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Oil & Gas Practice

Global downstream outlook to 2035

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June 2021

Executive summary

The future of the global refining industry will vary across regions based on three potential scenarios.

Energy transition (reference case)

- Global **liquids demand peaks in 2029 at 104 million barrels per day (MMB/D)**, with road transport fuels peaking in 2023.
- European and US utilization recovers in the short term (~2025) but then declines, requiring **~5 MMB/D of closures by 2035**. Asian utilization is **suppressed by overcapacity** in the short term, but **more resilient in the long term** due to slower demand decline.
- **All hub margins recover in line with utilization**. US and European margins decline in the long term, with **average margins ~$2/barrel lower in 2031–35** than in recent history. Asian margins **remain more stable** in the long term compared with other regions.
- By the 2030s, the global refining value pool declines ~36% from 2015–19 levels, with the 2031–35 global average at $100 billion. Asia and the Middle East are the only regions with growing value pools in the 2030s.

Delayed transition

- Global **liquids demand continues to grow through 2035**, with light product demand peaking in 2029.
- **Hub utilization will remain strong, with 1.3 MMB/D of capacity additions** occurring in Asia and the Middle East. Asian utilization is **suppressed by overcapacity** in the short term, but this is short lived. US and European utilization is more sensitive to additions in Asia as utilization will lower in these more marginal markets, but it rebounds quickly.
- **All hub margins recover** to historical levels and follow utilization trends. Margins **remain more stable in Asia than in other regions**, with stronger demand growth.
- By the 2030s, the global refining value pool grows by ~16% compared with 2015–19 levels, with the 2031–35 global average at $181 billion. Increases are driven largely by Asia and the Middle East.

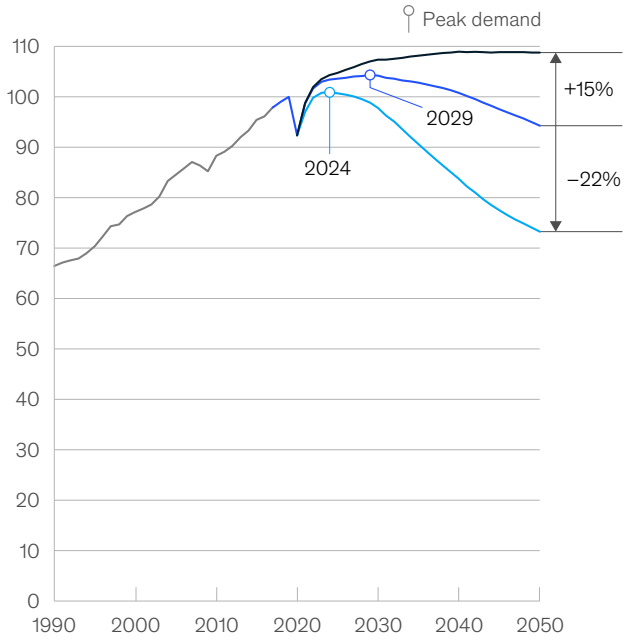
Accelerated transition

- Global **liquids demand peaks in 2024 at 101 MMB/D**, with light product demand never recovering to 2019 levels.
- All hub markets are **affected by declining demand almost immediately**, particularly Europe and the United States, **requiring ~16 MMB/D of unannounced closures by 2035**. As in the reference case, Asian utilization is **suppressed by overcapacity** in the short term but less volatile in the long term due to slower demand decline.
- **Hub margins do not recover** to historical levels in any geography, driven by low average hub utilization and Brent prices. Margins will cycle with rationalization and have short periods of higher margins after closures.
- By the 2030s, the global refining value pool declines across all regions, falling to 74% compared with 2015–19 levels, with the 2031–35 global average at $40 billion.

Exhibit 1

McKinsey's Global Downstream Model includes three potential scenarios for future demand.

Global gross liquids demand outlook by scenario,
million barrels/day



Scenarios description

Energy transition (reference case)
Consensus view on key drivers of oil demand, including global trade, rate of car ownership, and electrification of road transport; EVs reach cost parity with internal-combustion-engine (ICE) vehicles in next decade, while hydrogen could become competitive for long-haul trucks around 2030.

Delayed transition
Slower uptake of electric vehicles (EVs) due to supply delays and limited government subsidies or industry targets. Less recycling and avoidance of plastics in packaging due to long-lasting lower oil prices and lack of regulation.

Accelerated transition
Stronger governmental push for subsidizing EV purchases or banning ICE vehicles, combined with strong uptake of alternative fuels in aviation and maritime. Stricter regulations for minimal recycling levels and avoiding plastics in packaging.

Source: IEA; McKinsey Energy Insights Global Energy Perspective 2021

About this article

Overview
This report provides McKinsey's perspective on the global refining market, including recent trends and the outlook for fundamentals, margins, and profits. The outlook is based on results from McKinsey's Global Downstream Model, a macro-based global supply and demand balances and flows tool; OilDesk, a scenarios-based pricing tool; and the Net Cash Margin (NCM) model, a refinery-optimization and market-sizing tool.

It also draws on McKinsey's views on the fundamentals of liquids supply and demand, as detailed in our *Global oil supply-and-demand outlook to 2040* and our *Global Energy Perspective 2021*.

The latest versions of these perspectives are available through McKinsey Energy Insights.

Structure
The report begins with a historical review of the fundamentals of the global refining market, then shifts to the outlook for market fundamentals, refining margins and spreads, and refining yields and value pools.

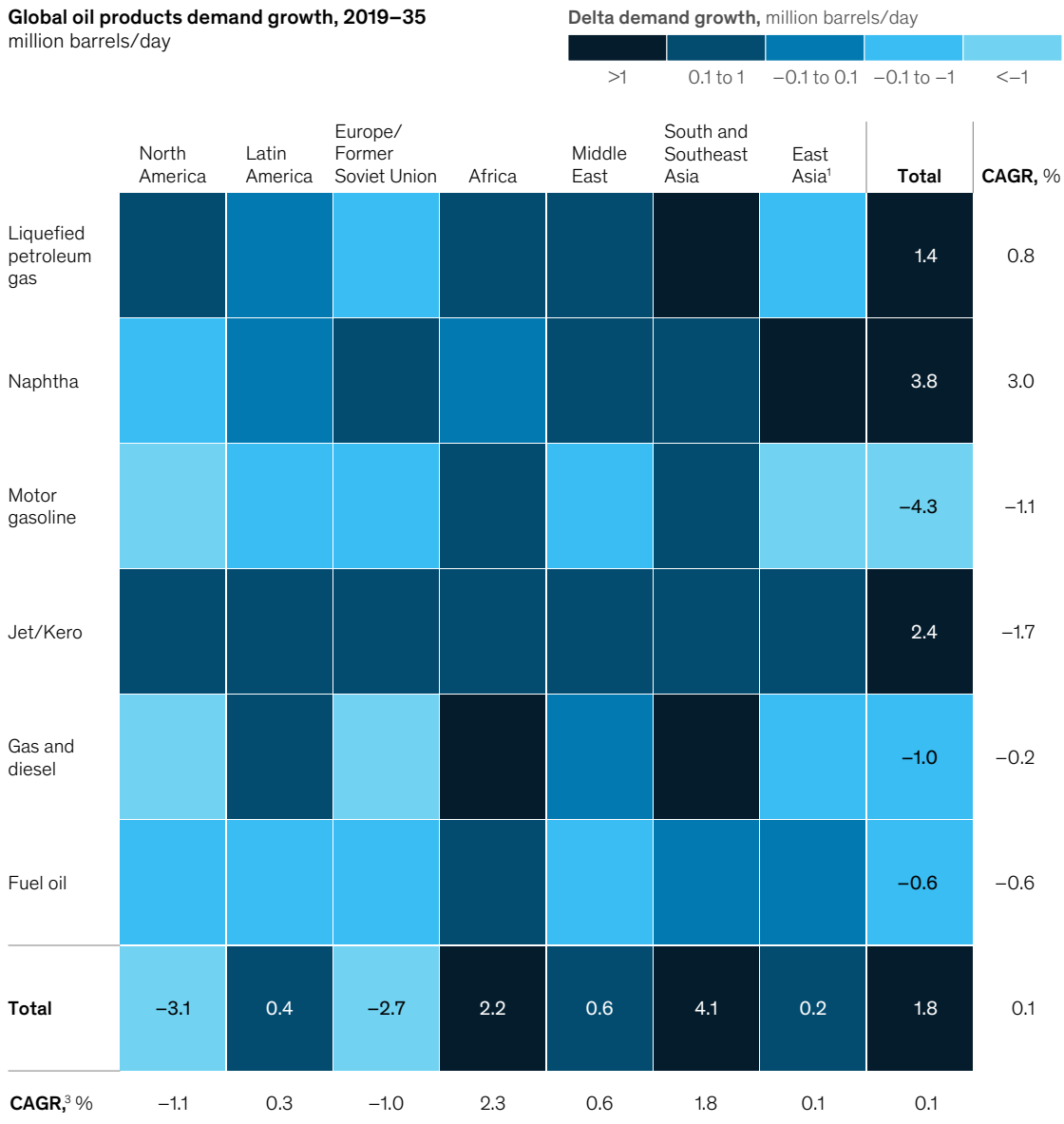
For customized scenarios using tailored assumptions and for additional information on our downstream services and tools, please contact us at info_energyinsights@McKinsey.com or visit www.McKinsey.com/energyinsights.

Exhibit 2

Liquids demand in Europe and North America will shrink, while Asia and Africa drive growth.

Energy transition (reference case)

Global oil products demand growth, 2019–35
million barrels/day



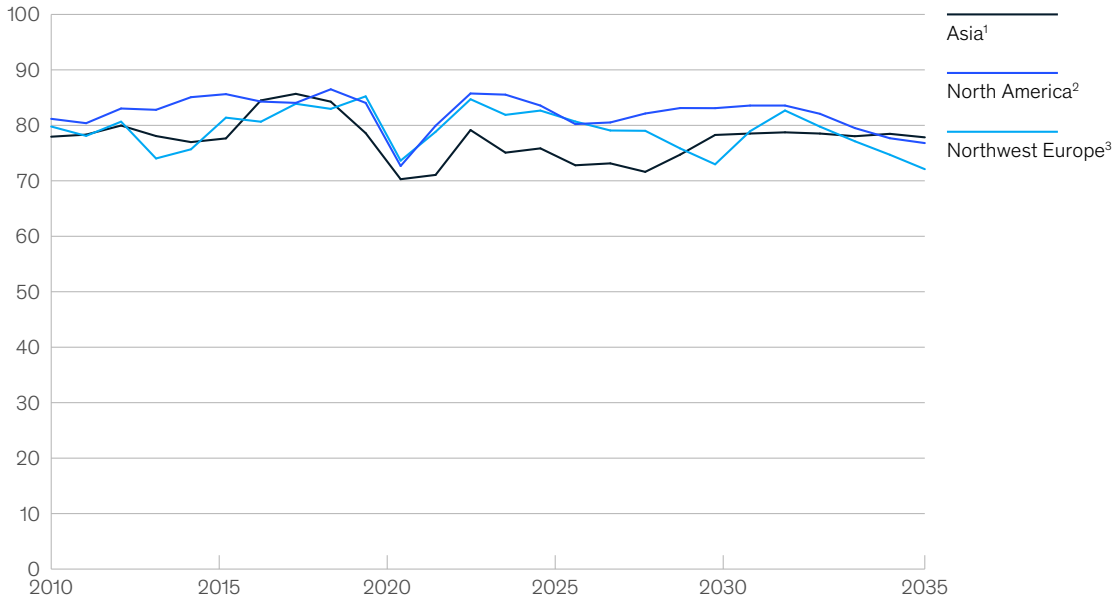
[1]China, Japan, South Korea, and Taiwan.
Source: McKinsey Energy Insights, Global Downstream Model 2021

Exhibit 3

Utilization in Asia is low in the near term but shows the most resilience in the longer term.

Energy transition (reference case)

Regional refining swing capacity utilization,
% of stream-day capacity



[1]Singapore, South Korea, Taiwan, Thailand.
[2]PADD 3.
[3]Belgium, Netherlands, United Kingdom.
Source: McKinsey Energy Insights Global Downstream Model 2021

Europe and North America see a relatively strong recovery from COVID-19 in the near term, while Asia struggles to increase utilization with announced capacity projects coming online.

Utilization in Europe and Asia continues to decline with capacity additions and flattening demand, dropping below 72 percent in 2028 and triggering a wave of rationalization.

North American utilization is stronger due to advantageous location for export markets and crude supply.

Utilization recovers after closures from 2029 to 2031 but declines again, likely triggering more rationalization in the late 2030s.

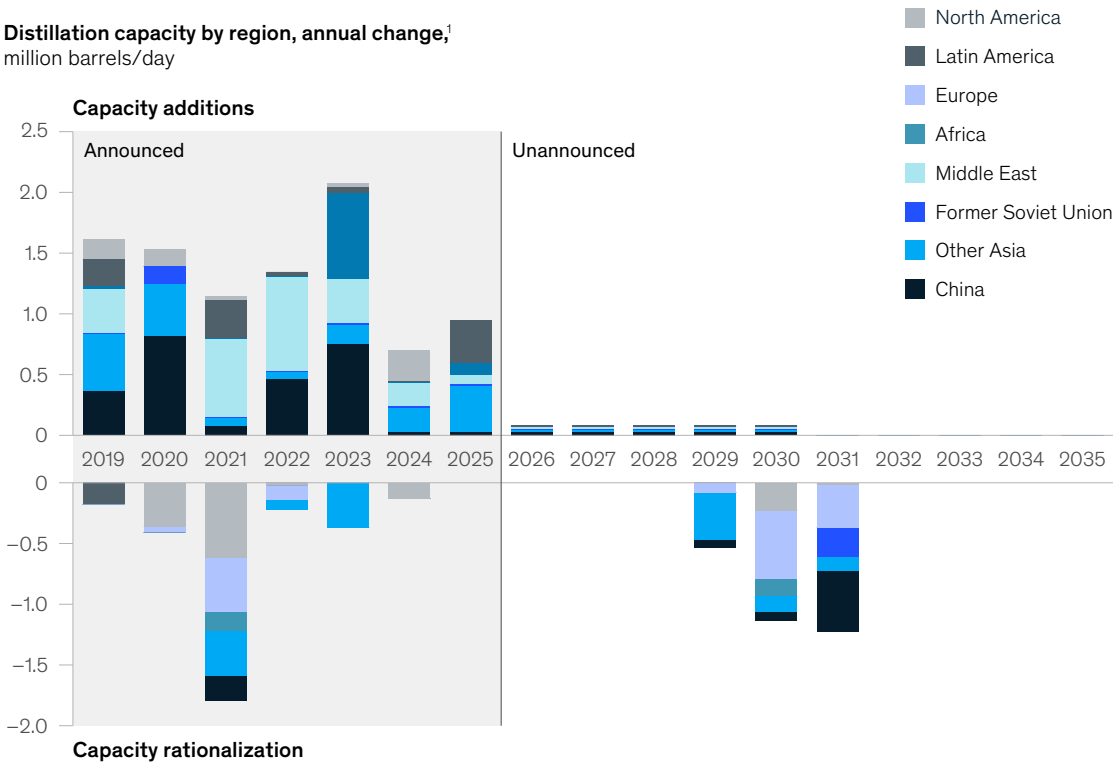
The reference case sees high utilization in the early 2020s but begins to decline as expansions outpace closures and demand decline. Rationalization is triggered with utilization in the low 70s in 2028, and closures from 29 to 31 boost utilization back into the 80s. By 2034, utilization is back into the low 70s, triggering more rationalization from 2035 to 2037.

Exhibit 4

A total of ~5 MMB/D of capacity closures are expected by 2035 in the reference case.

Energy transition (reference case)

Distillation capacity by region, annual change,[1]
million barrels/day



[1]Start and closure dates defined as first full year; additions include only projects classified as firm and probable; includes 0.125% per annum creep in growing markets.
Source: McKinsey Energy Insights Global Downstream Model 2021; McKinsey Refining Capacity Database

Current announced shutdowns (2.5 MMB/D from 2021 to 2024) keep the market balanced until 2025, when utilization begins to decline.

Next wave of shutdowns occurs in 2029–31, closing ~2.9 MMB/D of capacity, primarily in China, Europe, and OECD Asia.

China, Europe, and North America account for ~75% of total rationalizations.

~450 KB/D[1] of the announced rationalizations are biofuel-conversion projects, with 90% of them located in the US.

Total closures in the reference case are estimated at 11–12 MMbd by 2040, with detailed modeling of ~6 MMbd complete, with another ~5–6 needed from 2036 to 2040 to complete the rationalization cycle. The unannounced closures are mostly in Europe, US and China (independent teapots as China grows as a net exporter).

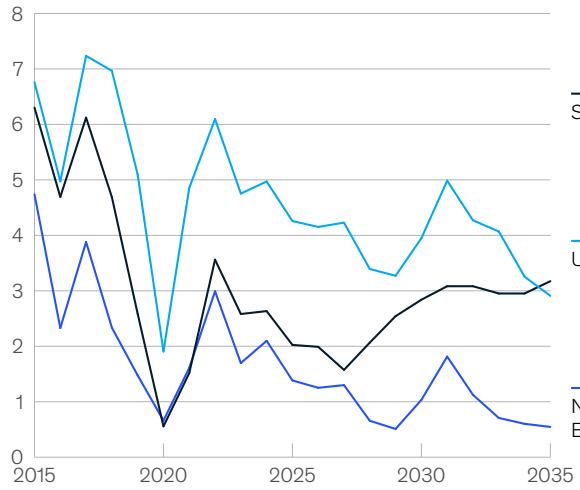
[1] Thousand barrels per day.

Exhibit 5

Closures result in moderate recovery margins for US and Asia, with Europe at lower margins for longer.

Energy transition (reference case)

Variable cash refining margins—cracking configuration,[1]
$/barrel, real



	$/barrel, average			
	2015–19	2021–25	2026–30	2031–35
Singapore	4.9	2.5	2.2	3.0
US Gulf Coast	6.2	5.0	3.8	3.9
Northwest Europe	3.0	2.0	1.0	1.0

[1]Gulf Coast: FCC Mars; NW Europe: FCC Brent; Singapore: FCC Dubai.
Source: Argus Media; McKinsey Energy Insights OilDesk, May 2021

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