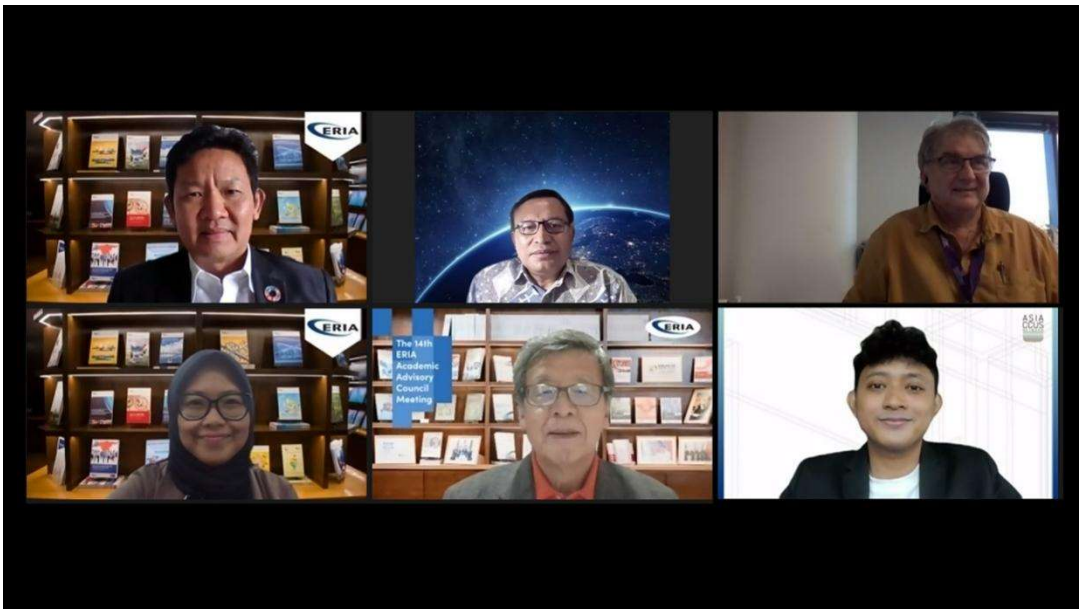
Volume 7, Quarter III-2023
Asia CCUS Network Newsletter

A. Summary of the Past Events

The 9th ACN Knowledge Sharing Conference

30 June 2023



Australia's Northern Territory's CCS Hub Project to Facilitate Carbon Reduction Initiatives in Asia

Virtual Conference, 30 June 2023: The Australian government is a strong proponent of carbon-reducing technologies including Carbon Capture and Storage (CCS) and Carbon Capture, Utilization and Storage (CCUS). Australia continues to spearhead initiatives and programmes on clean technology to strengthen domestic and international collaborations and to lower the costs of these innovations. The Northern Territory is an Australian territory rich in gas reserves and has subsequently pushed ahead with its CCS hub better known as the Middle Arm CCS facility which is rapidly undergoing development. The project seeks to bolster the territory's economy through the pursuit of low-emissions business activities, support the Australian government's climate commitments, and assist the Asian region's carbon reduction plans.

CLICK HERE FOR THE FULL ARTICLE

JOGMEC Published CO2-EOR Guideline for ASEAN

23 June 2023: Japan Organization for Metals and Energy Security (JOGMEC) has developed and published the "JOGMEC's guideline for safe, long-term containment of CO2 using CO2-EOR (JOGMEC CO2-EOR Guideline)." The guideline which is developed based on rich experience and knowledge is available as an open resource. It also expected to support CO2-EOR projects in which Japanese companies participate.

JOGMEC has been developing carbon dioxide capture and storage (CCS) and carbon intensity (CI) guidelines to establish institutional infrastructure aimed at energy security and climate change mitigation. It considers CO2-EOR (CO2-enhanced oil recovery), a technology to increase crude oil production by injecting CO2 into underground reservoirs, as an important method to accomplish energy transition; moreover, JOGMEC has established guidelines aimed to provide recommended work guidelines (guidelines) for the appropriate implementation of CO2-EOR, which can contribute to climate change mitigation.

Further, the established guideline is expected to be referenced and used by domestic and international operators and all stakeholders involved in CO2-EOR projects to reduce carbon emissions from energy fuels through safe, long-term storage of CO2. This guideline will also assist in understanding the procedures for planning and implementing CO2-EOR projects that contribute to greenhouse gas (GHG) emission reductions, along with the recommended operational guidelines for calculating GHG emission reductions.

The ACN fully support the development of the guideline by holding workshop with ACN Advisory Group members and ASEAN CCUS experts to invite review and recommendation to the draft of guideline as part of ACN contribution to effectively promote collaboration among CCUS experts in the region.

For the complete documentation of the CO2-EOR guideline, please visit the following link.

CLICK HERE FOR THE FULL ARTICLE

B. Publications (Report, Journal & Article)[1]

Carbon Capture Utilization and Storage (CCUS): A Key Decarbonization Technology for Thailand and the Region

Article by **Weerawat Chantanakome**, Councilor and Advisor, Ministry of Energy of Thailand - ACN Advisory Member

The adoption of Carbon Capture Utilization and Storage (CCUS) technology is critical in addressing the rapidly increasing energy demand and carbon emissions, which pose significant threats to global climate change. This article has briefly provided an overview of CCUS technology and its specific implications for **Thailand**. Thailand has committed to achieving net zero emissions by 2065 and carbon neutrality by 2050 as part of the Paris Agreement and the 26th annual session of the COP26 in 2021. Various policies and mitigation options have been implemented. Under Thailand's Long-term Low Greenhouse Gas Emission Development strategy (LT-LEDs), key actions towards low carbon, energy transition and carbon neutrality were defined depending on the maturity of the industry/technologies. Under decarbonization policy, the National Energy Policy (NEP2022) for Thailand includes the role of CCUS technology as a critical decarbonization tool to address Thailand's increasing energy demand and greenhouse gas emissions.

In fact, there are two critical factors in advancing CCUS technologies: sufficient policy drivers & incentives, and the availability of fund. Thailand is formulating a **5-Year Plan (2022-2027)** focusing on CCUS deployment and development in both upstream and downstream industry. The Ministry oversees the involvement of national oil companies, utilities, and the private sector in developing a comprehensive CCUS Roadmap. Many CCUS pilot projects are installed. These include CCUS installations retrofitted in existing coal-fired power plants and CO2 sinks in depleted reservoirs. The government is also preparing a business and revenue model for CCUS by 2026. Read more....

Carbon Capture Utilization and Storage (CCUS) Development in Thailand

Research Paper by **Twarath Sutabutr**, President, Office of Knowledge Management and Development (Public Organization), The Office of the Prime Minister, Royal Thai Government

Thailand is a developing country with a growing economy, which has led to an increase in energy consumption and carbon emissions. In order to tackle this issue, the Royal Thai Government (RTG) has implemented a number of policies and initiatives aimed at reducing the country's carbon footprint and promoting sustainable development. Carbon Capture Utilization and Storage (CCUS) has just become one of Thailand's policies to help pushing a low-carbon agenda and to enable Net Zero emissions within 2065.

Thailand National Committee on Climate Change Policy has approved the establishment of the Greenhouse Gas Reduction Steering Committee which initiated the technology applications for the country's first carbon capture, utilization and storage. The Committee's mission is set to accelerate the actions that can mitigate climate impacts through the application of CCUS technology in the Energy and Industry sectors, leveraging the knowledge and experiences in Petroleum Exploration and Production (E&P) Industry. This first CCUS pilot project is known as the "**Thailand CCUS HUB project"**. This paper will summarize the conceptual design and the list of actions required to start implementing the project. Read more....

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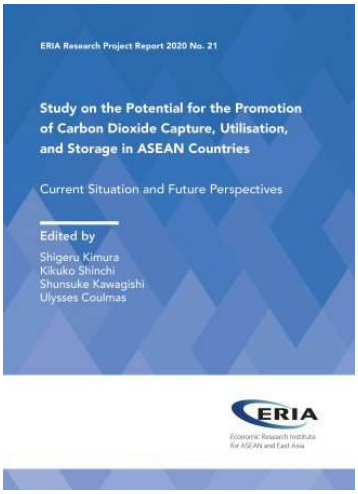
[1] *'We invite ACN Members and Supporting Members to write news, article, or op-ed to be published in the ACN website'.*

Study on the Potential for the Promotion of Carbon Dioxide Capture, Utilisation, and Storage in ASEAN Countries: Current Situation and Future Perspectives

Edited by Shigeru Kimura (ERIA), Kikuko Shinchi (Mitsubishi Research Institute, MRI), Shunsuke Kawagishi (MRI), and Ulysses Coulmas (MRI)



This 'Study on the Potential for the Promotion of Carbon Dioxide Capture, Utilisation, and Storage in ASEAN', uses a multi-aspect survey approach. The study covers findings on recent trends in policies, technologies, and business development from countries with experience in Carbon Dioxide Capture, Utilisation, and Storage (CCUS). It also looks into the potential for CCUS development in the Association of Southeast Asian Nations (ASEAN) and the East Asia Region. Based on discussions held at the 3rd East Asia Energy Forum, the report reiterates the important role CCUS can play in the region to achieve both energy transition and decarbonisation objectives. It also explores the potential and benefits of a regional collaborative approach, which is proposed as the Asia CCUS Network to create an enabling environment for business cases of CCUS.

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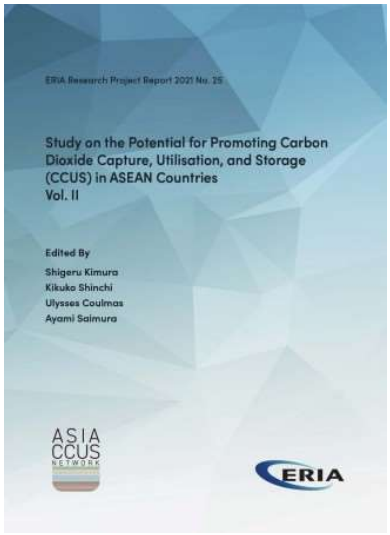
Study on the Potential for Promoting Carbon Dioxide Capture, Utilisation, and Storage (CCUS) in ASEAN Countries Vol. II

Edited by Shigeru Kimura (ERIA), Kikuko Shinchi (Mitsubishi Research Institute, MRI), Ulysses Coulmas (MRI), and Ayami Saimura (MRI)



This report was prepared under the Asia CCUS Network umbrella and focuses on the cost of Carbon Capture and Storage (CCS) and the legal framework of CCUS. To analyse the cost of CCS, we use a model case in central Java, Indonesia with the following assumptions: a) capture of CO2 emitted from a 500MW coal power plant (ultra- supercritical) applying chemical absorption using amine, b) transport of CO2 to the storage site through a 50km long pipeline, and c) storage of CO2 in sandstone formation of about 1000m. Costs of capture, transport, and storage – both capital and operation costs – are surveyed referring to existing publicly available literature. The cost of this model case is estimated at US$60–US$70 per CO2 ton and 70% of the cost results from the capture of CO2. The legal framework emphasises that deployment of CCUS will be implemented under appropriate regulations. Hence, surveys of the existing CCS regulations of European countries, Australia, and the United States are undertaken to come up with appropriate CCUS regulations for the Asia region. Finally, as an important regional policy framework, this report suggests an Asia Collective CCUS Initiative to start design of a business model of the CCUS value chain in the Asia region.

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C. Introduction: New Staff of the ACN Secretariat

The ACN Secretariat is pleased to announce the addition of two new staff members who will assume responsibility for overseeing the day-to-day operations and annual activity planning of the network. It is with great delight that we introduce, Dr I Gusti Suarnaya Sidemen and Mr Ryan Wiratama Bhaskara, to the ACN members. For a brief overview of their backgrounds, kindly refer to the following biographical information:

1. Dr I Gusti Suarnaya Sidemen

Dr Gusti joined ACN Secretariat as a part-time Research Fellow in April. With 30 years of experience in the public sector, he has held various roles, including safety inspector for offshore oil and gas operations, overseeing environmental and technical regulation compliance, downstream business licensing, and strategic planning. An engineer by training, Dr Gusti holds master's and doctoral degrees in Petroleum Law and Policy.

During his tenure as Deputy Director for Environmental and Technical Regulation Compliance Supervision, Dr Gusti and his team assessed technologies similar to CCS and CCUS, such as acid gas reinjection unit (AGRU), produce water reinjection, and drill cutting reinjection in Indonesia's oil fields. Dr Gusti's involvement with CCS and CCUS began while working with ADB to establish Indonesia's CCS and CCUS Center of Excellence. He contributed to the preparation of the first Indonesian CCS pilot project, Japon-1 Central Java, and collaborated on ADB-funded academic concepts for CCS regulations in Indonesia. Dr Gusti also played a key role in drafting Indonesia's CCS and CCUS regulations issued in January 2023.

2. Ryan Wiratama Bhaskara

Ryan has been working with the ACN Secretariat since March, as he joined the Economic Research Institute for ASEAN and East Asia (ERIA) as a Research Associate in the previous month. Previously, Ryan has been working as a Research Assistant in the Centre for Energy Studies Universitas Gadjah Mada and has involved in multiple strategic studies and research in Indonesian energy sector.

Ryan holds a bachelor's degree in mechanical engineering from Universitas Gadjah Mada and a master's degree in energy systems and data analytics from University College London.

C. List of Registered Members (as of July 2023)

Advisory Members

- Department of Industry, Science, Energy and Resources, Australia
- Ministry of Economy, Trade, and Industry, Japan
- Department of Energy, Philippines
- Ministry of Industry and Trade, Viet Nam
- Ministry of Mines and Energy, Cambodia
- Ministry of Energy and Mines, Lao PDR
- Energy Market Authority, Singapore
- Ministry of Energy and Mineral Resources, Indonesia
- Energy Commission of Malaysia, Malaysia
- Ministry of Energy, Thailand
- Ministry of Science and Technology, India
- Oil and Gas Planning Department, Ministry of Electricity and Energy, Myanmar
- Department of Energy, United States of America

Supporting Members

Academia/ Research Institute (46 members)

- Universitas Indonesia
- PARTIDO STATE UNIVERSITY
- Energy Studies Institute
- Pandit Deendayal Energy University
- Kyushu University
- Environmental Law Centre of Meiji University
- R & D Institute, Hokkaido Electric Power Co., Inc.
- Read more.

Finance – Banking (15 members)

- Sumitomo Mitsui Banking Corporation
- Japan Bank for International Cooperation (JBIC)
- Citigroup Global Markets Japan Inc.
- MUFG Bank, Ltd.
- SPARX Group Co., Ltd.

Read more.

Private – Public (216 members)

- Toyota Tsusho Corporation
- Eni
- Osaka gas
- Toyota Tsusho Corporation
- IHI Corporation
- IHS Markit
- JOGMEC
- PT. PERTAMINA (PERSERO)

Read more.

Regional/ International Organizations (25 members)

- International Finance Corporation
- International Association for Hydrogen Energy (IAHE)
- Oil and Gas Climate Initiative (OGCI)
- Clean Energy Ministerial (CEM) CCUS Initiative

Read more.

D. Recommended Links

1. IEA's Report on CCUS in Southeast Asia: https://www.iea.org/reports/carbon-capture-utilisation-and-storage-the-opportunity-in-southeast-asia

2. JOGMEC's New Website 'CLEAN FUTURE ENERGY': https://mirai.jogmec.go.jp/en/

3. National Energy Technology Laboratory Training Resources: https://www.netl.doe.gov/LCA/co2u/Training

D. Upcoming Events (Knowledge Sharing Conference, CCUS Workshop and Capacity Building)

Date & time will be announced later

- **The 3rd Asia CCUS Network Forum,** 27 September 2023 in Hiroshima, Japan, cohosted by Economic Research Institute for ASEAN and East Asia (ERIA) as ACN Secretariat and Ministry of Economy, Trade, and Industry (METI), Japan.
- **ACN capacity building training** 'Estimation of CO2 Storage Potential', 11-15 September 2023, organized by ACN Secretariat in collaboration with USGS.
- **The 10th ACN Knowledge Sharing Conference,** organized by ACN Secretariat in collaboration with Shell.

'We invite ACN Members and Supporting Members to be a speaker to share your expertise and knowledge in our next ACN Knowledge Sharing Conferences'.

Asia CCUS Network Secretariat

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