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U.S. - GCC Changing Energy Relations

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U.S.-GCC Changing Energy Relations

Energy has been a cornerstone of the decades-long relationship between the Gulf Cooperation Council (GCC) countries and the United States. Over this period, the US assisted in guaranteeing the Gulf region's security in exchange for reliable energy supplies. The unspoken arrangement contributed to the stability of the world economy and allowed for prosperity on both sides.

Of late, US-GCC energy ties have undergone some changes due to various factors such as growing American energy independence, the issue of climate change, and the global drive away from hydrocarbons to protect the environment. A decline in the cost of renewable energy, new opportunities in energy efficiency, digitalization, smart technologies, and electrification solutions contributed to this shift (IRENA, 2019). The advent of shale oil, which significantly increased US domestic production, was another factor. The recent Russian invasion of Ukraine has further brought a political dimension to the forefront, with the US asking for production increases from countries such as Saudi Arabia and the United Arab Emirates. These oil producers, however, argue that agreements within the OPEC+ framework take precedence to ensure medium-term energy stability. Together, these shifts have led to fundamental questions on the sustainability and durability of maintaining US-GCC energy ties with both sides recalculating the way forward.

While ensuring economic prosperity remains a crucial objective, there can be no doubt that the impact of climate change will dominate the energy debate. The GCC states have started to develop strategies, and projects to mitigate the effects of climate change in an attempt to reaching carbon neutrality. For instance, Saudi Arabia, one of the world's largest oil producers, committed to adding 50% renewable power its energy mix by

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2030 and pledged net-zero greenhouse gas emissions by 2060 under its strategic framework, Vision 2030. Likewise, the UAE pledged to reach net-zero carbon emissions by 2050. The UAE is also hosting COP28 next year, further advancing the goal of cleaner energy. Additionally, Bahrain announced its goals to bring carbon emissions to net-zero by 2060, whereas Qatar produced a national climate change plan that aims to reduce greenhouse gas emissions by 25 percent by 2030.

US President Biden, even prior to his presidency, made climate change a pillar of his domestic and foreign policies, promising to decarbonize the US economy and lead the world away from fossil fuels. Consequently, he included an extensive range of energy and climate-related policies in both the American Jobs Plan (AJP) and the Build Back Better Framework (BBBF) and issued the Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis. Additionally, President Biden recommitted the US to the UN Paris Climate Agreement on January 20, 2021. Moreover, the US aims to reduce greenhouse gas emissions by 50 percent by 2030 and net-zero by 2050.

The crisis in Ukraine has at the same time brought the old energy debate back in terms of the Western, especially European, dependence on energy imports, the continued centrality of hydrocarbons to broad elements of the world economy, and the questions associated with high energy costs and continued investment in the oil industry. Despite dynamics including climate change, energy will therefore remain a critical factor in US-GCC bilateral ties. This paper will examine energy fundamentals, recent US-GCC energy ties, the role of the Organization of Petroleum Exporting Countries (OPEC) and OPEC+, GCC energy ties to Asia, the role of climate change, and the impact of the crisis in Ukraine.

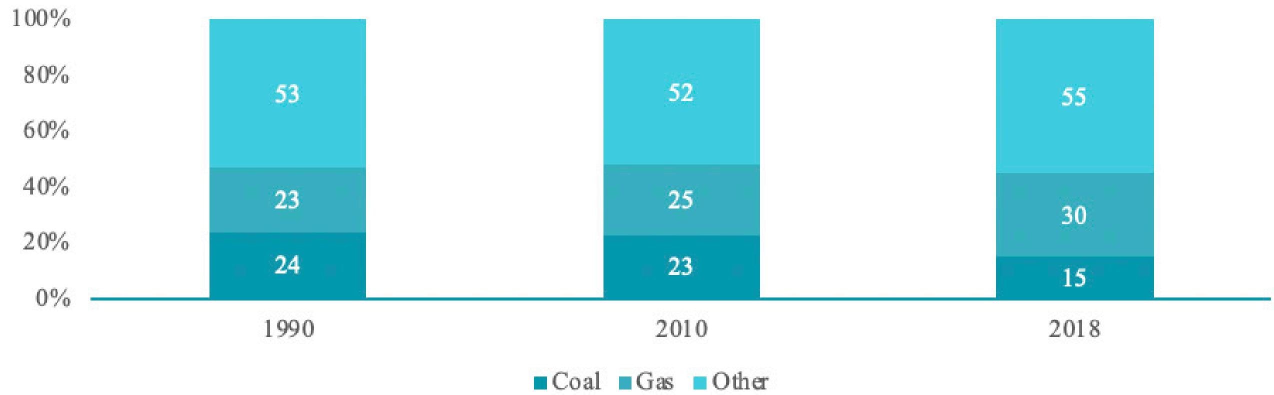
Current Situation

Currently, US-GCC relations are marked by a growing level of mutual distrust, as the immediate interests of the two sides have begun to diverge. On the one hand, there is a high skepticism among the GCC states about the US' intentions and commitment to the region. Questions and concerns have arisen over the withdrawal from Afghanistan, the Iran nuclear deal, Washington's policy toward the war in Yemen, as well as its policy to ensure the stability of Iraq. Much of the increased distance is grounded in the US invasion of Iraq in 2003 and several other decisions made since. On the other hand, there is also a degree of unhappiness in the US about some GCC regional policies including over the response to the Arab Spring and the Yemen war. For the US, there current environment is very much about trying to find a new approach to the region, one that lessens the costs of continued large-scale involvement but at the same time maintains a US role that is not seen as abandonment. In this dichotomy, energy issues are becoming more politicized than in the past, contributing to the existing doubts that have been growing on both sides.

Energy Fundamentals

Energy markets have significantly transformed over the years. The US Shale Revolution, for instance, enabled the US to increase its production of oil and natural gas significantly through the combination of hydraulic fracturing and horizontal drilling, particularly from tight oil formations (Brown and Yücel, 2013). Moreover, since 2010, the US gas market share has increased more than any other energy source, as coal has decreased significantly, as shown in Figure 1 (IEA, 2019). According to the US Bureau of Labor Statistics, domestic petroleum production in the U.S. surpassed imports for the first time in May 2013 since January 1997.

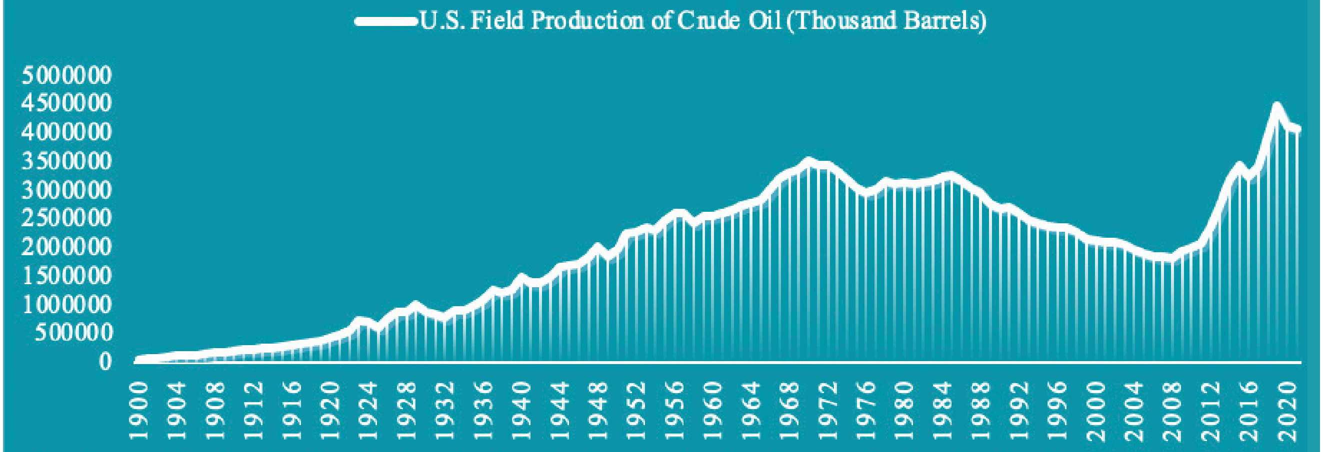
Figure 1: Shares of Coal and Gas in Primary Energy in the United States, 1990 to 2018



Source: IEA

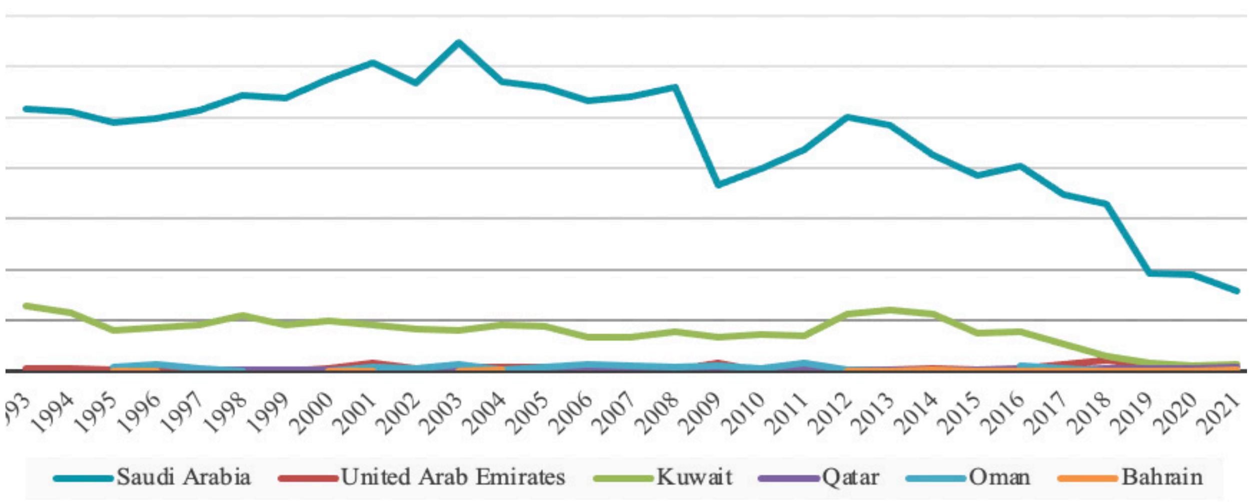
Consequently, the US oil and gas output has surged 57% over the past decade, and it has become a leading oil and gas producer as it diversifies away from the Middle East's oil (Wethe, 2019). since 2012, US crude oil production has increased steadily and is forecasted to increase to 12 million b/d in 2022. According to the IEA, the US surpassed Saudi Arabia to become the world's largest crude oil producer in 2018, producing 15% of global crude oil. As Figures 2 and 3 demonstrate, the US has subsequently become more energy independent as domestic production increases and imports from the GCC states decrease.

Figure 2: U.S. Field Production Of Crude Oil (Thousand Barrels), 1990 To 2021



Source: IEA

Figure 3: U.S. Imports from GCC of Crude Oil and Petroleum Products Mbbl, 1993 to 2021



Source: IEA

GCC-Asia Energy Ties

As the US became more energy independent, the GCC states began exporting oil to other areas. As a result, most Gulf oil now goes to Asia, the world's top oil-importing region. According to a report by Middle East Institute, China and India are the world's top 2 net oil-importing countries, with China's dependence on imported crude oil standing at nearly 80 percent of the country's oil supplies and India at around 75 percent (Calabrese, 2021). Moreover, around three-quarters of the Gulf crude oil is exported to Asian customers, particularly China (Calabrese, 2021).

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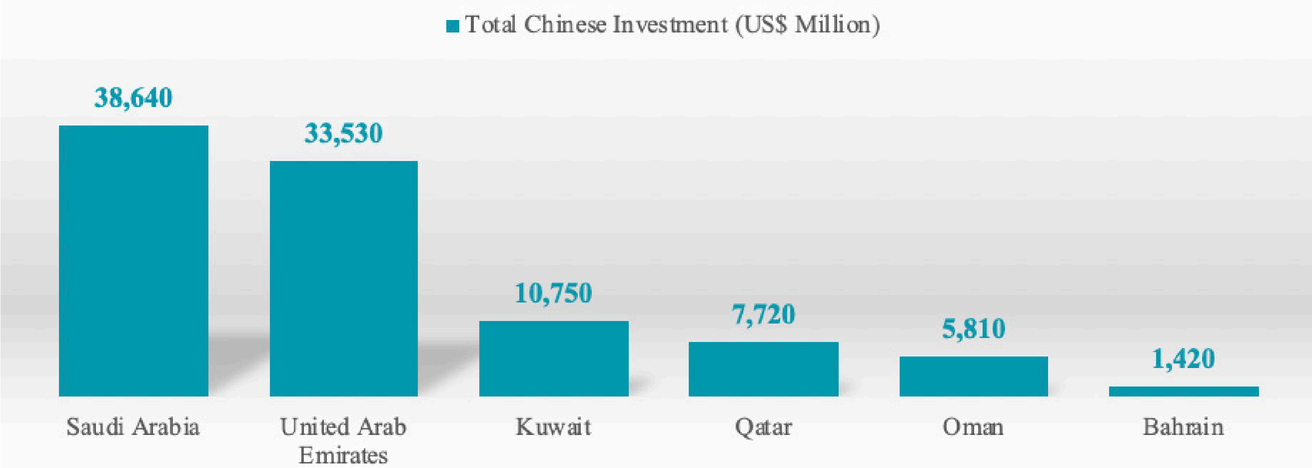
Indeed, China has been actively engaging the GCC states, particularly Saudi Arabia, due to the new mutual economic opportunities arising from Vision 2030 and the Belt and Road Initiative (BRI). Saudi Arabia was among the first countries to voice their support for China's initiative, given the fact that BRI complements the Kingdom's plans. In addition, China has also been keen to strengthen ties with the UAE. GCC and China ties surged after President Xi Jinping proposed the 1+2+3 framework in 2014, a formal plan to advance Sino-Arab cooperation (Carr, 2020). The three foundational pillars of the framework are energy, infrastructure, and trade & finance.

OPEC constituted over half of China's crude oil imports at 55 percent during 2019 and 2020 (Carr, 2020). Specifically, Saudi Arabia exported US$28.1 billion (15.9 percent of China's crude oil imports), Oman $12.8 billion (7.3 percent), the UAE $9.7 billion (5.5 percent), and Kuwait $9 billion (5.1 percent). In return, China's investment continued to increase in the GCC states, as shown in Figure 4 below.

Figure 4: Total Chinese Investment (US$ Million), 2020

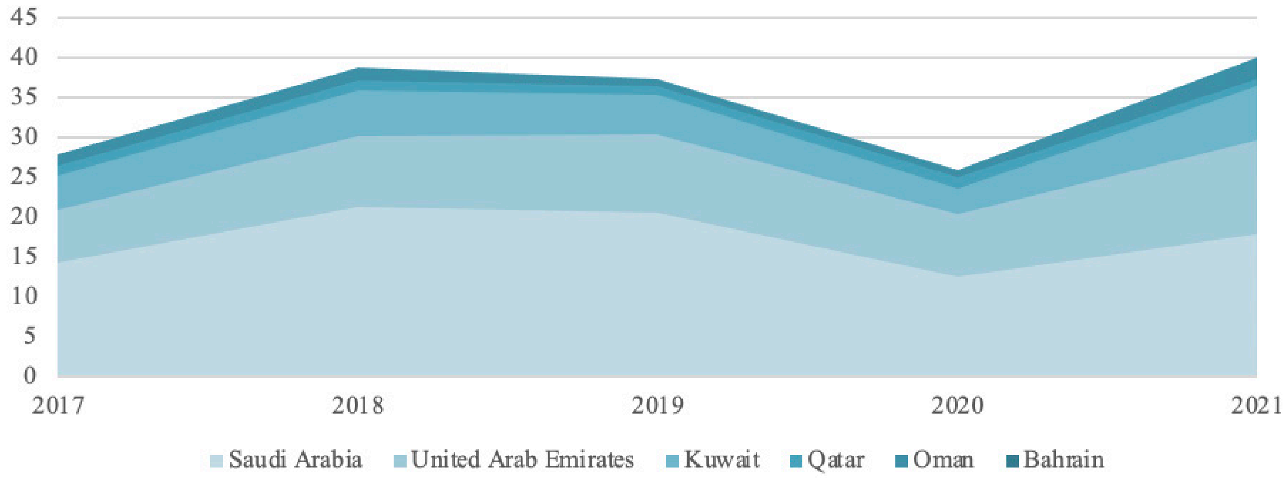


Source: AEI

However, when it comes to the GCC's growing ties with China, the Gulf alliance seeks to read carefully to avoid unnecessary tension with the US and stay away from the ongoing tug-of-war between the two key global powers. The GCC states understand the continued importance of relations with the US, which imposes limitations on developing ties with other powers such as China. China is also not seen as a substitute for the US when it comes to the regional security and stability. Therefore, while the GCC states continue to rely on the West and, in particular, the US for security assistance, economics has shifted to the East.

The GCC states are also looking to other countries in Asia, such as India, Japan, and South Korea. Regarding India, the GCC is India's largest trading partner, as GCC-India trade is higher than both India-ASEAN trade and India-EU trade. As Figure 5 shows, petroleum imports from the GCC accounted for about $40.1 billion out of India's total $106.4 billion, which is around 38 percent of India's total petroleum imports. Despite the dip in 2020 due to the COVID-19 pandemic, trade is expected to further increase between India and the GCC states. The UAE and India signed a bilateral trade agreement on Feb. 18, 2022, called the India-UAE Comprehensive Economic Partnership Agreement (CEPA). It is the largest economic agreement between the two countries, as well as India's first major bilateral trade pact after the pandemic.

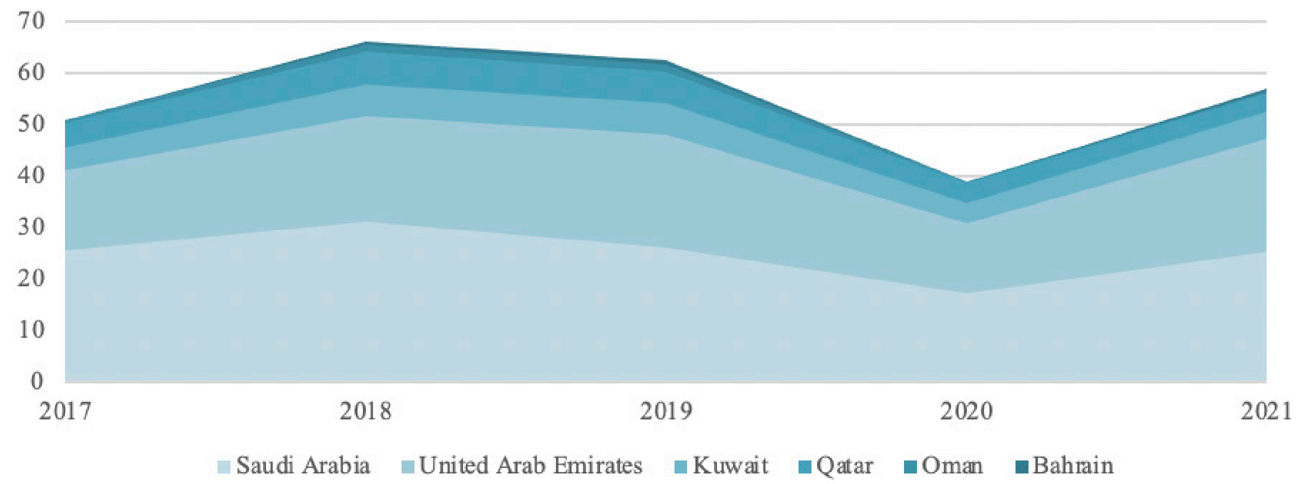
Figure 5: India's Petrolium Imports from the GCC (US$ Billion), 2017-2021



Source: UN Comtrade

In Japan's case, trade is even more significant. Of Japan's total $63.1 billion in 2021, Japan imported petroleum worth $56.9 billion from the GCC states, as shown in Figure 6. In other words, the GCC states accounted for almost 90 percent of Japan's petroleum imports in 2021, with Saudi Arabia ranking the highest at 40 percent. Similar to India, Japan witnessed a decline in trade in 2020 due to the pandemic but increased the following year significantly. The UAE recently increased its crude oil exports from 24.67 million barrels in February 2022 to 34.11 million barrels in March, representing 38.3 percent of Japan's total oil imports, according to the Japanese Ministry of Economy, Trade, and Industry.In the case of South Korea, the country relies heavily on the Gulf hydrocarbons as the GCC states accounted for roughly 60 percent of Seoul's oil imports in 2020 (see Figure 7). However, imports from the GCC

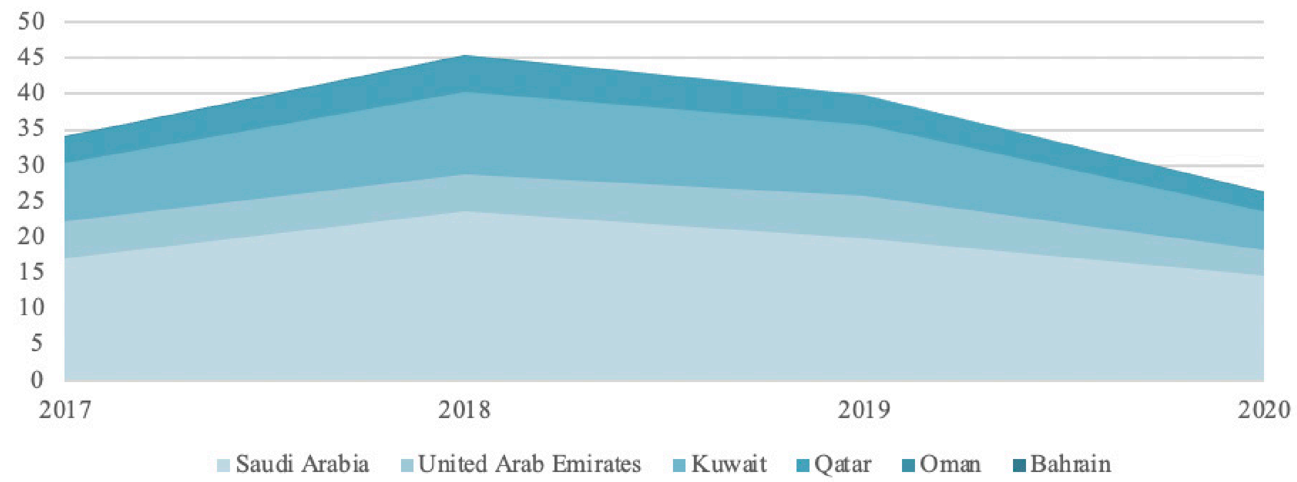
Figure 6: Japan's Petrolium Imports from the GCC (US$ Billion), 2017-2021



Source: UN Comtrade

states have been declining since 2019, hitting a 25-year low in 2021. Although Saudi Arabia was South Korea's largest oil importer in 2021 at 290,248 million barrels, imports decreased 11.3 percent from 2020 (327,058 million barrels) (Vahn, Wang, & Lee, 2022). Kuwait, the UAE, and Qatar ranked third, fifth, and eighth, respectively, also decreased in 2021. Imports from Kuwait decreased by 15.8 percent (110,195 million barrels in 2021 from 130,949 in 2020), the UAE by 26.8 percent (56,809 in 2021 from 77,563 in 2020), and Qatar by 15.3 percent (50,610 in 2021 from 59,735 in 2020). Instead, South Korea raised imports from the Americas, including the US, Mexico, Brazil, and Ecuador (Vahn, Wang, & Lee, 2022).

Figure 7: South Korea's Petrolium Imports from the GCC (US$ Billion), 2017-2021



Source: UN Comtrade

The Role of OPEC and OPEC+

Many argue that despite the growth of US domestic oil and gas production, energy production in the Gulf is still of strategic importance to the US (Feierstein, Saab, and Young, 2022). Saudi Arabia remains a dominant actor in OPEC, which makes up 40 percent of the world's oil supply. According to OPEC Secretary-General Dr. Alvaro Silva Calderón, OPEC's mission is "to ensure price stability in the world oil market; to obtain a stable revenue for oil-producing nations; and to provide a regular, reliable, efficient and economic supply to consuming countries and a fair return to investors in the oil industry" (OPEC).

Recently, OPEC dealt with numerous challenges, such as internal divisions, the rise of the US as a major oil exporter, and the global shift to renewable energy sources (Siripurapu and Chatzky, 2022). One of the ways that OPEC has adapted is by forming OPEC+, which includes Bahrain, Oman, and Russia, to coordinate oil production and stabilize prices. Despite objections from the US, the bloc formalized the OPEC+ coalition in July 2019. The creation of this partnership led to tensions between the US and its allies within the bloc. For instance, the US Senate passed 'The No Oil Producing or Exporting Cartels' (NOPEC) bill that threatened to allow antitrust lawsuits against the bloc (Siripurapu and Chatzky, 2022). President Biden also blamed OPEC+ for the US' record inflation by not increasing production quickly enough to counter the surging oil prices.

The dispute over the role of OPEC+ has come to the forefront with the Russian invasion of Ukraine in February 2022. Previously, oil production fell in early 2020 due to the COVID-19 pandemic reducing oil demand. In addition, Saudi Arabia and Russia clashed during early March 2020 when Russia refused Saudi Arabia's request for OPEC+ members to reduce production (Siripurapu and Chatzky, 2022). After the kingdom announced massive discounts on its selling prices and the price of oil briefly became negative on April 20, 2020, an agreement was reached with Russia on respective production quotas. Since then, the OPEC+ peace has held with all sides claiming satisfaction with the arrangement. However, as energy demand has rebounded as the threat from COVID has lessened, and as energy prices have surged due to fears of Russian energy embargoes, the Gulf producers find themselves under pressure to abandon their production commitments. In the context of US-GCC ties, this issue has become highly politicized.

A key point of contention is to what degree Saudi Arabia, rather than OPEC or OPEC+, remains the swing producer whose production levels are the key to influencing prices and calendar spreads (Kemp, 2019). On January 5, 2021, Saudi Arabia announced that it would cut its production unilaterally by 1 million barrels per day in February and March, which Russian Deputy Prime Minister Alexander Novak called "a New Year's gift" to an energy market still reeling from the pandemic's effects (Dourian, 2021).

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At the same time, Saudi Arabia's Energy Minister Prince Abdulaziz bin Salman warned on numerous occasions that the lack of investments in the oil industry would cause a surge in prices of oil and gas, and not the lack of increased Saudi production. At the 2022 International Petroleum Technology Conference in Riyadh, he stated that "a sharp downturn in oil and gas investment is jeopardizing energy security, as we see today, and I have been warning about it for a few months. And there is a real risk that the world will not be able to produce all the energy it needs to fuel recovery" (Arab News, 2022). Saudi Arabia's Energy Minister Prince Abdulaziz bin Salman explained at the aviation summit in Riyadh that states need to look at energy security, sustainability, and affordability as a whole, stating that "all mobility fuels have skyrocketed ... and the gap between crude prices and these products in some cases is actually 60%" (Reuters, 2022).

Whatever the case might be, the US had called on Saudi Arabia to pump more oil. President Biden's National Security Advisor Jake Sullivan criticized the OPEC+ nations, including Saudi Arabia, saying their production was "simply not enough" (Hunnicutt and Mason, 2021). President Biden also blamed Saudi Arabia for the sharp rise in oil prices. At the G-20 meeting in Rome on Oct. 30 and 31, 2021, he stated that "the idea that Russia and Saudi Arabia and other major producers are not going to pump more oil so people can have gasoline to get to and from work, for example, is not right." (CNBC, 2021).
In response, former Saudi Intelligence chief Prince Turki Al-Faisal asserted on May 2, 2022, that Saudi Arabia should not be blamed for the US' energy price issues. He stated that "when you say that Saudi Arabia has not budged on the issue of the oil problems that America is facing, basically America itself is

the reason for the state that they're in because of their energy policy" (Arab News, 2022). Prince Turki Al-Faisal also explained that OPEC+ members are trying to stabilize the oil market, stating that "the kingdom and the other OPEC members, and the OPEC+ members are sticking to the production quotas that they have assigned themselves.

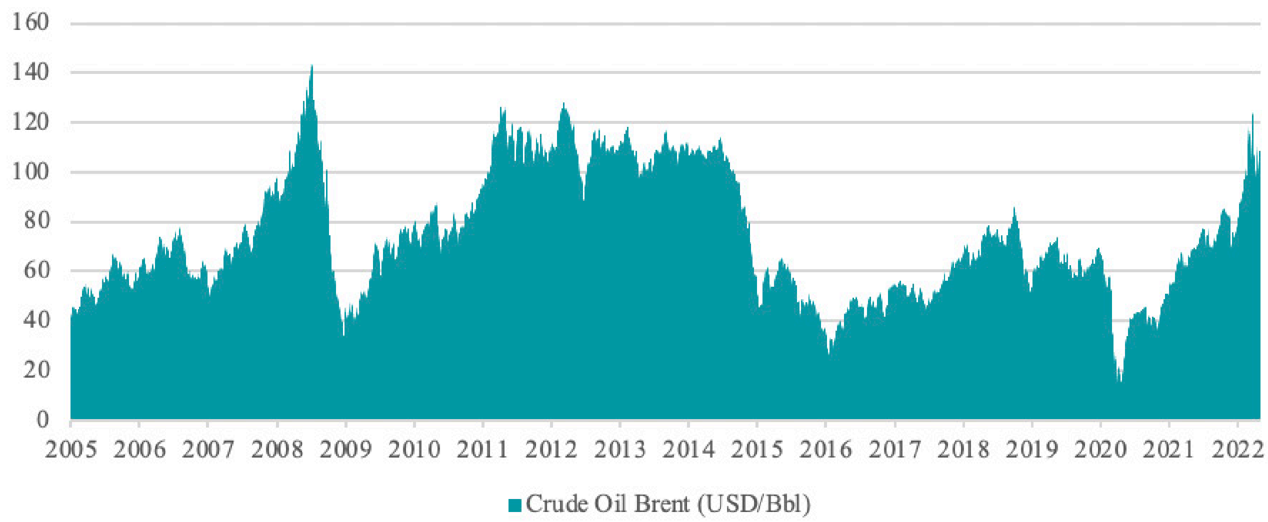
The recent decision by OPEC+ to increase incrementally oil production is in response to the present difficulties that people have in the energy sector" (Arab News, 2022). Saudi Arabia's energy minister brought forward another factor when he stated that the kingdom's ability to ensure energy security is no longer guaranteed as the kingdom and its oil facilities continue to be attacked by the Houthis. "It goes without saying that if this security supply is impacted, it will impact us ... but more fundamentally, I think it also will affect the world economy," yet highlighting that Saudi Arabia "won't bear any responsibility" for any shortages in oil supplies due to the continued attacks (Batrawy, 2022).

Energy has also been a point of tension between the US and the UAE. On March 9, Secretary of State Antony Blinken praised statements from the UAE that the country will increase oil production to offset rising prices following the crisis in Ukraine. However, the UAE quickly denied this claim with the UAE's Energy Minister Suhail al-Mazrouei stating that his country remained committed to the OPEC+ deal and its existing monthly production adjustment system. He tweeted that "the UAE believes in the value OPEC+ brings to the oil market" (Reuters, 2020).

The Impact of the Crisis in Ukraine

The crisis in Ukraine has, in the meantime, underlined the return of hydrocarbons. According to Bruegel, a Brussels- based think tank, 38% of the EU's natural gas alone in 2021 originated from Russia with other countries also dependent on continued supplies from Moscow. Therefore, bans and restrictions on Russian oil have a significant impact globally. As shown in Figure 8, oil prices reached near record highs at almost $130 a barrel on March 7, the highest level for almost fourteen years, after the US announced an import ban on Russian oil and gas and the EU and UK imposed restrictions on hydrocarbon imports (Islam, 2022).

Figure 8: Crude Oil Brent Prices (USD/Bbl), 2005-2022



Source: EIA

US calls for increased production have so far led to minimal results. Instead of allowing the fundamentals of the energy markets to be placed front and center, the US is expecting GCC producers to join in the condemnation of Russia by unilaterally raising their production levels. However, it should be clear that the GCC states, particularly Saudi Arabia and the UAE, do not determine oil prices themselves. Instead, the lack of investment in the oil industry in the past is the critical factor that determines whether production can or cannot be raised significantly enough. Whether an agreement can be found to bridge the current gap remains to be seen. However, what is clear is that energy has joined the list of issues on which the US and GCC have different perspectives.

Trends and Likely Scenarios

With sanctions being imposed on Russia, importing countries, particularly in Europe, will have to seek alternatives. While the EU is primarily looking to the Americas and Africa for a solution, another source lies in the Gulf region. European countries have already initiated talks with Qatar for natural gas supplies as Europe tries to reduce its dependence on Russian supplies. Specifically, Qatar and Germany are looking to sign a contract over liquefied natural gas (LNG), as Germany saw its own supplies through the Nord Stream 2 gas pipeline project come to an end. Additionally, Oman and France have partnered to develop LNG bunkering.

If followed through, new dynamics will allow the GCC states to increase their presence in the European oil market. Already, Saudi Arabia has been steadily increasing its presence in the Polish oil market since 2017, with Saudi Aramco acquiring a 30% stake in the Polish refinery in Gdansk as well as agreeing to supply the Polish company Orlen with an additional supply of 200,000- 337,000 bpd (Kozhanov, 2022). On the other side, Russia will have to redirect its exports away from Europe and, most likely, to Asia, the traditional consumer market of the GCC states (Kozhanov, 2022). Consequently, this could possibly create competition between Gulf and Russian oil, particularly in China.

A big question in the meantime hangs over the immediate impact as far as the climate change issue is concerned. The crisis in Ukraine has caused global oil prices to skyrocket, and consequently, this could provide OPEC+ greater attention and leverage, at least in the short term. However, as the world shifts to cleaner energy sources, the bloc's power could diminish over time (Siripurapu and Chatzky, 2022). In fact, many analysts argue that this exacerbates the switch to cleaner energy and reduces dependency on oil and gas, as countries will balance between short-term energy concerns and the long-term energy transition. It is a debate in which the GCC states also find themselves in the middle of, as the next two COP meetings will be held in the Middle East.

In terms of renewable energy and the green transition, Europe could further emerge as a more important and relevant economic partner than the US. Indeed, in May 2022, Josep Borrel, the High Representative of the Union for Foreign Affairs and Security Policy, announced a Joint Communication on a Strategic Partnership with the Gulf to broaden and deepen the EU's cooperation with the GCC with a particular focus on the green transition. Dr. Nayef Al-Hajraf, the GCC Secretary-General, welcomed the proposal, stating that "the Gulf countries are keen on the strategic partnership with the European side, and are working to strengthen it." He added that the GCC aspires to "seize economic opportunities, trade, and investment cooperation, advance the tracks of free trade negotiations, and enhance coordination and partnership in facing challenges threatening global security and stability."

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All of the above suggests a re-orientation in the traditional oil-for-security US-GCC relationship. That does not mean a sudden end to the ties in place, however. For example, on April 23, 2021, Saudi Arabia and the US, alongside Canada, Norway, and Qatar (collectively representing 40% of global oil and gas production), released a joint statement on establishing a net-zero producers forum between the respective energy ministries. Moreover, on June 16, 2021, Saudi Arabia and the US released a joint statement addressing climate challenge issues. Nevertheless, the trends outlined here indicate a more lasting shift with the ultimate impact drawn out over the medium- to long-term.

Bibliography

Arab News (February 2022). "Lack of Investments in Energy Sector Causing a Price Surge: Saudi Energy Minister." *Arab News.* https://arab.news/z4nnd

Arab News (May 2022). "Saudi Arabia Not to Be Blamed for U.S.'s Rising Energy Costs: Prince Turki Al-Faisal." *Arab News.* https://arab.news/zg5qb

Batrawy, Aya (March 2022). "Saudi Oil Chief Says Energy Security Imperiled by Attacks." *ABC News.* https://abcnews.go.com/International/wireStory/saudi-oil-chief-energy-security-imperiled-attacks-83735393

Brown, Stephen P.A., and Mine K. Yücel, (October 2013). "The Shale Gas and Tight Oil Boom: U.S. States' Economic Gains and Vulnerabilities." *Council on Foreign Relations.* https://www.cfr.org/report/shale-gas-and-tight-oil-boom

Calabrese, John, (May 2021). "Middle East-Asia Pacific Oil Relations: From the Pandemic to Peak Oil." *Middle East Institute.* https://www.mei.edu/publications/middle-east-asia-pacific-oil-relations-pandemic-peak-oil

Carr, Earl, (September 2020). "The U.S., Gulf States & China: Oil, Power, and Geo-Strategic Influence." *Forbes.* https://www.forbes.com/sites/earlcarr/2020/09/25/the-us-gulf-states-and-china-oil-power--geo-strategic-influence/?sh=16e51cfd70d5

Dourian, Kate, (January 2021). "Saudi Arabia Delivers Shock to Market with Surprise Oil Output Cut." *Arab Gulf States Institute in Washington.* https://agsiw.org/saudi-arabia-delivers-shock-to-market-with-surprise-oil-output-cut/

Feierstein, Gerald M., Bilal Y. Saab, and Karen E. Young, (April 2022). "US-Gulf Relations at the Crossroads: Time for a Recalibration." *Middle East Institute.* https://www.mei.edu/publications/us-gulf-relations-crossroads-time-recalibration

Hunnicutt, Trevor, and Jeff Mason, (August 2021). "U.S. Calls on OPEC and Its Allies to Pump More Oil." *Reuters.* https://www.reuters.com/article/us-usa-oil-opec-idCAKBN2FC14X

IEA, (July 2019). "The Role of Gas in Today's Energy Transitions." *IEA.* https://www.iea.org/reports/the-role-of-gas-in-todays-energy-transitions

IRENA. (April 2019). "Global Energy Transformation: A Roadmap to 2050 (2019 Edition)." *IRENA.* https://www.irena.org/publications/2019/Apr/Global-energy-transformation-A-roadmap-to-2050-2019Edition

Islam, Faisal, (March 2022). "Ukraine Conflict: Petrol at Fresh Record as Oil and Gas Prices Soar." *BBC News.* https://www.bbc.com/news/business-60642786

Kozhanov, Nikolay, (March 2022.) "How Will the War in Ukraine Affect Gulf Oil Producers?" Middle East Institute. https://www.mei.edu/publications/how-will-war-ukraine-affect-gulf-oil-producers

Nelson, Steven, (March 2022). "Saudi, UAE Leaders Ignore Biden When He Calls to Talk Gas Prices: Report." *New York Post*. https://nypost.com/2022/03/08/saudi-uae-leaders-ignore-biden-when-he-calls-to-talk-gas-prices-report/

Reuters, (May 2022). "Saudi Energy Minister Blames Lack of Investment for Surge in Fuel Prices." *Reuters*. https://www.reuters.com/article/saudi-energy-idAFL2N2X10HK

Reuters, (November 2020). "UAE Is a Committed Member of OPEC: Energy Minister." *Reuters*. https://www.reuters.com/article/oil-opec-emirates-int/uae-is-a-committed-member-of-opec-energy-minister-idUSKBN27Z1G4

Siripurapu, Anshu, and Andrew Chatzky, (March 2022). "OPEC in a Changing World." *Council on Foreign Relations*. https://www.cfr.org/backgrounder/opec-changing-world

Turak, Natasha, (November 2021). "OPEC+ Agrees to Stick to Oil Production Plan, Defying U.S. Pressure." *CNBC*. https://www.cnbc.com/2021/11/04/opec-agrees-to-stick-to-oil-production-plan-defying-us-pressure.html

Vahn, Gawoon Philip, Fred Wang, and Charles Lee, (January 2022). "South Korea's Dependence on Middle Eastern Crude Hits 25-Year Low in 2021." *S&P Global Commodity Insights*. https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/oil/013122-south-koreas-dependence-on-middle-eastern-crude-hits-25-year-low-in-2021

Wethe, David, (December 2019). "The Shale Revolution." *Bloomberg*. https://www.bloomberg.com/quicktake/fracking


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