



ASEAN Oil and Gas Updates 2024

ASEAN Oil and Gas Updates 2024 examines the current state and emerging trends in ASEAN's oil and gas industry. It provides key statistics and analyses the oil and natural gas situation in ASEAN, covering reserves, production, consumption, trade, infrastructure, policy trends, investments, and energy transition initiatives.

This edition covers the recent status of the trade balance and movement, and investments in infrastructure development. Also included here are descriptions of recent initiatives relating to ASEAN's energy security and energy transition.

Our aim is to equip stakeholders with a high-level overview of the oil and gas industry in ASEAN to navigate its ever-evolving landscape and to point out opportunities for governments to maximise sustainable growth.

The data were collected from various reliable sources: official reports from the governments, the private sector, international organisations, and the ASEAN Centre for Energy report, mainly 8th ASEAN Energy Outlook.

This publication has benefitted from the overall guidance of ACE's Acting Executive Director, Mr, Beni Suryadi and Mr Suwanto, Senior Analyst from the Power, Fossil Fuel, Alternative Energy, and Storage (PFS) Department. This publication was led by Shania Esmeralda Manaloe, and prepared by Ignatius Bima Torence and Lintang Ambar Pramesti from the PFS Department.

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Abbreviation

BBO	Billion Barrels of Oil Equivalent	RRR	Reserve Replacement Ratio
BCFD	Billion Cubic Feet per Day	MBOPD	Thousand Barrels of Oil per Day
BCF	Billion Cubic Feet	MMBtu	Million British Thermal Units
BOE	Barrel of Oil Equivalent	MMbbl	Million Barrel of Oil
BOED	Barrel of Oil Equivalent per Day	Mt	Megatonne
BOPD	Barrels of Oil per Day	MW	Megawatt
BSCFD	Billion Standard Cubic Feet per Day	MTOE	Million Tonnes of Oil Equivalent
FSRU	Floating Storage Regasification Unit	TCM	Trillion Cubic Meters
FSU	Floating Storage Unit	TCF	Trillion Cubic Feet
kb/d	Thousand Barrels per Day	MTPA	Million Tonnes per Annum

2023 Highlight

Oil and Gas Reserves



ASEAN's oil reserves **increased** by **1.25%** and natural gas reserves **declined** by **0.94%** in 2023

Oil and Gas Production



The region's oil production **decreased** by **0.51%**, while natural gas production **increased** slightly by **0.84%**.

Oil and Gas Consumption



Economic growth led to an **increase** of oil and gas consumption in the region in 2023, to **4.19%** and **4.56%**, respectively.

Oil and Gas Trade



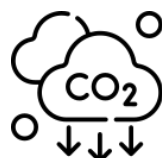
ASEAN countries are **net importers** of crude oil, with **92%** sourced from outside the region, while half of them are net exporters of natural gas, with **81%** exported to outside the region.

Oil and Gas Infrastructure



A total of **6.36 Mtpa** new regasification capacity and **3.89 Mtpa** new liquefaction capacity were **added** in 2023

Path to Decarbonisation



ASEAN national oil companies are achieving net-zero emissions by reducing operations, investing in renewable energy and electric mobility, and collaborating with foreign companies for clean energy initiatives.

Reserves, Production, and Consumption

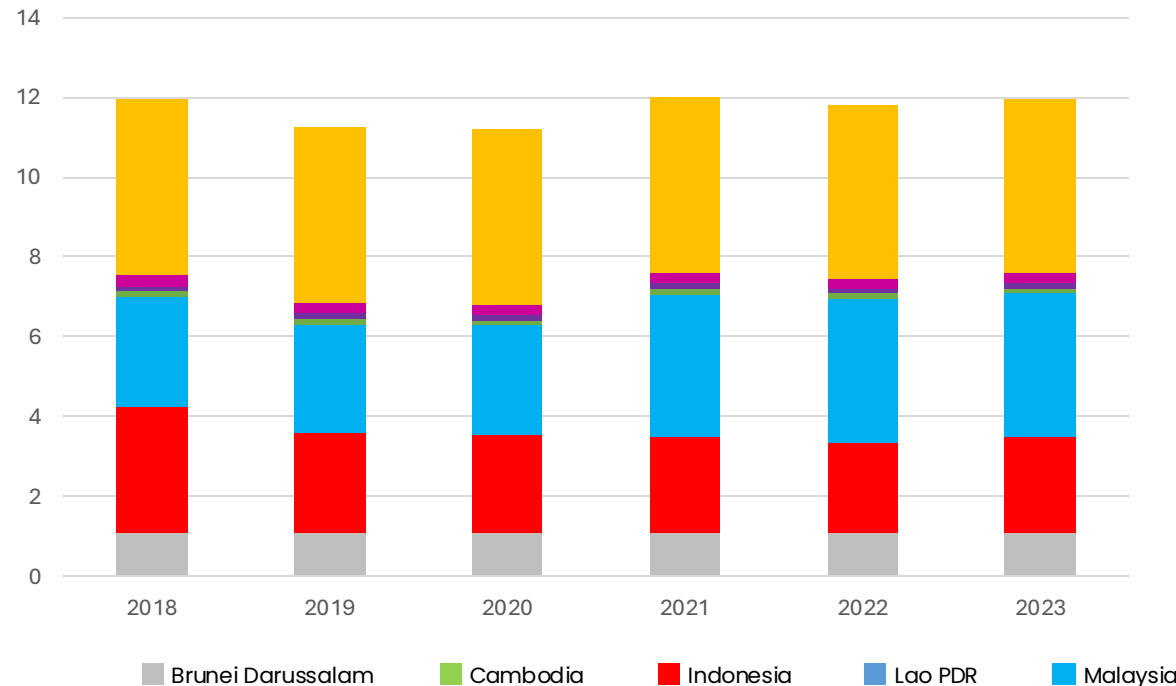
Proven Reserves

ASEAN's proven oil reserves increased, and natural gas reserves decreased in 2023.

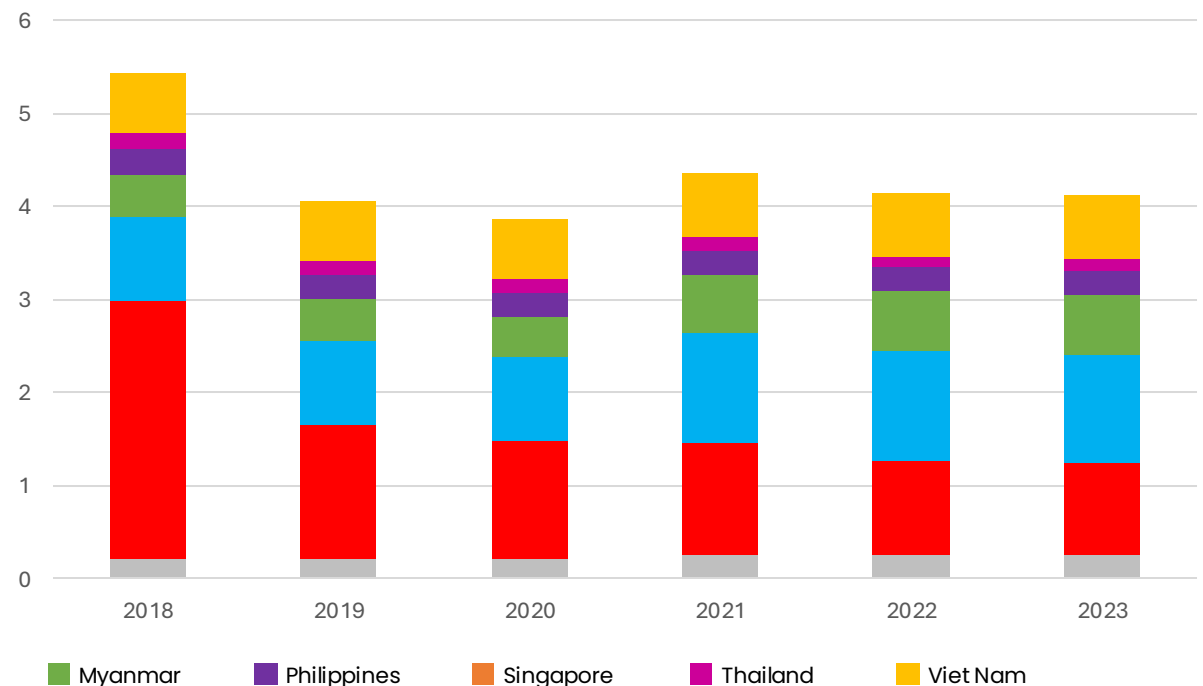
The region's combined crude oil reserves in 2023 reached **11.9 BBO**, marking a **1.25% increase** compared to 2022. This growth was primarily driven by **Indonesia's** oil reserves, which **grew by 6.17%**, rising from **2.27** to **2.41 BBO**.

On the other hand, the region's natural gas reserves **declined by 0.94%**, due to a **3.79% decrease** in **Indonesia's** natural gas reserves. Besides Indonesia, other countries have not reported their oil and gas reserves yet.

Crude Oil Reserves (BBO)



Natural Gas Reserves (TCM)



2023 was the outstanding year in **Indonesia's** oil and gas exploration in the last two decades, with **Malaysia** also showing exceptional results.

Indonesia remains committed to increasing oil and gas production while sustaining its reserves. In 2023, a total of [38 exploration wells were drilled](#), with the total investment in exploration reached [USD 900 million](#), the highest in the past six years. The country made significant exploration efforts, highlighted by two major gas field discoveries: Geng North, with total of [5 TCF](#) of gas and up to [400 MMbbl](#) of condensate, and Layaran, with [3.3 TCF](#) of recoverable gas. Both fields rank among the [top five largest global discoveries](#) in 2023.

Although [USD 13.7 billion](#) was invested in upstream oil and gas, this amount fell short of the [USD 15 billion](#) target. The increase in investment was driven by fiscal system improvements and government enablers. By July, [91 MMbbl](#) of oil and [2.2 BCF](#) of gas reserves had been added. Beyond exploration, enhanced oil recovery (EOR) methods are being employed, including CO₂ injection using the [Huff & Puff](#) method at the Sukowati Field in East Java. Furthermore, a USD 300 million chemical-enhanced recovery project is planned for the Rantaubais and Minas Fields.

Malaysia's state-owned oil company, Petronas, achieved impressive exploration results in 2023, recording 19 new exploration discoveries and two exploration-appraisal successes. These efforts contributed [1 BBO](#) in new resources for Malaysia. Petronas also increased its exploration activity, drilling the highest number of exploration wells in a single year since 2015.

Of the 25 wells drilled, 19 were successful, reflecting a [76% success rate](#), up from [60%](#) in 2022. Over half of the discoveries occurred in the Sarawak Basin. The company sees continued potential in Malaysia's mature basins and has adopted a new exploration strategy focusing on near-field opportunities to enable faster monetization. However, challenges such as limited [rig and workers availability](#) still exist.

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Illustration by Freepik

Thailand also experienced some notable results on their drilling efforts in Gulf Thailand. Operated by a Canadian company, Valeura Energy, these efforts have significantly extended the economic life of the field. [The company drilled six \(6\) production-oriented development infill wells, five \(5\) appraisal wells, and one \(1\) workover well in 2023](#), resulting in a replacement of more than double the volume of oil produced by all fields in 2023, with [219% of Reserve Replacement Ratio \(RRR\)](#).

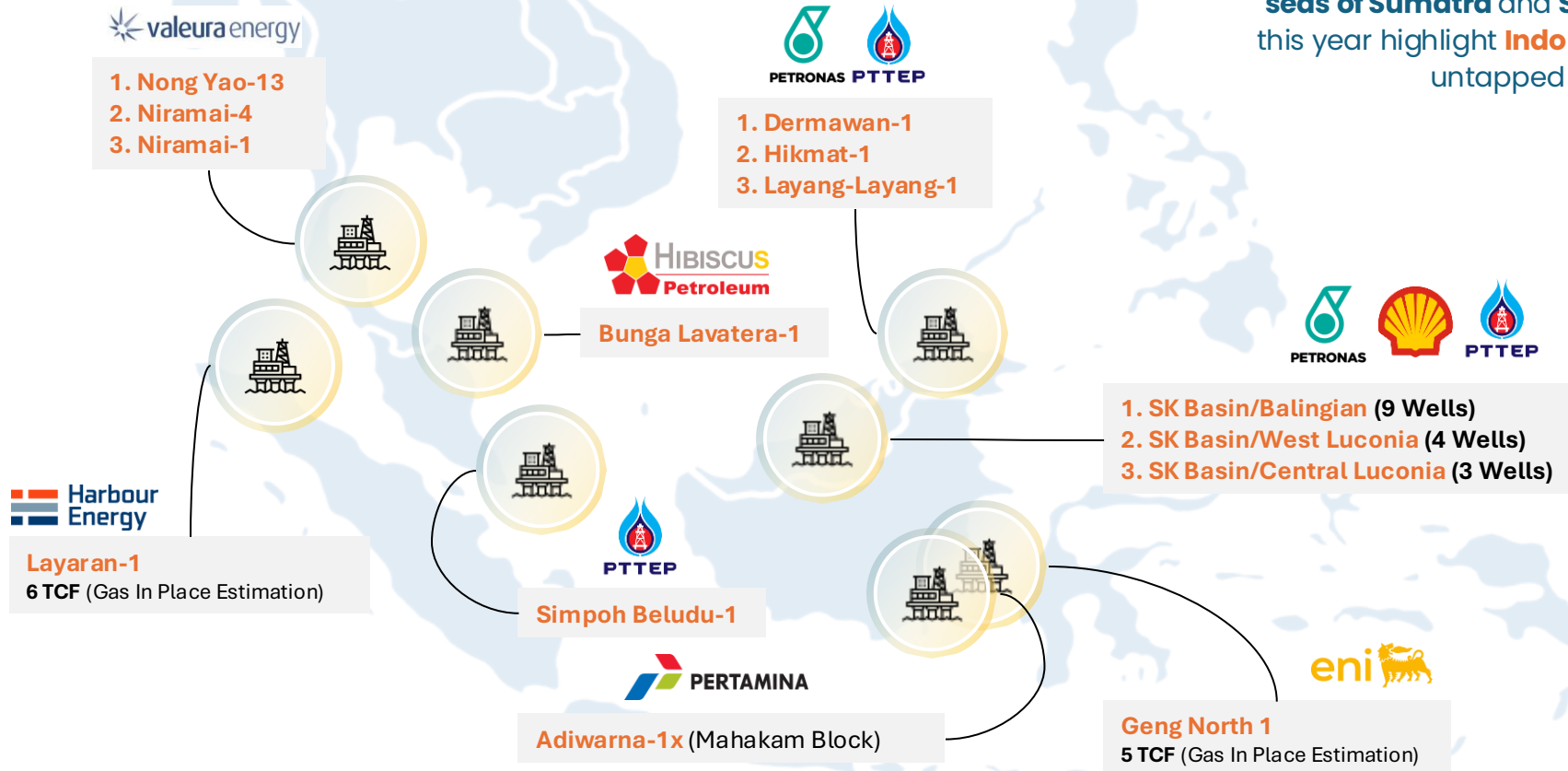
Viet Nam's oil and gas exploration and production sector achieved remarkable success in 2023 by reaching its annual target for increasing reserves [a full month and 10 days ahead of schedule](#). By November 2023, reserves had reached [12 MTOE](#), well within the year's target range of [8-16 MTOE](#).



ASEAN Oil and Gas Exploration in 2023

Sarawak Basin saw the most exploration wells drilled in **Malaysia**, led by various operators.

Meanwhile, significant discoveries in the **seas of Sumatra** and **South Kalimantan** this year highlight **Indonesia's** promising, untapped energy resources.



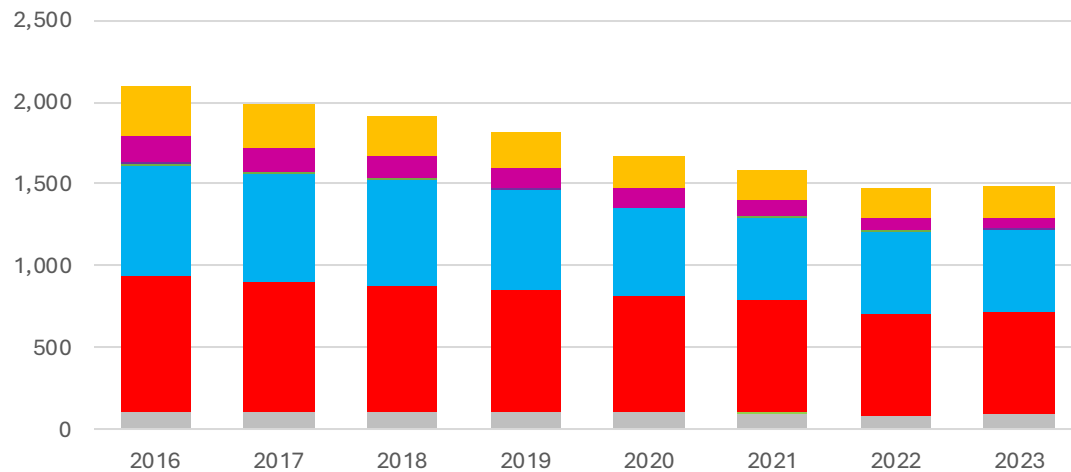
Production

Oil and gas production continues to decline as several major producers missed the set targets.

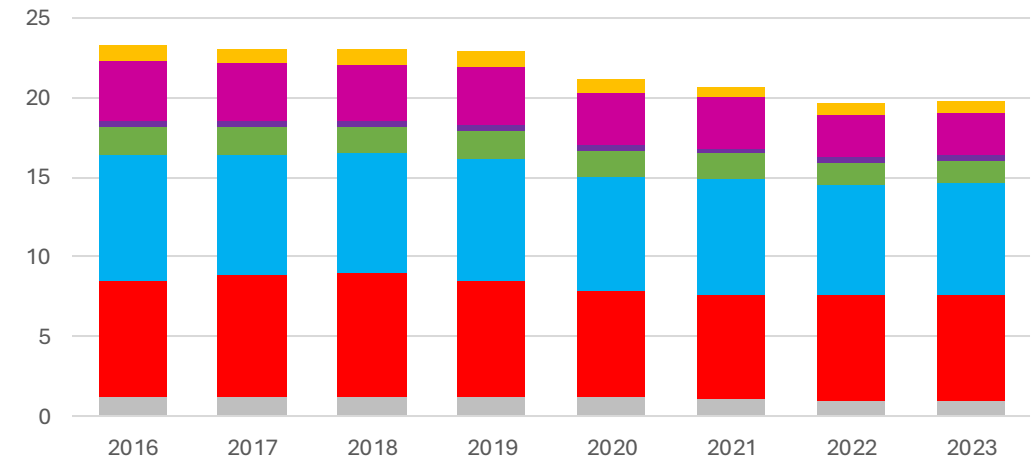
AMS produced 1.48 MBOPD in 2023, a 0.51 % decrease from the previous year. **Indonesia** and **Malaysia** remain dominant, accounting for 75.78% of total oil production. **Indonesia** and **Brunei Darussalam** increased their oil output, while **Malaysia** experienced a slight reduction. Oil production in the region is falling at approximately 7.51% annually since 2016.

The region’s gas production increased by 0.84% compared to last year, amounting to 19.8 BSCFD, after experienced a decline for each year from 2016 to 2023, with the average decline of 3.02% annually. The growth was driven by modest production increases in several countries, including the region’s top three producers: **Indonesia**, which rose by 1.52%, from 6.59 to 6.69 BSCFD; **Malaysia**, which increased by 0.77%; and **Thailand**, which grew by 0.25%.

Crude Oil Production (MBOPD)



Gas Production (BSCFD)



Source: ACE Database, Handbook of Energy & Economic Statistics of Indonesia 2023 ESDM, Petronas

Brunei Darussalam Cambodia Indonesia Lao PDR Malaysia Myanmar Philippines Singapore Thailand Viet Nam

Retaining oil and gas supply remains a big challenge for the region, with the **depletion of major fields** despite new discoveries.

Oil production declines in **ASEAN** are mainly driven by the depletion of major fields.

Advanced production methods such as workover and enhanced oil recovery are needed to curb the decline. Despite the investment towards the upstream operation in the region remains high, the challenges in raising the production at the mature fields have persisted. The role of the government will become increasingly critical to ensure to encourage investment for production enhancement in mature fields since the oil and gas demand is still expected to grow significantly in the next 15 years under the baseline scenario of the 8th ASEAN Energy Outlook.



Indonesia's oil output is **605 MBOPD** in 2023. A slight decrease compared to 2022 (**622 MBOPD**) but still a significant decrease compared to the 2021 level (**687 MBOPD**). Rokan Field, a mature field which currently the highest producer field in the country continues its production decline trend, with a decrease from **185 MBOPD** in 2022 to **162 MBOPD** in 2023. Few [initiatives](#) such as well optimisation, workovers, and drilling program well clustering have been done to minimise the reduction.

To attract more investment, work area offerings are being made with more attractive profit-sharing terms. Among these is an increase in the [split-sharing arrangement](#), allowing contractors an after-tax split of up to **50%** for high-risk work areas. Additionally, contractors have the flexibility to choose between Cost Recovery and Gross Split product-sharing contract schemes.

Malaysia's oil and gas remain stable in 2023, with only a slight decrease from **506 BOPD** to **500 BOPD** this year for crude oil production and a slight increase of gas production to **7 BSCFD**. Petronas currently investing most of the capital expenditure in the [development of gas fields](#) but is still committed to investing in oil exploration to fill up the country's refinery.

Thailand's oil production has steadily declined each year since 2017, dropping 11% in 2023 due to the depletion of mature fields like Erawan and Tantawan. However, [gas production rose by 0.25% in 2023, driven by increased drilling in the Bongkot Field](#), which boosted output from 508 MMSCFD to 812 MMSCFD, offsetting slight declines in other fields.

Reserve-Replacement Ratio

Indonesia outperformed the other AMS in maintaining its oil reserves, yet the natural gas replacement was not sustainable enough despite some successful discoveries in 2023.

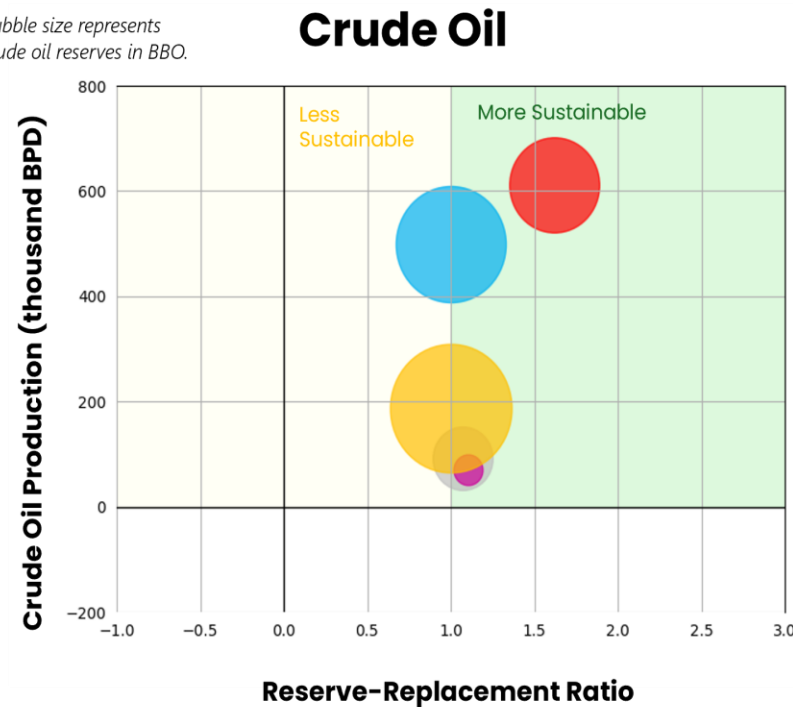
In 2023, most ASEAN oil producers maintained a RRR of nearly 1.00. **Indonesia** increased its oil reserve replacement to 1.62, a more sustainable level than in 2022. However, its gas reserve replacement, although improved from -2.03 in 2022 to 0.34 in 2023, remained unsustainable. This could be due to major revisions of previously recorded reserves or new discoveries remain unrecorded.

The Reserve-Replacement Ratio (RRR) is a metric used to evaluate the ability of a country to sustain its current production level. It is calculated by dividing the net changes of booked reserve, including from new discoveries, extensions, revisions, and enhanced recovery but excluding cumulative production, with the cumulative production over the given period in a country.

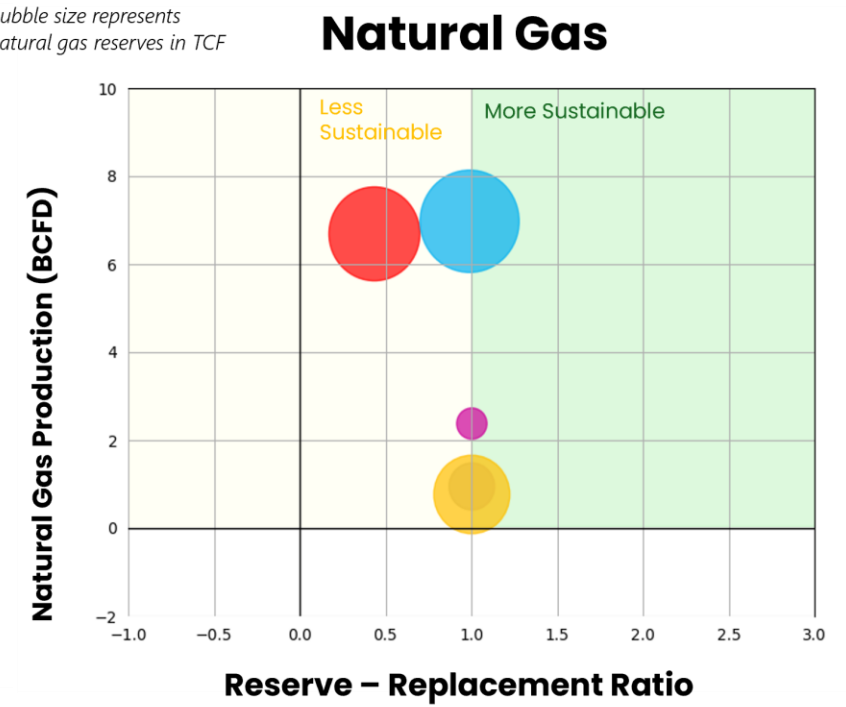
If the RRR is 1.00 or greater, the net change in reserves is positive and equal to the cumulative production during a period, meaning that the current level of production is sustainable.

To note: The RRR metric can be misleading as it depends on each country's reporting practices. Only Indonesia reported its oil and gas reserves this year, while other countries have not updated their data.

Bubble size represents crude oil reserves in BBO.



Bubble size represents natural gas reserves in TCF



■ Brunei Darussalam ■ Indonesia ■ Malaysia ■ Thailand ■ Viet Nam

Consumption

The AMS' oil and natural gas consumption increased in 2023 as economic expansion drove higher energy demand.

The region GDP grew by 4.07% from 2022 to 2023, drove the region's total oil and gas consumption for energy use **grew by 4.19%** and **4.56%**, respectively compared to last year value. All countries experienced growth, with **Cambodia** having the highest increase in oil consumption at **7.57%**, followed by **Malaysia**, the **Philippines**, and **Indonesia**. **Indonesia** and **Malaysia** also recorded the highest growth in natural gas consumption, with **increases of 5.51%** and **5.09%**, respectively.

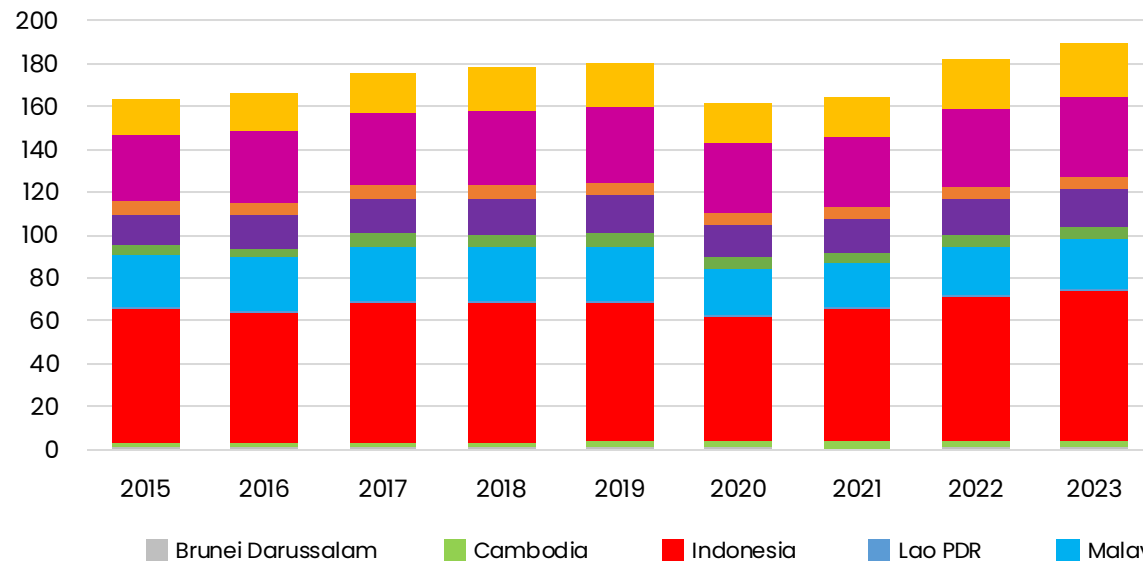
According to the 8th ASEAN Energy Outlook, by 2050, oil and gas consumption is projected to **rise by 2.37 times** and **2.63 times**, respectively, under the BAS, and **by 29.45%** and **87.3%**, respectively, under the ATS compared to 2023 levels, as the Real GDP is projected to be 2.83 times higher in 2050 compared to 2023 levels

Total Final Energy Consumption (TFEC): The sum of energy consumption by end-use sectors, excluding non-energy use and international transportation. The end-use sectors include agriculture, commercial, industrial, residential, and transportation.

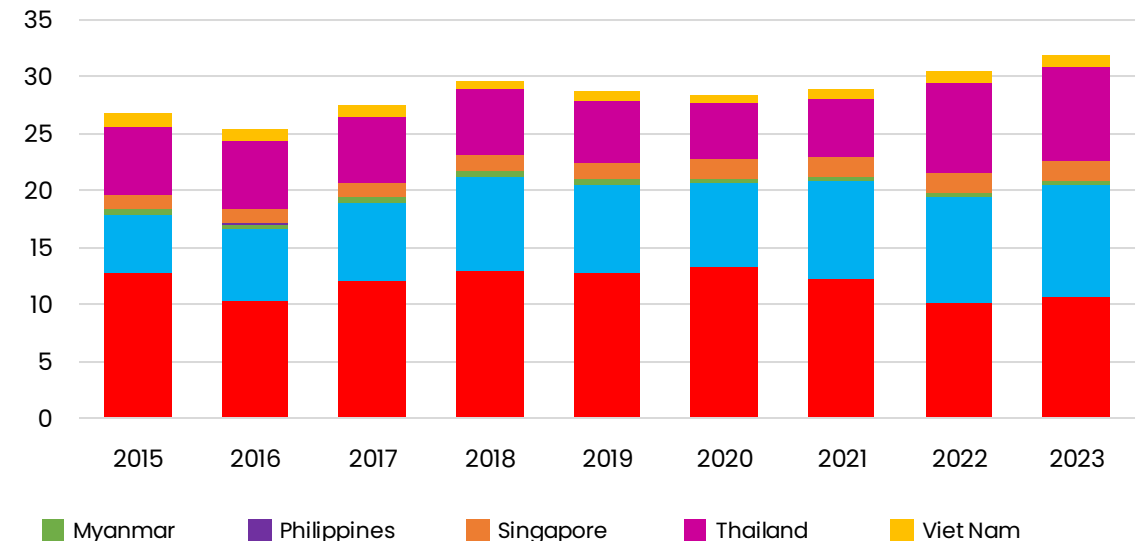
The Baseline Scenario (BAS): scenario based on the historical trend without any policy intervention

AMS Targets Scenario (ATS): scenario that considers the energy policies of each AMS, such as power development plans, renewable energy (RE), and energy efficiency and conservation (EE&C)

Oil TFEC (MTOE)



Natural Gas TFEC (MTOE)



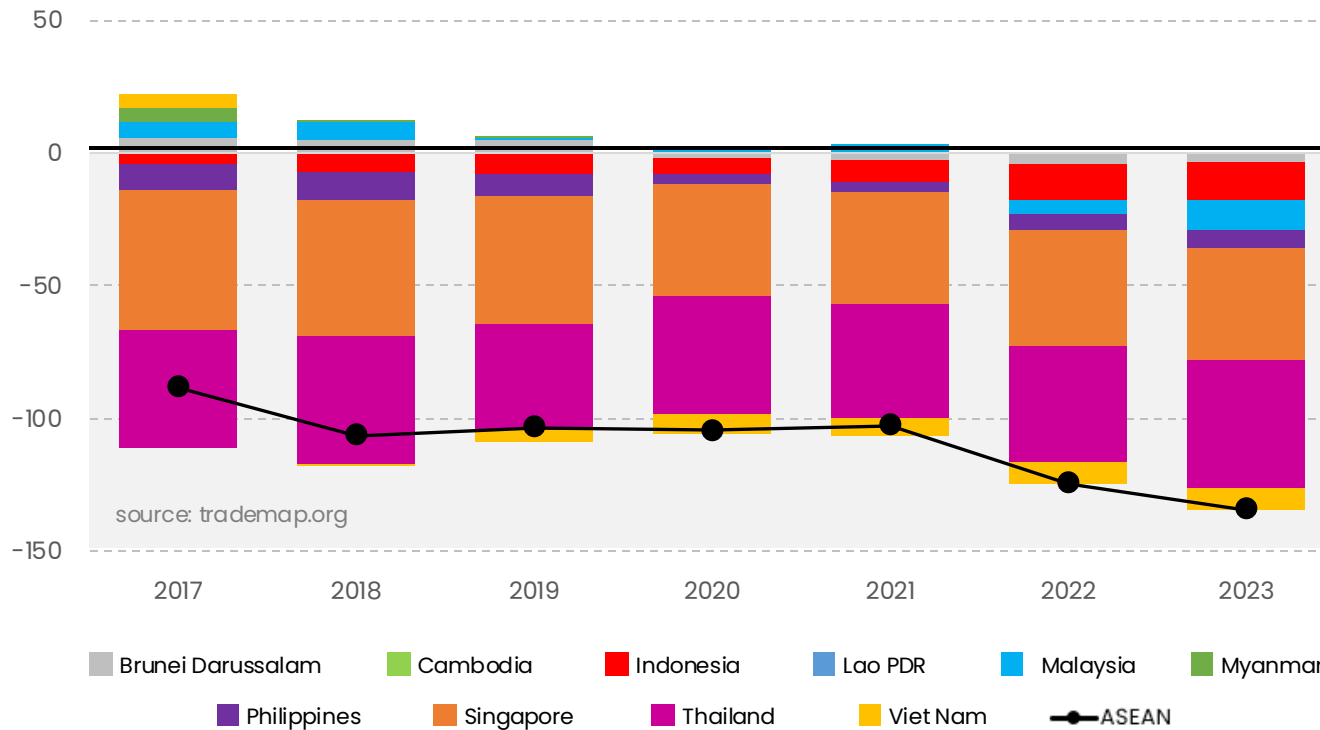
Trade

Crude Oil Trade Balance

None of the AMS was a net oil exporter in 2023, and ASEAN's oil trade deficit grew by 7% compared to last year.

ASEAN's crude oil trade deficit expanded by 13.68%, increasing from 124.62 Mt in 2022 to 134.22 Mt in 2023. With growing demand and declining domestic production, none of the AMS remained net oil exporters, continuing the trend since 2022.

Crude Oil Net Export (Mt)



Indonesia's crude oil trade deficit expanded once again, reaching a 14.99 Mt deficit in 2023, 83% higher compared to the pre-covid levels.

Singapore slightly decreased its crude oil import by 3.75% compared to the 2022 levels, partly due to lower oil prices.

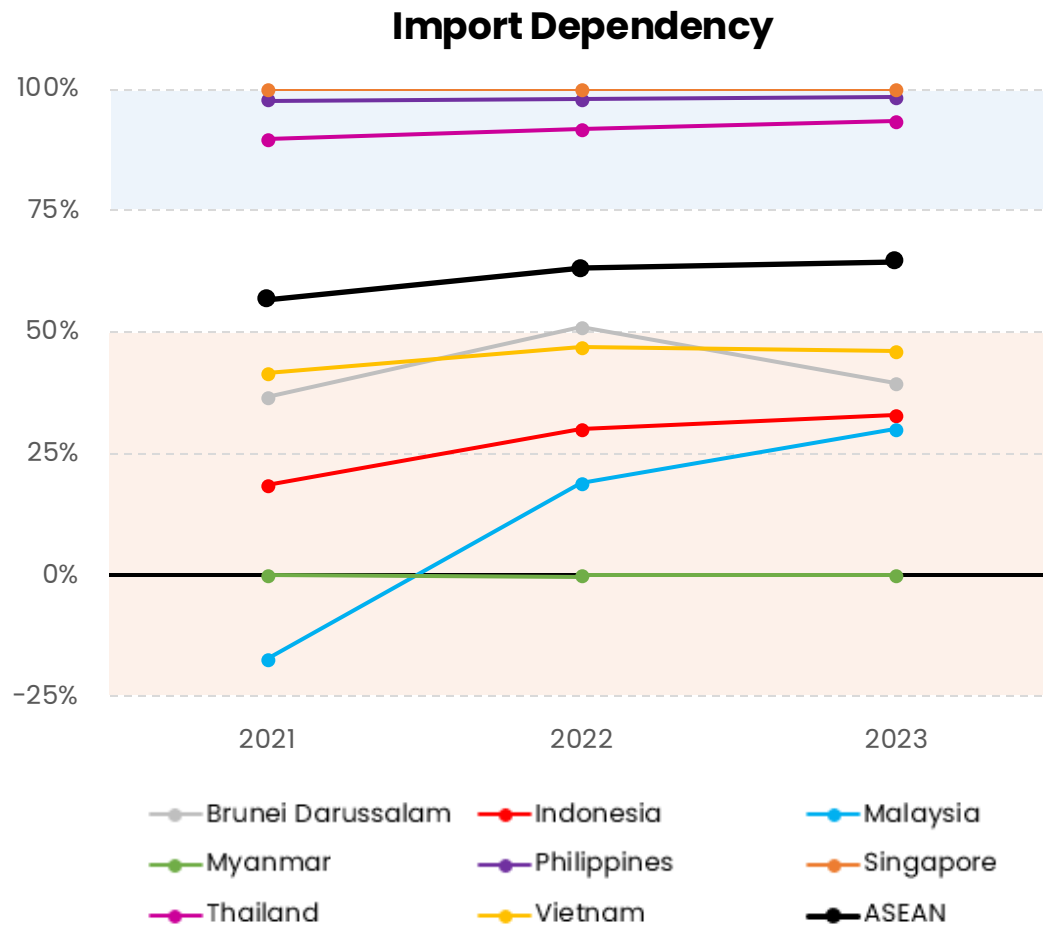
Malaysia had the biggest growth in crude oil trade deficit, with an 81.49% increase in the deficit, with a 5.89 Mt deficit in 2022 to 10.69 Mt in 2023.

Brunei Darussalam experienced a significant reduction in its oil trade deficit, driven by a 19.74% increase in exports and a 13.29% rise in imports.

As one of the largest oil importers in the region, **Thailand's** oil trade deficit continues to grow, showing a 10% increase compared to the previous year.

Crude Oil Import Dependency

The AMS dependency of crude oil imports is increasing, as the region demand grows and the production declines.



Two clusters were identified: one with dependency consistently **nearing 100%** and another with dependency around **50% or less**.

Continuing the 2022 trend, all ASEAN countries remained net oil importers in 2023, with the region experiencing a **2-percentage-point increase** in oil import dependency compared to the previous year. This growing dependency was primarily driven by **Malaysia** and **Indonesia**. **Malaysia** saw the most significant rise, with dependency jumping from **19%** in 2022 to **30%** in 2023. **Indonesia's** dependency increased slightly, from **30%** to **33%**.

In contrast, **Brunei Darussalam's** dependency dropped significantly by **12 percentage points** from 2022 levels. The oil import dependency of the **Philippines, Singapore, Thailand, and Viet Nam** stayed stable, with **Singapore, the Philippines, and Thailand** having the highest dependency rates at **100%, 99%, and 93%**, respectively. With oil demand expected to continue growing, enhancing energy security is a priority for AMS.

Import dependence is the ratio of net import (import minus export) to domestic consumption (net import plus domestic production). High import dependency means that the country is highly reliant on import to meet its domestic demand. Note that **Cambodia** and **Lao PDR** are not included in the figure as they import oil products instead due to their small refinery capacity.

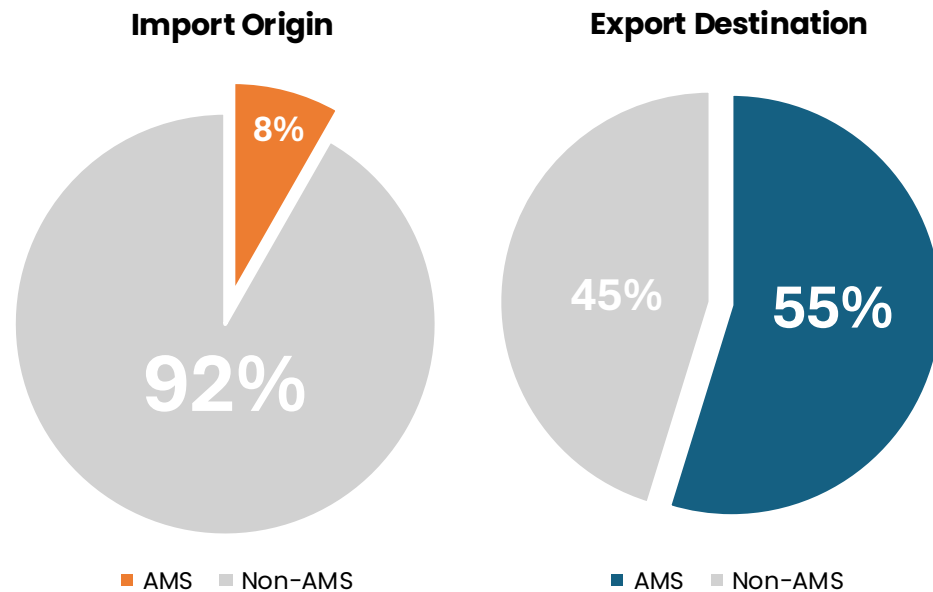
Crude Oil Movement in 2023 – By Region

Crude oil supply in the region was dominated by imports from outside the region.

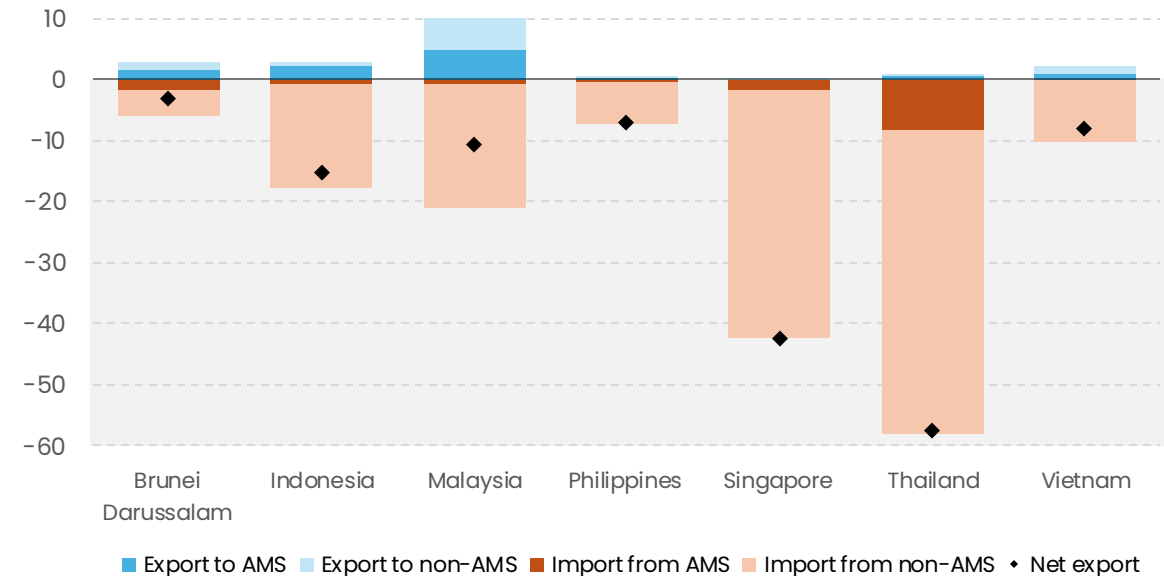
Due to limited oil production, **92%** of crude oil imports in ASEAN came from outside the region, a slight decrease from **93%** the previous year. **Singapore** and **Thailand** were the largest importers, accounting for **62%** of the region's total imports in 2023.

In terms of exports, **55%** of **ASEAN's** crude oil was shipped to destinations outside the region, while the remaining **45%** stayed within **ASEAN**. **Malaysia** retained its position as the region's largest oil exporter, with **10.3 Mt** of crude oil exported, primarily to Thailand, Japan, and Australia.

Crude Oil Import and Export



Crude Oil Net Export (Mt)

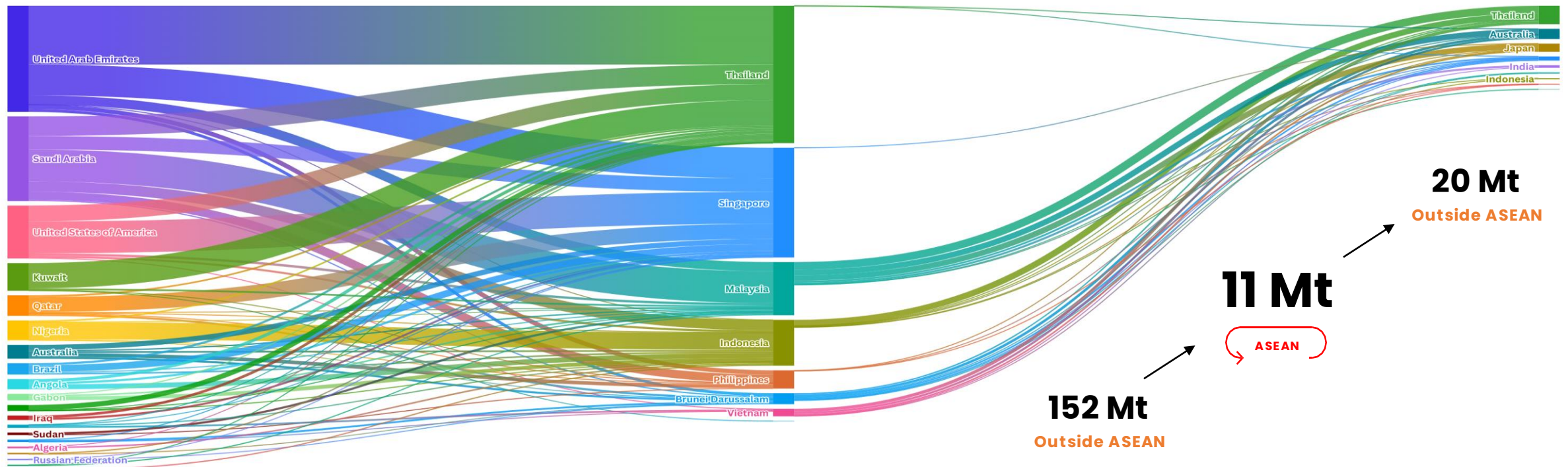


Crude Oil Movement in 2023 – By Country

ASEAN as whole ran an **oil trade deficit**, with most of the crude oil coming from **UAE, Saudi Arabia, and the US.**

The region's crude oil import from outside ASEAN grew by **18%** this year. There was no significant change from the previous year in ASEAN's primary sources of crude oil, with **Saudi Arabia** and the **United Arab Emirates** accounting for **49%** of all crude oil imports from non-ASEAN countries.

The **United States**, accounting for **12%** for combined crude oil imports from outside region, remains ASEAN's third-largest crude oil trading partner, with most exports directed to **Singapore**. For Thailand, the United Arab Emirates continues to be the largest crude oil supplier.



Natural Gas Trade Balance

ASEAN continue their declining trend of natural gas export from the region in 2023.

In 2023, ASEAN continued to maintain its status as a net exporter of natural gas. **Brunei Darussalam, Indonesia, Malaysia, and Myanmar** remained net exporters, offsetting the net imports of **Singapore** and **Thailand**. The region's net exports **declined by 13%** compared to 2022, marking a total **decrease of 66%** from 2019, which was the highest point for net exports in the past five years.

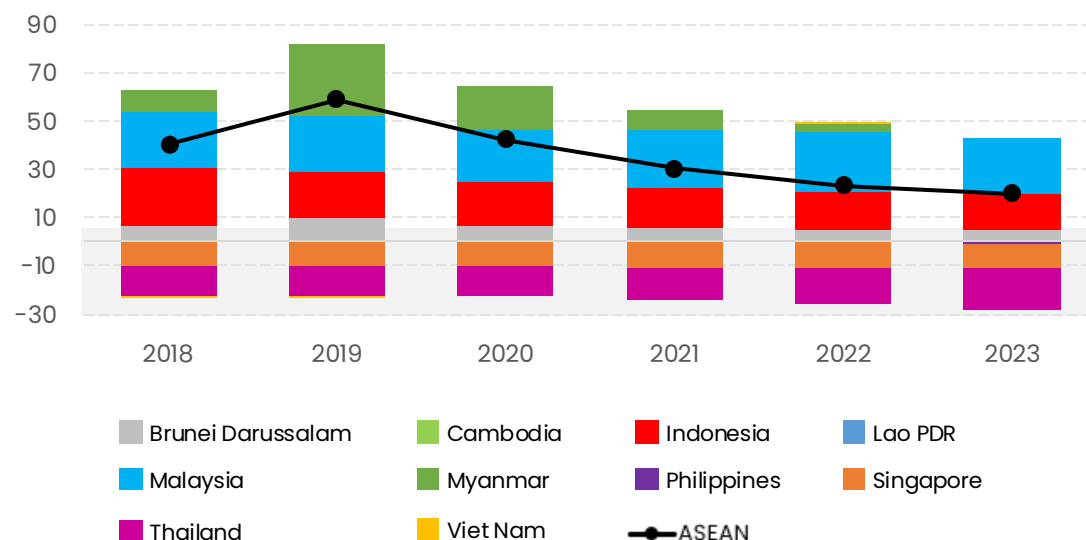
According to the **ASEAN Centre of Energy's** analysis in the 8th ASEAN Energy Outlook, under the baseline scenario, **ASEAN** is projected to become a net importer of natural gas by 2027.

The **Indonesian** government has pledged to enhance domestic gas use and gradually curtail exports to maintain energy security and independence, thereby bolstering economic growth. Indonesia's net exports **declined by 3%** compared to last year.

Thailand remains the biggest natural gas importer, with net imports **increasing by 11%** compared to last year. Thailand's economy is heavily reliant on natural gas. According to the country's National Power Development Plan, the gas contribution to the energy mix is projected to increase, **aiming at 53%** by 2037.

Singapore's natural gas trade deficit **increased by 2%** due to rising natural gas imports, as gas is the main source of the country's electricity. This trend is expected to continue in the short term, with natural gas imports likely to increase in the coming years.

Natural Gas Export (Mt)



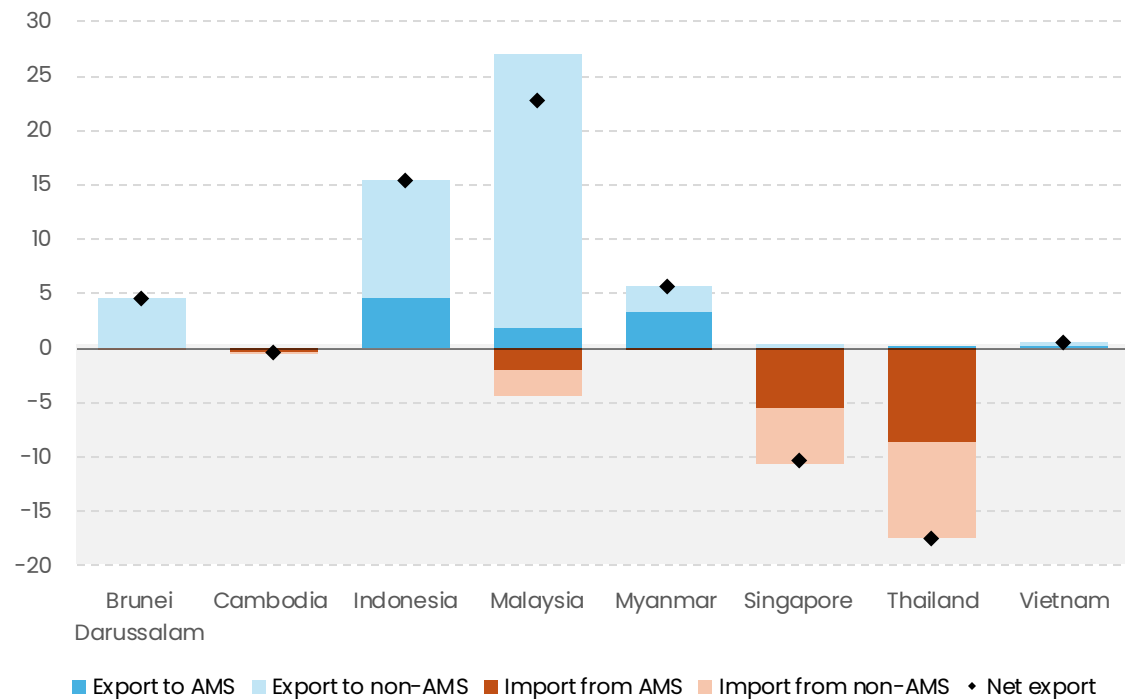
Natural Gas Trade Movement in 2023 – By Region

ASEAN maintained its status as a net natural gas exporter, with 81 % of its exports sent to destinations outside the region.

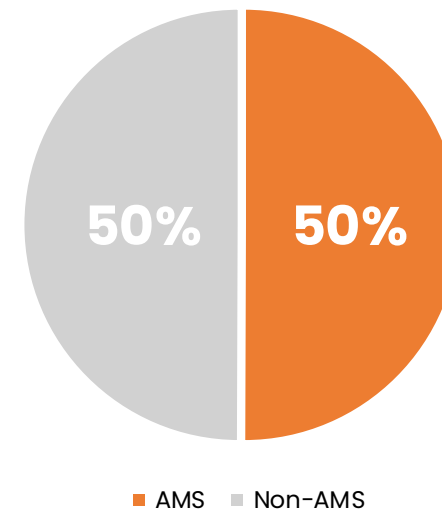
In 2023, **ASEAN** maintained its position as a net exporter of natural gas, with total exports reaching **55.8 Mt**, up from **51 Mt** in 2022. Of this, **80%** was exported to markets outside of **ASEAN**.

Malaysia remained the region's largest natural gas exporter, delivering **28.91 Mt**, primarily to Japan, China, and South Korea, while only **12%** was exported within ASEAN. **Indonesia** ranked as the second-largest exporter, with **30%** of its gas exports staying within ASEAN, where **Singapore** was the largest recipient. **Thailand** was the largest natural gas importer in the region with **17.37 Mt** of gas imported, mainly from **Myanmar**.

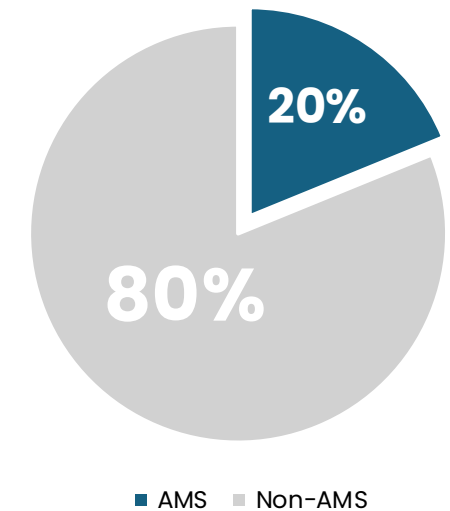
Natural Gas Net Export (Mt)



Import Origin



Export Destination

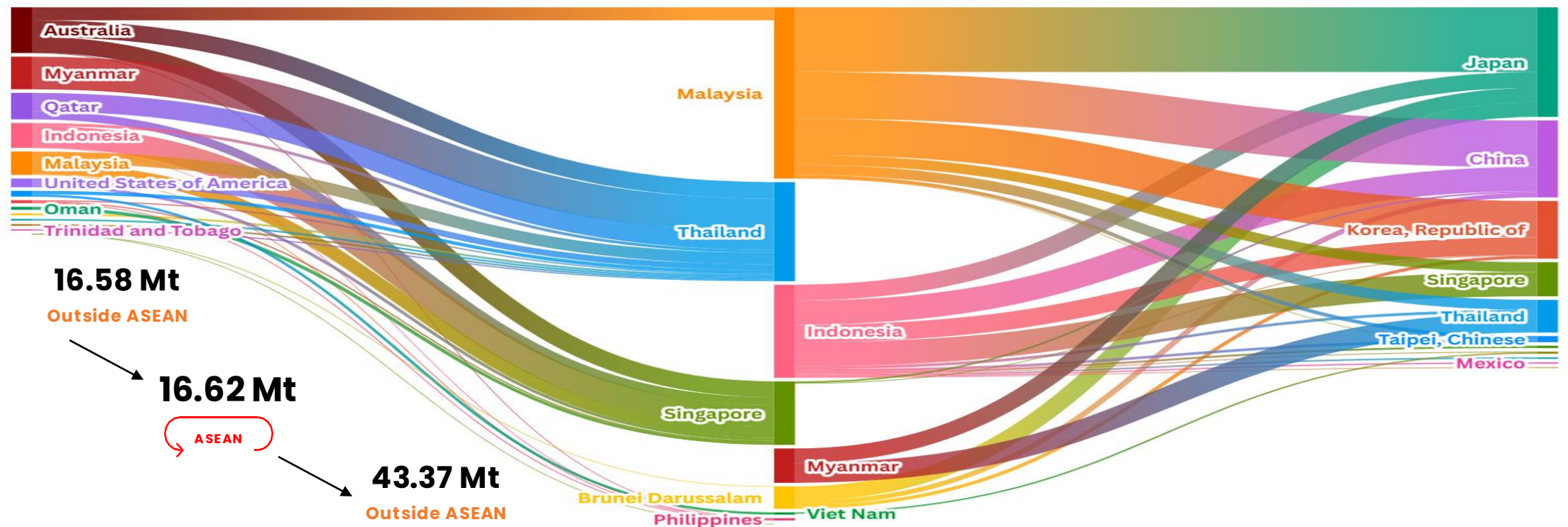


Natural Gas Trade Movement in 2023 – By Country

Malaysia and **Indonesia** remained the primary drivers of ASEAN’s gas exports to the global market, with China, Japan and The Republic of Korea remained as the top export destination.

In 2023, **Australia** once again emerged as the largest source of foreign gas imports for AMS accounting for **46%** of the total imports from non-ASEAN countries. **Qatar** followed as the second-largest source, contributing **26%** of non-ASEAN gas imports.

Meanwhile, **76%** of **ASEAN’s** natural gas exports were directed to countries outside the region, with **Japan** being the largest destination, followed by **China** and the **Republic of Korea**. These three countries accounted for **95%** of ASEAN’s total gas exports outside the region. **Indonesia** and **Malaysia** remained the top two natural gas exporters, with combined export value accounting for **79%** of the total natural gas export value in the region.



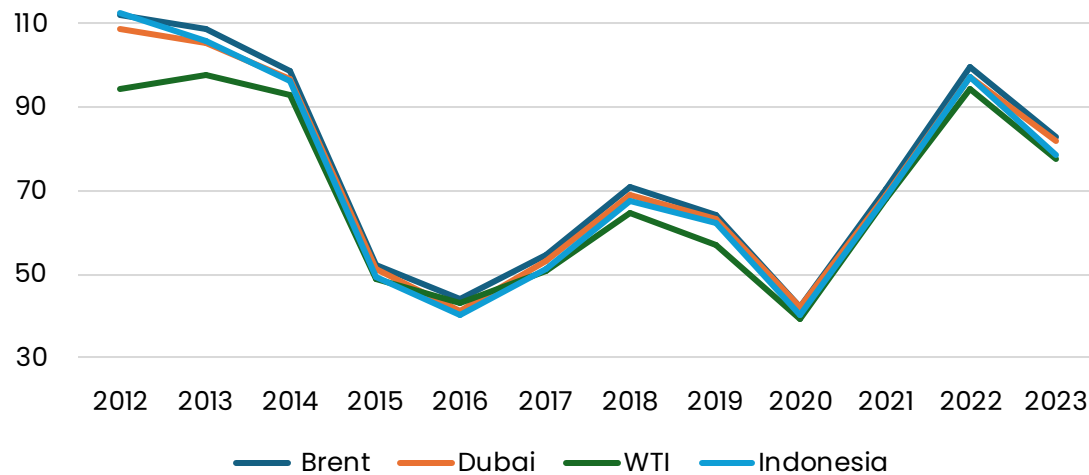
Prices

Lower-than-expected crude oil and lower geopolitical risks means lower crude oil price this year.

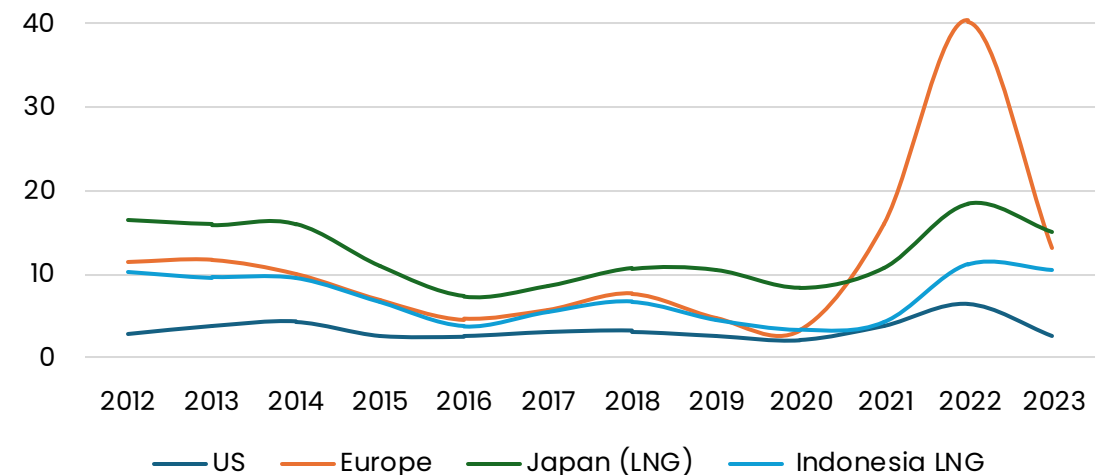
In 2023, the average price of Brent crude oil was **USD 83 per barrel**, down from **USD 101 per barrel** in 2022, due to changes in global trade dynamics and lower-than-expected crude oil demand. Despite OPEC+ supply cuts, prices were less volatile in the first half of 2023 compared to 2022. This stability was influenced by a lower geopolitical risk premium, improved global oil trade flows, and strong growth in non-OPEC oil production.

The U.S. benchmark Henry Hub natural gas price averaged **USD 2.57 per MMBtu** in 2023, representing a **62% drop** from the 2022 average annual price. Record-high natural gas production, flat consumption, and rising natural gas inventories contributed to the lower prices in 2023 compared to 2022.

Crude Oil Price (USD/barrel)



Natural Gas Price (USD/MMBtu)



Oil & Gas Companies Financial Summary

All ASEAN NOCs experienced a decline in revenue, but Pertamina and PTTEP managed to increase their net profit.

Pertamina, **Indonesia's** state-owned oil and gas company, increased its net profit by **25%**, from **USD 3.81 billion** in 2022 to **USD 4.77 billion** in 2023, despite a **10.7% decline** in total profit. According to Pertamina's Director, Nicke Widyawati, this positive growth was driven by [efficient management, cost optimization, liabilities control, and compensation payments](#).

Petronas **Malaysia** recorded a revenue of **USD 71.88 billion**, driven by lower average realized prices across products. The company's CAPEX reached **RM 52.8 billion (USD 11.1 billion)**, primarily for upstream and gas projects. [Domestic CAPEX rose by 41%](#), largely due to investments in the PETRONAS Nearshore Floating LNG Project in Sabah and the Kasawari Gas Field and CO₂ sequestration facilities in Sarawak.

In 2023, PTTEP from Thailand reported a total revenue of **THB 315.2 billion (USD 9.1 billion)**, a **6% decline** from 2022. Average sales volume remained steady at **462,007 BOED**, while the average selling price dropped 10% to **USD 48.21 per BOE** due to lower global crude prices. Despite this, [reduced non-operating expenses, including oil price hedging and impairments, led to a net profit of THB 76.7 billion \(USD 2.2 billion\)](#), with about **40%** attributed to business expansion in Southeast Asia and the Middle East.

PetroVietnam from **Viet Nam** recorded a consolidated revenue of **103,639 VND billion (USD 4.25 billion)** in 2023, compared to **104,833 VND billion (USD 4.3 billion)** in 2022. This decline was due to fluctuations in global crude oil prices, economic recession, and high inflation, which led to a decrease in consumer demand in many leading economies.

Revenue

Company	2022	2023	YoY (%)
Pertamina	84.89 billion	75.79 billion	-10.72%
Petronas	90.2 billion	71.88 billion	-20.31%
PTTEP	9.7 billion	9.05 billion	-6.70%
Petrovietnam	4.3 billion	4.25 billion	-1.16%

Net Profit

Company	2022	2023	YoY (%)
Pertamina	3.81 billion	4.77 billion	25.20%
Petronas	24.4 billion	16.88 billion	-30.82%
PTTEP	1.99 billion	2.208 billion	9.87%
Petrovietnam	22.8 million	24 million	5.45%

*All revenue and net profit data in US Dollar

Infrastructures

Oil Refinery Capacity

No capacity addition from newly built facilities was reported in 2023, but several refineries were already under construction and expected to start operating in the next few years.

Number of Refineries in ASEAN countries

No	Country	Number of Refineries	Total Capacity (MBPD)
1	Brunei Darussalam	2	170
2	Cambodia	0	0
3	Indonesia	9	1,187
4	Lao PDR	1	60
5	Malaysia	6	696
6	Myanmar	3	57
7	Philippines	1	180
8	Singapore	4	1,482
9	Thailand	6	1,104
10	Viet Nam	2	348
Total		34	5,252

Pertamina, **Indonesia's** state-owned oil company, continues to develop the [Balikpapan Refinery Development Master Plan \(RDMP\)](#). In 2023, the progress of this largest project in Pertamina's history has reached **82%**, aiming to increase the processing capacity from **260 KBPD** to **360 KBPD**.

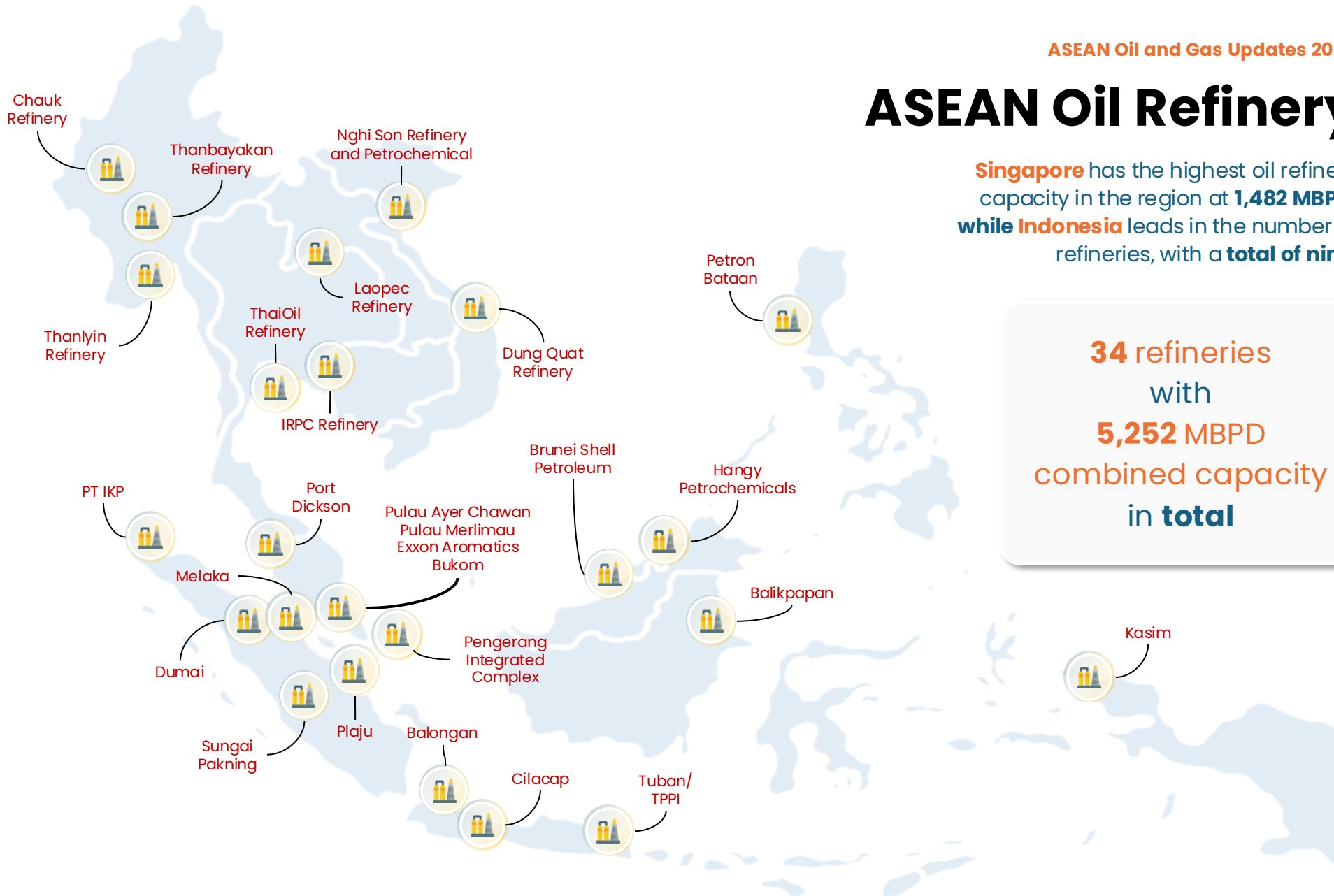
Binh Son Refining and Petrochemical, a subsidiary of **Viet Nam's** state-owned group PetroVietnam (PVN), has announced plans to expand the capacity of its Dung Quat oil refinery from **148 KBPD** to **171 KBPD**.

Thailand's ThaiOil plans to spend **USD 15 million** to expand its refinery capacity and move to higher value-added fuel products. The company aims to increase its oil refinery capacity in Sriracha from **280 KBPD** to **400 KBPD**, with completion expected in 2024.

ASEAN Oil Refinery

Singapore has the highest oil refinery capacity in the region at **1,482 MBPD**, while **Indonesia** leads in the number of refineries, with a **total of nine**.

34 refineries
with
5,252 MBPD
combined capacity
in **total**



LNG Terminal Capacity

New regasification and liquefaction plants continued to expand in 2023 as AMS explored the possibility of increasing natural gas use to replace coal and enhance energy security.

In **Indonesia**, the **3.8 MTPA** Tangguh LNG Train 3, located in Teluk Bintuni Regency, West Papua Province, commenced commercial operations in October 2023.

In October 2023, **Malaysia's** MISC reached an agreement with Petronas to convert the **137,500 m³** LNG carrier, Puteri Delima Satu, into an FSU for the Pengerang LNG Terminal in Johor. The FSU is expected to become operational in the first half of 2025 under a 20-year contract.

In October 2023, PetroVietnam Gas Corporation (PV Gas) inaugurated the Thi Vai LNG terminal, located in the Cai Mep Industrial Zone, Ba Ria-Vung Tau, **Viet Nam**.

Linseed Field Corporation's LNG terminal in **the Philippines** is using the **137,500 m³** FSU Ish and began operations in April 2023. The facility is supplying regasified LNG to San Miguel Corporation's **1,200 MW** Ilijan Power Plant, which resumed in May 2023. In September 2023, First Gen's Interim Offshore LNG Terminal in Batangas, using the **162,400 m³** FSRU BW Batangas chartered for five years, started commissioning.

Following an announcement by **Singapore's** Deputy Prime Minister and Minister for Finance in October 2023, SLNG is set to develop and eventually manage Singapore's second LNG terminal. SLNG is currently exploring the possibility of utilizing an FSRU for the new terminal.

Regasification & Liquefaction Capacity of AMS

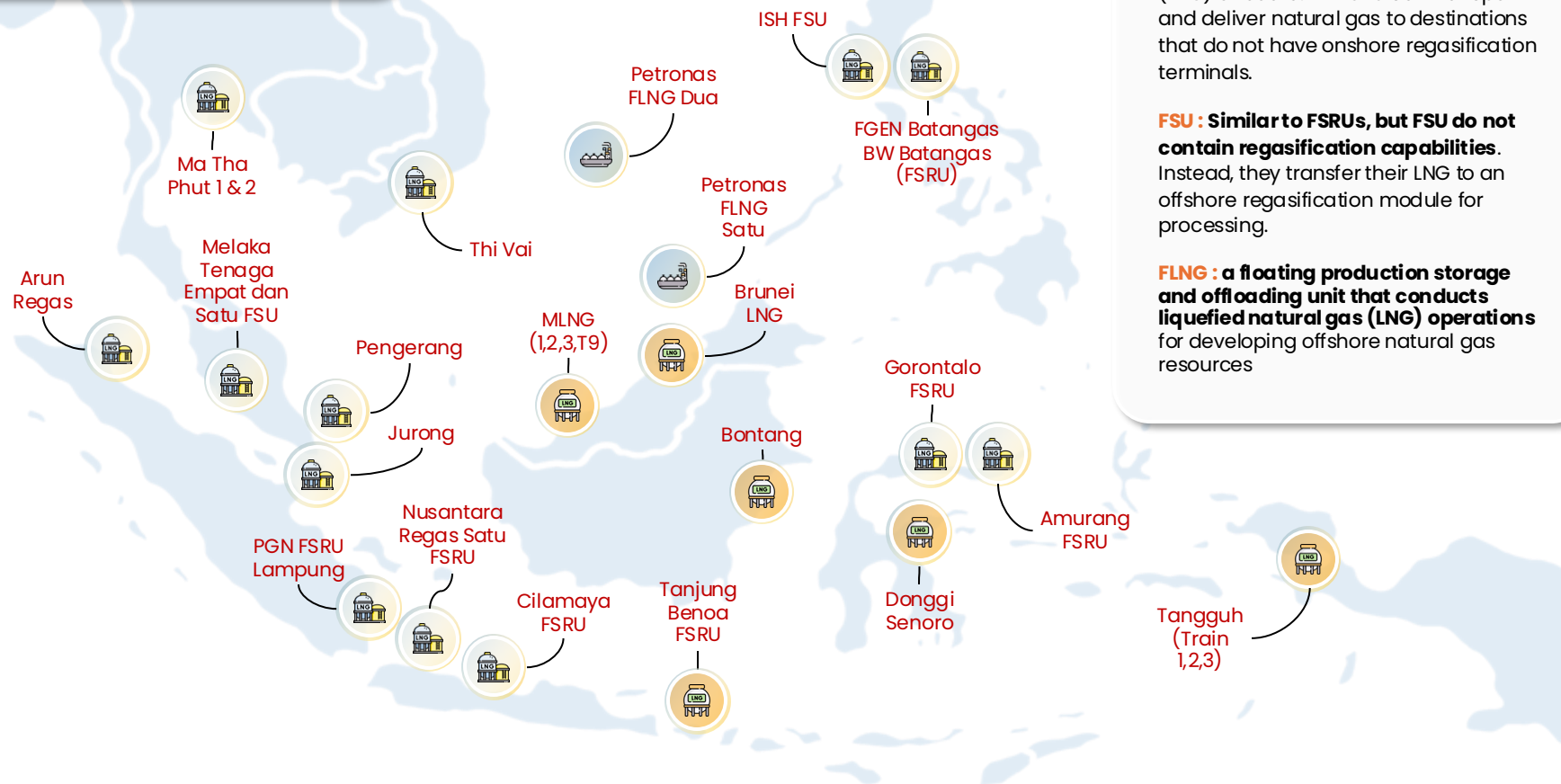
No	Countries	Regasification Capacity (Mtpa)	Liquefaction Capacity (Mtpa)
1	Thailand	19	
2	Indonesia	10.3	24.9 (+3.89)
3	Malaysia	7.3	32
4	Singapore	11	
5	Viet Nam	(+1.1)	
6	Brunei Darussalam		7.2
7	Myanmar	0.9	
8	Lao PDR		
9	Philippines	8.26 (+5.26)	
10	Cambodia		
Total		57.76	64.1

*Texts in green are the net changes in 2023

ASEAN LNG Terminal

Regasification Plant

Liquefaction Plant



FSRU : Floating Storage Regasification Unit, a floating vessel that can transport, store, and re-gasify liquefied natural gas (LNG) onboard. An FSRU can transport and deliver natural gas to destinations that do not have onshore regasification terminals.

FSU : Similar to FSRUs, but FSU do not contain regasification capabilities. Instead, they transfer their LNG to an offshore regasification module for processing.

FLNG : a floating production storage and offloading unit that conducts liquefied natural gas (LNG) operations for developing offshore natural gas resources

Energy Security Policies and Investment Trends

Oil Supply Security Policies

Most of the AMS have developed oil stockpiling policies for securing the supplies of oil (including oil products).



Brunei Darussalam, being a net oil exporter, has no specific oil-stockpiling objective but requires oil companies to maintain a **31-day** oil stock. To enhance energy security, Brunei is developing more gas stations and increasing the Country Wide Stock (CWS) days for LPG from **7 to 14 days** starting in 2024.



Cambodia targeted a **30-day** commercial oil stockpile and a **5-day** SPR by 2030. To attain the target, 4 units of 5,000 m³ gasoline tank and 7 units of 5,000 m³ diesel tank will be necessary in 2023.



Indonesia's National Energy Reserves, under Governmental Regulation No. 79 of 2014, include operational stock, energy buffer stock (EBS), and strategic reserves. Operational stock ensures **24 days** of gasoline supply, while EBS covers crude oil, fuel, and LPG, aiming for a **30-day** import equivalent by 2035. Strategic reserves are for long-term energy security and used only when necessary.



Lao PDR's total oil stockpiling increased from **30 days** in 2015 to **40 days** in 2020 and will remain at **40 days** until 2025, divided into commercial stocks (**15 days**) and national strategic stocks (**25 days**). Government policy mandates a **10-day** petrol reserve for emergencies based on annual supply averages.



Malaysia's oil policy caps production at 700,000 barrels, with 3.6 million barrels in reserves. Petrol stations have 3 days of storage, and electricity providers offer a **3.5-day** backup. Gas supply security includes a 10% buffer from domestic gas, 15% from Regasification Terminal 1, and 3.5 MTPA from Terminal 2, with Third Party Access encouraging competition.



Myanmar's oil stockpiling target was **30 days** in 2020, aiming for **45 days** by 2030 and **90 days** by 2050. The total oil stockpile storage capacity is 1,413.878 thousand metric tons, with the government holding 542.012 thousand metric tons and the private sector the rest.



The Philippines' formulation of the National Oil and Gas Contingency (NOGCP) aims to address the vulnerabilities and threats to the oil supply chain stemming from both local and international uncertainties. The plan will cover the possibilities for emergency supply stockpiling, conservation, and allocation strategies to ensure continuous, adequate, and stable supply of petroleum products in the country.



Singapore does not impose requirements for refiners or private oil companies to hold minimum fuel stockpile due to the market situation.



Thailand's legal reserve requires 5% of crude oil demand and varying percentages for gasoline, kerosene/jet, diesel, and fuel oil. As of October 5, 2023, Thailand had **67 days** of total oil stock, with **53 days** in-tank and **14 days** in-transit.



Vietnam's oil stockpiling policies aim to achieve a total stockpile size of at least **90 days** of net imports by 2020, meeting IEA standards, as outlined in the [Master Plan for National Crude Oil and Petroleum Products Stockpiling System Development](#). The plan for 2021-2030 targets expanding storage capacity to **75-80 days** by 2030 and **90 days** by 2050.

Oil and Gas Supply Chain Diversification

Concerns over energy security are prompting nations to focus on strengthening supply chain resilience by seeking greater diversification, securing long-term deals, and enhancing self-reliance.



Indonesia is considering [alternative crude oil suppliers](#) from Africa and Latin America, such as Mozambique and Guyana, due to Middle East conflicts. The country is also seeking new LPG sources, prioritizing routes that avoid conflict-prone regions, despite higher shipping costs.



Malaysia is ramping up [natural gas exploration](#) due to recent discoveries and improved investment policies. Key activities include Mubadala Energy's discovery in the South Andaman Block and TotalEnergies' stake in SapuraOMV. Petronas has also awarded contracts for six blocks and launched a new bid round for ten more.



Myanmar's Yadana natural gas field saw [Chevron exit](#), redistributing its 41.1% stake to Thailand's PTTEP and Myanmar's state-owned MOGE. This move follows Chevron's aims to exit the country in a controlled manner amid ongoing crises.



The Philippines is exploring [new oil and gas areas](#) like the Sulu Sea due to stalled talks with China over the South China Sea. Efforts include Ratio Petroleum Energy LP's seismic data collection, as the country seeks alternatives to the depleting Malampaya gas field and suspended Reed Bank exploration



Thailand's policies to [minimize LNG imports and boost domestic gas production](#) are expected to curb LNG import growth in 2024, despite LNG's long-term importance due to declining domestic gas and imports from Myanmar.



Viet Nam seek [first spot LNG tender](#) for country's first and newly commissioned terminal amidst falling prices

Oil and Gas Investment

This year, AMS keep ramping up their E&P investments and developing new supporting infrastructures to meet growing domestic energy demands.



Brunei Darussalam plans to develop resources in the deep ocean and increase exploration activities to maintain oil and gas production at 300 kboe/d. A total expected fund of [BND 20 billion](#) (14.6 billion USD) is needed to finance these development and operational programs, an increase of approximately 15% compared to the last five years.



Cambodia announced the development of an [800 MW LNG](#) plant in November 2023. The LNG plant will replace the previous proposal of 700 MW coal power plant development worth 1.5 billion USD



Indonesia's investment in oil and gas reached 15.6 billion USD in 2023, or 89.66% of the target of 17.4 billion USD. A consortium of [Pertamina and Petronas](#) officially joined the [Inpex in the Masela Block operation, replacing Shell](#), which exited the block in 2023. The block is expected to be on stream in 2029, with CCS facilities included in the development plan. The country is currently aiming to increase its oil and gas production to 1 mbopd and 12 bscfd in 2030, which will need around [20 billion USD of investment annually](#).



In **Malaysia**, Petronas signed an MoU and two Technical Assistance Agreements with PTTEP for the development of PTTEP-operated Blocks [located off the coast of Sarawak](#). Nine exploration PSCs and three DRO PSCs were signed in Malaysia Bid Round 2023, [representing the highest number of PSCs awarded in Malaysia](#) within a single year since 2010. In the same event, offering 10 exploration blocks and two clusters of Discovered Resource Opportunities (DRO). Malaysia's investment in deepwater exploration is expected to grow in 2024, with [international oil companies](#) continuing to play an important role in their development.



On October 31, 2023, the U.S. Department of the Treasury's Office of Foreign Assets Control imposed new sanctions banning specific financial services for MOGE, **Myanmar's** [oil and gas company, including loans, transfers, accounts, insurance, investments, and foreign exchange](#).



Philippines' commitment to preserve and maintain the investment incentives for service contractors was reflected by [Presidential Decree 87](#). It aims to reaffirm the openness of the Philippines' economy to prospective foreign and local investors, especially in the oil and gas sector. In May 2023, the country signed the renewal agreement for the [Malampaya Service Contract](#) (set to conclude in February 2024), which extended it for another 15 years or until 22 February 2039.



In October 2023, **Singapore** LNG Corporation Pte Ltd announced plans to develop a second Liquefied Natural Gas Floating Storage and Regasification Unit (FSRU) with a gas supply capacity of up to [5 million tonnes per annum](#). Singapore's LNG terminal utilization is expected to continue rising as LNG imports increase and gas imports via [pipeline are expected to decline](#).



Thailand's PTTEP investments in Southeast Asia and the Middle East have yielded great results, contributing to 40% of the company's total net profit in 2023. [The net profit will be reinvested to enhance production in existing oil and gas fields and accelerate petroleum exploration in Thailand and beyond to meet future demands](#). PTTEP aims to increase petroleum production by 9% in 2024.











Vietnam's Petroleum Law, approved in 2022, finally took effect in [July 2023](#). The law governs local and international investors, assigning the Ministry of Industry and Trade the responsibility for overseeing oil and gas exploration and related activities. The law introduces tax incentives, reducing the corporate income tax rate from 50% to 32% and setting the crude oil export tax at 10% (previously range of 6-25%)

ASEAN NOC's Pathway to Net Zero

As global demand for cleaner energy grows, ASEAN national oil companies (NOCs) are taking significant steps to support the region's energy transition. This section highlights their key initiatives and how they're shaping a resilient, low-carbon energy future for Southeast Asia.

Key Trends: ASEAN NOC's Pathway to Net Zero

				
 Carbon Capture and Storage	✓	✓	✓	✓
 Electric Mobility	✓	✓	✓	✗
 Renewable Energy Business	✓	✓	✓	✓
 Operation Decarbonization	✓	✓	✓	✓

✓ Aligned with corporate strategy and actively executed ✓ Aligned with corporate strategy but not yet executed
 ✗ Not yet aligned with corporate strategy

Highlights



Pertamina aims for net zero by 2060, focusing on solar PV, geothermal, and biogas power plants. As a leader in carbon capture and storage (CCS), it utilizes Indonesia's vast CO₂ storage capacity and strong CCS regulations. Pertamina has several CCS/CCUS projects in the pipeline and collaborates with Japan's JOGMEC to measure methane emissions at natural gas facilities, highlighting its commitment to sustainability.



PTT aims for net zero emissions by 2050, targeting a 15% reduction in Scope 1 and 2 emissions by 2030 and a 50% reduction in Scope 3 emissions by 2050. Key initiatives include divesting from coal in 2023 and launching a carbon credit program. The company is entering the electric vehicle market with Aionex, planning to launch two-wheeler EVs in 2024 with a sales target of 5,000 units. PTT is also addressing methane emissions through collaborations with the Global Methane Initiative and the Oil & Gas Methane Partnership 2.0 under UNEP, highlighting its commitment to sustainable energy solutions.



Petronas aims for net zero by 2050, with a 49.5 MMTCO₂e emission cap by 2024 and a 25% reduction target by 2030. The company supports Malaysia's energy transition through CCS, renewable energy, and hydrogen development. Petronas is advancing CCS in the Kasawari Gas Field, planning the first CO₂ injection for 2026. It also targets a 50% reduction in methane emissions by 2025 and 70% by 2030.



PetroVietnam has not developed as many initiatives as other ASEAN NOCs, but the company is aiming to use its existing infrastructure to strongly advance renewable energy sources, prioritizing offshore wind power in combination with oil and gas activities. The company has set a target of achieving net zero by 2050 and has signed several agreements with foreign companies to study renewable energy development in Viet Nam.

National Oil Companies Path to Net Zero

Pertamina targets net zero by 2060, driving Indonesia's energy transition through green business initiatives and pioneering carbon capture technology.

81.4 million
CO₂
reduction
in 2060

PERTAMINA

Net Zero
By 2060

Decarbonization

- Energy efficiency
- Loss reduction
- Low carbon fuel utilization
- Green power generation
- Mobile equipment electrification
- CCS for own use

- Biofuels
- Green Hydrogen
- RE business development
- Battery and Electric Vehicle
- Nature-based solutions
- CCS services

Green Business Acceleration

Ongoing Initiatives

- Signed an MoU with PT Astra Agro Lestari to **develop bioethanol** from palm oil waste as a fossil fuel alternative
- Installed **solar power** in oil and gas facilities: **25.7 MWp** at Pertamina Hulu Rokan and **225 MWp** at Pertamina Plaju Refinery
- Reached an agreement with ExxonMobil to **develop carbon capture** in the Java Sea, with a capacity of **3 Gt CO₂** and an investment exceeding **USD 2 billion**
- Electricity from **clean sources** reached **5.5 million MWh**, **18% increase** compared to 2022
- Pertamina Power & New Renewable Energy plans a **USD 5 billion** investment to **develop an electric vehicle battery ecosystem** in Indonesia, focusing on building charging infrastructure.

Planned Initiatives

Methane Emission Mitigation

Pertamina is currently focused on reducing CO₂ emissions while also recognizing that **methane** is more harmful to the environment.

7.6% methane reduction	5.5% CO ₂ reduction	16.7% flare reduction
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Emission reduction target

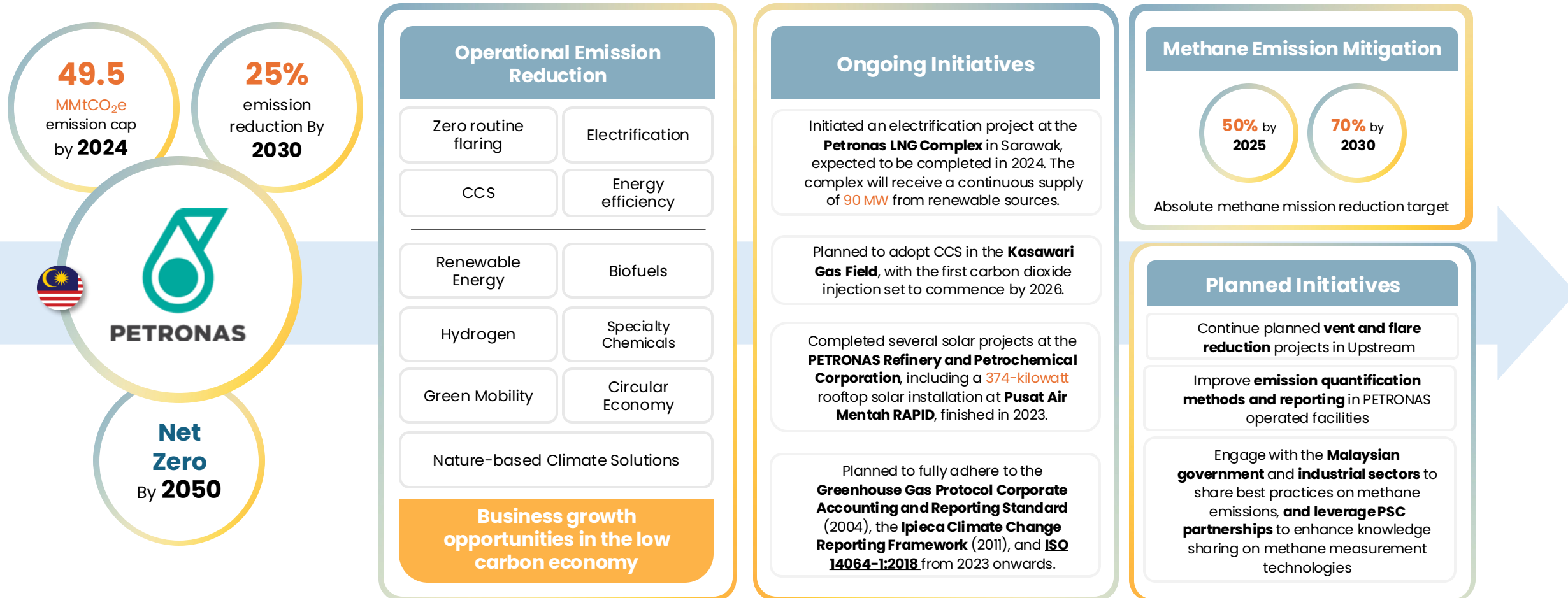
5.3 MMtCO ₂ e from flare gas utilization	1.4 MMtCO ₂ e from energy efficiency	0.04 MMtCO ₂ e from other activities
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Emission reduction achieved

Pertamina and **JOGMEC** also agreed to collaborate on methane emissions mitigation at natural gas production facilities, focusing on **calculating carbon intensity (CI)** and **establishing methane emission management system**, starting with Pertamina's upstream areas, **Donggi Matindok** and **JOB Tomori** in Central Sulawesi.

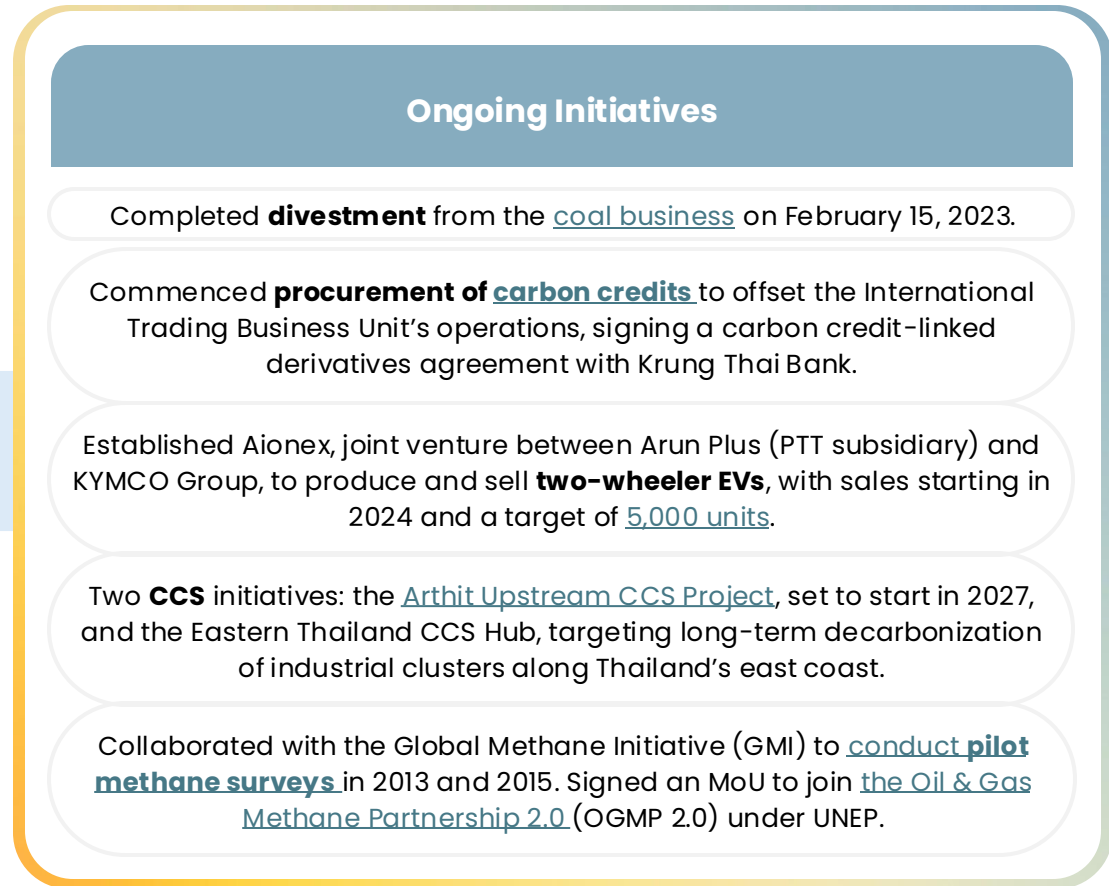
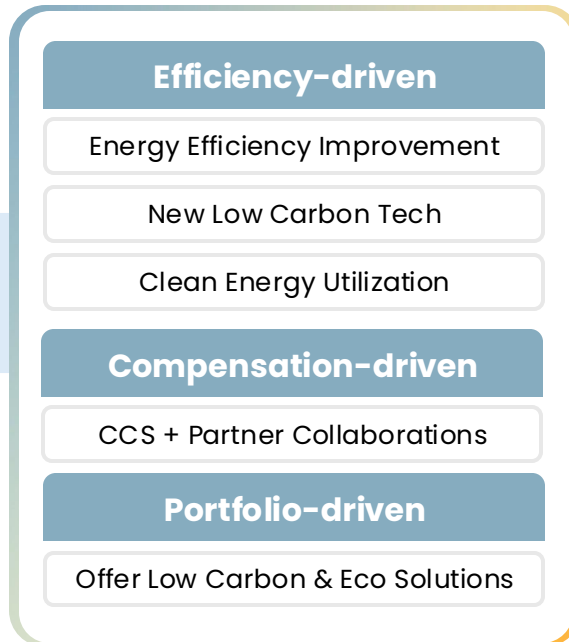
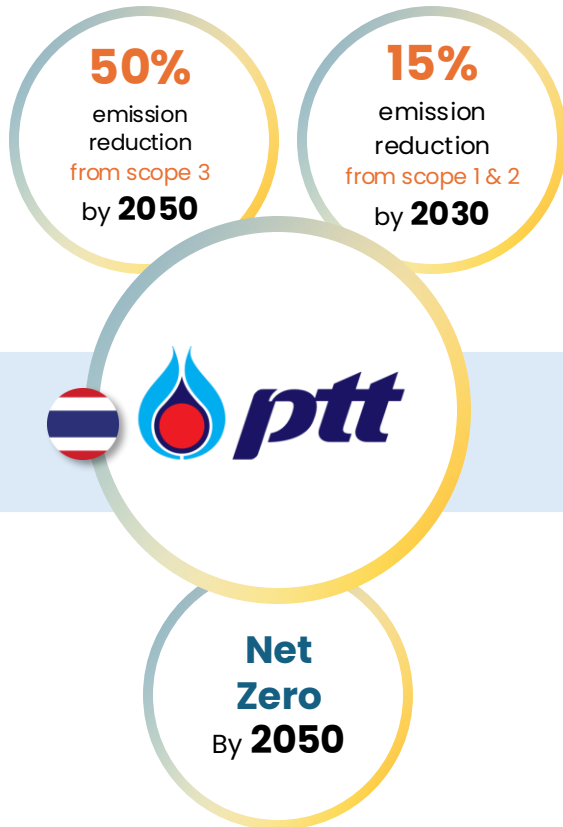
National Oil Companies Path to Net Zero

Petronas has set a clear target for achieving net-zero emissions, supported by a diverse range of decarbonization initiatives and the development of new business ventures.



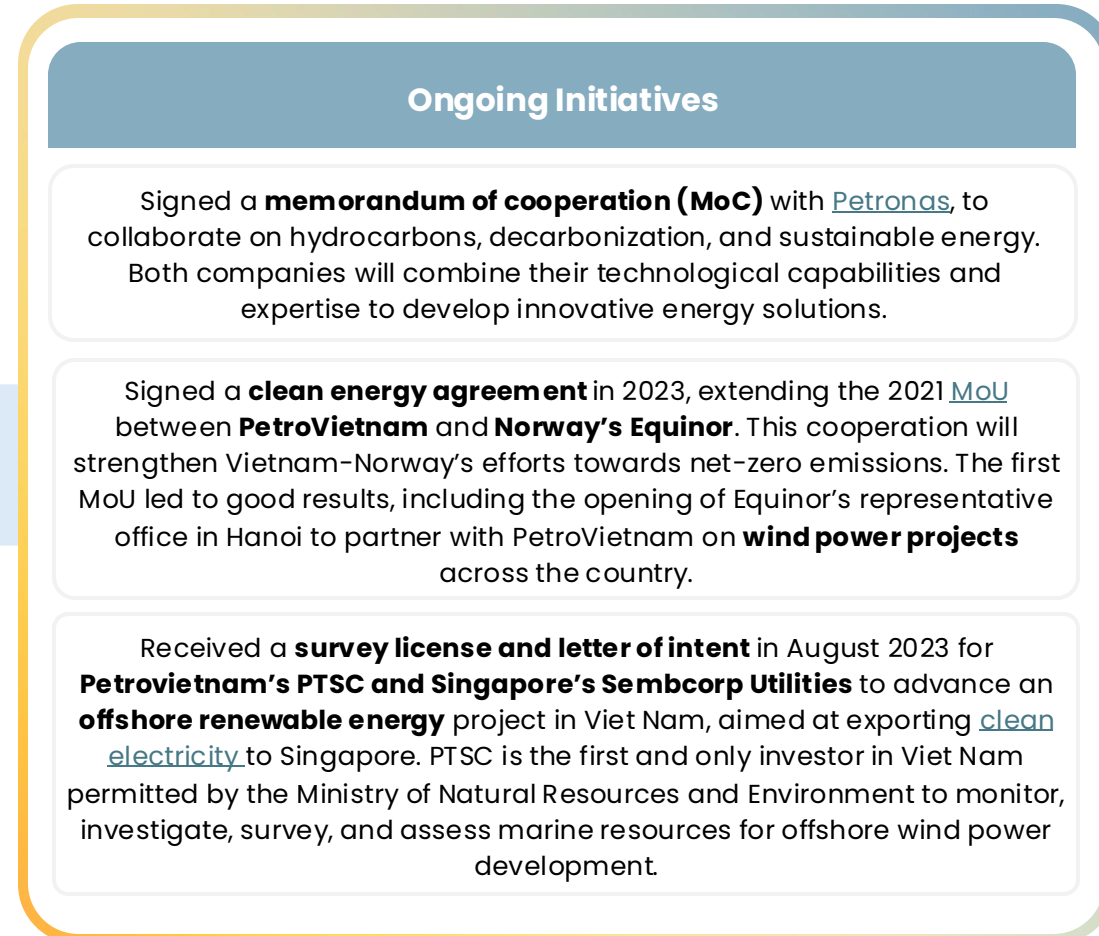
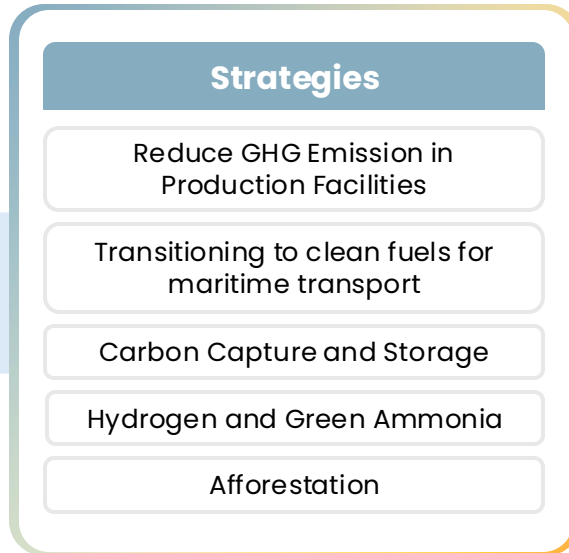
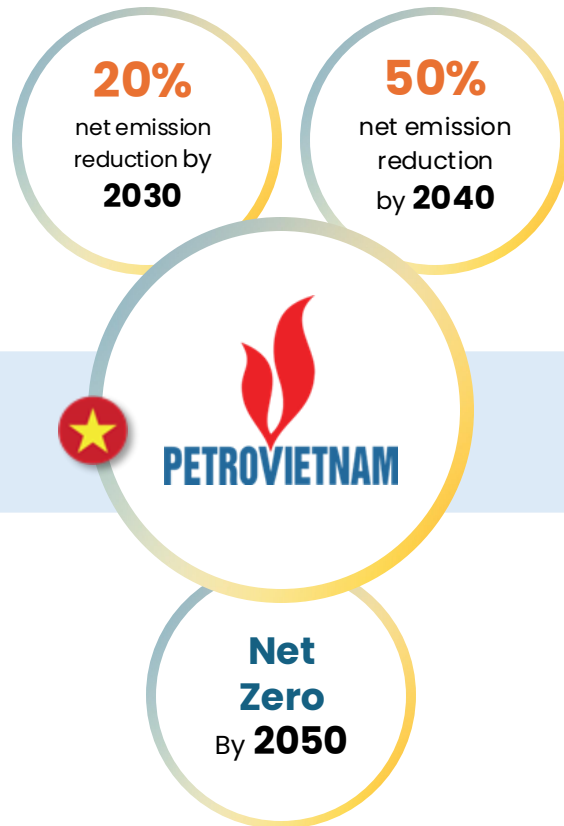
National Oil Companies Path to Net Zero

PTT Group has set a net-zero target for 2050, supported by clean energy ventures, integrating GHG intensity into upstream investment decision-making, achieving zero routine flaring for new projects, and developing CCS/CCUS technologies.



National Oil Companies Path to Net Zero

PetroVietnam aims for net-zero emissions by 2050 and is collaborating with foreign companies on studies to advance clean energy development in the country.





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