pipeline feeding the plant.

However, the Balhaf LNG Project continues to remain in good condition, as TotalEnergies along with the other foreign shareholders continues to finance Yemen LNG at a loss^{lxii}. There has been some speculation as to a possible re-opening.





The European energy crisis is not a new "energy spring" for MENA gas exporters: they should not forget that gas / LNG supplies from the MENA region are part of a short-term European natural diversification strategy that looks to enhance energy security. However, in the long-term, Europe is on the path to decarbonisation.

If MENA countries want to maintain or expand their energy links to Europe, they will have to consider exporting renewable and low-carbon electricity, hydrogen, and derivatives.

The European Union looks at MENA countries as valuable energy partners as it looks to reconcile short-term energy security with its long-term decarbonisation targets. A potential area of cooperation is addressing venting and flaring, which will release additional gas supplies and bring climate benefits.

The European Union is open to technical assistance in setting up mutually beneficial "you collect / we buy" schemes^{lxiii}. In 2022, Iraq flared 18 BCM, Iran 17 BCM, Algeria 8 BCM, and Libya 5 BCM^{lxiv}. If flaring and methane leakage are not addressed, the EU's carbon border adjustment mechanism (CBAM) could close off its market to offending countries.

Regarding long-term European decarbonisation plans, MENA countries could become valuable low-carbon and / or renewable electricity exporters and decarbonised gas suppliers to Europe. The MENA region has one of the highest technical renewable potentials due to its high solar irradiation in general, and wind potential across selected areas. In 2021, the EU acknowledged this potential with unparalleled opportunities for clean energy cooperation^{lxv}.



As renewable energy policies and targets successfully materialise, this will not only help meet rising domestic electricity consumption but also free up volumes for additional gas / LNG exports. Improved energy efficiency, eliminating wasteful subsidies and, in some countries, introducing nuclear power, also help save gas. North African gas exporters to Europe, such as Algeria, Libya, and Egypt, could diversify their energy exports dominated by fossil fuels by exporting renewable and / or low-carbon electricity, allowing them to align their renewable resources to domestic demand and the future European low-carbon energy mix.

Morocco is a renewable leader across North Africa and a good example for its North African neighbours. Morocco has set ambitious targets to expand the share of renewables in its electricity capacity mix to 52% by 2030 (currently standing at 40%).

The country's targets were announced in 2009 when it only had 280 MW of wind capacity, which in 2022 grew to 1.4 GW of wind and 0.96 GW of solar^{lxvi}.

In 2020, Algeria, as part of its Five-Year Development Plan, set a target of 16 GW of renewables capacity by 2035 and a mid-term target of 4 GW by 2024. The plan also underscored Algeria's renewed focus on building its gas export capacity.

However, it is unlikely Algeria's 2035 and mid-term renewable target will materialise in time, given the country only has 460 MW of renewable capacity^{lxvii}.

Libya needs a comprehensive regulatory framework for renewable deployment. Instead, various pieces of legislation apply, and projects are typically based on Power Purchase Agreements (PPAs) with the Libyan authorities. Renewables have hardly been developed so far, and the country suffers badly from power

shortages, but its huge area gives it probably the best technical solar potential of any MENA country.

Egypt aims to generate 42% of its electricity from renewables by 2035, with different targets for various renewable technologies^{lxviii}. The country has successfully held various competitive renewables tenders, which include the 1.5 GW Benban Project that came online in 2019. However, a healthy auction pipeline is slowly diminishing due to excess electricity generation capacity and supply chain issues.

The potential of renewable / low-carbon electricity trade between the MENA region and Europe has its challenges. Firstly, despite their great potential, MENA countries still need to catch up on renewable deployment. Renewables currently account for <3% of total electricity generation across 9 out of 10 fossil fuel-producing countries, except for Egypt, where renewables account for 10% of electricity generation^{lxix}. This is mainly due to the need for fossil fuels phase-out policies; and political, regulatory, and infrastructural constraints that have undermined the attractiveness of renewable investments.

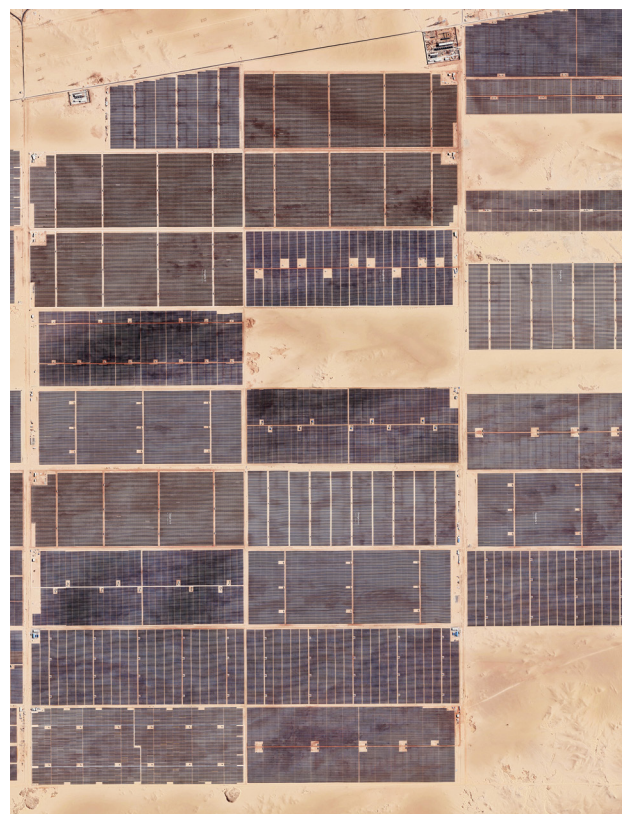
An exception to these constraints is GCC countries, which are financially self-sufficient and have relatively robust political, regulatory, and infrastructures.

However, European public and private renewables investors could significantly mobilise capital for other lagging MENA countries, for example, through the European Union's Global Gateway initiative. The initiative is part of a European strategy to boost smart, clean, and secure links in digital, energy and transport sectors and to strengthen health, education, and research systems across the world^{lxx}.

Secondly, MENA countries suffer from electricity shortages themselves, particularly Libya, Lebanon, and Iraq, or have fast-growing demand which they struggle to meet, such as Iran, Kuwait and Algeria.

Thirdly, there is a need for sufficient electricity interconnections between the MENA region and Europe. The 1.4 GW electricity interconnection between Spain and Morocco is the only electricity link between a MENA country and Europe.

To develop the electricity trade potential, the European Union has added a 600 MW submarine interconnector between Italy and Tunisia to the European Union's Projects of Common Interest list^{lxxi}. In 2022, Italy and Algeria restarted discussions on the possibility of developing an electricity interconnection through a 1 GW – 2 GW submarine cable between both countries^{lxxii}.



The Euro-Africa and Euro-Asia subsea interconnectors are also under development to link Egypt and Israel with Cyprus and mainland Europe. Nevertheless, these projects represent a tiny fraction of EU power demand, which averages about 340 GW.

MENA hydrogen exports to Europe are another source of cooperation between the regions in the long-term since Europe is unlikely to achieve self-sufficiency in hydrogen, even though it has updated its domestic hydrogen and biomethane production targets.

The European Union's Hydrogen Strategy (which the REPowerEU plan has reiterated) has a target of 10 million tonnes (MT) of domestic renewable hydrogen production and an additional 10 MT of renewable hydrogen imports by 2030, of which 6 MT are expected to be imported through hydrogen pipelines, and the rest through seaborne ammonia or other hydrogen derivatives^{lxxiii}.

The European Union is open to supporting hydrogen export corridors with North Africa, as it could be a low-cost producer, in addition to seaborne imports from other MENA countries. The European Commission launched the Mediterranean Green Hydrogen Partnership at COP28^{lxxiv}.

The partnership envisages a governing body for hydrogen trade between the European Union, Algeria, Egypt, Morocco, Tunisia, and Libya, comprising of representatives from each member country, which will establish a set of rules and regulations that govern hydrogen trade, based on the supranational model of the European Coal and Steel Community, both for its decision-making and for the implementation and oversight of its policies^{lxxv}.

This regulatory framework will minimise regulatory uncertainty, which is essential for lenders and investors to make long-term financial commitments^{lxxvi}.

The Mediterranean Green Hydrogen Partnership will begin with the European Union – Egypt Hydrogen Partnership and is exploring Green Hydrogen Partnerships with the GCC countries^{lxxvii}.

Earlier this year, Eni and Sonatrach entered into agreement to study the feasibility of a new pipeline that will transport hydrogen^{lxxviii}. Gaia Future Energy and HyDeal signed a partnership called HyDeal Africa, which will explore the feasibility study of a coastal subsea hydrogen pipeline connecting Mauritania and Morocco to Spain^{lxxix}.

Across the GCC, Qatar, Saudi Arabia, the United Arab Emirates, and Oman will lead the move towards sustainable hydrogen production.

The advantages of hydrogen exports from the GCC to Europe are the GCC's potential for low-cost green hydrogen production, existing experience in blue hydrogen and ammonia production, and the availability of LNG terminals and export infrastructure that could be used to expand seaborne hydrogen exports. Other options are to produce 'green' steel, aluminium, synthetic fuels, or other energy-intensive materials for export.

GCC countries are closely eyeing the European market for hydrogen exports, in addition to Asian markets. However, exports to Europe in the short-to-medium-term will largely be based on blue hydrogen rather than green hydrogen. And the lack of pipeline transport options could lead to high landed costs at European ports for ammonia, liquified hydrogen, or other seaborne hydrogen derivatives from the GCC.



The MENA region's strategic importance to Europe's energy security has grown since the start of Russia's invasion of Ukraine. This is based on its vast gas and renewable resources, robust existing infrastructure, and close geographical proximity to Europe, as well as generally good political relations.

The European Union's political commitment to increase the use of non-Russian gas and the subsequent reconfiguration of global gas trade will drive European energy markets closer to the MENA region. However, North African, East Mediterranean, and GCC gas exports face different regulatory, market, and infrastructure challenges.

Nonetheless, the MENA region will remain a gas exporting powerhouse to Europe in the short-to-medium term. The European Union has reiterated its commitment to decarbonisation as it reconciles its energy security goals with its climate targets. This represents an opportunity for MENA states to secure new income streams.

Conversely, for the European Union, it could have the "Brussels Effect" on the MENA region, incentivising it to follow a similar decarbonisation pathway as Europe while enhancing the European Union – MENA energy and geopolitical cooperation. This would be strategically helpful to Europe at a time when the MENA region is increasingly witnessing growing influence from Europe's rivals, China and Russia.

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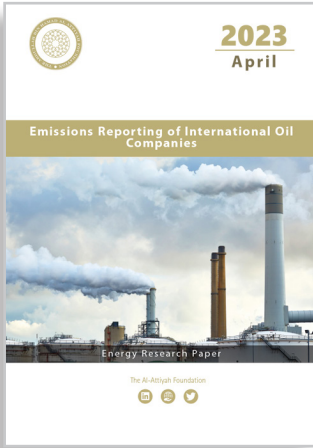
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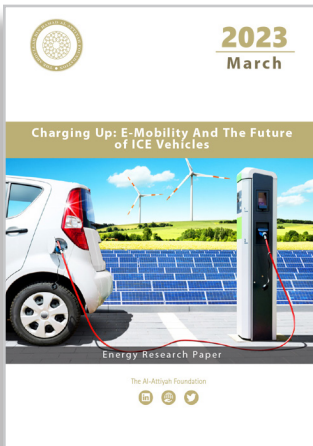
April – 2023

Energy-Report-2023-04- Emissions Reporting of International Oil Companies

The oil and gas industry, a major contributor to global greenhouse gas (GHG) emissions, faces increasing pressure from environmental, social, and governance (ESG) factors influencing investment decisions. Despite the uncertainty of its future in the energy transition context, demand for oil and gas is not expected to diminish in the nearterm.



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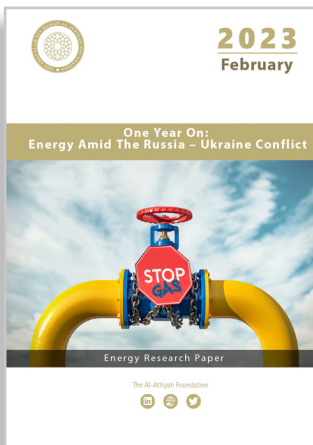
March – 2023

Charging Up: E-Mobility And The Future of ICE Vehicles

Electric vehicles have gained significant market share in the past year and numerous automakers have committed to predominantly EV futures. EVs have gained range, costs have fallen, and numerous governments have rolled out supportive packages for their manufacturing, purchase and charging.



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February – 2023

One Year On: Energy Amid The Russia – Ukraine Conflict

The Russian invasion of Ukraine in February 2022 has created shockwaves in global energy markets, with fossil fuel supply shortages, changing energy trade flows, and economic uncertainty. After an initial global energy crisis, much adjustment has happened, but serious risks remain.





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Our partners collaborate with The Al-Attiyah Foundation on various projects and research within the themes of energy and sustainable development.





The Al-Attiyah Foundation

 Tel: +(974) 4042 8000,
Fax: +(974) 4042 8099
 www.abhafoundation.org

 Barzan Tower, 4th Floor,
West Bay.
 PO Box 1916 Doha, Qatar

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