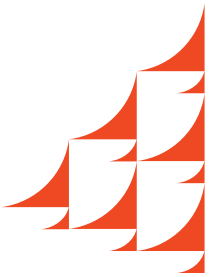
The Arab Gulf States Institute in Washington

Building bridges of understanding

Gulf States' Climate Change Policies Amid a Global Pandemic

Mari Luomi



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About the Author

Mari Luomi is a policy-oriented social scientist, best known for her work on climate change policy in the Gulf. In her other core area of expertise, global climate governance, she has a decade of hands-on experience having participated in United Nations climate change negotiations in various capacities, including capacity development and reporting. She has worked for leading sustainable development and foreign policy research institutions, including the Oxford Institute for Energy Studies, International Institute for Sustainable Development, Georgetown University, and Finnish Institute of International Affairs. She also established and led a research program at the Emirates Diplomatic Academy on energy, climate change, and sustainable development. Luomi holds a PhD in Middle Eastern studies from Durham University and an MSSc in international politics from the University of Helsinki.

Executive Summary

Gulf Arab states' climate change policies and responses have evolved since the adoption of the 2015 Paris Agreement on climate change, and the coronavirus pandemic has raised questions as to what the implications will be on climate change agendas. This paper provides an updated account of six Gulf Arab states' climate change policies and their evolution over the past two decades through the end of 2019. It examines the immediate related impacts of the coronavirus pandemic and identifies the main external and internal factors that are likely to determine the direction of climate change policies and actions going forward, as the Gulf recovers from the economic devastation caused by the pandemic's countermeasures.

- The Gulf Arab states have always had a challenging relationship with climate change. The growing pressure to decarbonize the global energy system is a challenge for, and a further reason to decrease, hydrocarbon reliance. The six countries have worked to address climate change in varying degrees of depth and breadth, reflecting the diversity of their political economies and broader policy priorities.
- Climate change policy planning in the region has been largely driven by international reporting obligations and carbon monetization opportunities. Therefore, the Gulf countries' international-level climate change policies have been characterized by an absence of strong domestic strategies.
- Since the 2010s, the Gulf countries have found a way to present their domestic actions in an international context that is acceptable to them, which emphasizes their special circumstances as countries highly dependent on the exportation of fossil fuels. This has consisted of framing climate action as something to be streamlined with economic diversification plans and subject to their success.
- An evaluation of Gulf countries' existing climate change-related plans reveals growing activity around exploring mitigation co-benefits in energy efficiency and demand-side management, renewable electricity generation, carbon capture and storage, water management, urban planning, agriculture, and marine conservation. Some governments continue to place a heavy emphasis on the negative consequences of international climate change response measures.
- The coronavirus pandemic has had well-documented, deep impacts on social and economic activity worldwide. Based on initial estimates and proxy indicators, the Gulf states are likely to see temporary reductions in greenhouse gas emissions.
- As elsewhere, the region's emissions will rebound as economies recover in the absence of targeted reduction measures. To achieve a permanent peak and fall, they must be addressed at the source. A return to past global emission trajectories would signify catastrophic levels of warming of more than 3 degrees Celsius. Government economic stimulus packages and recovery policies therefore have a historic and significant role in deciding humanity's future trajectory: more unsustainable incrementalism or a transformative shift.

- Renewable energy has thus far withstood the pandemic well. Renewable electricity capacity expansions remain the area where most climate change policy developments can be expected in the near future in the Gulf Arab states. The United Arab Emirates and Saudi Arabia have several gigawatts of renewable capacity in the project pipeline and are set to lead.
- The region's governments have so far remained silent on whether or how economic recovery policies and accelerated climate action could be combined. Choices made now will leave a lasting legacy for the economic future of the Gulf Arab countries but also the region's emissions.
- Deciding to incorporate climate change considerations as an integral element in coronavirus economic recovery strategies and expanding the scope of climate change policy beyond the co-benefits of economic diversification and adaptation would help set the Gulf Arab countries on more sustainable, low-emission, and climate-resilient trajectories.

Introduction

In the past decade, climate change has rapidly moved from a back-of-the-mind issue[1] to front and center of the global agenda, particularly in the field of energy. For the Gulf Arab states,[2] the growing pressure to decarbonize the global energy system is a challenge for, and a further reason to decrease, their hydrocarbon reliance. The Gulf Arab states' have always had a challenging relationship with climate change.

Over the past two decades, the Gulf countries have expanded their understanding of the various negative effects of climate change on the region – including on agriculture, food and water security, infrastructure resilience, public health, and the environment.[3] The geographic and economic similarities of these countries make these impacts similar in many cases. However, reflecting the relative diversity of their political economies and broader policy priorities, the Gulf states have worked to address climate change in varying degrees of depth

1 See: Anthony Giddens, *The Politics of Climate Change* (Cambridge: Polity Press), 2009.

2 This paper focuses on the six member states of the Gulf Cooperation Council. In the paper, the terms "Gulf countries," "Gulf Arab countries," "Gulf states," and "Gulf Arab states" are used synonymously to refer to these six countries, including to differentiate between the GCC as an institution versus the geographical Gulf location.

3 The direct and indirect impacts of climate change on the region have received growing attention in scientific/technical and analytical literature. Examples of the former include reports by the United Nations Economic and Social Commission for Western Asia's Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR) project, the Abu Dhabi Global Environmental Data Initiative, the Arab Forum for Environment and Development, and the World Bank.

and breadth. Understanding the similarities and differences in these approaches is important for identifying the additional scale and type of ambition needed in each country. So far, however, these nuances have not been studied extensively.[4]

The 2020 coronavirus pandemic has introduced a significant factor of uncertainty into policymaking worldwide. For climate change policy, it is a major potential accelerator and disruptor. Globally, the initial lockdowns and the subsequent economic slowdowns have led to decreases in greenhouse gas (GHG) emissions and have prompted calls for a renewed emphasis to reduce emissions boldly and consistently. However, the pandemic has also pushed climate change down on the international agenda. The health response and efforts to bring economies back to their pre-pandemic state have dominated the discourse on many national agendas. This applies to the Gulf Arab countries as well: By August, these governments had remained silent on whether or how economic recovery policies and accelerated climate action could be combined. Choices made now will leave a lasting legacy for the economic future of the Gulf Arab states and the region's emissions. Could the pandemic pave the way for more ambitious policies?

The health response and efforts to bring economies back to their pre-pandemic state have dominated the discourse on many national agendas.

This paper provides a compact analysis of the six Gulf Cooperation Council member states' climate change policies through the start of 2020. It also examines the immediate interactions of the pandemic with this policy area and identifies emerging trends and proposes significant policy choices.

The Gulf Arab Countries' Climate Change Policies – A Brief Analytical History

Through the 2000s and 2010s, climate change transitioned from a marginal topic occupying a small group of technical experts to an issue in its own right on the Gulf Arab countries' policy agendas. While not reaching the status of a defining issue, as it has for small island states or the European Union, climate change has gained increasing attention in the Gulf region over the past decade.

4 Mari Luomi, *The Gulf Monarchies and Climate Change: Abu Dhabi and Qatar in an Era of Natural Unsustainability* (London and Oxford: Hurst and Oxford University Press, 2012 and 2014) was a first major effort in this regard. More recent studies examining Gulf Arab climate change policies include: Mari Luomi, "Mainstreaming Climate Policy in the Gulf Cooperation Council States," *Oxford Institute for Energy Studies*, February 2014; Aisha Al-Sarihi, "Climate Change and Economic Diversification in Saudi Arabia: Integrity, Challenges, and Opportunities," *Arab Gulf States Institute in Washington*, March 20, 2019; Jim Krane, "Energy Governance in Saudi Arabia: An Assessment of the Kingdom's Resources, Policies, and Climate Approach," *Rice University's Baker Institute for Public Policy*, January 2019; Aisha Al-Sarihi and Michael Mason, "Challenges and Opportunities for Climate Policy Integration in Oil-Producing Countries: The Case of the UAE and Oman," *Climate Policy* (2020); and Mari Luomi, "Climate Change Policy in the Arab Region," in *Low Carbon Energy in the Middle East and North Africa*, ed. Robin Mills and Li-Chen Sim (London: Palgrave, forthcoming 2020).

Variation in Style and Depth of Engagement

There are marked differences in the level of engagement by the Gulf Arab governments with climate change. On the one end of the spectrum is the United Arab Emirates, which already in the late 2000s wove climate change into the narratives of its state-owned clean energy company, Masdar, and its successful bid to host the International Renewable Energy Agency headquarters. It has since actively built a reputation as the region's clean energy champion and hosts one of the world's largest solar plants.

In the middle is Saudi Arabia, which has always had an ambivalent relationship with the issue: On one hand, it has earned a notorious reputation in United Nations climate change negotiations, accused of seeking to obstruct progress and water down ambition. On the other hand, since the early 2010s, it has floated ambitious renewable energy targets and created high expectations among investors regarding the pickup of solar-powered electricity and electric vehicles in its large domestic market.

The other Gulf countries have been less engaged. In Oman, climate change was explicitly added to the environment ministry's name and mandate in 2007 (with the UAE following suit in 2016). Even so, climate change has remained a low-key issue in Oman, as it has in Bahrain and Kuwait, attracting interest mainly from scientists studying its physical impacts on the region. Natural gas-rich Qatar has engaged with climate action mainly through two major events, hosting the 2012 U.N. Climate Change Conference and its successful 2010 bid for the 2022 FIFA World Cup, which included a carbon-neutrality pledge.

Converging Role Perceptions and Group Identity

Given its generally low status on Gulf policy agendas, climate change policy planning in the region has been largely driven by international reporting obligations and carbon monetization opportunities. Renewable energy, driven in turn by improving cost-effectiveness, has been the partial exception to this. For most of the past two decades, Gulf Arab countries engaged with climate change mainly through their participation in the U.N. Framework Convention on Climate Change, the principal global climate change governance instrument and forum.

With the partial exception of the UAE, the Gulf countries' international-level climate change policies have therefore been characterized by an absence of strong domestic strategies. And with the exception of Saudi Arabia, they have been shaped by weak institutional mandates. The Gulf Arab countries' policy positions have followed a similar pattern to many other emerging economies, whereby they have emphasized their status as developing countries under the convention in two ways. First, they have stressed their vulnerability to climate change impacts and related response measures, namely emission reduction policies in other countries, and underscored adaptation, as opposed to mitigation,[5] as a policy priority. Second, they have regarded their ability and willingness to commit internationally to ambitious emission reduction measures as conditional to developed countries taking the lead in reducing emissions and providing support to developing countries.

5 Climate action is generally divided into two areas, mitigation and adaptation, which, in turn, are underpinned by "means of implementation," namely finance, technology development and transfer, and capacity building.

The Gulf Arab states' discourse regarding mitigation has also been characterized by protectionist rhetoric, which originates from the external pressure the governments have faced to do more, given their high per capita emissions (see Table 3) and gross domestic product. Their high per capita emissions are due to a number of structural factors, including a hot climate, high living standards, and energy-intensive industries. However, there are several underlying drivers that could be influenced through proactive policy, including low shares of clean energy, low energy prices, low energy efficiency in the economy, and wasteful energy and resource consumption patterns.

The Gulf Arab countries have, however, always argued against using the per capita metric. Governments have referred to their region's relatively recent industrialization and suggested that end users of fossil fuels, rather than producers, should be held responsible for oil- and gas-related emissions. Qatar has gone the furthest suggesting that its liquefied natural gas exports have contributed to global mitigation given the lower emission intensity of natural gas compared to other fossil fuels.[6]

Governments have referred to their region's relatively recent industrialization and suggested that end users of fossil fuels, rather than producers, should be held responsible for oil- and gas-related emissions.

Under the U.N. Framework Convention on Climate Change, the Gulf countries have also commonly sided with developing countries that favor a binary approach to countries' responsibilities toward emission reductions, as opposed to a capabilities-based one supported by developed countries, many small island states, and Latin American countries, among others. The former refers to a static division to developed and developing countries agreed upon in 1992, while the latter emphasizes the countries' ability to increase their contribution to climate action as they develop. The Gulf Arab countries have been reluctant to commit to quantitative emission-based targets, citing their developing country status and role as exporters (rather than consumers) of fossil fuels, and they have qualified their mitigation actions and climate finance contributions as voluntary to underscore this.[7]

The Gulf Arab countries' participation in the convention can also be examined through the two-level game concept, which draws attention to the role of climate change negotiators in shaping policy positions. In the case of the Gulf states, negotiators have either represented the interests of the countries' oil and gas sector (notably in Saudi Arabia), not engaged actively (Bahrain and Oman), or acquiesced in situations in which their perceived interests have been promoted by peers and explicit support could have harmed their generally more proactive image (the UAE in some cases). While the two-level game is generally used to explain the interplay of international pressures and domestic interests, in this case it reveals

6 See: The State of Qatar, "Major Environmental, Economic and Methodological Considerations To Promote the Utilization of Natural Gas as a Cleaner or Less-Greenhouse Emitting Energy Source for the Twenty-First Century," in "Proposal on Cleaner or Less Greenhouse Gas-Emitting Energy," *UNFCCC*, March 6, 2002: 16-35.

7 For this same reason, Gulf Arab countries have not supported climate finance through international institutions like the Green Climate Fund.

"weak domestic constituencies that favor ambitious international climate policies (such as environment ministries or nongovernmental organizations) and low institutionalization of regional cooperation and coordination mechanisms."[8]

Different Problem Definitions at the International and Domestic Levels

A further observation can be made regarding how Gulf countries perceive climate change as a policy challenge at different levels. At the international level, they have generally treated climate change as a transitional challenge, with direct implications for their economic prosperity. After an earlier period of emphasizing economic losses expected from the implementation of the Kyoto Protocol (which have failed to demonstrably materialize), and following a period of emphasizing carbon capture and storage as almost a silver-bullet solution, in the past 10 years, the Gulf countries have found a way to frame their domestic actions in an international context that is acceptable to them, which emphasizes their special circumstances as countries highly dependent on the exportation of fossil fuels. This has consisted of framing climate action (mitigation and adaptation) as something to be streamlined with economic diversification plans and subject to their success.[9] [10]

In contrast, in domestic policymaking, the Gulf countries have, to a large extent, pigeonholed climate change as an environmental issue: Policy leadership is often delegated to dedicated departments within environmental ministries or agencies. These have largely focused on monitoring the direct impacts of climate change and, to some extent, adaptation, with little focus on mitigation.[11] At the same time, energy ministries and authorities have increasingly engaged with the latter through their renewable energy plans, and a number of entities

8 Mari Luomi, "Climate Change Policy in the Arab Region," in *Low Carbon Energy in the Middle East and North Africa*, ed. Robin Mills and Li-Chen Sim (London: Palgrave, forthcoming 2020).

9 This approach can be traced back to UNFCCC Decision 24/CP.18, which institutionalized economic diversification-related co-benefits under the U.N. climate convention. This was later reinforced in Paris Agreement Article 4.7 and the Gulf countries' first round of nationally determined contributions.

10 The UAE has taken a somewhat more opportunity-oriented approach to the issue than its neighbors but also uses the economic diversification frame, for example, in its long-term climate change plan. UAE Ministry of Climate Change and Environment, *National Climate Change Plan of the United Arab Emirates 2017-2050* (Dubai: Ministry of Climate Change and Environment, 2017), 13.

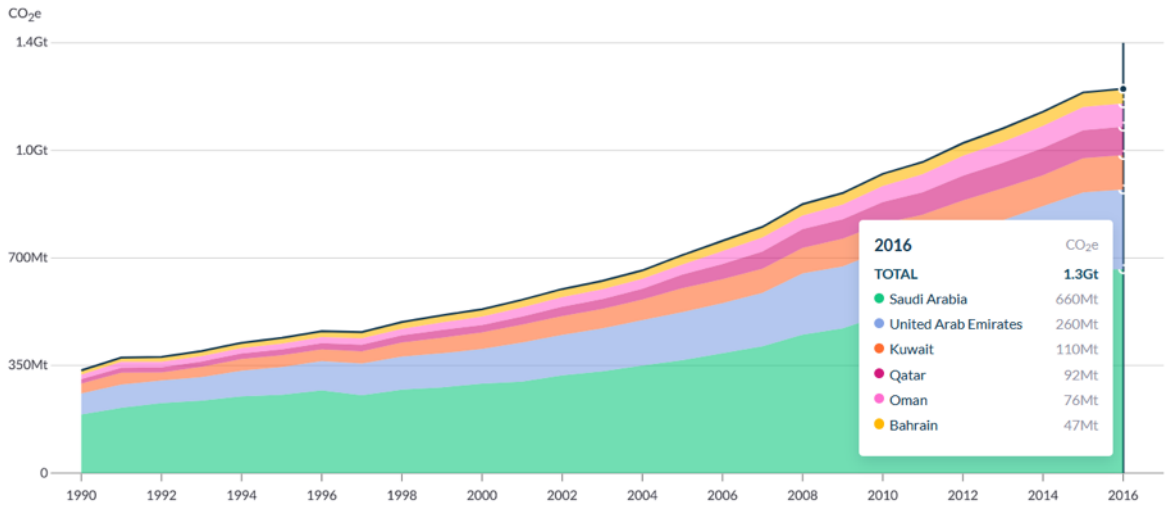
11 Saudi Arabia has been the exception in this regard, with the Ministry of Energy (originally the Ministry of Petroleum and Mineral Resources, renamed the Ministry of Energy, Industry and Mineral Resources in 2016, and then divided into two in 2019) in charge of international and domestic policy. In 2020, the U.N. climate convention's national focal points were Bahrain's Supreme Council for Environment, Kuwait's Environment Public Authority, Oman's Ministry of Environment and Climate Affairs, Qatar's Ministry of Municipality and Environment, and the UAE's Ministry of Climate Change and Environment. The countries also have in place national committees with representatives from various government sectors. In 2016, the UAE also set up a multiagency and stakeholder Climate Change and Environment Council.

have been set up to lead on renewable or clean energy implementation.[12] Gulf national oil companies, however, have not turned to renewable energy as a serious option for diversifying their operational models and sources of revenue.[13]

Rising Emissions and the Drivers of Early Mitigation Projects

The region's GHG emissions have increased rapidly over the past decades, overtaking economic growth rates. Between the mid-1990s and mid-2010s (the period measured in the countries' U.N. Framework Convention on Climate Change reports), Oman's carbon dioxide emissions, for example, grew at an annual rate of 7.6%, while its economy grew by 3.6%, on average.[14] While the question of what might be an equitable rate of emission reductions for the Gulf countries is highly normative and internationally politicized, for the sake of comparison, the U.N. estimates that to stay below the Paris Agreement thresholds of 1.5 degrees Celsius or 2 degrees Celsius of global warming, emissions globally should fall by 7.6% and 2.7% per annum, respectively, between 2020 and 2030.[15]

Figure 1: Gulf Countries' Greenhouse Gas Emissions (1990-2016)



Total GHG emissions, including land use, land-use change, and forestry. Source: "CAIT Country Greenhouse Gas Emissions Data (1990-2016)," World Resources Institute, accessed August 19, 2020.

12 These include Abu Dhabi's energy companies Masdar (2006) and Emirates Nuclear Energy Corporation (2009), Saudi Arabia's Renewable Energy Project Development Office (2017), and Bahrain's Sustainable Energy Authority (2019).

13 In countries without a dedicated renewable energy lead entity, oil companies have recently become involved: The Kuwait Petroleum Corporation has been participating in the development of 2.5 gigawatts of solar capacity and Petroleum Development Oman has built a 100 megawatt solar park, which went online in June. MESIA, *Solar Outlook Report 2020* (Dubai: MESIA, January 2020), 41 and 46.

14 Sultanate of Oman, *Biennial Update Report* (Muscat: December 2019), 12; "World Development Indicators," The World Bank, updated July 1, 2020.

15 U.N. Environment Program, *Emissions Gap Report 2019* (Nairobi: U.N. Environment Program, 2019).

Pre-Paris mitigation projects in the Gulf states were largely motivated by related monetization opportunities under the Kyoto Protocol's Clean Development Mechanism. It allowed for developed countries to offset their emission reductions with the purchase of carbon credits from developing countries. The six Gulf states collectively have 27 projects (15 in the UAE, six in Saudi Arabia, and two each in Kuwait, Oman, and Qatar), comprising 0.6% of Clean Development Mechanism projects registered worldwide in terms of size.

The region's largest Clean Development Mechanism projects were in the areas of oil field flaring reduction (Qatar and Oman, 2,500 kilotons of carbon dioxide equivalent per year and 775 $ktCO_2e$/year, respectively), landfill flaring (Saudi Arabia and the UAE, 355 $ktCO_2e$/year and 269 $ktCO_2e$/year, respectively), and solar photovoltaics (a 100 megawatt solar photovoltaic plant in Dubai, avoiding 213 $ktCO_2e$/year).[16] For comparison, annual reductions from the largest project, Qatar's Al Shaheen flaring reduction project, equaled 4% of the country's total emissions upon the start of crediting in 2007. However, the avoided emissions were always designed to count for reductions elsewhere. Moreover, they have been far offset by the region's rapid population, economic, and emissions growth. Qatar's emissions, for example, were estimated to have almost doubled between 2007 and 2016.[17]

By the mid-2010s, with rapidly falling solar energy prices, two Gulf Arab countries had begun treating renewables as a viable option for boosting domestic energy security and, to some extent, cleaning the energy mix. In 2009, the UAE emirate of Abu Dhabi had announced a target of 7% solar power generation in the energy mix by 2020 and embarked on a 5.6 gigawatt nuclear energy project.[18] In 2013, Saudi Arabia published a highly ambitious clean energy target of 68 GW by 2032 (significant if compared to the country's total power capacity of 88 GW in 2017). This was later revised down and revised again upward. Only 0.5 GW had been installed by mid-2020.[19] In turn, energy efficiency has featured prominently in policy discussions and measures in Saudi Arabia in particular, but also in other Gulf countries, even if it has generally not been discussed in a mitigation framework.[20]

16 Measured in 2020 kCERs (thousands of Certified Emission Reductions, each representing one ton of carbon dioxide equivalent). They had issued credits for one-fourth of this volume, and 11 of the projects have been dormant since 2014. Calculations based on Joergen Fenhann, "CDM Pipeline," UNEP DTU Partnership, updated August 1, 2020. In addition, the UAE and Saudi Arabia engaged with the Kyoto Protocol through Programs of Activities.

17 Data for 2007 emissions based on: State of Qatar, *Initial National Communication to the UNFCCC* (Doha: 2011), 25. Growth between 2007 and 2016 based on: "Historical GHG Emissions," Climate Watch, accessed August 16, 2020.

18 In 2019, Abu Dhabi's electricity company had a total generation capacity of 17.7 GW, out of which 7%, or 1.3 GW, were solar. A share of 7% of generation would, in practice, require more, given that solar has a lower capacity factor than nuclear or natural gas power.

19 Jim Krane, "Energy Governance in Saudi Arabia: An Assessment of the Kingdom's Resources, Policies, and Climate Approach," *Rice University's Baker Institute for Public Policy*, January 2019: 8-9; "Mideast Petro-States Look Past Oil Rout to Chase Solar Power," *Bloomberg*, May 5, 2020.

20 Saudi Arabia has been very particular about language around mitigation. It has preferred "carbon management" instead and is known to dislike terms like "decarbonization" and "net-zero emissions," as these imply a rapid scale down of oil consumption worldwide.

The Gulf Countries in the Paris Agreement Era

The 2015 Paris Agreement established climate change prominently on the international agenda, constituting the first time in history that 196 countries agreed to all contribute to combating climate change through ambitious emission reductions and adaptation to its unavoidable impacts. Despite the challenge posed to the agreement's future by the United States, climate change policies and actions have since become something expected from every country. The largely bottom-up design of the Paris Agreement, however, means that in practice, each state individually determines its "fair share" in terms of its contribution. At the same time, despite the agreement's weak compliance mechanism, countries have remained careful when communicating their intentions to the U.N., meaning that more ambitious national policies or more positive emission trajectories already underway may not get included in countries' international pledges.

Therefore, assessing countries' climate change policies and performance requires looking at multiple indicators. First, the prominence of climate change on countries' national policy agendas can be assessed through adherence to U.N. reporting obligations, the existence of domestic planning and policy documents, and engagement with international climate finance.[21] Renewable energy and energy efficiency targets are another useful proxy, even if related policies and implementation have had other drivers and the emission reductions needed for climate-safe trajectories go far beyond the power sector (to which these targets generally apply).

Second, another important source of information are the nationally determined contributions (NDCs), which, since the entry into force of the Paris Agreement in 2016, have become the core instrument through which countries communicate globally their national plans to address climate change.[22] Third, even if a source of some controversy and disagreement, a country's actual climate change (policy) performance can be measured through various indicators and proxies.

International Transparency, National Plans, and Climate Finance

National reports detailing countries' emissions, national circumstances, policies, plans, and support needs comprise the core of the U.N. Framework Convention on Climate Change's transparency mechanism, intended to inform global policy and build trust in the system. As

21 The most prominent are renewables' increasing price competitiveness and their growing potential to support domestic energy security as well as the economics of energy exports – namely the higher value achievable from exporting fossil fuels compared to burning them for domestic power generation.

22 Parties to the agreement are expected to communicate new nationally determined contributions every five years and report on related progress in a parallel "transparency" process. All countries are expected to put forward mitigation measures as part of their NDCs and also communicate their adaptation plans and actions. In addition, developed countries are expected to take the lead in mitigation and are required to biennially communicate their climate finance plans and actual contributions. Some countries intend to use the NDC as the communication vehicle for both mitigation and adaptation plans, whereas others see the adaptation communication (Paris Agreement Article 7.10) as separate from the NDC. The Gulf Arab countries have supported the former view as this allows them to portray mitigation as something resulting from adaptation actions and economic diversification.

shown in Table 1, some Gulf Arab countries have been engaging more actively than others with related obligations. Kuwait, Oman, and the UAE have submitted the most recent reports and emission inventories, with Saudi Arabia also submitting various reports.

The four countries' post-Paris reports reveal two trends. First, in the case of the UAE and Saudi Arabia, they reveal the growing activity around exploring the co-benefits of economic diversification and emission reductions (and of adaptation and mitigation) in areas including energy efficiency and demand-side management, renewable electricity generation, carbon capture and storage, water management, urban planning, agriculture, and marine conservation. The main difference between the two countries is that Saudi Arabia always emphasizes mitigation as a co-benefit, whereas the UAE tends to present its mitigation-related activities in a more straightforward manner and not as much conditioned by, but rather supporting, economic diversification.

Second, Kuwait and Saudi Arabia, in particular, continue to place a heavy emphasis on the negative consequences of response measures (i.e., efforts targeted at fossil fuel-related emissions in other countries) on their economies – something that has been a GCC/OPEC rallying point since the 1990s. Oman stands out for making practically no reference to this issue.

Reports by Qatar and Bahrain are old, from 2011 and 2012, respectively, and contain very little in terms of concrete adaptation or mitigation plans and actions.[23] Work on a national climate change strategy reportedly started in Bahrain in 2020, but there have been no reports of similar plans in Qatar, Kuwait, or Saudi Arabia. The Omani government adopted a national strategy in 2019, but details have not been made public. The UAE's climate change plan for 2050 is therefore the only major strategy document in place. Premised on regarding climate change as "an opportunity for diversifying the economy and tapping into new growth engines in the form of innovative green products and services," it sets out milestones in three areas: mitigation, adaptation, and private sector-led green diversification. It does not establish new quantitative targets but refers to existing ones. A national climate change law has also been developed but not yet adopted.

All Gulf Arab countries have set renewable energy targets, but comparing their ambition is complicated by the fact that some are expressed as capacity targets (in gigawatts) and others as shares of power generation, in countries with varying grid sizes. Also, some targets are underpinned by clear implementation plans, such as Dubai's 2030 target, while others contain large aspirational elements. The UAE overall has a relatively ambitious long-term clean

23 According to the UNFCCC, "Non-Annex I Parties are required to submit their first [national communication] within three years of entering the Convention, and every four years thereafter." "National Communication Submissions From Non-Annex I Parties," UNFCCC, accessed August 18, 2020. In practice, in most cases this has not materialized. Almost all non-Annex I countries, however, have submitted two national communications and half have submitted three or more. Biennial update reports, intended to complement the national communications, have been required since 2014, but fewer than half of non-Annex I countries had submitted one or more by August 2020. Non-Annex I countries, including the Gulf countries, are entitled to financial support for preparing the reports.

electricity generation capacity target of 50% by 2050, but has no official medium-term targets.[24] Its 27% clean electricity target for 2021 will not be met due to delays with its Barakah nuclear power plant. The first Barakah reactor came online in August, and the plant is expected to supply 25% of the country's power once fully operational.

In 2019, the Saudi government announced a highly ambitious renewables program, which aims to deliver close to 60 GW of solar and wind capacity by 2030 while supporting a local manufacturing industry.[25] Given similar announcements in the past, some analysts remain skeptical.[26] For comparison, if the plan were implemented and *all* new capacity in the country came from renewables, this would nearly double the country's 2017 power grid size and renewables would account for more than 40% of total capacity in 2030.[27] Energy efficiency is another area with major potential for mitigation co-benefits. Some Gulf countries have announced targets but, similarly to renewables, their specificity, measurability, and binding character is generally low.[28]

In the area of international climate finance, the Gulf Arab states have traditionally been careful not to pledge funds through international climate finance institutions, as this has been seen as a slippery slope to growing external expectations regarding their contributions. The UAE, however, has actively contributed to renewable energy financing worldwide since the early 2010s, and Qatar made similar pledges at a major U.N. event in 2019.

24 The federal 2050 capacity target, set in 2017, includes 44% from renewables, 6% from nuclear, as well as 12% from "clean coal." A 30% by 2030 clean electricity target has been floated and should be easily achievable. Anthony McAuley, "UAE Eyes New Clean Energy Generation Target by 2030," *The National*, January 20, 2016. Dubai also has in place a 75% clean electricity generation target for 2050.

25 Kingdom of Saudi Arabia, "Saudi Arabia National Renewable Energy Program" (presentation, International Energy Forum, 2019).

26 See e.g., "UAE and Saudi Arabia Set to Drive Renewables Growth in Gulf," *The Economist Intelligence Unit*, July 9, 2019.

27 According to the International Renewable Energy Agency, installed power capacity in Saudi Arabia in 2017 was 76.4 GW. IRENA, *Renewable Energy Market Analysis: GCC 2019* (Abu Dhabi: IRENA, 2019), 36.

28 IRENA has identified a spectrum of "specificity, measurability and binding character" for renewable energy targets, which can also be applied to energy efficiency targets. At the first level are political announcements and vision statements, followed by energy strategies and scenarios, detailed roadmaps and action plans, and, finally, legally binding targets. IRENA, *Renewable Energy Target Setting* (Abu Dhabi: IRENA, June 2015), 9.

Table 1: Mapping of Gulf Countries' UNFCCC Reports, National Climate Change Policy Documents, Renewable Energy Targets, and Climate Finance Received and Provided

	National communications (+ year of most recent emissions inventory)	**Biennial Update Reports (+ emissions inventory)**	**National climate change policy document(s)**	**Medium-term national renewable energy target**	**Medium-term national energy efficiency target**	**International climate finance received (excl. Global Environment Facility support for)**	**International climate finance provided**
Bahrain	2 (2000)	0	National climate change strategy under development, announced in January 2020, funded by the UAE (work in progress)	5% of power demand (0.3 GW) by 2025; 0.7 GW by 2030; 10% by 2035	6% reduction in electricity consumption by 2025 compared to average final consumption in 2009-13 consumption by 2025 compared to average final consumption in 2009-13	$2.3 million from the Green Climate Fund (water sector resilience)	-
Kuwait	2 (2000)	1 (2016)	-	15% of power demand (4.3 GW) by 2030	15% improvement in generation efficiency and 30% reduction in consumption by 2030 (baselines not available)	-	-
Oman	2 (2000)	1 (2015)	National Strategy for Adaptation and Mitigation to Climate Change 2020-2040 (not publicly available)	10% of power demand (2.6 GW) by 2025	-	$300,000 (readiness)	-
Qatar	1 (2007)	0	-	20% of power demand (10 GW) by 2030; 30% by 2030	-	-	$100 million pledged (in 2019) for Small Island Developing States & Least Developed Countries
Saudi Arabia	3 (2010)	1 (2012)	-	27.3 GW by 2023 and 58.7 GW by 2030	(Programs in place)	-	-
UAE	4 (2014)	0	UAE Green Agenda 2015-2030; National Climate Change Plan 2017-2050; Dubai Climate Change Adaptation Strategy (not publicly available)	25% of power demand by 2030 (Dubai) (No official nationwide medium-term renewable energy target as of August 2020)	30% reduction in electricity consumption below business as usual 2030 (Dubai) (baseline not disclosed)	-	Total $450 million allocated through three funds (renewables)

Sources: Various, inter alia: Gulf Arab countries' UNFCCC reports and other government reports; Green Climate Fund website; official press releases; IRENA, *Renewable Energy Market Analysis: GCC 2019* (IRENA: Abu Dhabi, 2019). All accessed in August 2020. "-" = data not publicly available/found or does not exist

First Nationally Determined Contributions

As per the Paris Agreement (Art. 4.4), developing countries are "encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances." Generally, quantitative targets are considered more ambitious and better for comparing and aggregating efforts. Of all initial NDCs submitted by parties to the Paris Agreement, almost 80% contain GHG reduction targets and only a small number contain "actions" only.[29] Of the six Gulf states, only Oman has set a quantitative emission reduction target. Three Gulf governments have communicated no quantitative targets.

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In terms of mitigation measures, common references in the six NDCs include renewable energy, energy efficiency, and carbon capture and storage. Four NDCs frame mitigation contributions or actions in the context of economic diversification efforts. Four also mention their special status as countries highly dependent on fossil fuel export revenue and stress the need to minimize the negative impacts of response measures. The UAE's and Kuwait's NDCs refer to fossil fuel subsidy reform, but none of the NDCs discuss carbon pricing or mention the use of international market mechanisms. Only Kuwait's NDC refers to plans to develop a long-term low GHG emission development strategy (referred to in Paris Agreement Article 4.19).[30]

- Bahrain's NDC contains no quantitative targets. It recalls that Bahrain is a Small Island Developing State and is therefore allowed to communicate "strategies, plans, and actions."
- Kuwait's NDC similarly has no quantitative targets. It states that efforts will be based on business-as-usual emissions in 2020-30 and points to the importance of diversifying the country's energy mix in avoiding increases in GHG emissions by 2035.

29 UNDP, UNEP, UNEP DTU, and WRI, *Implementing Nationally Determined Contributions (NDCs)* (Copenhagen: UNEP DTU Partnership, 2020), 15.

30 These four were the original sponsors of UNCCCC Decision 24/CP.18, "Economic diversification initiative."

- Oman's NDC has the only GHG emission-based target. However, the reduction is only 2% below projected business-as-usual emissions and conditional on international support. Gas flaring, which constitutes a large share of Oman's emissions, is referenced, as is the development of new legislation to support mitigation.[31]
- Qatar's NDC has no quantitative targets. It suggests that Qatar has been contributing indirectly to global mitigation efforts through its liquefied natural gas exports.
- Saudi Arabia's NDC contains a quantitative reduction element but no baseline for comparison. The reduction is contingent on continued economic growth and diversification, robust oil export revenue, limited negative impacts from international response measures, and technical assistance and capacity building.
- The UAE's original, intended NDC contained a 24% power sector clean energy target for 2021, which was later revised to 27%. The UAE has not yet communicated its second NDC, which (given the first NDC's early target year) was due in 2020. The new NDC is expected to build on the government's 50% by 2050 clean energy capacity target, setting a new target for 2030 or 2035, which could either be based on an interpolation of the 2050 target or constitute an upward revision and could contain an emission reduction target relative to a baseline for the power sector.[32]

Table 2: Analysis of Gulf Countries' First Nationally Determined Contributions

	Unconditional quantitative target(s)	**Conditional quantitative target(s)**	**Quantitative target type and sectoral coverage**	**Other targets/actions**	**Framing through economic diversification**
Bahrain	No	No	-	Mitigation co-benefits "which may contribute to low GHG emission development" and adaptation actions, (both conditional on international support)	Yes (partly)
Kuwait	No	No	-	Diversification of energy sources and adaptation actions (both conditional on international support)	No
Oman	No	2% below business-as-usual growth from 2020-30	GHG emissions; energy, industrial processes, and waste	Adaptation contributions (conditional on international support)	No
Qatar	No	No	-	Mitigation co-benefits in energy efficiency, clean energy, R&D, etc. and adaptation actions with mitigation co-benefits (both through 2030)	Yes
Saudi Arabia	No	130 megatons of carbon dioxide equivalent (MtCO2e) avoided annually by 2030 (baseline not disclosed)	GHG emissions; sectors not specified/various	Mitigation co-benefits and adaptation actions (including with mitigation co-benefits)	Yes
UAE	27% of clean energy in electricity mix by 2021	No	Clean energy: NDC refers to "energy mix," but the target refers to power generation only	Mitigation co-benefits; adaptation actions with mitigation co-benefits	Yes

31 Fugitive emissions from the oil and gas sector constituted 22% of Oman's GHG emissions in 2015. Sultanate of Oman, *Biennial Update Report* (Muscat: December 2019).

32 Author's estimate.

Climate Change (Policy) Performance

Contrary to Gulf countries' claims, they are currently among the least vulnerable countries to the direct negative effects of climate change, based on Germanwatch's 2020 Global Climate Risk Index, which aggregates fatalities and per capita GDP losses in 181 countries over two decades (see Table 3). Oman is the exception. Due to its long Indian Ocean coastline, the country has been impacted by several cyclonic storms, including Gonu in 2007, which are intensified by climate change.[33] Overall, given their high income status, the Gulf Arab countries are on average better positioned to adapt to climate change and build resilience than their regional neighbors, for example.

On the mitigation side, Climate Action Tracker has evaluated the consistency of Saudi Arabia's and the UAE's NDCs with different global warming scenarios and has concluded that the emission reduction-related targets contained therein are aligned with global warming of greater than 4 degrees Celsius and greater than 3 degrees Celsius, respectively.[34] Notably, a study of Saudi Arabia's carbon dioxide emissions in the 2010s found they plateaued from 2015 to 2017 owing to a combination of falling energy and carbon intensity (partly driven by energy efficiency measures and fuel switching) and slower GDP growth.[35] Since Saudi Arabia has not disclosed the baseline for its NDC reduction target, it is not possible to contextualize this reduction in these terms.

According to the 2019 Arab Region SDG Index, which included a performance assessment in relation to two climate change-relevant sustainable development goals – sustainable energy and climate action – identified "major challenges" in all Gulf Arab countries based on indicators including renewable electricity output, energy intensity, carbon dioxide emissions per capita, and carbon dioxide emissions exported and imported.[36] On per capita emissions, the Gulf Arab countries rank among the top in the world,[37] and their combined renewable electricity capacity is still low in global comparison, at 2.4 GW in 2019. The UAE's solar energy capacity, however, stands as the highest in the Middle East.[38]

33 See e.g., Global Facility for Disaster Reduction and Recovery, "Oman: Cyclone," ThinkHazard! tool, accessed August 24, 2020.

34 Climate Action Tracker, accessed August 17, 2020.

35 Nicholas Howarth, Alessandro Lanza, and Thamir Alshehri, *What is Behind the Recent Fall in Saudi Arabia's CO2 Emissions?* (Riyadh: KAPSARC, December 3, 2019).

36 Mari Luomi, Grayson Fuller, Lara Dahan, Karina Lisboa Basund, Eve de la Mothe Karoubi, and Guillaume Lafortune, *2019 Arab Region SDG Index and Dashboards Report* (Abu Dhabi and New York: Emirates Diplomatic Academy and U.N. Sustainable Development Solutions Network, 2019).

37 More recent internationally comparable per capita data is available on carbon dioxide than for GHGs. "World Development Indicators," The World Bank, July 1, 2020.

38 For comparison, Morocco had a nonhydro renewables capacity of 1.5 GW, Egypt 3.1 GW, Jordan 1.6 GW, and Syria 1.5 GW; world leaders China 402 GW, the United States 162 GW, and Germany 115 GW. Author calculations, based on: IRENA, *Renewable Energy Statistics 2020* (Abu Dhabi: IRENA, 2020).

Table 3: Gulf Countries' Climate Change Policy and Performance

	Global Climate Risk Index 1999-2018 rank, Germanwatch (2020)	**Climate Action Tracker evaluation of first NDC (2019)**	**Climate Change Performance Index rank, Germanwatch (2019)**	**SDG 7 (affordable and clean energy) performance based on Arab Region SDG Index dashboard color (2019)**	**SDG 13 (climate action) performance based on Arab Region SDG Index dashboard color (2019)**	**Per capita carbon dioxide emissions in 2016, The World Bank (2020)**	**Renewable energy capacity, IRENA (2019)**
Bahrain	179/181	-	-	red ("major challenges remain," moderately improving)	red ("major challenges remain," moderately improving)	22.2 tons of carbon dioxide equivalent (tCO2e) (5th)	7 megawatts (MW)
Kuwait	163/181	-	-	orange ("significant challenges remain," stagnating)	red ("major challenges remain," moderately improving)	25.0 tCO2e (4th)	106 MW
Oman	23/181	-	-	red ("major challenges remain," moderately improving)	red ("major challenges remain," moderately improving)	14.2 tCO2e (16th)	8 MW
Qatar	181/181	-	-	red ("major challenges remain," moderately improving)	red ("major challenges remain," decreasing)	38.9 tCO2e (1st)	43 MW
Saudi Arabia	112/181	"critically insufficient" ("highly insufficient" counting 2019 renewable energy targets)	60/61	red ("major challenges remain," moderately improving)	red ("major challenges remain," decreasing)	17.4 tCO2e (10th)	397 MW
UAE	167/181	"highly insufficient"	-	red ("major challenges remain," moderately improving)	red ("major challenges remain," decreasing)	22.0 tCO2e (6th)	1,888 MW

Pre-pandemic, most policy developments were expected in renewable electricity capacity expansion over the coming years. The UAE and Saudi Arabia, given their early engagement and track record as well as existing project pipeline, are likely to lead in this area. While Saudi Arabia's targets should probably be taken with a grain of salt, the several GW in the pipeline in both Saudi Arabia and the UAE at the beginning of 2020 were encouraging.

The Coronavirus Pandemic and the Gulf Climate Change Agenda

Short-Term Impacts – Emissions

The coronavirus pandemic has been described as a foretaste of future challenges associated with the climate crisis, if left unchecked. In the short term, however, the most obvious link between the two has been the plunging GHG emissions. Since March, the pandemic has had well-documented, deep impacts on social and economic activity worldwide. At the peak of the spring lockdowns, in April, daily global carbon dioxide emissions were down by an estimated 17% compared to 2019 levels.[39]

But since the decreases resulted from forced energy demand reductions rather than structural changes, their duration and impact on overall GHG concentrations will be limited.[40] Despite the uncertainties involved, experts have estimated that global emissions in 2020 could remain 7% to 8% below 2019 levels and plateau in the coming years. Without further efforts, however, even this would pave the way for catastrophic levels of global warming of more than 3 degrees Celsius. Strong rebounds in emissions have historical precedents: Global carbon dioxide emissions jumped by 5% in 2010 after falling by only 1% in 2009.[41] Therefore, public economic stimulus and recovery policies and investments have a historic and significant role in determining humanity's future trajectory: more of the unsustainable, business as usual, or a transformative departure.

GHG emissions are generally not monitored in real time, and governments often make related data available with several years' – and, in the most extreme cases, two decades' – delay (see Table 1). Data on the impact of lockdowns on Gulf Arab countries' emissions is therefore not available but can be estimated through proxies, including mobility, air pollution, and economic activity data. A study on Saudi Arabia expects the country's emissions to fall by 4% to 7% in 2020, compared to 2019.[42]

Power generation generally is the highest-emitting sector in the Gulf states, accounting for 27% to 55% of their total GHG emissions.[43] In the UAE, it accounts for one-third.[44] The impact of the lockdowns was relatively minor in this area. Mobility data gathered by Google

39 Corinne Le Quéré, Robert B. Jackson, Matthew W. Jones, Adam J. P. Smith, Sam Abernethy, Robbie M. Andrew, Anthony J. De-Gol, David R. Willis, Yuli Shan, Josep G. Canadell, Pierre Friedlingstein, Felix Creutzig, and Glen P. Peters, "Temporary Reduction in Daily Global CO2 Emissions During the COVID-19 Forced Confinement," *Nature Climate Change* 10 (2020): 647-53.

40 For the same reason, the accompanying negative socioeconomic impacts cannot be compared to other hypothetical emission reductions of the same scale.

41 See, e.g,. Benjamin Storrow, "Global CO2 Has Risen for a Century. That Appears to Be Over," *E&E News*, June 1, 2020.

42 Nicholas Howarth, Alessandro Lanza, Thamir Al Shehri, and Jan Braun, *Saudi Arabia's CO2 Emissions Steady in 2019 Ahead of Expected 2020 Fall Due to COVID-19* (Riyadh: KAPSARC, July 8, 2020).

43 Author calculations based on the Gulf countries' most recent U.N. Framework Convention on Climate Change reports. No data was available for Bahrain.

44 36% in 2014. UAE Ministry of Energy and Industry, *United Arab Emirates Fourth National Communication Report* (Abu Dhabi: 2018), 45-48.

indicates that retail activity in the UAE initially fell by almost 60% compared to baseline levels but had bounced back to only 20% below the baseline by August (see Table 4). Activity around workplaces and residential areas, in turn, seems to have followed changes in the government's remote work and workplace capacity regulations, with 20% lower-than-usual activity registered at workplaces in August. However, according to Abu Dhabi's utility company, electricity generation was only 5% below forecast levels during the spring lockdowns, and there was no change in water demand. In August, Dubai's utility reported a record increase of 6.6% in annual peak electricity demand. While the authority attributed this to a "boost [in] social and economic activities"[45] in addition to increased telecommuting, border restrictions may have prompted the higher demand, with most residents staying in the country through the hottest months, unlike in previous years, increasing the use of air conditioning.

Table 4: Proxies for Estimating Impacts of the Novel Coronavirus on GHG Emissions in the UAE in 2020

	Time/period	**Impact**	**Source of data**
Mobility: retail and recreation	mid-March to end-April 2020; early May to mid-June 2020; early July to mid-August 2020	-57%; -46%; -19% (compared to baseline)	Google Community Mobility Report
Mobility: workplaces		-47%; -21%; -22% (compared to baseline)	Google Community Mobility Report
Mobility: residential		+31%; +16%; +10% (compared to baseline)	Google Community Mobility Report
Mobility: transit stations (metro, bus)		-66%; -58%; -42% (compared to baseline)	Google Community Mobility Report
Electricity demand (in Abu Dhabi/ under the Emirates Water and Electricity Company)	early May 2020	-5% (compared to forecast, estimate)	MEED/Emirates Water and Electricity Company
Electricity demand (in Dubai/under the Dubai Electricity and Water Authority)	summer 2020	+6.6% (compared to peak load in 2019)	Dubai Electricity and Water Authority
Nitrogen dioxide emissions (air pollutant emitted by vehicles and power plants)	February 1 to April 30, 2020	-30% (over the period)	UAE Ministry of Climate Change and Environment
Real GDP forecast for 2020	2020	-5.5% (annual forecast)	Emirates NBD
Population size	2020	-10% (compared to 2019, forecast)	Oxford Economics

Sources: "COVID-19 Community Mobility Reports," Google, accessed August 2020; Jennifer Aguinaldo, "Abu Dhabi Electricity Demand Falls," *MEED*, May 7, 2020; "UAE Records 30% Reduction in Nitrogen Dioxide Levels Between February and April 2020," *WAM*, May 27, 2020; Khatija Haque, Edward Bell, Shady Elborno, Daniel Richards, and Jamal Mattar, "Monthly Insights – July 2020," *Emirates NBD*, July 23, 2020; Shaji Mathew, "Oxford Economics Sees Exodus of Expat Workers From Across Gulf," *Bloomberg*, May 22, 2020.

45 "DEWA Records a Peak Load Increase of 6.6%," Dubai Electricity and Water Authority, August 21, 2020.

Road transportation accounts for approximately 17% of the UAE's total emissions. The government reported a 30% fall in nitrogen dioxide emissions during the initial lockdown period. This air pollutant mostly originates from vehicles (and power plants) and can therefore be used as a proxy for changes in road transportation levels. Comparable data for the summer months has not been published, but anecdotal and observational evidence suggests a rapid rebound rate across the country over the summer with the easing of movement restrictions and return to economic activity. Use of public transportation, however, remained at close to half of baseline levels even in August, possibly indicating lower levels of mobility among lower-income residents and a shift to private transportation.[46]

Negative GDP and population projections, however, indicate that annual total emissions in the UAE (and Gulf Arab countries) could decline in 2020, relative to business-as-usual growth rates. A contraction in the population could, however, lead to a rise in per capita emissions, given the large hydrocarbon and energy intensive industries. Total emissions are expected to rebound as the economy recovers. As elsewhere, to achieve a permanent peak and fall, emissions must be addressed at the source and related changes must be transformational.

Short-Term Impacts – Renewable Energy

Given its high share in most countries' GHG emissions and the increasing price competitiveness of renewables, the power sector is the obvious first target of emission reduction policies. (In the Gulf, energy efficiency across the board has been, and is, another important area with low-hanging fruit and economic savings.) While the primary source of concern for Gulf governments since the onset of the pandemic has been the reduced oil demand in an already oversupplied market, climate change analysts have focused on how the pandemic might impact renewable energy uptake patterns.

In the short term, Gulf industry analysts noted that some renewable projects under construction in the region had suffered financially from the lockdowns and disruption of supply chains.[47] They also projected possible delays in procurement and implementation in the long term due to lower energy demand and budgetary constraints. Given the region's expected economic and population contractions, an eventual slowdown in electricity demand growth is likely: The UAE, for example, reported an annual demand growth of 9% before the pandemic.[48] The

46 Petroleum refining is another major source of domestic emissions for the Gulf countries (17% in the UAE), but OPEC production quotas and related developments continue to be the major driver of production levels. In the first seven months of 2020, the country's crude oil production averaged 3 million barrels per day, compared to 3.14 mb/d in 2019. Production has fluctuated significantly in 2020, from an April high of 3.8 mb/d to a June low of 2.4 mb/d. "Open Data," U.S. Energy Information Administration, accessed August 20, 2020. Proxy data for other major sources of GHG emissions, namely manufacturing and construction (16%) and cement, iron, and steel, and aluminium production (11%), was not available, but major reductions over 2020 are unlikely. International aviation emissions have significantly declined, with recovery likely to take several years, but rules governing these emissions were considerably relaxed in June.

47 Experts have also predicted that various novel coronavirus-related mobility and supply chain restrictions could drive up renewable energy project costs, similarly to other regions. See e.g.: Mhairi Main Garcia, "Middle East Renewables in the Age of COVID-19," *The Oath Legal Magazine* 95 (July/August 2020): 12-14.

48 UAE Ministry of Energy and Industry, *Fourth National Communication Report* (Abu Dhabi: UAE Ministry of Energy and Industry, 2018), 17.

coming online of the 5.6 GW Barakah nuclear plant is officially estimated to deliver 25% of the country's power demand. While this additional capacity will be zero emission, its scale might dampen the need for new capacity in the coming years. While this may not necessarily be bad news from an emission perspective, it would make renewable energy investments less attractive as an economic recovery tool.

Government officials in the UAE and Saudi Arabia, in particular, however, have affirmed their commitments to existing renewables plans. A number of large solar projects are in the pipeline and seem to be progressing, despite some reports of delays.[49] Record-low prices in bids were declared in Qatar and the UAE.[50] In April, Saudi Arabia announced shortlisted bidders for a total 1.4 gigawatts of solar capacity and Dubai signed a purchase agreement for a 900 MW share of its 5 GW Mohammed bin Rashid Al Maktoum Solar Park. In July, Abu Dhabi announced the winners of a 2 GW solar plant, and the construction of a 400 MW wind power plant in Saudi Arabia – the country's first – is reportedly progressing.[51]

In Qatar, an 800 MW solar project, which will satisfy 10% of the country's peak power demand, closed financing in July.[52] The same month in Oman, the government issued a request for proposals for a total 1 GW of solar power, which could go operational in 2023.[53]

An exception was a $1.4 billion, 1.5 GW project (part of the 3 GW Al Shagaya project) in Kuwait, which the government canceled in July.[54] Kuwait Petroleum Company reportedly preferred focusing on hydrocarbons instead of diversifying into renewables,[55] but observers have suggested the project was canceled due to project viability and management challenges and various shortcomings in the overall enabling environment for businesses.[56] The canceled project was the only major renewable energy project in the country, which still generates two-thirds of its electricity from oil.[57]

49 Mhairi Main Garcia, "Middle East Renewables in the Age of COVID-19," *The Oath Legal Magazine* 95 (July/August 2020).

50 Emiliano Bellini, "Qatar's 800 MW Tender Draws World Record Solar Power Price of $0.01567/kWh," *PV Magazine*, January 23, 2020; Ed Reed, "Dubai, Abu Dhabi Go Head to Head in Solar Pricing," *Energy Voice*, April 30, 2020.

51 Emiliano Bellini, "Lowest Shortlisted Bid in Saudi 1.47 GW Tender Was $0.0161/kWh," *PV Magazine*, April 3, 2020; Fareed Rahman, "Taqa and Masdar Consortium To Develop World's Largest Solar Power Plant in Abu Dhabi," *The National*, July 27, 2020; TLME News Service, "Turbines Delivered for Saudi Arabia's First Wind Farm Project," *Transport & Logistics Middle East*, August 4, 2020.

52 "Kahramaa Announces Successful Financial Closure of Siraj-1 Power Project," *Qatar News Agency*, July 22, 2020.

53 Conrad Prabhu, "Bids Invited for Oman's Biggest Solar Power Scheme," *Oman Daily Observer*, July 22, 2020.

54 "Kuwait Scraps $1.4bln Solar Project Over Covid-19 Crisis," *TradeArabia*, July 14, 2020. According to the article, the government had reached the decision after "evaluating the project in the context of spreading of coronavirus and its impacts on the global oil and financial markets."

55 "Kuwait Cancels Al-Dabdaba Solar Plant Project Due to Coronavirus," *Reuters*, July 13, 2020.

56 For example, economist Saad K. Al-Adwani (@SaadAlAdwani) has suggested these included shortcomings in regulatory support, government backing, and the bidding process and a consequent lack of interest from major developers. Twitter responses to the author, August 10, 2020.

57 In 2015, oil accounted for 64% of Kuwait's power generating capacity. Kuwait Institute for Scientific Research, *2019 Kuwait Energy Outlook: Sustaining Prosperity Through Strategic Energy Management* (Kuwait City: KISR, 2019), 35.

In the UAE and Saudi Arabia, renewable energy is driven by a strategic decision to reduce reliance on natural gas (and in the case of Saudi Arabia also oil) in power generation and, in the longer term, transportation. A similar policy would make sense for Kuwait as well, given the high share of oil in its power sector energy mix and the consequently higher opportunity cost of burning fossil fuels at home instead of exporting them. However, pre-2020 plans and current developments indicate that Kuwait, Qatar, Bahrain, and Oman are not likely to significantly speed up their renewable energy plans in the near term – the latter two owing to limited funds given their lower oil and gas revenue. Gas-abundant Qatar appears the least pressed to drive up renewable energy capacity, from an economic and geopolitical perspective.

Even though pre-2020 renewable energy plans may still largely be on track, they are far from sufficient from a climate change mitigation perspective. First, electricity generation only accounts for approximately half to two-thirds of Gulf countries' total GHG emissions. Second, renewables' shares in electricity generation capacity still translate into significantly lower shares in generation, in the absence of storage capacity; currently, twice the solar capacity is needed to achieve similar output levels than with natural gas.[58] Third, Gulf countries continue to construct fossil-fueled power capacity – primarily natural gas, but Dubai is developing a 2.4 GW coal capacity.

Staying below 1.5 degrees Celsius or 2 degrees Celsius of global warming would require global carbon dioxide emissions to reach net zero around 2050 and 2075, respectively.[59] In the Gulf states, these emissions appear to remain largely on a growth trajectory.[60]

Emerging Trends and Policy Determinants

The Gulf Arab governments' early economic policy responses to the coronavirus pandemic included: liquidity support for banks and lending; government fee exemptions, reductions, and deferrals; salary support for citizens in the private sector; and fiscal reallocations within government as well as spending freezes and budget cuts. Saudi Arabia raised its value-added tax from 5% to 15%. The UAE and Oman undertook government restructuring. It is premature to evaluate the effectiveness of the short-term economic response and, as of August, Gulf governments had not yet made major announcements regarding their longer-term economic recovery strategies.

Despite the progress made in economic diversification in recent decades, the Gulf countries' dependency on hydrocarbon revenue both for government revenue and overall demand remains high. A leading external driver impacting the Gulf countries' economic response to the coronavirus pandemic is therefore the current low oil price environment. It is a major constraint, forcing Gulf leaders to prioritize certain areas in their recovery plans over others.

58 According to U.S. estimates, the capacity factor of solar energy is on average 25%, natural gas is close to 60%, and nuclear energy is more than 90%. "What is Generation Capacity?," *U.S. Office of Nuclear Energy*, May 10, 2020.

59 "In-Depth Q&A: The IPCC's Special Report on Climate Change at 1.5C," *Carbon Brief*, October 8, 2018.

60 A study from 2019 projected Kuwait's GHG emissions to increase at an annual rate of 1.1% through 2035. In 2015, experts projected Saudi Arabia to become the world's sixth highest emitter by 2030. Kuwait Institute for Scientific Research, *2019 Kuwait Energy Outlook: Sustaining Prosperity Through Strategic Energy Management* (Kuwait City: KISR, 2019), 18; Niklas Hohne, NewClimate Institute, cited in: "The Paradox of Saudi Arabia's Climate Plans," *Climate Analytics*, November, 24, 2015.

Among internal policy drivers, top officials in most cases still retain broad powers over decision making, and their autonomy could even expand, with the pandemic response providing a cover for implementing reforms that could have been less feasible in normal times.

Changes in oil prices have generally been a major determinant of Gulf spending, and pro-cyclical investments have been the norm. With Brent prices averaging at $43 in July, the limited appetite Gulf governments have so far demonstrated to engage in high fiscal stimulus spending appears to confirm this rule. While most experts agree that the low prices could persist for years,[61] some believe higher prices will never come back.

Forecasts of when global oil demand will peak have varied and constantly changed in recent years, ranging from the early 2020s through the 2040s. A flurry of predictions have been made that the pandemic could move this peak forward and accelerate the clean energy transition. Some analysts have suggested that peak demand may have already occurred due to a confluence of a slow global economic recovery from the pandemic, continued technological and cost improvements in electric vehicles, changing mobility patterns, and more stringent government policies.[62] Natural gas, too, will see growing competition from solar and other renewables as storage technologies improve. Large uncertainties, however, remain, including whether demand for oil and natural gas will plateau for extended periods or start declining shortly after peaking. And some analysts have suggested demand could still rebound above 2019 levels as soon as 2022 in a scenario of strong global recovery and no policies to replace oil use.[63]

Despite the progress made in economic diversification in recent decades, the Gulf countries' dependency on hydrocarbon revenue both for government revenue and overall demand remains high.

Increasingly aware of the growing threat to their export revenue, Gulf-based oil and gas majors have begun accelerating vertical diversification, such as into petrochemicals, positioning themselves strategically in growth markets like Asia, privatizing their assets, investing in carbon capture and storage to reduce their carbon intensity (ADNOC having set a 5 $MtCO_2$/year by 2030 target), and even flirting with the idea of carbon taxes (given the comparatively lower carbon intensity of Gulf oil).[64]

61 See e.g. "Middle East Economy Watch," PwC, June 2020.

62 See e.g. Jordan Blum, "Oil, Fossil Fuel Demand May Have Peaked in 2019 Thanks to COVID-19: Report," *S&P Global Platts*, June 23, 2020; Edoardo Campanella, "After Decades of Wrong Predictions, Oil May Finally Be Peaking," *Foreign Policy*, July 13, 2020.

63 Frank Watson and Robert Perkins, "Global Oil Demand Unlikely To Have Peaked Due to Pandemic: IEA's Birol," *S&P Global Platts*, July 6, 2020. Some foresee the recovery of global aviation in the next four to five years as a demand booster given the lack of feasible alternatives in the short term.

64 On Saudi Aramco's strategies, see for example: Jim Krane, "For Saudi Arabia, the Threat of Stranded Reserves has Spawned a Climate Strategy," *IAEE Energy Forum* (Fourth Quarter 2019): 7-8. On ADNOC's goals, see: "ADNOC To Build On Its Position as One of the Least Carbon-Intensive Oil and Gas Producers in the World," ADNOC, February 25, 2020.

From a climate change policy perspective, the challenge for Gulf governments is not how to manage their oil and gas sectors per se. Oil and gas industries will continue to play a role in Gulf economies for decades to come, and the imperative to remain competitive in an increasingly carbon-constrained world will push them to reduce emissions in their operations and seek the best possible returns.

The challenge is, rather, how to best invest the revenue generated from this wealth to enable a transition into low-carbon economies and climate-resilient societies before this revenue dwindles. Structurally, there are important differences among the six Gulf Arab countries. In financial terms, Kuwait, Qatar, Saudi Arabia, and the UAE are overall better placed given their higher reserves-to-production ratios and breakeven oil prices than Bahrain and Oman. Saudi Arabia has by far the largest population, nearly 35 million, and a lower GDP per capita than the three other wealthy rentier states. Qatar, in turn, has the world's third largest reserves of natural gas, which improves its position vis-à-vis the oil demand peak but decreases incentives to invest in renewables.

Turning to the role of leadership, most analysts currently expect no major departures from past development strategies in the near term, even if some elements could be canceled or delayed. There have already been some indications that major national development plan-related projects would still go ahead despite an expected widening of fiscal deficits.[65] Government changes and related announcements in the UAE and Oman have indicated policy priorities in the recovery phase. In both cases, climate change seems to have moved down the agenda.

In May, a major UAE government meeting that focused on six sectors – health, education, the economy, food security, society, and the government – announced a review of the government structure, which was confirmed two months later. The ministerial reshuffle indicated that overall economic planning and food and water security, among others, were among rising priorities, while climate change and the environment may be less so.[66] In a government restructuring in Oman in August the Ministry of Environment and Climate Affairs was downgraded to an Environment Authority, with climate change affairs transferred to the Directorate General of Meteorology, under the Civil Aviation Authority.[67]

Overall, the Gulf Arab countries have so far not engaged actively in the global debates on green or sustainable recoveries that have emphasized the necessity to align coronavirus recovery strategies with the goals of the Paris Agreement and the 2030 Agenda for Sustainable Development. These debates have been particularly prominent in the European Union,

65 See e.g.: Robert Mogielnicki, "Is This Time Different? The Gulf's Early Economic Policy Response to the Crises of 2020," *Arab Gulf States Institute in Washington*, August 19, 2020; Nader Kabbani, "How GCC Countries Can Address Looming Fiscal Challenges," *Brookings*, June 16, 2020.

66 "Mohammed bin Rashid Opens UAE Government Meeting for Post COVID-19 Era," *WAM*, May 11, 2020; "President Approves New Structure of UAE Government," *WAM*, July 5, 2020. Food security was delegated to two ministers – of food and water security, and climate change and environment – with the latter responsible for domestic agriculture. The former climate change and environment minister who had held the country's climate change portfolio for a decade was designated as a minister of state at the Ministry of Economy.

67 "PROJECTS: Oman Renames Civil Aviation Regulatory Body," *Zawya*, August 18, 2020.

South Korea, and the United States and among major international institutions, including the International Monetary Fund, World Bank, Organization for Economic Cooperation and Development, and various U.N. agencies.

While it may be too early to judge, the incremental and piecemeal approach of the Gulf countries to the challenge of climate change is likely to continue to prevail over transformative strategies and action.

Conclusion

The Gulf countries have come a long way over the past two decades in how they perceive climate change. It is no longer seen purely as a threat to future oil revenue or narrowly as an adaptation challenge. However, climate change is yet to become a defining issue on the regional agenda.

There are major differences in how the six Gulf countries engage with the issue at the international and domestic levels. At the international level, Saudi Arabia is still held back by its strong focus on oil sector interests, while the UAE has consistently built a reputation as a regional leader in the sustainable energy transition. Others have remained less visible.

While it may be too early to judge, the incremental and piecemeal approach of the Gulf countries to the challenge of climate change is likely to continue to prevail over transformative strategies and action.

At the domestic level, the UAE and Saudi Arabia have taken commendable steps toward building a cleaner electricity mix. While all Gulf countries have announced plans to improve energy efficiency and scale up the share of renewables, the narrow scope and timid ambition of their current climate change plans is unlikely to have a noticeable impact on their generally rising emission trajectories. On the adaptation side, which has been discussed less in this paper, most do not have nationwide strategies and policies in place.

Similar to other parts of the world, the impact of the novel coronavirus pandemic on Gulf emissions is likely to be temporary in the absence of targeted countermeasures. Even though the region's renewable energy plans appear to be largely unaffected, they remain far from aligned with climate-safe trajectories.

The risks associated with dangerous levels of global warming significantly outweigh the costs of taking preventative action, and the pandemic has provided a historic opportunity to correct course. A rebound in emissions should be prevented and they should be redirected onto safe trajectories. Significant acceleration in this regard is needed in particular in Bahrain, Kuwait, Oman, and Qatar. Even in Saudi Arabia and the UAE, mitigation-relevant policies should also target other sectors beyond power generation.[68]

The pace of the global energy transition will to a large extent remain beyond the control of the Gulf countries. The Paris Agreement has weak legal teeth but holds strong symbolic value. The Gulf countries therefore have little to lose from taking a more proactive approach

68 ADNOC's carbon intensity goal and carbon capture and storage plans are a step in the right direction in this sense.

to global climate governance, less influenced by oil sector interests and more representative of all sectors of the economy, and also more informed of, and driven by, the opportunities of international partnerships.

The Gulf governments now face two major decisions regarding the future of their climate change agendas. First, they should make a strategic choice on integrating low-carbon, climate-resilient growth into their coronavirus economic recovery agendas. Second, they should reevaluate the use of the economic diversification lens in their climate change policies. Treating mitigation as conditional to successful economic diversification not only is based on narrow causality, but it also prevents a broader assessment of other related co-benefits and comprehensive cost-benefit analyses.

Climate change should not be treated as an exclusively environmental problem either, reduced to an issue to be merely monitored. Addressing the challenge is ultimately an exercise in economic transformation. In the case of the Gulf states, there are obvious synergies with economic diversification, but climate change should be treated as a strategic priority in its own right to enable a policy response of the appropriate scale and ambition. Most importantly, it should not be sidelined in the region's coronavirus response.

The spring 2020 lockdowns demonstrated the obvious health co-benefits of decarbonized transportation and energy systems even in the Gulf where natural dust is often blamed for the poor air quality. Various other co-benefits of the two main mitigation options, renewable energy and energy efficiency, had already been established, far before the pandemic. They include increased economic competitiveness, cost savings for individuals and businesses, and increased volumes of oil and gas available for exportation and higher-value uses. The pandemic has reintroduced a decade-old element to this debate, namely how they can also be utilized as tools in economic recoveries.

Building on the lessons of the recovery from the 2009 financial crisis, experts worldwide are drawing attention to various areas in which job creation and economic returns can be combined with greening the economy. These include investments in renewable energy and clean transportation infrastructure and related research and development as well as building retrofits.[69] Policies to engage the private sector in these areas would be particularly beneficial for economic growth and sustainability.

Electrification of transportation would be the next logical step for the Gulf countries after decarbonizing their power supply. Green hydrogen is increasingly seen as one viable energy transition option for the Gulf countries, for the decarbonization of their transportation sectors

69 Cameron Hepburn, Brian O'Callaghan, Nicholas Stern, Joseph Stiglitz, and Dimitri Zenghelis, "Will COVID-19 Fiscal Recovery Packages Accelerate or Retard Progress on Climate Change?" (working paper No. 20-02, Oxford Smith School of Enterprise and the Environment, Oxford, United Kingdom, 2020).

and substituting for the inevitable declines in oil and natural gas revenue over time. Fossil fuel subsidy reform and carbon pricing are also tools that can generate government revenue and help direct energy use toward cleaner sources and improved efficiency.[70]

The coronavirus pandemic represents an opportunity to reevaluate existing policies and tools, and climate change provides the needed lens for redirecting development onto sustainable trajectories.

Among the first tasks in moving climate change higher on the Gulf recovery agenda in 2020 include: creating strong institutional mandates for the development of science-based, comprehensive climate change policies; mandating each sector and line ministry to integrate climate change considerations into its crisis recovery plans; and initiating work on a new set of NDCs, for submission by the 2021 U.N. Glasgow Climate Change Conference, which establish ambitious, quantitative medium-term mitigation targets that contain clear definitions of sectoral scope, are based on up-to-date emission data, and build on realistic and transparent baselines.

70 According to Jim Krane ("Energy Governance in Saudi Arabia: An Assessment of the Kingdom's Resources, Policies, and Climate Approach," *Rice University's Baker Institute for Public Policy*, January 2019: 16), as much as one-third of energy demand in the Gulf countries is attributable to subsidies. Energy efficiency in materials and services is important. Reducing energy consumption can achieve even higher benefits, both economic and environmental. Buildings and air conditioning alone account for 70% of power demand in the Gulf states.