JADE ROAD

ESG Insights

December Focus: Attaining Net-Zero Targets
This Week: Carbon Capture

- *Carbon Capture, Utilisation and Storage (CCUS) technologies are a novel method of capturing and storing gaseous carbon dioxide, which can be used to mitigate harmful emissions*
- *These technologies may play a key role in aiding Asia's transition from fossil fuels to green energy, as the region strives to meet ambitious emissions goals*
- *There are already many large-scale CCUS projects in progress, and countries worldwide are pledging expertise and resources towards making the technology commercially viable*

OVERVIEW

Carbon dioxide emissions are one of the key pollutants created by industrial activity and one of the primary contributors to global warming and climate change. Carbon Capture, Utilisation and Storage (CCUS) technologies are a proposed method of mitigating these emissions and could be an important asset in reaching net-zero emissions. Carbon Capture and Storage (CCS) technologies essentially captures gaseous carbon dioxide (CO^2) emissions using a solid substrate, allowing them to be more easily sequestered for permanent storage. Firstly, this can reduce carbon dioxide emissions from heavy industry and allow for the direct removal of existing atmospheric CO^2. Secondly, the captured carbon can be utilised (hence the 'U' in CCUS) in manufacturing, such as aiding the production of low-carbon hydrogen and improving the efficiency of oil extraction.

In the *International Energy Agency* (IEA) Sustainable Development Scenario, in which global net CO^2 emissions from the energy sector fall to zero by 2070, CCUS accounts for nearly 15% of the reduction in emissions. The contribution of CCUS grows over time and extends to almost all parts of the global energy system, so the development and subsequent integration of these technologies are crucial in making this future a reality.

CASE STUDY

In terms of energy demand, Southeast Asia is one of the fastest growing in the world, but it is still heavily reliant on fossil fuels such as coal and gas. CCUS may provide a clear pathway for the region to transition to more sustainable energy infrastructures. Heavy industries such as cement production and the manufacturing of iron and steel currently account for 20% of energy-sector emissions in the region today; without alternative methods of production, CCUS is the only viable method of reducing their environmental impact.

For Southeast Asia to reach the temperature objectives outlined in the Paris Agreement, carbon capture must reach at least 35 Megatons ("Mt") by 2030, and 200Mt by 2050. Considerable investment will be required to reach these targets, both through retrofitting existing energy infrastructure and through the development of new CCUS hubs. The work has already begun; at least seven large scale CCUS projects have been identified in the region, and the foundations of various state-funded research programs have been laid.

OPPORTUNITY

The magnitude of CCUS investment required must be supported by the private sector and the extension of debt financing to CCUS technologies and projects. Particular attention must be given to regional approaches to CCUS deployment, including shared CO^2 transport and storage infrastructure. CCUS deployment will likely be encouraged by significant policy support including grants, carbon taxes and emissions standards, which should create a favourable environment for companies operating in the space to grow.

There is plenty of movement in the area regarding assessing CCUS technologies, with a broad emphasis on making the technology commercially viable. In Australia, *Transborders Energy* is working on a project to capture 1.5 million tons of carbon dioxide per year and inject the material under the seabed. Recently, Japan formed the Asia CCUS network with the 10 ASEAN members along with Australia and the US, a think-tank of industrial players and research institutes designed to pool skills and resources and share technological know-how. Similarly, the adoption of CCUS technologies is a key part of Singapore's *Long-Term Low Emission Development Strategy* (LEDS), with the view towards CCUS aiding the state in becoming net-zero by the second half of the century.

While there are currently very few listed pure-play CCUS companies, and technology is still costly, fund managers should remain vigilant and seek to capitalise on any commercial opportunities within the space. Given the expertise and resources currently invested in commercialising CCUS technology, combined with the broad international support of achieving net-zero carbon emissions, it is only a matter of time before viable investment opportunities arise.