



Climate Change Adaptation in the GCC

Implementation Gaps

Tanzeed Alam and Leela Evans

COP 27 AND CLIMATE ACTION IN THE MIDDLE EAST

The Middle East region, a large swathe of which comprises deserts and semi-arid zones, is a climate hotspot. It is warming almost two times faster than the global average. Intensive exploitation and use of fossil fuels, which lead to increased greenhouse gas emissions, are part of the reason for the warming. Heatwaves as well as extreme weather events such as droughts, dust storms and torrential rains will have disruptive health and socioeconomic impacts.

The 27th Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC), set to place in Sharm el-Sheikh, Egypt, from 6 November 2022 is a timely opportunity to examine the progress of climate action in the Middle East. This series of *Insights* looks at the key climate threats faced by countries in the region and the mitigation and adaptation measures pledged or implemented so far, including financing challenges. It hopes to identify the implementation gaps in these measures and offer possible solutions.

Cover photo: People taking cover inside the FIFA World Cup Qatar countdown clock during heavy rains in Doha, 28 July 2022. AFP.

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The Gulf Cooperation Council countries are particularly vulnerable to the impacts of climate change: temperatures are rising twice as fast as the global average, extreme weather patterns have caused more intense flooding, and a recent surge in suffocating dust and sandstorms saw homes and major cities caked in brown dirt as visibility plunged below 1 km. Given that such climate impacts are predicted to intensify, these countries would increasingly need to prioritise climate adaptation measures. But are they doing so? With Egypt poised to hold the 2022 UN climate conference (COP 27) next month, this paper explores the opportunity for climate change adaptation in the GCC countries and suggests measures that could be taken to tackle the existing implementation gaps.

GCC States and Cities: Particularly Exposed to Climate Change

The global intensification of climate impacts is already well in evidence. The year 2020 was one of the warmest years on record. Floods, droughts, storms and wildfires affected ecosystems and over 50 million people globally that year.¹

The nations of the Gulf Cooperation Council (GCC) — Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates —

¹ United Nations Environment Programme (UNEP), “Adaptation Gap Report 2020”, 14 January 2021, <http://www.unep.org/resources/adaptation-gap-report-2020>.

have a collective area of more than 2.5 million sq km, a population of more than 54 million people, and a total GDP in excess of US\$3.464 trillion (see table 1). Approximately 90% of the population in these

Table 1. Demographic Profile of GCC States

Country	Population (total) ²	% Urban population ³	GDP per capita ⁴ (US\$)
Bahrain	1,472,233	89.7	\$48,766
Kuwait	4,268,873	100	\$41,627
Oman	4,576,298	87.8	\$30,178
Qatar	2,695,122	99.3	\$93,508
Saudi Arabia	36,408,820	84.7	\$46,811
UAE	9,441,129	87.5	\$58,753
World	7,673,533,974	56	\$12,263 ⁵

countries live in urban areas. Most of these urban areas and capital cities are located along the coast and often have a high concentration of buildings, roads, infrastructure and industry. Consequently, a significant

² World Population Review, “GCC Countries”, 2022, <https://worldpopulationreview.com/country-rankings/gcc-countries>

³ World Population Review, “Most Urbanized Countries”, 2022, <https://worldpopulationreview.com/country-rankings/most-urbanized-countries>

⁴ World Population Review, “GDP Per Capita by Country”, 2022, <https://worldpopulationreview.com/country-rankings/gdp-per-capita-by-country>

⁵ Macrotrends, “World GDP Per Capita 1960–2022”, <https://www.macrotrends.net/countries/WLD/world/gdp-per-capita>

proportion of people and urban infrastructure are exposed to climate change hazards.⁶

Physical drivers such as storms and temperature and sea level rises will impact the economic sectors of countries and cities. For example, increased temperatures and heat waves will directly affect human health, causing increased pressure on healthcare systems and reducing productivity.

Rising Temperatures

Temperatures in the GCC region are rising twice as fast as the global average.⁷ The hottest time in the region typically is July. In 2016, temperatures reached 54°C in Mitribah, Kuwait, with government offices being shut for two days in mid-July and streets deserted.⁸ More recently, in 2021, an early summer heat wave struck the GCC, with temperatures spiking above 50°C in Oman, the UAE and Kuwait. The UAE saw its national all-time heat record on 6th June 2021, when the temperature in Sweihan, Abu Dhabi, reached 51.8°C.⁹

Rising temperatures will increase energy demand for cooling beyond current expectations, with analysis by the International Energy Agency (IEA) indicating that the Middle East as a whole will see an increase in cooling degree days (CDD) of 7% by 2035 and 11% by 2050.¹⁰ Air conditioning in buildings contributes to the highest

⁶ AFP, “‘Avoid driving’, UAE residents warned as dust storms smother roads”, *Al Arabiya*, 14 August 2022, <https://english.alarabiya.net/News/gulf/2022/08/14/-Avoid-driving-UAE-residents-warned-as-dust-storms-smother-roads>.

⁷ Sophie Tremblay, “The Middle East’s \$13 billion Sandstorm Problem is About to Get Worse”, CNN, 25 May 2022, <https://edition.cnn.com/2022/05/25/middleeast/climate-change-sand-storms-mime-intl/index.html>.

⁸ “Iraq Sweats in Near-Record Heatwave”, BBC News, 22 July 2016, <https://www.bbc.co.uk/news/world-middle-east-36867138>.

⁹ “Heat Bakes Middle East as Temperatures Top 125 Degrees”, *Washington Post*, 7 June 2021, www.washingtonpost.com/weather/2021/06/07/record-june-heat-wave-middle-east/.

¹⁰ International Energy Agency, “World Energy Outlook Special Report: Redrawing the Energy–Climate Map”. 2021.

proportion of electricity loads in the region, and rising temperatures will drive this demand up to 20% or more by mid-century¹¹.

Flooding

Significant flooding in the region included the 2009 and 2011 floods in Jeddah from intense rainfall. These has caused an estimated US\$3–5 billion in damages and were registered as the worst floods in 30 years.¹² In 2007, Cyclone Gonu caused flooding and damage in Oman, estimated at US\$3.9 billion in damages and affecting 20,000 people.¹³ On the first day of the cyclone, an estimated 27% of the capital city, Muscat, was without power, 90% of all roads were affected, and 49 people were confirmed dead.¹⁴ Cyclone Gonu also spread much further into the Gulf region than any other similar weather event, affecting also the eastern coast of the UAE and the city of Dubai.

Heavy precipitation events could entail tremendous costs if there is a need for flood protection structures, slope stabilisation, dewatering of foundations and extra staff and technical equipment to undertake these works.¹⁵ They may also deal a blow to the building frenzy in some of the GCC countries by slowing down construction work.

¹¹ Emirates Wildlife Society(EWS)–WWF, “UAE Climate Change Risks & Resilience: An Overview of Climate Change Risks to 12 Key Sectors”, 2017, <https://greenarea.me/wp-content/themes/divi-child/reports/WWF.pdf>.

¹² Daloudi and Niang, “Flood Risk and Vulnerability of Jeddah City, Saudi Arabia”, in *Recent Advances in Flood Risk Management*, eds. John Abbot and Andrew Hammond (IntechOpen, 2019), www.intechopen.com/books/recent-advances-in-flood-risk-management/flood-risk-and-vulnerability-of-jeddah-city-saudi-arabia.

¹³ World Bank, “Natural Disasters in the Middle East and North Africa: A Regional Overview”, 2014, <http://documents1.worldbank.org/curated/en/211811468106752534/pdf/816580WPOREPLA0140same0box00PUBLIC0.pdf>.

¹⁴ Sultan Al-Shaqsi, “Care or Cry: Three Years from Cyclone Gonu: What have we learnt?”, *Oman Medical Journal* 25, no. 3 (July 2010): 162–167, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3191634/>.

¹⁵ University of Cambridge, “Climate Change: Actions, Trends and Implications for Business: The IPCC’s Fifth Assessment Report, Working Group 1”, 2013,

Water Scarcity

The GCC states are among the most water-stressed countries in the world,¹⁶ relying heavily on the desalination of seawater to provide drinking water. Desalination is energy intensive and releases hot brine into the marine environment, which increases local water temperatures and salinity and kills marine life. The salinity of GCC coastal waters is projected to increase due to increased dumping of brine and the evaporation caused by climate change.¹⁷ Effectively processing water with high salinity remains a challenge for reverse osmosis technology. Rising salinity will therefore affect the ability of desalination plants to provide fresh drinking water.

Droughts and water stress negatively impact agricultural yields, affecting the livelihoods of farmers and the sources of nutrition on which entire urban communities depend.

Public Health

The World Health Organization (WHO) considers a changing climate as the greatest threat to global health in the 21st century, noting that it already claims tens of thousands of lives a year due to heat waves and other extreme weather events, outbreaks of infectious diseases, the effects of malnutrition, and environmental pollution.¹⁸ The construction and energy sectors in the GCC region have many employees engaged in outdoor work, all of whom will be negatively affected by high

https://www.cisl.cam.ac.uk/system/files/documents/Science_Report__Briefing__WEB_EN.pdf.

¹⁶ Tianyi Luo, Robert Young, and Paul Reig, “Aqueduct Projected Water Stress Country Rankings”, World Resources Institute, 2015, <https://wriorg.s3.amazonaws.com/s3fs-public/aqueduct-water-stress-country-rankings-technical-note.pdf>.

¹⁷ Abu Dhabi Global Environmental Data Initiative (AGEDI), “Final Technical: Regional Desalination and Climate Change”, AGEDI, 2016, LNRCCP. CCRG/IO, <https://agedi.org/item/technical-report-regional-desalination-and-climate-change/>.

¹⁸ World Health Organization (WHO), “WHO Calls for Urgent Action to Protect Health from Climate Change”, 2016, <http://www.who.int/globalchange/globalcampaign/cop21/en/>.

temperatures. Extreme heat events also exacerbate poor air quality through the production of ground-level ozone,¹⁹ which in turn worsens public health risks. Air pollutants can irritate the respiratory system, decrease lung function, and may also be linked to cancer.²⁰

All GCC countries outline climate change's public health impacts as a common concern in their nationally determined contributions (NDCs) and national communications on climate change.

Ecosystems and Biodiversity

The marine and coastal habitats of the GCC have ecosystems of high biodiversity value, including islands, coral reefs, seagrasses, intertidal areas, salt marshes, tidal inlets (*kehors*) and mangroves. These habitats offer refuge for unique and endangered marine species, including the green turtle, hawksbill turtle, loggerhead turtle, the Indo-Pacific humpback dolphin, and, in Abu Dhabi, the world's second-largest population of dugongs.²¹ Further changes in climatic conditions will affect these sea animals severely. Warmer sea surface temperatures and changing water depths will alter the growth rates of seagrass beds found in shallow waters, on which a range of species feed.²²

¹⁹ Ground-level ozone is created when pollutants emitted by cars, power plants, refineries and similar sources chemically react in the presence of sunlight. For details, see Kovats, R. S., and Hajat, S., "Heat Stress and Public Health: A Critical Review", *Annual Review of Public Health* 29 (2008): 41–55, <https://pubmed.ncbi.nlm.nih.gov/18031221/>; Ion of Concerned Scientists, "Climate Change and Your Health. Rising Temperatures, Worsening Ozone Pollution", Cambridge, Massachusetts, USA, 2011.

²⁰ Verner, D. (ed.), "Adaptation to a Changing Climate in the Arab Region. MWN Development Report", World Bank, 2012.

²¹ Taher, M. M., Mohamed, A. R. M., Al-Ali, A. K. H., "Some Ecological Characteristics and Ichthyofauna of Surrounding Sammaliah Island, Abu Dhabi, UAE", *Basrab Journal of Science* 30, no. 2 (2012): 31–49; Environment Agency, Abu Dhabi, Webpage on Dugongs, www.ead.gov.ae/en/discover-our-biodiversity/mammals/dugong.

²² Greve, T.M., and Binzer, T., "Which Factors Regulate Seagrass Growth and Distribution?" in *European Seagrasses: An Introduction to Monitoring and Management*, eds. Borum, J. et al. (2004), pp. 19–23.

Rising sea water temperatures and ocean acidification are additional stressors for coral reefs, with their bleaching already becoming more common in the region.²³ Some marine forms will seek to respond by changing their ranges of migration. However, if they do not have suitable areas to migrate to, they would face existential threats.

Economic Benefits of Adaptation

The costs of climate change far outweigh the benefits of early action and investment in adaptation. The Global Commission on Adaptation (GCA) estimated that a US\$1.8 trillion global investment in adaptation measures would bring a return of US\$7.1 trillion in avoided costs and other benefits²⁴ (see table 2).

While the GCC countries all mention adaptation in their NDCs, there is little evidence to show that their pledges have been translated into national adaptation planning processes or city-level plans, nor is there evidence of nature-based solutions (Nbs) being incorporated into climate change or urban plans (see table 3). There is also no publicly available information about the status of investment in adaptation measures. However, we are aware that in at least one of the GCC countries, Covid-19 affected the allocation of budgets to implementation of adaptation measures.²⁵ This lack of implementation may be a reflection of the low priority accorded to climate change adaptation, compared with mitigation and other issues for these countries.

²³ World Meteorological Organization, “Climate, Carbon and Coral Reefs”, WMO, No. 1063, 2010, https://library.wmo.int/doc_num.php?explnum_id=5044; Verner, D. (ed.), “Adaptation to a Changing Climate in the Arab Region”. Mena Development Report, World Bank, 2012.

²⁴ GCA, “Adapt Now: A Global Call for Leadership in Climate Resilience”, GCA, 2019, https://gca.org/wp-content/uploads/2019/09/GlobalCommission_Report_FINAL.pdf

²⁵ Personal Communication with high level environmental official of a GCC country, 2021.

Table 2. Benefits and Costs of Illustrative Investments in Adaptation

Adaptation measure	Net benefit (US\$ trillion)	Benefit–cost ratio
Strengthening early warning systems	0.1	9:1
Making new infrastructure resilient	4.0	5:1
Improving dryland agriculture crop production	0.7	5:1
Protecting mangroves	1.0	6:1
Making water resources management more resilient	1.4	4:1
Total	7.1	

Note: This table is a simplified version from Figure ES.1 of the GCA report (fn. 4). The net benefits total does not equal the sum of the rows due to rounding. The benefit–cost ratios selected are also rounded estimates of the range provided in Figure ES.1 (estimating the median line of the range provided).

That said, the lack of funding allocation for adaptation is not unique to the GCC; it is a global reality. Global funding for climate adaptation averaged US\$30 billion a year in 2017–18, which remains far short of the US\$300 billion a year that the UN Environment Programme (UNEP) states is required to respond to escalating climate risks. According to Swiss RE Institute, by 2050, the world stands to lose up to 18% of GDP from climate change with a 3.2°C temperature rise. The study estimates that the same temperature increase would result in Saudi Arabia and the UAE losing up to 35.5% and 33.7% of GDP, respectively.²⁶

²⁶ Swiss RE Institute, “The Economics of Climate Change: No Action Not an Option”, 2021, www.swissre.com/dam/jcr:e73ee7c3-7f83-4c17-a2b8-8ef23a8d3312/swiss-re-institute-expertise-publication-economics-of-climate-change.pdf. The Swiss RE

Table 3. Status of Climate Change Adaptation Planning in GCC Countries²⁷

Country	NDC mentions adaptation?	National adaptation planning process	≥ 1 City-level adaptation or resilience plan	NbS in national climate or urban plans
Bahrain	√	→	X	√
Kuwait	√	√	X	√
Oman	√	→	X	X
Qatar	√	X	X	X
Saudi Arabia	√	X	X	√
UAE	√	√	√	√

Legend

√ = Yes; → = Work in Progress; X = No

Opportunities and Solutions for Adaptation

The global intensification of climate impacts requires strategies and measures to adapt to ongoing risks. The UNEP Adaptation Gap Report 2020 stressed that while most developing countries were working on national adaptation plans (NAP), uptake and action was low.²⁸

assessment looked at the risks to the economy posed by transition and physical risks of climate change. Therefore, the GDP figures for the Saudi Arabian and UAE economies include exposure to decarbonisation policies and reduced demand for oil and gas, as well as the impacts of more extreme climate changes, including more unknown climate feedback loops occurring.

²⁷ Table is correct as of 6 September 2022, based on reviews of documents uploaded on UNFCCC website, news articles available online, and expert knowledge, and validated through private interviews. National Adaptation Planning Process refers to any document or process in place such as National Adaptation Plans, National Adaptation Plans of Action and other terminological variations of climate change adaptation planning.

²⁸ UNEP, “Adaptation Gap Report 2020”.

Despite the challenges, there are significant opportunities for climate change adaptation in GCC cities. Every GCC country has signed the Paris Climate Agreement and outlined some of the key climate change vulnerabilities it faces. Although there are efforts to conduct urban/city level adaptation, gaps in implementation arise due to several common issues. Listed below are some of these issues alongside recommendations that policymakers at national, mayoral or municipality levels can take.

- (1) **Prioritising climate adaptation agenda.** Understandably, Covid-19 has taken priority over all other issues on government agendas since the onset of the pandemic. But climate change has also been accorded lower priority than several other issues. Top-level decision makers must recognise climate change as a threat to national security — indeed, as an existential threat for some communities — and one that will exacerbate the existing socio-economic and health crises their countries face. There is, therefore, a dire need to prioritise climate adaptation measures.
- (2) **Improving governance of climate change.** Climate change governance usually rests with environment ministries and not at whole-of-government level. Environmental consciousness should permeate the work of every agency. For instance, improving the resilience of the built environment to the effects of climate change is not just a matter for the environment ministry but would have to involve the agencies responsible for housing, roads, bridges and other public infrastructure as well. Thus, climate change policies should be integrated into national development plans and budgets and managed at prime ministerial/presidential office level. Climate action should also be approached in a whole-of-society manner and be undertaken in an inclusive and transparent manner. Local communities should be engaged on climate change adaptation to secure their inputs and buy-in and reduce public resistance to measures adopted by governments.
- (3) **Building institutional capacity beyond environmental ministries.** There is a lack of institutional capacity for climate change adaptation across government departments, businesses and

academia. Raising awareness of the importance of adaptation to climate change among senior decision makers is key. This could be done by providing training courses on climate change impacts and adaptation for mid-level managers and senior technical advisers.

Similarly, finding ways to engage with youth on urban adaptation is incredibly important — high school curricula could incorporate urban adaptation knowledge, and local universities should create undergraduate and postgraduate degree programmes in climate change and urban adaptation, helping to ensure that the next generation of leaders are equipped with the scientific knowledge to tackle the climate crisis.

- (4) **Supporting science-based adaptation policymaking.** Gaps in scientific knowledge and data will restrict the ability to monitor and evaluate the impact of adaptation and limit access to funding. There is a need for systematic collection and use of climate and meteorological data to update climate models regularly. Regional meteorological centres could provide such insights, as is being done in Europe by the European Centre for Medium Range Weather Forecasting.

Since the effects of climate change respect no national boundaries, it is imperative that periodically updated and science-based adaptation planning processes be established on the regional impacts of climate change as well. Countries should start implementing collaborative action plans and filling identified gaps. They should also establish climate change research networks.

- (5) **Allocating finance for climate change adaptation.** Climate change adaptation will require additional and dedicated financing in the GCC. To deal with this, the GCC countries must:
- Create local financing tools that can assist in funding adaptation measures;
 - With Covid-19 having left a major dent in many countries' economies, there are opportunities to raise revenues through carbon taxes, a proportion of which can be used for adaptation;

- Consider innovative financing mechanisms. There are a number of these being deployed across the world, including private finance, crowdsourced funding through organisations such as Kiva, and international banks and funds;
 - If eligible, approach international funding sources for support. The Global Ecosystem-based Adaptation Fund (GEBAF) was recently established by UNEP and the International Union for Conservation of Nature (IUCN). The Global Environmental Facility (GEF) and Green Climate Fund (GCF) could be other sources of funding.
- (6) **Implementing NbS.** NbS offer an opportunity to help create green jobs, mitigate and adapt to climate change, improve city dwellers' health and well-being, and improve urban biodiversity. There are some important NbS initiatives already occurring in the GCC countries, but their success and scalability will require cities' climate change, biodiversity and economic development agendas to be aligned. Some notable examples of NbS include:
- The Saudi Green Initiative. This initiative is committing to plant 10 billion trees across Saudi Arabia and another 40 billion in the region to improve air quality, reduce sandstorms, combat desertification, and lower temperatures;²⁹
 - “Blue Carbon” Environmental and Social Responsibility Project. The Environment Agency–Abu Dhabi (EAD) has partnered with the global French utility company ENGIE to establish this project, which uses drone technology to help rehabilitate Abu Dhabi's mangrove habitats.³⁰ The project's technical partner is Distant Imagery Solutions, and Earth Matters Consulting helped to facilitate the development of this partnership.

²⁹ Saudi Green Initiative website, www.saudigreeninitiative.org/targets/greening-saudi/.

³⁰ ENGIE, “Environment Agency — Abu Dhabi and ENGIE Launches Phase II of the Mangrove Rehabilitation Project Using Drone Technologies”, Press Release, 26 September 2021, https://engimiddleeast.com/press-releases/ead-mangrove_rehabilitation-project-using-drone-technology/.

- (7) **Adapting to sea level rise (SLR) and extreme events.** Real estate developers planning projects in coastal areas should be trained on design best practices to protect assets against SLR and storm surges. Policymakers should make urban and land use planning decisions on the basis of the latest science on climate change impacts. They should ensure that climate change vulnerability assessments are regularly updated so that these could inform their urban adaptation measures to deal with key climate risks.

Early warning systems for flash flooding are important solutions that need to be developed, so that countries in the Middle East could better prepare for major storms. Examples include the high-tech dust forecasting system developed by the UAE's Masdar Institute in 2016.³¹

Protecting grey-green infrastructure is also essential, including integration of coastal natural assets into planning processes to manage sea level rises and extreme events. “Green infrastructure”, such as mangroves, salt marshes, seagrasses and coral reefs, all help protect coastal areas, and should be part of a comprehensive strategy alongside the development of grey infrastructure (e.g., sea walls). Green infrastructure can be cheaper to manage and maintain than grey infrastructure.

- (8) **Adapting to water scarcity through a circular economy.** Developing integrated water management systems is an important adaptation strategy that policymakers can facilitate by:
- Protecting major water sources such as rivers and water basins;
 - Ensuring that water supply infrastructure is well maintained to reduce leaks and losses;
 - Developing policies and initiatives that mainstream end-use efficiency, such as establishing retrofitting programmes to reduce water flow from taps, toilets and showers, implementing

³¹ Daniel Bardsley, “New Weapon in the UAE’s War on Dust”, *The National News*, 3 September 2016, www.thenationalnews.com/uae/new-weapon-in-the-uaes-war-on-dust-1.230051.

efficient irrigation networks, and using low water-consuming trees and vegetation in urban landscaping;

- Treating wastewater sufficiently so that it can be reused in urban landscaping and food production, along with public awareness campaigns to debunk negative perceptions about the use of treated wastewater in food production.

(9) **Adapting urban areas to rising temperatures.** Adaptation of the built environment is critical. Policymakers must take an integrated approach to building, combining smart urban planning, building design and building technologies to reduce heat load. Adaptation and mitigation co-benefits are crucial strategies for adaptation. Some important areas for consideration are:

- Developing stringent green building codes;
- Deploying more holistic approaches to passive cooling that integrate NbS into urban planning and changes to the building envelope;
- Incentivising the use of energy-efficient cooling technologies. Municipal authorities can join strategic global initiatives such as the District Energy in Cities Initiative³² and the Clean Cooling Collaborative.³³

(10) **Building climate-resilient public health systems.** Since many of the health-related impacts of climate change will be felt most acutely in urban areas, policy makers can consider the following measures:

- Collaboration between health agencies and meteorology departments to create early warning systems and develop emergency response planning;
- Health departments and real estate regulators jointly establishing “safety in heat” programmes to protect the well-being of outdoor workers during heat waves;
- Monitoring and increasing understanding of the links between climate change and its impacts on human health.

³² Website of District Energy in Cities, www.districtenergyinitiative.org/.

³³ Website of Clean Cooling Collaborative, www.cleancoolingcollaborative.org/.

The Road Ahead for Adaptation — COP 27 & COP 28

In less than five weeks' time, Egypt will host the 27th Conference of the Parties (COP 27) of the UN Framework Convention on Climate Change (UNFCCC) in Sharm El-Sheikh, with a view to building on previous successes. COP 27 has set out the important aim of furthering the Global Goal on Adaptation, which was agreed at COP 26 in Glasgow. That COP 28 will be held in the UAE signals an opportunity to keep adaptation at the forefront of the GCC region.

Both the Egyptian and UAE presidencies could make this aim more tangible by creating a specific initiative on urban adaptation, fostering collaboration between the GCC countries and the wider Middle East. Both countries' respective High Level Climate Champions would naturally be the most suitable persons to facilitate such an initiative, with Egypt being well placed to bring together both GCC countries and non-GCC members. A wider regional initiative would help address any inequalities and climate justice concerns as the poorer Middle Eastern countries would be at the same table as the richer GCC countries. The broad aims of the initiative could be to deepen exploration of climate vulnerabilities and identify common opportunities and ways of collaborating across the Middle East on adaptation. Specific objectives could involve countries that face common vulnerabilities getting together to develop shared action plans that address key gaps and recommendations. The ideal outcome would be that these countries are ready to implement their action plans by the end of the UAE's presidency of COP 28. The initiative would have more integrity and impact if it adopts an inclusive approach that considers the different perspectives of various stakeholders. The secretariat of the High Level Champions would be well placed to organise, convene and support the work, while also bringing together others from the region. Stakeholders could include (but not exclusively) the following:

- Government leads on adaptation at national and city levels;

- Businesses that face major impacts but also are able to provide solutions (e.g., real estate companies, financial and insurance institutions, technology companies);
- Academics engaged in climate change impacts and adaptation research;
- Civil society organisations in the areas of community development, awareness, research, and policy. ◆

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