

The emerging Gulf carbon market

Countries in the Gulf region are keen to promote their green credentials through backing for clean energy initiatives and carbon, capture and storage. However, efforts to launch regional carbon trading, which could ease the way for these developments, remain in their early stages, writes Justin Dargin



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IN LINE with the efforts of the global community to create a mechanism to regulate carbon emissions, Gulf countries are now taking serious first steps in the fight against climate change. Of late, a number of Gulf Cooperation Council (GCC) nations have undertaken multi-billion dollar investment plans, in an effort to be identified as “green”.

Much of the impetus that led them to do so came from being labelled “bad” global citizens in the fight against climate change. For example, in 2007, Qatar received the dubious distinction of being singled out by the annual UN Development Programme’s Human Development Report for the highest per capita carbon emissions in the world, estimated to be at 79.3 tonnes per capita. As with most Gulf countries, Qatar’s extremely high emissions result from the confluence of large oil and gas sectors and a relatively small population. In a bid to change its global image, Qatar became the first GCC member to join the World Bank’s Global Gas Flaring Reduction project. The objective of the project is to reduce carbon dioxide (CO₂) emissions by exercising tight controls on gas flaring, which is a major contributor to the region’s CO₂ emissions. Moreover, the Qatar Fuel Additives Company is in the process of installing a carbon capture plant in its methanol production plant by the beginning of 2015.

Additionally, Gulf countries realised that by being green, they would be able to reduce their energy intensity rates and export more hydrocarbons in a bid to increase their foreign revenue. This last point is particularly important, as the Gulf welfare state has expanded immensely in the wake of the Arab Spring.

Abu Dhabi – which was cited by a 2010 World Wildlife Foundation

report as having highest the world’s highest per capita carbon footprint – launched a \$15 billion future energy initiative house in the UAE’s Energy City. The initiative was to promote the construction of the world’s first zero pollution, zero waste city. The company commissioned to carry out its vision is Abu Dhabi-based Masdar, which planned to leverage funds to produce a portfolio for investment in clean energy technology across the Middle East and North Africa.

Carbon trading

To further capitalise on the synergy developed by the initiative, Masdar announced a plan to strategically construct regional carbon capture storage facilities in the Gulf. These plans were initially designed to take advantage of a carbon-trading exchange that was to commence in Dubai in 2009. Most regional plans were, however, derailed by the late-2008 financial crisis. At the time of writing, the bulk of these plans remain on hold or are just in the initial proof of concept stage. Meanwhile, Masdar’s city has been subject to the criticism in that, while it may be billed as the world’s most sustainable city, it is surrounded by some of the world’s most energy-intensive developments.

Another Gulf project meant to change the way that Gulf states emit greenhouse gases has produced the UAE-Bahrain carbon capture agreement. In July 2008, Masdar signed a strategic agreement with Bahrain’s Gulf Petrochemical Industries Company (GPIC) to jointly reduce greenhouse gas emissions under the United Nation’s Clean Development Mechanism, and, thereby, earn certified emission reduction units (CERs), which could be sold on the open market to firms in industrialised nations.

Any potential Gulf-based carbon

emissions platform should incorporate CO₂ sequestration through carbon capture and storage (CCS). Using CCS is quite attractive to the Gulf countries because it is publicly associated with making hydrocarbon combustion clean. The process takes any fossil fuel as an input and separates it into its constituent elements, in this case, hydrogen and CO₂. The hydrogen can then be used in clean-power generation, producing only water as a by-product, while the carbon dioxide may be injected into mature oil reservoirs, to enable enhanced oil recovery (EOR).

CCS also has the support of many multilateral agencies, perhaps most notably the International Energy Agency.

The agency considers CCS to be one of its four initiatives, along with energy efficiency, nuclear power and renewable energy, essential to combating climate change.

A Gulf-based emissions platform could disburse emissions credits when carbon is stored underground, and withdraw credits if previously stored carbon escapes into the atmosphere. Incorporation of CCS in the Gulf would be extremely beneficial, because the technology is particularly suited for a region that contains major oil, gas and industrial projects.

Carbon sinks offer particular challenges for carbon storage from large point sources.

A major issue is the lack of certainty as to the carbon flows and questions as to the dependability or permanency of the storage – these include concerns that sinks may evolve into future emissions points.

Nonetheless, CCS has tremendous applicability in the Gulf due to its enormous economies of scale that not only allow depth in a carbon market, but also allow targets for greenhouse

gas emissions – including CO₂, methane, nitrous oxide, and synthetic chemicals such as fluorinated gases – to be met at minimal cost.

Meanwhile, Saudi Arabia is constructing CCS plants to bring 1,500 tonnes per day (t/d) of carbon from two ethylene glycol plants and deliver it to the three Sabic-affiliated companies for enhanced methanol and urea production. There are also several other CCS projects in the project development phase in Saudi Arabia, including a few pilot projects to gauge the applicability for utilisation for EOR purposes.

There have been other ongoing projects in the region as well. In 2010, Kuwait deployed a carbon project which will capture more than 150,000 t/y of CO₂ from a large petrochemicals company owned by Equate. Oman is still currently in the process of assessing its CCS capability, primarily for use in EOR in its mature oilfields.

The UAE, for its part, is developing an ambitious CCS project that intends to reuse the sequestered carbon from a steel plant in oilfields to assist in EOR (known as CO₂-EOR). Adnoc and Masdar established a joint venture company, Al Reyadah, which is on schedule to be operational by 2016. This will capture approximately 800,000 tonnes of carbon annually. The UAE hopes this will be the first project of many that will create an industrial scale CCS network that will decarbonise the economy.

Regulatory framework

Yet, while all this indicates that there is a clear interest in CCS and other carbon abatement related activities among Gulf countries, one major obstacle to further development and attracting the private sector is the lack of transparent and formal regulations and legislation.

Another is the environmental concern directed at these projects. One criticism is that even though a significant amount of carbon may be removed from the atmosphere, when that carbon is used for EOR, then, ultimately, it is not helping to solve global warming.

However, many of the companies currently involved in CCS in the region counter that, while CCS will help increase or maintain oil production, it also helps to free up other gas

from reinjection to go to power plants, where it will substitute for more carbon-intensive fossil fuels, such as coal or oil.

Despite the significant interest, and the many millions of dollars of investment, there are still serious questions as to whether the cost and technology are easily scalable to meet the needs of the Gulf countries.

Among OECD countries, CCS projects have had quite a contentious history and, several pilot projects aside, have never quite taken off. Canada, for instance, launched one of the most commercially-viable CCS projects in the OECD, the Saskatchewan project.

However, while that project was technologically viable, its cost was quite high, at around \$1.23 billion. If all the world's power stations were fitted with CCS, some estimates have put the cost at more than \$17 trillion.

The enormous price tag is one of the major stumbling blocks to implementing CCS on a massive scale. For CCS to be a key instrument to reduce carbon emissions, it needs two vital components: massive government subsidies – the Saskatchewan dam absorbed about \$220 million in subsidies – and a large industrial consumer nearby.

Though not ideal, the Gulf potentially has both of these available in significant amounts.

The Gulf states, armed with significant liquidity, have the political will and ambition to assist in making CCS and CO₂-EOR a viable tool in carbon mitigation strategies. Their focus on this technology derives from two main strategic focuses. Firstly, they want to divert much-needed natural gas away from EOR towards power generation. And, secondly, they want to participate in the deployment of a technology that will make continued consumption of fossil fuels – a crucial revenue generator – environmentally palatable.

Before the global financial crisis unfolded, the Gulf hosted two competing plans to develop carbon-emissions trading platforms. One project, in Dubai, was to be built jointly by the state-run Dubai Multi Commodities Centre (DMCC) and the London-listed carbon credit company EcoSecurities by the end of 2009. The other proposed exchange was to be built in Doha, Qatar, by the Doha

Bank, Qatar's largest private commercial bank, in 2009.

Each project was intended to make its home country the regional hub of global carbon credits trading, taking advantage of the burgeoning carbon capture projects that could potentially earn CER certifications under the UN Clean Development Mechanism (CDM). The onset of the global financial crisis put those plans on hold for several years. In the interim, Qatar and the UAE sought instead to obtain UN credits under the CDM to develop various renewable energy projects such as solar, waste heat and gas flaring.

Global leader

Qatar decided to direct most of its efforts towards becoming more energy efficient, as well as becoming a global leader in hosting various carbon and climate-related conferences.

However, Dubai revisited its plans, and in late 2012 announced plans to create its own carbon trading market to expedite its decarbonisation strategy. While the government has shown remarkable tenacity in attempting to implement carbon trading as a viable part of Dubai's economy and meet its Dubai Integrated Strategy 2030 plan to reduce energy consumption by 30% and carbon emissions by over 5 million tonnes, carbon trading in the emirate has not been without its detractors.

One of the primary criticisms directed at the Dubai carbon market is that, because of the top-down process of attempting to somewhat artificially create the market without the active involvement of the private sector, it has created too much supply, and not enough demand. Investors have been warned to keep a distance from carbon credits issued in Dubai because of the difficulty in reselling them.

Moreover, there have been allegations of several financial scams bilking investors in Dubai carbon credits out of tens of thousands of dollars. Nonetheless, the issues with potential carbon trading in the Gulf, such as minimal oversight, over supply and potential fraud, can be resolved through robust regulation and the creation of sector-specific policymakers to monitor the market. ■