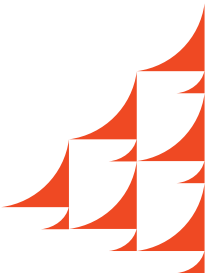
The Arab Gulf States Institute in Washington

Building bridges of understanding

The Energy Transition and the Road to COP28

Kate Dourian



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Kate Dourian

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Now in its ninth 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

Investments in renewable energy rose faster than investment in fossil fuels in 2022 for the first time ever, the International Energy Agency stated in a recent report.[1] Much of the momentum for this shift was driven by the volatility in the oil and gas markets following Russia's invasion of Ukraine in February amid fears of an energy shock. So where do the Gulf Arab oil and gas exporters stand in this new energy paradigm, and how are they managing their own energy transition? As the United Arab Emirates prepares to host the United Nations Conference of the Parties climate summit, COP28, in November, the role of hydrocarbons in the future energy mix is likely to be one of the more contentious issues – one that will determine the success or failure of the summit.

COP28 will provide an opportunity for the Gulf Cooperation Council states that have set net-zero emission targets to demonstrate that they are taking seriously the threat of climate change and implementing measures to decarbonize and make a meaningful contribution to the global net-zero effort. A number of mega solar and wind projects are in the implementation stages across the GCC at the same time as a budding green hydrogen industry is taking hold, but the process of producing green hydrogen will require a massive scale-up of renewables capacity. Energy efficiency measures need to be implemented more stringently to reduce the region's high per capita consumption of fossil fuels and diversify energy sources for power generation to curb greenhouse gas emissions.

Although fossil fuels make up around 80% of the global energy mix, the rapid scale-up of investment in renewables and electrification might advance the peak oil demand timeline. The IEA now expects demand for fossil fuels to peak by the end of the 2020s, or earlier, while demand for gasoline will reach a plateau even sooner as sales of electric vehicles multiply. Natural gas has a longer shelf life in the decarbonization scenario, but methane emissions need to be tackled if the cleaner of the fossil fuel family is to serve as a transition fuel.

If the Arab oil and gas producers are to survive in a carbon-constrained energy world, they will have to decarbonize their energy and industrial operations by trapping the carbon dioxide emitted across the value chain as they expand their production capacity to meet future demand and counter natural declines from existing reservoirs. Setting a price on carbon would allow for carbon capture, utilization, and storage to be deployed more aggressively across the Gulf states, which is not currently the case. Oil and gas will continue to have a space in a much smaller market leading up to 2050, assuming the carbon content can be managed. The Gulf Arab producers are well placed to deliver low cost, low carbon intensive oil as higher cost production and carbon intensive oil is left in the ground.

Dependence on oil and gas exports renders the economies of the Gulf Arab states vulnerable to price shocks, which hit hard during the 2020 coronavirus pandemic when demand and prices crashed. This reality underscores the urgent need for the Gulf states to diversify their economies at a much faster pace away from heavy reliance on hydrocarbons. A new economic template is needed to ensure societal well-being and to preserve the environment for future

1 International Energy Agency, *World Energy Investment* (Paris: IEA, 2023).

generations in a region that is highly exposed to climate change. The loss of a significant revenue stream for the oil exporting countries carries socioeconomic ramifications and needs careful management.

As one of the world's biggest oil producers and a leader in renewable energy technologies, the UAE will need to prove that it can provide a neutral space for constructive talks to push the climate agenda toward a conclusion that is acceptable to all parties. It will not be an easy task, but it is one that can no longer be relegated to future summits. As host of what may prove to be a make-or-break summit for climate action, the UAE will need to find common ground to make COP28 a success because time and the Middle East's remaining carbon budget are running out.

Introduction

By the time the 70,000 or so participants arrive in Dubai for the United Nations Climate Change Conference, COP28, that will be held from November 30 to December 12, almost a decade will have passed since the landmark Paris Agreement, during which nearly 200 governments pledged to limit "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts to "limit the temperature increase to 1.5°C."[2]

But a March 20 United Nations Intergovernmental Panel on Climate Change report has sounded the alarm that the pledges made in Paris through nationally determined contributions would make it "likely that warming will exceed 1.5°C during the 21st century and would make it harder to limit warming below 2°C – if no additional commitments are made or actions taken." The report blamed "human activities, principally through emissions of greenhouse gases" for the rise in global temperatures to 1.1 degrees Celsius above preindustrial levels from 2011-20.[3]

The Ukraine crisis distorted energy geopolitics and the geography of the global energy market, resulting in changes to oil and gas trading patterns and spawning new alliances.

The report was a wake-up call for urgent action to limit global warming before it reaches unsustainable levels to support human life and the habitat. It is the last installment of the "IPCC Sixth Assessment Report," a compilation of eight years of research and observations from hundreds of the world's leading scientists and experts. The report serves as a guide for policymakers and carries weight because it is endorsed by governments. The report is a red flag for the planet and humanity, pointing to the urgent need for a course correction given that current emission reduction pathways and technologies are insufficient to reach the goal of net-zero emissions by 2050.[4]

Keeping warming below 1.5 C will require emissions to peak by 2025 and decline by 43% from 2019 levels by 2030, demonstrating the urgency of the action needed to avert the catastrophic degradation of the ecosystem. But the IPCC report projected that "policies implemented by the

2 "The Paris Agreement," United Nations Climate Change, accessed June 14, 2023.

3 International Panel on Climate Change, *Sixth Assessment Report* (Geneva: IPCC, March 20, 2023), 23-24.

4 Ibid.

end of 2020" would result in higher global greenhouse gas emissions in 2030 than what was projected for emission levels with the current NDCs, suggesting there is an "implementation gap."[5]

A more recent report by the World Meteorological Organization, another U.N. body, carried an even more ominous message, stating that there was a 66% likelihood that "the annual average near-surface global temperature between 2023 and 2027 will be more than 1.5°C above pre-industrial levels for at least one year." It found that there was a "98% likelihood that at least one of the next five years, and the five-year period as a whole, will be the warmest on record." While this does not mean that this is a permanent condition, it does sound the alarm "that we will breach the 1.5°C level on a temporary basis with increasing frequency." This, the World Meteorological Organization secretary-general said, is due to the El Nino weather effect and human-induced climate change.[6]

The Ukraine crisis distorted energy geopolitics and the geography of the global energy market, resulting in changes to oil and gas trading patterns and spawning new alliances. Initial fears of an oil and gas supply deficit due to sanctions on Russia pushed energy security concerns to the fore as governments scrambled to secure alterative supplies, some turning to the Middle Eastern oil and gas exporters. As those fears receded and a supply shock failed to materialize, policymakers in the big consuming countries and blocs advanced their net-zero emission timelines, which boosted investment in clean energy.

Solar to Overtake Investments in Fossil Fuels

Because energy accounts for roughly two-thirds of global greenhouse gas emissions, it is the prime target for decarbonization. But huge investments are needed to transition to a more sustainable energy system. The International Energy Agency's "World Energy Investment 2023" report estimated that around $2.8 trillion will be invested in energy over the year, of which $1.7 trillion will go to clean energy, including renewable power, nuclear energy, grids, storage, low emission fuels, and end-user renewables and electrification. Slightly over $1 trillion will be spent on "unabated fossil fuel supply and power, of which 15% is to coal and the rest to oil and gas."[7] The IEA noted that solar power was set to overtake investment in fossil fuels in 2023. Five years ago, the ratio was one-to-one.

As in any transition, there is no linear path, and recent events, such as the coronavirus pandemic and the Ukraine crisis, have caused disruptions that could not have been foreseen when the 1.5 C target was set in Paris in 2015. But failure to act is no longer an option.

Rapid changes have already occurred in the atmosphere and oceans, affecting weather and causing climate extremes in many parts of the world, the IPCC report stated, a reference to the recent increase in forest fires, flooding, and heatwaves around the world. "It is unequivocal that human influence has warmed the atmosphere, ocean and land," it concluded.[8]

5 International Panel on Climate Change, *Sixth Assessment Report* (Geneva: IPCC, March 20, 2023), 24.

6 "Global Temperatures Set to Reach New Records in Next Five Years," *World Meteorological Organization*, May 17, 2023.

7 International Energy Agency, *World Energy Investment* (Paris: IEA, 2023), 12.

8 International Panel on Climate Change, *Sixth Assessment Report* (Geneva: IPCC, March 20, 2023), 23-24.

The U.N. Framework Convention on Climate Change, the parent treaty of the Paris Agreement, previously warned that a temperature rise above 1.5 C risks "unleashing far more severe climate change impacts, including more frequent and severe droughts, heatwaves and rainfall."[9] But the current report determined that even 1.5 C is not enough to stave off the effects of climate change.[10]

The surge in demand for oil and gas in 2022, and even for coal as a substitute because of record high gas prices, led to a rise in greenhouse gas emissions in 2022. But emissions would have been higher were it not for growth in renewable energy sources, such as wind and solar, the IEA stated in its "CO2 Emissions in 2022" report.[11]

The Gulf Arab states are not big contributors to global greenhouse gas emissions, but their per capita consumption of energy and per capita emissions are very high by international standards and will need to be adapted to align with their decarbonization agenda. Because oil and gas export revenue is the mainstay of their economies, the Gulf states will need to balance their need for hydrocarbon revenue, at least in the medium term, to maintain economic growth while reducing their exposure to the impact of climate change.

Climate activists have suggested that the United Arab Emirates, as a major oil producer and ally of oil superpower Saudi Arabia, cannot be an impartial participant in decisions on climate change and point to the fact that the Arab oil producers are expanding oil production capacity despite calls to phase out fossil fuels. The Abu Dhabi National Oil Company plans to raise its oil production capacity to 5 million barrels per day by 2027, three years ahead of its original schedule, from around 4.4 mb/d currently.[12] Saudi Aramco is also in the process of adding 1 mb/d to its oil production capacity to reach 13 mb/d by 2027.[13] Gas powerhouse Qatar plans to more than double its liquefied natural gas production to 127 million metric tons per year before the end of the decade.[14]

The IEA's "Net Zero by 2050" report published in 2021 stated that there would be no need for new oil and gas developments if the world was to have any chance of attaining carbon neutrality,[15] an assessment that angered the Gulf Arab oil producers and caused a rift with the Paris-based consumer watchdog. Saudi Energy Minister Prince Abdulaziz bin Salman referred to the report as a "La La Land" scenario.[16] OPEC subsequently dropped the IEA as one of the secondary sources it relies on to assess members' monthly production.[17]

9 "The Paris Agreement," United Nations Climate Change, accessed June 14, 2023.

10 International Panel on Climate Change, *Sixth Assessment Report* (Geneva: IPCC, March 20, 2023).

11 International Energy Agency, *CO2 Emissions in 2022* (Paris: IEA, March 2023).

12 Maha El Dahan and Alaa Swilam, "UAE Brings Forward Oil Production Capacity Expansion to 2027," *Reuters*, November 28, 2022.

13 Yousef Saba and Maha El Dahan, "Saudi Arabia Set for Oil Output Capacity Above 13 Million Barrels per Day by 2027, Minister Says," *Reuters*, May 16, 2022.

14 Jamie Ingram, "Qatar Brings Major Players Into LNG Expansion," *MEES*, June 24, 2022.

15 International Energy Agency, *Net Zero by 2050* (Paris: IEA, May 2021).

16 Herman Wang and Robert Perkins, "Saudi Oil Minister Calls IEA's Net-Zero Roadmap 'La La Land' Sequel," *S&P Global*, June 1, 2021.

17 Jamie Ingram, "Opec Bins IEA With 'Secondary Source' Changes," *MEES*, April 1, 2022.

If Middle Eastern countries are to reduce carbon emissions and reach their net-zero targets, solar and wind energy must be scaled up by multiple factors if they are to catch up with the rapid global transition that has moved into high gear.

Decarbonization Pathways in the GCC States

The UAE is the undisputed regional leader in the decarbonization effort, having committed billions of dollars to clean energy. However, the country's economy and those of its Gulf Cooperation Council neighbors still rely heavily on revenue from hydrocarbons.

According to Emirates NBD, a UAE bank, economic diversification has been slow and uneven, but the share of oil and gas revenue in GCC economies is declining, albeit marginally. Between 2010 and 2021, the share of oil and gas in Saudi gross domestic product fell from 45% to below 40%, while in the UAE it fell from 31% to 27%, according to the bank's March 22 presentation at the Middle East Petroleum and Gas Conference. But hydrocarbons still dominate trade across GCC states, except for the UAE, where its share has fallen sharply over the past decade. State budgets still rely heavily on oil revenue, though non-oil budget deficits have shrunk, thanks largely to the imposition of new taxes that have boosted state coffers. Hydrocarbons still account for the bulk of budget revenue with Kuwait showing the highest dependency on oil income, accounting for just under 90% of the state budget in 2021.[18]

Infrastructure spending for Gulf Arab countries has become more diversified. But energy still retains a significant share of public outlays, with Saudi Arabia leading the group in the construction sector as it proceeds with megaprojects, including Neom and The Line. Investments in oil, gas, and chemicals dwarf investments in the power, transportation, industrial, and water sectors with Oman as the biggest investor, followed closely by Saudi Arabia, according to the Emirates NBD analysis. Saudi Arabia, the UAE, and Kuwait are all expanding their oil and gas production capacity while also investing in solar as well as green and blue hydrogen.[19]

The Middle East and North Africa's energy mix is still dominated by oil with Iraq and Saudi Arabia the most dependent. Iraq, which flares roughly half of the gas produced in association with crude oil, relies on oil for around 70% of its energy needs, while the share of oil in Saudi Arabia is just over 60%. In the UAE, the percentage is much smaller at 40% because of its more diversified energy mix. As global demand for low-emission products grows amid the energy transition, the UAE aims to capitalize on its growing low-carbon electricity supplies to transform its industrial base and catalyze the next phase of economic growth.

The challenge for Gulf Arab governments is how to prepare for the approaching peak demand for oil while their economies remain highly dependent on sales of hydrocarbons in the medium term and at the same diversify their economies and incorporate renewable energy much faster to attain carbon neutrality before their carbon budget runs out.

18 NBD presentation at the S&P MPGC conference, Dubai, May 22-23, 2023.

19 Robin Mills, "Fossil Fuels and the Gulf Energy Transition," *Arab Gulf States Institute in Washington*, April 13, 2023.

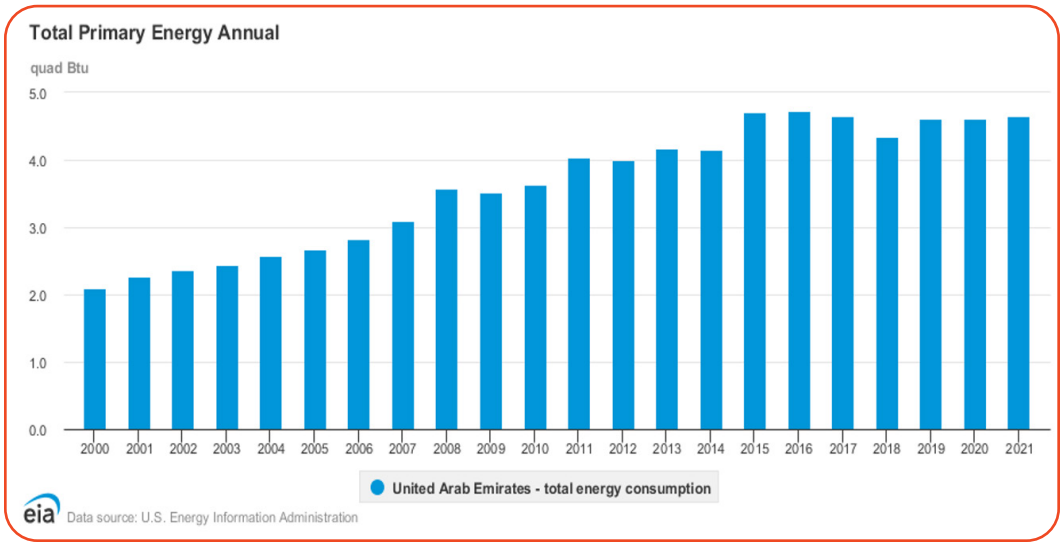
Carbon Budget Shrinking

Against a remaining global budget of 260 billion tons of carbon dioxide to limit global warming to 1.5 C, the world has recoverable resources of 729 billion metric tons of carbon dioxide equivalent of oil, 389 billion metric tons of natural gas, and 1,120 billion metric tons of coal.[20] The GCC states hold 30% of that oil and 21% of the gas. But looking at historical emissions since 1850, the preindustrial era, to 2022, North America, Europe, Russia, and Central Asia, Southeast Asia, and China accounted for 75% of total global emissions. The share of the Middle East was a mere 6% and sub-Saharan Africa 4%, according to the World Inequality Database.

The data shows that the global north is mainly responsible for the majority of greenhouse gas emissions and is now demanding that the global south decarbonize even as energy poverty is rampant in the developing world. Sub-Saharan Africa is a particularly blighted region, where some 600 million people lack access to basic energy and yet receives the smallest share of global investments.

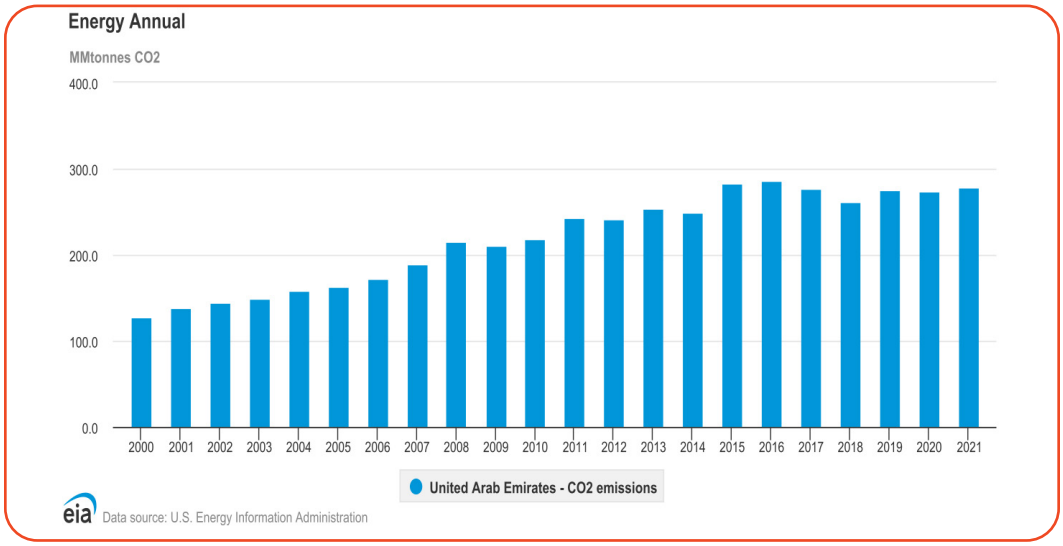
The U.N.'s Sustainable Development Goals on energy, SDG7, calls for ensuring universal access to affordable, reliable, and sustainable energy for all. Yet the latest annual "Energy Progress Report" that tracks progress toward achieving the SDG7 goals shows that sub-Saharan Africa received just 1.5% of global investments between 2000 and 2020. The report was a collaboration among the International Renewable Energy Agency, the IEA, and U.N. bodies.[21]

Despite their low contribution to global greenhouse gas emissions, the oil producing states still suffer from an image problem as producers of heat-trapping fossil fuels with little global awareness of their decarbonization efforts and development of large-scale green hydrogen projects.



20 BP, *BP Statistical Review of World Energy* (London: BP, 2022).

21 International Energy Agency, International Renewable Energy Agency, United Nations Statistics Division, World Bank, World Health Organization, *Tracking SDG7: The Energy Progress Report* (Washington, DC: World Bank, 2023).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United Arab Emirates - CO2 emissions
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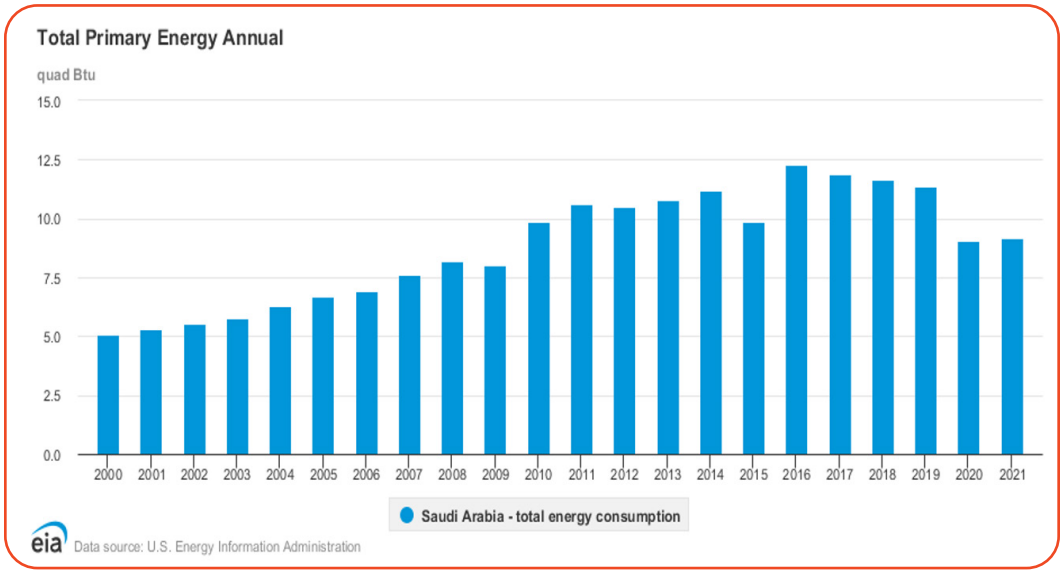
Data source: U.S. Energy Information Administration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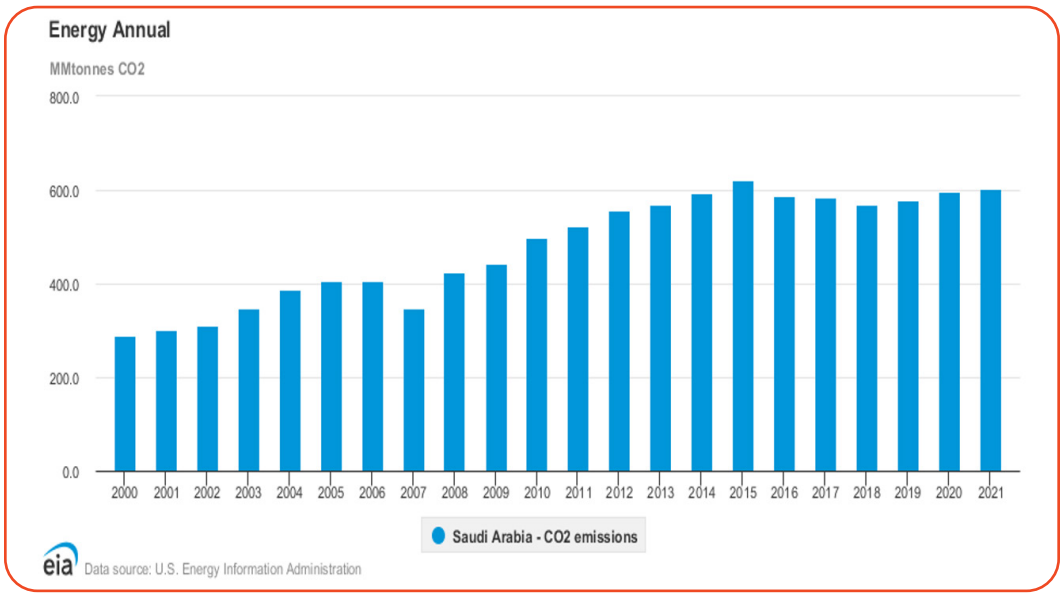
Saudi Arabia - total energy consumption
eia
Data source: U.S. Energy Information Administration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Saudi Arabia - CO2 emissions
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Data source: U.S. Energy Information Administration

Five Gulf states have net-zero carbon goals, with the UAE and Oman aiming for 2050 and Bahrain, Kuwait, and Saudi Arabia planning to reach net zero by 2060. ADNOC, Saudi Aramco, and Kuwait Petroleum have all set 2050 as a target for corporate net-zero emissions. QatarEnergy has a more modest near-term target of cutting its carbon intensity (emissions per unit of production) by 15% to 25% by 2030.

The cost of achieving a global net-zero target by 2050 is astronomical. IRENA estimates that keeping the world on track to achieve an energy transition in line with the 1.5-C scenario will require a cumulative $150 trillion in investments, an average $5 trillion a year, between 2023 and 2050.[22]

U.N. Secretary-General António Guterres said in presenting the IPCC report that it showed 1.5 C is achievable but needs "a quantum leap in climate action." It will require a total end to the use of coal globally by 2040 and "establishing a global phase down of existing oil and gas production, compatible with the 2050 global net-zero target," he said. Leaders at COP28 should include ambitious, new, and economy-wide NDCs due in 2025 encompassing all greenhouse gases, he added.[23]

Time to Tackle the Climate "Time Bomb"

As part of the effort to tackle what he called a climate "time bomb," Guterres urged the "CEOs of all oil and gas companies to be part of the solution. They should present credible, comprehensive and detailed transition plans in line with the recommendations of my High-Level Expert Group on net-zero pledges." He said, "These plans must clearly detail actual emission cuts for 2025 and 2030, and efforts to change business models to phase out fossil fuels and scale up renewable energy."[24]

COP27, held in Egypt in November 2022, was not a runaway success, but it did result in an agreement to establish a "loss and damage" fund to compensate vulnerable countries adversely affected by climate change. Developing countries have long argued that responsibility for climate change lies with the industrialized countries, the largest per capita contributors to greenhouse gas emissions.[25]

The final COP27 communique appeared to bear the stamp of the oil producing countries and even some major consuming countries in and outside the Middle East, as it avoided a clear statement on the need to phase out fossil fuel use, which the U.N. had pushed to incorporate. Deadlock over the issue threatened to scuttle a final agreement. In the end, a watered-down version called on parties to accelerate the transition to lower emission energy sources

22 International Renewable Energy Agency, *World Energy Transitions Outlook 2023* (Abu Dhabi: IRENA, March 2023).

23 "Secretary-General Calls on States to Tackle Climate Change 'Time Bomb' Through New Solidarity Pact, Acceleration Agenda, at Launch of Intergovernmental Panel Report," United Nations, March 20, 2023.

24 Ibid.

25 "COP27 Reaches Breakthrough Agreement on New 'Loss and Damage' Fund for Vulnerable Countries," United Nations Climate Change, November 20, 2022.

by scaling up the deployment of clean power generation and energy efficiency measures, including accelerating "efforts to phasedown unabated coal power and phase-out inefficient fossil fuel subsidies."[26]

This time around, the U.N. and European Union will be pushing for a firm commitment at COP28 to phase out fossil fuels, though a senior U.N. official said that is not yet on the summit agenda. The world needs to phase out fossil fuels if it wants to curb devastating global warming, U.N. Framework Convention on Climate Change Executive Secretary Simon Stiell said in an interview published June 5 by The Associated Press. But the idea might not even make it onto the agenda of the "make-or-break" summit, he added.[27]

The phaseout of heat-trapping fossil fuels "is something that is at top of every discussion or most discussions that are taking place," Stiell told AP.[28] The decision rests on the shoulders of COP28 President-designate Sultan Ahmed Al Jaber of the UAE, who is head of both the national oil company ADNOC and clean energy producer Masdar. The selection of Jaber as summit president, despite his credentials as his country's special envoy for climate change, has been controversial, and there have been recent calls by U.S. and EU lawmakers for his removal because of his association with the fossil fuel industry.

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A letter addressed to President Joseph R. Biden Jr., EU Commission President Ursula von der Leyen, Guterres, and Stiell, signed by more than a hundred members of the U.S. Congress and the EU Parliament, appealed to the leaders of the members' countries "to secure the withdrawal of the President-designate of COP28; and to take immediate steps to limit the influence of polluting industries, particularly major fossil fuel industry players whose business strategies lie at clear odds with the central goals of the Paris Agreement, at gatherings of the UNFCCC."[29]

The signatories also objected to the outsized presence of the fossil fuel industry at the Sharm el Sheikh COP27 summit in 2022. "It did not escape our attention that at least 636 lobbyists from the oil and gas industries registered to attend last year's COP—an increase of more than 25% over the previous year," they wrote. "When the number of attendees representing polluting corporate actors, which have a vested financial interest in maintaining the status quo, is larger than the delegations of nearly every country in attendance, it is easy to see

26 "COP27 Reaches Breakthrough Agreement on New 'Loss and Damage' Fund for Vulnerable Countries," United Nations Climate Change, November 20, 2022..

27 Seth Borenstein, "UN Climate Chief Calls Fossil Fuel Phase Out Key to Curbing Warming But May Not Be on Talks' Agenda," *AP*, June 5, 2023.

28 Ibid.

29 "Letter Addressed to President Joseph R. Biden Jr., EU Commission President Ursula von der Leyen, António Guterres, and Simon Stiell" from members of the U.S. Congress and EU Parliament, May 23, 2023.

how their presence could obstruct climate action." They added, "One of the largest barriers to strong climate action has been and remains the political influence and obstruction of the fossil fuel industry and other major polluting industries."[30]

Fossil Fuel Phaseout Not Yet on the Agenda

An EU representative of the European Green Party said keeping Jaber as head of the climate summit was like "letting the fox guard the henhouse," and called for the expulsion of the fossil fuel lobby from the conference.[31]

That opinion is not supported by the reality of the current global economy, which still runs on hydrocarbons, and where the energy system is still designed to run on fossil fuels. Electrification as the preferred means of decarbonization is being scaled up, but that also requires upgrades to grid designs to accommodate intermittency and storage solutions as backup to wind and solar.

Jaber cannot have ignored the controversy over his appointment, though he has yet to commit to the inclusion of a phaseout of fossil fuels on the summit agenda. Speaking in Berlin while attending climate talks, one of several pre-summit events that have taken him on a tour around the world, Jaber admitted that the phasedown of fossil fuels was inevitable, a more emphatic variation on earlier remarks in which he had referred to scaling down fossil fuel emissions. "The phasedown of fossil fuels is inevitable. The speed at which this happens depends on how quickly we can phase up zero carbon alternatives, while ensuring energy security, accessibility and affordability," he said on the sidelines of the talks to set the final agenda for COP28.[32]

The UAE and Saudi Arabia have argued that their respective investments in new oil production capacity alongside renewable energy and hydrogen projects are better suited to the evolving energy architecture. The Gulf Arab oil and gas producers see carbon capture, utilization, and storage and the adoption of a circular carbon economy, where carbon dioxide is removed, stored, and reused or otherwise recycled, as one technology that can keep oil flowing and ensure that the world's energy needs are met without harming the environment. The IPCC report does make allowances for fossil fuels with carbon capture, utilization, and storage in the transition to very low or zero-carbon energy sources in parallel with energy efficiency measures.

The Middle Eastern national oil companies and their international counterparts have argued that they should have a seat at the table because they have the superior technology, the financial muscle, and a tested ability to manage large-scale energy projects.

"Everyone in the industry needs to be aligned around the same goal. And we should stretch ourselves to go further, and let's aim to achieve net-zero even earlier," Jaber told a major industry conference in Houston in March. "Let's scale up best practices and aim to reach net-

30 "Letter Addressed to President Joseph R. Biden Jr., EU Commission President Ursula von der Leyen, António Guterres, and Simon Stiell" from members of the U.S. Congress and EU Parliament, May 23, 2023.

31 "Transatlantic Alliance of 130+ EU and US Decision Makers Call to End Fossil Fuel Influence at UN Climate Talks," *Corporate Europe Observatory*, May 23, 2023.

32 Riham Alkousaa, "COP President Says Fossil Fuels Phasedown is Inevitable," *Reuters*, June 8, 2023.

zero methane emissions by 2030. We must electrify operations, equip facilities with carbon capture and storage, and use all available technologies to increase efficiency across the board," he declared.[33]

The major energy companies, formerly known as international oil companies, saw record income in 2022 as oil prices rose to a near record and LNG prices hit a new high shortly after the Russian invasion of Ukraine. This generated income of $4 trillion and will lead to a more than 6% rise in fossil fuel projects in 2023, estimated at $950 billion, a big chunk of it going into the upstream sector. The biggest spenders will be the Middle East's national oil companies, the IEA noted in its investment report.[34]

The GCC countries are not on the same pathway or at the same speed when it comes to climate action, mitigation, and adaptation despite being highly vulnerable to the impact of climate change. In what is a largely arid part of the world, water stress is an urgent challenge and likely to worsen if temperatures rise further. The IPCC has previously warned that a further increase in temperatures could exacerbate existing weaknesses in the ecosystem, leading to more extreme weather patterns.

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IRENA forecasts that to limit the global temperature rise to 1.5 C, the world must produce more than 1,000 gigawatts "of annual renewable capacity additions until 2050." To put that into context, in 2022 a record increase of 295 GW in renewable energy capacity was achieved, representing 83% of global power additions, meaning that capacity additions will need to more than triple each year to reach the 1,000-GW goal.[35]

GCC Share of Renewables Has Space to Grow

According to IRENA, a record 3.2 GW of new capacity was commissioned in the Middle East in 2022, an increase of 12.8% in one year. Yet the Middle East accounts for just 1% of global renewable energy capacity. Africa's share is slightly higher, at 2%, but that's because it includes South Africa, Egypt, and Morocco, which have the highest penetration of renewables capacity on the continent.[36]

The Middle East is not the only laggard in climate ambitions. IRENA's data shows that the world is generally off track in progressing toward the 2050 net-zero target.[37]

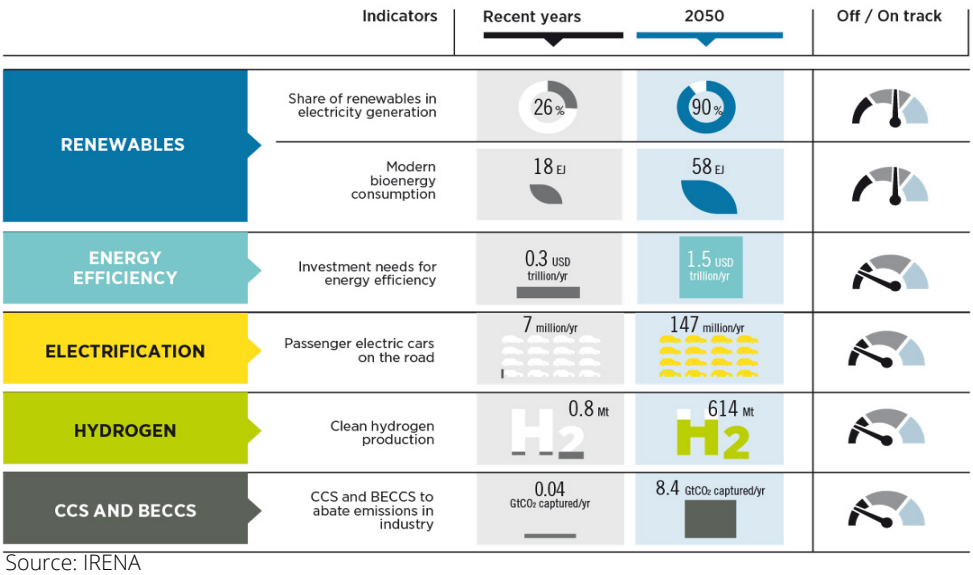
33 Maha El Dahan, "CERAWEEK-UAE's Jaber Urges Big Oil to Join Fight Against Climate Change," *Reuters*, March 6, 2023.

34 International Energy Agency, *World Energy Investment* (Paris: IEA, 2023).

35 International Renewable Energy Agency, *Renewable Capacity Statistics 2023* (Abu Dhabi: IRENA, 2023).

36 Ibid.

37 Ibid.



Source: IRENA

The UAE has the most diversified energy mix of the Gulf oil exporters, with a combination of natural gas, solar power, and nuclear energy. Other Gulf states have lagged behind in tapping into their renewable resources, though Saudi Arabia has set ambitious clean energy targets, including in wind power and green hydrogen production.

Both Saudi Arabia and the UAE, among the top oil producers in the OPEC+ alliance of OPEC and non-OPEC producers, have argued that oil and gas will continue to have a share in the energy mix for decades to come. As such, they have adopted a hybrid energy policy that incorporates oil and gas capacity additions alongside renewables, incorporating solar and wind into their energy mix as part of their net-zero strategies.

Despite recent growth, the Middle East had only 28.54 GW of installed renewable generation capacity, the lowest of any region. However, the Middle East's share will likely be slightly higher in 2023, mostly due to the addition of new solar capacity rather than wind energy. The region's onshore wind capacity in 2022 was around 1.05 GW, primarily concentrated in Iran and Jordan. Egypt, which IRENA listed under the Africa region, had an estimated wind capacity of 1.64 GW in 2022 – more than the entire Middle East – thanks to its installations located mainly in the Gulf of Suez, where wind speeds can reach over 10 meters per second. In 2022, Morocco's installed wind capacity was estimated at 1.56 GW, slightly higher than its solar capacity.[38]

Egypt to Build Africa's Biggest Wind Farm

The UAE's Masdar and Egypt have teamed up to build Africa's largest wind farm, a 10-GW capacity onshore wind farm in Egypt, which would make it one of the largest in the world. The wind farm, which will cost more than $10 billion, is an example of Masdar's overseas investment strategy to advance the energy transition within the region and beyond. The wind

38 International Renewable Energy Agency, *Renewable Capacity Statistics 2023* (Abu Dhabi: IRENA, 2023).

farm will reduce carbon emissions by 23.8 million tons per year and help Egypt to meet its target of sourcing 42% of its energy from renewable sources, the Abu Dhabi-based company stated in a June 6 press release.[39]

Wind energy is the cleanest and cheapest energy source in most of the world. However, not all regions enjoy ideal wind conditions. Solar power is more competitive in the Gulf, and so it is the preferred option for many Gulf Arab states. The cost of generating electricity from solar power has come down dramatically in the last decade, particularly in the Gulf Arab states. IRENA calculated that the global weighted average levelized cost of electricity of newly commissioned utility-scale solar photovoltaic projects declined by 88% between 2010 and 2021, while onshore wind fell by 68%, concentrating solar power by 67% and offshore wind by 60%. This makes solar energy far more competitive than natural gas, liquid fuels, or even coal for power generation.[40]

Among the Gulf Arab states, the UAE has the highest percentage of renewable energy in its mix, with 3.058 megawatts of mainly solar capacity. In the Middle East, only Iran and Israel have greater penetration of renewables. Saudi Arabia is low in the rankings having produced just 443 MW of energy from renewables in 2022, though it has made rapid progress since 2002, when it recorded only 22 MW of renewables capacity. These numbers are expected to rise, as the kingdom has stepped up its clean energy agenda and set a target of reaching net-zero emissions by 2060.[41]

The UAE has committed to investing $160 billion into renewable energy projects over the next 30 years and is proceeding at a fast pace to bring on new solar capacity. The 2-GW Al Dhafra solar photovoltaic plant is nearing commercial operations, and the planned 1.5-GW Al Ajban plant is on track to start up in 2026 with new sites being assessed for future solar phases. In Dubai, the UAE's financial hub and COP28 host, solar now accounts for 2.1 GW (14.4% of installed capacity), and new increments are due online later in 2023.

Abu Dhabi's state energy company, ADNOC, has ventured into the clean energy space. In December 2022, ADNOC, the Mubadala Investment Company, and the Abu Dhabi National Energy Company, TAQA, all became shareholders in Masdar. The agreement gave ADNOC a 24% stake in Masdar; ADNOC is now leading Masdar's green hydrogen business, in which it was granted a 43% stake. "The partnership sets out to develop Masdar into a global clean energy powerhouse that consolidates the renewable energy and green hydrogen efforts of TAQA, Mubadala, and ADNOC under a refreshed single Masdar brand," Masdar stated in a December 8, 2022 press release.[42] Masdar mentioned it is targeting at least 100 GW of renewable energy capacity and the production of up to 1 million tons of green hydrogen by 2030, with aspirations to grow its renewable energy portfolio to more than 200 GW.[43]

39 "UAE and Egypt Advance Development of Africa's Biggest Wind Farm," Masdar, June 6, 2023.

40 International Renewable Energy Agency, *Renewable Power Generation Costs in 2021* (Abu Dhabi: IRENA, July 2022).

41 International Renewable Energy Agency, *Renewable Capacity Statistics 2023* (Abu Dhabi: IRENA, 2023).

42 "TAQA, ADNOC, and Mubadala Complete Landmark Transaction for Stake in Masdar Clean Energy Powerhouse," Masdar, December 8, 2022.

43 Ibid.

Big Hydrogen Ambitions

As part of its low-carbon strategy, ADNOC is investing in blue hydrogen, which is produced from natural gas with carbon capture. A 1 million metric ton per year blue ammonia facility is scheduled to come on line in 2025. At the same time, ADNOC's offshore oil facilities are being connected to the grid in order to receive clean energy.

Abu Dhabi's investment in renewables and nuclear power has paid off, allowing the emirate to meet rising demand for electricity and cut gas consumption. In 2022, with the third unit of the Barakah nuclear power plant in operation, Abu Dhabi's gas consumption fell to an 11-year low. Once Barakah reaches full capacity, which is expected by 2024, the plant will provide 25% of the UAE's electricity needs, according to the Emirates Nuclear Energy Corporation.[44]

Saudi Arabia is fast catching up with ambitious plans to transform its economy and ease reliance on oil as part of the Vision 2030 economic reform package. It has increased its ambitions and is targeting a 50-50 split between natural gas and renewables in power generation by 2030 with a mix of solar, wind, and, eventually, nuclear. Additionally, Riyadh plans to build the world's largest carbon capture, utilization, and storage facility. This two-track approach would allow the world's top oil exporter to market a cleaner hydrocarbon product and ensure the longevity of crude oil in the energy mix, preserving its role in the global oil market while also weaning the Saudi economy off its overdependence on crude oil exports.

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The Saudi Green Initiative reported in March that two years after its launch, energy from solar and wind projects is already providing enough power to light up 150,000 homes, and over 11 GW of additional renewable energy capacity is under development.[45]

Riyadh showcased its green energy plans on the sidelines of COP27 and has since announced plans to invest around $265 billion in clean energy by 2030, including by building the world's largest green hydrogen plant as part of the Neom megaproject.

Neom Green Hydrogen Company, a joint venture by ACWA Power, Air Products, and Neom, has secured $8.4 billion in finance and plans to produce green hydrogen at scale in 2026. It has also secured an exclusive 30-year offtake agreement for its product. The plant will integrate up to 4 GW of solar and wind energy to produce up to 600 tonnes per day of carbon-free hydrogen by the end of 2026, in the form of green ammonia as a cost-effective solution for the transportation and industrial sectors globally, the company stated on reaching financial close May 22.[46]

44 "What's Happening at Barakah," Emirates Nuclear Energy Corporation, accessed June 15, 2023.

45 "SGI Target: Reduce Carbon Emissions by 278mtpa by 2030," Saudi and Middle East Green Initiatives, accessed June 15, 2023.

46 "Neom Green Hydrogen Company Completes Financial Close at a Total Investment Value of USD 8.4 Billion in the World's Largest Carbon-Free Green Hydrogen Plant," Neom, May 22, 2023.

Aramco announced in April that it had shipped the first cargo of "independently-certified" low-carbon ammonia to Japan for use in power generation. This, it said, "represents another milestone in the development of this low-carbon energy solution."[47]

Oman has also upped its game and aspires to become one of the world's leading exporters of green hydrogen. A June 12 report produced jointly by the Omani Ministry of Energy and Minerals and the IEA suggested that Oman has a competitive advantage and the potential to become a hub for renewable energy and hydrogen. It plans to produce more than 1 million tons of green hydrogen by 2030.[48]

Hydrom, the state entity set up to oversee Oman's green hydrogen sector, on March 14 signed six term-sheet agreements with international companies, including BP and Shell. The six projects totaling 700,000 t/y of prospective green hydrogen output will require 15 GW of wind and solar capacity and an investment of $20 billion. In early June, Hydrom, awarded the first green hydrogen blocks for three projects to be developed.

The report on Oman's green hydrogen ambitions indicated that based on the current global project pipeline, "Oman is on track to become the sixth largest exporter of hydrogen globally" and potentially the largest in the Middle East by 2030. Oman has an advantage in that it has "extensive expertise" in handling LNG and ammonia that is directly applicable to renewable hydrogen and hydrogen-based fuels. The report assessed that, to achieve its target, Oman will need to scale up its renewable energy, both solar and wind, to more than the current total electricity system.[49]

The IEA's analysis indicates that Oman can achieve its renewables targets of 20% by 2030 and 39% by 2040 in the energy mix cost effectively. Lifting hydrogen production to 1 million mt/y by 2030 would require a cumulative investment of around $33 billion and an additional $4 billion to raise the share of renewables to 20%. "Achieving its targets and using one-third of renewable hydrogen for domestic uses would significantly contribute to Oman's clean energy transition. The benefits would include reducing domestic use of natural gas by 3 billion cubic metres a year and avoiding 7 million tonnes of carbon dioxide emissions," it concluded.[50]

The EU has set a target to import 10 million tonnes of renewable hydrogen a year by 2030,[51] and a number of EU countries, led by Germany, have tapped Middle Eastern and North African countries for supplies of green hydrogen, an energy vector that produces zero emissions when burned but is more expensive to transport than LNG. The Oxford Institute for Energy Studies suggested in a recent study that the EU target "could kick-start the international trade

47 "First Accredited Low-Carbon Ammonia Shipment for Power Generation Dispatched From Saudi Arabia to Japan," Aramco, April 20, 2023.

48 International Energy Agency, *Renewable Hydrogen From Oman* (Paris: IEA, June 2023).

49 Ibid.

50 "Oman's Huge Renewable Hydrogen Potential Can Bring Multiple Benefits in Its Journey to Net Zero Emissions," *IEA*, June 12, 2023.

51 "Energy Systems Integration: Hydrogen," European Commission, accessed June 15, 2023.

of renewable hydrogen," with more than 50 countries that have either announced or are preparing hydrogen strategies. It identified Saudi Arabia, the UAE, Oman, Egypt, and Morocco as among 14 potential suppliers to the EU.[52]

Qatar, one of the world's top three producers and exporters of LNG, is focusing on expanding LNG production capacity to 127 million mt/y before the end of the decade but is also slowly moving into the clean energy space. Qatar has become the latest Gulf state behind the UAE, Saudi Arabia, and Oman to capitalize on its sunny skies; its first commercial solar plant, Al Kharsaah, became fully operational October 18, 2022. The photovoltaic plant has 800 MW of installed capacity and was completed just before Doha hosted the 2022 FIFA World Cup in time to meet the surge in electricity demand.

As Qatar seeks to reduce the carbon intensity of its grid, which has until now been 100% gas fired, QatarEnergy in August 2022 awarded contracts to build two new solar power plants with combined capacity of 875 MW. This will enable Qatar's solar capacity to hit 1.675 GW by 2024 and increase the share of renewables from a current 10% of national demand.

The two plants will primarily provide power to QatarEnergy's operations at Ras Laffan and Mesaieed as part of the company's plans to reduce the carbon intensity of Qatar's LNG facilities by 35% and of its upstream facilities by at least 25% by 2035.

Qatar has major green ambitions. As well as targeting 5 GW of solar capacity, QatarEnergy's sustainability strategy entails the deployment of carbon capture and storage technology to capture over 11 million mt/y of carbon dioxide in Qatar by 2035.

The Gulf Arab states are also venturing into production of components for renewable energy and electrolyzers, which split water into hydrogen and oxygen, for green hydrogen production.

The Gulf Arab states are also venturing into production of components for renewable energy and electrolyzers, which split water into hydrogen and oxygen, for green hydrogen production. Again, ADNOC has taken the lead. It announced that it had entered into a joint venture to manufacture hydrogen electrolyzers, which could provide a new income stream from exports in the future. China is currently the biggest producer of the electrolyzers.[53] The UAE also plans to build an electric vehicle charging station to meet rising demand for electric vehicles in the country and region.

No Renewables in Kuwait, Limitations for Bahrain

In addition to the risk of desertification, rising seawater salinity, and erosion of coastal areas, the Middle East and North Africa region suffers from bouts of severe drought and water stress, all of which are likely to intensify in the event of a further rise in temperatures. Already Kuwait and Iraq have registered some of the highest temperatures on record.

52 Abdurahman Alsulaiman, "Renewable Hydrogen Import Routes Into the EU," *Oxford Institute for Energy Studies*, May 2023.

53 John Benny, "ADNOC Signs Agreement With Strata and John Cockerill to Make Electrolysers in the UAE," *The National*, June 1, 2023.

The Middle East as a whole is heating up at twice the global average, and greenhouse gas emissions are rising. According to the IPCC, per capita greenhouse gas emissions in the Middle East rose faster than the global average between 2000 and 2015. The U.N. has warned that without further action, the region could face 200 days of extreme heat and temperatures above 50 degrees Celsius (122 degrees Fahrenheit) every year by the end of the century.

Because Kuwait relies on oil and gas for nearly 100% of power generation, and demand for electricity is set to triple between 2019 and 2030, Kuwait has turned to LNG imports to supplement domestic production of mostly associated gas. Political inertia in the emirate has prevented it from realizing much delayed plans to develop a more sustainable energy policy even as demand for electricity has hit records, requiring imports of LNG. Kuwait has no renewable energy projects in the pipeline, and it is now considering purchasing electricity from its neighbors to meet peak demand.[54]

Bahrain, which is not a major oil and gas producer, benefited from the 2022 increase in oil prices, which provided an impetus for economic reforms. Bahrain's small area means that large-scale renewables projects are not viable as it is not geographically positioned to build large-scale solar farms. Energy officials are suggesting that Bahrain build solar farms jointly with neighboring countries, most likely Saudi Arabia, and transmit back to the island state.[55]

Given that Saudi Arabia has hugely ambitious plans to develop 58 GW of renewables capacity by 2030, and the neighbors already have a long history of cooperating in the energy sector – or rather of Saudi Arabia supplying its smaller neighbor with crucial volumes – joint development projects in the renewables sector are a real possibility.

Neom as Incubator of Water Solutions

Although the GCC states are not fully aligned in their energy policies, they are all desert countries that rely heavily on desalinated water, for which demand is on the rise as a result of economic growth and urban sprawl.

Saudi Arabia's Neom, if realized according to its original plans, would be one of the world's first zero-carbon megapolises, powered exclusively by renewables, and a possible template for future urban design. In addition to the green hydrogen plant, which has been billed as the biggest in the world, Neom's developers say it will also be an incubator for water solutions.

A video posted on the Neom website says the aim is to "build sustainable smart systems that reclaim wastewater … pull water from the air and harness the power of the sun to change seawater into the purest drinking water." These advances, it adds, "will be shared with the world so we can make water flow forever."[56]

The Middle East and North Africa region is blessed with some of the world's highest irradiation levels, but solar energy production is concentrated in a few countries with vastly different timelines and trajectories. Hydropower is threatened by drought, highlighting the water

54 Yesar Al-Maleki, "Kuwait Considers Buying Power as Generation Capacity Flatlines," *MEES*, June 2, 2023.

55 Megan Byrne, "Bahrain Heads for Economic Rebound Following Upstream Shakeup," *MEES*, July 15, 2022

56 Neom, "Neom is Changing the Future of Water," September 28, 2021, Neom video, 1:00.

scarcity crisis in several Middle Eastern and North African countries. Increased seawater salinity due to evaporation will have a negative impact on aquatic life and the fishery industry while also straining desalination plants on which all the Gulf states rely for water, and these plants are powered mainly by natural gas.

Desalination is an energy-intensive business, though it varies depending on the technology used, and the business of turning saltwater sweet is growing as water stress in many parts of the world has intensified. This is due to a number of factors attributed to population growth, demand from agriculture, the impact of climate change, and geopolitical risk. Water scarcity also endangers food supplies, since agriculture accounts for some 70% of water usage, according to the U.N.

Approximately 2 billion people around the world lack access to safe drinking water, and 40% of the world's population is affected by water scarcity, according to remarks from the U.N. at the conclusion of the March 2023 Water Conference. Pressure on freshwater is projected to increase by more than 40% by 2050, the U.N. mentioned. Only 0.5% of water on earth is usable for human consumption, and climate change is posing a risk to this scarce supply.

A September 2022 report by the French Institute of International Relations found that the UAE relies on desalinated water for 42% of its supply, Kuwait 90%, Oman 86%, and Saudi Arabia 70%.

This is a particular challenge for the aridGulf Arab states, which depend heavily on desalination technology for their water supplies. A September 2022 report by the French Institute of International Relations found that the UAE relies on desalinated water for 42% of its supply, Kuwait 90%, Oman 86%, and Saudi Arabia 70%.[57]

In 2022, there were more than 21,000 desalination plants in operation around the world, nearly double the number a decade ago. With the U.N. projecting that within two years, two-thirds of the world's population will be affected by water stress, the desalination business is booming with an estimated growth rate in capacity of between 6% and 12% per year, according to the Institute of International Relations analysis.

By 2030, desalination capacity in the Middle Eastern countries is expected to almost double, making it that much harder to control carbon dioxide emissions because of the energy-intensive nature of desalination plants that currently run on electricity produced primarily from natural gas or liquid fuels. The release of salt-loaded waste into the sea during the desalination process raises salinity in coastal areas and affects marine life. There is also the problem of transmission losses, which the Institute of International Relations estimated is higher than 50% in some Gulf countries.

57 Marc-Antoine Eyl-Mazzega, "The Geopolitics of Seawater Desalination," *French Institute of International Relations*, September 27, 2022.

Shifting Geopolitics and Trade Patterns

The war in Ukraine did not produce the energy shock that the IEA and others had predicted at the start of the conflict in February 2022, but it did change oil and gas trading patterns as Russia was increasingly isolated by a raft of sanctions and shunned by Western countries. In the days following Russia's invasion of Ukraine, European countries that relied heavily on Russian oil and gas looked to the Middle East in the scramble to secure alternatives to Russian supplies as they contemplated imposing an embargo on Russian oil. Middle Eastern oil and gas exporters benefited by selling more cargoes to Europe, which partly made up for increased flows of now discounted Russian crude oil to China and India, traditionally the biggest customers for Middle Eastern crude oil. The Gulf Arab states adopted a neutral stance in the conflict while maintaining the energy alliance with Russia through OPEC+.

As oil prices rose to a near record of close to $130 per barrel in March 2022, Washington leaned on Saudi Arabia to boost oil supplies, which caused tensions between the two allies at a time when relations were already strained.

Flush with cash, Saudi Arabia and the UAE have become more assertive in their foreign policies and have expressed their view that setting oil production levels are sovereign decisions and should not be dictated by the big powers.

Over the last decade, there has already been a shift in relations between the Gulf states and their traditional allies. The Ukraine war has added a new dimension to the geopolitical transformation both within the Middle East and the world at large with a growing perception that the United States has disengaged from the region, though Washington's security presence in the region has not been challenged. Saudi Arabia relies on the United States for 60% of its weapons, though it is now diversifying its suppliers, including China.

As oil demand growth shifted to the East of Suez market, and demand in the OECD countries flattened, the relationship between the GCC states and China has expanded beyond just oil trade. Beijing has used its deep pockets to forge a steady path into the Gulf region, becoming a significant investor in various sectors of Gulf economies, with Saudi Arabia the biggest beneficiary so far.

China Steps Up GCC Investment

In the last decade, China has invested more than $100 billion in the GCC states, and that figure is likely to increase with a slate of new projects lined up. The relationship has evolved to include an economic, a strategic, and possibly a political dimension.[58]

The recent role that China played in mediating between Saudi Arabia and Iran was a diplomatic coup for Beijing, thanks largely to the fact that Iran remains under U.S. sanctions, and Washington could not act as power broker in this particular dispute. While China's intervention

58 Arab Gulf States Institute in Washington, "China-GCC FTA Negotiations and Prospects for Broader Economic Collaboration," April 5, 2023, AGSIW panel discussion video, 01:31:01.

was a novel development, it may not lead to more active engagement by Beijing in regional squabbles and is likely to be limited to growth in both bilateral trade relations and Chinese investment flows into the region.

There has been speculation that China is pushing to promote use of the "petro yuan" for trade with the GCC states after the first yuan-settled LNG trade was concluded in March. The state-owned China National Offshore Oil Corporation and French energy giant TotalEnergies completed the first yuan-settled LNG trade through the Shanghai Petroleum and Natural Gas Exchange, according to a March 28 statement. The 60,000-tonne cargo originated in the UAE, where TotalEnergies has upstream stakes.[59]

Whether more such transactions will transpire remains to be seen, but a switch would be complicated and costly. Oil and gas are priced in the U.S. dollar, the global reserve currency, and the Chinese renminbi is not a convertible currency.

A 2022 Wall Street Journal report that Saudi Arabia was considering switching to the Chinese yuan to price some of its oil sales was possibly an indirect message to Washington not to interfere in its oil policy decisions rather than a serious proposition.[60] The currencies of the Gulf's oil producing states are pegged to the U.S. dollar – except for Kuwait, which adopted a basket of currencies some years back – and they have shown little inclination to make a radical switch in monetary policy.

Azal Advisors, which provides bespoke foreign policy and economic advisory services to GCC countries, suggested in a January report that a switch to a multilateral collateralized digital currency could serve as a tool of influence for oil exporting states. The authors of the report, Jean-Francois Seznec and Nicolas Dunais, opined that the Gulf states are "in the front line of the strategic competition between China and the United States." The situation is reflected in the recurring de-dollarization of global oil trade and China's desire to settle oil purchases in its own currency, which they admit does not currently serve the interests of the Gulf oil exporters.[61]

The widespread use of the U.S. dollar in global oil trade and the currency peg by most Gulf oil exporters poses constraints on both monetary and foreign policy to some extent. Monetary inflation, economic slowdown, and a growing debt burden in the United States raise questions as to "the sustainability of the dollar as a store of value," the report argued, adding that "multilateral and oil-collateralized digital currency (MCDC) could provide like-minded Gulf oil-exporters with a tool of partial monetary policy independence and enhanced global influence, ultimately enabling them to carve a more independent policy that serves their own interest rather than the one of either of the two super-powers."

59 Andrew Hayley, "China Completes First Yuan-Settled LNG Trade," *Reuters*, March 28, 2023.

60 Summer Said and Stephen Kalin, "Saudi Arabia Considers Accepting Yuan Instead of Dollar for Chinese Oil Sales," *The Wall Street Journal*, March 15, 2022.

61 Jean-Francois Seznec and Nicolas Dunais, "A Multilateral Collateralized Digital Currency as an Instrument of Influence for Oil-Exporting States," *Azal Advisors*, January 1, 2023

Conclusion

The energy transition is underway in the Gulf Arab states but will need to be prioritized and scaled up massively to achieve net-zero targets adopted by the majority of the GCC states. The share of renewables in the Middle East is growing but is still a small fraction of global renewables capacity. The forthcoming COP28 climate summit due to be held in Dubai, the UAE's financial hub, will provide yet another opportunity for the Gulf Arab oil and gas exporting states to show that they are implementing the necessary measures to decarbonize their energy industries and contribute positively to the climate effort.

The region has immense solar and wind potential that remains largely untapped in much of the Middle East and some countries, such as Saudi Arabia, have been slow to kick off their renewable energy program. Weaning the economies of the oil exporting states off reliance on hydrocarbons poses budgetary and socioeconomic challenges that need to be overcome in a way that preserves stability while promoting sustainability.

As low cost, low carbon intensity oil producers, the GCC states will need to scale up decarbonization of their energy and industrial operations if they are to retain a share of what will be a smaller market as the energy transition progresses. Recent solar and wind additions in all but a few of the Gulf Arab states and development of an export market for green hydrogen show promise and are aligned with net-zero pledges.

But all this will take time and trillions of dollars in new investments, which the GCC states are able to tap into after raking in record income in 2022 when oil prices rose to a near record and LNG prices hit an all-time high. Some of the windfall profits can easily be diverted into clean energy projects to recalibrate their economies and create a sustainable future for the coming generations.

COP28 will require a major course correction not just on the part of the host country and its oil producing neighbors but the global community at large without prejudice or hidden agendas. It will be a test of the UAE's diplomatic skills to get the COP28 agenda back on track, but that will require a unity of action, clear policy direction, and a firm financial commitment by the industrialized and wealthy countries to developing countries most affected by climate change to ensure that the goals of energy security, affordability, and sustainability are met for all.