



The Arab Gulf States  
Institute in Washington  
Building bridges of understanding



# Coincidence of Coronavirus, Climate Crises Accelerates Major Shifts in Oil and Gas Industries

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This paper is the scene setter for the 2020 Petro Diplomacy conference. For the sixth consecutive year, AGSIW convenes its Petro Diplomacy conference, this year virtually, bringing together private and public sector stakeholders from the United States and the Gulf Arab countries to discuss emerging trends in energy markets and regional politics.

## About the Author

[Kate Dourian](#) is a non-resident fellow at the Arab Gulf States Institute in Washington and the regional manager for the Middle East and Gulf states at the World Energy Council. Previously, she was the programme officer for the Middle East and North Africa in the Global Energy Relations Division of the International Energy Agency. 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. 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. She joined the IEA from the Middle East Economic Survey where she was a senior editor covering energy-related developments in the Middle East from 2013-15.

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## Executive Summary

The coronavirus pandemic sparked the sharpest energy demand drop in history in early 2020 as a global health crisis tipped the world economy into recession. Billions of people were ordered into full or partial lockdowns by their governments in a bid to control the spread of the virus. Supply chains were disrupted, and offices, factories, and businesses were forced to shut down, leading to massive job losses. Trillions of dollars in fiscal stimulus packages have been pledged by countries, many of which are presented as “green recovery” plans that tighten environmental policies. The European Union has pledged to become a net-zero zone by 2050, while China has set a 2060 target to attain carbon neutrality. International oil companies are in the process of reinventing themselves as clean energy champions with BP, Eni, Total, Shell, and many of their peers announcing plans to decarbonize their businesses.

Regardless of when the global economy returns to growth and what shape the post-pandemic recovery takes, the crisis has exacerbated existing weaknesses in the energy system and may have a far-reaching impact on future demand for fossil fuels as a result of structural changes driven by the climate change agenda. The percentage share of fossil fuels in final energy consumption has been in decline for nearly two decades due to fuel switching, particularly in the electricity sector, where renewable energy has been growing rapidly as costs have declined. All this has led to predictions that oil demand is on the verge of peaking or may already have peaked in 2019, according to the latest BP Energy Outlook.<sup>1</sup>

All these developments will have extensive implications for the oil-producing Gulf Arab states, where revenue from oil and gas exports remain the single largest source of income. Economic diversification is still at an early stage and the Gulf states face the challenge of preserving their role as energy suppliers to a new market system that is more competitive and diverse. The way forward is to decarbonize their oil and gas assets by using existing technologies that can strip harmful carbon and methane emissions and export cleaner products that are acceptable to a more environmentally conscious consumer base. Yet this does not preclude the need to further diversify their economies sooner rather than later as the writing is already on the wall.

## Introduction

The post-coronavirus recovery may be long and painful as governments around the world grapple with the aftershocks of the pandemic. With International Energy Agency projections pointing to demand for oil declining by 8.4 million barrels per day (mb/d) in 2020,<sup>2</sup> the Middle East’s oil producers have been forced to cut production and adjust their budgets. Similarly, U.S. shale production declined sharply earlier in the year, with only subdued production growth expected in 2021 despite a rebound following the 2016 production cut agreement between OPEC and non-OPEC members, the OPEC+ agreement. But the effort to stabilize the oil market amid ongoing uncertainty over the pace and direction of the post-pandemic recovery continues and the Gulf oil producers may find that they need to maintain production discipline beyond 2022 and possibly into 2023.

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<sup>1</sup> BP, *Energy Outlook 2020 Edition* (London: BP, 2020).

<sup>2</sup> International Energy Agency, *Global Energy Review 2020* (Paris: IEA, April 2020).

This may prove to be a hard sell as the smaller producers, or those constrained by sanctions or internal turmoil, struggle with the dual challenges of weak oil demand and shrinking revenue. Even as the OPEC+ group agreed to the steepest production cut in history, Saudi Arabia's energy minister, Prince Abdulaziz bin Salman, was already flagging the possibility that the cuts may need to be extended beyond 2022, when the current OPEC+ agreement expires.

Oil prices may have recovered since the U.S. oil futures contract sank into negative territory in April, but they remain at levels that are not conducive to growth. In many of the Gulf states, budget deficits and debt are adding to the composite effect of the global economic slowdown and an uneven recovery in energy demand. The Arab oil producers are still dealing with the fallout and the possibility that oil demand may never recover to pre-pandemic levels as consumption patterns have changed dramatically and may become entrenched. Indeed, BP's Energy Outlook 2020 released on September 14 covering 2018-2050 suggests that oil demand may have already peaked in 2019 in two of its stepped up decarbonization scenarios.<sup>3</sup>

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Even OPEC, in its long-term outlook to 2045 released on October 8, expects demand to reach a plateau in the late 2030s as the decline in demand from Organization for Economic Cooperation and Development countries accelerates and growth in non-OECD states starts to decelerate.<sup>4</sup>

The Gulf Arab states face the challenge of managing their vast oil and gas resources, which are still the major contributors to their budgets and export revenue, in an era of diminishing returns and competition from low-cost renewable energy and U.S. shale oil. The process of diversifying their hydrocarbon-reliant economies has begun but is not being applied evenly across the Middle East. The international oil companies have begun the process of reducing the percentage of oil and gas as they incorporate more net-zero and carbon-neutral technologies into their portfolios. National oil companies, the custodians of energy resources in the Gulf Arab states, cannot yet shut down their oil and gas wells and need to find a way of decarbonizing their hydrocarbons at the source while introducing renewable energy in tandem with the consuming countries they serve. The technology exists to decarbonize oil and gas through carbon capture and storage and develop a circular carbon economy where carbon emissions are reused to produce carbon-free products. The risk is that the coronavirus pandemic may lead to a race to zero emissions faster than anticipated and the Gulf oil producers cannot afford to be left behind. The energy map was being redrawn before the pandemic inserted a new variable for the direction of the transition while exposing weaknesses that were already causing disruption in global energy markets.

The oil sector has been marked by increased competition with the emergence of the United States as the world's largest oil producer but also new alliances as Russia and Saudi Arabia have joined hands in defense of oil prices. The Asian market, which has driven oil and gas demand in the last two decades, has become the front line for competition between oil producers as the United States, Russia, and Saudi Arabia, as well as the other OPEC oil producers, now vie for

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<sup>3</sup> BP, *Energy Outlook 2020 Edition* (London: BP, 2020).

<sup>4</sup> OPEC, *World Oil Outlook 2020* (Vienna: OPEC, October 2020).

market share. China's commitment to attain carbon neutrality by 2060 and India's significant renewable energy plans will likely be a major influence on demand-side fundamentals in the years ahead.

## Managing the Energy Transition Amid an Oil Crisis

Even before the pandemic forced nearly half of the world's population into full or partial lockdown in the first quarter of 2020, the transition away from hydrocarbons was under way. In a sense, the writing was on the wall, but the Middle Eastern oil producers, for the most part, initially ignored the warning signs while insisting that fossil fuels would retain the majority share of the global energy mix for decades to come. While this may be true to an extent, the percentage share of oil is set to shrink by 2050 in scenarios produced by the IEA, OPEC, and others. The pandemic delivered a shock to an energy system that had sustained the global economy since the Industrial Revolution. Today's energy landscape is more diverse and electricity systems are being decarbonized thanks to the falling costs of renewable energy sources like solar and wind, which now compete with coal and natural gas on a level playing field.

Electrification is a pathway to decarbonization, but electricity accounts for just 20% of total primary energy consumption; there are some energy-intensive industries that still need molecules rather than electrons. The pathway to net-zero emissions is strewn with uncertainty, more so with the headwinds that the pandemic has thrown its way. But there is no room for complacency and the Gulf Arab producers are beginning to realize that they need to diversify their economies and prepare for the day when oil is no longer the fuel of choice in an environmentally conscious world. The United Arab Emirates is the regional role model for a more diversified energy mix, but others are slowly joining the transition bandwagon, aware that if they do not have a seat at the table, they will not have a voice in setting the global energy agenda.

Saudi Arabia, as current president of the G-20 and host to the Clean Energy Ministerial summit in 2020, made a strong case for the circular carbon economy<sup>5</sup> as a decarbonization technology that would lower carbon dioxide emissions in the production process. The concept of reducing, reusing, recycling, and removing the carbon content of oil and gas has gained traction but has yet to be deployed at scale. Other technologies, such as direct carbon capture from the atmosphere, are being considered, but costs will have to come down substantially for them to take hold. Saudi Arabia and the UAE are leading the charge in developing a hydrogen economy either by using renewable energy to produce zero-carbon hydrogen, known as green hydrogen, or natural gas for production of blue hydrogen, with the carbon dioxide emitted in the process stored below ground. But there is a long road ahead to secure societal acceptability and commercial gain.

A large percentage of energy investment in recent years has gone into downstream projects to extract maximum value from what is for many Gulf Arab states their most prolific resource. Yet there is a risk that massive investments in refining and petrochemical-integrated projects may lead to overcapacity and depress prices for finished products. The petrochemical, aviation,

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<sup>5</sup> "G20 Energy Ministerial Communiqué," G20 Information Centre, September 28, 2020

and heavy transportation sectors were expected to drive oil demand in the decades ahead, but environmental policies that predate the pandemic and the more ambitious climate goals being adopted by leading economies, including China, are changing the equation. The impact of the pandemic on the economies of developing countries in Asia and Africa has been acute and this has added a new layer of uncertainty to future demand forecasts, since the emerging economies have for the last two decades been the key drivers of energy demand growth.

By exploring various options to diversify their fuel mix and revenue, the leading Gulf Arab economies are tacitly acknowledging that oil demand growth can no longer be taken for granted. While demand for oil is tapering off, it is by no means the end of oil. Even in the most optimistic net-zero or zero-carbon scenarios, hydrocarbons will not disappear, though their share in the energy mix will shrink. In BP's three scenarios, the role of fossil fuels – coal, oil, and natural gas – declines over time, falling from around 85% of primary energy in 2018 to between 65% and 20% by 2050.<sup>6</sup> There is a tipping point beyond which there will be no further oil demand growth. Zero demand growth does not mean that investment in new oil production capacity stops, because there is still a need to replace declines from existing oil fields estimated at between 4% and 5% annually. By BP's calculations, this will require investments of between \$9 trillion and more than \$20 trillion over the next 30 years.<sup>7</sup> The 2014-15 oil price

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collapse had already led to declines in upstream investments, and the uncertainty surrounding the post-pandemic recovery as well as the need to divert funds to recovery efforts may result in yet another shortfall in the investments needed to maintain production capacity by delaying project timelines. This would affect long-cycle projects and lead to a possible imbalance between oil supply and demand and price volatility.

The alarmist headlines heralding the end of the oil age are premature. The technology exists to decarbonize oil and gas through carbon capture utilization and storage, but the challenge is convincing climate activists and investors who are rapidly divesting from the hydrocarbon sector. The focus in the Gulf Arab states is on developing technologies that will lower the carbon footprint of their oil and gas at the source. Renewable energy alone cannot meet the energy demand of the future given its small share in total primary energy supply. Renewable energy, which includes wind, solar, geothermal, and bioenergy, accounted for just 5% of total primary energy, according to BP's outlook.<sup>8</sup> In the most optimistic transition net-zero scenario, the share of renewables is expected to grow to 60% of primary energy.

The prospects for the Middle East's oil producers, however, are slightly more positive in BP's outlook, which sees the Middle East remaining a key oil producer with its share in global output ranging from 45% in the business-as-usual scenario, where there is very little decarbonization, to 37% in the rapid-transition scenario, which is compatible with the Paris Climate Agreement.

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<sup>6</sup> BP, *Energy Outlook 2020 Edition* (London: BP, 2020).

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.



In all three scenarios, the Middle East remains a large oil and gas producer with the share of gas increasing by 50% in the business-as-usual scenario but remaining flat in the rapid-transition scenario.<sup>9</sup>

The greater variety of fuels available now means the mix is likely to be increasingly driven by customer choice rather than fuel availability, which is reflected in the net-zero scenario. In this scenario, the decline in demand for oil is the most pronounced. After peaking in 2019 at around 100 mb/d, oil demand is expected to decline to around 25 mb/d by 2050. In the business-as-usual scenario, the outlook for oil consumption is more resilient with demand recovering to around pre-pandemic levels, where it remains for the next 10 to 15 years before edging lower in the second half of the outlook to around 90 mb/d by 2050. The huge gap in demand forecasts is one of the issues that keeps policymakers awake in trying to determine just how much to invest in new capacity and infrastructure without running the risk of being saddled with stranded assets.

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Many of the Gulf Arab states have invested heavily in new downstream capacity. Most of the additional capacity in oil refining is concentrated in the Middle East, but the risk of overcapacity looms. The sector was already under pressure before the pandemic but continues to suffer from low margins as mobility has been curtailed. A large percentage of a crude barrel produces light ends like gasoline and jet fuel used in transportation, a sector that has yet to recover from the impact of the pandemic on aviation and road transportation. Air and land transportation account for 60% of total energy use, according to the IEA.<sup>10</sup> Already announced projects will add some 9 mb/d of new refining capacity over the next five years with additions from expansions of existing refineries in India and some countries in Africa. With demand for oil set to decline, this could lead to overcapacity and more refinery shutdowns.<sup>11</sup>

## Prospects for Natural Gas

The coronavirus pandemic has delivered an unprecedented shock to the global natural gas market, which was already under pressure from excess supply and weak demand. The liquefied natural gas market has been particularly affected by the economic slowdowns and the demand disruption caused by the pandemic, which pushed LNG prices to historic low levels in the Asian market. This has come at a time when the environmental credentials of natural gas are being questioned due to methane emissions, with the European Union leading a decarbonization drive to reduce the share of natural gas in power generation and other sectors gradually to attain carbon neutrality by 2050. Gulf oil producers have been investing heavily in new gas and petrochemical projects, mostly to meet demand in a region that has abundant resources but, with the exception of Qatar, suffers from a gas deficit, largely

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<sup>9</sup> BP, *Energy Outlook 2020 Edition* (London: BP, 2020).

<sup>10</sup> International Energy Agency, *Global Energy Review 2020* (Paris: IEA, April 2020).

<sup>11</sup> For further analysis of BP's outlook and the implications for the Gulf states, see: Robin Mills, "What BP's Claim of an End to Peak Oil Demand Means for Gulf Producers," *Arab Gulf States Institute in Washington*, September 23, 2020.

the result of the late monetization of existing reserves. The Arab Petroleum Investments Corporation sees planned investment in the gas value chain in the Middle East and North Africa approaching \$28 billion from 2019 to 2023, up by 13% over its previous 5-year forecast.<sup>12</sup>

The global outlook for natural gas is slightly more positive than for oil in that gas is still seen as a filler fuel to manage intermittency of renewable energy in the power sector. Combined with carbon capture and storage to eliminate methane emissions, natural gas demand is projected to grow over the next two decades as a result of the switch from coal to gas, particularly in emerging economies where coal is a key component of the energy mix. It also has a role in production of blue hydrogen, which is increasingly being seen as a clean energy vector that can replace hydrocarbons in the aviation and long-haul transportation sectors. In early October, Saudi Arabia shipped its first cargo of blue ammonia, a low-carbon fuel extracted from hydrocarbons, to Japan and plans to have the world's largest green hydrogen project, produced from renewable energy, in the futuristic city of Neom. Because the natural gas market is more regional, demand in the Middle East will be driven mainly by the power sector, where gas is the dominant fuel and renewables still make up a very small share of the mix, most of which is concentrated in the UAE.

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The IEA, in its Global Energy Review 2020 analyzing the impact of the pandemic on energy demand and emissions, predicted that natural gas would come under pressure after the first quarter because of reduced demand in power and industry. It expects overall demand for gas in 2020 to fall by 5% from the 2019 level, which would be the first drop in demand since 2009. This compares with a 4.6% increase in natural gas demand in 2018 when consumption accounted for nearly half of the increase in global energy demand, according to the IEA.<sup>13</sup>

For the Middle East, natural gas is seen as a conduit to diversification away from oil and as a lower carbon fuel for power generation. However, the latest indications are that the use of liquid fuels in power generation has increased. In Saudi Arabia, direct crude burn for power generation, which had been declining, reached its highest level in three years in July on the back of higher domestic electricity consumption, according to a report by Jadwa Research, a Saudi think tank, citing figures from the Joint Organisations Data Initiative.<sup>14</sup> This deficit in natural gas production across the region, except Qatar, has led the UAE, Kuwait, Oman, and Bahrain to turn to imports of pipeline gas and LNG to satisfy demand. Iraq, on the other hand, continues to flare much of the natural gas it produces because it lacks the infrastructure to gather and utilize its gas. The prospects for gas demand across the Gulf Arab region are uneven. The UAE is investing in development of its sour gas fields with the goal of becoming self-sufficient, while Saudi Arabia plans to invest tens of billions of dollars in developing its

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<sup>12</sup> Leila R. Benali, Mustafa Ansari, Ramy Al-Ashmawy, *MENA Energy Investment Outlook 2020-2024* (Dammam: Apicorp, 2020).

<sup>13</sup> International Energy Agency, *Global Energy Review 2020* (Paris: IEA, April 2020).

<sup>14</sup> "Saudi Chartbook," *Jadwa Investment*, October 2020.

unconventional gas reserves. A more integrated regional gas grid would help to alleviate some of the shortage in gas supply, but the path forward is strewn with geopolitical risk as evident in recent tensions in the eastern Mediterranean, long touted as an emerging gas hub.<sup>15</sup>

## Post-Pandemic Trade and Investment

Saudi Arabia's G-20 presidency in 2020 was aimed at cementing its position not only as the leading regional economy but also as a member of the elite group of industrialized countries whose economic policies have global impact. However, the pandemic has hit the economies of the Gulf countries, including Saudi Arabia, just as it was in the process of diversifying its economy away from overdependence on oil revenue. Lower oil prices and production will result in less income with which to shift from a public sector-dominated economy to one with more robust non-oil sectors. Meanwhile, with the onset of the pandemic, the region had not yet fully recovered from the 2014-15 oil price collapse, when many governments took steps to ease subsidies and introduce taxes to make up for lost revenue while dipping into their foreign reserve funds. They have less margin for maneuver this time around given the scale of the crisis and the fact that it has struck the key aviation and hospitality sectors previously seen as growth engines. With unemployment and fiscal debt rising across the region, governments may struggle to honor their social contracts, which appear to be fraying as oil revenue has shrunk. Even the tripling of the value-added tax in Saudi Arabia is not expected to add significantly to projected revenue for 2020-21, according to Jadwa Research.<sup>16</sup>

At the same time, foreign direct investment inflows are expected to decline sharply due to the pandemic, according to the OECD.<sup>17</sup> It estimates a decline of at least 30% in 2020 in the most optimistic scenario with the Middle East and North Africa likely among the more impacted due to the large share of FDI in primary and manufacturing sectors and the direct and indirect effects of the oil price drop. The Arab states are expected to lose 45% of FDI inflows in 2020, according to the OECD, citing U.N. Economic Commission for West Asia estimates. The International Monetary Fund forecasts a contraction of the economies of all Middle East and North Africa countries, except Egypt, due to containment measures and the subsequent disruption of global supply chains but expects a V-shaped recovery in 2021.<sup>18</sup>

## New Technologies and the Energy Transition

In July, ACWA Power, Air Products, and Neom agreed to develop a \$5 billion green hydrogen facility for ammonia production in Saudi Arabia's planned futuristic city Neom, which will use renewable-powered electrolysis. Technology is driving the global energy transition away from oil and gas toward a more sustainable, cleaner, and greener energy future. The transition was under way before the pandemic struck and few see a reversal of the drive to decarbonize, a posture even the oil-producing Gulf countries have adopted to varying degrees. Saudi Aramco

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<sup>15</sup> For a longer analysis on Gulf gas, see: Kate Dourian, "The Looming Peak Oil Demand Triggers Gulf Race for Natural Gas," *Arab Gulf States Institute in Washington*, July 20, 2020.

<sup>16</sup> "Saudi Chartbook," *Jadwa Investment*, October 2020.

<sup>17</sup> "Covid-19 Crisis Response in MENA Countries," *OECD*, updated June 9, 2020.

<sup>18</sup> International Monetary Fund, *Regional Economic Outlook: Middle East and Central Asia: Confronting the COVID-19 Pandemic in the Middle East and Central Asia* (Washington, DC: IMF, April 2020).

prides itself on the carbon management of its upstream operations and sees a future for a circular carbon economy. In the UAE, the drive to diversify energy sources has begun, and it leads the way in deployment of renewable energy within the Gulf region with large solar parks and a nuclear power plant that has come online. Yet the share of renewable energy in power generation in the Gulf states as a whole remains very low despite the abundance of solar irradiation across the region.<sup>19</sup>

## Conclusion

The green recovery packages being incorporated into post-pandemic strategies, particularly in the EU, and the recent commitment by China to achieve carbon neutrality by 2060 will affect energy balances in the future. Hybrid energy systems are the way forward with multiple sources of energy being deployed. As renewable energy has become more competitive and socially acceptable, the outlook for oil and gas demand has changed dramatically in the last two decades as growth projections have been revised down.

With the Gulf Arab oil and gas producers sitting on reserves that have a production life span of 50 to 70 years or more, the challenge is to find ways to monetize their assets in a manner that is more compatible with environmental sustainability metrics, which can be achieved using technologies available today. The world economy is decarbonizing mostly through electrification. But a move to a net-zero economy cannot be achieved with solar and wind alone nor can all sectors like long-haul transportation and heavy industry be electrified.

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All fuels have a role to play in meeting future energy demand and the oil-producing countries can ensure that they are not left behind by accelerating the effort to strip oil and gas of harmful carbon and methane emissions and export low-carbon products. Failure to act now may result in a chaotic transition for the oil- and gas-producing countries that have long relied on petrodollars to run their economies and heighten the risk of stranded assets. News headlines pronouncing the end of the hydrocarbon era are misleading, but they pack a punch. The transition to a lower-carbon energy system should not be framed as a war on hydrocarbons but the carbon content of oil and gas, which can and should be eliminated if the climate goals of the Paris Climate Agreement are to be achieved.

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<sup>19</sup> To find out more about the Gulf states' climate policies, see: Mari Luomi, "Gulf States Climate Change Policies Amid a Global Pandemic," *Arab Gulf States Institute in Washington*, September 25, 2020.

