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Whole-of-government approach to solidify Malaysia`s CCUS transition

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Whole-of-government approach to solidify Malaysia's CCUS transition

Malaysia's newly passed carbon capture, utilisation and storage (CCUS) bill is a pivotal milestone in the country's push to become a regional leader in low-carbon industrialisation.

However, that is just the first step by the government, led by the Ministry of Economy and fully supported by other ministries, including the Ministry of Investment, Trade and Industry (MITI) and the Ministry of Natural Resources and Environmental Sustainability (NRES), which outlined their coordinated strategies to ensure CCUS is a success story both environmentally and economically.

"The long-term strategic case for CCUS in terms of foreign direct investment (FDI) is really about positioning Malaysia as a prime destination for green investment," says MITI's secretary-general Datuk Hairil Yahri Yaacob.

Malaysia's readiness to offer CCUS solutions "backed by strong policy signals and infrastructure development" will assure foreign investors that the country's industrial ecosystem is climate-aligned, says Hairil.

MITI has identified CCUS as one of seven investment levers in its Green Investment Strategy (GIS), targeting RM33 billion in cumulative investment by 2030, he adds. "In short, CCUS provides a transformative opportunity for Malaysia, not only in meeting environmental goals, but also in driving innovation and attracting high-quality foreign investment."

"CCUS is not just a mitigation tool," says NRES' deputy secretary-general Datuk Nor Yahati Awang. "It is a strategic enabler to transition sustainably while safeguarding industrial growth and future-proofing the economy."

Without CCUS, Malaysia would face significant challenges in reducing emissions from these industries and this will hinder the country's ability to achieve its net zero commitments, says Nor Yahati. This would pose risks to "both environmental goals and economic resilience", she adds.

"Failing to deploy CCUS could also reduce Malaysia's attractiveness to green investors and undermine its competitiveness in the rapidly growing low-carbon economy," she points out.

Nor Hayati: Failing to deploy CCUS could reduce Malaysia's attractiveness to green investors

Hairil Yahri: Conversations should steer towards the need for adequate and timely infrastructure development, such as pipelines and storage facilities to complete the domestic CCUS ecosystem

The way forward

The CCUS Act regulates the capture, transport, utilisation and permanent storage of greenhouse gases, including carbon dioxide (CO_2), both in Malaysia and from international sources. It is an essential component to decarbonising hard-to-abate industries such as cement, steel, and oil and gas, where carbon reduction remains a challenge.

"From MITI's perspective, the CCUS Bill should be accompanied by a robust enabling environment to accelerate early-stage development. This includes the introduction of targeted investment incentives such as carbon trading mechanisms, tax relief for companies that adopt and supply CCUS, and strong funding to support the CCUS ecosystem development and drive private sector participation," says MITI's Hairil.

The Act will ensure that all actors along the CCUS value chain "carry out their responsibilities in a transparent and accountable manner", he adds.

In parallel, the ministries involved are developing a clear and supportive regulatory framework for CCUS projects, particularly as foreign investors need certainty regarding issues such as permits, liability and long-term storage regulations, says Hairil.

"Additionally, conversations should steer towards the need for adequate and timely infrastructure development, such as pipelines and storage facilities to complete the domestic CCUS ecosystem," he adds.

Meanwhile, NRES' Nor Yahati points to the need for a "robust monitoring, reporting and verification (MRV) framework" and utilising advanced and proven technologies to prevent leaks and unintended impacts on the environment. "Continuous research and development will be supported to improve technology efficiency and minimise potential environmental risks associated with storage sites," she says.

Ongoing efforts

With Europe's Carbon Border Adjustment Mechanism (CBAM) altering global trade norms, industries seeking to stay competitive must reduce their emissions footprint. "The readiness of Malaysia's CCUS infrastructure sends a strong policy signal to global investors that we're serious about carbon accountability," says Hairil.

Apart from CCUS, actions are being taken by hard-to-abate sectors, including the adoption of low-carbon technologies in processes and production activities, recycling and reusing waste as secondary sources of feedstock.

MITI, through its standards and industrial research unit SIRIM, with the support of national oil company Petroliam Nasional Bhd (Petronas), has already begun work towards the development of Malaysia's first national pilot project on carbon capture for hard-to-abate sectors.

The project aims to "demonstrate the cost and viability of providing capture-as-a-service (CaaS)" as part of the domestic CCUS ecosystem development, says Hairil. "Malaysia has the capability to be a leader in the development of post-combustion carbon capture technologies, by leveraging its strong talent pool in the oil and gas sector that are already experienced in pre-combustion carbon capture activities."

A significant milestone in Malaysia's CCUS journey is the national demonstration carbon capture project at Eastern Steel Sdn Bhd (ESSB) in Kemaman, Terengganu, with up to four million tonnes of CO_2 emitted annually through the deployment of carbon-intensive steelmaking technology of blast furnace deployment, coupled with its huge exports to CBAM-affected markets such as Turkey and Europe.

The construction and commissioning of its CCUS infrastructure — comprising capturing emissions at source and aggregation at the Kerteh terminal to facilitate transport to geological storage hubs off Kerteh and/or Kuantan — is estimated to cost RM400 million. Nevertheless, the economic value is clear.

"Without CCUS, producing one tonne of steel would result in a cost increase of more than 46% under the EU Emission Trading Scheme (ETS) pricing. With CCUS, this increase is reduced to 34%, resulting in potential savings of US$78 per tonne," says Hairil.

"Through coordinated policy leadership, cross-sector collaboration and strategic investments, MITI remains committed to building a decarbonised industrial ecosystem that is globally competitive," he adds.

For NRES, its efforts to support the broader decarbonisation mission include policies like the National Climate Change Policy 2.0 (NCCP 2.0) and the Long-Term Low Emission Development Strategy (LT-LEDS). The LT-LEDS outlined long-term strategies and enablers critical to guide Malaysia's transition towards net zero greenhouse gas emissions by 2050.

In parallel, NRES is pushing for the National Climate Change Bill (RUUPIN) to be tabled this year. "RUUPIN will serve as the legal framework to enhance governance and transparency of inclusive climate action across all sectors," says Nor Yahati.

The government also plans to roll out a carbon tax by 2026 as well as provide financial incentives, such as tax exemptions, to support CCUS adoption and accelerate Malaysia's transition to a low-carbon economy, she adds.