



Oil 2019 – Analysis and Forecast to 2024

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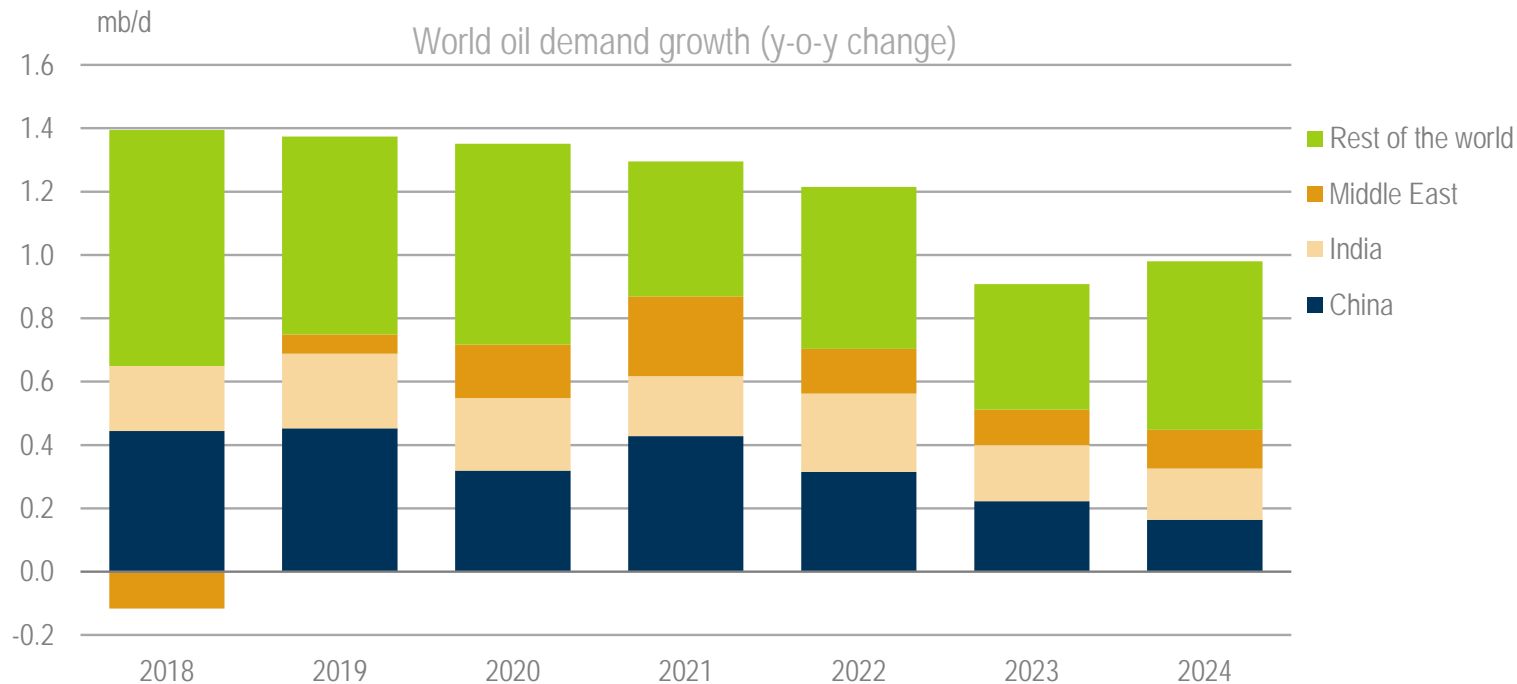
Tokyo, 26 April 2019, The Institute of Energy Economics, Japan



Oil 2019

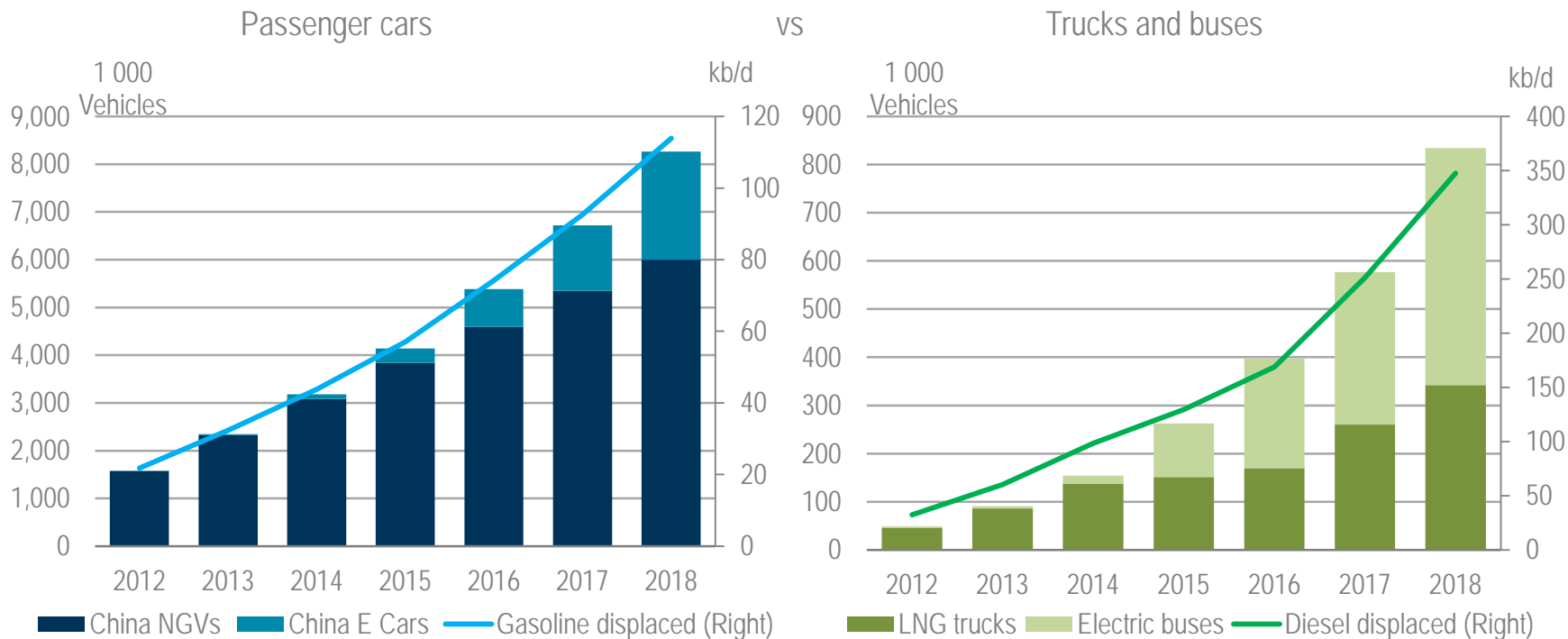
Analysis and Forecast to 2024

World oil demand growth easing



China slowdown reflects structural shift in the economy and environmental policies. Middle East fuel oil demand boosted after IMO 2020. India growth robust: similar to China by 2024.

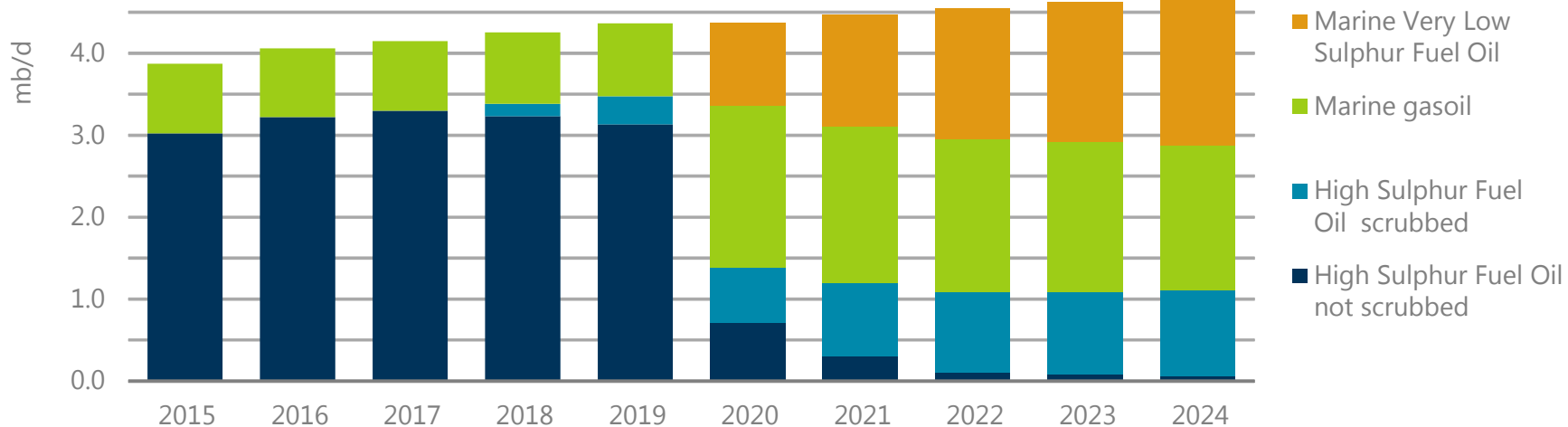
China's oil demand transformed by alternative fuels



While EVs are in the headlines, electric buses and LNG trucks replace larger volume of oil demand

Shippers and refiners adjust to IMO 2020 shakeup

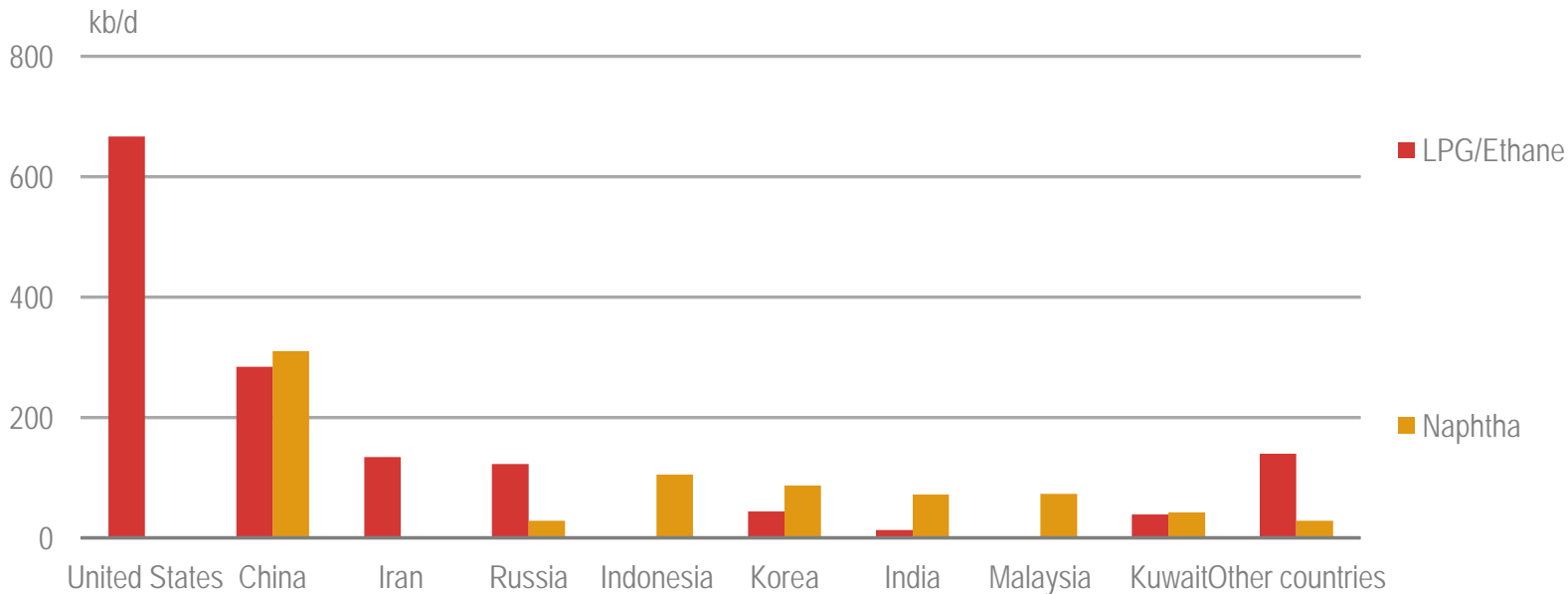
Marine bunkers product demand



Over 2 mb/d of HSFO shifts to gasoil and VLSFO. Main impact in first year but manageable over time.

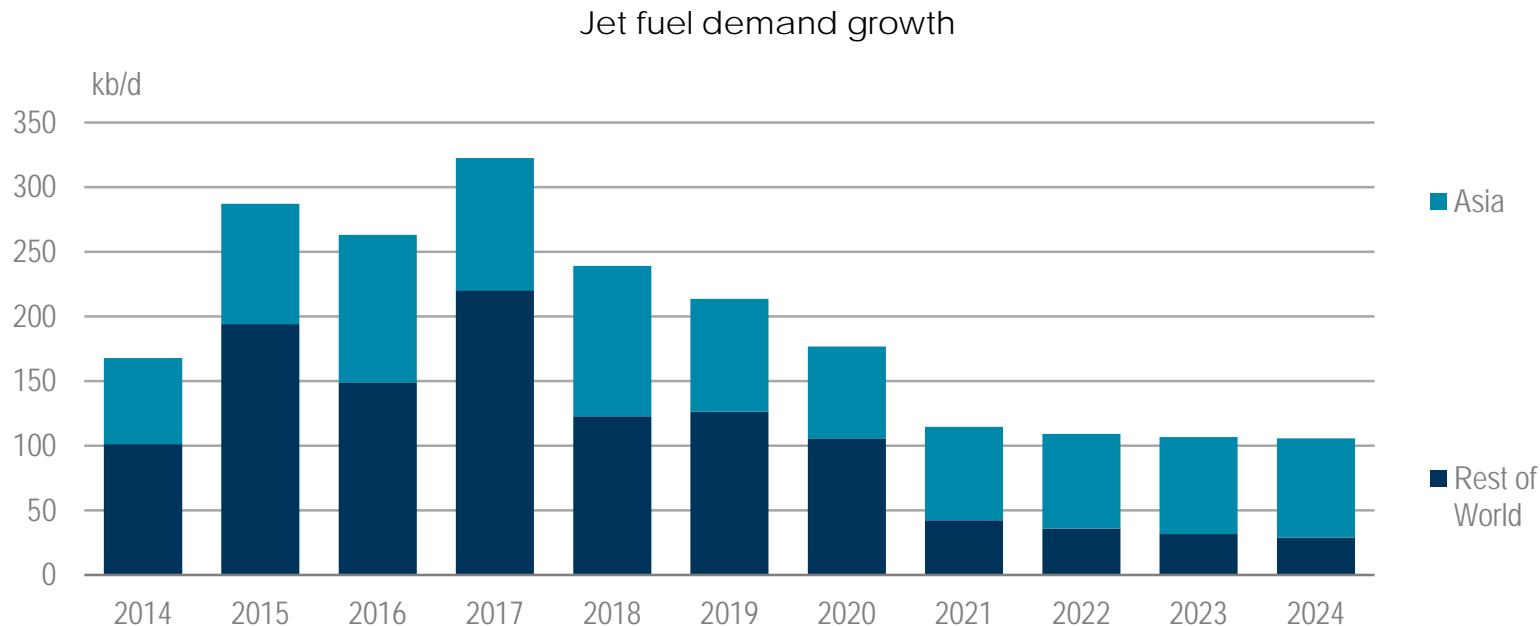
Petrochemicals will be pillar of support for oil demand

Incremental feedstock demand (changes vs. 2018)



Petrochemicals demand accounts for 30% of total demand growth

Air travel grows, but jet fuel demand is maturing

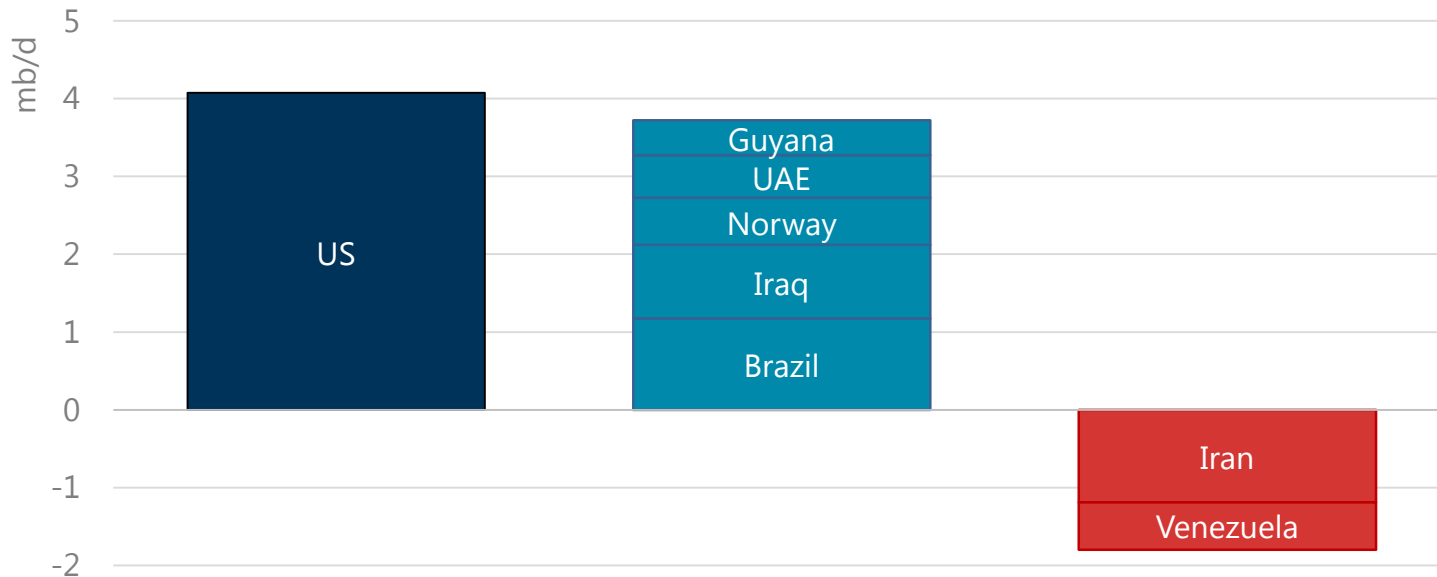


Although passenger volumes grow strongly, efficiency improvements see the pace of jet fuel demand growth halve. Asia accounts for 75% of demand growth by 2024.

US leads the way in global supply growth



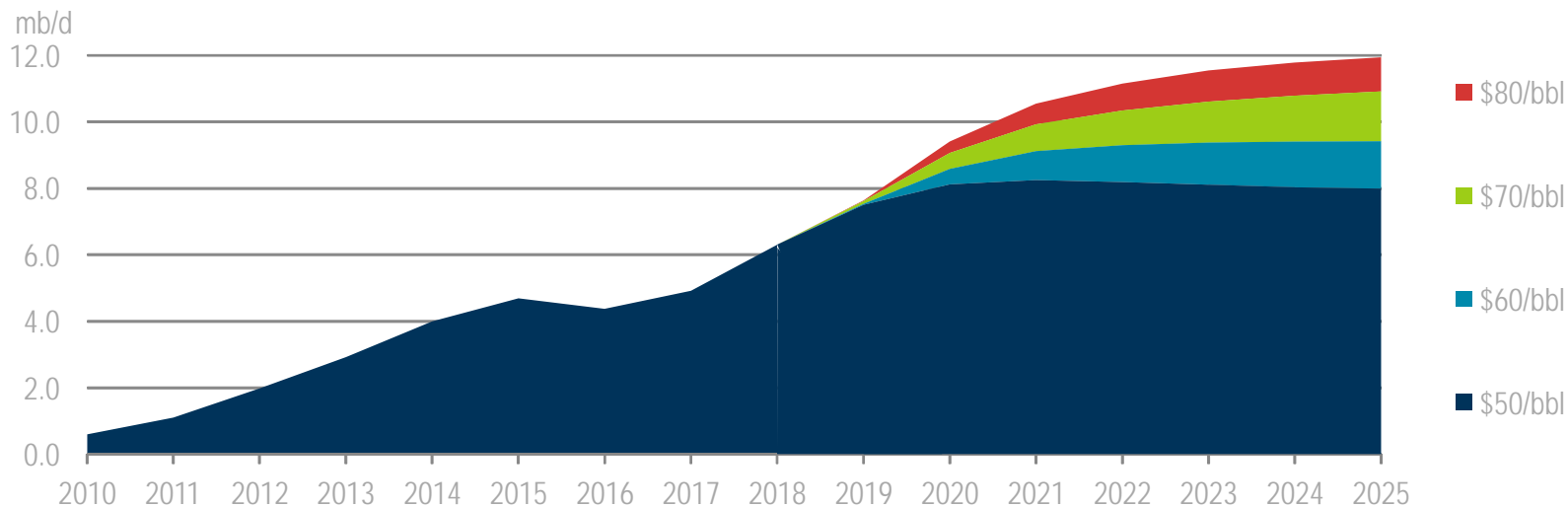
Change in total oil supply 2018-24



US expansion is 70% of global growth. Gains in Brazil, Iraq, Norway, the UAE and Guyana. Main declines in Iran and Venezuela.

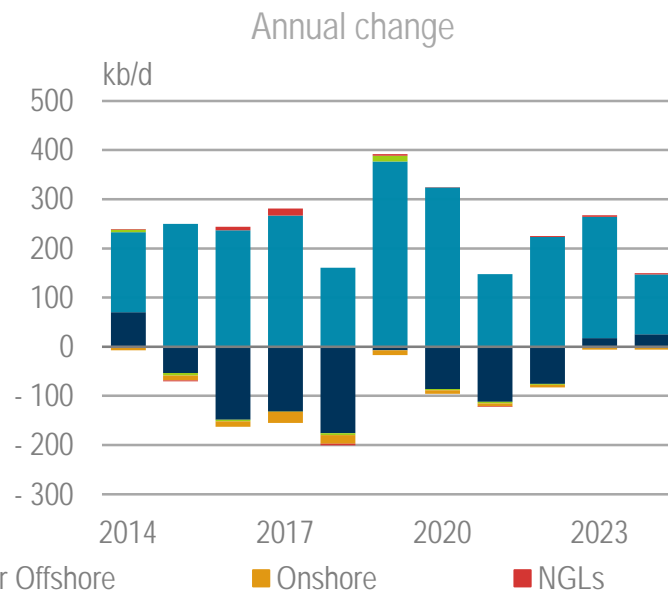
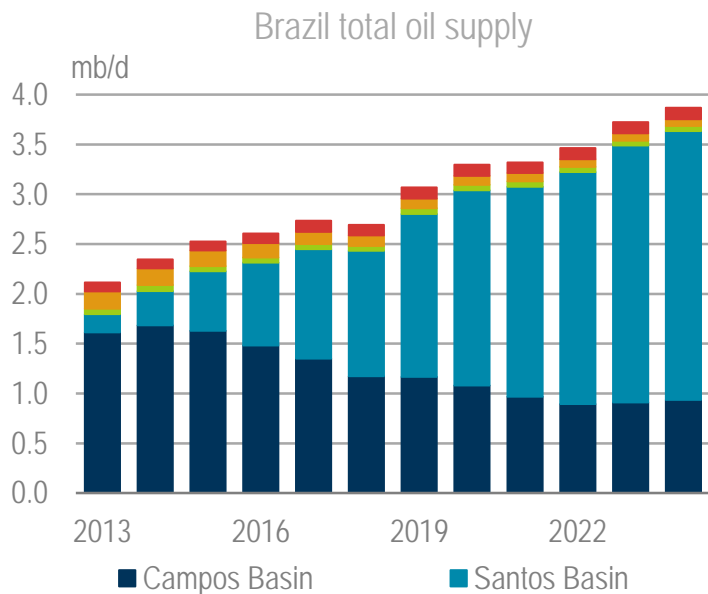
Considerable upside for US shale if prices head higher

US shale oil prospects



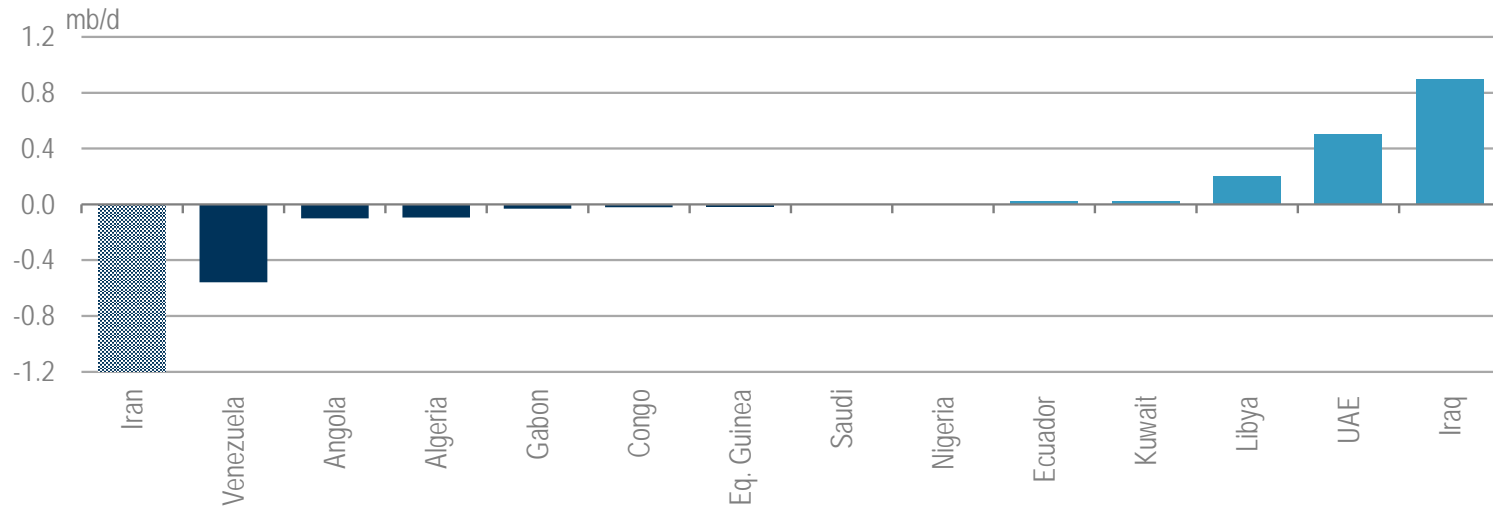
US shale would continue to grow to 2025 even at today's price levels, with significant potential to rise even more quickly in a higher-price environment

Brazil rebound around the corner – even as mature fields decline



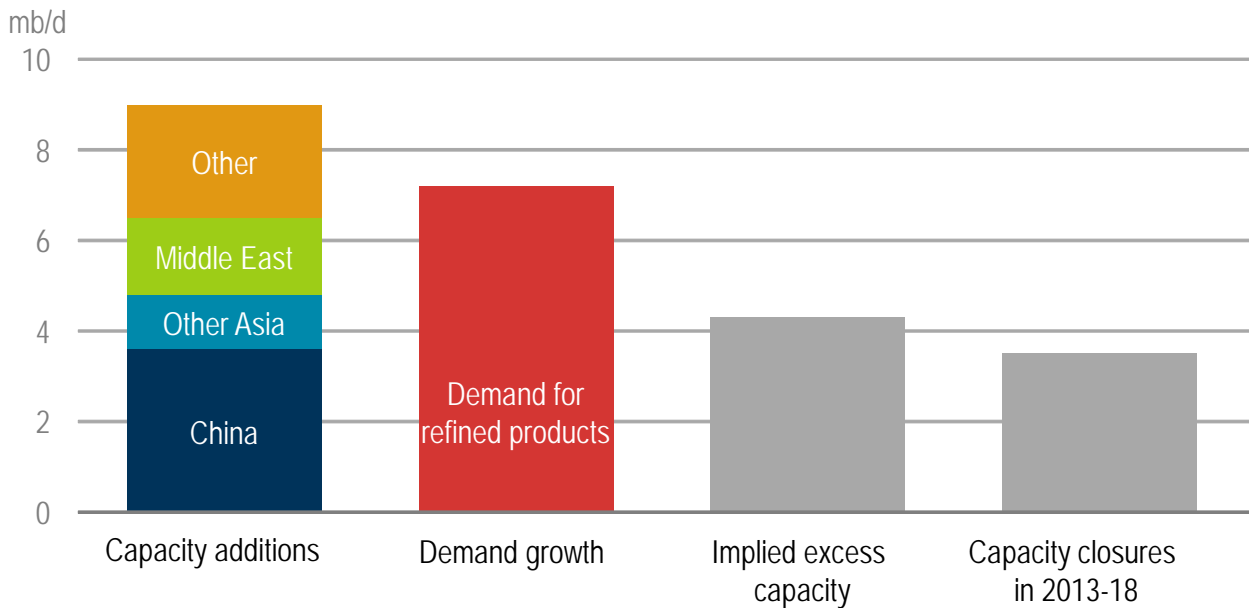
Output set to rise by net 1.2 mb/d, to reach 3.9 mb/d in 2024.

OPEC "laid low" by US shale?



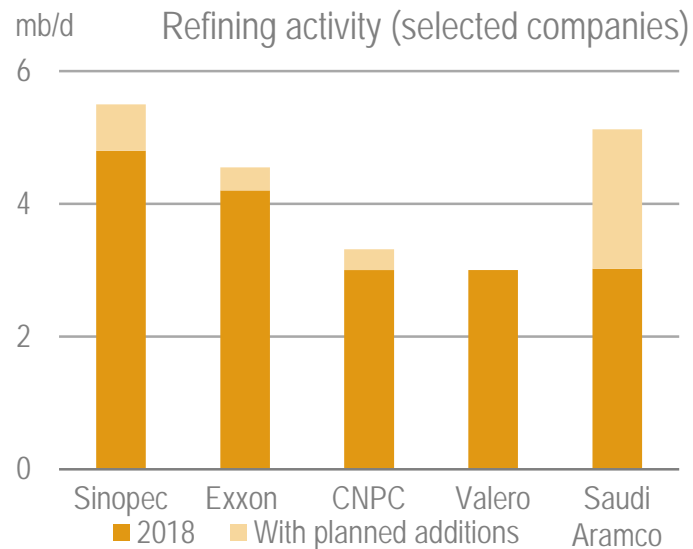
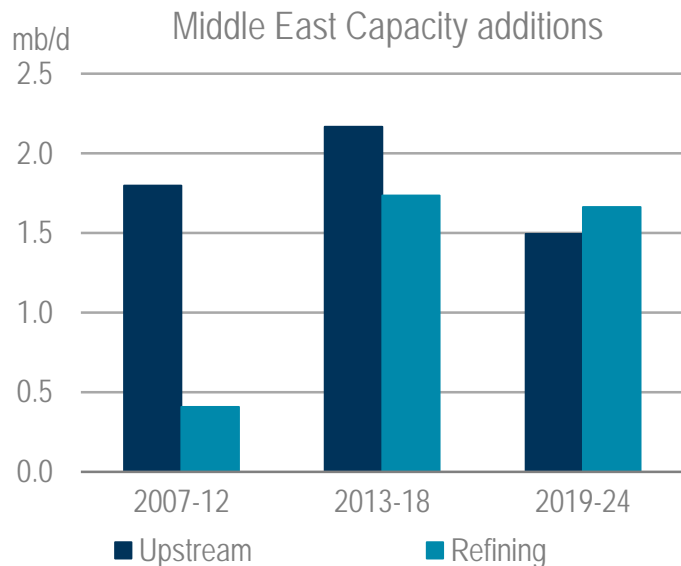
Requirement for OPEC crude drops to 30 mb/d in 2020

Downstream capacity additions challenge refiners



Global capacity growth to 2024 far exceeds refined products demand growth.

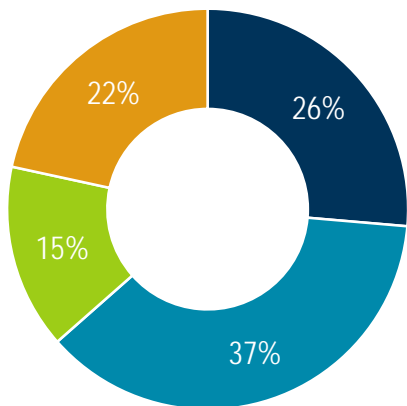
Middle East wants to refine more



Strong focus on refining capacity additions continues. NOCs target horizontal and vertical integration.

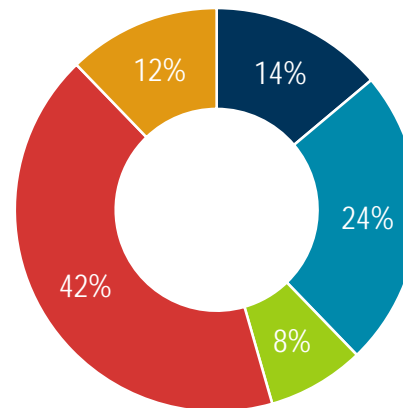
Petrochemical drivers of China's refining

Installed Capacity 2018



- CNPC
- Sinopec
- Other state-owned
- Big 3 independents
- Other independents

Additions 2019-24



Independents dominate China's capacity expansion

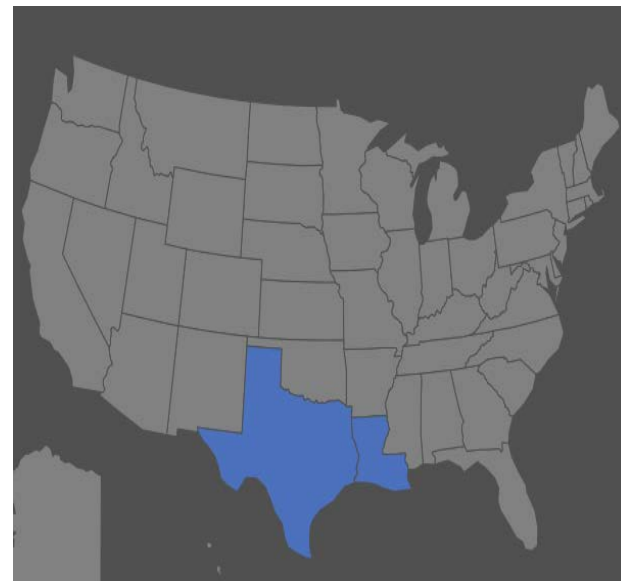
Looming world-scale downstream hub in northern China

China Bohai Bay Rim

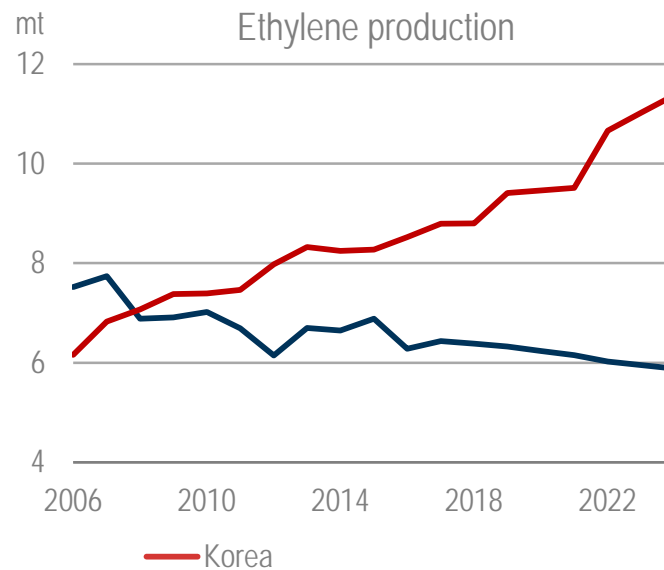
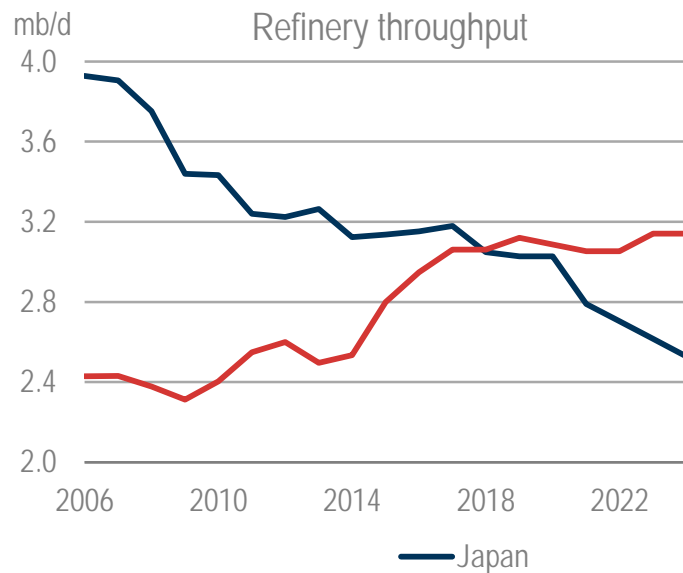
US Gulf Coast



Population	
235 mln	33 mln
Refining capacity	
6.8 mb/d	9.2 mb/d
as % of country total	
43%	49%
Oil production	
1.3 mb/d	9.3 mb/d
Natural gas production	
0.5 bcf/d	25.4 bcf/d
Crude storage capacity	
469 mb	1388 mb

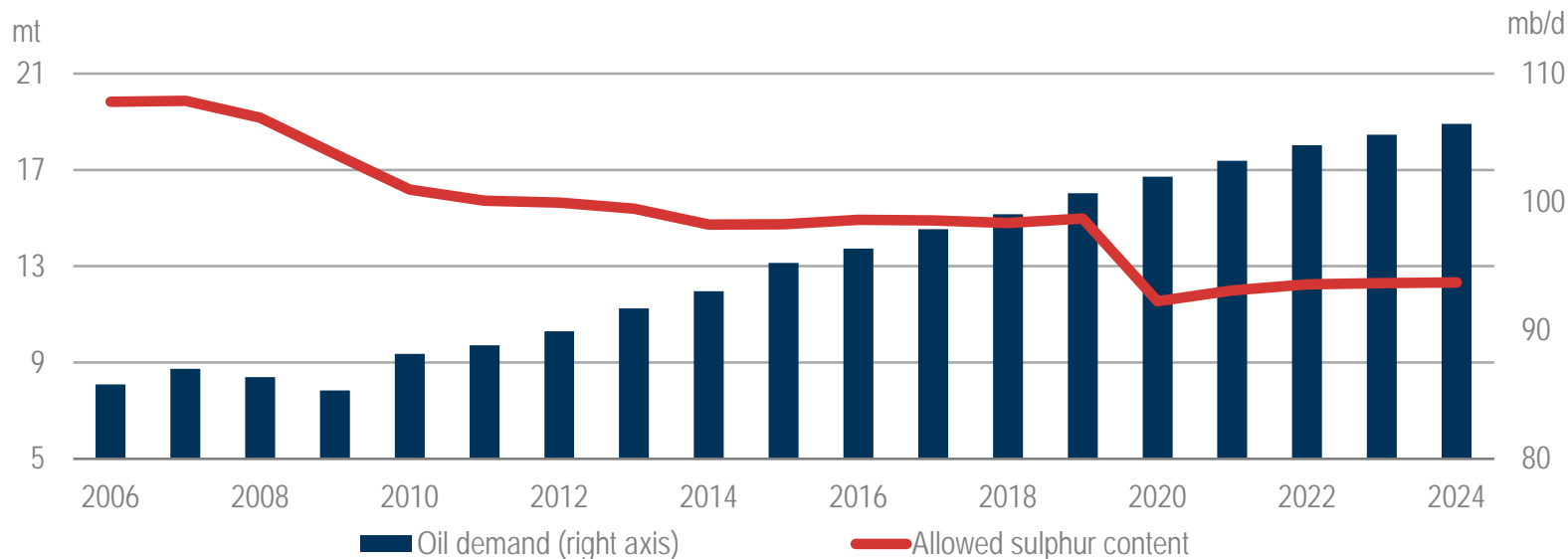


China's Bohai Bay Rim could become the equivalent of the US Gulf Coast in concentration of downstream infrastructure, though different in the drivers of the expansion.



Korean refining prospects supported by petrochemical focus.

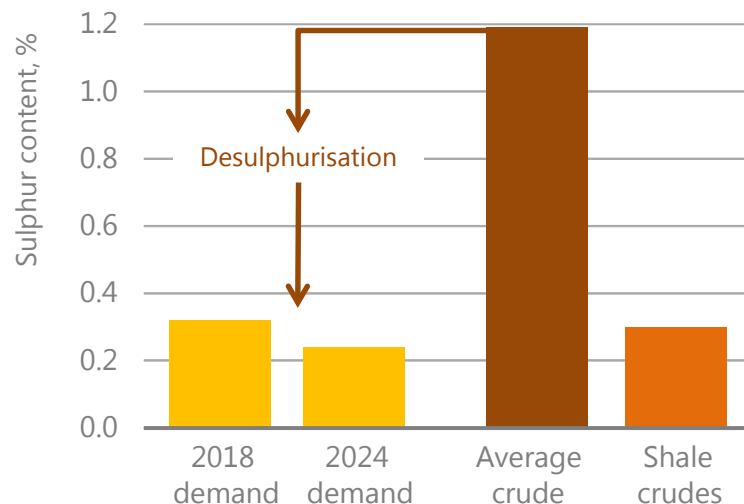
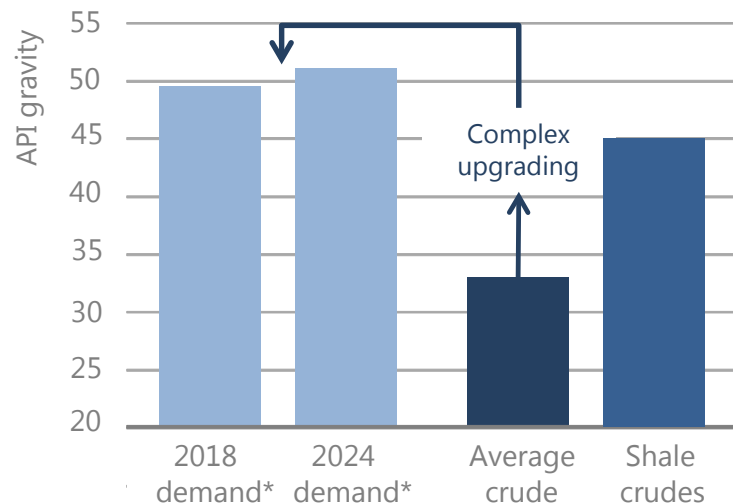
Sulphur content regulations tighten further



IMO 2020, India Bharat 6 standards, China inland bunkers, West African transport fuels..

US shale fits the new demand landscape

Global refined product barrel vs crude barrel

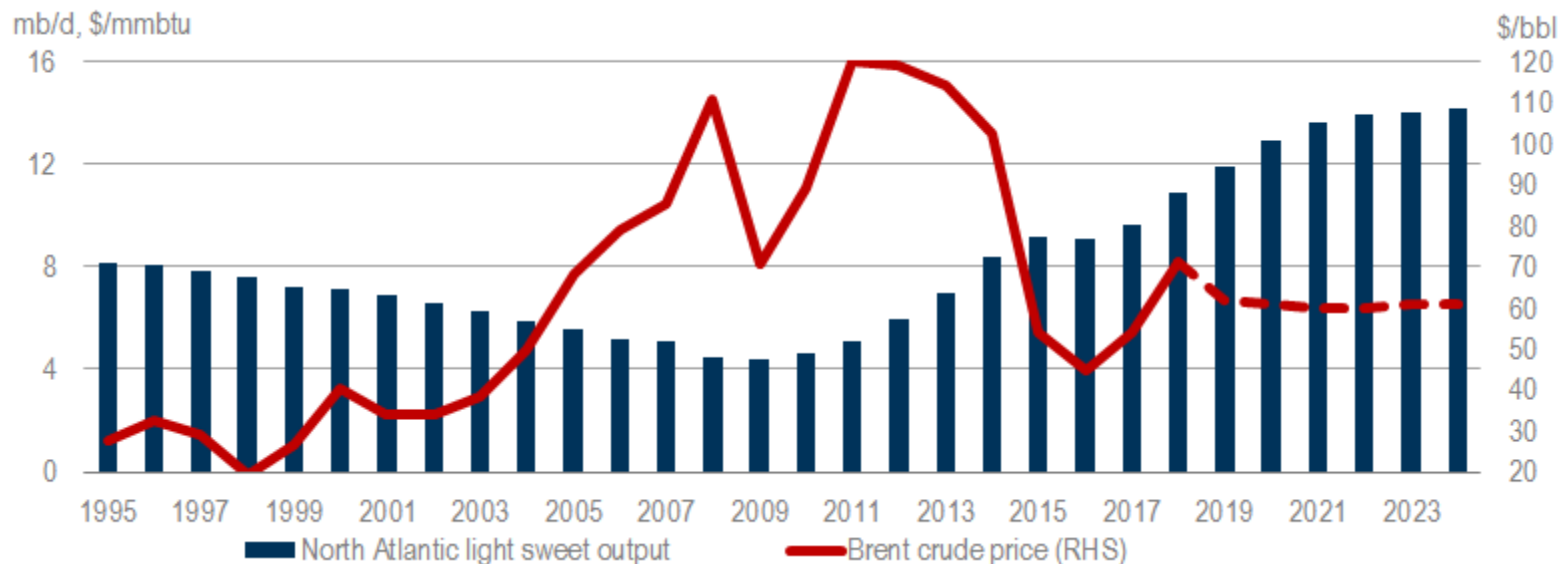


*excludes natural gas liquids and other non-refinery products

Shale crudes reduce need for complex refining, first reversal of the historical trend.

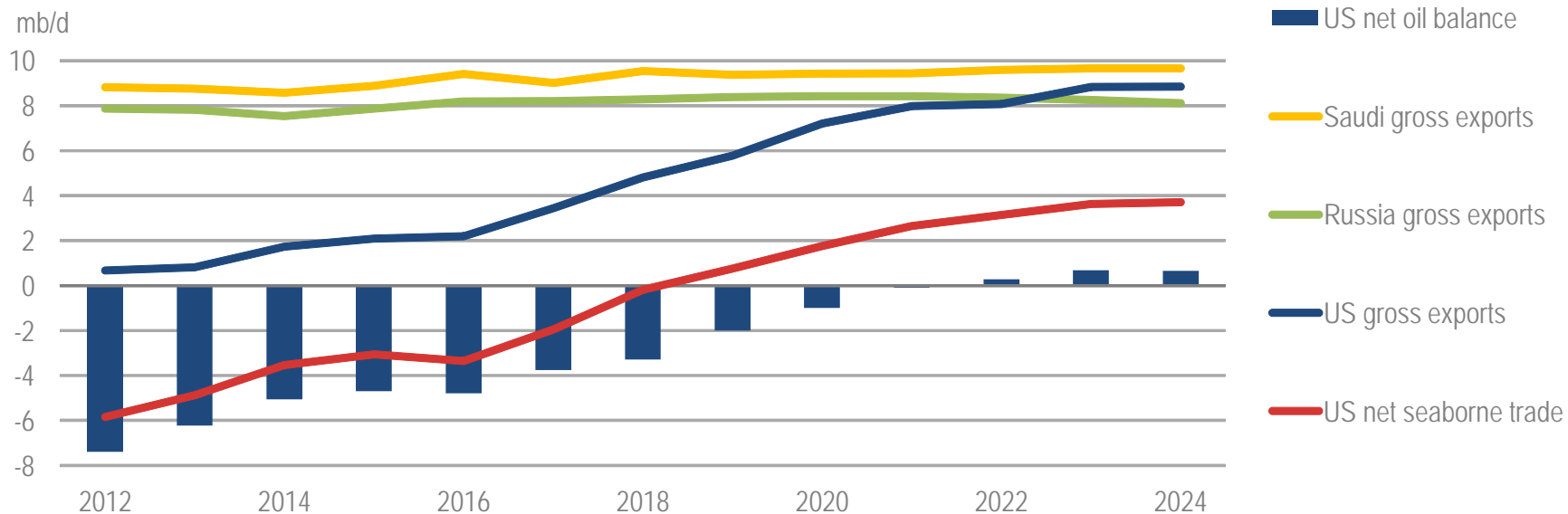
The age of plenty..

Light sweet crude output and Brent futures



Reversal of crude market fundamentals compared to 2000s – crude output growth comes mainly from light sweet grades.

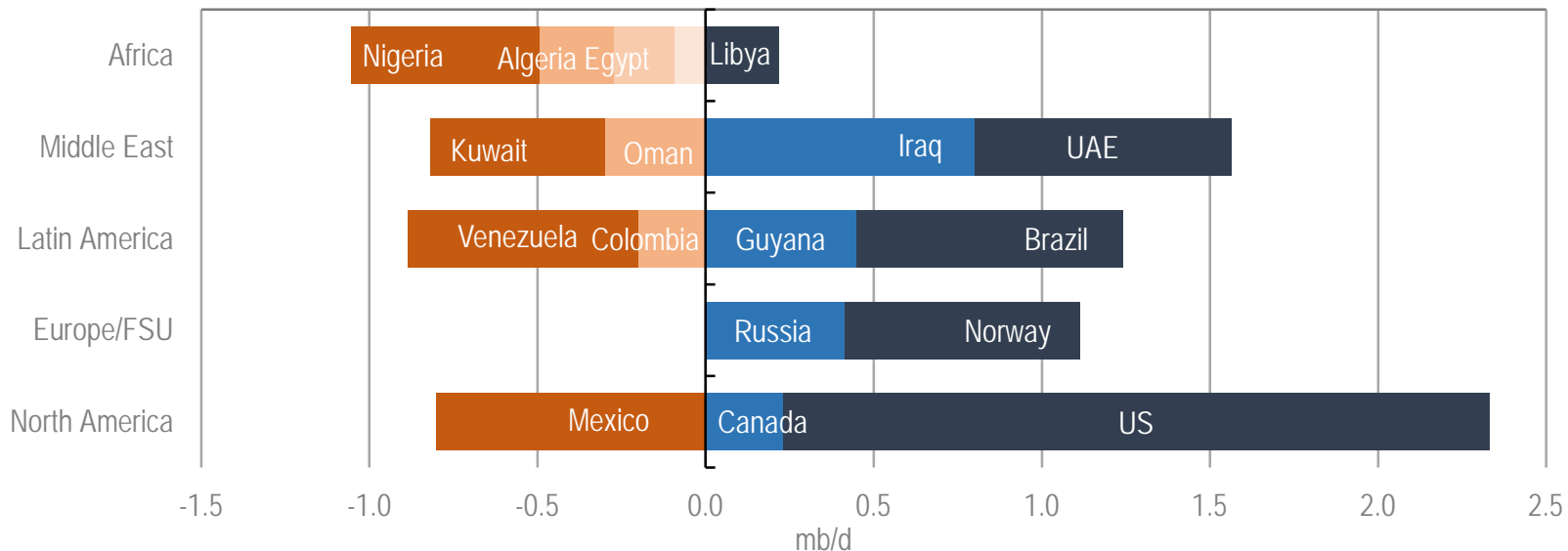
US gross exports overtake Russia, close in on Saudi Arabia



US is net oil exporter in 2021 after 75 years of import dependency. US exports add to market flexibility.

Crude export growth is in the Atlantic Basin...

Largest changes in crude exports

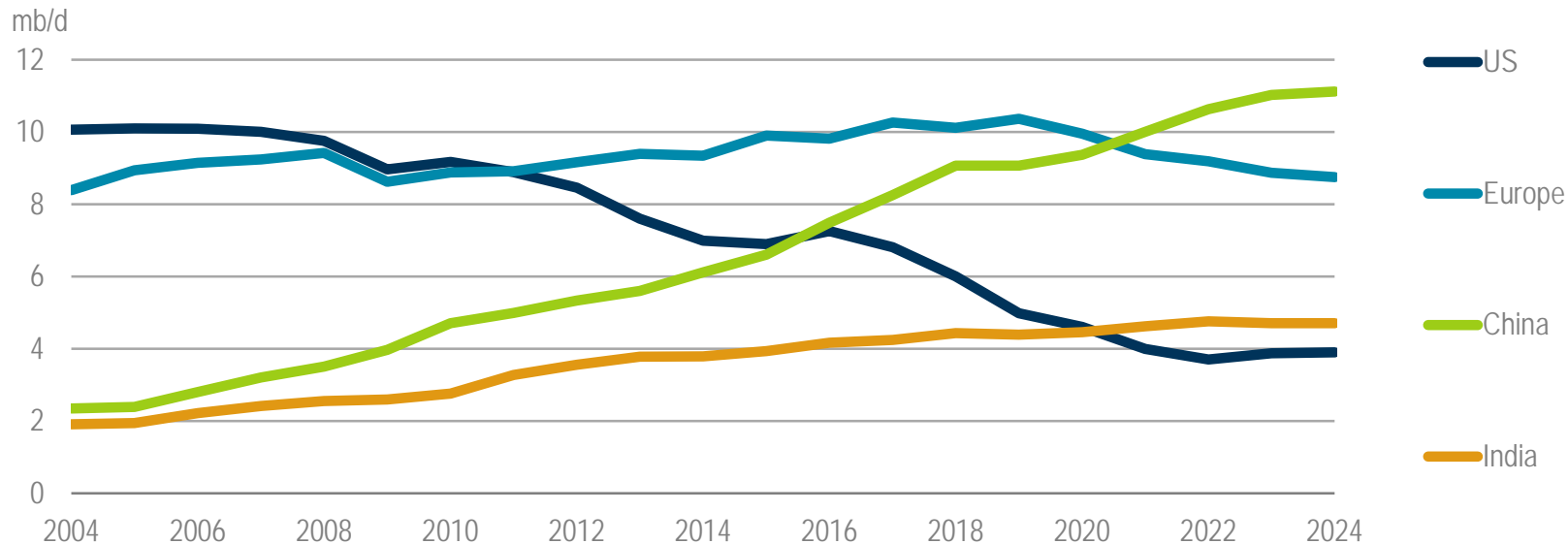


US, Brazil, Norway and Iraq lead crude exports growth.

...while import growth is in Asia



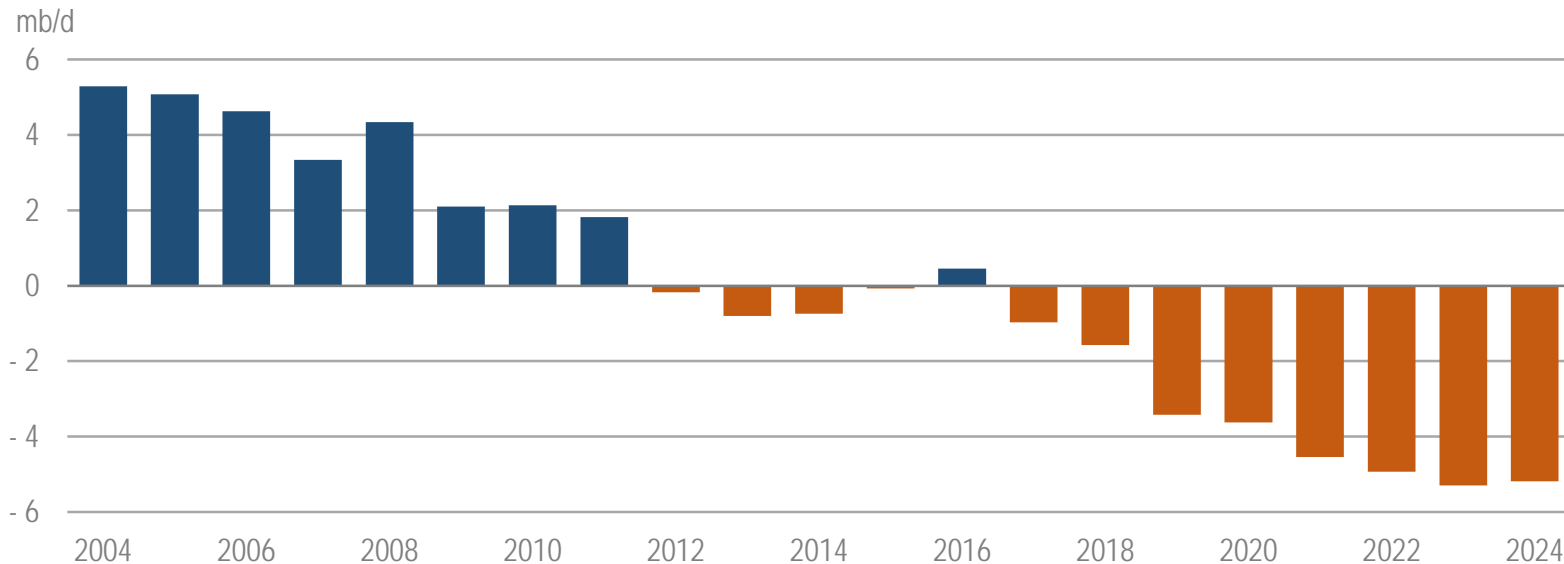
Largest net crude oil importers



Having overtaken the US as the single largest crude importing country, China is on track to overtake the European continent.

The centre of gravity of the crude trade shifts to Asia

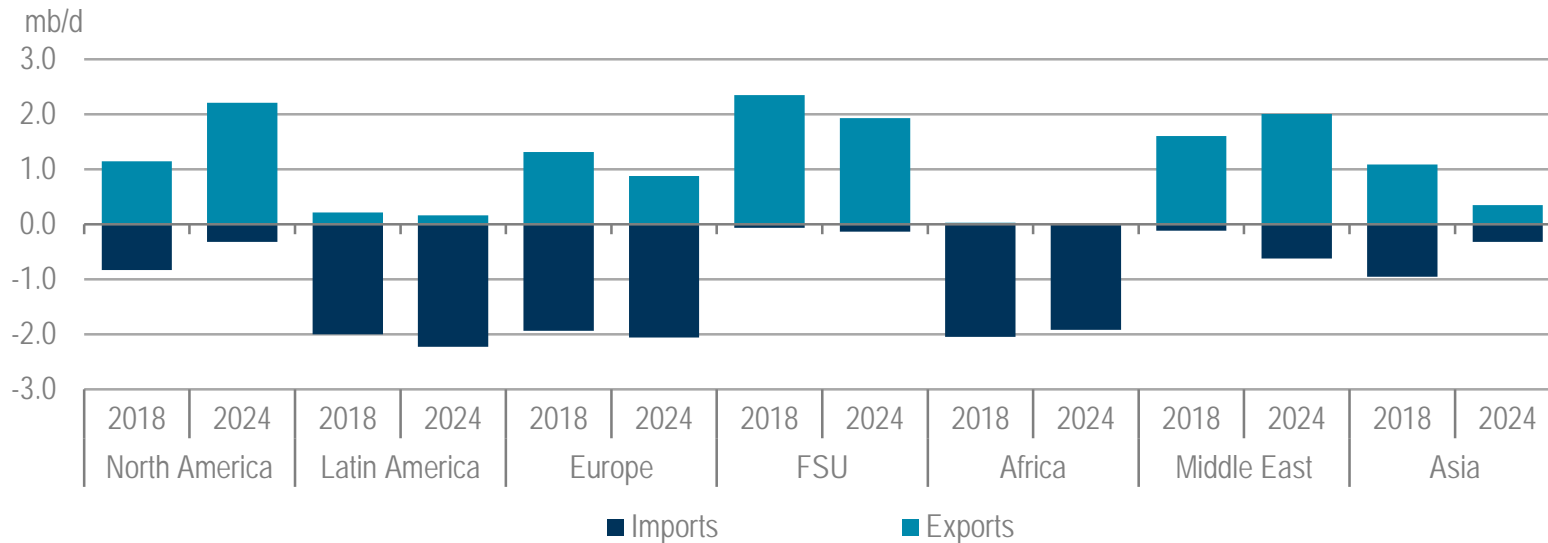
East of Suez crude oil balance



Diversification beyond Middle East sources now a necessity rather than choice.

..while largest product importers are in the Atlantic Basin

Refined product balances



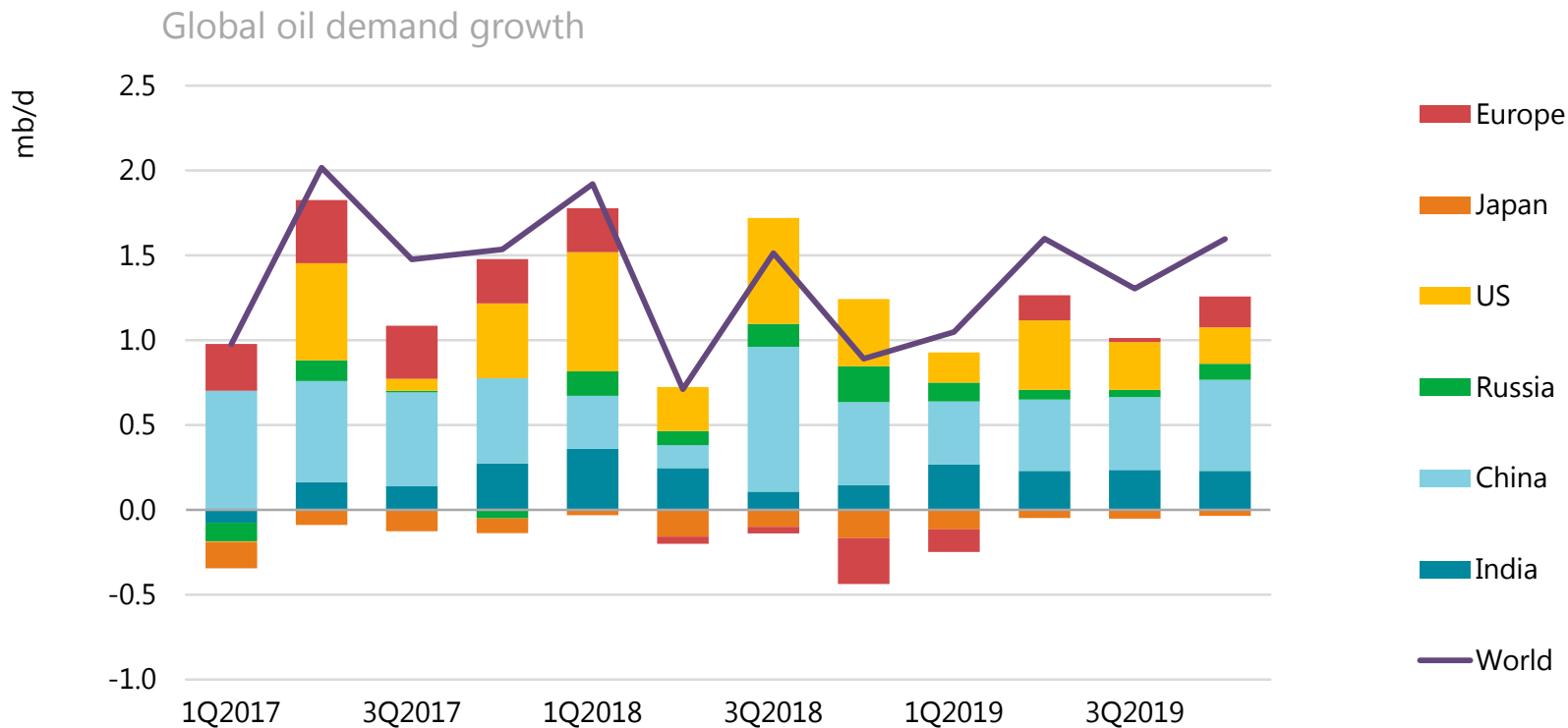
Latin America and Africa are the largest net import regions.

- The United States to provide 70% of the increase in global oil supply over next five years, with Iraq, Brazil, Norway & Guyana other major contributors
- Global oil demand growth to slow modestly, but still average 1.2 mb/d, with petrochemicals a key driver
- The oil industry needs to do more to cut its carbon footprint, including on flaring & methane leakages, and use of CCUS, EOR, hydrogen & renewables
- While there may be teething problems, refiners & shippers are relatively well prepared to respond to the new IMO bunker fuel regulations
- The 2nd wave of the US shale revolution is coming – it will shake-up international oil & gas trade flows, with profound implications for the geopolitics of energy

Oil Market Report

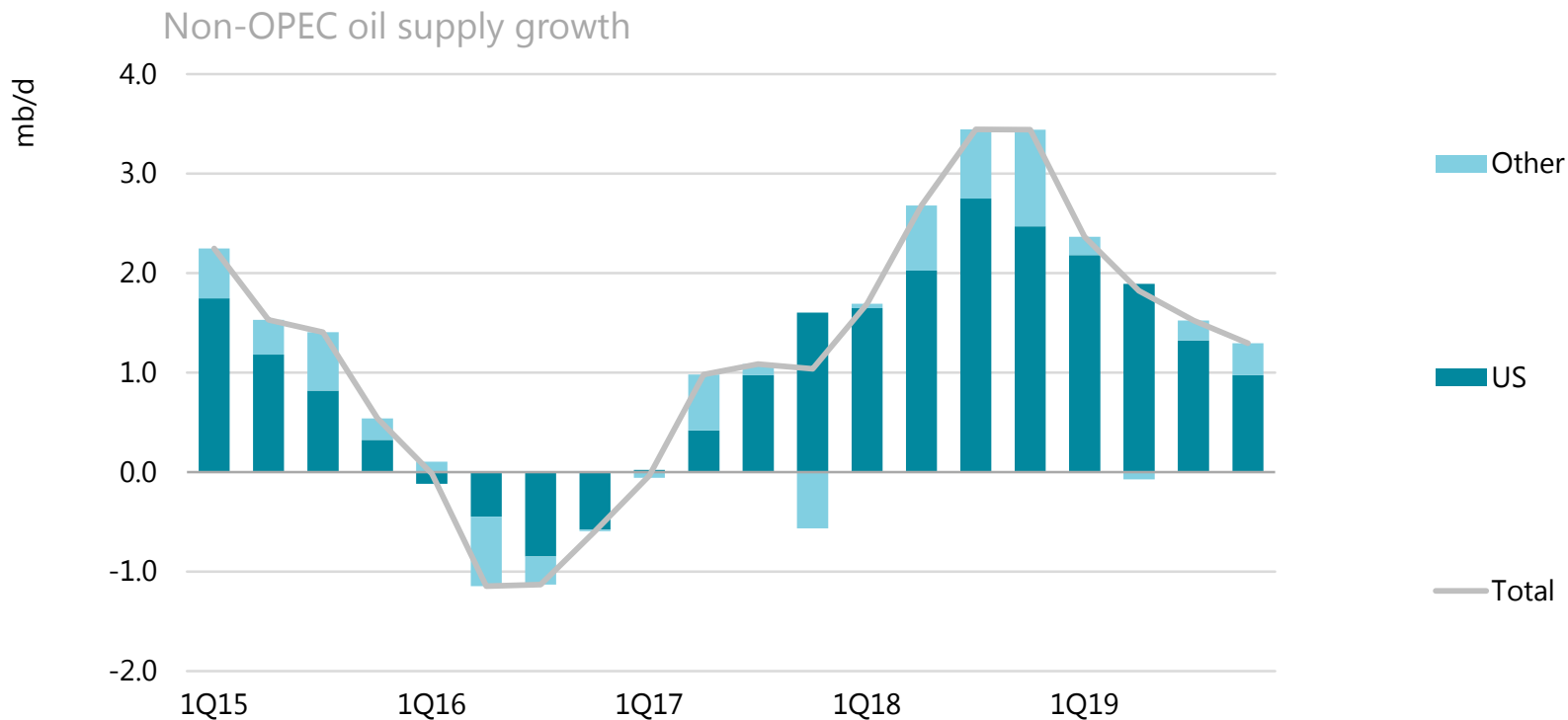
April 2019

Global demand growth solid for now



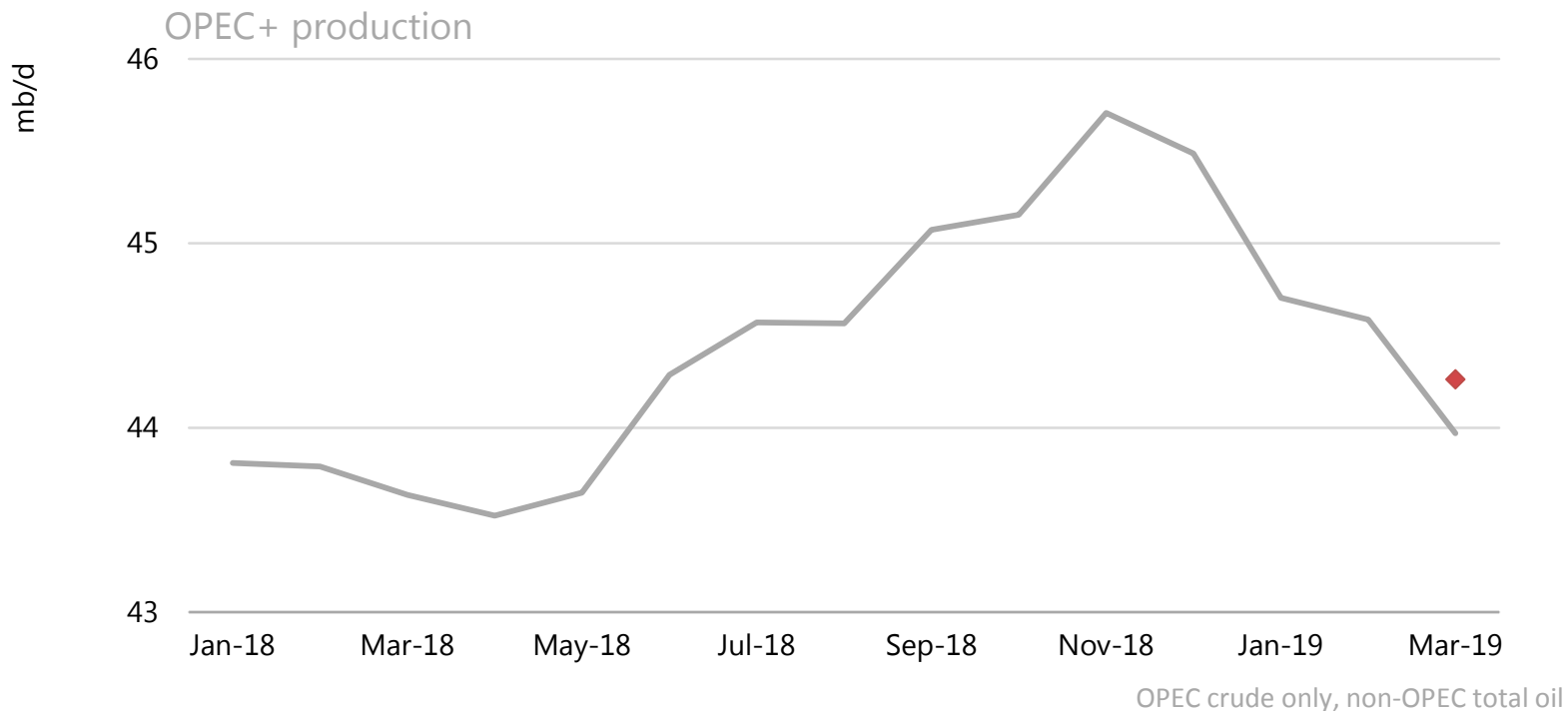
Demand expected to grow by 1.4 mb/d this year, up from 1.3 mb/d 2018.
Economic outlook, trade disputes, Brexit brings uncertainty.

Non-OPEC growth eases from 2.8 mb/d in 2018 to 1.7 mb/d in 2019



US accounts for 92% of 2019 gains (80% in 2018). Significant growth in Brazil.
Declines in Canada, China, Mexico, Norway.

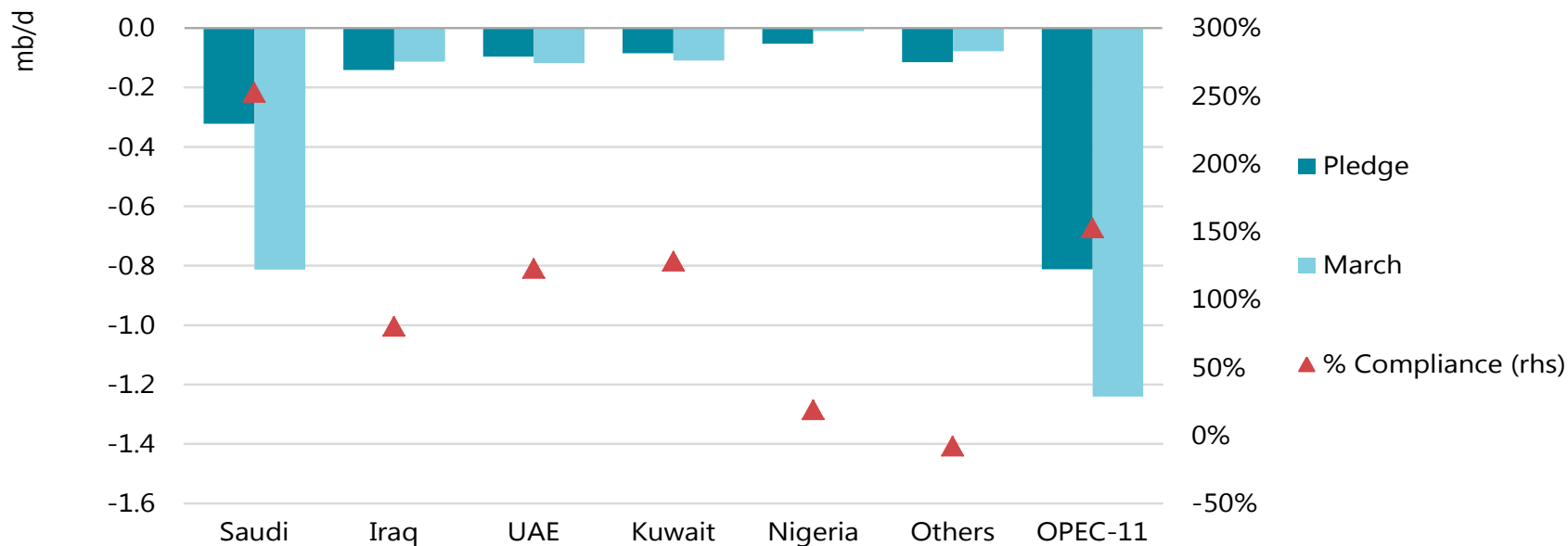
OPEC+ supply cuts exceed the target



Compliance reaches 124% in March with OPEC+ production 290 kb/d below target.
Compliance OPEC 153%, Non-OPEC 64% as Russia takes its time.

Saudi Arabia cuts 0.5 mb/d below supply target

Saudi outperforms on cuts

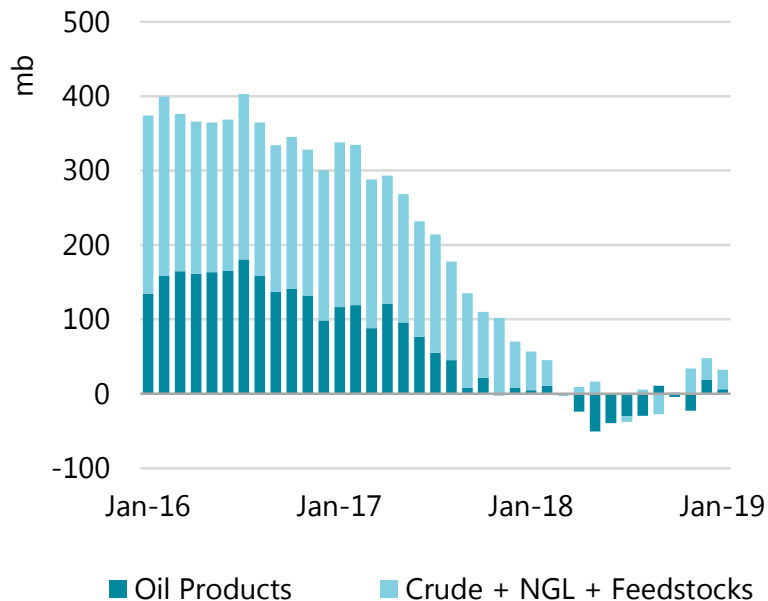


Saudi Arabia shows strong lead: March production of 9.8 mb/d was lowest in two years.

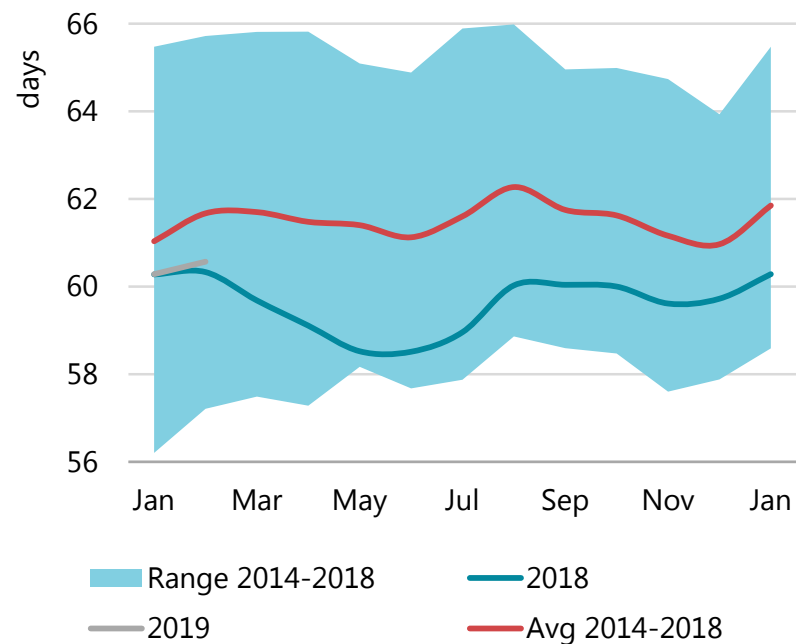
OECD stocks gradually tightening



OECD Stocks vs 50yr Average

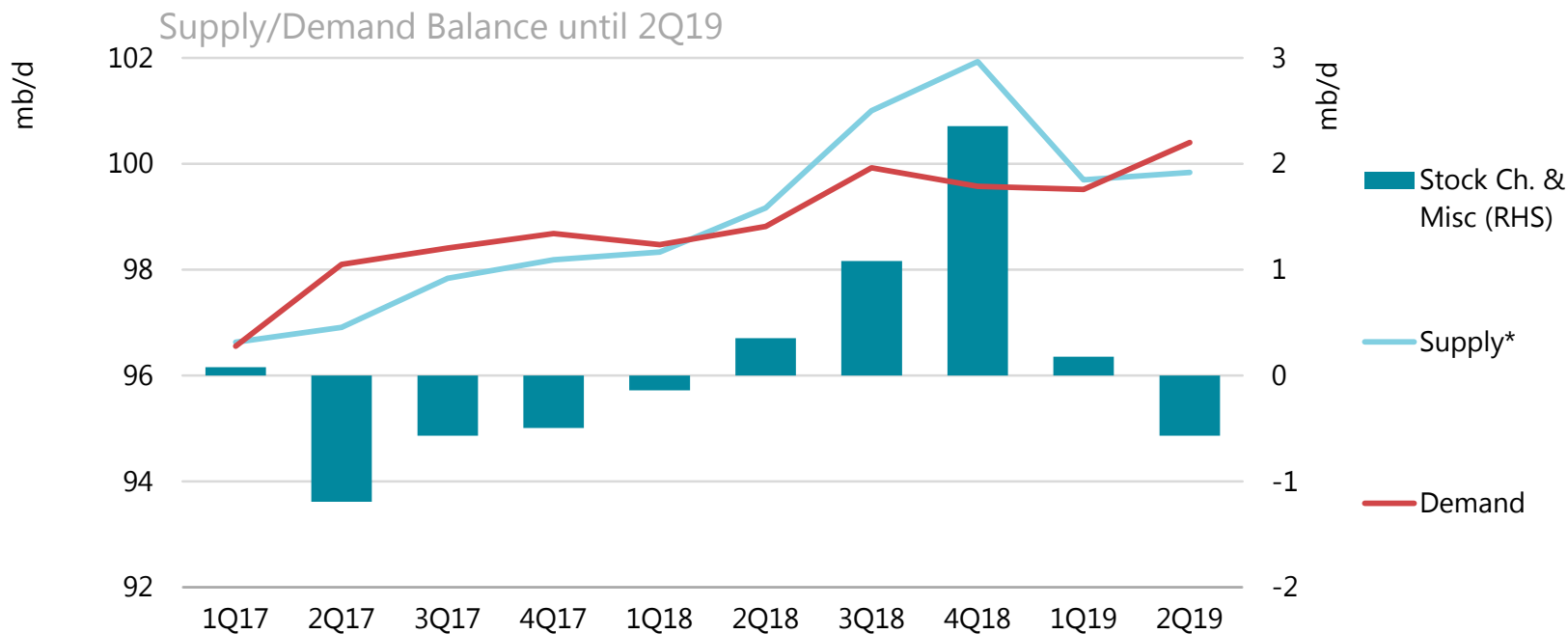


OECD Industry Stocks Days of Forward demand



OECD commercial stocks above five-year average but below it in days of forward demand.

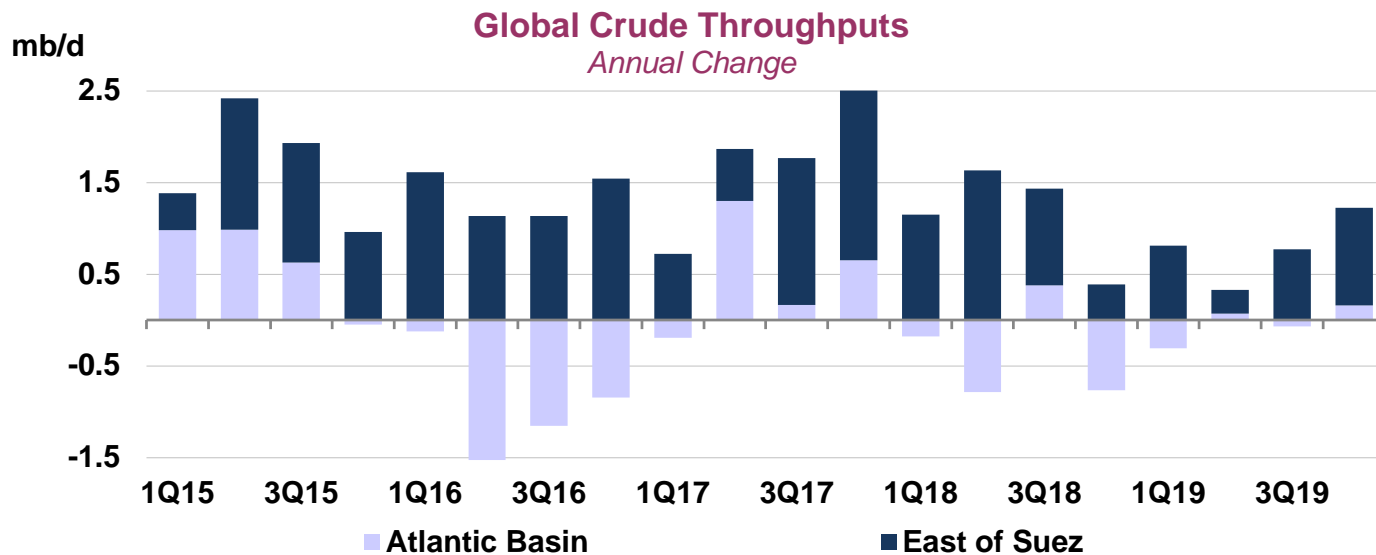
Market in deficit in 2Q19



* Assumes 100% OPEC compliance with Dec 2018 Vienna Agreement and further declines in Iran and Venezuela.

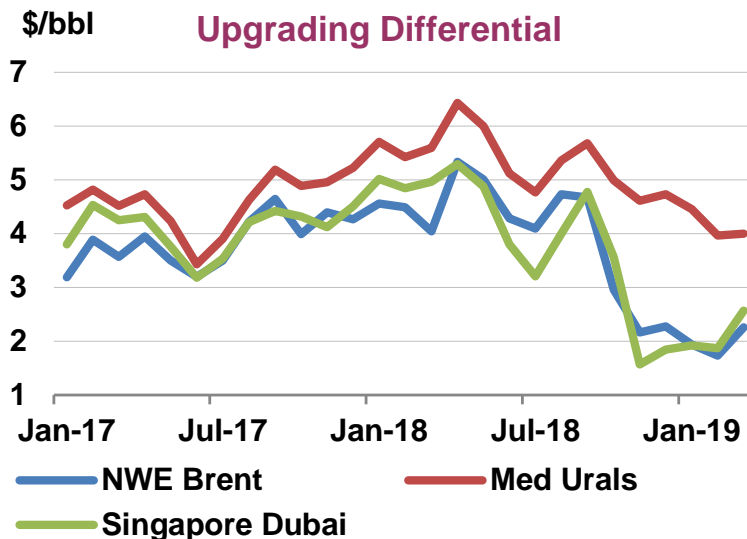
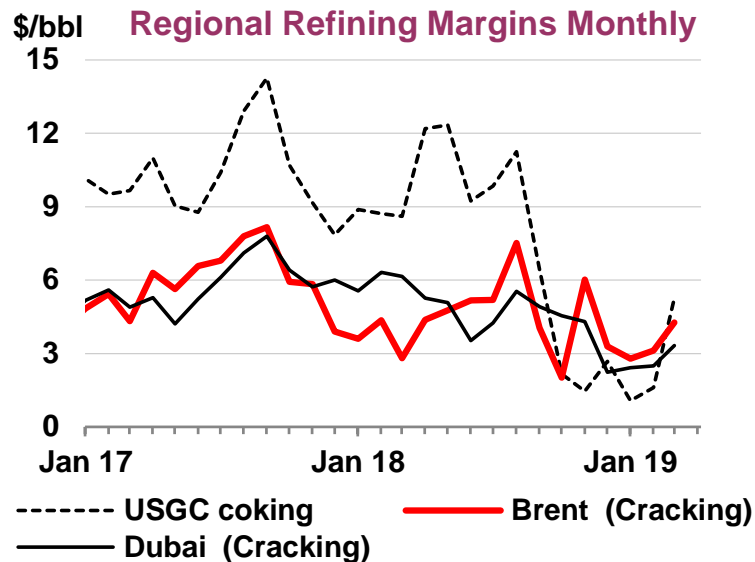
Demand & supply numbers suggest return to deficit in 2Q19. Rest of year depends on OPEC+ agreement, Iranian waivers, Venezuela collapse, Libya unrest and strength of global economy.

Refining growth mostly coming from East of Suez



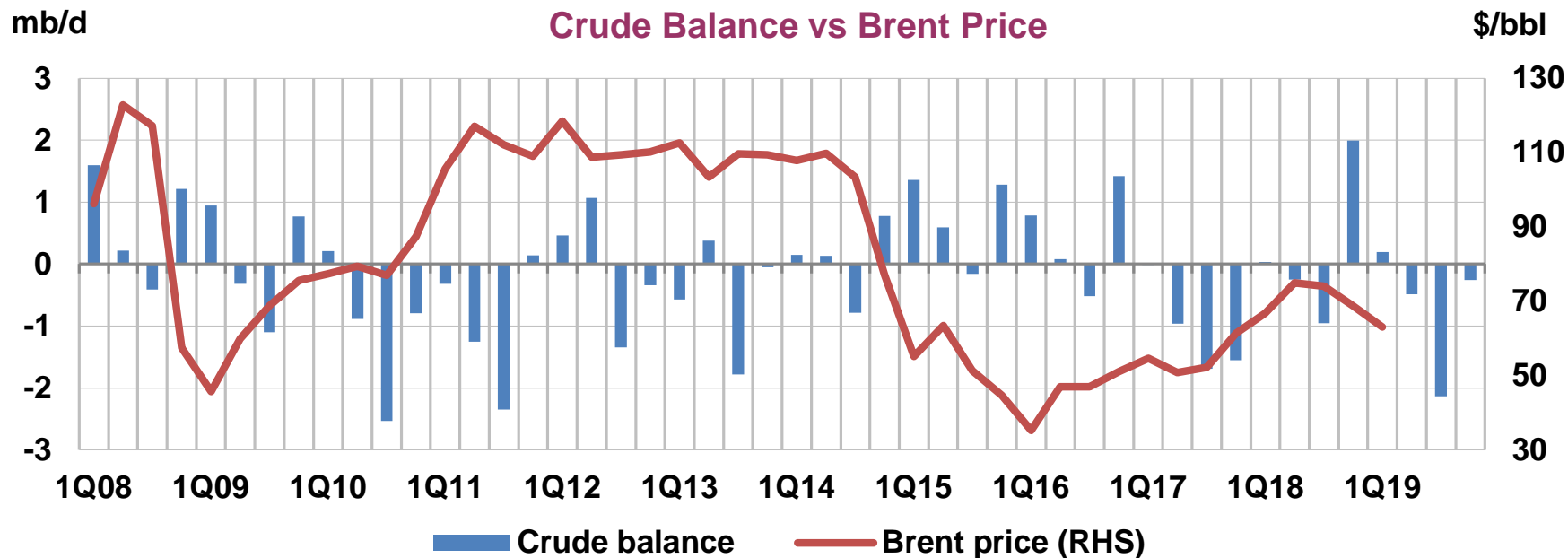
Atlantic Basin refiners struggle to add to throughput

Refining margins now rising, but only thanks to disruptions



Fuel oil supply shortage, itself a consequence of lower medium-heavy crude grade shortfall, helps simple refining margins, narrows the differential between complex and simple margins.

Sobering outlook on refining on tight crude balances



Global crude balance set for the largest draw since 2011 in 3Q19 if cuts continue.



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