



# Progress in Southeast Asia's Decarbonisation Efforts and Sustainable Development

## ASEAN Climate and Energy Insight Q2/2024 by ACCEPT II

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As we progress halfway through 2024, we are pleased to see that the nations of Southeast Asia are continuing to make notable breakthroughs in promoting decarbonisation efforts towards low carbon development. In the first half of the year, there were pivotal investments, aligned with the [ASEAN Plan of Action for Energy Cooperation \(APAEC\) 2016-2025](#), in renewable energy infrastructure and advanced clean energy technologies, combined with supportive policies which demonstrate the region's commitment to achieving its targets and accelerating the transition to a sustainable green energy system.

Our [Climate Insight of Q1/2024](#) discussed ASEAN's progress towards a sustainable future through investment mobilisation, regional collaboration and carbon pricing policy development. The ASEAN Member States (AMS) are steadily making important strides towards carbon neutrality through renewable energy projects, green financing mechanisms and legislative measures. More and more initiatives in climate finance, along with increased regional and international collaboration have enhanced the AMS' climate action. Carbon pricing policies which incentivise emission reductions and promote clean energy transitions are clearly gaining traction across the region.

In this issue of Climate Insight, we highlight the significant advances that have been made since April in energy and climate investment, underscored by numerous partnerships, funding initiatives and international collaborations aimed at achieving carbon neutrality. We also present the most recent technological advancements in renewable energy, hydrogen and carbon capture technologies, and update the development of carbon pricing policies across the region.

## Energy–Climate Investments and Funding Paces Steadily

In this past quarter, climate financing in the region was mobilised from diverse sources. Private sector investments and public funding have tried to keep pace with the staggering amounts of financing coming from climate funds and blended financing schemes. In Thailand, four power and waste management companies—Gulf Energy Development, Earth Tech Environment, Better World Green and Waste Tech Exponential—formed joint ventures worth at least USD 416.9 million (THB 15 billion) to construct ten waste-to-energy power plants, each planned to have a capacity of 8 MW. There were also undisclosed amounts of investment from the same companies to build three refuse-derived fuel (RDF) production factories and two waste-fired power plants.

Australia's national science agency, Commonwealth Scientific and Industrial Research (CSIRO) and the Maritime and Port Authority of Singapore (MPA), under the Australia-Singapore Initiative on Low Emissions Technologies (ASLET) granted USD 13.5 million (AUD 20 million) to decarbonise maritime and port operations. This initiative is expected to roll out research, demonstration and commercialisation of zero- and low-emission technologies, as well as on fuels and energy sources used in maritime shipping and port operations.

The goal of a Clean Economy Agreement signed with the United States, Singapore and Japan is to enhance the region's transition to a more sustainable green energy system, with achieving net-zero emissions in mind. It stipulates that over USD 23 billion in infrastructure projects spanning energy, agriculture and waste management will be invested by the participating governments and private entities.

Singapore's National Environment Agency (NEA) also pledged USD 67.1 million (SGD 90 million) for a Productivity Solutions Grant which will support the efforts of its environmental services industry to test the commercial viability of various innovative technological solutions. The treatment of mixed municipal solid waste (MSW) was tagged as an area of special interest by the Minister for Sustainability and the Environment, signalling Singapore's commitment to generating value from waste management.

As for public-private partnership, a Memorandum of Understanding (MoU) was signed between the Philippines' climate change policymaking focal point, the Climate Change Commission (CCC) and the Ayala Group, to explore future projects related to low-carbon development and climate adaptation. Investments in renewable energy, energy efficiency and decarbonisation are to be expected.

The signing of two other notable MoUs signalled the development of other new energy-climate-related investments. One was signed between the Electricity Generating Authority of Thailand (EGAT) and the Swedish Trade and Invest Council for knowledge and technology exchange, with a focus on biomass energy and hydrogen energy storage systems to raise the share of renewable energy in Thailand electricity mix and achieve its carbon neutrality targets. The other was signed by The Radical Fund, a venture capital firm, in partnership with the Real Estate Division of Keppel Ltd., to explore prospective projects relating to energy efficiency, operations optimisation and environmental impacts reduction.

With respect to climate funds and development banks, a variety of grants and concessional funds were deployed in this quarter. In blended finance, New Zealand announced a [USD 25 million \(NZD 41 million\)](#) contribution to the - Energy Transition Mechanism (ETM) which is led by the Asian Development Bank (ADB). The Philippines, Indonesia and Vietnam were chosen to be the initial focus of these funds, and their goal is to mobilise further public and private finance for decarbonising the power sector. Similarly, Indonesia's state-owned power company, Perusahaan Listrik Negara (PLN), received [USD 581.5 million](#) from the World Bank, the Canada Clean Energy & Forest Climate Facility and the Clean Technology Fund to increase electrification, IT operational capacity and integration of new renewable energy technologies to the national power grid. The funding is under a direct loan agreement with a sovereign guarantee called the Indonesia Sustainable Least-Cost Electrification-1 (ISLE-1) Program. Its focus will be the Maluku and Nusa Tenggara regions, which have very low electrification levels and high mean electricity generation costs.

The Philippines secured [USD 500 million for its coal transition](#) from the Climate Investment Fund (CIF). This funding is under the Accelerating Coal Transition (ACT) investment plan, and its primary purpose is to expedite the retirement and repurposing of coal-fired power plants. The overall target is to retire up to 900 MW of existing coal generation capacity by 2027. The funding will also support the addition of 1500 MW of renewable energy capacity by 2030 through offshore wind, floating solar, pumped hydro projects and battery systems. This is highly significant for the Philippines given that 60% of its total power generation accounts for 55% of its national emissions, and that the country is currently committed to an emissions reduction of 75% by 2030 as per their Nationally Determined Contribution (NDC).

The Philippines is also set to benefit from a [USD 10 million](#) grant from the Green Climate Fund to enhance the government's readiness to address climate hazards. This grant is expected to accelerate the implementation of climate-resilience projects in energy, transportation, waste and environment, among other sectors.

Intersecting clean energy funding, sustainable banking and financing initiatives were also observed in this quarter. The Hanoi-based private commercial bank, Southeast Asia Commercial Joint Stock Bank (SEABank), received [USD 180 million](#) from the International Finance Corporation (the World Bank group's private investment arm) and the Norwegian Investment Fund for Developing Countries (Norfund). This funding will support SEABank's issuance of green and blue bonds. The proceeds from the green bonds will be used to finance green assets such as renewable energy, energy efficiency and green buildings. Similarly, three Cambodian issuers of green bonds also received comprehensive support, worth [USD 140 million](#), under the inaugural Cambodia Sustainable Bond Accelerator Program. These bonds, which will be issued between 2024-2025, will support investment projects which have crucial environmental and socio-economic benefits across the country. A USD 50 million portion of it will be used to fund "Project Sunflower", a major solar photovoltaic plant project in Cambodia, initiated by the solar farm operator Schneitec Dynamic Co., Ltd.

## Propelling Emerging Technologies Forward

The AMS have been proactively exploring the use of various emerging technologies in different sectors through productive discourses and cooperations. One such promising technology is green hydrogen. At the [Singapore Maritime Week](#), green hydrogen was given center stage and touted as the future key fuel of the maritime sector while it carries out its decarbonization. Green hydrogen is categorised as a clean energy with low carbon emissions, making the sources more environmental-friendly. The Envision Energy's President expressed commitment and a call-for-action to collaborate with global partners in exploring the feasibility of green hydrogen in the shipping industry.

In May, Malaysia hosted the [Asia Pacific Green Hydrogen and Exhibition 2024 \(APGH 2024\)](#) in Sarawak. The Malaysian Deputy Prime Minister—who is also the governing Minister of Energy Transition and Water Transformation—has successfully sought out international collaboration, focusing on innovation and investment to accelerate the growth of green hydrogen.

Meanwhile, Thailand is considering the adoption of [small modular nuclear reactor technology](#) to diversify the nation's energy mix. At present, only 23% of Thailand's total installed capacity comes from renewable energy. Natural gas is expected to remain the primary energy source, and account for 53% of total installed capacity between 2018 and 2037. As the government is avoiding LNG imports to control electricity price fluctuations, it is hoping that small modular nuclear reactors, along with other emerging technologies, such as green hydrogen and battery storage, can meet the manufacturing industry's energy demand.

In the Philippines, [the University of the Philippines, Manila \(UPM\), plans to increase its environmental sustainability](#) by expanding its solar panel deployment to cover 10,000 m<sup>2</sup> with a generation capacity of 1,600 MWh, thereby enabling electricity savings of USD 297,000 (PHP 17 million). As the Energy Efficiency Excellence (EEE) awardee, UPM has set a target to reduce its carbon footprint by 1,000 tonnes each year. It aspires to become the largest independent education institution in the country generating renewable energy. At the same time, the Philippines's largest distribution utility, Manila Electric Co. (MERALCO) is eyeing [nuclear power](#) to replace LNG. The government is also keen to pursue energy cooperation pertaining to [waste-to-energy projects](#), as highlighted by the courtesy visit of the Philippines' President to Brunei Darussalam. The existing waste-to-energy projects in the Philippines are all at the micro level. It is believed that these could be greatly expanded and represent an untapped opportunity.

Meanwhile, [ExxonMobil and BP are considering carbon capture and storage \(CCS\) projects in Indonesia](#). They envisage Indonesia emerging as the CCS hub in Southeast Asia. Recently, Indonesia's state-owned enterprise, Pertamina together with ExxonMobil and Korea National Oil Corp, signed an agreement to cooperate in developing carbon storage on Sumatera Island, to be operated by Pertamina.

## Carbon Market Policies and Developments in ASEAN

The carbon market in Southeast Asia has received wide attention, especially following the carbon border adjustment mechanism imposed by the European Union. The AMS are proactively working on finding the right approach to implementing something similar in their respective nations. Recently, [Thailand has agreed to roll out a carbon tax at the rate of USD 5.7 per ton CO<sub>2</sub>e \(THB 200 per tCO<sub>2</sub>e\)](#) by the start of 2025 to minimise the GHG emissions from each fuel product and ensure that the private sectors are mindful of their emissions. This carbon tax rate is the same as in Singapore. The carbon market is foreseen to be a competitive advantage for the private sectors as the initiative is aligned with EU's regulations. Meanwhile, in the private sector, Thailand's Carbon Registry has signed agreements with nine project owners in Indonesia for [USD 163 million](#) worth of carbon credits. A total of 4,081,725 credits is expected to be rolled out annually.

Vietnam's carbon market has served as a way to pursue its green economy and shape export competitiveness. [The governance amendment was issued under the Directive No. 13/CT-TTg](#) and mandated by the Prime Minister. It enables carbon credits management to contribute towards the NDCs target. This effort corresponds with the Environmental Protection Law debuted in 2020. The government is focused on the geographical locations which have abundant renewable energy development opportunities mainly in the form of wind and solar energy. A carbon credit trading platform is introduced to facilitate a seamless transaction.

To date, [Vietnam has received the first payment amounting to USD 51.5 million from the first carbon credit sale](#), demonstrating the country's potential in the carbon market. This initial success involves 10.3 million carbon credits generated between 2018 and 2020, priced at USD 5 per credit. Meanwhile, [Indonesian startups are seeking potential carbon trading investment from Singapore and Japan](#). As Indonesia has many suitable coastal project locations, the aim is to offer Singapore and Japan "blue carbon", and attract more global business investment in carbon trading.

At the same time, the Malaysian Minister of Economy and Deputy Prime Minister are expecting to hold the hearing for country's carbon trading law by Q4 this year. [Two regulations, in the drafting phase, relating to carbon capture trading and a greenhouse gas emissions bill, will cover laws, regulations and tax schemes](#). These bills are aligned with the NDCs target to reduce GHG emissions by 45% by 2030 based on 2005 levels. In addition, [the Malaysian Minister of Economy is confident that carbon capture trading will attract investment amounting to an industry value of USD 23 billion \(RM 100 billion\) in 20 years](#).

Throughout these efforts, the AMS are putting decarbonisation at the top of their energy transition agendas. By disbursing funds for various low-carbon energy projects, forming alliances to implement emerging technologies, and enriching the carbon market by groundbreaking policies and noteworthy investments, the AMS are signalling to the world that the region is strongly committed to incorporating climate considerations in regional energy planning, in the hope to securing a resilient and sustainable future for the peoples of ASEAN.

This insight is a product of the ASEAN Climate Change and Energy Project II (ACCEPT II)

ACCEPT II is a continuation of ACCEPT Phase 1 that was successfully accomplished on 31 March 2022. The commencement of the 48-month project officially began on 1 November 2022. This collaborative project between the ASEAN Centre for Energy (ACE) and the Norwegian Institute of International Affairs (NUI) is funded by the Norwegian Government, under the Norwegian-ASEAN Regional Integration Programme (NARIP). The project aims to support ASEAN member states and ASEAN's capacity to transition to Low-Carbon Energy System and contribute to carbon neutrality or a net zero future.



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