

POWER PLAY: EUROPE'S CLIMATE DIPLOMACY IN THE GULF

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SUMMARY

- Gulf monarchies believe hydrocarbons will continue to be a fundamental – albeit shrinking – source of revenues for decades.
- But, as shown by Saudi Arabia's net-zero pledge, they now see economic and political opportunities in embracing the green energy transition.
- If the EU is to achieve its climate and geopolitical goals, it will need to substantially increase its engagement with Gulf states on the European Green Deal.
- Electricity interconnection and green hydrogen are the two most promising fields of clean energy cooperation between the sides.
- Europeans should not cave to international pressure to lower their ambitions on carbon taxation, including the carbon border adjustment mechanism, as this remains a powerful incentive for hydrocarbons producers to make the transition to cleaner energy.

Introduction

When the European Union first presented the European Green Deal in 2019, the monarchies of the Gulf Cooperation Council (GCC) reacted with confusion, scepticism, and a degree of resistance. It was immediately clear to them that the key objective of the deal – to ensure that the EU became climate-neutral by 2050 – would entail an attack on the petrochemical industry and fossil fuels as primary energy sources. But they were not afraid of losing the European market: the EU receives less than 4 per cent of GCC oil and gas exports (while Asia receives, on average, 30 per cent). Instead, they were concerned that the EU's normative push for renewable energy would accelerate the global shift away from fossil fuels, marking a qualitative change from the ambitious rhetoric and insignificant action on climate issues that characterised global trends for decades.

On average, hydrocarbons account for more than 80 per cent of government revenue and around 40 per cent of GDP in GCC states. As such, GCC governments' concerns about the European Green Deal centred on regime survival. They worried that the deal would threaten their rentier social contract – in which the state provides citizens with jobs and social services in exchange for political acquiescence.

With time, however, GCC countries have slowly come to accept that this model will have to change, and to see the European Green Deal as a potential opportunity. With global oil demand declining, preparations for a post-oil era – which they believe will take a few decades to materialise – are slowly becoming a priority for GCC governments. The oil crises of 2014 and 2020, during which prices collapsed dramatically, have reinforced the trend.

In this new environment, the European Green Deal can create channels for constructive cooperation between the EU and GCC countries. Through the agreement, the EU can support its Gulf partners' attempts to diversify their energy mix by expanding their green energy capabilities. This could create opportunities for sustainable economic development – and, in some cases, even contribute to political and economic stability in the Middle East. Equally, if the EU and its member states want to achieve their domestic and international climate goals, they will need to engage with GCC countries – which hold almost one-third of the world's proven crude oil reserves and around one-fifth of natural gas reserves. Indeed, while the per capita emissions in the GCC are quite high, their domestic CO₂ emissions are barely significant (accounting for 2.4 per cent of the global total) relative to those they produce indirectly through oil and gas exports.

The EU should also use cooperation through the European Green Deal to strengthen European influence on the Gulf and partly offset the GCC's growing dependence on China and the rest of Asia as the last major importers of oil and gas. For example, if the EU became an important market for green

energy exports from Gulf countries, as well as their essential partner in the green transition, the bloc would gain a new form of influence – which it could use to revitalise a strategic political dialogue between the sides.

This paper explores how the EU can use the European Green Deal in this way, analysing GCC countries' perspectives on climate issues and their relevant projects and strategies. It assesses Europe's current approach to the GCC on climate issues, highlighting the risks and opportunities it presents. Finally, the paper makes several recommendations for how the EU – and, in some cases, European governments – should support the green transition in the GCC to protect European geopolitical, climate, and economic interests.

GCC countries' attitudes towards the green transition

Countries in the GCC are among those most affected by climate change – even if, given their wealth, they are better positioned than many others in the region to build up their resilience against it. The rising temperatures the Gulf has experienced in recent decades have intensified water scarcity and desertification in the region. On average, GCC states rely on desalination for more than two-thirds of their water needs. A lack of water and an inhospitable climate also affect food security: Qatar, Bahrain, and the United Arab Emirates import 80-90 per cent of their food, Oman approximately 50 per cent, and Kuwait and Saudi Arabia sometimes up to 70 per cent. Food shortages could become a national security issue during a disruption in supply chains such as occurred during the covid-19 pandemic. Rising sea levels could flood aquifers with salt, making groundwater unfit for consumption and causing countries such as Bahrain, the UAE, and Qatar to lose a significant part of their populated and developed coastlines. GCC countries could be hit by environmental disasters of the kind they have recently experienced, such as the Shaheen cyclonic storms Oman endured in October 2021. Growing air and water pollution could continue to aggravate public health issues. And various other environmental challenges could fuel unrest and conflict – as they recently have in many countries in the Middle East and North Africa (including immediate neighbours of the GCC such as Yemen).

These problems have been the grim reality in the region for decades – yet they have elicited only limited policy responses from GCC countries. Their hesitance is linked to their role as some of the world's top producers of fossil fuels, and the fact that revenues from the extraction and export of energy are existentially important to their economies. These revenues' contribution to GDP ranges from 30 per cent in the UAE to around 60 per cent in Saudi Arabia and Qatar; oil and gas rents' contribution to the government budget ranges from 60 per cent in the UAE to up to 90 per cent in Kuwait and Qatar. GCC governments have historically viewed climate policies as a more significant

threat than climate change, as the energy transition posed a direct threat to their economic livelihood and rentier state political economies. Indeed, a fall in the price of hydrocarbons erodes GCC countries' ability to afford the generous welfare systems that are at the core of their ruling bargains, potentially threatening their political stability. This is why GCC states want to continue extracting and exporting hydrocarbons for as long as it makes economic sense to do so – in other words, for as long as there is global demand – while trying to reduce the industry's environmental impact with measures to limit or offset CO₂ emissions.[1]

Accordingly, GCC countries' climate policies focus on adaptation, not mitigation. In international climate negotiations, including those leading up to the Kyoto Protocol and the Paris Agreement, the countries have usually aligned with other emerging economies. This involved tying their climate commitments to developed countries' emissions reductions and support for their energy transitions. GCC states consistently emphasise the low carbon intensity of the hydrocarbons they produce relative to those of all other producers, and the potentially disastrous economic losses that could result from the transition. In 2018 Saudi Arabia and Kuwait joined the United States and Russia in blocking the adoption of a report by the Intergovernmental Panel on Climate Change at COP24 in Katowice, a document that recommended countries phase out the use of fossil fuels by 2050. Indeed, the Climate Action Tracker categorises Saudi Arabia as "critically insufficient" and the UAE as "highly insufficient".

GCC states joined forces at COP24 to push for technologies that, they argue, make the fossil fuel industry more sustainable. Chief among these is carbon capture, utilisation, and storage (CCUS) – which involves trapping carbon emissions at source to hold them underground or to transform them into marketable products. GCC countries treat this as a silver bullet, but scientists fear that such technology cannot permanently avoid leakage.[2] These and other measures to reduce, reuse, remove, or recycle carbon to create a "circular carbon economy" were the centrepiece of Saudi Arabia's 2020 chairmanship of the G20. And they will be key talking points for GCC countries at COP26, held in Glasgow in November 2021. Saudi Arabia, as leader of the Arab group, maintains an ambiguous position on climate. Riyadh insists that the focus should be on improving efficiency and reducing the environmental footprint of conventional fuels.

It will take more than just political pressure to convince these top fossil fuel producers to move beyond the oil and gas industry. Economic arguments will have a much greater impact. Globally, demand for oil has been falling for some time, a trend that will accelerate once the EU and others undertake the green transition in earnest. However, contrary to perceptions in Europe, there is no real sense of urgency in the GCC to invest everything in the transition.[3]

The International Energy Agency's net-zero road map projects that the world will consume as much as 24m barrels of oil a day by mid-century, compared to the roughly 100m barrels a day used in 2019. With some of the lowest production costs in the world, Saudi Arabia and the other Gulf monarchies might even increase their market share in the medium term, as high-cost producers go out of business. Given the lower carbon footprint of its production vis-à-vis other petrostates, Saudi Arabia could face 30 per cent to 50 per cent less in EU carbon tariffs than most of its competitors. The idea that the world will soon reach peak demand for oil has inspired Saudi Arabia to increase its export capacity, aiming to produce as much oil as possible and to seize market share before demand fades away. Saudi Arabia's influential oil minister, Abdulaziz bin Salman, expressed this "last man standing" strategy bluntly in July 2021 when he said: "every hydrocarbon molecule will come out".

But the pandemic significantly accelerated trends towards energy transition. The lockdown many nations implemented had a huge impact on an energy market that was already grappling with decreasing global demand. The pandemic reduced demand for oil in the largest global consumers in Asia, especially China, and in the most fuel-hungry industry, aviation. The result was a collapse in oil prices, which reached their lowest levels in 18 years. This crisis triggered a dual process. Across the GCC, policymakers moved to salvage the hydrocarbons market while finally starting to implement energy diversification strategies they had talked about for decades. Until recently, the costs linked to diversification outweighed the potential benefits, meaning that there was no real economic imperative to seriously engage in the transition. Today, GCC countries recognise that they need to be ready for the next crisis in the hydrocarbons market, and for an era in which green energy provides them with a real opportunity to retain their positions as major energy exporters and support their national diversification strategies.[4]

According to a 2016 report by the International Renewable Energy Agency, an increase in renewable energy capacity of 80GW by 2030 in the GCC region would allow countries there to conserve around 11 trillion litres of water and 400m barrels of oil per year, and to create more than 200,000 jobs. Renewables' economic potential has become clearer with the rapid fall in their prices since the 2010s: it is now possible to generate large amounts of renewable energy at low cost in the many areas of the GCC that lie in the so-called 'sun belt'.

Meanwhile, GCC countries have become aware of the potential political opportunities linked to climate issues. They now acknowledge that there had been a shift in momentum for climate action, especially in the US under the Biden administration, in the EU with the European Green Deal, and in the United Kingdom in the lead-up to COP26. GCC leaders are trying to use this momentum to increase their international prestige and relevance, especially vis-à-vis the US – which is increasingly

willing to relinquish its traditional role as the key security guarantor in the Middle East.[5] This is particularly relevant for Saudi Arabia, one of whose top priorities is to repair the damaged international reputation of Crown Prince Muhammad bin Salman.[6]

Green initiatives in the GCC

GCC countries differ in their levels of commitment to exploring the opportunities of the energy transition. The UAE and Saudi Arabia have been the two most active players in the area, particularly since the onset of the pandemic. Their immediate goal is to use renewable energy for their domestic consumption and thereby free up oil and gas for exports, but their long-term aspiration is to become top exporters of green energy. Oman is traditionally sensitive about environmental preservation, but climate change has been a low-key issue in the country. Nonetheless, Muscat is also moving ahead with plans to export green energy. Bahrain and Kuwait trail other GCC states in this area, only engaging with green policy superficially. Qatar has made larger investments than either of them, but has not fulfilled the international expectations it generated by hosting the 2012 UN Climate Change Conference and pledging to ensure that the 2022 FIFA World Cup is carbon-neutral. And the country continues to champion natural gas over cleaner energy sources.

In 2015 Muhammad bin Zayed, crown prince of Abu Dhabi and the UAE's de facto leader, famously said: "the question is, 50 years from now after we have loaded this last barrel of oil, are we going to feel sad? If our investment today is right, I think ... we will celebrate that moment". Indeed, the UAE has been diversifying its energy mix since the late 2000s, winning a 2009 bid to host the headquarters of the International Renewable Energy Agency. In 2006 the Emirati government established Masdar, a renewable energy company that has provided a vehicle for targeted climate investments. But the government failed in its bid to build the world's first zero-carbon city, Masdar City, by 2016.

In 2017 the UAE launched Energy Strategy 2050, aiming to reduce the carbon footprint of its domestic power generation by 70 per cent. The country set out to increase the share of clean energy in its domestic energy mix from 25 per cent to 50 per cent by 2050. This clean energy comprises renewables (44 per cent), gas (38 per cent), clean coal (12 per cent), and nuclear (6 per cent). Viewing nuclear energy as pivotal, the Emiratis are building a major nuclear power plant in Barakah, whose first reactor came online in August 2021. And the UAE has the highest solar energy capacity in the Middle East and North Africa, thanks to the 5GW Mohammed bin Rashid Al Maktoum Solar Park and the 2GW Al Dhafra Solar Project in Abu Dhabi.

The UAE's green policies have had a political dimension for decades. This is why it is now the GCC state that is best placed to reap the benefits of the international momentum around climate issues.

One of the signature features of EXPO 2020 Dubai is a Sustainability Pavilion – which hosted a high-level event organised by the EU to promote the European Green Deal. This event involved European officials including Hannah Neumann, chair of the European Parliament’s Delegation for Relations with the Arabian Peninsula. The UAE is the first member of the Organization of the Petroleum Exporting Countries to commit to achieving net zero in domestic consumption (which excludes emissions from the fossil fuels it exports) by 2050. The country is pushing to host COP28 in 2023. The UAE has appointed a high-profile official as special envoy for climate change, Sultan Ahmed Al Jaber – who is the minister of industry and advanced technology, head of Abu Dhabi National Oil Company, and founding CEO of Masdar. He took up this first position in November 2020, just after the US created the same role for John Kerry. The UAE claims that it wants to make climate security a priority of its 2022-2023 term at the United Nations Security Council.

In October 2021, Saudi Arabia pledged to achieve net-zero emissions in its domestic production by 2060, and to reduce its carbon emissions by 278m tonnes per year by 2030. The country’s need to make the economy more resilient against fluctuations in commodity prices has prompted Riyadh to sharpen its focus on issues linked to the energy transition, as underscored by Vision 2030.[7] Vision 2030 sets out measures to remove consumer subsidies – an effort that Riyadh intended to promote the sustainable consumption of water and electricity, but that has made little progress since it began in 2016.

On the clean energy front, Riyadh has committed to achieving by 2030 an energy mix that comprises 50 per cent renewables and 50 per cent gas. The aim is to develop 58.7GW of renewable energy capacity. Saudi Arabia is engaged in construction projects that will provide 3.3GW of solar capacity and has built the country’s first wind farm at Dumat al-Jandal – which, with a capacity of 400MW, is the largest in the Middle East and North Africa.

These are significant moves considering that, in mid-2020, Saudi Arabia had a total renewables capacity of only 500MW. As discussed, such initiatives run alongside Saudi Arabia’s efforts to preserve and even strengthen its role as a leading oil exporter. This involves a push to offset and reduce emissions through measures including carbon reuse, removal, and recycling, as part of a circular economy.

In April 2021, Saudi Arabia hired Germany’s Linde Group to build the world’s largest CCUS plant. Saudi Arabia is also betting on nature-based solutions to offset emissions, including two major schemes it announced in March 2021: the Saudi Arabia Green Initiative and the Middle East Green Initiative – which are designed to plant 10 billion trees in Saudi Arabia and 40 billion trees across the region respectively. Riyadh is openly trying to generate political capital – especially for its crown

prince – through these initiatives, as seen in its decision to host a high-level regional summit on climate issues in October 2021, with the goal of emerging as the pivotal Middle Eastern actor for international engagement on the theme.

In Qatar, the government dedicated one section of its National Vision 2030 to environmental development and has established a climate change department within its Ministry of Environment. National Vision 2030 includes a vague commitment to reduce both energy consumption and the nation's carbon footprint. So far, Qatar has invested in trophy projects such as Msheireb – which Qatari leaders say will become “one of the largest sustainable cities in the world” – and in an 800MW solar project in Al Kharsaah, which is its first major solar power plant, designed to meet 10 per cent of its peak power demand.

Nonetheless, Qatar will continue to bet on liquefied natural gas (LNG). The country will simply invest more in CCUS technologies and offsets to cut net emissions, and will rename its main product “Green LNG”. EU policymakers are particularly reluctant to back green LNG because of the lack of mechanisms to monitor its true greenhouse gas and methane emissions. Announcing that state-owned company Qatar Petroleum would be rebranded as Qatar Energy, Energy Minister Saad Al-Kaabi claimed in October 2021 that the country aimed to deploy technologies to capture and hold 9m tonnes of CO₂ per annum by the end of this decade. According to a report by Arab Youth Climate Movement Qatar, the country produced 116.2m tonnes of total greenhouse gas emissions in 2019 – with natural gas responsible for 42.7 per cent of the total.

Doha promotes natural gas as a key transition fuel – one that is cleaner than oil but still usable with existing technology and infrastructure while the world prepares to adopt greener energy sources. Earlier this year, Kaabi said that the country aims to be the world's biggest producer of LNG for at least the next two decades, as Doha intends to expand its LNG production capacity by more than 50 per cent, and to do this so cheaply that the industry will still be economically viable if oil prices fall below \$20 a barrel. Qatar is also looking to expand its LNG exports to Europe, by investing in Belgium, France, and the UK. “Renewables will definitely happen – we're doing a lot ourselves – but you need gas to complement that,” the country's energy minister said. “Gas is sort of in a Catholic marriage with renewables. They would need to stay together for a very long time for you to have the transition successfully.”

Kuwait, Bahrain, and Oman also focus mostly on low-carbon technologies such as carbon capture and storage, as well as energy efficiency. Oman is the most proactive in this group in terms of its climate and green policies, but the financial challenges the country faces prevent it from pushing ahead rapidly with substantive, large-scale green initiatives. The Omani government adopted a national

climate strategy in 2019 but has not made its details public. The same year, Oman announced the launch of some of its first utility-scale renewable energy projects. The state's first such independent solar project, the 500MW Ibri 2, is due to come online by the end of 2021.

Muscat projected that it would cover 30 per cent of its electricity demand with renewable energy projects – and the remainder with gas-fired power plants – by 2030. In 2015 Petroleum Development Oman and US company GlassPoint Solar announced that they had signed an agreement to build a 1GW solar thermal field at Miraah. Oman is even more determined than its neighbours to increase its energy efficiency and minimise domestic consumption, thereby freeing up more hydrocarbon resources for exports and saving on energy subsidies. Muscat would probably invest more in renewables if it had the financial wherewithal to do so.[8] Instead, climate change has become less of a priority for Oman in recent times, as it has prioritised measures to address the economic challenges it faces. In August 2020, Muscat downgraded the Ministry of Environment and Climate Affairs to the Environment Authority, transferring responsibility for climate change affairs to the Directorate General of Meteorology, under the Civil Aviation Authority.

Green policies are even lower on the agenda in Kuwait, which generates two-thirds of its electricity from oil. The country has ignored the opportunity cost of burning fossil fuels at home rather than exporting them, as well as the climate impact of doing so. In July 2020, the Kuwaiti government cancelled Al Dabdaba – a \$1.4 billion, 1.5GW solar plant that formed part of the 3GW Al Shagaya project and that would have been the only major renewable energy facility in the country.

Bahrain has also engaged in few climate initiatives. Manama appointed Mohamed bin Mubarak Bin Daina as a special envoy for climate affairs and chief executive of the Supreme Council for Environment, providing a high-level contact point on these issues. But, under the country's current plans, renewables will only account for 5 per cent of energy consumption – and energy consumption will fall by just 6 per cent – by 2025.

After several decades in which GCC states mostly saw climate policy as an alien concept or an accessory to their international engagements, some of them are starting to shift their perspectives on the issue. While all GCC capitals are still highly aware of the costs of the green transition, several are starting to see the need for this gradual shift – as well as its potential opportunities. However, unless they implement ambitious climate plans, their direct – and, especially, indirect – emissions will continue to grow. This makes it all the more urgent for the EU to persuade Gulf states of the European Green Deal's merits, thereby helping the bloc achieve its climate objectives and increase its influence in the GCC.

The geopolitics of the European Green Deal in the Gulf

Energy has been central to relations between Europe and Gulf monarchies since the advent of the first EU-GCC Cooperation Agreement, in 1988. As Europe became less dependent on hydrocarbons from GCC countries, the energy dialogue between the sides lost some of its momentum. However, it has regained some of this as the EU has gradually become more interested in imports of clean energy. In 2010 the sides launched the Joint Action Programme for Implementation of the EU-GCC Cooperation Agreement. This policy document covered a period of three years and was broad in scope, dealing with sustainable energy, electricity, water security, nuclear safety, transport, and the environment. The document focused on technical cooperation on solar power, waste recycling, carbon capture and storage, the preservation of biodiversity, desertification, water security, and energy efficiency. And they launched INCONET-GCC and INCONET-GCC2 – which covered 2010-2012 and 2014-2017 respectively – to support inter-regional dialogue on scientific research and innovation in areas including climate change. This led to the establishment in 2010 of the EU-GCC Clean Energy Network, which has a permanent office in Abu Dhabi. The network, involving various stakeholders and experts across the EU and the GCC, is designed to develop substantive joint activities – including research – in clean energy, CCUS, and energy efficiency, connectivity, policy, and technology.

These frameworks have helped European companies participate in renewable energy projects across the GCC, in which European technology has consistently played a key role. European firms have cooperated with the UAE on the Masdar project since it began. And Masdar subsequently started joint ventures with its counterparts in Europe, such as Spain's SENER. In 2010 Qatar Science and Technology Park and Germany's Fraunhofer Institute began work on a joint research project on the solar thermal production of hydrogen from methane. Two years later, Swiss investment fund Terra Nex and German company Middle East Best Select invested \$2 billion in Oman's solar power industry. These forms of private-public cooperation have continued in recent years. For instance, the European Commission approved in July 2021 the latest joint venture between a GCC company and European firms: a project to build a solar power plant in Greece involving Masdar, Finland's Taaleri Energia, and Greek firms Kyoto SA and Autohellas Tourist and Trading.

Electricity is another potentially important field of EU-GCC cooperation. The dialogue on this is already quite advanced, as a result of discussions between producers, transmissions system operators, distributors, and their associations. In 2001 the members of the GCC developed an interconnected transmission grid, managed by the Gulf Cooperation Council Interconnection Authority (GCCIA), to operationalise cross-border power exchange and trade. This GCC grid is projected to reduce electricity

system losses and thereby save up to \$1 billion per year. However, despite its potential, the grid currently has a low capacity and is underused. There has been limited collaboration between the European Network of Transmission System Operators for Electricity (ENTSO-E) and the GCCIA on common rules, adequacy assessments, and grid planning. Between 2018 and 2019, the GCCIA signed one memorandum of understanding with Jordan and Egypt, and another with Ethiopia, to link these countries' power grids to Europe's – via organisations such as ENTSO-E. There are concrete plans to link up the GCC Interconnection Authority electricity grid to the EU electricity grid via Egypt, as a follow-up to the Saudi-Egypt deal inked in October 2021 and a bid won by Sweden's Hitachi ABB Power Grids.

Despite their long-running energy dialogue, Europe and Gulf monarchies have not discussed the European Green Deal in sufficient depth.^[9] The EU is still working to develop a strategy for the external dimension of the deal, but it does not appear to have devoted much attention to Gulf countries in this process. The European Commission has sometimes engaged with Saudi Arabia under the Strategic Partnerships for the Implementation of the Paris Agreement, and has launched training initiatives through the International Renewable Energy Agency and the EU-GCC Clean Energy Network. But the Commission should intensify these activities and draw more GCC states into them. While the EU Delegation to Abu Dhabi has been particularly active in public diplomacy, this activity would be more effective if it was expanded and extended with a dedicated facility or, at least, a dedicated delegate. The EU could do so through Mission Innovation, a platform it has developed to bring together governments, public authorities, corporations, investors, and academics. So far, Saudi Arabia and the UAE are the only GCC members of this initiative.

Given that GCC countries are top oil and gas producers, the EU cannot ignore them if it is to achieve its objectives under the European Green Deal. These states could become key exporters of cheap clean energy to Europe. GCC countries initially reacted to the European Green Deal by expressing concern that the push for net zero and mechanisms such as the proposed carbon border adjustment mechanism (CBAM) would have negative effects on the hydrocarbons industry, which is vital to their economic survival. However, they are now more inclined to consider the opportunities offered by the green transition. The EU could use this new enthusiasm to transform its relations with GCC countries, going from being a secondary player – judged by its political and security clout – to a primary one. The bloc could do so by facilitating economic diversification in the region, which would help stabilise it. By becoming the GCC's major partner in the green transition, the EU could strengthen its influence in the region and thereby partly offset Gulf countries' growing dependence on China and the rest of Asia. This should be part not of a zero-sum strategy to push China out of the Middle East – which, for political and security reasons, would be difficult to achieve – but rather of an effort to provide Gulf

monarchies with viable alternatives to dealing with Beijing.

Political relations between Gulf monarchies and Europe (especially the EU) have been weak in the past few years, mainly as a consequence of sharp differences over regional policy issues such as the war in Yemen and GCC countries' abysmal human rights records. But intense cooperation on the economic and energy transition could reverse this trend. European leaders should now work closely with their GCC counterparts on green energy as a means to achieve global climate goals, strengthen their regional influence, protect Europe's core geopolitical and geo-economic interests, and create a high-profile platform for engagement tout court.

Green hydrogen

Hydrogen is the most promising field of EU-GCC clean energy cooperation. The EU's high representative for foreign affairs and security policy, Josep Borrell, highlighted this as a key theme of his October 2021 visit to the Gulf. Although there was widespread optimism about its potential in the 1980s and early 2000s, hydrogen has only recently become a commercially viable source of power. This is due to the availability of cheap renewable energy. Experts believe that electricity and hydrogen will be equally vital to making the huge emissions reductions required between 2030 and 2050 to achieve climate neutrality. Electrification will do much of the heavy lifting to reduce emissions but cannot guarantee decarbonisation by itself. If hydrogen can meet 24 per cent of the world's final energy demand by 2050, this would be enough to limit global warming to 1.5°C above pre-industrial levels. Yet that goal remains very ambitious.

Green hydrogen – which is produced by using zero-carbon electricity to split water into hydrogen and oxygen, and whose only byproduct is clean water – currently makes up less than 1 per cent of global hydrogen production. The majority is grey hydrogen, created using fossil fuels in processes that emit around 830m tonnes of carbon annually, equivalent to the emissions of the UK and Indonesia combined. Blue hydrogen is a cleaner version of this, as its production involves the capture and storage of emissions, but is still gas-based.

For these reasons, the EU is interested in blue hydrogen only as a transition fuel but regards green hydrogen as strategically important. European countries such as Germany, Italy, Spain, the UK, and France published hydrogen strategies between 2020 and 2021, identifying the fuel as key to their energy transitions. The applications for hydrogen they envision include industrial manufacturing and mobility, especially in areas where electrification is difficult, such as aviation and maritime transport. In the long term, green hydrogen can become the “Swiss Army knife” of energy – used for heating, the production of synthetic fuels, and more. Green hydrogen is currently much more expensive than the

grey and blue alternatives – partly because of the huge amounts of energy required in its production – but it is projected to be cost-competitive with both of them by 2030.

Last year, the EU published a hydrogen strategy that has the overly ambitious goal of producing up to 10m tonnes of the fuel per year in Europe by 2030. Experts believe that, while this goal is achievable in theory, the EU will require more time and exponentially larger investments than it currently plans to gain self-sufficiency in hydrogen and also reach net zero by 2050.^[10] It is unclear whether there is enough physical space in Europe to install the massive amounts of renewable energy infrastructure the effort would require, as the EU would need to produce 4,000GW of solar and 1,300GW of wind energy annually – more than four times the amount it currently generates.^[11]

Therefore, the safest option would be for the EU to rely on imports of hydrogen. Due to technical constraints, these imports should come from states in the bloc's neighbourhood. The European Commission is currently considering North African countries as potential suppliers, as developing hydrogen capacity in these states could also foster economic development there and reduce migration flows to Europe. However, it would take a long time and substantial investment to develop large-scale hydrogen capacity in these countries, as most of them have underdeveloped infrastructure and technological capabilities. While Europeans should not abandon this strategy, they should recognise that it would be quicker and easier to import hydrogen from Gulf states, while supporting North African countries' development as energy transit hubs. Indeed, regardless of whether companies transport hydrogen via pipelines or tankers, there are technical and commercial reasons why they need to use intermediate hubs between the Gulf and Europe.

Gulf countries such as Saudi Arabia, the UAE, and Oman are increasingly interested in securing a prime spot in the international hydrogen market, which is expected to be worth around \$11 trillion in 30 years, according to Bloomberg New Energy Finance. These countries have significant potential to do so. Production can be markedly cheaper in GCC countries compared to other states, as they have greater access to solar energy than any other region of the world. For instance, Saudi Arabia's 2GW project in NEOM – a planned megacity near the borders of Egypt and Jordan – aims to produce green hydrogen at between \$1.5 and \$1.95 per kilogramme, whereas the EU generally estimates that domestically produced hydrogen will cost between \$3 and \$6 per kilogramme.

According to a 2021 report by the MENA Hydrogen Alliance, the fuel could create up to 1m new jobs (directly and indirectly) and could generate \$200 billion in annual revenues by 2050. This would be tremendously valuable for GCC states that see job creation as an existential challenge to their stability, including Oman and Saudi Arabia. And the hydrogen industry's potential use of some existing infrastructure – such as port facilities, LNG export and import terminals, gas pipelines, salt domes for

storage – could rescue oil and gas firms that are cut out of traditional renewables markets and at risk of collapse. Indeed, established energy firms could support this transition. Gulf states increasingly see green hydrogen as a viable way to decarbonise segments of the domestic transport sector – the third-largest source of emissions in the GCC – and their energy value chains.

Saudi Arabia is working on its hydrogen capacity, aiming to make 29m tonnes of blue and green hydrogen annually by 2030. Riyadh believes that the country has the skills, infrastructure, and resources to produce blue and green hydrogen on a large scale. Saudi Arabia aims to operationalise its first green hydrogen plant, in NEOM, by 2025. The plant will require 4GW of wind and solar power. Jubail and Yanbu are developing dedicated hydrogen pipeline networks in their industrial district.

The US sees the potential of the Saudi hydrogen industry, as Kerry has said. So does Germany, which signed in 2021 a memorandum of understanding with Saudi Arabia to “promote bilateral cooperation for the production, processing, application, and transport of clean hydrogen”. The aim of this agreement is to encourage cooperation between research institutes and public and private entities, share know-how and transfer technology, implement projects, and establish a bilateral hydrogen fund. Frans Timmermans, the European Commission’s executive vice-president for the European Green Deal, initiated an exploratory dialogue with Abdulaziz bin Salman at the 2021 International Energy Forum about the possibility of a hydrogen pipeline to the EU. Saudi Arabia is also interested in working on cross-border projects within the GCC, including by replicating EU mechanisms in the Projects of Common Interest.

The UAE sees hydrogen as a competitive business in which it should establish an early-mover advantage. The idea is to develop blue and green hydrogen, to create balance and allow for a steady supply. But the Supreme Council for Financial and Economic Affairs, which is in charge of Abu Dhabi’s energy policy, notes that the EU’s preference for green hydrogen under the European Green Deal makes the latter especially valuable.

Earlier this year, the UAE established the largest hydrogen plant in the Middle East and North Africa, a joint initiative between Siemens Energy, Dubai Electricity and Water Authority, and Expo 2020 Dubai. The country is now building its first dedicated hydrogen export terminal in Fujairah. The Emirates Nuclear Energy Corporation has signed an initial agreement with French company EDF for research and development in nuclear energy, including that for the production of green hydrogen. The UAE's Mubadala Investment Company is working on options for hydrogen pipelines with Italian energy infrastructure operator Snam. Meanwhile, the Emirati-German Energy Partnership has been developing public-private partnerships since 2017. And Mubadala has signed a memorandum of understanding with Siemens for joint investment in the development of green hydrogen technology.

Generally, the Emiratis believe that public and private international partnerships will be essential to develop opportunities provided by hydrogen. They are keen to expand their current dialogue with the EU, its member states, and European firms in the area. And the EU Delegation to Abu Dhabi has seized on this interest to organise several exchanges with its Emirati interlocutors in forums such as an EU Hydrogen Online Forum in the UAE in 2020 – which involved discussions about technical cooperation and trade between Suhail al-Mazroui, Emirati minister for energy and infrastructure, and Kadri Simson, EU commissioner for energy.

Oman is also trying to enter the green hydrogen market. The country's Ministry of Energy and Minerals is establishing a national hydrogen alliance named Hy-Fly, which includes European-linked entities such as British Petroleum Oman, Oman Shell, Total Energies Oman, and the German University of Technology in Oman. Oman is drafting a hydrogen strategy and preparing to host the Green Hydrogen Summit in November 2021. Omani energy company OQ has formed a consortium with the Hong Kong-based InterContinental Energy and Kuwait's EnerTech to build Hyport Duqm Green Hydrogen, a mega-project able to generate up to 25GW of renewable solar and wind energy, 1.8m tonnes of green hydrogen, and 10m tonnes of green ammonia each year. The project, which is designed to help decarbonise Oman's industrial areas and export green hydrogen to Europe, will be located in a special economic zone at Duqm, a strategically important area for the Omani government. Belgian firm DEME is involved in the construction of an electrolyser facility at Duqm to use solar energy to make green hydrogen or green ammonia, while German company Uniper is likely to provide engineering services to the project. Construction on Hyport Duqm Green Hydrogen is scheduled to start in 2028. And the project should reach full capacity by 2038. But the consortium is still working to finalise funding for the initiative.

These futuristic projects present several risks and challenges. The production of green hydrogen still faces technological barriers related to costs, technical efficiency, and capacity. States will need to

account for carbon emissions in the process as a whole, including those in water desalination, and to develop international standards for carbon accounting, as well as common protocols for hydrogen production. They will need to create new hydrogen infrastructure such as fuelling systems, pipelines, port upgrades, and ammonia and methanol synthesis and shipping systems. Governments can overcome these challenges with time and resources, but the most important factor in the development of the green hydrogen market will be the product's commercial viability. The EU and its member states will need to provide substantial policy support and investment to the development of a commercial market, and to give producers the assurance of an acceptable risk-adjusted return on investment.

Europeans should align these investments with their geopolitical goals. To avoid creating new patterns of energy dependency, they should simultaneously diversify their energy supplies and develop a European green hydrogen capacity. And this diversification should account for the risk that the shift to green energy could deepen intra-regional rivalries through competition for market share. As such competition could disrupt energy supply chains and connectivity, Europe should ensure that it has a say on the restructuring of energy infrastructure in the Middle East, including pipelines, port terminals, and electricity grids. The issues Europe needs to address are: whether to repurpose the EastMed Pipeline for hydrogen (rather than gas) and to grant Turkey a role in the project; how to diversify away from Egypt as the single key transit hub for pipelines, grids, and shipping to other North African countries; whether to build pipelines and grids that cross Jordan and Israel or Iraq and Turkey; and how to deal with maritime security around the Strait of Hormuz and Bab al-Mandab.

The development of the hydrogen economy will be a massive undertaking: given the current technological and infrastructural constraints, Europe's most viable option is to look to the Middle East and North Africa and vice versa. China is increasingly exploring the potential of hydrogen fuel, but mostly of the blue and grey types. The country is interested in becoming a major hydrogen producer, and exported some of the fuel to neighbouring states in 2019. China has imported blue and grey hydrogen in small quantities from Qatar and much larger quantities from Singapore and France. But it has not supported the energy transition in the Gulf. The US is in a similar position. In 2019 the country exported significantly more hydrogen than China. And it is looking to develop its own production capabilities and those elsewhere in the Americas. But, like China, the US has not followed Europe in developing large-scale projects for hydrogen consumption, and has more limited ambitions in the area.

All this makes Europe the only credible hydrogen market from a GCC perspective. And, for the time being, GCC states view European technology as the global leader in alternative energy development – even over its American, Chinese, and Israeli competitors.[12] The EU should make the most of this

first-mover advantage to gain leverage over GCC states. In doing so, the EU should try to fill the vacuum created by US retrenchment from the region – at least in the domains where it can benefit from doing so. This should partly offset GCC states’ growing dependence on China and the rest of Asia, preventing their Gulf leaders from looking only to the east.

Recommendations

Like other major fossil fuels producers, GCC states should receive a great deal of attention from the EU as it positions itself as a green champion. These countries are not only leading voices in the global oil and gas market, especially through Saudi Arabia, but also have great potential to accelerate the green transition. By developing a strategy to adapt its foreign policy to the European Green Deal, the EU can advance its climate, economic, and geopolitical interests in the Gulf. Credibility will be key to this across the board. Europeans will need to lead by example, ensuring that the green transition is a tangible reality at home to show others the opportunities it presents. They should do so in four main ways:

Link the European Green Deal to a narrative on driving change

Europeans should use public diplomacy to dispel GCC countries’ most dangerous misconceptions about the European Green Deal. The agreement’s net-zero objective is easy to understand, but one cannot say the same of the scope of its implementation strategy – which could address GCC priorities such as food and water security. As Gulf states often view the deal as an instrument for green taxation rather than green growth, Europeans should replicate public diplomacy campaigns such as those the EU has initiated on biodiversity, single-use plastic, and air quality – and should involve local civil society groups in these efforts.

Where a narrative focused on climate degradation and disasters would fail, one that emphasised the mutual benefits of a sustainable recovery could succeed. The EU should encourage GCC countries to think of themselves as drivers of green development, not losers trying to survive the transition. This messaging should also draw on GCC policymakers’ desire to use the international momentum around climate issues to burnish their countries’ reputations.

Promote the CBAM as a financial product

Europeans should transform their engagement with GCC states on carbon pricing by promoting the CBAM’s potential to become a financial product. This is an approach that GCC countries are comfortable navigating and that would fit with their previous and current action on carbon emissions

trading and the circular carbon economy.

The Public Investment Fund – Saudi Arabia’s sovereign wealth fund – and the Saudi bourse, Tadawul, announced in September 2021 that they would set up the Riyadh Voluntary Exchange Platform, to provide carbon offsets and credits to other countries in the region. The European Commission should support this initiative by helping Saudi Arabia build up its technical capacity to create a carbon pricing framework. This could even prove beneficial for GCC countries, where industries such as ammonia and steel have relatively low carbon leakage – and where detailed carbon pricing could be a more convenient basis for taxation than standard emissions metrics.

Still, the EU should not cave to international pressure to lower its ambitions on carbon taxation, including the CBAM. According to a 2017 [report](#) by the High-Level Commission on Carbon Prices, states will need to charge between \$50 and \$100 per tonne of CO₂ by 2030 if they are to cost-effectively reduce CO₂ emissions enough to meet the Paris Agreement’s temperature targets. This means that the carbon price under the Emissions Trading System, which topped \$60 per tonne of CO₂ in the second quarter of 2021, is still at the cheaper end of the scale. If producers such as Kuwait and Qatar remain excessively reliant on hydrocarbons and fail to align with the Paris Agreement, the carbon price should incentivise them to either move towards green energy or increase their investment in CCUS technologies.

Partner with GCC countries to increase green investment

According to the [International Energy Agency](#), the push to reach net zero by 2050 will require global energy investment to rise to at least \$5 trillion and stay there. This is double its current amount and five times that pledged by the EU under the European Green Deal. With their liquid economies and expertise in complex financial markets, GCC countries should be natural partners for Europe as it increases its green investments. The Public Investment Fund announced in September 2021 that it wanted to become the world’s first sovereign wealth fund to issue green bonds, working on a framework with investment giant BlackRock. And environmental, social, and governance principles are quickly rising to the top of the agenda in the other GCC states.

Europeans should use the EU-GCC Dialogue on Trade and Investment, launched in May 2017, to discuss a common environmental, social, and governance framework; develop incentives for a joint preferential green investment area; and propose guidelines for joint green investments in North Africa. This dialogue should involve the private sector and financial institutions such as the Islamic Development Bank, the European Investment Bank, and the European Bank for Reconstruction and Development – which will be key to accelerating the implementation of proposals.

Invest in green hydrogen

As discussed, green hydrogen could be crucial to the EU's efforts to achieve net zero and GCC countries' push to reduce their dependency on oil and gas exports. The fact that green hydrogen's only byproduct is clean water is potentially important to water-insecure Middle Eastern countries, and has significant political value in a Europe trying to reach net zero by 2050. Nonetheless, the development of green hydrogen will require large-scale investment; a substantial upgrade of energy infrastructure; and the construction of new infrastructure – including hydrogen-ready pipelines, a refuelling network in ports and import terminals, and renewable energy parks fitted with electrolyzers. Saudi Arabia, the UAE, and even Oman are well placed to complete these tasks more quickly than other major energy producers, but will only do so if they are confident that there will be a market for green hydrogen.

Therefore, Europeans need to send a strong signal to the GCC that they will import large quantities of green hydrogen within a certain timeframe. To do so, they should abandon their scattered bilateral approach to the issue and develop a message that is consistent across the EU. And European states should invest in their hydrogen infrastructure. The most useful framework for this could be 'Team Europe' – which brings under one umbrella efforts by the EU, its member states, and institutions such as the European Investment Bank and the European Bank for Reconstruction and Development. The EU should build on Germany's memorandum of understanding with Saudi Arabia, and extend it to the UAE and Oman.

The EU should engage with GCC countries as favoured partners on green hydrogen, cooperating with them in all stages of the value chain – especially storage capacity, transport technology, technology transfer, and certification schemes. The bloc can accomplish this through the International Renewable Energy Agency's Collaborative Framework on Green Hydrogen, which the European Commission currently co-chairs.

These steps would make the EU a key export market for the GCC once again – which the bloc could use as a new source of leverage over Gulf monarchies. The EU could gain influence over the GCC

strategy for developing energy infrastructure that links the Gulf to Europe. Europeans should try to push for intra-regional connectivity: this could reduce geopolitical risk via diversification and link a decrease in tensions to economic gains.

Europeans should avoid energy dependency on the Gulf – and the leverage this would provide the GCC – by bearing in mind the need for diversification and long-term self-sufficiency. In this context, infrastructure running between Iraq and Turkey could provide an alternative route to the Suez Canal. And, if Saudi Arabia normalises its ties with Israel, this could provide another alternative route. Europeans should dust off their plans for the EastMed Pipeline, adapt it for hydrogen, and involve more countries in the project. And they should increase their efforts to provide maritime security at chokepoints in the Strait of Hormuz and Bab al-Mandab.

Conclusion

The development of the external dimension of the European Green Deal is critical to Europe's future as a global power. Targeted cooperation on the agreement could be fundamentally important to economies in the Gulf. To be sure, Europe should continue to emphasise regional instability and human rights in its dialogue with GCC states – rather than allow these issues to fall by the wayside as it tries to persuade them to participate in the green transition. But the EU and its member states should put the European Green Deal at the centre of their engagement with the Gulf. This could allow them to amplify their influence on Gulf monarchies as the US disengages from the Middle East and China moves in.

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[1] Author's interviews with senior officials in Saudi Arabia's Energy Ministry, Abu Dhabi National Oil Company, and Qatar Petroleum, August 2021.

[2] Author's interview with European energy experts.

[3] Author's interviews with senior officials in Saudi Arabia's Energy Ministry, Abu Dhabi National Oil Company, and Qatar Petroleum, August 2021.

[4] Author's interview with a Saudi-based senior international climate expert, September 2021.

[5] Author's interview with a climate expert and advocate based in Qatar, September 2021.

[6] Author's interview with a high-level Saudi Foreign Ministry official, August 2021.

[7] Author's interview with a senior energy and climate expert in Saudi Arabia, August 2021.

[8] All experts interviewed by the author agreed on this, including Frank Wouters, director of the EU-GCC Clean Energy Network, interviewed in September 2021.

[9] Author's interviews with a senior European diplomat posted in the region and a senior energy official working at the European Commission, September 2021.

[10] Author's interviews with several European climate and energy experts, September 2021.

[11] Author's interview with Frank Wouters, director of the EU-GCC Clean Energy Network, September 2021.

[12] Author's interviews with senior officials in Saudi Arabia's Energy Ministry, Abu Dhabi National Oil Company, and Qatar Petroleum, August 2021.

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