



One Community  
for Sustainable  
Energy

# ASEAN Energy Landscape and its Pathways: Where are Oil and Gas?

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# Introduction to ASEAN Centre for Energy (ACE)



Established in January 1999, ASEAN Centre for Energy (ACE) is an **intergovernmental organization within ASEAN** structure that represents the 10 ASEAN Member States' interests in the energy sector.

## What We Do



### Catalyst

Unify and strengthen ASEAN energy cooperation by providing a platform for sharing, policy advisory, best practices, and capacity building.



### Knowledge Hub

Provide a knowledge repository for ASEAN Member States (AMS) and services through data management, publication, and dissemination.

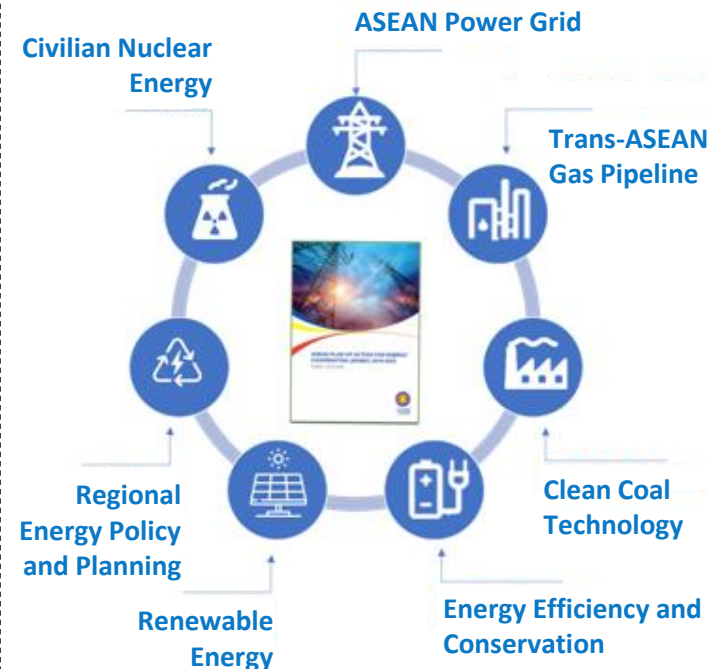


### Think Tank

Assist AMS on research and identifying practical and specific solution on policies, legal, and regulatory frameworks, technologies, and innovative solutions.

## ASEAN Plan of Action for Energy Cooperation (APAEC)

*Enhancing Energy Connectivity and Market Integration in ASEAN to Achieve Energy Security, Accessibility, Affordability and Sustainability for All*



### What is APAEC?

A series of guiding policy documents serving as the platform for deeper cooperation both within ASEAN as well as with DPs and IOs.

### What does APAEC do?

Promoting **multilateral cooperation and integration** in the energy sector.

### What is APAEC trying to achieve?

To attain the goals of **ASEAN Economic Community (AEC)** by enhancing security, accessibility, affordability, and sustainability in the energy sector.

# Energy Consumption in ASEAN will Continue to Grow



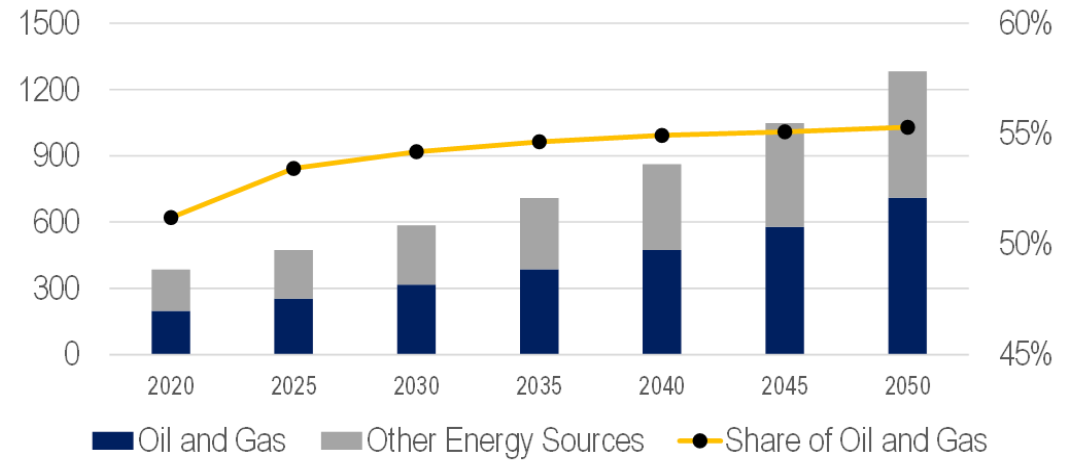
ASEAN energy consumption is **expected to triple from 2020 to 2050** under baseline scenario, with **fossil fuels remain the highest consumption**.

- Under the baseline scenario, oil and gas consumption will grow by 4 times in 2050 from 2020.
- This is equivalent to about 55% of the total final energy consumption in 2050, increasing from 51% in 2020.

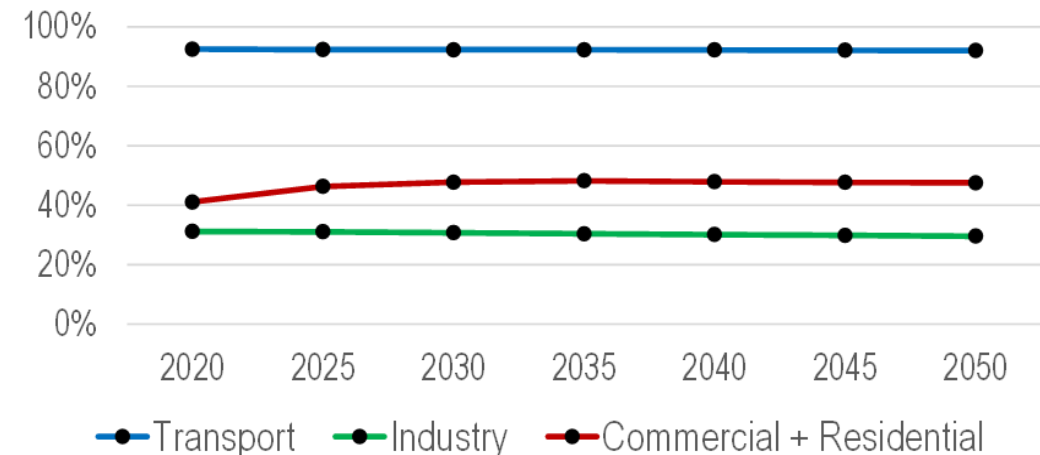
Despite the requirement to boost renewable energy consumption, **oil and gas will still play a significant role in meeting the energy consumption in ASEAN**.

- Transportation sector is still dominated by **oil for about 91% of the total energy demand required by transportation sector in 2050**.
- Oil and gas will also supply **nearly half** the required energy for commercial and residential sectors, and about **30%** in the industrial sector in 2050.

Mtoe **Final Energy Consumption (Mtoe) and Share of Oil and Gas (%)**



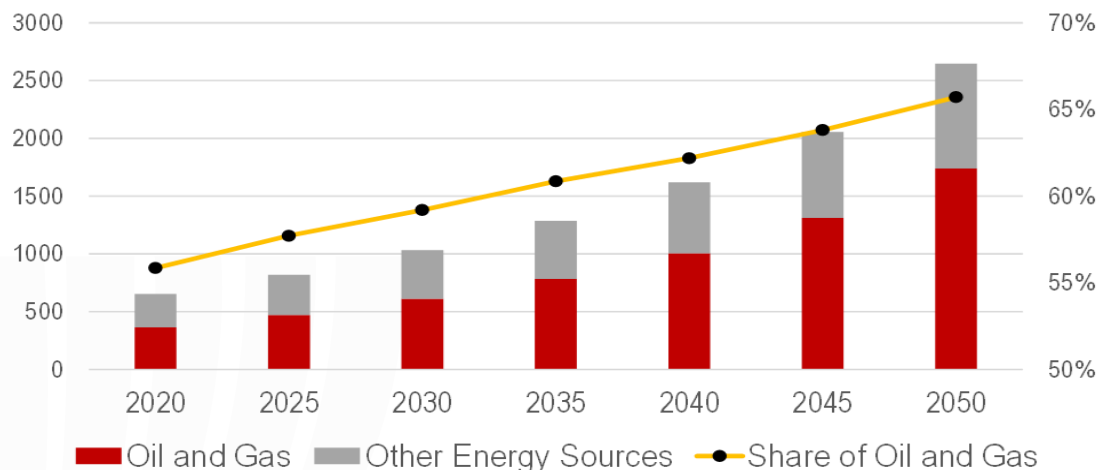
**Share of Oil and Gas Consumption by Sector**



# Oil and Gas will still Dominate Energy Supply in ASEAN



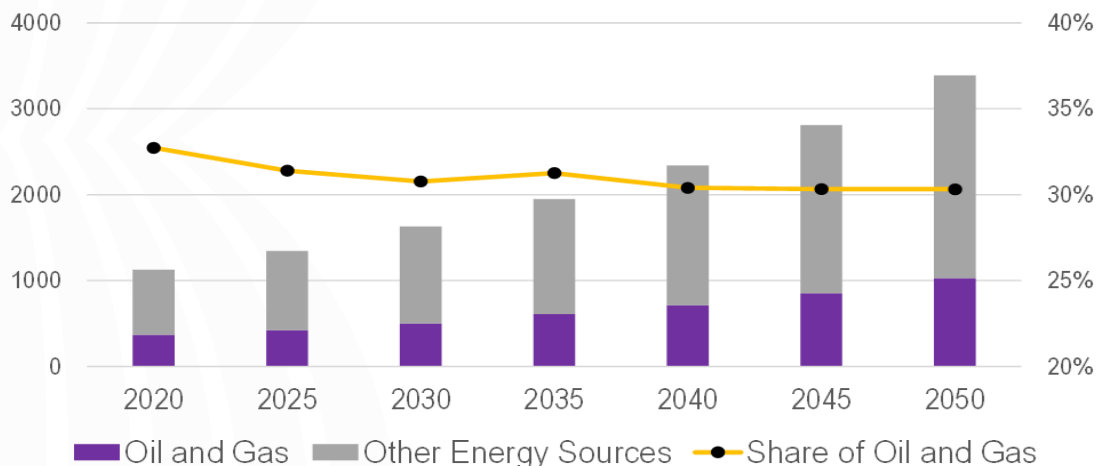
Mtoe Primary Energy Supply (Mtoe) and Share of Oil and Gas (%)



Fossil fuels remain the largest component in the energy supply mix of the region, with **oil and gas contributing more than 65%** of the mix in 2050.

- ❑ Baseline scenario projects a 4-fold increase in energy required to fuel the economic growth from 2020 to 2050.
- ❑ Even with the most aggressive energy transition scenario, oil and gas will contribute to a notable portion of the total energy supply.

TWh Total Power Generation (TWh) and Share of Oil and Gas (%)



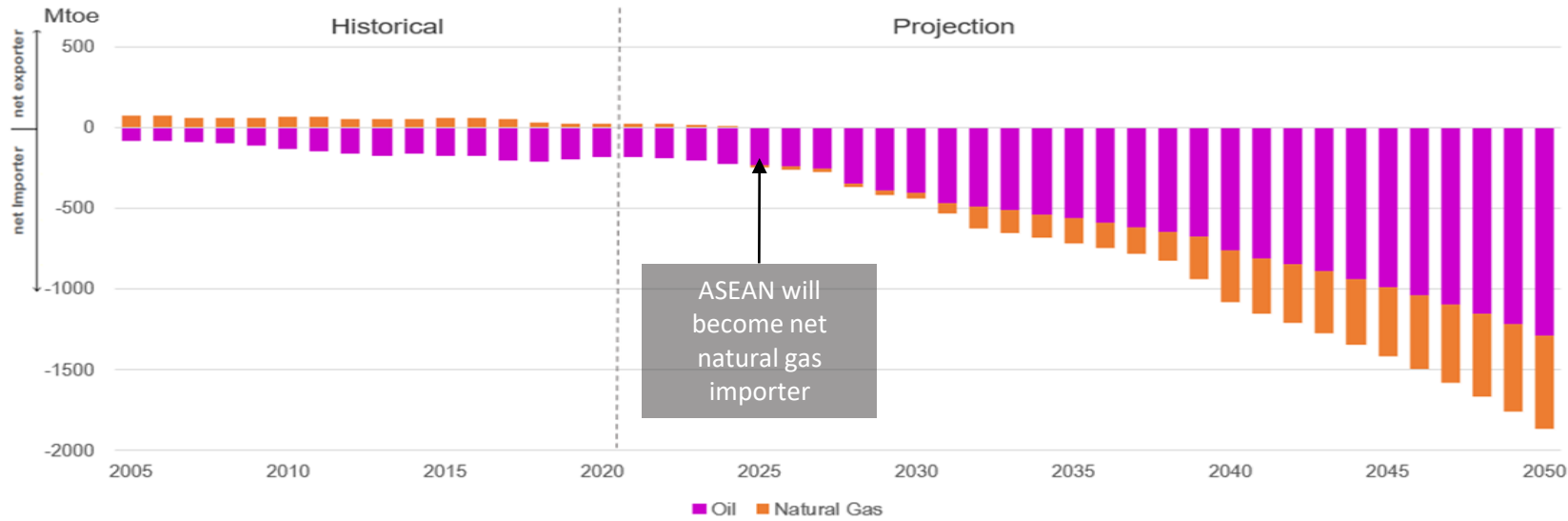
In the power sector, generation from **oil and gas will still grow by about 3 folds** from 2020 to 2050.

- ❑ Despite increasingly being replaced by renewable energy, oil and gas still comprises around one-third of the total electricity generation in 2050.
- ❑ Natural gas will remain the second most important energy sources after coal in power sector, contributing to 29% of the total generation in 2050.

# Energy Security Concern from Energy Trade Deficit



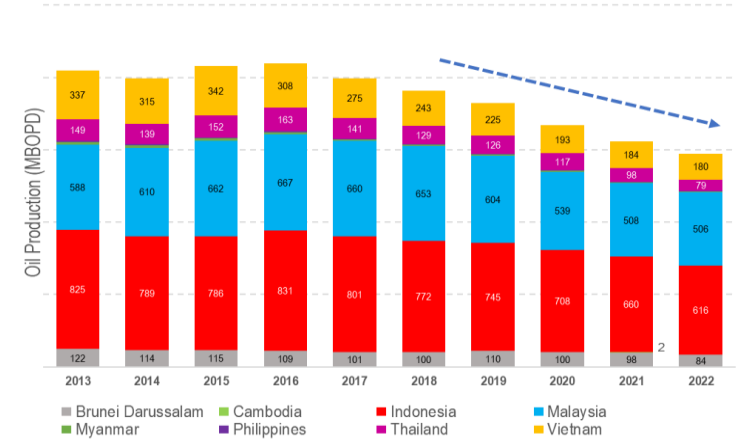
### Historical and Projected Oil and Gas Trade Balance in ASEAN



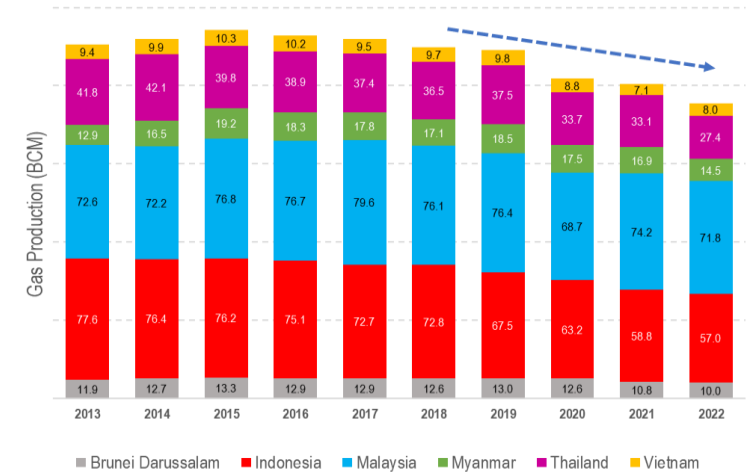
Oil and gas production **has been declining since mid-2010s**, raising concern about energy security from the worsening energy trade deficit.

- ❑ Without significant new discoveries and/or additions to existing production capacity, and with continuous dependence of fossil fuels, ASEAN would **become net importer of natural gas by 2025**.
- ❑ Crude oil import is also projected to increase by seven folds by 2050 from 2020 level.

### Oil Production in ASEAN



### Natural Gas Production in ASEAN



# Oil and Gas Still Plays a Critical Role in Energy Transition



Our energy policies should balance the trade-offs between **securing energy supply** and **accelerating energy transition** to enable a sustainable economic growth while also halting the climate crisis.

- ❑ Building new energy infrastructure to diversify energy supply sources
- ❑ Investing in new exploration of existing energy sources
- ❑ Enhancing the production capacity of existing energy sources



- ❑ Replacing traditional technology with low-carbon one in power sector
- ❑ Developing the indigenous renewable energy sources
- ❑ Expanding transitioning fuel to enable wider renewable energy penetration

Strategic policies that allow us to reach the goals of both **energy security** and **climate change mitigation**:

Converting coal-powered power plants to **gas-fired power plants**

Enhancing domestic production through **tertiary recovery**

Implementing **CCUS projects** in mature / inactive oil and gas fields

Producing **grey hydrogen** from **natural gas** using steam-methane reforming

Building **new LNG facilities** to expand natural gas import capacity

Promoting **more exploration** in potential new oil and gas plays

Mitigating **methane emission leakage** in oil and gas operations

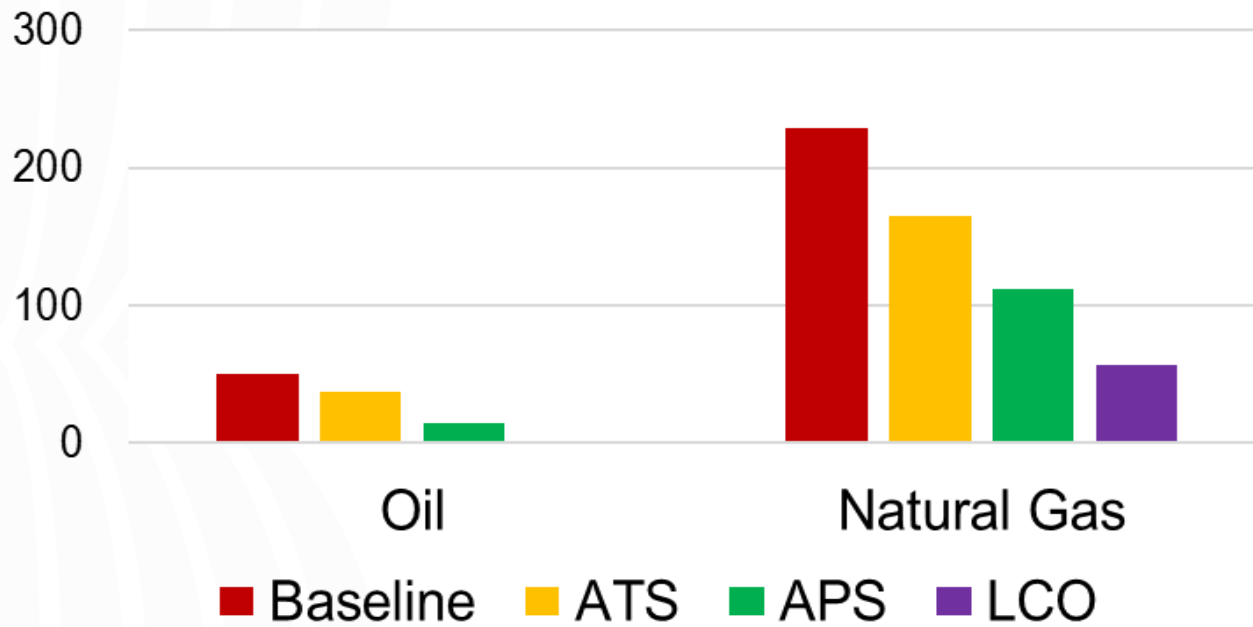
Expanding the share of **biofuel blending** in **gasoline** and other oil products

# Investments for Energy Transition Will Still Involve Fossil Fuel



While most of the investments will be directed to renewable, **power sector will still need a notable investment in fossil fuel.**

2022 Real USD (Billion) Investment Requirement in Power Sector between 2021-2050



## Total Investment in Power Sector (APS)

**\$725** bn

This is the investment required to build **power generation facilities** from fossil fuel and renewables (including nuclear) and **battery storage**.

## Oil and Gas Investment in Power Sector (Baseline)

**\$279** bn

This accounts for **26%** of the total investment in power sector. The majority (21.4%) will be needed to build **gas-fired power plants**.

## Oil and Gas Investment in Power Sector (APS)

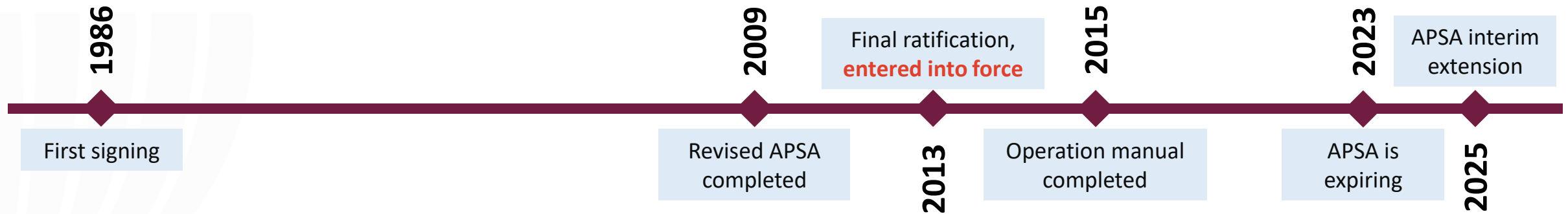
**\$127** bn

This accounts for **17.5%** of the total investment in power sector. The majority (15.5%) will be needed to build **gas-fired power plants**.

# ASEAN Petroleum Security Agreement (APSA)



To **enhance petroleum security**, either individually or collectively, and **minimize exposure to an emergency situation** in oil and gas supply.



## Short-term Measures:

Coordinated Emergency Response Measures (CERM)



Demand Restraint



Supply Assistance



Information Sharing

## Medium- and Long-term Measures:

Strengthening the fundamentals of ASEAN energy systems



Energy Cooperation



Energy Diversification



Energy Efficiency



Infrastructure Connectivity



Resource Stockpiling



# Ways Forward for ASEAN

- 1** The continuous, enormous share of oil consumed by transportation sector in the region until 2050 (91%) needs to be managed by both **demand** (such as strengthening energy efficiency measures) and **supply sides measures** (such as promoting the use of biofuel and EV).
- 2** The strengthening energy efficiency measures are also needed in **residential, commercial, and industrial sectors** due to significant share of oil and gas consumption in these sectors.
- 3** The combination of the **CCUS technologies and hydrogen** would be needed more than ever, given that **the huge required volume of critical minerals** may prevent the immediate penetration of clean energy technology.
- 4** **Diversification of energy supply (types and sources)** to ensure the region's resiliency to external shocks in the global energy supply chain is becoming increasingly urgent than ever.
- 5** **Regional cooperation on trade and stockpiling of oil and gas** within the region needs to be strengthened.

# Upcoming Event: ASEAN Energy Business Forum 2023



**ASEAN INDONESIA 2023**

**ASEAN Energy Business Forum**

Hosted by: Organised by:

# ASEAN ENERGY BUSINESS FORUM

24 - 26 AUGUST 2023

**Main Conference**  
Opening Ceremony with President of Indonesia together with 10 ASEAN Energy Ministers  
Parallel Sessions: Discussing Emerging Sub-Themes through Panels and Workshops

**Business Matching**  
The 5th Cleaner Energy Future Initiative for ASEAN (CEFIA) Forum  
ASEAN Green Transport Rally (ASEAN GTR) 2023: Towards Net Zero Emissions

**Exhibition**  
Awarding Ceremony of ASEAN Energy Awards & Gala Dinner  
The 3rd ASEAN International Conference on Energy and Environment (AICEE)

**Minister-CEOs Dialogue**  
Business-to-Business Meeting & Business-to-Government Meeting  
ASEAN Energy Leaders Golf Tournament

# Soft Launching: ASEAN Oil and Gas Updates 2023



## ASEAN Oil and Gas Updates 2023

Download here:



Report Presentation at ACE Booth  
Wednesday, 26<sup>th</sup> of July @ 10.30



Reserves, Production, and  
Consumption



Trade Movement



Infrastructure



Policy, Trend,  
and Investment



Outlook



Initiatives for Energy  
Security and Transition

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*We welcome your feedback,  
comments and suggestions.*

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