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Foreword

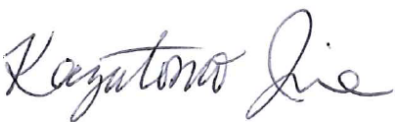
The APERC Oil Report 2026 describes changes and expected near-term developments in APEC and global oil markets. It examines shifting dynamics across the entire oil value chain, analyzing global trends and regional indicators in oil production, consumption, trade, refining, and price movements. The report draws on the latest available dataset from all 21 APEC economies, covering up until 2024.

Global oil production and refined product consumption both stabilized with modest growth in 2024. However, global demand is undergoing structural shifts, with consumption growth heavily concentrated in emerging economies. Upstream production growth continues to expand outside of the Middle East, notably the United States and Canada, while major new discoveries in Africa are positioned to reshape long-term global supply patterns. In international trade, a clear divergence persists as key APEC economies remain structurally dependent on crude imports from the Middle East, yet maintain robust domestic self-sufficiency for refined petroleum products.

Crucially, emerging energy security risks are increasingly concentrated in the downstream oil sector. Net global refining capacity additions have not been able to keep pace with the growth in oil product consumption, a tightness exacerbated by recent refinery closures and biofuel conversions. This systemic mismatch has contributed to global spare refining capacity to decline to historically low levels, resulting in volatile and elevated refining margins. Looking ahead, ongoing geopolitical tensions underscore the reality that regional oil security depends heavily on the resilience of oil transport systems, strategic stockpiling, and strengthened regional cooperation.

The report's publication in 2026 comes amid continuing and emerging geopolitical challenges that have had significant impacts on the oil sector. While oil price volatility and disruptions to trade routes have had significant effects on APEC economies, this report focuses on the underlying structural factors that will shape the oil industry over the coming years. We hope the APERC Oil Report 2026 will provide policymakers across APEC with useful information to assist in improving the sustainability, security, and affordability of their energy systems. This oil report is part of the APERC fossil fuel reports series, which are published annually. APERC has published APERC Oil Report since 2018 in order to supply oil market information and analysis to policymakers in the APEC region. However, with a shift in APERC's research priorities toward energy security and efficiency amid the current challenging geopolitical climate and human resource constraints, APERC will discontinue the publication of this report effective this year. Nonetheless, APERC will continue to evaluate oil market developments periodically through its other research streams, most notably the APEC Oil and Gas Security Studies (OGSS) Series.

I would like to express my sincere gratitude to the authors and contributors for their time and effort in preparing and publishing this report. I am also grateful to APEC member economies for providing updated data through the APEC Expert Group on Energy Data and Analysis (EGEDA).



Dr. Kazutomo IRIE
Chairman & President
Asia Pacific Energy Research Centre (APERC)
October 2026

Acknowledgements

We are grateful for the full support and insightful advice of Mr. Robert Tromop, Senior Vice President of APERC. We also wish to thank the administrative staff of APERC as this study could not have been completed without their assistance.

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Abbreviations and acronyms

Abbreviations

b/d	barrels per day
kb/d	thousand barrels per day
mb/d	million barrels per day

Acronyms

APEC	Asia-Pacific Economic Cooperation
APERC	Asia Pacific Energy Research Centre
CER	Canada Energy Regulator
CIS	Commonwealth of Independent States
EGEDA	Expert Group on Energy Data and Analysis
EI	Energy Institute
EV	Electric Vehicle
EIA	Energy Information Administration
EU	European Union
IEA	International Energy Agency
ICE	Internal Combustion Engine
NGL	Natural Gas Liquid
OECD	Organization for Economic Cooperation and Development
OPEC	Organization of the Petroleum Exporting Countries
WTI	West Texas Intermediate
USD	United States Dollar

APEC regional groupings

China (PRC)	
Northeast Asia (NEA)	Hong Kong, China; Japan; Korea; Chinese Taipei
Oceania (OCE)	Australia; New Zealand; Papua New Guinea
Other Americas (OAM)	Canada; Chile; Mexico; Peru
Russia (RUS)	
Southeast Asia (SEA)	Brunei Darussalam; Indonesia; Malaysia; the Philippines; Singapore; Thailand; Viet Nam
United States (US)	

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Introduction

Global Oil Market Context: A Changing Oil Security Landscape

The global oil market in 2024 continued to demonstrate resilience despite a series of major disruptions over the past five years. Following the unprecedented collapse in demand during the COVID-19 pandemic and the 2022 energy market disruptions, oil markets have largely adapted to a new operating environment. Production continued to expand, consumption reached another record high, and international trade flows adjusted as importing economies diversified supply sources and new oil exporting economies emerged.

Although the immediate risks of physical oil shortages have eased, the nature of energy security challenges continues to evolve. Global crude oil production increased by 0.6% in 2024 while oil product consumption grew by 0.7%, reflecting continued, albeit slower, market expansion following the post-pandemic recovery. Demand growth became increasingly concentrated in emerging economies, while consumption in several mature markets, including the United States and China, declined for the first time since post-pandemic recovery. These trends underscore a shift in the geographical distribution of oil demand, with emerging economies becoming the primary drivers of global consumption growth.

Important structural changes also occurred across the oil value chain. Production growth remains concentrated in the United States and Canada, while output in Southeast Asia remains on a long-term downward trajectory. Major APEC importers continue to rely heavily on crude oil from the Middle East, although their dependence on refined petroleum products from the region is significantly lower due to APEC's extensive domestic and regional refining capacity. At the same time, the composition of oil supply is also evolving. Condensates and natural gas liquids (NGLs) are playing an increasingly important role in supporting growth in non-energy sectors, particularly the petrochemical industry.

Major discoveries of multi-billion-barrel resources were announced in 2024, including finds in Guyana, Kuwait, Namibia, and China, alongside numerous additional discoveries containing millions of barrels of recoverable resources. Collectively, these discoveries strengthen the long-term global resource base and have the potential to reshape future oil supply patterns as demand continues to grow, particularly in emerging and developing economies. While these new resources are expected to strengthen future supply prospects, they will require several years of appraisal, development, and infrastructure investment before production reaches the market. As a result, they are unlikely to materially ease near-term supply constraints but are expected to influence global oil supply dynamics and market balances over the longer term.

Although global crude oil production continued to grow in 2024, emerging constraints are becoming increasingly concentrated downstream. Global oil refining capacity has struggled to keep pace with rising demand for petroleum products, reducing spare refining capacity to historically low levels and contributing to elevated refining margins. These developments suggest that future oil security risks are increasingly likely to arise from downstream infrastructure, logistics, and refining capacity rather than from the availability of crude oil resources alone.

Against this evolving oil security backdrop, this report examines developments across the global oil supply chain in 2024, covering crude oil production, oil product consumption, international trade, downstream refining, and oil price movements. Rather than viewing these topics in isolation, it is key to consider how they collectively shape the changing energy security landscape for APEC economies. Particular attention is given to the growing importance of refining capacity, changing trade patterns, and the resilience of oil supply chains, which are becoming increasingly significant determinants of regional energy security. Together, these developments provide a clearer understanding of the evolving dynamics of the global oil market and their implications for energy security, investment, and policymaking across APEC economies.

Chapter 1 Crude oil production

In 2024, global crude oil production reached 96.9 million barrels per day, marking a modest 0.6% increase over the previous year. APEC economies accounted for 47% of global output, with growth primarily driven by booming shale production in the United States and steady gains in Canada. In contrast, Southeast Asia and Russia recorded notable declines. Outside of APEC, production remained relatively flat, as a strong 6.1% output surge in Central and South America offset downward trends in Europe and the Middle East. Looking ahead, major new oil discoveries in Africa are poised to reshape the geography of global oil supply as these resources enter the market around 2030.

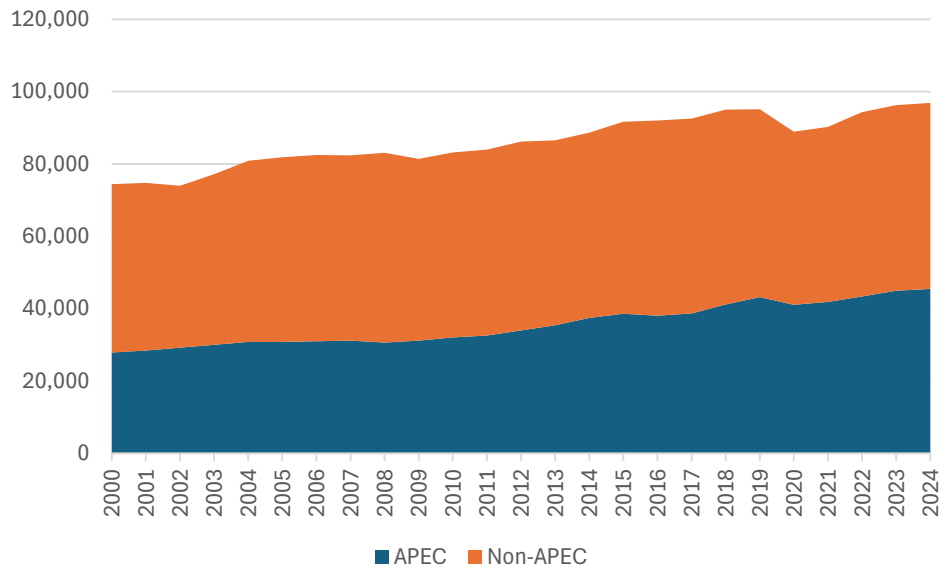
APEC led in global oil production growth in 2024

In 2024, global production of crude oil[1] reached 96.9 million barrels per day, representing a 0.6% increase over 2023 (Figure 1-1). APEC produced 45.4 million barrels per day, accounting for 47% of global output. APEC's oil production increased by 1.1%, driven primarily by higher output in the United States. In contrast, non-APEC production grew marginally by 0.1% to 51.4 million barrels per day, reflecting continued production in Europe.

While large oil reserves were recently discovered in Africa, this new production is only expected to enter the market by 2030 at the earliest.

[1]Crude oil production includes crude oil, shale oil, oil sands, condensates (lease condensate or gas condensates that require further refining), and NGLs (natural gas liquids - ethane, LPG and naphtha separated from the production of natural gas).

Figure 1-1: Global crude oil production, 2000 - 2024 (kb/d)

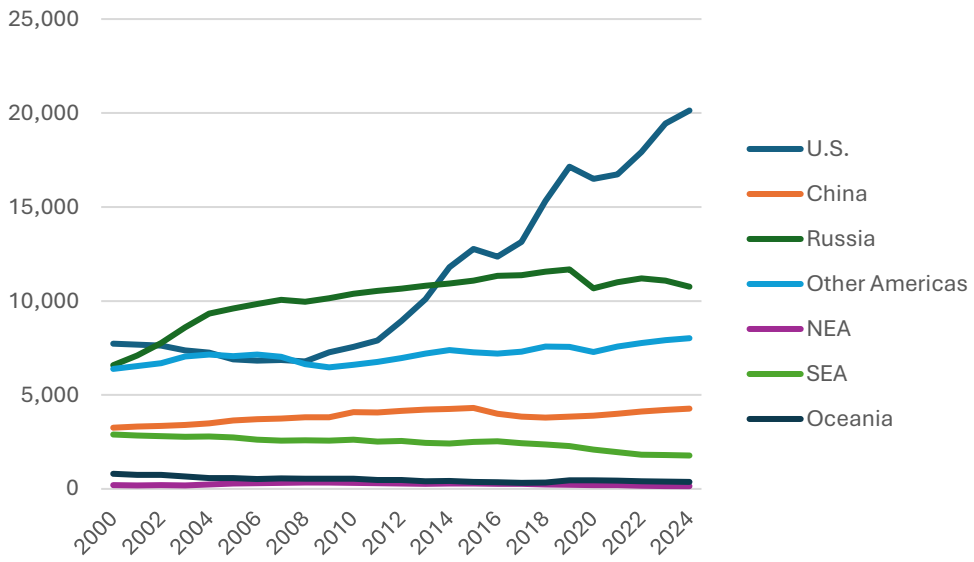


Source: EI (2025), EGEDA (2025)

In APEC, production in the United States continued to grow strongly while production in Southeast Asia continued its structural decline

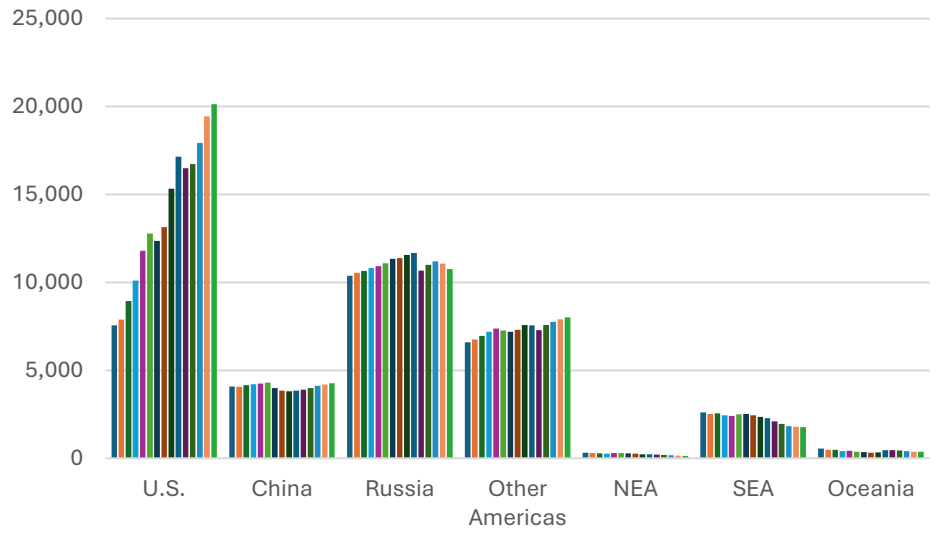
Among APEC economies, the United States recorded the strongest growth in crude oil production, with output rising by 3.6% in 2024 (Figure 1-2 and Figure 1-3). Notably, U.S. output nearly tripled compared to its 2000 level, as a result of the shale revolution. In contrast, production in Southeast Asia continued its downward trend, contracting by 1.1% in 2024. Russian production also fell by 2.9%, maintaining a post-COVID plateau of about 11 million barrels per day, down from its 2019 peak of 12 million barrels per day. Production growth in the "Other Americas" subregion was driven by a 3.6% increase in Canada, where output reached 5.9 million barrels per day in 2024, more than double its 2000 production level.

Figure 1-2: APEC production, 2000 – 2024 (kb/d)



Source: EI (2025), EGEDA (2025)

Figure 1-3: APEC production by subregion, 2000 – 2024 (kb/d)

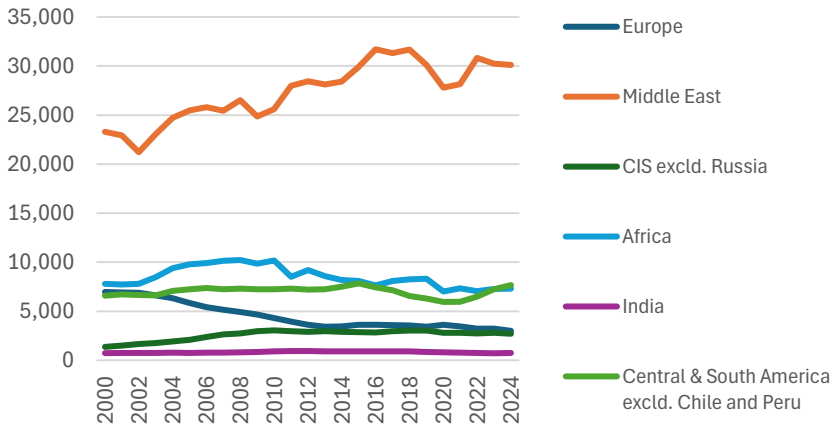


Source: EI (2025), EGEDA (2025)

In non-APEC, strong production growth in Central & South America offset production declines in Europe, Africa, and the Middle East

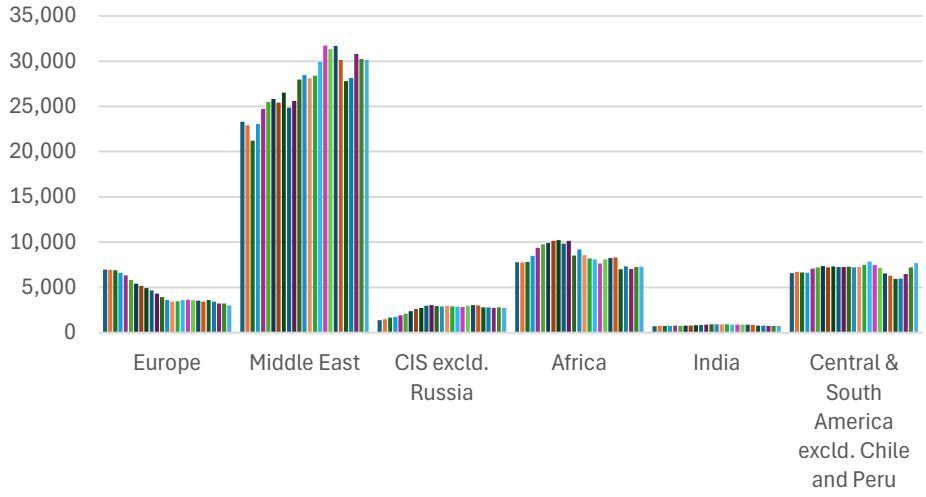
Crude oil production in the non-APEC region grew marginally by 0.1% in 2024. While the Middle East maintained its leading position in global oil production, its output decreased by 0.4% in 2024 (Figure 1-4 and Figure 1-5). Production in Europe also continued its downward trend. Nonetheless, these declines in Europe and the Middle East were offset by production growth in India, Africa, and Central and South America, with each of these regions contributing over 7 million barrels per day. Central & South America performed especially strongly, with a 6.1% increase driven by production growth in Argentina and Venezuela.

Figure 1-4: Non-APEC production, 2000 - 2024 (kb/d)



Source: EI (2025), EGEDA (2025)

Figure 1-5: Non-APEC production by subregion, 2000 - 2024 (kb/d)



Source: EI (2025), EGEDA (2025)

Chapter 2 Oil product consumption

In 2024, global consumption of refined oil products grew marginally by 0.7% to total 101.4 million barrels per day, driven by strong demand in non-APEC regions, such as the Middle East, India, and Africa. This growth was partially offset by a modest 0.2% increase in the APEC region, where major economies like the United States and China recorded their first demand contractions since the post-COVID recovery period. Conversely, robust economic development in Southeast Asia and Russia sustained an upward consumption trajectory, with rapid domestic demand growth increasingly driving Southeast Asia's reliance on refined product imports.

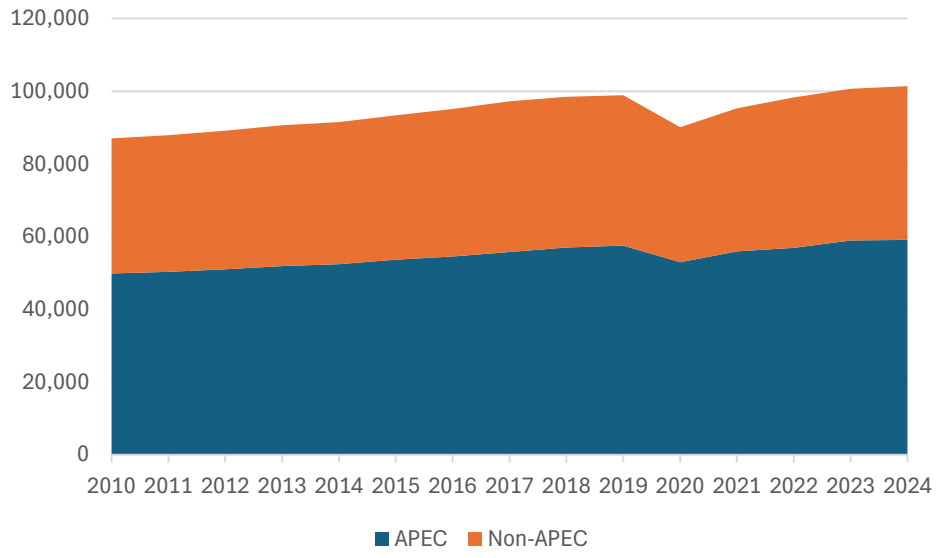
At the product level, overall growth was supported by strong demand for light distillates, used as petrochemical feedstocks and gasoline, as well as middle distillates for jet fuel. This growth more than offset declines in diesel consumption in the United States and China.

Non-APEC led global oil consumption growth in 2024

Global consumption of petroleum products[2] grew by 0.7% to amount to 101.4 million barrels per day in 2024, with APEC accounting for 58% of the total (Figure 2-1). APEC consumption grew marginally by 0.2%, compared to a stronger 1.4% growth rate in the non-APEC region.

[2]The consumption in this report does not include ethanol and bio-diesel, estimated at 3.3 million barrels per day in 2024 (IEA). It does include international aviation and marine bankers, and refinery own uses and losses. It also includes petroleum products from coal and natural gas processing.

Figure 2-1 Global oil consumption, 2000 - 2024 (kb/d)

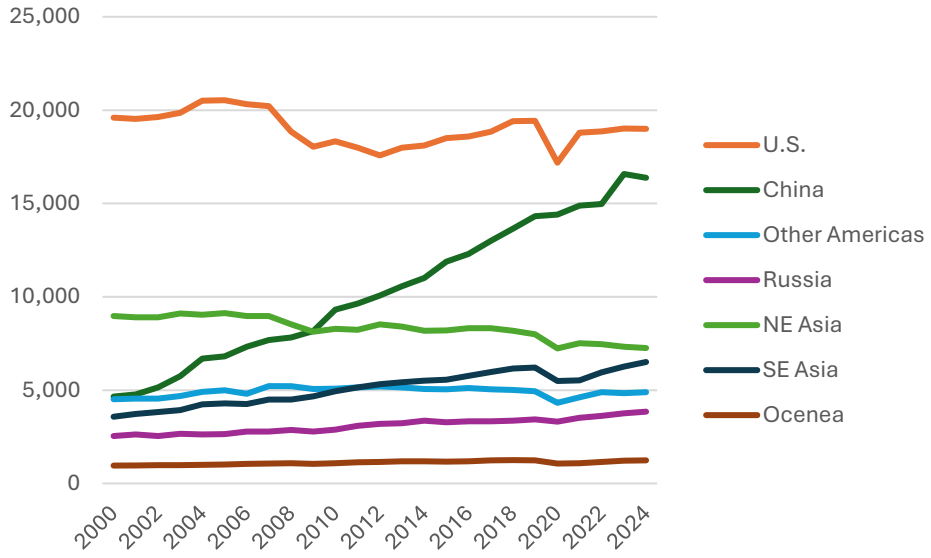


Source: EI (2025), EGEDA (2025)

Consumption in the United States and China contracted for the first time since post-COVID; Southeast Asia and Russia consumption continued to grow

The marginal 0.2% growth in APEC was attributed to slight dips in the United States and China, marking their first declines since the post-COVID recovery (Figure 2-2). However, this was offset by strong growth in Southeast Asia and Russia, which expanded by 3.9% and 2.2%, respectively. Other Americas and Oceania exhibited slight growth. Notably, consumption in Northeast Asia continued its structural downward trend.

Figure 2-2: APEC consumption, 2000 – 2024 (kb/d)

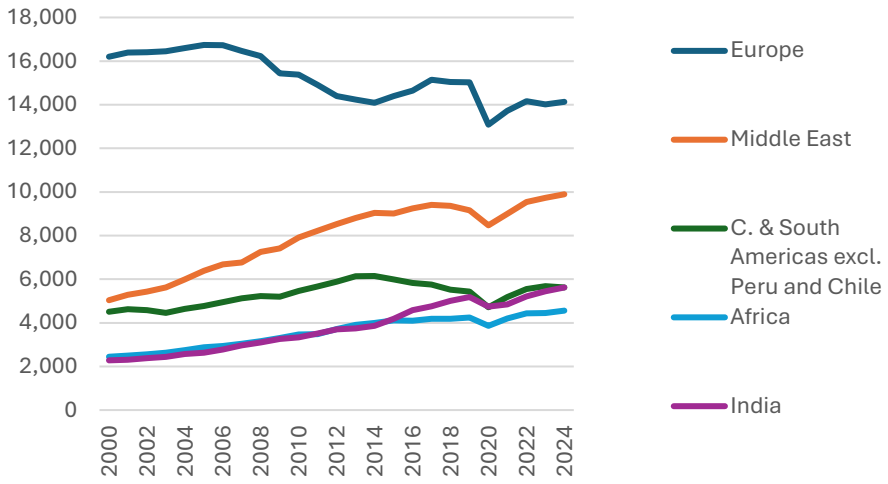


Source: EI (2025), EGEDA (2025)

India, Africa, and the Middle East led non-APEC in growth

India, Africa, and the Middle East led global consumption growth in 2024, expanding by 3.1%, 2.5%, and 1.6%, respectively (Figure 2-3). Europe, in contrast, continued its structural decline, experiencing a cumulative 16% drop since its peak in 2005. Notably, consumption in India rose to 5.6 million barrels per day in 2024, approaching the 6.5 million barrels per day of total APEC Southeast Asia. Both India and Southeast Asia exhibited similarly strong growth patterns.

Figure 2-3: Non-APEC consumption, 2000 - 2024 (kb/d)

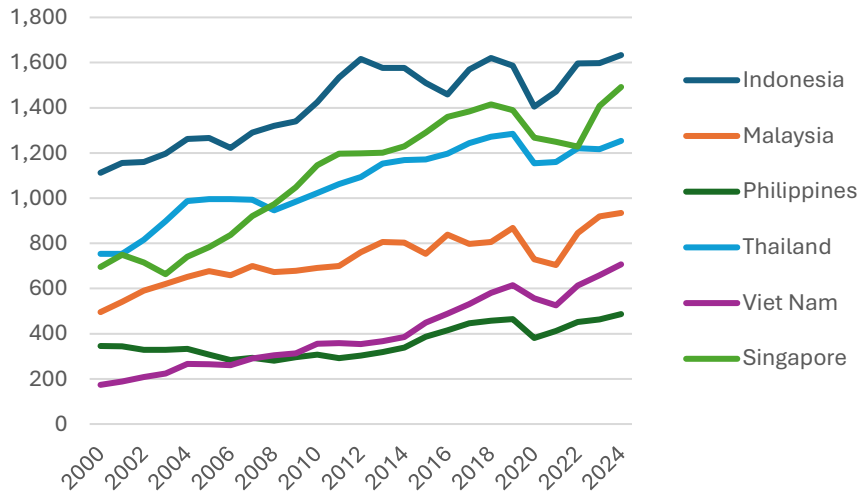


Source: EI (2025), EGEDA (2025)

Robust economic development drove consumption growth in APEC Southeast Asia

Specifically in Southeast Asia, robust economic growth led to an increase in fuel consumption. Indonesia, Singapore, and Thailand were the region's largest consumers, followed by Malaysia, Viet Nam, and the Philippines (Figure 2-4). In Singapore, oil consumption is largely driven by its international marine and aviation bunkering sectors. In contrast, consumption growth in Thailand softened, partly due to its rapid adoption of electric vehicles (EVs), with this economy holding the leading EV stock position in Southeast Asia.

Figure 2-4: APEC Southeast Asia consumption, 2000 - 2024 (kb/d)

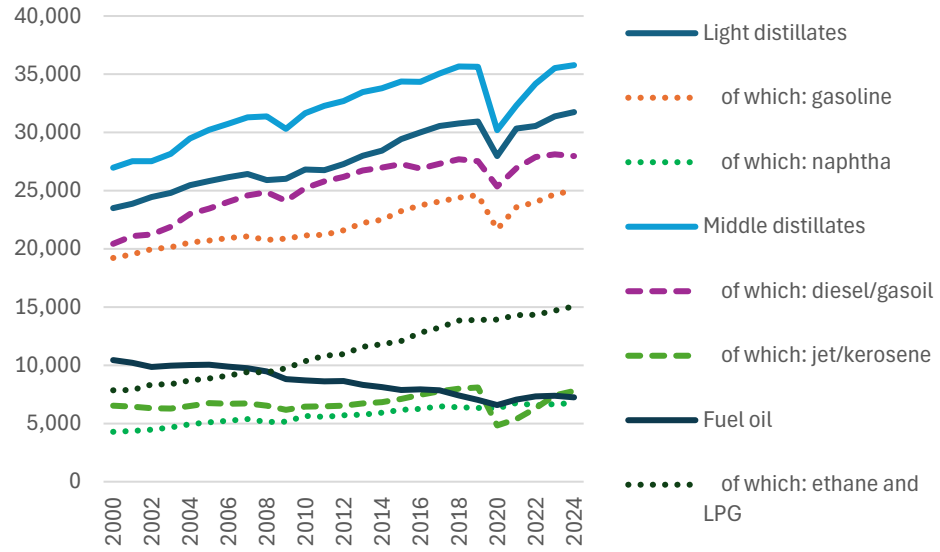


Source: EI (2025), EGEDA (2025)

Consumption of light and middle distillates continued to expand

Global consumption of light and middle distillates continued to grow strongly in 2024 (Figure 2-5). The expansion of light distillates was primarily supported by sustained demand growth for ethane, LPG, and naphtha within the petrochemical sector, alongside continued growth in gasoline demand. Within middle distillates, growth was driven by demand for diesel and jet fuel. In contrast, fuel oil consumption continued its long-term downward trend, despite a slight uptick over the last few years.

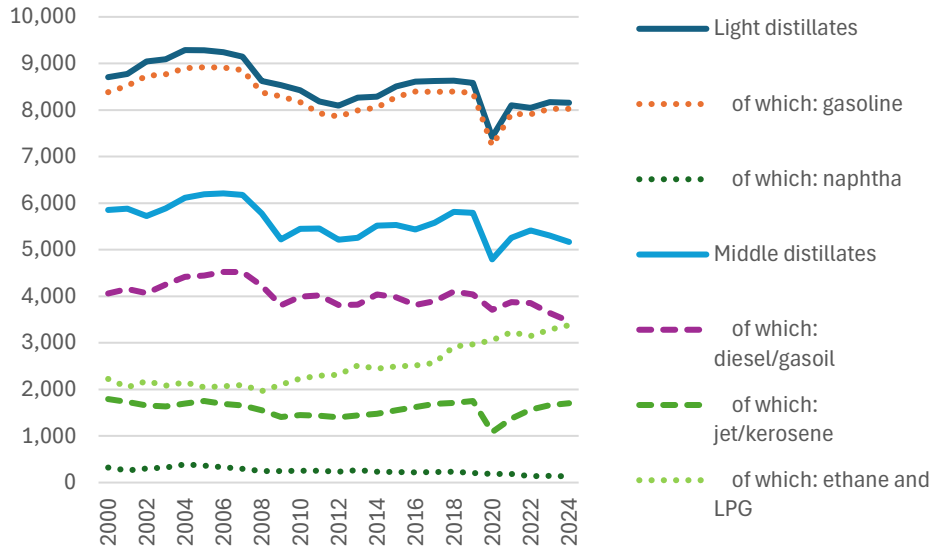
Figure 2-5: Global consumption by product category, 2000 - 2024 (kb/d)



Source: EI (2025), EGEDA (2025)

In the United States, the slight 0.1% decrease in consumption in 2024 was attributed to a dip in middle distillates, largely diesel, even as jet fuel demand continued to grow (Figure 2-6). According to the U.S. Energy Information Administration (EIA), the drop in U.S. diesel consumption stemmed from a combination of factors, including the rising uptake of renewable diesel and biodiesel, efficiency gains in the freight sector, and an ongoing contraction in manufacturing. Within light distillates, gasoline consumption continued to rebound from its pandemic-era contraction. Notably, U.S. consumption of ethane and LPG, the primary feedstocks for the petrochemical sector, has grown significantly since 2010 following the shale revolution. This domestic ethane and LPG demand is uniquely met by supplies from both the refining and gas processing sectors.

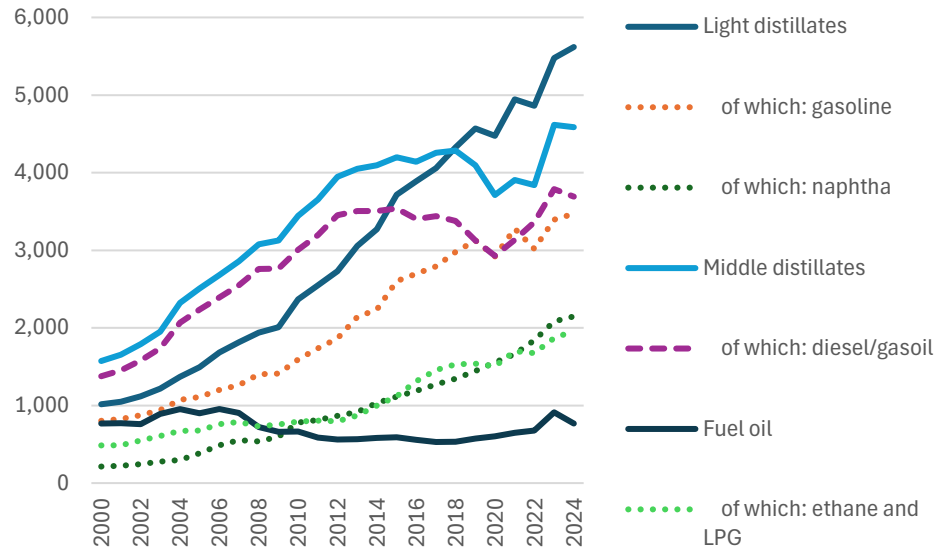
Figure 2-6: U.S. consumption by product category, 2000 - 2024 (kb/d)



Source: EI (2025), EGEDA (2025)

China experienced a dip in oil consumption for the first time since the post-COVID recovery period (Figure 2-7). The 1.2% decrease in 2024 was largely attributed to declining diesel demand within middle distillates. This drop was driven partly by a slowdown in real estate and construction, alongside a rapid, large-scale substitution of diesel with liquefied natural gas (LNG) and electric heavy-duty trucks in the freight sector, according to the U.S. EIA and Reuters. Within the light distillates category, gasoline continued its strong growth despite high EV adoption. Similar to the United States, ethane, LPG, and naphtha maintained robust growth trends, supporting expanding demand in the petrochemical sector.

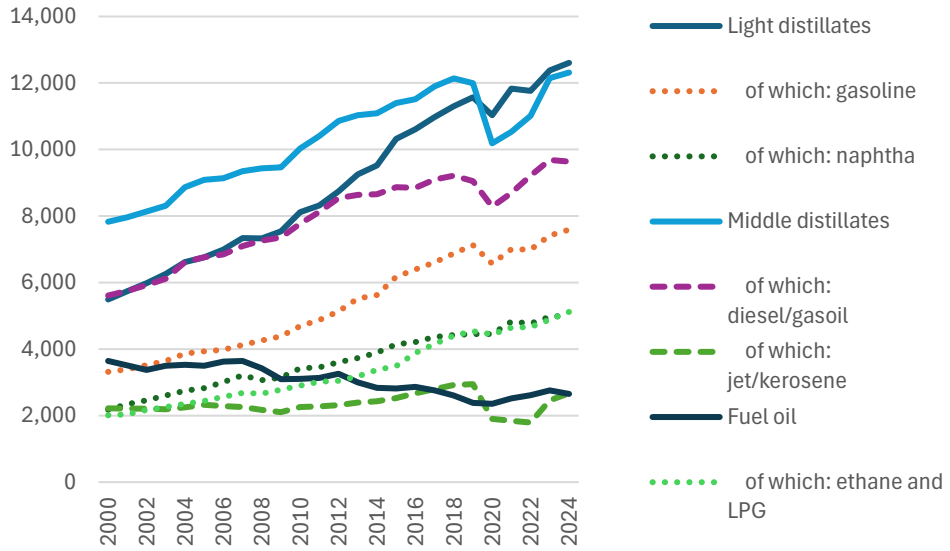
Figure 2-7: China consumption by product category, 2000 - 2024 (kb/d)



Source: EI (2025), EGEDA (2025)

In Southeast Asia, strong growth was observed across all product categories (Figure 2-8). However, due to this rapid expansion, the region has become increasingly reliant on refined product imports to meet the growing needs of its transportation and petrochemical sectors.

Figure 2-8: Southeast Asia consumption by product category, 2000 - 2024 (kb/d)



Source: EI (2025), EGEDA (2025)

Chapter 3 Oil trade

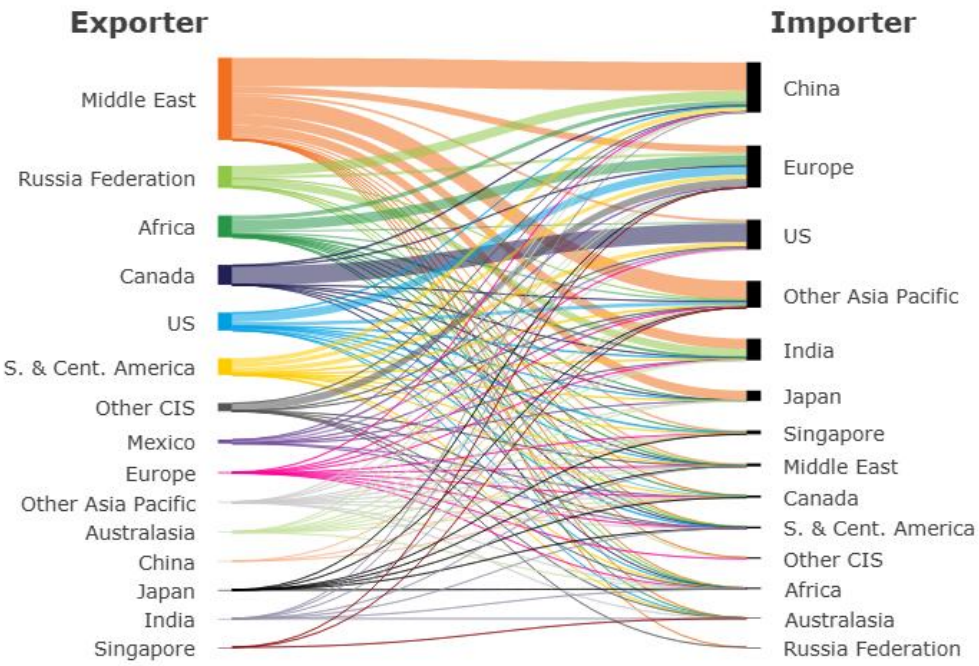
In 2024, the global oil trade was characterized by the Middle East's continued dominance in crude oil exports, alongside the United States' strengthening position as a major global exporter of refined petroleum product. Driven by the shale revolution and expanding downstream capacity, U.S. product exports reached 283 million tonnes, nearly matching the Middle East's product export lead of 292 million tonnes. Concurrently, key Asia-Pacific economies, including China, Japan, and Singapore, maintained their high reliance on Middle Eastern crude oil imports, with dependency levels exceeding 50%. However, APEC member economies kept their reliance dependency on Middle Easter refined products well under 33%, supported by robust domestic refining infrastructure. Ultimately, these dynamics highlight the contrast between highly concentrated crude oil supply chains and a more diversified and competitive landscape for refined petroleum products.

The Middle East continued to dominate global crude exports

Total trade of crude oil in 2024 amounted to 2,158 million tonnes. The Middle East continued its dominant role as a crude oil exporter, accounting for 906 million tonnes (42%) of the total in 2024 (Figure 3-1). Other major exporters included Russia, Africa, Canada, the United States, and South & Central America, with each region contributing about 200 million tonnes. On the importing side, China led global crude oil imports, followed by Europe, the United States, and the Other Asia-Pacific region which includes APEC Southeast Asia economies, with India emerging as a major importer in recent years. The United States relied heavily on imports of Canadian crude (Figure 3-2) via extensive pipeline systems, enabling both economies to optimize their resources and downstream operations. Concurrently, Europe relied more on imports from Africa to compensate for declining domestic production. Meanwhile, China, India, Japan, and other

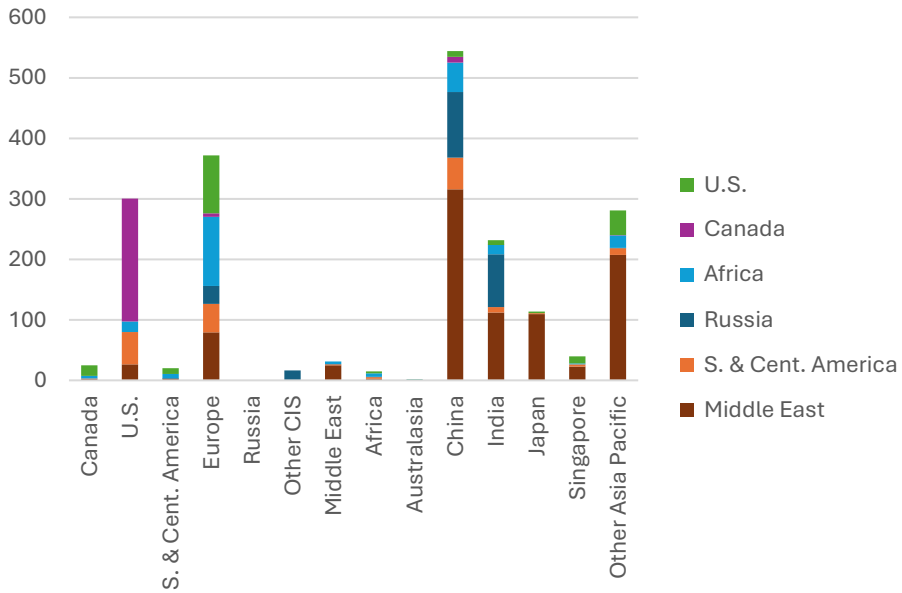
economies across the Asia-Pacific region remained heavily dependent on imports from the Middle East.

Figure 3-1: Global crude oil trade flows, 2024



Source: EI (2025), EGEDA (2025)

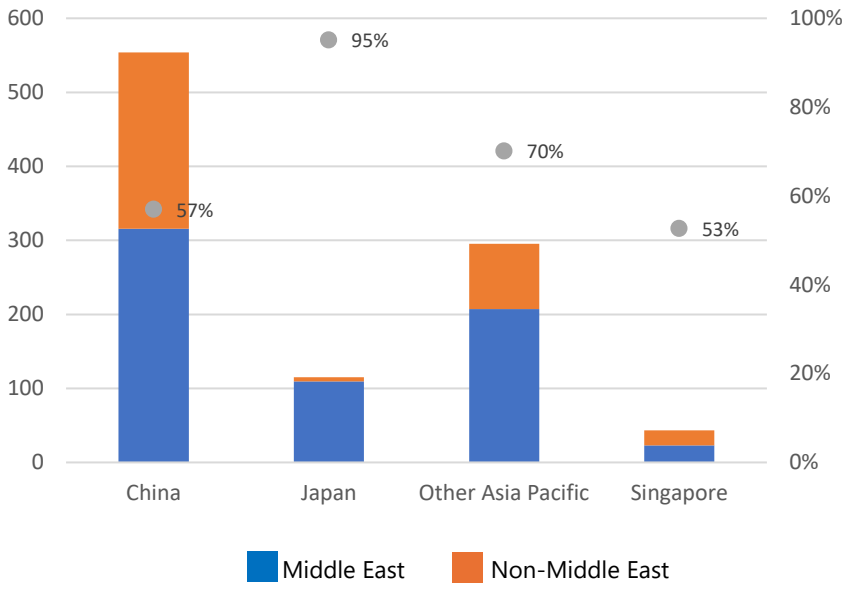
Figure 3-2: Crude oil import by source, 2024 (million tonnes)



Source: EI (2025), EGEDA

Specifically within APEC, key crude-importing economies, with the exception of the United States, relied heavily on Middle Eastern sources. These dependencies are particularly pronounced in China, Japan, and APEC Southeast Asia (categorized under 'Other Asia-Pacific') (Figure 3-3). In each of these economies, more than 50% of crude oil imports originated from the Middle East.

Figure 3-3: Crude oil import by source (million tonnes-LHS) and dependency on the Middle East (%-RHS), 2024

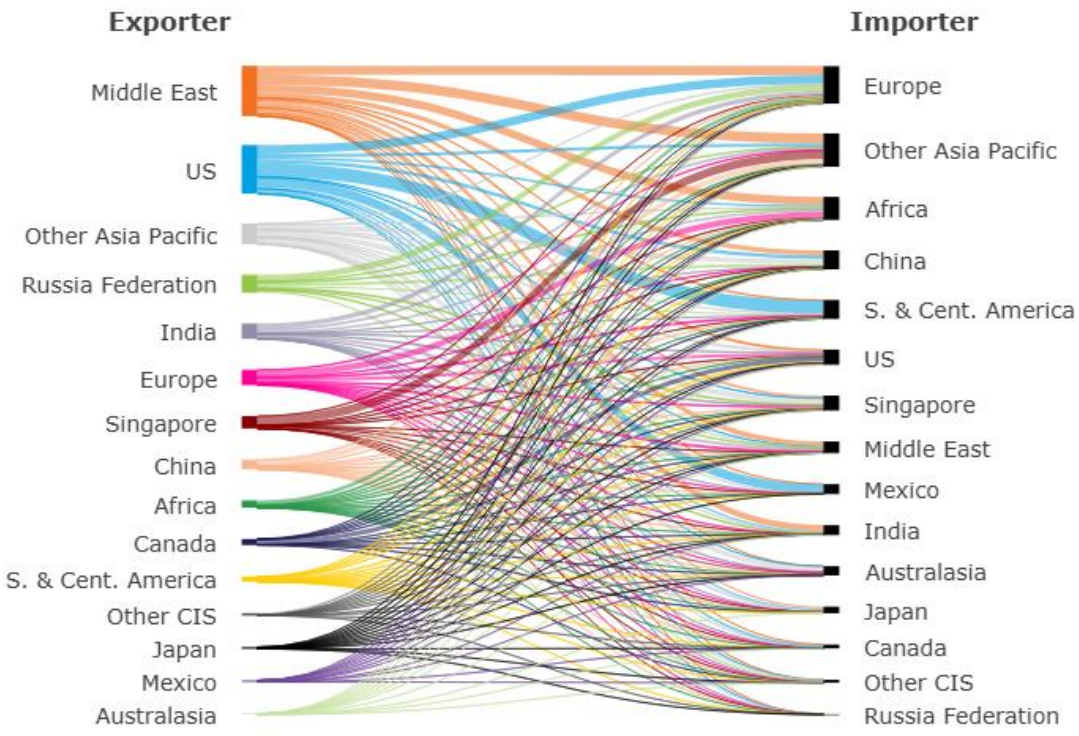


Source: EI (2025), EGEDA (2025)

The United States has emerged as a major exporter of refined oil products, while Europe maintained its leading position in product imports

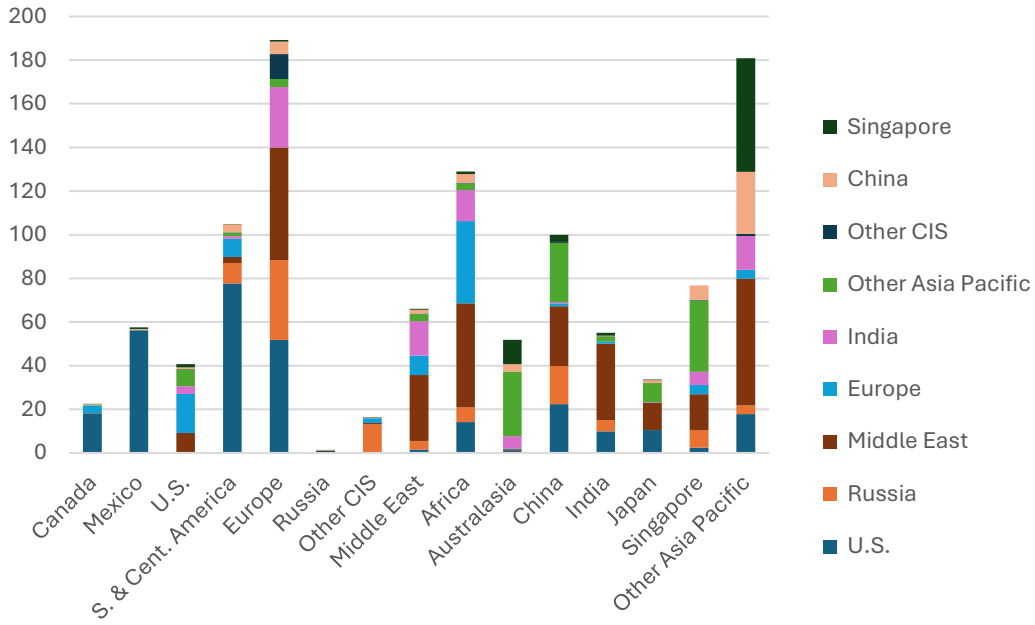
The total volume of global oil product trade in 2024 amounted to 1,258 million tonnes. Driven by the shale revolution and recent expansion of domestic refining capacity, the United States solidified its role as a major global exporter (Figure 3-4 and Figure 3-5). Total refined product exports from the United States reached 283 million tonnes in 2024, nearly matching the 292 million tonnes exported from the Middle East. On the importing side, Europe led global product imports despite experiencing a continuous decline in consumption, a trend largely attributed to a high rate of domestic refinery closures. In contrast, elevated imports in the 'Other Asia-Pacific' region were driven by strong economic growth outpacing inadequate domestic refining capacity. Africa also emerged as a key importer of oil products, with its total imports reached 129 million tonnes in 2024, surpassing China's 100 million tonnes. However, recent refining capacity additions in both Africa and China could result in lower oil product import reliance in the near future. In South and Central America, imports were predominantly sourced from the United States, facilitated by the regional exchange of domestic crude oil for United States refined products. Notably, India exhibited the highest dependency rate on Middle Eastern oil products, which accounted for 65% of its total product imports.

Figure 3-4: Global oil product trade flows, 2024



Source: EI (2025), EGEDA (2025)

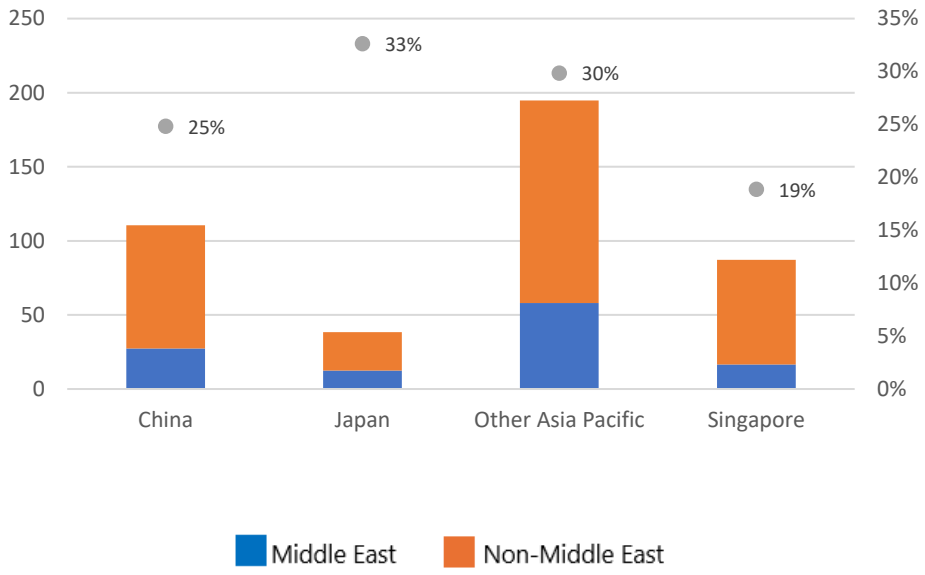
Figure 3-5: Oil product import by major sources, 2024 (million tonnes)



Source: EI (2025), EGEDA (2025)

Looking at the APEC region, major member economies were far less reliant on imports of refined products from the Middle East (Figure 3-6), reflecting their extensive domestic refining capacities. Consequently, regional dependency rates on Middle Eastern oil product imports remained below 33% in 2024. This contrasts sharply with the region's crude oil import dependency rate, which exceeded 50% for Middle Eastern supplies.

Figure 3-6: Oil product import by source (million tonnes-LHS) and dependency on the Middle East (%-RHS), 2024



Source: EI (2025), EGEDA (2025)

Chapter 4 Downstream refining

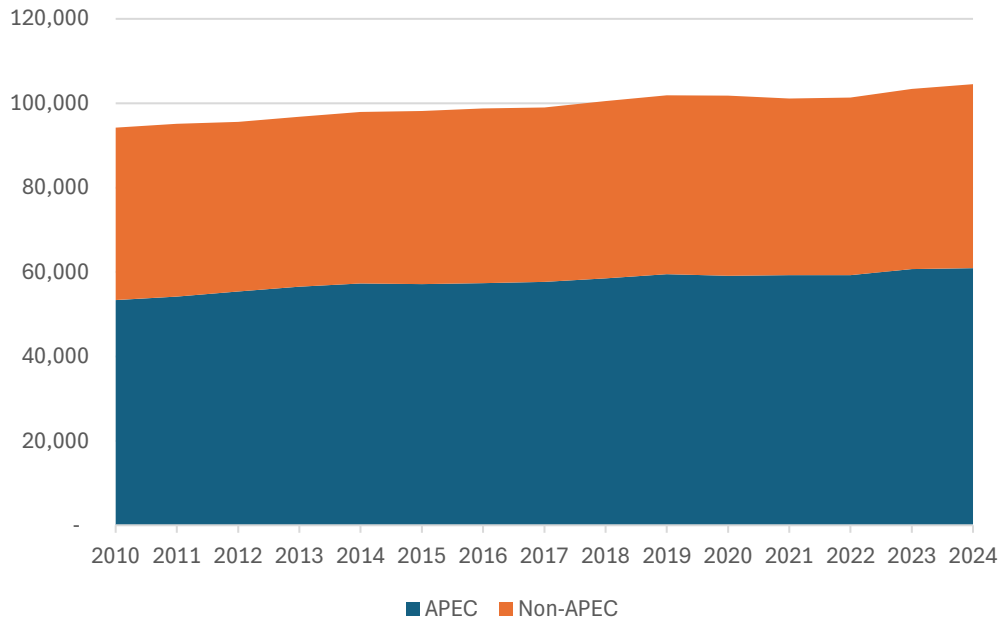
The global downstream oil sector is facing emerging risks to energy security due to a widening gap between refining capacity additions and rising oil product consumption. Between 2011 and 2024, net global refining capacity additions of 9.3 million barrels per day failed to keep pace with a net demand increase of 13.5 million barrels per day, a structural tightening exacerbated by a wave of recent international refinery closures and biofuel conversions. This mismatch has caused the global ratio of spare refining capacity to consumption to decline from a pre-pandemic average of 6% down to 3% in 2024. While APEC maintained its global lead in absolute capacity, bolstered by existing refineries in China and the United States, this infrastructure tightness has ultimately resulted in volatile and elevated refining margins across major global trading hubs.

APEC refining capacity exhibited a slow growth but maintained a global lead

Global refining capacity[3] stood at 104.5 million barriers per day in 2024, up 1.1% from the previous year (Figure 4-1). APEC accounted for 60.9 million barrels per day, representing 58% of the global total. Refining capacity in the APEC region increased marginally by 0.3% from the previous year, while non-APEC capacity grew by 2.3%.

[3]*Atmospheric distillation capacity at year end on a calendar-day basis.*

Figure 4-1: Global refining capacity, 2010-2024 (kb/d)

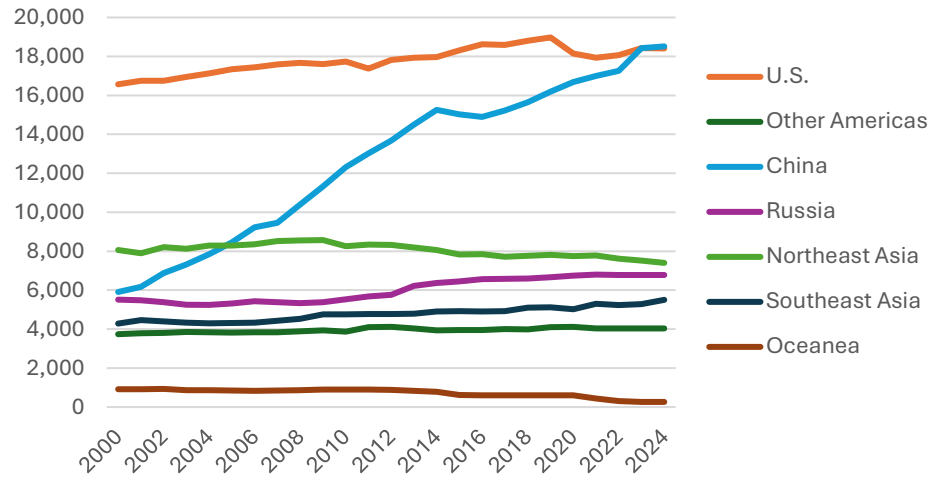


Source: EI (2025), EGEDA

Capacity contraction in the United States and a plateau in China's refining sector resulted in slow capacity growth in APEC

In 2024, U.S. refining capacity experienced a slight contraction for the first time since its post-COVID recovery, declining 0.1% from the previous year to 18.4 million barrels per day (Figure 4-2). China's capacity also exhibited slower growth at 0.5%, compared to a previous 6.7% increase, to reach 18.5 million bars per day. Notably, in 2024, China's capacity marginally exceeded that of the United States for the first time. The contraction in the United States and the slow growth in China were offset by a strong 4.4% increase in capacity in Southeast Asia, leading to an overall 0.3% growth in the total APEC capacity. Following a long-term trend, refining capacity in Northeast Asia continued its decline.

Figure 4-2: Refining capacity in APEC, 2000-2024 (kb/d)



Source: EI (2025), EGEDA

Large capacity additions in the Middle East, Africa, and India contributed to strong refinery capacity growth in non-APEC

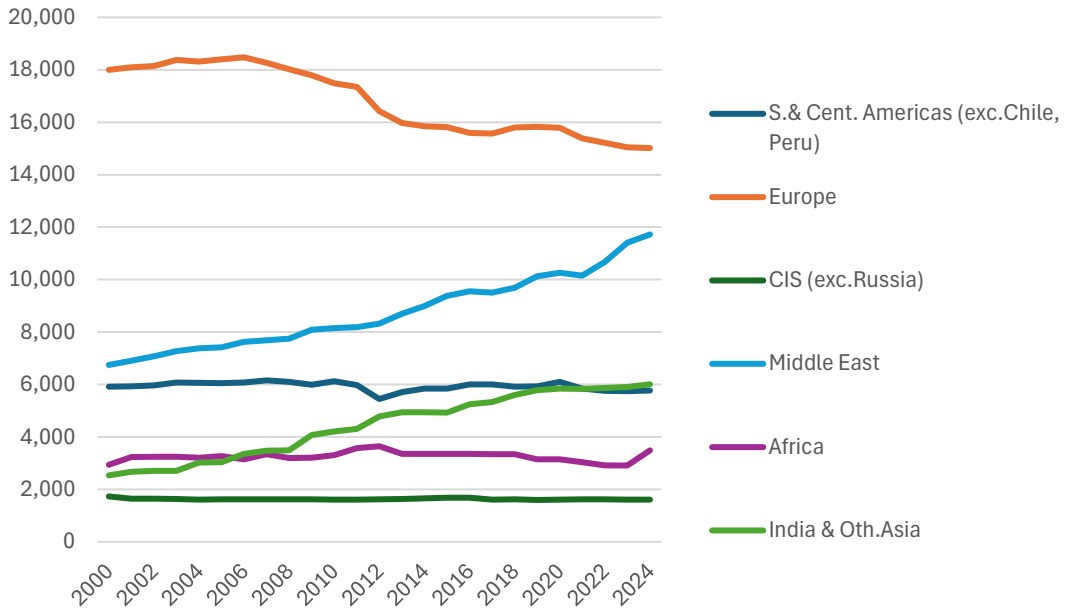
In terms of non-APEC refining capacity, net capacity additions in the Middle East, Africa, and India in 2024, amounting to almost 1 million barrel per day, contributed to strong capacity growth in non-APEC economies (Figure 4-3). In contrast, European refining capacity continued its structural decline.

Refining capacity in the Middle East has nearly doubled since 2000, reaching 11.7 million bars per day in 2024. Conversely, capacity in Europe has declined by 3 million barrels per day since 2000.

In Africa, refining capacity increased by 20% in 2024 owing to the January commissioning of the 650 thousand barrels per day Dangote refinery in Nigeria. This facility is the world's largest single-train refinery capable of producing high-quality transport fuels.

Capacity in India and 'Other Asia' (non-APEC Asia) also exhibited significant growth, reaching 6 million barrels per day, more than double its 2000 levels.

Figure 4-3: Refining capacity in non-APEC, 2000-2024 (kb/d)



Source: EI (2025), EGEDA (2025)

Capacity additions in the past 13 years could not keep pace with growth in consumption

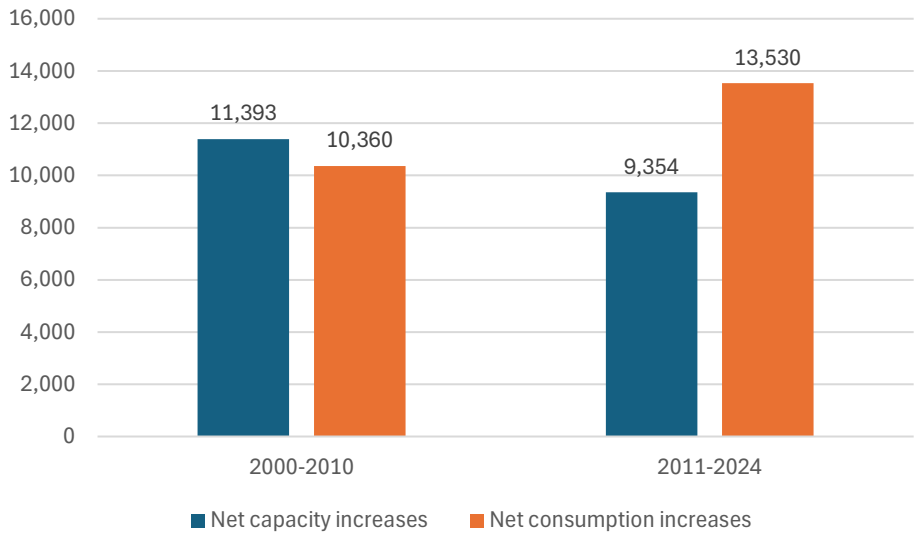
During the 10-year period from 2000 to 2010, the world added a net 11.4 million barrels per day of refining capacity (Figure 4-4). These capacity additions exceeded the 10.4 million barrels per day of net increases in oil product consumption[4], enabling the global refining sector to continue providing adequate product supply security.

However, over the subsequent 13-year period from 2011 to 2024, net refining capacity additions amounted to only 9.3 million barrels per day, while net consumption increased by over 13.5 million barrels per day (Figure 4-4). This widening gap between capacity growth and demand has contributed to tightening conditions in the global refining sector.

Recent closures of oil refineries across multiple regions contributed to the slower pace of global capacity additions. For example, in 2024 alone, refinery closures included the Yamaguchi Refinery (Japan) in March (120 thousand barrels per day), the Grangemouth Refinery (Scotland) in autumn (150 thousand barrels per day), and the Houston Refinery (United States) in late 2024 (270 thousand barrels per day). In addition to these closures, many refineries in 2024 have been repurposed to produce biofuels, including the Rodeo refinery in California and the Livorno refinery in Italy. These developments further reduced available global refining capacity and contributed to tightening market conditions.

[4]Oil product consumption does not include ethanol and bio-diesel, estimated at 3.3 million barrels per day in 2024 (IEA). It does include international aviation and marine bankers, and refinery own uses and losses. It also includes petroleum products from coal and natural gas processing.

Figure 4-4: Net increases in global refining capacity and product consumption[2] (kb/d)



Source: EI (2025), EGEDA (2025)

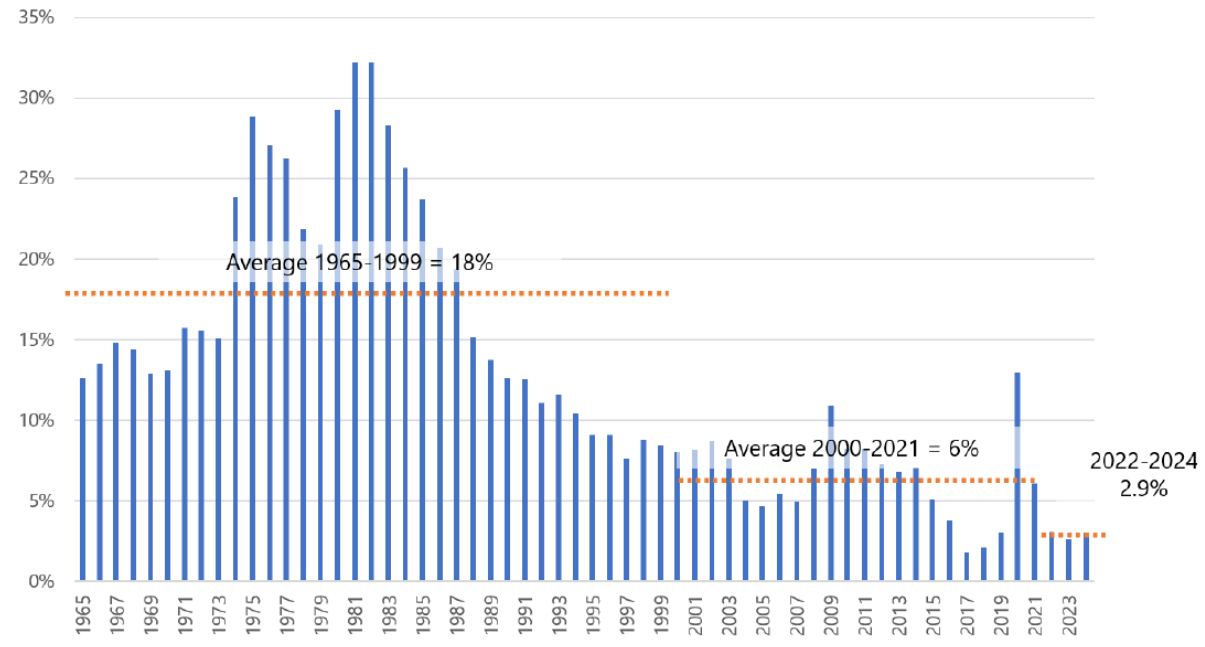
The lower ratio of spare refining capacity to consumption indicates the tightness of the global refining sector and presents emerging risks to energy security

The ratio of global spare refining capacity to consumption is defined as the ratio of unutilized crude distillation capacity divided by total oil product consumption. It indicates the ability of the global refining sector to absorb any increases in consumption at any given period.

Prior to 2000, the ratio of global spare refining capacity to consumption averaged at 18% (Figure 4-5). Between 2000 to 2021, however, this ratio declined to an average of 6%. Following the COVID pandemic, from 2022 to 2024, the ratio steeply dropped to only 2.9% as global consumption outpaced the net refining capacity additions.

Although the decline in the spare refining capacity ratio is partly influenced by increased consumption of natural gas liquids (NGLs), particularly ethane and liquefied petroleum gas (LPG), the ratio remains a useful indicator of refining market conditions. While these fuels are included in total oil product consumption statistics, they are increasingly supplied through natural gas processing rather than crude oil refining. As a result, growth in their consumption adds to overall oil product demand without requiring additional refinery capacity, causing the gap between refining capacity and total consumption to appear larger than it otherwise would. Nevertheless, the sustained decline in spare refining capacity is consistent with tightening conditions in the downstream oil sector, as reflected in elevated refining margins.

Figure 4-5: Ratio of global spare refining capacity to oil product consumption, 1965-2024, %



Source: EI (2025), EGEDA (2025), FGE

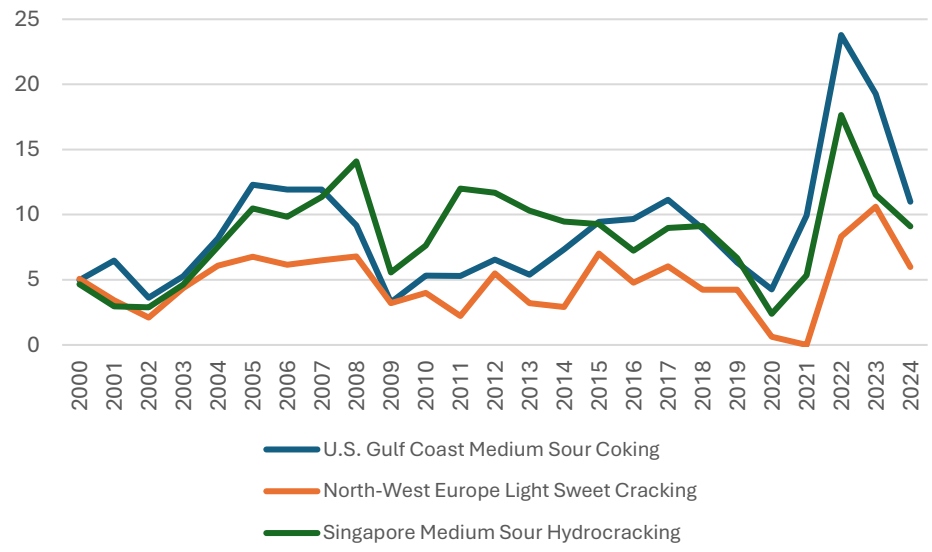
The tightness in the global refining sector contributed to elevated refining margins

Prior to 2003, refining margins[5] at global trading hubs averaged 4.96 USD per barrel (Figure 4-6). From 2003 onwards, however, refining margins began to rise. These margins surged during the energy market disruptions of 2022, averaging USD 16.6 per barrel across the three hubs, before easing to an average of USD 8.7 per barrel in 2024.

The multi-year elevated margins reflected the tightness in global refining sector and added volatility during the unexpected events. To note, however, the lower level of refining margins in Europe could be partly due a combination of factors, such as the higher operating costs and lower operating efficiencies of the domestic refineries due to their aging and smaller sizes.

[5]The refining margins presented are benchmark margins for three major global refining centres: U.S. Gulf Coast (USGC), North-West Europe (NWE - Rotterdam), and Singapore. In each case, they are based on a single crude oil appropriate for that region and have optimized product yields based on a generic refinery configuration (cracking, hydrocracking, or coking), again appropriate for that region. The margins are on a semi-variable basis, i.e. the margin after all variable costs and fixed energy costs.

Figure 4-6: Refining margins, 2000-2024, USD per barrel



Source: EI (2025)

Chapter 5 Price movements

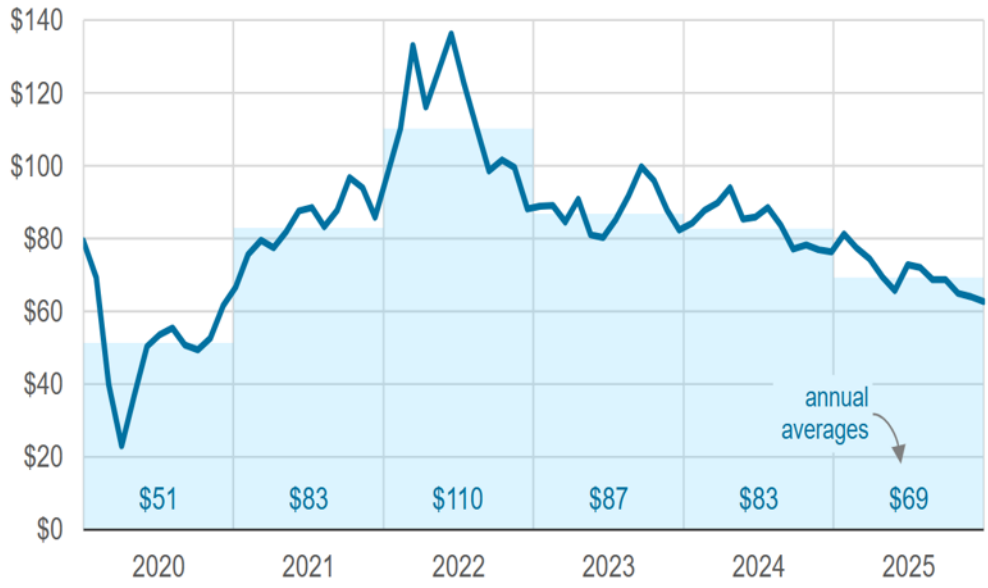
Brent crude oil prices have generally declined since reaching a peak in 2022, although geopolitical tensions in the Middle East led to a renewed price increase in early 2026. After falling to an annual average of USD 69 per barrel in 2025, Brent prices rose sharply in the first five months of 2026, peaking at a monthly average of USD 117 per barrel in April before easing in May.

Brent crude oil prices followed a downward trend after reaching a peak in 2022

Brent spot prices rebounded from an annual average of USD $51 per barrel in 2020 to a peak annual average of USD $110 per barrel in 2022, driven by heightened geopolitical tensions and market uncertainty in Europe (Figure 5-1). Following this peak, prices entered a declining trend, dropping to an annual average of USD $69 per barrel in 2025.

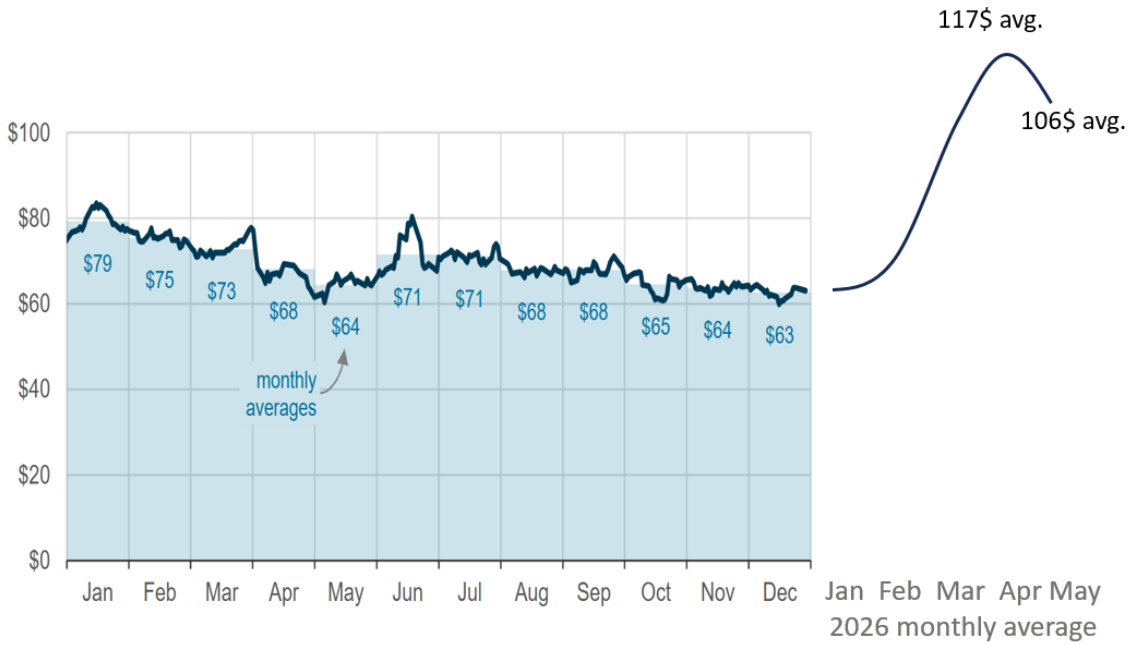
However, the recent geopolitical tensions in the Middle East pushed prices upward during the first five months of 2026, culminating in an average peak of USD $117 per barrel in April of this year. Brent prices then began to ease, averaging USD $106 per barrel in May (Figure 5-2). As of the time of writing, the Brent price closed at USD $75.26 per barrel on 25 June 2026, with the June's month-to-date average standing at USD $86.29 per barrel.

Figure 5-1: Historical Brent prices, 2020-2025 (USD per barrel)



Source: IEA

Figure 5-2 Monthly Brent prices, 2025 (USD per barrel)



Source: IEA

Chapter 6 Conclusions and future implications

Conclusions

In 2024, the global oil market was characterized by a deceleration in production and consumption, coupled with a persistent structural dependence on Middle Eastern imports among several APEC economies. Ongoing global refining tightness, combined with crude price volatility and elevated refining margins, highlighted vulnerabilities and necessitated strategic considerations regarding energy security and supply chain stability.

1) Global crude oil production trends stabilized in 2024

Global production of oil, encompassing conventional crude, oil sands, condensates, and natural gas liquids (NGLs), continued to increase in 2024, albeit at a more modest pace. Year-over-year production increased by 0.6%, representing a deceleration from the pre-pandemic annual average of 1.4% per annum and the post-pandemic recovery surge of 2.4% per annum. Output growth was primarily sustained by increases in production across the United States, Central America, and South America. The Middle East retained its position as the world's leading oil producer, maintaining an output of 30 million barrels per day. The United States followed as the second-largest global producer, averaging 20 million barrels per day. Recent exploration discoveries in Africa are projected to introduce new supply volumes to the global market by approximately 2030.

2) Emerging economies continued to drive oil consumption growth, with petrochemical demand remaining strong

Global consumption of petroleum products expanded by 0.7% in 2024, broadly in line with production growth. Consumption patterns varied between regions, with strong increases observed in India, Africa, and the Middle East for non-APEC. APEC Southeast Asia and Russia sustained steady consumption growth, while the United States and China exhibited contractions for the first time since the COVID-19 pandemic. Product-wise, the light distillates, specifically ethane, liquefied petroleum gas (LPG), and naphtha, demonstrated exceptionally strong growth driven by robust feedstock demand within petrochemical sectors across the United States, China, and Southeast Asia.

3) Regarding oil trade, key APEC economies remained highly dependent on Middle Eastern crude imports but less reliant on Middle Eastern oil product imports

A divergence persists between crude oil and refined product trade. The Middle East continues to dominate global crude and oil product exports, with the United States closely following as a another major exporter of oil products. Key APEC economies remain structurally dependent on crude oil imports from the Middle East; however, their exposure and dependence on Middle Eastern refined products imports is significantly lower, indicating robust domestic refining self-sufficiency.

4) Tightness in the global refining sector presents emerging risks to energy security

Cumulative net additions to global refining capacity between 2011 and 2024 failed to keep pace with the cumulative growth of global oil product consumption. This mismatch has led to a structural decline in the global spare refining capacity-to-consumption ratio. A lower spare capacity ratio limits the downstream sector's ability to absorb unexpected consumption spikes or sudden supply shocks, and this operational tightness poses a direct risk to the stability and security of the global petroleum product supply chain.

5) Oil price volatility and elevated refining margins persisted

Increased oil price volatility and historically elevated refining margins serve as market indicators of systemic uncertainty and tightness across the global oil value chain. These metrics highlight a market operating condition that is sensitive to any oil supply disruption.

Future implications

1) The nature of oil security is evolving

The findings presented throughout this report suggest that the nature of oil security is becoming increasingly complex. While global oil production and consumption continued to grow in 2024, the market also demonstrated the ability to adapt to structural changes stemming from the COVID-19 pandemic and the geopolitical realignment following the energy market disruptions of 2022. Production growth shifted towards the United States and other economies in the Americas, while international trade flows adjusted as importing economies diversified their sources of supply and new exporters emerged. At the same time, global oil demand reached another record level despite slower growth in several major economies. Together, these developments illustrate the resilience of the global oil market while also highlighting new challenges for maintaining secure and reliable supplies of both crude oil and oil products.

2) Ongoing upstream investment is crucial to ensure security of crude oil supply

Oil security should resultingly be viewed across three interconnected dimensions. The first is the continued availability of crude oil resources and production capacity. Global reserves remain substantial, and production capacity continues to expand in several producing regions, suggesting that sufficient resources exist to meet projected demand under normal market conditions. Recent major discoveries in Guyana, Kuwait, Namibia, and China in 2024 also contributed to future supply security and supply-source diversity. At the same time, however, the production from existing major global production resources is declining at rapid rates, especially unconventional resources. Therefore, the ongoing capital investment to maintain existing production fields and the timely investment in the development of new resources are crucial to ensure sufficient supply for at least the medium-term growth in oil demand. In this regard, the particular subject of energy security implications of upstream oil investment will be highlighted in more details in APEC Oil and Gas Security Study Series 22 (OGSS 22), which is scheduled to be published on the APEC website at the beginning of 2027.

3) Downstream resilience will become increasingly important

The second dimension is the ability of downstream infrastructure (including refineries, storage facilities, ports, and transport networks) to convert, store, and deliver petroleum products efficiently. Against the backdrop of closures and repurposed global oil refineries, the outlook for global refining capacity is becoming increasingly challenging. The analysis in this report indicates that downstream refining sector has become an important determinant of oil security. Between 2011 and 2024, cumulative additions to global refining capacity failed to keep pace with growth in oil product consumption, contributing to a sustained decline in global spare refining capacity and elevated refining margins. While the refining sector has continued to meet demand, lower spare capacity reduces the system's flexibility to respond to unexpected disruptions or sudden increases in product demand. These findings suggest that maintaining adequate refining capacity and operational flexibility will remain an important component of future energy security. The APEC Oil and Gas Security Study Series 20 (OGSS 20) titled, "What are the energy security implications of recent declines in both APEC and global spare petroleum refining capacity?", published on the APEC website, highlights these challenges in more detail.

4) Trade diversification is important to ensure supply security under future uncertainties

The third dimension is trade diversification. Regional developments across APEC further illustrate the changing nature of oil security. Production growth continued to be led by the United States and Canada, while production in Southeast Asia remained on a long-term decline. At the same time, robust economic growth continued to drive oil demand across Southeast Asia, increasing the region's dependence on imported crude oil and refined products. These contrasting trends reinforce the importance of diversified supply sources, resilient maritime transport routes, sufficient oil storage, and continued investment in downstream infrastructure to support regional energy security.

The experience of recent years also demonstrates the adaptability of global oil markets. Following the 2022 energy market disruptions, international trade flows were successfully reconfigured as importing economies diversified suppliers and production growth from the Americas helped offset declines elsewhere. Major discoveries in 2024, particularly in Africa, have also increased opportunities for supply source diversification. At the same time, the recent tensions in the Middle East and disruptions to shipping through the Strait of Hormuz in 2026 serve as a reminder that geopolitical risks remain an integral component of oil security. These events demonstrate that secure oil supplies depend not only on the availability of crude oil resources, but also on the resilience of transport routes, storage systems, refining capacity, and international supply chains.

5) Preparedness and regional cooperations enhance resilience

Another dimension is the resilience of supply chains to geopolitical disruptions, natural disasters, and other unexpected events. Weakness in any one of these dimensions can affect the reliability of oil supply, even when global production remains adequate. Accordingly, APEC economies would benefit from strengthening their preparedness by regularly exercising oil and gas security preparedness. APEC's ongoing activities under the Oil and Gas Security Initiatives (OGSI), namely APEC Oil and Gas Security Exercise (OGSE), provide continuous support to member economies in this regard. Strengthened regional cooperation among APEC economies, including collaborative crude oil and petroleum product stockpiling, can play a critical role in enhancing energy security and mitigating the impacts of supply disruptions and market shocks.

6) Demand uncertainty will increase investment challenges

Looking ahead, uncertainty surrounding future oil demand presents an additional strategic challenge. The continued adoption of electric vehicles, improvements in vehicle efficiency, and the growing use of alternative fuels are expected to moderate demand growth for gasoline and diesel in many economies, while aviation and petrochemical feedstocks are likely to remain important drivers of oil demand. This uncertainty complicates long-term investment decisions for refineries and other downstream infrastructure, which require significant capital investment and long operating lifetimes. Balancing the need to maintain adequate refining and storage capacity while avoiding the risk of overinvestment will therefore become an increasingly important policy consideration.

Final Remarks

Taken together, the findings of this report suggest that future assessments of oil security should extend beyond traditional measures of crude oil production and reserves. Greater attention should also be given to refining capacity, oil storage, transport infrastructure, supply chain resilience, and the ability of markets to respond to future disruptions. As the global oil market continues to evolve, these interconnected factors are likely to play an increasingly important role in shaping energy security across APEC economies.

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