



# Gulf Transition to Low-Carbon Economies: The Role of Carbon Markets

*Aisha Al-Sarihi*

## KEY TAKEAWAYS

### **Carbon Markets are Gaining Unprecedented Momentum Across the Six Gulf Arab States**

Almost all Gulf Cooperation Council (GCC) countries have established carbon market-related initiatives ranging from voluntary carbon credit exchange platforms to national carbon alliances that encourage emissions trading. Carbon markets will also be at the top of the COP 29 agenda, with the aim of resolving technical and methodological issues.

### **Carbon Markets in the GCC are Still Nascent**

The region's carbon markets are facing structural challenges, including emissions data availability and disclosure. Institutional capacity building also requires improvement. Gulf countries would benefit from aligning their carbon markets with economic diversification plans and fostering regional collaboration.

### **Carbon Markets Offer New Advantages for the Gulf**

Along with creating economic incentives for emissions reductions and removals, carbon markets also unlock several economic, social, and environmental advantages for the Gulf countries.

### **Carbon Trading Cannot Replace Innovation and Biodiversity Restoration**

Despite their essential role in ecological economics, carbon markets cannot replace the important role that innovation plays in reducing carbon emissions. Efforts to restore polluted environments must also progress and grow.

## KEYWORDS

Carbon Credits

Carbon Markets

Climate Change

Climate Finance

Decarbonization

Emissions Reduction

Nationally Determined Contributions (NDCs)

Gulf Cooperation Council (GCC)

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Cover Image: Industry metallurgical plant smog emissions aerial photography.

## Introduction

Gulf countries are striving to align their economic expansion, which is largely dependent on fossil fuel industries, with sustainable, low-carbon economy practices. Almost all Gulf countries have pledged to adhere to the emissions reduction objectives of the Paris Agreement and have made commitments towards carbon management. Fifteen years ago, climate mitigation efforts in the Gulf were either minimal or nonexistent. The present shift towards addressing climate change is unprecedented. With their net-zero emissions commitments, the Gulf countries are exploring a variety of possible solutions. These include investing in low-carbon engineered solutions (such as renewables, energy efficiency, hydrogen, and carbon capture and storage) as well as carbon trading (or carbon markets), which is gaining momentum. The latter option seemed unthinkable in the Gulf a few years ago, yet voluntary carbon exchange platforms have been created across the region in recent years. For instance, Qatar has been hosting the Global Carbon Council since 2016. In 2021, the Abu Dhabi Global Market (ADGM) teamed up with AirCarbon Exchange (ACX) and created a carbon trading exchange and clearing house, while Kuwait Finance House created a carbon offset platform. In 2022, Saudi Arabia's Public Investment Fund and the Saudi Tadawul Group Holding Company created the Regional Voluntary Carbon Market Company. And, in 2023, Bahrain's sovereign wealth fund, Bahrain Mumtalakat Holding Com-

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pany (Mumtalakat), established a voluntary carbon offsetting platform called 'Safa.' Also in 2023, Oman established a national Green Alliance and a general policy framework for carbon markets to promote afforestation and unlock economic op-

portunities for carbon credits. These voluntary markets contrast with compliance markets, where regulated entities trade offsets to meet government mandates for emissions reduction.

But what are carbon markets? What are the benefits of carbon market implementation in the Gulf? What is the current state of carbon markets in the region? How relevant are they for the Gulf context, wherein economies are heavily dependent on hydrocarbons? What are the challenges that face the implementation of carbon markets in the Gulf countries?

### What are carbon markets?

Carbon markets provide a trading system for emissions. Emissions are traded through permits or certificates called 'carbon credits,' which are bought and sold. One tradable carbon credit equals one ton of carbon dioxide or an equivalent (CO<sup>2</sup>e) amount of a different greenhouse gas reduced, removed, or avoided. The CO<sup>2</sup>e can be derived from eligible projects, such as capturing methane gas at a landfill, producing energy using renewable sources, planting forests to absorb CO<sup>2</sup> or implementing technology-based removal systems to sequester and store emissions. As with any market, carbon markets are characterized by supply and demand. The demand for carbon credits comes from companies or individuals that seek to voluntarily compensate for their greenhouse gas emissions by purchasing carbon credits, allowing them to account for their emissions reliably and transparently. The entity that removes or reduces greenhouse gas emissions is the project developer, seller, or supplier of carbon credits. Carbon credits are issued and verified by governmental or independent registries, such as Verra, Gold Standard, Climate Action Reserve, or the American Carbon Registry. Carbon credit projects undergo a complex process involving formal verification, registration, issuance, and retirement.

Carbon markets play a crucial role in addressing carbon emissions and promoting sustainability efforts worldwide. These markets can be broadly categorized into compliance-based and voluntary carbon markets, each serving different purposes and catering to diverse business needs. Compliance carbon markets are established and regulated by governments with the primary aim of achieving carbon reduction targets set by the authorities. Voluntary carbon markets (VCM), on the other hand, operate independently from government regulation, and participation in these markets is entirely optional.

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At the 26th UN Climate Change Conference (COP26) in November 2021, nations finally reached an agreement on the operationalization of Article 6, providing essential guidance for the transfer of emissions reductions between countries and encourages the private sector to invest in climate-friendly solutions. Article 6 of the Paris Agreement further introduces a new framework for market-based cooperation across borders that includes a new central crediting mechanism similar to the Clean Development Mechanism (CDM). Article 6 establishes market and non-market mechanisms that encourage countries to cooperate with each other to co-achieve emissions reduction targets set out in their Nationally Determined Contributions (NDCs). For instance, market mechanisms under Article 6.2 enable bilateral and multilateral agreements for carbon credit transfers between countries, while Article 6.4 allows countries to trade emissions reductions or mitigation outcomes to meet their emissions reduction targets on a voluntary basis. Article 6 also calls for the establishment of a centralized mechanism for carbon crediting overseen by the United Nations Framework Convention on

Climate Change (UNFCCC). At COP 29, hosted in Baku, Azerbaijan, between 11-22 November, parties aimed to finalize the remaining technical issues associated with Article 6 operationalization including methodologies, registry, authorization, reporting, among other.

## Overview of carbon markets in the Gulf

Almost all the Gulf Arab countries have pledged to achieve net-zero emissions by around 2050. Given that emissions removal technologies are not yet fully developed, relying on engineered emissions removal or avoidance technologies such as renewables, carbon capture and sequestration, and improved energy efficiency will not be sufficient to meet the Gulf's carbon management commitments. Carbon markets create economic incentives for both the sellers and buyers of carbon credits to reduce emissions while also attaining economic, environmental, and social gains, including the protection of biodiversity, the creation of jobs, and the improvement of livelihoods.

Given the dominance of carbon-intensive industries and the abundance of natural resources, Gulf countries, to a large extent, can be both sellers and buyers of carbon credits. Energy-intensive industries such as national oil companies, petrochemicals, and power and desalination companies can be buyers of carbon credits as they seek to compensate for their carbon emissions. Meanwhile, nature-based resources such as mangrove systems, oceans, peridotite-rich mountains, forest terrains, as well as solar and wind power generation, present potential opportunities for carbon credit generation. Some Gulf Arab countries are developing national or regional carbon crediting frameworks that may include provisions for carbon capture, utilization, and storage (CCUS) projects.

The supply and demand of carbon credits in the Gulf are still in their infancy. However, the discussion of carbon markets is gaining momentum, with nearly all Gulf countries having established exchange platforms for carbon credits or signaled an interest in engaging with carbon markets.

Bahrain has taken notable steps to this end. In its NDCs, Bahrain signaled its interest in engaging with market and non-market mechanisms to participate in emissions offsetting. Specifically, the country aims to accomplish this by creating a blue carbon inventory in Tabli Bay, enhancing the role of mangrove transplantation, and positioning Bahrain as a service hub for carbon exchange. Furthermore, in November 2023, Bahrain's Sovereign Wealth Fund, the Bahrain Mumtalakat Holding Company (Mumtalakat), launched a voluntary carbon offsetting platform called "Safa." "Safa" aims to provide a user-friendly offsetting function for hard-to-abate emissions such as aviation, shipping, and logistics. The platform facilitates access to high-quality and globally certified carbon credits for individuals and businesses.

Kuwait, on the other hand, does not yet have an emissions trading system but has expressed its interest in engaging with Article 6 of the Paris Agreement in its NDC. The country has pledged to use voluntary cooperation mechanisms to achieve its 7.4% emissions reduction goal relative to business-as-usual (BAU) by 2035. In 2021, Kuwait Finance House supported the creation of Kuwait's first carbon offset platform. Its aim was to mitigate carbon emissions by increasing tree plantings and starting new environmental projects. Upon the launch of Rwanda's Carbon Market Framework on the sidelines of the 2023 United Nations Climate Change Conference (COP28), Kuwait joined Rwanda and Singapore in signing a memorandum of understanding to collaborate on carbon credits aligned with Article 6.2 of the Paris Agreement through the recognition of Internationally Transferred Mitigation Outcomes (ITMOs).

In showcasing its intent to align with Article 6 of the Paris Agreement, Oman also updated its NDC and completed the final draft of a general policy framework for carbon markets. The policy details the processes for registering and issuing carbon reduction certificates, fee structures, transparency and reporting guidelines, relevant registries,

and more. Oman aims to establish itself as a leading carbon trading hub in the Middle East. The Sultanate's NDCs also recognize the importance of protecting blue carbon resources such as mangroves, seagrass, and other coastal habitats, both as valuable carbon sinks and sources for carbon credits. Oman does not have a voluntary emissions trading system but has established a national Green Alliance to foster afforestation and unlock economic opportunities for carbon credits, capitalizing on its great potential to participate in international markets as a carbon credit seller. It is estimated that mangrove restoration in the country can generate \$150 million in carbon credits. Furthermore, the Oman-based 44.01 company explores the role of Omani mountains, rich in peridotite, as a form of natural mineralization of carbon emissions and natural carbon storage solution with a huge potential for carbon credit generation and financial gains in engaging with international carbon markets.

Qatar has taken a different route and has sought to act as a convener for global south players in the carbon market. Doha has hosted the region's first independent voluntary carbon offsetting program, the Global Carbon Council (GCC), which was also the first global platform headquartered in the Global South upon its establishment in 2016. The GCC has created its own crediting standards, and in 2021, it received full approval under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) of the United Nations International Civil Aviation Organization (ICAO).

As for Saudi Arabia, carbon markets are gaining unprecedented buildup. Riyadh holds the potential to be both a seller and a buyer of carbon credits. In 2022, the kingdom's Public Investment Fund and the Saudi Tadawul Group Holding Company created a Regional Voluntary Carbon Market Company (RVCMC), now named Voluntary Carbon Market (VCM), as a platform to enable the voluntary exchange of carbon credits. RVCMC's first voluntary carbon credit auction in October 2022, sold credits equivalent to 1.4 million tons

of carbon. In its second voluntary carbon credit auction held in Nairobi, Kenya, in June 2023, the VCM announced the successful auction of carbon credits for more than 2.2 million metric tons of carbon. Aramco, Saudi Electricity Company, and ENOWA (a subsidiary of the Public Investment Fund-owned giga-project NEOM) were among the purchasers of the largest amount of carbon credits. The clearing price reached \$6.27 per metric ton of carbon credits, and it is estimated that at least 70% of the sold credits were associated with projects from countries in the Middle East, North Africa, and sub-Saharan Africa, including Morocco and Egypt. Also, at the MENA Climate Week 2023, held in Riyadh in October 2023, Saudi Arabia's Clean Development Mechanism Designated National Authority (CDMDNA) announced the operation of a domestic market mechanism, the Greenhouse Gas Crediting and Offsetting Mechanism (GCOM), to facilitate domestic participation in the offsetting scheme and to serve as the basis for generating carbon credits.

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While currently not linked to carbon markets, Saudi Arabia in 2021 launched two initiatives that hold the potential for carbon credit generation: the Saudi Green Initiative and the Middle East Green Initiative. The former aims to rehabilitate over 74 million hectares of land and restore Saudi Arabia's natural greenery by planting 10 billion trees across the Kingdom. The second initiative aims to plant 50 billion trees across the Middle East, presenting an equivalent of restoring 200 million hectares of degraded land.

The UAE also expressed interest in participating in voluntary cooperative approaches under Article 6 of the Paris Agreement to meet its emissions commitments. In 2021, it created a national carbon registry and trading system, the Carbon Trading Exchange and Clearing House, established by the Abu Dhabi Global Market and the AirCarbon Exchange (ACX), whose functions were shifted to Singapore in October 2024 after one year of trading. To support the growth and mobilization of the carbon market, in April 2023, the UAE Independent Climate Change Accelerators (UICCA) formed the UAE Carbon Alliance, which is made up of companies from various sectors with potential involvement in carbon trading. In September 2023, the UAE Carbon Alliance pledged to purchase \$450 million in African carbon credits by 2030. This represents a move to engage with international carbon markets as a buyer for carbon credits that helps to both, unlock Africa's carbon credit generation potential, as well as support the UAE's commitment towards its climate pledges.

### Opportunities and challenges for carbon markets in the Gulf

Along with providing economic incentives for emissions reductions, carbon markets bring several advantages for Gulf countries in their pursuit of carbon management and commitments towards net-zero emissions goals. These include creating incentives for companies to invest in research and innovation to find more efficient ways to reduce their own emissions, purchasing allowances or investing in offsets, and unlocking new markets. Oman's 44.01 company, which won the 2022 Earthshot Prize, is an example of a carbon credit innovator. It developed a technique that accelerates the removal of carbon from the atmosphere and turns it into rock through its mineralization in peridotite – a rock found in Oman, America, Europe, Asia, and Australasia. Carbon markets also encourage the restoration of biodiversity and natural ecosystems by creating monetary incentives to invest in projects like reforesta-

tion that reduce or sequester emissions. Almost all Gulf countries have plans to scale up the transplantation of mangroves and protect coastal ecosystems to support blue-carbon economies while creating potential carbon credits. Additionally, carbon markets can create new revenue streams that can be reallocated for climate action. Revenues generated from the auction of carbon allowances or the sale of credits can be used to fund climate adaptation and mitigation projects. All these are associated with employment co-benefits.

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Importantly, the ongoing momentum to adopt carbon markets in the Gulf enables a gradual build-up of awareness and expertise among stakeholders regarding carbon accounting, regulation, quality, and transaction of carbon credits, increasing consumer awareness and demand for lower-carbon products and services. Carbon trading expertise is essential as a starting point to address emerging challenges associated with carbon border adjustment mechanisms (CBAM) introduced by the EU. It also plays a role in paving the way for the adoption of carbon pricing measures, another complementary policy tool that can drive emissions reductions, especially from carbon-intensive industries, while creating new streams of revenue.

Carbon pricing sets a direct price on the carbon content in fossil fuels and is implemented as a means of bringing down emissions while driving investments towards cleaner options. Depending on its design, it can raise revenues for the government that can be recycled to citizens or can be targeted to support affected industries or fund

decarbonization projects. Carbon pricing sends an economic signal to carbon-intensive industries to either continue polluting and pay a price or invest in alternative cleaner options. As of now, 39 countries and cities have implemented carbon taxes, with prices ranging from \$0.46/tCO<sub>2</sub>e to \$167/tCO<sub>2</sub>e. None of the Gulf countries have set a price on carbon to date.

A major concern for Gulf countries, which depend heavily on oil export revenues, is that setting a price on carbon could discourage foreign direct investment and suppress expansion in the oil sector. To-date, all Gulf countries have plans to continue oil and gas production and are employing strategies to secure long-term markets for their hydrocarbon exports. Gulf states still have not decoupled the hydrocarbon sector from government spending. In fact, today's Gulf economic diversification projects largely depend on hydrocarbon export revenues, without which these alternative development initiatives may be delayed or become obsolete. Therefore, in the short term, implementing carbon pricing counteracts their economic ambitions of expanding the hydrocarbon sector and funding economic diversification projects. Combining carbon pricing with subsidizing fossil fuels seems counterproductive. Subsidy reform should be an essential first step preceding the introduction of carbon pricing. However, this is complicated by the fact that significantly raising the cost of fossil fuels in petrostates would potentially create shocks for the residents and generate negative political consequences.

Additionally, a universal concern around carbon markets is the quality of carbon offsets. Robust monitoring, reporting, and verification (MRV) systems are integral to carbon markets, ensuring that emissions reductions are real and measurable. They also ensure additionality and permanence, which are crucial for maintaining the credibility and effectiveness of carbon markets in driving real emissions reductions and contributing to genuine climate action. Carbon markets are still in their infancy, and given the complexity

of calculating offsets and credit generation, institutional and human capacity, as well as awareness and understanding of carbon markets across governments and the private sector, present a major challenge to building robust carbon markets in the Gulf. Deploying carbon marketplace technology on modern platforms, such as Exchanges, could help enable automated processing, including instantaneous settlement.

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Data availability and disclosure is another serious hurdle for advancing carbon markets in the region. While some companies lack the capacity for monitoring and reporting emissions, others are reluctant to disclose their emissions data publicly. Some companies are concerned that strict government regulations on emissions might arise due to public disclosure of information.

Finally, market fragmentation may limit the ability of Gulf countries to maximize the benefits of carbon markets. Gulf countries would benefit from integrating their carbon markets and cooperating in the trade of carbon credits at a regional level, especially given their differentiated capacity of carbon markets in terms of buyers and sellers. A unified carbon market would help Gulf countries to strengthen their technical expertise by fostering collaboration and the exchange of knowledge. This would consequently limit the technical challenges associated with data transparency and quality of carbon credits, making the region an attractive destination for international carbon traders.

## Conclusion and Recommendations

Carbon markets have gained unprecedented momentum across the six Gulf Arab states, representing a significant shift towards low-carbon economic development. Nearly all Gulf Arab countries have launched carbon market-related initiatives, ranging from voluntary carbon credit exchange platforms to national carbon alliances. Beyond economic incentives to lower emissions, carbon markets offer numerous advantages, such as spurring innovation, restoring biodiversity, creating new revenue streams, and generating jobs. Gulf countries must explicitly integrate international carbon markets into their own initiatives in order to achieve their emissions reduction targets. They must also aim to leverage market mechanisms to promote cost-effective emissions reductions and support climate action in other countries through climate finance. However, as these markets are still in their early stages, they face challenges such as limited emissions data availability, disclosure issues, and gaps in institutional and human capacity. Gulf countries can overcome these challenges and maximize the benefits by:

- 1. Aligning climate policies with economic goals.** Carbon markets should not be designed in isolation with national economic plans. For the Gulf countries, carbon markets align with economic diversification ambitions in their potential to create new revenue streams, as well as new employment and economic sectors.
- 2. Enhancing data measurement and reporting.** Enhancing human and technical capacity for data measurement, reporting, and verification is an essential first step towards an effective design and implementation of carbon markets.
- 3. Building local expertise and capacity in carbon markets.** The development of local expertise and capacity is critical to enhancing effective design and regulation of carbon markets.





Regional training programs and knowledge exchange platforms, both at a regional level and in collaboration with international organizations, can foster learning and sharing of best practices.

**4. Fostering regional collaboration and best practices.** As the Gulf countries are characterized by diverse economies and unique potential for carbon credit generation, a collaborative and regionally integrated approach to carbon markets is imperative for maximizing the environmental, social, and economic benefits of carbon markets.

Finally, despite their essential role in ecological economics, carbon markets cannot replace the important role that innovation and biodiversity restoration play in reducing carbon emissions. Efforts to restore polluted environments must persist and grow.

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