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KUALA LUMPUR: The climate mitigation technology process through the Carbon Capture, Utilisation and Storage (CCUS) deployment in Malaysia requires a whole-of-nation approach involving government agencies, industry players, researchers and financiers, while at the ASEAN level, it needs stronger regional collaboration to accelerate its adoption.

The deputy director of the Environmental and Natural Resources Division of the Ministry of Economy, Azral Izwan Mazlan, said CCUS cuts across multiple sectors and ministries, making coordinated policy development and implementation essential to support the country's net-zero emissions aspiration by 2050.

"CCUS requires a whole-of-nation approach, even from policy-making to implementation, education and financing, and it is one of the main levers identified for decarbonisation to meet net-zero carbon aspiration by 2050," he said during a dialogue session titled "CCUS Readiness: Is ASEAN Prepared for Carbon Capture at Scale?", in conjunction with the Energy Transition Conference 2026 (ETCon26) here.

Azral said that gaps remain across the CCUS value chain, particularly in carbon capture and utilisation, noting that supporting guidelines are being developed alongside the CCUS Act 2025 to ensure participation by not only large corporations but also small and medium enterprises (SMEs) and local companies.

He noted that Malaysia also needs international cooperation to advance CCUS initiatives, given the industry's technology-intensive, capital-heavy nature.

Meanwhile, Tenaga Nasional Bhd (TNB) Research Head of Decarbonisation and Renewable Energy Research Centre, Noraziah Muda, said carbon utilisation presents an immediate opportunity while large-

scale carbon sequestration infrastructure is still being developed.

Noraziah noted that CCUS remains the only available technology capable of capturing carbon dioxide emissions from existing thermal power plants, including gas-fired and coal-fired facilities, which are expected to remain part of the energy mix for years to come.

"TNB Research started exploring CCUS in 2011, and we currently have a few pilot projects on capturing carbon dioxide from point sources. We have a few approaches for utilisation, among others, biological use such as microalgae and crop plantations, as well as converting carbon dioxide (CO₂) into e-fuels like methane or methanol," she said.

However, she noted that commercialisation challenges remain due to the significant energy requirements involved in capturing and converting carbon dioxide into marketable products.

Looking ahead, Noraziah has proposed the establishment of an ASEAN CCUS hub to facilitate regional infrastructure sharing and collaboration. "ASEAN has a very good opportunity to start with something; probably Malaysia, Indonesia and Japan can start with the hub of capture and then after that slowly move into utilisation as well as storage of CO₂," she said.

Held from June 3 to 5, 2026, at the Kuala Lumpur Convention Centre, ETCon26 is a flagship conference by TNB that brings together global stakeholders to accelerate the implementation of the national energy transition agenda.

Themed "Energy & AI: The Synergy for Energy Transition", the conference is anchored on three content pillars, namely Energy for AI, AI for Energy, and Energy Transition (ET) for People, reflecting the growing interdependence between energy systems and digital technologies. —Bernama