



The Arab Gulf States
Institute in Washington
Building bridges of understanding



Gulf Countries on the Front Line of Energy Security
Kate Dourian



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About Petro Diplomacy

Now in its eighth year, AGSIW's Petro Diplomacy conference is a signature annual event that brings together stakeholders in the energy sector of the Gulf Arab states, global supply competitors in North America, analysts, and policymakers to discuss how changes in technology, fiscal priorities, and opportunities for growth continue to alter the relationship between politics and energy for both the region and the world.

About the Author

Kate Dourian is a non-resident fellow at the Arab Gulf States Institute in Washington, a contributing editor at MEES, and a fellow at the Energy Institute. Previously she was the regional manager for the Middle East and Gulf states at the World Energy Council, as well as the programme officer for the Middle East and North Africa in the Global Energy Relations Division of the International Energy Agency since September 2015. Her role included building relationships between the IEA and the governments of several Middle East and North Africa countries, using the extensive contacts that she accumulated during three decades spent in several Middle Eastern and North African countries as a journalist and energy analyst. Dourian was actively involved in the discussions that led to Morocco becoming an IEA Association country and the joint work program for which she raised funds from IEA members. She also helped write and edit the Middle East and North Africa sections of several IEA publications and contributed to the supply section of the Oil Market Report. Dourian joined the IEA from MEES where she was a senior editor covering energy-related developments in the Middle East for the weekly from 2013-15.

Executive Summary

The energy crisis triggered by the Ukraine crisis is unprecedented in scale and severity. Oil and gas prices soared to near records shortly after the February 24 Russian invasion of Ukraine as a slew of sanctions imposed on Russia wreaked havoc on the global economy. What followed was economic slowdown in the world's largest economies, while high energy and food prices stoked inflation and prompted fears of a global recession. International Monetary Fund Managing Director Kristalina Georgieva warned in late September that the world's economic outlook was "gloomy" and could get worse in 2023 if inflation is not brought under control.¹

The elevated prices of oil and refined products, like gasoline and diesel, in the first half of the year generated buffer revenue for the Arab oil producers and revived the fortunes of the international energy companies. But they inflicted pain and hardship on import-dependent economies around the world. It was a matter of time before a demand response knocked down prices to their lowest levels since January. This price volatility makes it difficult to predict the market's direction as the year draws to a close amid mounting uncertainty over both supply and demand balances in the months ahead.

Introduction

Oil prices averaged \$105 per barrel in the first half of the year as the OPEC+ alliance of OPEC and non-OPEC oil producers led by Saudi Arabia and Russia held fast to a policy of modest supply increases as they phased out the steep cuts implemented at the start of the coronavirus pandemic in 2020. While the policy might reap short-term rewards, there are long-term risks in allowing prices to remain at elevated levels. There are signs that demand destruction has already set in, which led to a sharp drop in oil prices. On September 25, Brent crude oil, the global benchmark, sank to \$85/bbl, a more than \$50/bbl drop since early March when Brent traded at a near record, just above \$139/bbl. The slump in oil prices came even as Russian President Vladimir Putin raised the stakes with an implicit threat of resorting to the nuclear option against Ukraine's allies. The decline in oil prices and a weaker global economy prompted the OPEC+ group to take what it said was "pre-emptive" action, agreeing on October 5, when the group met in person for the first time in two years, to cut production quotas by 2 million barrels per day starting in November.² The White House, which had been urging Saudi Arabia and other producers to ramp up production to bring down prices, criticized the decision as "short sighted" and said it would consult with Congress on ways to reduce OPEC's control over energy prices.³

Prior to the OPEC+ meeting, the market was more influenced by demand-side concerns as fears of a supply shock dissipated. Russia, locked out of the European and U.S. oil markets, diverted more of its exports to Asia, discounting its oil heavily but still managing to benefit

¹ Jennifer Sor, "The Global Economy Will Be Even Tougher in 2023 Unless Central Banks Can Get Inflation Under Control, IMF Chief Says," *Business Insider*, September 22, 2022.

² "33rd OPEC and Non-OPEC Ministerial Meeting," OPEC, October 5, 2022.

³ The White House, "Press Gaggle by Press Secretary Karine Jean-Pierre En Route Vail, CO," October 12, 2022.

from the price rally earlier in the year. However, a European Union ban on Russian oil imports and an embargo on imports of Russian oil products might lead to a tighter market in the months ahead.

In Europe, which has been overly dependent on Russian gas for power generation and industrial use, electricity prices shot up to record highs after Russia sharply restricted supplies of natural gas through a key pipeline to Germany. Europe faces the prospect of blackouts and rationing to cope with possible shortages should the winter season prove to be harsh. So far, self-sanctioning by European refiners and outright bans by the United Kingdom and United States of Russian crude oil and product imports have had little impact on the Russian economy or global supply balances. The International Energy Agency, in its September Oil Market Report, estimated that Russian crude oil exports actually rose by 220,000 barrels per day in August to 7.6 mb/d, just 390,000 b/d below pre-war levels.⁴

While the war in Ukraine has not yet resulted in the loss of significant volumes of Russian oil, the threat of further disruption looms amid a scramble by former customers of Russian oil and gas to seek alternative supplies from the Middle East and Africa.

Oil and gas prices were on the rise in late 2021 as the global economy was recovering from the coronavirus-induced slowdown. Supply and demand balances were tight even before the Ukraine crisis and the energy system was stretched after eight years of underinvestment in upstream capacity during previous low oil price cycles. Oil refinery shutdowns in many industrialized countries led to a loss of capacity, making for an extremely tight market for refined products, particularly transportation fuels like gasoline and diesel of which Russia is a major exporter.

While the war in Ukraine has not yet resulted in the loss of significant volumes of Russian oil, the threat of further disruption looms amid a scramble by former customers of Russian oil and gas to seek alternative supplies from the Middle East and Africa. As holders of the bulk of global spare oil production capacity, Saudi Arabia and the United Arab Emirates stand to benefit the most from this revival in demand for crude oil, at least in the short term. In the longer term, the producers will need to future-proof their hydrocarbon resources by using decarbonization technologies to capture and store, recycle, or reuse carbon dioxide to ensure that they can meet stricter environmental standards that align with net-zero targets.

Though Abu Dhabi and Riyadh have set net-zero targets, they have called for a more realistic approach to the energy transition, warning of the risks of a world rushing to displace oil and gas with clean energy too quickly. The climate agenda has taken a back seat to energy security as coal has made a comeback as an alternative to prohibitively expensive gas. The war in Ukraine laid bare the challenge of transitioning away from oil and gas to renewable energy prematurely, before national grids and transportation systems were ready to cope with a more diversified energy mix.

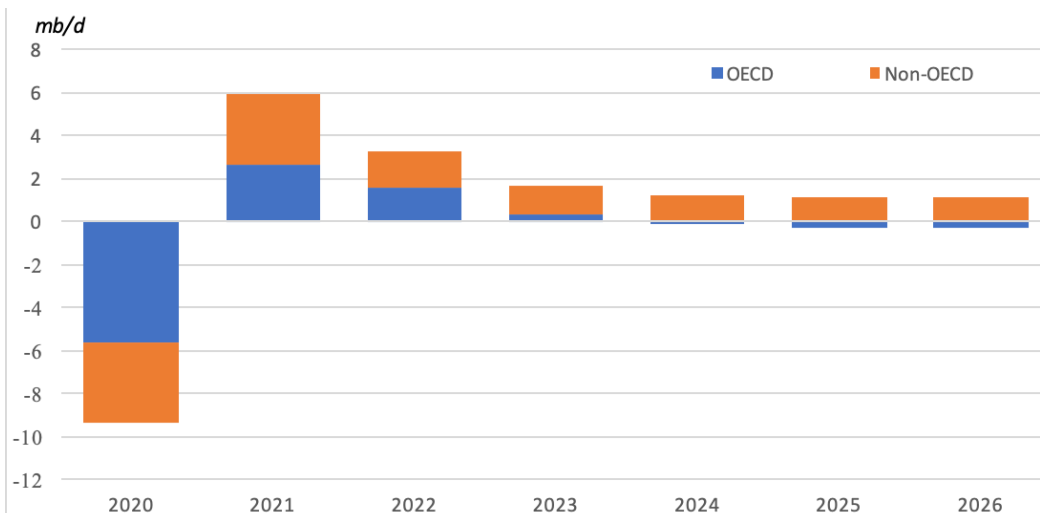
The UAE and Saudi Arabia argue that their respective investments in new oil production capacity alongside renewable energy and hydrogen projects are better suited to the evolving energy architecture.

⁴ International Energy Agency, *Oil Market Report - September 2022* (Paris: IEA, September 2022).

Middle Eastern gas producers from Qatar to Egypt to Algeria have been courted by the EU, U.K., and United States to fill the anticipated drop in Russian supplies. However, while crude oil cargoes can be diverted, and there is some spare capacity still available to tap (albeit a razor thin cushion at current production levels), gas is a different story in that most supplies are committed under long-term contracts. Pipeline gas flows tend to be more regional, while the liquefied natural gas market is global; but even with LNG, there is not enough supply to meet demand from Asia and Europe. It will take years for new capacity to come on line with most volumes from existing facilities already spoken for. This has pushed spot market prices higher, forcing Europe to pay more for spot cargoes diverted from Asia. The Arab oil producers have also seen a rekindled interest for their crude oil from European refiners as Russia pushed more of its oil to the Asian market, where it has been heavily discounted to entice buyers like China and India. India's purchases of Russian crude oil went from near zero to just under 1 mb/d in June. Saudi Arabia and Iraq have shipped more crude oil to the European market in recent months to fill the gap.

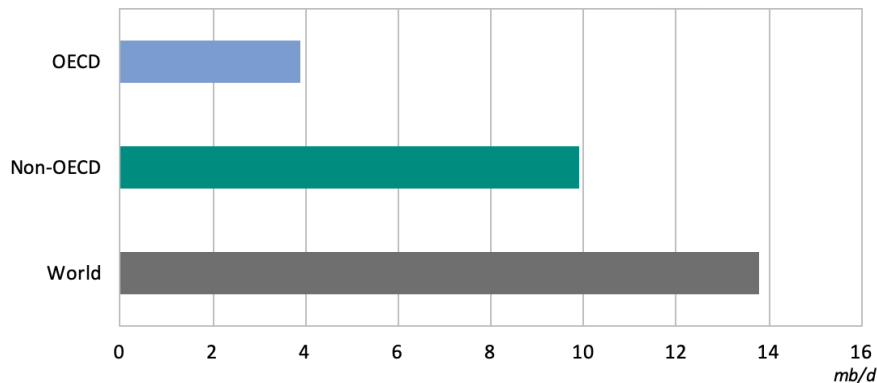
But Chinese oil demand, which had sustained the market until recently, has slumped as Beijing has adopted a strict "zero-Covid" policy that has curbed economic activity. A drought in the world's largest oil-importing country has forced blackouts as hydropower generation slumped, forcing some factories to shut down. Some analysts believe that if China's economy recovers, pent-up energy demand will come back strongly just as Russian supplies dwindle when the latest round of EU sanctions come into effect.

Annual Incremental Oil Demand by Region, 2020-26



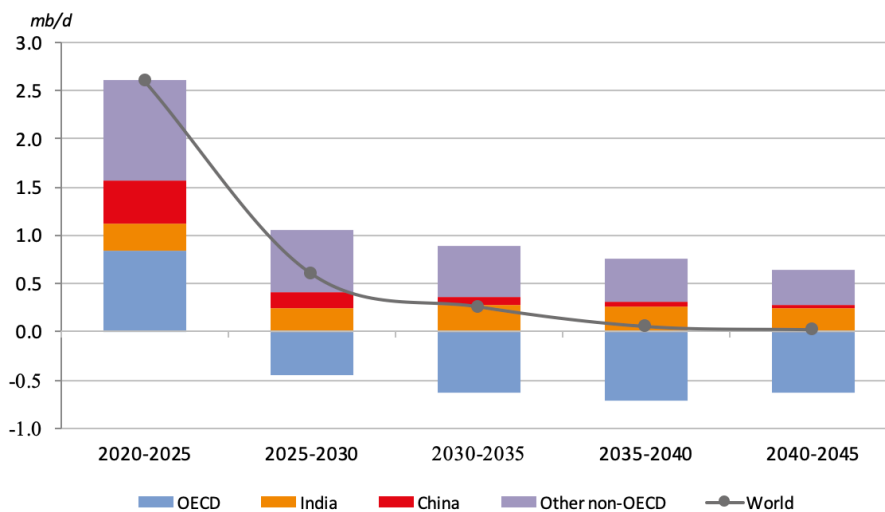
Source: OPEC

Incremental Oil Demand by Region, 2020-26



Source: OPEC

Annual Average Oil Demand Increments by Region, 2020-45



Source: OPEC

Abu Dhabi and Riyadh know that there is a small window of opportunity to take advantage of the lifeline that the Ukraine crisis has offered the oil and gas industry that has long sustained their economies. They see oil and gas retaining a significant share of the global energy mix for decades and have warned of the risks of a world rushing to displace hydrocarbons with clean energy too quickly and endangering energy security in the process.

The Ukraine war has injected new life into the hydrocarbon industry that many thought was on its final legs. These may be boom times for the oil and gas producers of the Middle East and North Africa, but there is no guarantee that the future will be as bright. A temptation to put profits first by producers and energy companies might hasten the switch by consuming countries to cleaner alternative sources of energy.

A Revival in Crude Oil Demand: Boom or Bust?

The current crisis in the energy market has been compared to the oil price shock caused by the Arab oil embargo of the 1970s. But author and energy historian Daniel Yergin argues that the situation today is as serious and potentially worse. “In the 1970s, only oil was involved, whereas this crisis encompasses natural gas, coal, and even the nuclear-fuel cycle. In addition to stoking inflation, today’s crisis is transforming a previously global market into one that is fragmented and more vulnerable to disruption, crimping economic growth. And, together with the geopolitical crisis arising from the war in Ukraine, it is further deepening the world’s great-power rivalries,” he wrote in *Financial Advisor* in July.⁵

These multiple shocks have wreaked havoc with the energy market, where oil prices climbed to a near record, above \$139/bbl, in early March before slipping below \$85/bbl in late September. These price swings prompted Saudi Arabia’s energy minister, Prince Abdulaziz bin Salman, to serve warning that OPEC and its Russian-led non-OPEC allies in the OPEC+ group would not stand by and allow speculators on the paper market, where no physical oil changes hands, to influence prices with erroneous signals. Commodity traders have reduced their exposure to the oil market, which has resulted in low liquidity, making it easy for sharp price movements. This high volatility in an unpredictable market had become “a self-perpetuating vicious circle,” Prince Abdulaziz said in an interview with *Bloomberg* August 22, shortly before the 23-member OPEC+ met in early September.⁶ Yet the OPEC+ producers have also sent conflicting signals, agreeing in August to raise production by a mere 100,000 b/d only to reverse the decision a month later. Prices fell briefly below \$100/bbl after what was seen as a token increase

The October 5 decision by OPEC+ to slash production by 2 mb/d sent oil prices soaring with benchmark Brent crude trading above \$97/bbl on October 10 as the magnitude of the decision sank in.

following President Joseph R. Biden Jr.’s July visit to Saudi Arabia, but they rose again above \$100/bbl after OPEC+ reduced production by an equal volume. Neither the increase nor the reduction will have moved the needle in a 100 mb/d market. However, the October 5 decision by OPEC+ to slash production by 2 mb/d sent oil prices soaring with benchmark Brent crude trading above \$97/bbl on October 10 as the magnitude of the decision sank in.

In reality, the actual production cut will be less than the headline figure suggests. The cuts will come from August quotas and not actual output because many of the group’s 23 members are already struggling to meet their quotas, and production has fallen short of the overall OPEC+ ceiling by nearly 3 mb/d. Prince Abdulaziz said the actual cut may be closer to 1 mb/d or 1.1 mb/d,⁷ and he defended the decision as necessary to ensure market stability and guarantee the flow of investments into energy projects. Inevitably, the cut and a higher oil price was seen as benefiting Russian President Vladimir Putin at a time when Russian oil production is declining as a result of international sanctions as the war in Ukraine has intensified.

⁵ Daniel Yergin, “The Energy Crisis Will Deepen,” *Financial Advisor*, July 15, 2022.

⁶ Will Kennedy and Grant Smith, “Saudi Prince Says Oil’s Disconnect May Force OPEC+ Action,” *Bloomberg*, August 22, 2022.

⁷ Ahmad Ghaddar, Alex Lawler, and Rowena Edwards, “OPEC+ Agrees Deep Oil Production Cuts, Biden Calls It Shortsighted,” *Reuters*, October 5, 2022.

The revised quotas are to remain in place until the end of 2023 to provide “long-term guidance for the oil market,” Prince Abdulaziz said at a news conference after the OPEC+ meeting in Vienna.⁸ Oil prices moved back above \$90/bbl after the meeting as the market reacted to the announcement of the steepest output reduction since 2020. The White House, which had been urging Saudi Arabia and other producers to ramp up production to bring down prices, criticized the decision as “short sighted” and said it would consult with Congress on ways to reduce OPEC’s control over energy prices.⁹

There is little room for error on the supply side given capacity constraints in several oil-producing countries, erratic production in an unstable Libya, and dimming prospects for a nuclear deal that would see Iran return to the global market.

“At a time when maintaining a global supply of energy is of paramount importance, this decision will have the most negative impact on lower- and middle-income countries that are already reeling from elevated energy prices,” National Security Advisor Jake Sullivan said in a statement posted by the White House shortly after the OPEC+ meeting.¹⁰ The Financial Times called the move a “new oil war” by OPEC against the United States, adding that making the move at a time when oil prices were trading at \$90/bbl “marks a new and perhaps dangerous breach between producer and consumer countries, especially between the US and Saudi Arabia.”¹¹ Prince Abdulaziz denied accusations that OPEC+ was using oil as a weapon, saying “Where is the belligerence?”¹²

The production cut will come into effect just weeks before a European Union ban on imports of Russian crude oil comes into effect December 5. The move is likely to crimp supply and possibly bring about higher oil prices, which would stoke inflation further at a time when much of the world is teetering on the verge of recession.

Before the OPEC+ meeting, Prince Abdulaziz had complained that excessive market volatility was distorting the market. “The paper and physical markets have become increasingly more disconnected. In a way, the market is in a state of schizophrenia, and this is creating a type of a yo-yo market,” the Saudi minister warned in the Bloomberg interview.¹³ In an uncharacteristic show of his hand ahead of the ministerial meeting, Prince Abdulaziz said the producers would soon start working on a new agreement beyond 2022, and he raised the possibility of a further cut in production at any time. His remarks signaled that the OPEC heavyweight did not believe oil prices below \$100/bbl reflected market fundamentals, where low inventories and the steady erosion of spare production capacity have lent support to prices since the start of the year. There is little room for error on the supply side given capacity constraints in several oil-producing countries, erratic production in an unstable Libya, and dimming prospects for a nuclear deal that would see Iran return to the global market.

⁸ “33rd OPEC and Non-OPEC Ministerial Meeting,” OPEC, October 5, 2022.

⁹ The White House, “Press Gaggle by Press Secretary Karine Jean-Pierre En Route Vail, CO,” October 12, 2022.

¹⁰ The White House, “Statement From National Security Advisor Jake Sullivan and NEC Director Brian Deese,” October 5, 2022.

¹¹ Derek Brower, David Sheppard, Andre England, and Felicia Schwarz, “The New Oil War: OPEC Moves Against the US,” *Financial Times*, October 7, 2022.

¹² Ibid.

¹³ Ibid.

The Saudi minister's remarks were repeated almost verbatim in OPEC's press release following the OPEC+ September 5 conference, when members agreed to revert to the August production ceiling of 43.854 mb/d in October. The wording of the statement reinforced Saudi Arabia's role as de facto leader of the producers' club: "The OPEC and non-OPEC ministerial meeting noted the adverse impact of volatility and the decline in liquidity on the current oil market and the need to support the market's stability and its efficient functioning." The statement continued: "The Meeting noted that higher volatility and increased uncertainties require the continuous assessment of market conditions and a readiness to make immediate adjustments to production in different forms, if needed, and that OPEC+ has the commitment, the flexibility, and the means within the existing mechanisms of the Declaration of Cooperation to deal with these challenges and provide guidance to the market."¹⁴

As OPEC+ restored the last of the 9.7 mb/d that was withdrawn in April 2020, the market risked becoming tight again in the event of any unforeseen interruptions to supply as Saudi Arabia and the UAE, which together have held the bulk of available global spare production capacity, ramped up production.

OPEC supply rose by 950,000 b/d in August, as Libya restored production to 1.2 mb/d, Saudi Arabia raised output to 11 mb/d and Kuwait by 80,000 b/d, according to a survey of OPEC's production by specialist publication MEES.¹⁵ These additions took the 13-member group's overall crude output to 29.9 mb/d in August, nearly 3 mb/d more than a year earlier. The 10 OPEC members party to the OPEC+ production agreement (Iran, Libya, and Venezuela are exempt) were still 1.23 mb/d below quota, a consequence of low investments in upstream capacity during previous low oil price cycles. This deficit might increase when the EU ban on Russian crude oil imports comes into effect, further restricting Russian exports. While India, and to a lesser extent China, have scooped up discounted Russian barrels, the new embargo would likely crimp seaborne exports from Russia. The IEA estimates that an additional 1 mb/d of refined products and 1.4 mb/d of crude would have to find new buyers once the oil embargo and a ban on imports of Russian oil products that comes into effect February 5, 2023 take hold. An EU shipping ban that would curtail Russia's seaborne oil trade and a price cap proposed by the G-7, measures designed to deprive Moscow of funds with which to finance the war in Ukraine, are likely to cause further dislocation and redirection of crude flows. As a result, Russian oil production is expected to decline to 9.5 mb/d by February 2023, a drop of 1.9 mb/d compared with February 2022, the IEA noted.¹⁶

The mass exit of international energy companies from Russia since February might force Russian producers to shut down production that may be difficult to restore. "In the absence of (western) companies, in the absence of the technology providers, in the absence of service companies, it will be much harder for Russia to maintain the production," IEA Executive Director Fatih Birol told Reuters on August 29.¹⁷

¹⁴ "32nd OPEC and non-OPEC Ministerial Meeting," OPEC, September 5, 2022.

¹⁵ Aydin Calik, "Opec Posts Largest Output Rise in Two Years," *MEES*, September 9, 2022.

¹⁶ International Energy Agency, *Oil Market Report - September 2022* (Paris: IEA, September 2022).

¹⁷ Nerijus Adomaitis, "Russia Oil Output Exceeds Expectation, but Pressure Looms, IEA Chief Says," *Reuters*, August 29, 2022.

Demand for oil would have been even lower were it not for the fact that it is increasingly being used for power generation, particularly in Europe, in place of natural gas. Gas prices have risen fourfold since 2021, as Russia has restricted supplies to Europe. This fuel switching has been factored into the IEA's latest oil demand calculations.

Although global oil demand has decelerated largely because of lockdowns in China and economic slowdown in the OECD zone "this is partly offset by large-scale switching from gas to oil," the IEA noted in its September Oil Market Report.¹⁸ It expects "large scale" switching from gas to oil during the northern hemisphere winter, most of which will occur in Europe due to the displacement of Russian gas. It estimated that this would translate into an average 700,000 b/d of additional oil use during

Gas prices have risen fourfold since 2021, as Russia has restricted supplies to Europe.

the fourth quarter of 2022 and the first quarter of 2023, double the level during the same period the year prior. Yet overall, the IEA presents a gloomy forecast for demand growth. "The global economy is on the cusp of a recession. China's zero-Covid policy colliding with its protracted real-estate crisis has sapped domestic consumption while the deterioration in its goods exports has slowed manufacturing. Europe's outlook has degraded due to surging gas and power prices and a swelling fiscal burden as governments absorb part of the impact on consumers. Robust US economic activity has slowed under the weight of massive interest rate increases as the US Federal Reserve, like other central banks, battles soaring inflation."¹⁹ This led the IEA to revise down slightly its demand forecast, which it sees rising by 2 mb/d in 2022 and 2.1 mb/d in 2023, slightly lower than its previous month forecast.

OPEC, on the other hand, is more bullish, expecting economic growth to remain robust at 3.1% in 2022 despite the recessionary risk flagged by the IMF and a recovery in U.S. and Chinese demand and higher consumption by India. In its September Monthly Oil Market Report, OPEC projects global demand growing by 3.1 mb/d in 2022 and 2.7 mb/d in 2023, surpassing pre-coronavirus levels, to stand at 102.7 mb/d.²⁰

Based on their respective calculations, the IEA in its September Oil Market Report estimates OPEC will have to produce 29.2 mb/d in the final quarter of 2022 to meet demand, while OPEC sees demand for its oil at 29.9 mb/d, 500,000 b/d above its August production.²¹ Given the capacity constraints of its mainly African members, OPEC might struggle to achieve the target. According to MEES, Angola's production in August was 126,000 b/d down on April 2020, while Nigeria's was 677,000 b/d short of the mark. OPEC itself mentioned that, based on secondary source estimates, its production in the first and second quarters fell short of demand for its crude by 300,000 b/d and 200,000 b/d, respectively.²²

¹⁸ International Energy Agency, *Oil Market Report - September 2022* (Paris: IEA, September 2022).

¹⁹ Ibid.

²⁰ OPEC, *OPEC Monthly Oil Market Report* (Vienna: OPEC, September 2022).

²¹ International Energy Agency, *Oil Market Report - September 2022* (Paris: IEA, September 2022).

²² OPEC, *OPEC Monthly Oil Market Report* (Vienna: OPEC, September 2022).

As the noose has tightened around Russia's energy sector, Saudi Arabia has stuck by its OPEC+ ally and remained neutral in the conflict for fear of upsetting cohesion within the group, which includes nine other non-OPEC producers. Riyadh has been reluctant to distance itself from Moscow and upset a delicate relationship that took decades to consummate and one that Prince Abdulaziz had a big role in bringing about. The kingdom rejected calls to make up for the shortfall from other members, including dips in Russian production, insisting that the market was not reflective of fundamentals but was driven by geopolitics and sentiment. However, given the pressures on Moscow's energy sector, Russia will likely produce below its target for October, when quotas revert to baselines agreed to in July 2021 with both Saudi Arabia and Russia given equal quotas of 11.5 mb/d. This does not necessarily mean they will need to produce at that level, and in Russia's case, it is not likely to be able to reach that level.

Saudi Arabia in August raised its production by 180,000 b/d to 11 mb/d, the third time in its history it has achieved that level on a monthly basis. This left the kingdom's stated spare capacity at just over 1 mb/d. The UAE, which pumped 3.18 mb/d in August, could potentially raise production above 4 mb/d. But this level of spare capacity would leave the market highly exposed to potential disruptions, while other producers are already pushing against maximum capacity, and U.S. shale oil production is yet to recover fully from the coronavirus-induced slump.

The lifting of OPEC+ output restrictions will expose the weaknesses of an oil and gas industry that is now feeling the full impact of nearly eight years of investment declines in the upstream and downstream hydrocarbon sectors.

Yet even if these demand estimates are revised further, OPEC+ producers would have to pump flat out to avoid a supply shortfall, particularly if Chinese demand stages a strong recovery. This would put further pressure on demand for refined oil products, which are also trading at near-record highs because of tight global refining capacity and the loss of diesel and gasoline supplies from Russia.

Saudi Arabia and the UAE had preexisting plans in place to increase oil production capacity by 1 mb/d each in the next few years. Some of the additions will replace natural decline from existing fields. "Every country is facing a reduction – a natural decline/reduction," the UAE's energy minister, Suhail Mohamed Faraj al-Mazrouei, said at an Atlantic Council conference in Dubai in March. He said that OPEC+ had lost a million barrels per day over the course of a year, and "God knows ... how many more barrels we will lose."²³ In some countries the annual rate of decline has been between 15% and 20%. ADNOC and Saudi Aramco are "deploying lots of capital to maintain production," according to Mazrouei, but he said more investment is needed just to replace the 5 mb/d to 8 mb/d of production capacity lost globally each year through natural decline. "We have a growing demand, and we need to add to that. All of that requires huge investments."

The lifting of OPEC+ output restrictions will expose the weaknesses of an oil and gas industry that is now feeling the full impact of nearly eight years of investment declines in the upstream and downstream hydrocarbon sectors. This investment shortfall set the stage for a crisis that

²³ "To Prepare for the Energy Transition, Policies Must Serve 'Real-World Scenarios,' Says Top UAE Official," (event, Atlantic Council Global Energy Forum, United Arab Emirates, March 28, 2022).

emerged before the Ukraine invasion and cannot be blamed entirely on the energy transition, though, the net-zero drive across much of the developed world has also played a part in the fragmentation of the energy system.

Sultan Ahmed Al Jaber, the UAE's minister of industry and advanced technology, CEO of the state-owned Abu Dhabi National Oil Company, and special envoy for climate, said on September 22 that underinvestment in oil and gas while renewables still make up a small percentage in the energy complex was to blame for the current crisis. "Globally, there are less than 1.5 million barrels of spare oil capacity. That is simply less than 2% of global consumption," he said at a Bloomberg conference in New York. "In a world where markets may face further disruption, that doesn't give us a lot of room to maneuver. In fact, it is a recipe for disaster. What we need is more of a recipe for progress," he said.²⁴ Jaber has previously said that the oil and gas sector needed \$600 billion worth of investments until 2030 to keep pace with rising demand. With renewables, such as wind and solar, constituting only 4% of the global energy mix, oil and gas remain essential to meeting global energy needs, he has argued. The UAE is investing heavily in renewable energy, carbon capture and storage, and hydrogen at home and abroad, but a collective effort is needed to meet the investment requirements of the energy transition, he said.²⁵

Global investment in renewable energy exceeded \$365 billion in 2021, "but less than 5% of that amount was invested in energy storage, carbon capture, and the hydrogen value chain, the UAE minister said. This is simply not enough. In fact, according to some industry estimates, the energy transition will require more than \$200 trillion over the next 30 years – that's more than \$6 trillion every year. Clearly no single country or corporation can foot this bill," he said.²⁶

The UAE, as a global energy player, is "committed to the energy transition" and has so far invested \$50 billion in renewable energy projects across 70 countries, with plans to invest a further \$50 billion in the years to come, Jaber said.²⁷ The UAE has the most diversified energy mix of all the Gulf Arab states, having recently started up the Gulf region's first nuclear power plant as part of its policy to decarbonize its electricity sector, which currently runs mainly on natural gas, some of which it has to import.

Money will be no object for the OPEC producers big and small in 2022. The 13 OPEC members are on track to earn their highest annual export revenue in eight years even at sub \$100/bbl prices, and, barring a more precipitous price collapse, their earnings might even top the \$1 trillion mark, according to calculations by MEES. This would compare with export revenue of \$321 billion in 2020, the lowest in 17 years.

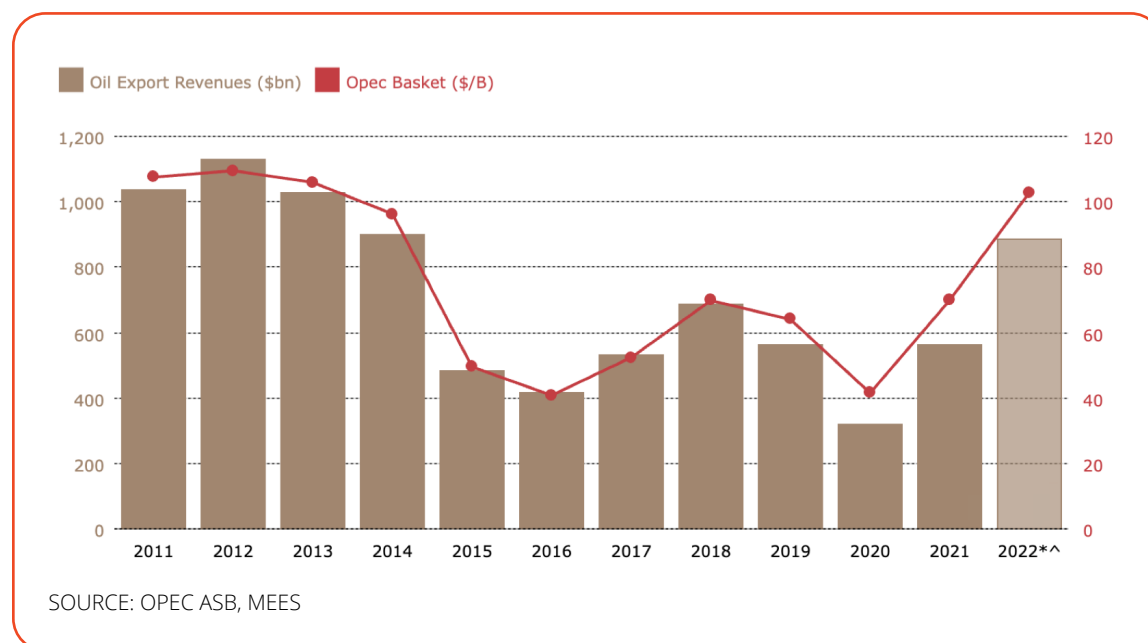
²⁴ Sultan Ahmed Al Jaber, "Keynote Address: Ensuring a Just Energy Transition," (keynote address, Emerging + Frontier Forum 2022, New York, September 22, 2022).

²⁵ Jennifer Gnana and Fareed Rahman, "Adipec 2021 Told Oil and Gas Industry Needs More Than \$600bn Annual Investment Until 2030," *The National*, November 15, 2021.

²⁶ Sultan Ahmed Al Jaber, "Keynote Address: Ensuring a Just Energy Transition," (keynote address, Emerging + Frontier Forum 2022, New York, September 22, 2022).

²⁷ Ibid.

If Brent averages \$90/bbl in 2022, OPEC could be looking at almost \$830 billion in oil export revenue, which would be the highest since 2015, according to one of two MEES scenarios. In a scenario in which Brent averages \$110/bbl for the year, OPEC oil revenue could be more than \$1 trillion for the first time since 2013.²⁸



For Saudi Arabia, MEES estimates that export revenue could jump from \$207 billion in 2021 to between \$310 billion and \$380 billion for 2022. The upper end of that would easily represent a new annual record, as Riyadh would combine near-record oil prices with record production, it noted. The UAE is on track to increase revenue to between \$80 billion and \$100 billion in 2022 from more than \$50 billion in 2021. Iraq, which has capacity to increase production but is constrained by its poor export infrastructure, has managed to earn \$82 billion from oil sales so far in 2022.²⁹

Saudi Aramco, which became the world's most valuable company as its profits surged, posted the highest quarterly profit by any listed firm ever in the second quarter, reporting profits of \$48.4 billion based on an average realized price for its crude of \$113.2/bbl. The record profits were driven by "higher crude oil prices and volumes sold, as well as strong refining margins," the partially privatized company reported August 14 in its second quarter results.³⁰ Saudi Arabia is investing in new production capacity, bucking a trend of declining investment by the multinational oil companies.

²⁸ Aydin Calik and Jamie Ingram, "Opec Revenues Set for 2022 Windfall After 2021 Turnaround," MEES, July 1, 2022.

²⁹ Ibid.

³⁰ "Aramco Announces Record Second Quarter and Half-Year 2022 Results," Aramco, August 24, 2022.

"Oil and gas investments crashed by more than 50% between 2014 and last year, from \$700 billion to a little over \$300 billion," Aramco CEO Amin Nasser said at a forum hosted by U.S. oil services giant Schlumberger. "The increases this year are too little, too late, too short term," he added.³¹

Nasser, like Jaber, stressed that Aramco was committed to the energy transition and was investing to reduce the carbon intensity of its energy products through carbon capture and storage technology while at the same time diversifying into lower-carbon products like blue and green ammonia. He asserted that Western economies setting unrealistic targets was a "naive approach" that exposed the precarious nature of an energy complex that has yet to transition fully. "The energy transition plan has been undermined by unrealistic scenarios and flawed assumptions ... one scenario led many to assume that major oil use sectors would switch to alternatives almost overnight"³² he said, an apparent reference to the IEA's "net-zero" scenario published in May 2021.

In its Net Zero 2050 report, the IEA stated that drastic measures were needed if the world was to have a fighting chance to attain carbon neutrality by 2050 and limit global temperatures to 1.5 degrees Celsius.³³ This would mean no further investment in new oil and gas projects, which would see oil's share of total energy supply fall to 24 mb/d by 2050 from around 90 mb/d in 2020. Needless to say, the report did not go down well with the oil-producing states at the time, and the current crisis, which has led the IEA and Western countries to plead for more OPEC oil, has changed the equation.

"In reality, once the global economy started to emerge from lockdowns, oil demand came surging back, and so did gas," Nasser said. "While the near-term demand outlook is highly uncertain, with concern growing that a recession in advanced economies combined with China's commitment to its zero-Covid doctrine threatens demand into 2023, the consensus is that the overall trend in the coming years will still be one of strong growth," he added. "As this crisis has shown, the plan was just a chain of sandcastles that waves of reality have washed away. And billions around the world now face the energy access and cost of living consequences that are likely to be severe and prolonged."³⁴

The compounded effects of underinvestment in oil and gas, lack of readiness of alternative supplies, and no back-up plan had caused "this state of energy insecurity," Nasser said, drawing a particularly gloomy picture of the situation. "When the global economy recovers, we can expect demand to rebound further, eliminating the little spare oil production capacity out there." He warned, "By the time the world wakes up to these blind spots, it may be too late to change course."³⁵

³¹ Amin Nasser, "Remarks by CEO Amin H. Nasser at Schlumberger Digital Forum 2022," (presentation, Schlumberger Digital Forum 2022, Switzerland, September 20, 2022).

³² Ibid.

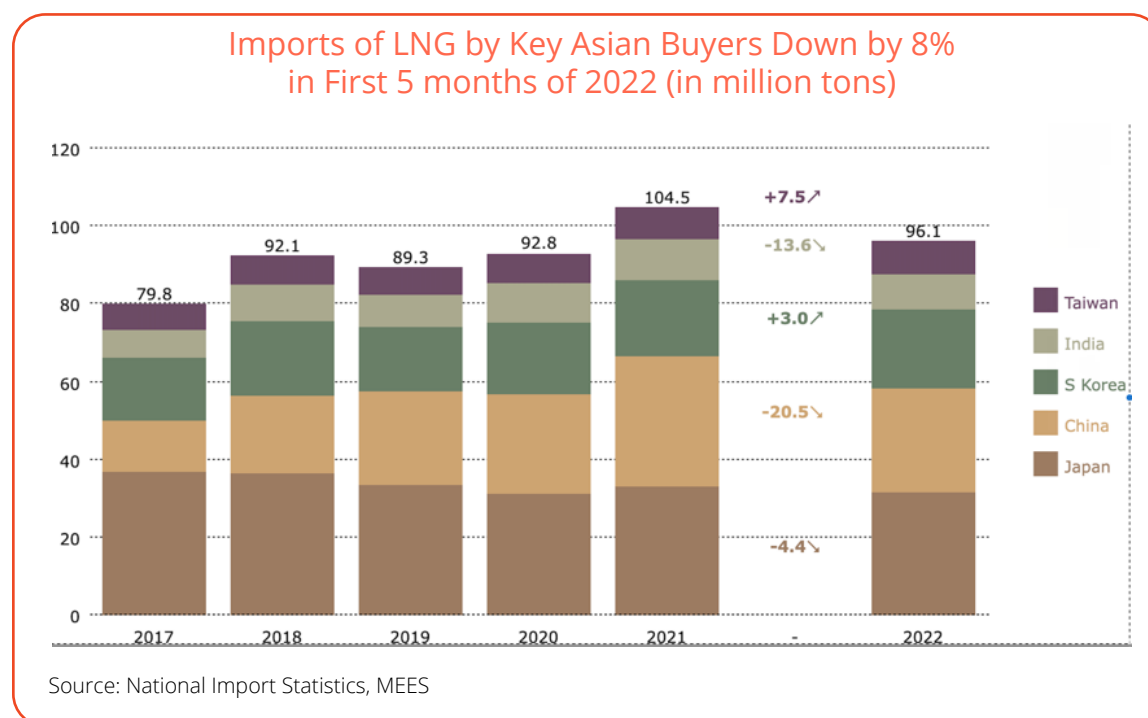
³³ International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector* (Paris: IEA, 2021)

³⁴ Amin Nasser, "Remarks by CEO Amin H. Nasser at Schlumberger Digital Forum 2022," (presentation, Schlumberger Digital Forum 2022, Switzerland, September 20, 2022).

³⁵ Ibid.

A Dash for Gas as Europe Faces Grim Winter

Middle Eastern and African gas producers from Qatar to Egypt to Algeria have been courted by the European Union as it scrambles to wean its member states off Russian natural gas, but there are no significant volumes available immediately. It will take years for new capacity to come on line with most cargoes from existing facilities already committed under long-term contracts. This has pushed spot market prices higher, forcing Europe to pay more for spot cargoes diverted from Asia.



Yet the IEA suggests that demand for gas will actually fall in 2022 even as it says the Russian invasion of Ukraine has exacerbated the tightening supply of natural gas that has been a feature since mid-2021, pushing up prices and leading to fuel switching to oil and coal and dampening demand. In the press release for its October Gas Market Report gas outlook for the fourth quarter, it stated that "Russia's continued curtailment of natural gas flows to Europe has pushed international prices to painful new highs, disrupted trade flows and led to acute fuel shortages in some emerging and developing economies, with the market tightness expected to continue well into 2023."³⁶

"This year's winter gas season opens with extreme natural gas price levels and volatility, caused by unprecedented uncertainty of supply as Russia steeply curtails its pipeline deliveries to Europe. The result is considerable market tension in alternative sources of supply. Security

³⁶ "Natural Gas Markets Expected to Remain Tight Into 2023 as Russia Further Reduces Supplies to Europe," International Energy Agency, October 3, 2022.

of supply has become a top priority in Europe and other importing regions as a total cut-off in Russian flows to Europe cannot be ruled out, creating further tensions and demand destruction for all competing LNG importers,” the report noted.³⁷

The release by Russian gas giant Gazprom of a promotional video in early September was a chilling reminder of how reliant Europe is on Russian gas, which is down by more than 80% from pre-crisis levels. Released after the Kremlin announced that it was shutting down the 55 billion cubic meter Nord Stream 1 gas pipeline to Germany indefinitely, it shows a Europe freezing over as the dial on a Gazprom pressure gauge slides down to zero to soulful music in the background. The EU is now exploring options to mitigate the impact of the gas deficit on consumers. It has already announced plans to reduce consumption by 15% this winter on a voluntary basis.

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Russia had been supplying 40% of Europe’s natural gas, and the percentage would have been higher had Germany proceeded with certification of Nord Stream 2, a parallel pipeline that would have doubled Russian gas flows to Europe, but it was canceled by Germany just days before the Russian invasion of Ukraine. At present, Europe is getting 10% to 20% of its gas from Russia as flows through Ukraine have continued despite the conflict.

The Middle Eastern and North African gas producers are helping to fill the gap as are Norway, which has inaugurated a new pipeline to Poland, and the United States, which has shipped more LNG to Europe.

The report suggested that, “Russia’s strategic behaviour of using natural gas as a political weapon has become increasingly obvious since September 2021. Despite available production and transport capacity, Russia has reduced its gas supplies to the European Union by close to 50% y-o-y since the start of 2022. In the current context, the complete shutdown of Russian pipeline gas supplies to the European Union cannot be excluded ahead of the 2022/23 heating season – when the European gas market is at its most vulnerable.”³⁸

But with prices near records in a tight market, there are doubts as to whether demand will extend beyond the current crisis. The IEA, in its latest medium-term gas report, projected negligible gas demand growth to 2025, suggesting high prices are depressing demand and causing some gas users to switch to coal and oil. The IEA noted, “The recent developments have led to a considerable downward revision of gas’ growth prospects. Global gas demand is set to rise by a total of 140 billion cubic metres (bcm) between 2021 and 2025 ... less than half the amount forecast previously and smaller than the 170 bcm increase seen in 2021 alone.”³⁹

³⁷ International Energy Agency, *Gas Market Report, Q4-2022* (Paris: IEA, October 2022).

³⁸ Ibid.

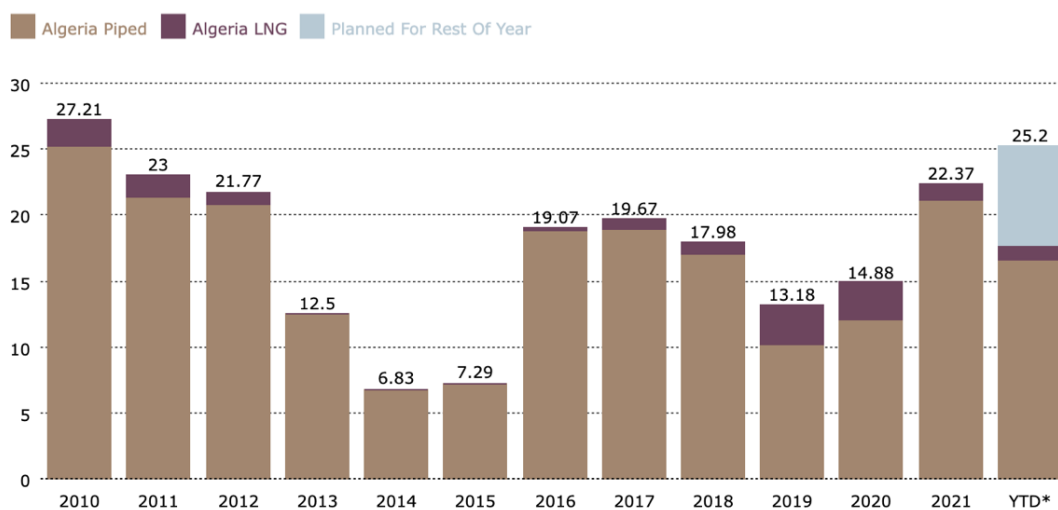
³⁹ International Energy Agency, “Global Natural Gas Demand Set for Slow Growth in Coming Years as Turmoil Strains an Already Tight Market,” July 5, 2022.

The downward revision in gas demand growth in the coming years is mostly the result of weaker economic activity and less switching from coal or oil to gas. “Only one-fifth of it comes from efficiency gains and substituting renewables for gas, highlighting the need for greater progress on clean energy transitions,” the IEA noted.⁴⁰

The surge in EU demand for LNG has drawn cargoes intended for other regions, the IEA noted but indicated that LNG export capacity additions should slow in the next three years as a result of curtailed investment plans during a period of lower prices in the mid-2010s and construction delays stemming from coronavirus lockdowns. “This raises the risk of prolonged tight market conditions. While there has been a recent surge in LNG investment decisions, the resulting infrastructure will not be operational until after 2025,” the report stated.⁴¹

The current dash for gas poses a dilemma for exporters of natural gas in a market where long-term contracts are preferable to short-term or spot market sales. Qatar is in the process of spending billions of dollars to expand its LNG production capacity, but the first phase will come on line in 2024. Germany, which is the most dependent of the EU countries on Russian natural gas, has signed up for future Qatari LNG cargoes and in late September reached an agreement with the UAE for LNG. Italy has secured additional Algerian gas. Pipeline projects linking Nigeria with Algeria and Morocco, which were all but shelved, may be revived. In the eastern Mediterranean, Israel is piping offshore gas to Egypt’s LNG terminals for onward exportation to Europe and the global market. U.S. LNG exports are also growing and are set to surge when new terminals come on line.

Algeria Targets 25 Billion Cubic Meters of Gas Exports to Italy in 2022 (in billion cubic meters)



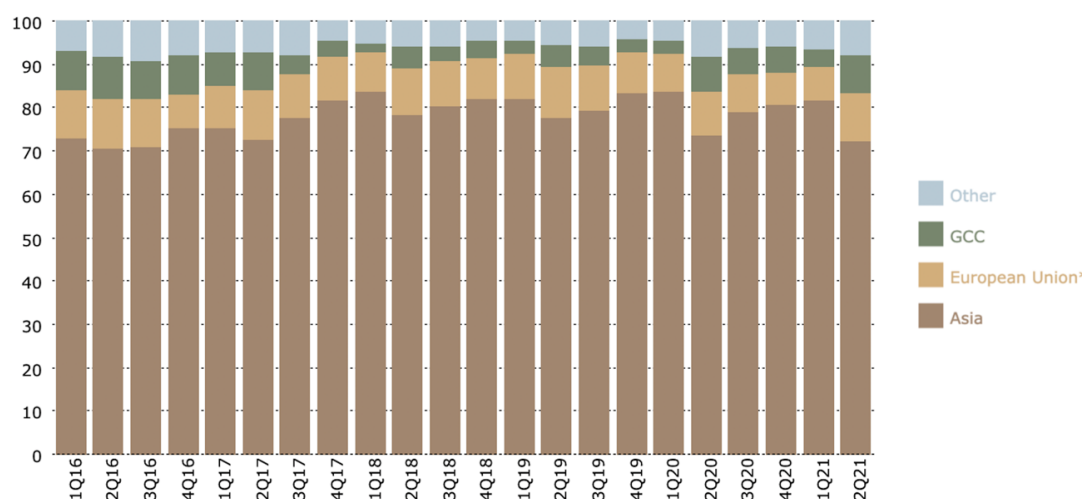
Source: SNAM, Kpler, MEES

⁴⁰ International Energy Agency, “Global Natural Gas Demand Set for Slow Growth in Coming Years as Turmoil Strains an Already Tight Market,” July 5, 2022.

⁴¹ Ibid.

Qatar's minister of state for energy affairs and president and CEO of QatarEnergy, Saad Sherida al-Kaabi, said in a September 22 interview with Energy Intelligence that the volume that will become available from the United States and other suppliers in the near term would not be enough to make up for the volumes that Russia supplied to Europe. He said, "If you look at a situation where zero Russian gas comes to Europe for more than two winters, I think it is going to be very difficult."⁴²

Europe's Share of Qatar Exports Hits Multiyear High as Gas Prices Soar (% of export revenue)



Source: MEES

"In the five- to seven-year horizon, we have much more capability to support Europe, because volumes are going to start coming from two of our projects. One is 16 million tons per year Golden Pass LNG coming on stream from 2024. It is already earmarked for Europe. It could go to other markets too, but Europe would be the first choice. In addition, just a couple of years after that we have the huge North Field expansion. When you combine our US and Qatar projects, QatarEnergy and its partners alone will bring around 65 million tons/yr into the market," Kaabi said.⁴³

A big unknown is how durable this surge in Europe's LNG demand will be. When the current acute gas crunch is over, will Europe return to its policy priority of phasing out fossil fuels (including gas)? Kaabi suggested he believes it will. "But we should not forget that gas, specifically, is very important for that transition for continuity of supply and for having a fuel that can be your baseload with no intermittency for a long time. When you couple gas with CO2 sequestration, some renewable energy to power that, it is the most powerful fuel we have. It serves both purposes. Gas is fundamentally needed for decades to come," he said.⁴⁴

⁴² Nicosia Rafiq Latta, "Qatar's Al-Kaabi: Crisis Changes Outlook for Gas," *Energy Intelligence*, September 22, 2022.

⁴³ Ibid.

⁴⁴ Ibid.

The latest EU ruling envisages the ending of gas use by 2035 – a time horizon significantly shorter than the 20-plus years of the traditional long-term LNG contracts that developers of export projects say is needed to raise the financing to get their projects off the ground.

Europe's acute need for LNG comes at a time of supply tightness. New project approvals, or final investment decisions, slowed in the second half of the last decade as capital expenditure budgets were slashed amid lower oil prices. Having picked up in 2019, project approvals then totally ground to a halt with the coronavirus pandemic beginning in early 2020.

With this uncertainty, it's difficult to predict how the gas market will develop beyond 2025, but it would be fair to say that there will be no shortage of supply. By 2027, Qatar will have completed its second phase expansion to take total capacity to 126 million metric tons per year from a current 77 million mt/y. The UAE, which had been planning to build an LNG receiving terminal, has switched tack and will instead build an export terminal in Fujairah to be completed by 2027.

So, a wave of new LNG capacity is set to hit the market in 2026 and 2027. And this is set to come on the back of several years of market tightness and sustained high prices that will have by then cut the demand for gas. There is a risk that this flood of new capacity may not be absorbed by the market, and it is possible that LNG prices will fall sharply.

What has become clear is that the conflict in Ukraine has brought about a change in the psychology and geography, changing East-West trade flows, of the oil and gas markets, and the ramifications will be felt across the energy complex for years.

Renewable Energy and the Hydrogen Kaleidoscope

Endowed with high levels of solar irradiation and abundant vacant land perfect for large-scale, cheap renewables, as well as low-cost gas production, petrostates in the Middle East and North Africa are well placed for a big push in the clean hydrogen market. Saudi Arabia, the UAE, Oman, and Egypt are proceeding rapidly with projects to develop blue and green hydrogen. Saudi Arabia has the most ambitious green hydrogen project to be built in the futuristic city of Neom at a cost of \$5 billion. The kingdom is aiming to be the world's largest hydrogen producer and exporter. In 2021, Prince Abdulaziz unveiled plans for production of 4 million mt/y of clean hydrogen by 2030. According to the Saudi Green Initiative, by 2030 the kingdom will capture more than 27 million tons of carbon dioxide by producing 3 million mt/y of blue hydrogen, which is produced using natural gas with carbon emissions captured and stored, and 1 million mt/y of green hydrogen.⁴⁵ Although green hydrogen is the preferred clean energy vector because it is produced from renewables with zero emissions, it will take years to scale up.

⁴⁵ "Reducing Emissions," Saudi Green Initiative, accessed September 29, 2022.

Saudi Aramco will lead the development of a blue hydrogen industry given that it is responsible for producing the kingdom's 9.2 billion cubic feet per day of sales gas. It aims to boost gas output by 50% by 2030. Central to this will be development of the 200 trillion cubic foot Jafurah Basin unconventional development, which Nasser said will provide "feedstock for low-carbon hydrogen and ammonia."⁴⁶

If Saudi Arabia's Neom is to have competition as the site of the region's first green hydrogen megaproject, it is likely to come from Abu Dhabi, whose state energy firms have been stepping up their hydrogen intent in recent months.

In Abu Dhabi, a trio of state firms, Mubadala Investment Company, ADNOC, and Abu Dhabi holding company ADQ, formed the Abu Dhabi Hydrogen Alliance in January 2021.⁴⁷ A fourth firm, state-led energy and water company TAQA, also teamed up with ADNOC in plans to develop a new global renewable energy and green hydrogen venture with a 30 gigawatt renewable capacity, with Mubadala joining in two weeks later.⁴⁸ The UAE unveiled its Hydrogen Leadership Roadmap during the November 2021 United Nations Climate Change Conference, COP 26, and it intends to develop a 25% global market share in low-carbon hydrogen by 2030.

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Qatar, which is the region's biggest gas exporter, plans to build the largest blue ammonia facility in the world in Mesaieed. Because ammonia is easier to transport than hydrogen, investments have focused on developing blue or green ammonia as the Gulf producers eye the export market for the low-carbon fuel. The 1.2 million t/y capacity plant is due to be completed in 2026, a year after ADNOC's 1 million t/y Ruwais plant is due to be operational.⁴⁹

Oman also has big ambitions to turn the port of Duqm into a major low-carbon hydrogen production hub. Key projects are advancing, with Oman banking on Duqm's wind and solar potential providing a competitive advantage. Oman's underdevelopment downstream hub of Duqm is set to be the centerpiece of its nascent low-carbon hydrogen and ammonia industry. Muscat wants to transform Duqm "into one of the largest industrial and economic hubs in the region."⁵⁰ As well as refining and petrochemicals, it sees green hydrogen as central to this vision.

⁴⁶ "Aramco Awards Contracts Worth \$10bn for Vast Jafurah Field Development, as Unconventional Resources Program Reaches Commercial Stage," Aramco, November 29, 2021.

⁴⁷ Mubadala, "Mubadala, Adnoc and Adq Form Alliance to Accelerate Abu Dhabi Hydrogen Leadership," January 17, 2021.

⁴⁸ Sarmad Khan, "Adnoc and Taqa to Become Shareholders in Abu Dhabi's Masdar With Mubadala," *The National News*, December 1, 2021.

⁴⁹ Jamie Ingram, "Qatar Launches 'World's Largest' Blue Ammonia Project," *MEES*, September 2, 2022.

⁵⁰ "Country Focus: Duqm Refinery: Springboard for Downstream Transformation," *Refining and Petrochemicals*, June 20, 2018.

Wind and solar are also slated to play a key role in Egypt's goal of becoming a major green hydrogen and green ammonia producer. If even a small fraction of these projects get off the ground, it would imply a transformation of Egypt's renewable landscape with several gigawatts of installed capacity needed to power facilities earmarked for the Suez Canal Economic Zone alone. It has signed a flurry of agreements in recent weeks ahead of the COP 27 U.N. climate summit, due to be held in Sharm el Sheikh, as a way of burnishing its green credentials.

But even with a low-cost advantage, the region's oil and gas producers will not be able to generate the profits they currently earn from sales of crude oil, refined products, and LNG from hydrogen exports. But there are a number of other benefits. In developing alternative, clean sources of energy, the petrostates can diversify their sources of revenue and use less polluting fuels for domestic power generation and desalination while freeing up more oil and gas for exportation without having to invest in new upstream capacity. By repurposing existing infrastructure to transport or store hydrogen, they may also avoid being left with stranded assets when demand for oil and gas peaks.

