

Let's dance

Gary Clyne | Contributor

POLITICAL winds have shifted. Populists are on defence. Liberals everywhere overwhelmingly see climate change as a central issue. The US will rejoin the Paris climate accord and climate plans will stress the need for the complete and rapid decarbonisation of the global economy. It will take trillions of dollars in spending to get it done and Trinidad and Tobago is super-positioned to take advantage of the spend. Carbon pricing, no longer viewed as politically toxic, is primed for the aggressive and costly climate plans under consideration. Well-designed carbon pricing systems will save money rather than cost taxpayers.

The University of Trinidad and Tobago (UTT) and Georgia State University (GSU – in the US) are working together to take advantage of upscaled US Department of Treasury rules and tax incentives to assist low emission developers that take on the most expensive option for reducing emissions, namely, Carbon Capture Utilisation and Storage (CCUS).

Industrial processes to produce sought after commodities such as ammonia, methanol, and cement emit large amounts of highly concentrated CO₂ gas to the atmosphere as a by-product of the chemical processes. Fossil fuelled power plants also emit large amounts of CO₂ as a product of the combustion technology used to generate electricity. The threat of more severe climate change impacts, due to increasing CO₂ levels and an inability to sell products that are carbon-dioxide-emission-rich to Paris Agreement nations, has encouraged fossil fuel companies in the US to now consider energy's carbon footprint at the forefront of future activities.

Society's heavy dependence on fossil fuels and its current copious contributions of CO₂ emissions linked to anthropogenic climate change, requires a long-term solution for sustainable development. CCUS is the uncoupling of energy use and CO₂ release to the atmosphere. Energy technology transformation is required to increase efficiency and decarbonise fossil fuel usage. These transformative climate-resilient outcomes are what UTT and



GSU will develop in the US to combat global warming and build capacity in the oil and gas sector.

CCUS offers a unique solution to maintain growing demands of energy and reduce 'business as usual' emissions to the atmosphere. It has been cited as a strong option to achieve large-scale reductions in CO₂ that are required in the coming century to mitigate the impacts of climate change.

CCUS involves four main stages:

1. **Capture:** Capturing of the CO₂ from industrial and energy-related sources.
2. **Transportation** of the captured CO₂ to a well-established suitable well.
3. **Usage or Underground Storage** through either physical, chemical, or hydrodynamic underground processes, which need to be monitored to verify the portion released to the environment and the one that remains stored or sequestered underground.
4. **Monitoring** of the sequestered carbon.

Until recently, the costs associated with CCUS rendered the technology unfeasible, but recent economic drives, such as carbon credits and tax deductions, together with the maturity of technology have allowed wide interest in its application. CCUS is being developed worldwide, predominantly in North America, Japan, Europe, and Australia. It has the potential for introduction into any area or region with the relevant dynamics of sources of CO₂ and sinks to store them. According to the International Energy Agency, there is expected to be a significant increase in CCUS projects until the year 2050 in power generation, the oil and gas sector

and industry in a global effort to reduce CO₂ emissions by decarbonising the energy generation.

The largest market for CO₂ captured from industrial sources through carbon capture utilization and storage in Trinidad is enhanced oil recovery (EOR), using the CO₂ to produce oil. Captured CO₂ can be used for cement, algae production, and other uses, but EOR for Trinidad has vast potential. Moreover, it has a nearly 50-year track record in the US, where it was pioneered and where UTT and GSU will improve the verification aspects of the processes. The CO₂ injected into oil formations becomes permanently stored as part of the process.

Another key option for captured CO₂ is underground storage in a non-producing geologic formation – for example, a saline formation. The US has been testing formations for suitability for large-scale storage for some two decades. There is one operating large-scale industrial capture and storage project in a saline formation in the US. There needs to be many more to make material progress toward meeting GHG emission reduction goals. Without CCUS, the world will not meet emission reduction goals.

To encourage the oil and gas sector to capture CO₂ from industrial processes, regardless of whether the CO₂ was used for EOR and stored, or whether it was simply stored, the US Congress enacted the Section 45Q tax credit under the Internal Revenue Code. Today, the tax credit is set to rise over a period of years to USD 35.00 per ton of CO₂ captured from an industrial source and stored through EOR, and USD 50.00 per ton for CO₂ stored in a non-producing geologic formation. The US Congress also authorized USD 50.00 per ton for "utilised" CO₂ (such as cement or algae), subject to a life cycle analysis to assure the CO₂ stays out of the atmosphere. The reason for the lower credit for CO₂ used for EOR is that there is an expectation that oil producers will pay for the CO₂, as they have done for many years.

There are several anticipated public benefits attached to CCUS spanning the economy, society, and environment. On the environmental side, CCUS

drives an emissions mitigation benefit thereby reducing the amount of carbon dioxide emitted into the atmosphere. Carbon dioxide is a greenhouse gas that contributes to climate change and the adverse effects of global warming, such as flooding, drought, and wildfires. From a social perspective, carbon capture can improve air quality, subsequently improving quality of life and reducing the incidence of respiratory illness. These improvements can lead to higher productivity due to lowering lost workdays owing to illness. Livelihoods are also improved as the capture and utilisation of carbon can be used to enhance agricultural production and increase food security. Additionally, captured CO₂, that is not geologically stored, can be used in many revenue generation and commercial activities, such as:

- Food and beverage
- Refrigerants
- Fire protection
- Concrete manufacture
- As a feedstock to produce and store fuels for future use

Morgan Stanley estimates that climate change has already cost the world more than USD 650 billion over the past three years. If policymakers were to price CO₂ at USD 100 per ton, the 40 gigatonnes of CO₂ that the world emits annually represents a USD 4 trillion opportunity for carbon capture firms.

Tax-equity financing encompasses investment structures in which a passive equity investor looks to achieve a target internal rate of return based primarily on US federal income tax benefits that are expected to be available to it with respect to an investment in a particular asset. Tax-equity investors are typically profitable tax-paying entities such as banks, insurance companies, certain utilities, and general corporate entities. Tax-equity investors generally invest with a developer who cannot make efficient use of the tax benefits associated with the underlying asset. Tax-equity financing structures are driven by tax laws that are unique to the US.

Tax credits can be allocated up to 99% to a tax-equity investor with a minimum of 1% going to the developer. Cash distributions are different from

allocations of income and credit, and cash distribution can change over the life of a project. The 45Q tax credit is available for the first 12 years after the facility is placed in service and will contribute to sustainable and investment-grade, climate-resilient projects and are a form of climate currency.

Under a cap-and-trade, regulated emissions are "capped" and the emission sources purchase allowances equal to their emissions. If a source exceeds its cap, it must purchase additional allowances from the cap-and-trade jurisdiction or from another source of emissions to offset. Under the Trump administration, US tax incentives could have never been used for emission trading and monetised via a Paris Agreement Article 6.2 exchange. This will not be the case under the Biden administration. CCUS undertaken in rich country cap-and-trade jurisdictions will be subject to emission-regulated floors and ceilings. Poor performers will be penalised and actors that invest in CCUS will be rewarded with credits to trade; credits which become more valuable as ceiling allowances are lowered.

The seller of 45Q tax credits will most likely be private oil and gas companies with operations in rich countries and developing nations. The work being performed by UTT and GSU will focus on developer partnerships that verify the earning of and the monetisation of the 45Q tax credit. The resultant three-way transactions will create multiple fee opportunities. These fees represent a niche market for international low emission developers and exchange possibilities under the Paris accord. 2021 will be a breakout year for CCUS and the state-of-the-art technology being developed by UTT, GSU and their private sector partners. Countries such as Trinidad and Guyana can benefit by including the international benefits generated from CCUS in their production share agreements. Let's ask Big Oil to invite us to the dance.

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Nutrien launches carbon programme to drive sustainability

Staff Writer | Energy Chamber

Nutrien announced the launch of the agricultural industry's most comprehensive carbon programme, providing end-to-end support for growers to drive improved sustainability and boost profitability. As the world's largest provider of crop inputs and services to growers, Nutrien is uniquely positioned to create the only programme at scale. It is ready to partner directly with growers to plan, plant and track sustainable farming practices and improve carbon performance.

As part of the new programme, Nutrien will provide sustainable products and solutions, year-round dedicated agronomic counsel and the industry's leading digital platform to track and measure results. Additionally, Nutrien will enable growers to monetise their improved carbon performance at the farm level by facilitating the purchase and sale of carbon credits from its grower customers to value-chain partners.

Working with select growers, Nutrien will design programmes that facilitate climate smart products and sustainable practices to reduce greenhouse gas (GHG) emissions, sequester carbon, and measure the resulting improvements in financial, production and environmental performance. Nutrien will pilot the new carbon

programme across North America in 2021 and it plans to further scale the programme to South America and Australia in the years ahead.

Chuck Magro, President and CEO, Nutrien, said, "Nutrien is working to solve some of the world's biggest challenges: producing more food with less land, water and environmental impact. Our new carbon programme will empower growers to produce, preserve and profit from sustainable practices. With our global reach, direct relationships with over 500,000 growers, the science-based expertise of our in-house agronomy team, and investments in industry-leading technology, Nutrien is uniquely positioned to create a carbon programme with the scale and resources to bring meaningful and sustainable benefits to growers and the planet they are working hard to feed."

"Over time, our vision is to expand the carbon programme to include partnerships across the value chain and into other industries that have interest in the carbon economy. Addressing climate change is critically important and we believe the best way to move forward is to work together; we are open to the full range of partnership opportunities. Our aim is to create an ecosystem to help our grower customers benefit from sustainable practices and enable the purchase and sale of their carbon credits, while partnering with

governments to help meet public environmental goals."

"With this new programme, we are helping to build an economy and market around sustainability that we believe is truly the next major transformation for the agriculture industry and addresses global issues that affect everyone," added Magro.

Demand for carbon credits in the voluntary market has more than doubled since 2017, according to Ecosystem Marketplace's *State of Voluntary Carbon Markets* report. Looking ahead, the Taskforce on Scaling Voluntary Carbon Markets notes that the global market for carbon offsets is expected to increase by 40 - 100X by 2050 as the world increasingly focuses on climate action. Agriculture is expected to be a leading participant in this growing market.

"Carbon has the potential to become a substantial economy that will go a long way towards realising net zero agriculture. Our programme is an important first step towards this journey. Our direct relationship with our grower customers will help them to be early movers in this space and see financial value from farming sustainably," added Magro.

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