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Climate Change

and its Impact on GCC Countries



Stable temperatures and reasonably predictable weather patterns ensure the sustenance of life on Earth. However, currently, this very basis is under threat. According to NASA, Earth's surface temperature has increased by 1°C since late 19th century. Increased ocean temperatures, shrinking ice sheets, retreating glaciers, rising sea levels, increasingly frequent extreme weather events indicate that a rapid climate change is underway. This is being mainly attributed to emission of greenhouse gases from burning of fossil fuels like coal.

GCC and the broader Middle East are particularly prone to such climatic changes. In July 2023, heat index in the Middle East recorded 152°C, reaching levels that are said to be the highest that human body can withstand. Kuwait recorded its highest temperature of 54°C in 2016 and 2021.

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Impact Assessment

In the backdrop of climate change, the world is witnessing extreme weather events, intense droughts, water scarcity, rise in sea level etc. Extreme weather events have been identified as the second most severe risk in World Economic Forum's Global Risk Report. Heavy rainfall in March 2023, hailstorm in December 2022, flash floods in November 2018 are examples of some extreme weather events caused by climate change in Kuwait. This is impacting us in a myriad of ways from food security and water availability to economic development.

The outlook on impact of climate change is quite grim. Temperature in GCC is expected to increase by 1-2°C by 2050.[1] A 2°C increase in global temperatures above pre-industrial levels would see a 4–5°C increase in surface temperatures in GCC countries. Sea level is expected to rise by 1m by 2100.

1 Impact on Population and Migration

Extreme weather events would result in loss of lives and population displacement. By 2030, 700 million people are at risk of being displaced because of drought.[2] On one hand, according to World Bank, due to climate change, GCC is expected to see inward migration of 143 million people from Southeast Asia and Sub-Saharan Africa, as well as Latin America by 2050. On the other hand, according to NASA, large parts of GCC might become unlivable by 2050 due to rising temperatures. Additionally, migrant workers in GCC would be at greater risk with increase in temperatures.

[1] IPCC Assessment Report 5
[2] WHO

2 Impact on Food Security and Water Availability

In the broader Arab region, agricultural sector is likely to experience a 50% decline in food production and security.[3] By 2025, 80-100 million people in MENA, including the GCC, will be exposed to water stress.[4]



3 Impact on Economy

Loss of GDP

Climate change impacts economies through damage to property from extreme weather events, loss of productivity due to rising temperature and loss incurred in the transition to low-carbon economy.

Mid Century GDP Changes, relative to a no-climate change world

Country	Well Below 2°C (Paris Agreement)	2°C	3.2°C
World	-4.2%	-11%	-18.1%
Middle East & Africa	-4.7%	-14%	-27.6%
UAE	-5.5%	-16.6%	-33.7%
Saudi Arabia	-5.3%	-17.8%	-35.5%

Source: Swiss Re Institute;

[3] Saad Darwish, Climate Change: Economic Impacts On The Arab Gulf Cooperation Council
[4] Middle East Institute

Reduced Labor Productivity

With increase in global temperature, heat stress will increase.[5] This would affect workers' health and in turn labour productivity. In the Arab States, heat stress is expected to reduce working hours by 1% by 2030, compared to 0.4% in 1995.

Working Hours Lost Due to Heat Stress

Country	Working Hours Lost (%)	Working Hours Lost (Full Time Jobs in Thousands)
Qatar	5.3	76.6
Bahrain	4.1	32.1
UAE	2.6	164.1
Kuwait	1.0	20.9
Oman	0.5	6.2
Saudi Arabia	0.5	69.3

Source: ILO

Transition Cost to Clean Energy

According to Energy Transition Commission, achieving net-zero by 2050 requires total capital investment of USD 110 trillion over 2021-2050. Of this, 70% would have to be towards electrification of power sector. The rest would cover buildings, transport, carbon removal, hydrogen production and storage and industry such as steel and aluminium.



[5] Heat received in excess of what the body can withstand

Sectors Impacted by Climate Change

Tourism and industrial sectors are likely to be negatively impacted with rising temperature, lower water supply and extreme weather events. Energy and mining are vulnerable to risk of transition to low-carbon economy.

While construction would be impacted by lower labour productivity, heat resistant infrastructure and green buildings could keep up pace of activity in the sector. Businesses that focus on lowering the impact of climate change such as carbon capture, electric vehicles stand to benefit.



2 Mitigation Measures

1 Carbon Capture Technology

This involves capture and storage of CO_2 emissions without letting them enter the atmosphere. As of March 2023, there are a total of 13 carbon capture, utilization and storage (CCUS) projects planned or operational in GCC, with total annual capacity of 20 million tonnes of CO_2.[6]

[6] IEA/AI Monitor

2 Circular Economy



With its key hydrocarbon sector seen as a major pollutant, implementing concepts of circular economy would enable GCC countries to mitigate impact of the sector. This involves usage of renewable or recycled inputs, maximizing product use and recovering by-products waste. In addition to national commitments towards circular economy, Saudi Aramco's initiative to capture CO2 from Hawiyah Gas Plant and injecting it into an oil reservoir at the Uthmaniyah field to increase its productivity, Borouge's investment to commercialise circular packaging solutions are some examples.

3 Energy Transition

Energy transition encompasses incorporation of renewables, net-zero emissions systems of hydrocarbons, decarbonized industries, and hydrogen. GCC has been making progress in these fronts through with renewable energy and hydrogen strategies, net-zero pledges and following it up with execution of projects in these areas. With proper execution of green growth strategies, GCC's GDP is estimated to grow to USD 13 trillion by 2050 from USD 2 trillion in 2022.[7]

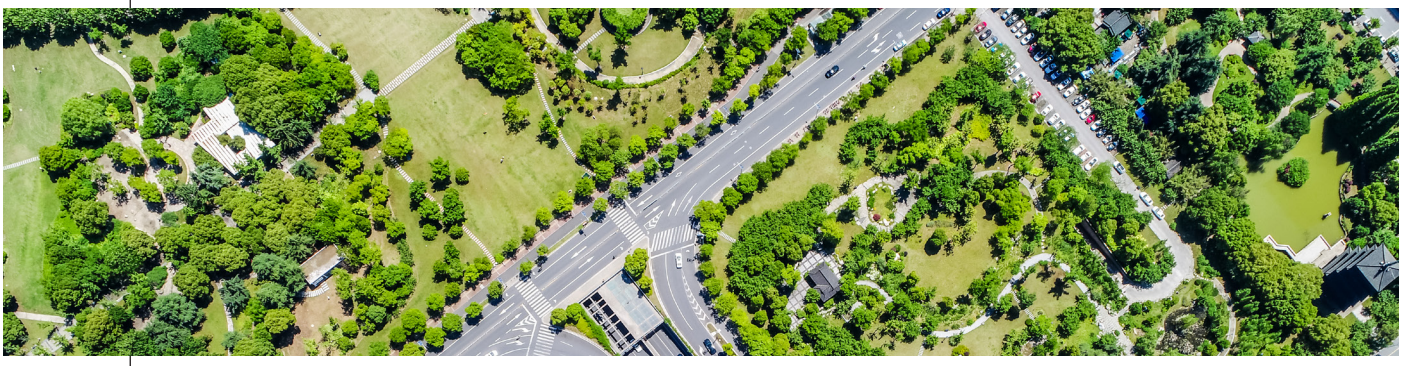
[7] World Bank

4 Electrification and Energy Efficiency

Electrification in transport, cooling etc. help in lowering carbon emissions. UAE's aim to have 50% of cars on roads to be electric vehicles by 2050, Saudi Arabia's plan to install 50,000 EV charging stations by 2025 are some examples of GCC countries initiatives in this front. With requirements such as constant air-conditioning, per capita fossil fuel consumption in GCC countries is amongst the highest in the world. Energy consumption in residential and commercial buildings has risen by over 200% on average across the GCC from 2000-2018. In this context, energy efficiency assumes importance, offering potential to save up to 180,000 gigawatthours (GWh) per year in GCC countries.[8]

3 Adaptation Measures

Even as countries take measures to mitigate further warming of the planet, adaptation measures are quintessential to handle the current repercussions of climate change.



1 Urban Planning

With many cities in GCC being along the coastline, rise in sea level due to climate change is a concern. Adaptation measures such as restricting construction in the most at-risk urban areas, avoiding unplanned settlements, ensuring durability of real estate property, improving or constructing flood defenses etc. are essential.

[8]KAPSARC

2 Early Warning Systems

GCC region is prone to events like flash floods and sandstorms. This makes it imperative for countries to have early warning system such as UAE's high tech dust forecasting system.

4 Role of Finance

The world needs USD 4-5 trillion a year to achieve climate goals of limiting the global temperature increase to 1.5°C above pre-industrial levels as in the Paris Agreement.[9] GCC countries are likely to require significant investment too. For example, UAE would require USD 680 million to meet its net-zero goals.[10]



1 Green Finance

Non-hydrocarbon sectors in GCC such as agriculture, construction etc. present a USD 2 trillion opportunity for green investing.[11] Restructuring supply chains, use of low environmental impact hydrocarbon resources are some use cases. Green finance is becoming popular in the region with over USD 8.5bn in green and sustainable bonds and Sukuk issuance in 2022, compared to just USD 605mn in 2021.[12]

[9] UNEP
[10] Standard Chartered
[11] Stratgy&
[12] PwC

2 ESG Investing

Globally, ESG investing seems set to become the norm with 89% of investors being ESG adopters.[13] 81% of high-net-worth investors in the Middle East are considering ESG issues when looking at potential investments.[14] Prospects for ESG investing in GCC seems to be favourable amid investor interest, upcoming ESG products like green bonds, ESG focused funds by firms in GCC and ESG disclosure requirements by stock exchanges.

3 Financial Markets

Emissions Trading Market

Carbon markets are gaining momentum in the region with initiatives such as Saudi Arabia's launch of domestic carbon credit scheme, Abu Dhabi Global Market's plans to form a voluntary carbon credit trading exchange and clearing house etc. Providing clear policy direction and openness to trade in international carbon markets would be important in ensuring success of the system in GCC countries.

Listing and Disclosure Requirements for Companies

With increasing interest in ESG investing, companies that are environment friendly would find it easier to attract capital through listing or follow on offers. Stock exchanges across the world are making it mandatory for listed companies to disclose climate risks, the environmental impacts of their activities and other ESG information. In GCC, countries other than Oman have published ESG guidance while UAE has made such disclosures mandatory.[15] Additionally, offering products such as green bonds would aid in attracting capital.

[13] Capital Group Research
[14] Lombard Odier
[15] EY

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Conclusion

Failure to mitigate climate change features among the top risks in both 2-year and 10-year outlook of Global Risks report. It has also been highlighted as one of the risks we are least prepared for. Given their hydrocarbon reliant economies, GCC countries would have to balance short term economic needs with long term green ambitions and would require conscious, concerted and tactical efforts in contributing to a greener future.



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8 Authors



M R RAGHU
CEO, Marmore MENA Intelligence
rmandagolathur@e-marmore.com



APARNA SRINIVASAN
Senior Analyst • Research
asrinivasan@e-marmore.com

9 Meet the Core Team



M R RAGHU
CEO, Marmore MENA Intelligence
rmandagolathur@e-marmore.com



NC KARTHIK RAMESH
Director
kramesh@e-marmore.com



SANKARA NARAYANAN
AVP - Consulting & Advisory Services
snarayanan@e-marmore.com



AJAY SAMUEL
Senior Manager
asamuel@e-marmore.com

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For further information, please contact 'Markaz' at P.O. Box 23444, Safat 13095, Kuwait; Email: info@e-marmore.com; Tel: 00965 22248280; Fax: 00965 22495741.