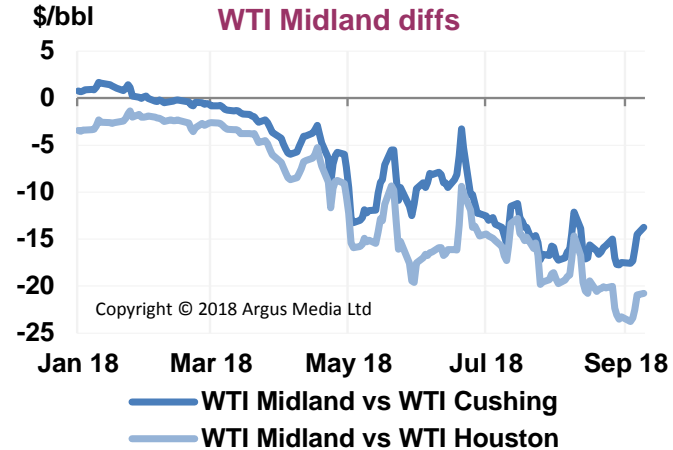
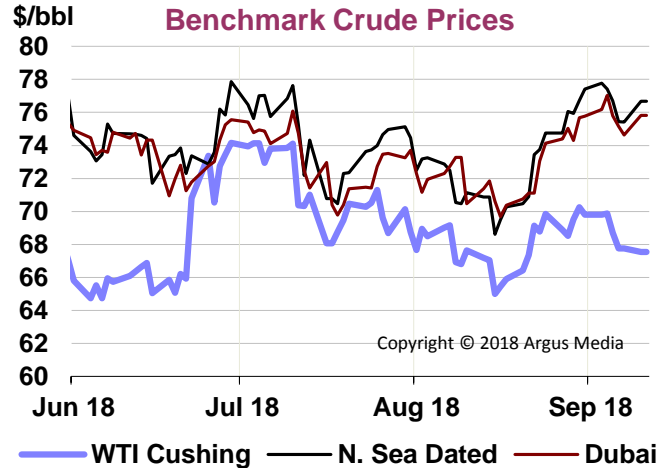




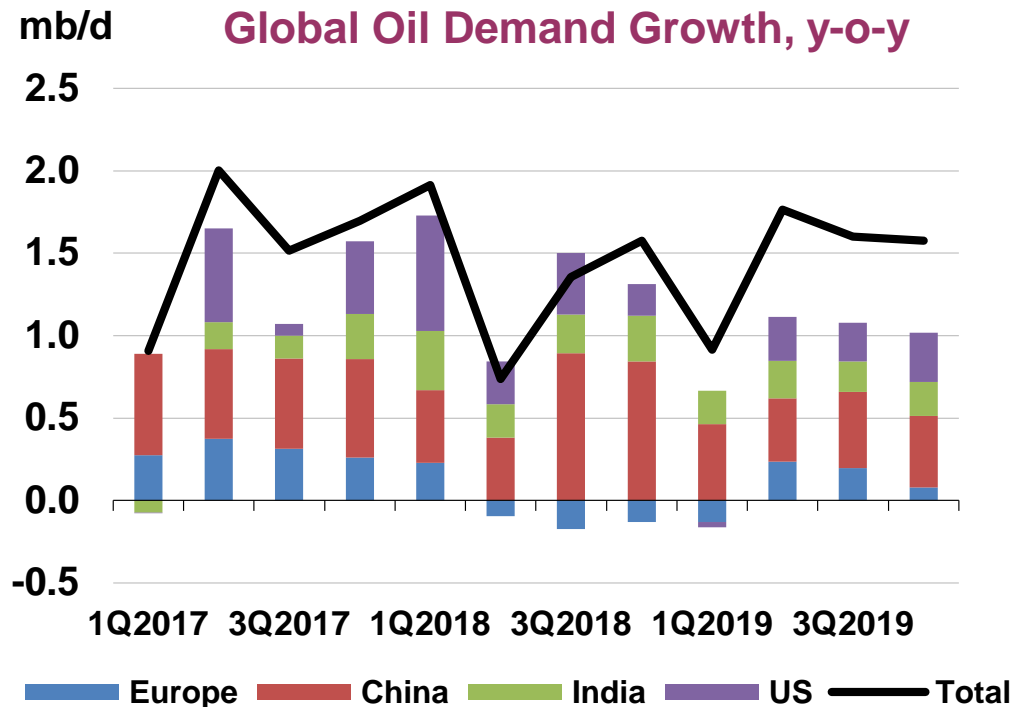
Market Report Series: “Oil 2018 – Analysis & Forecasts to 2023”

Energy Community – 10th Oil Forum, Belgrade, 25 September 2018

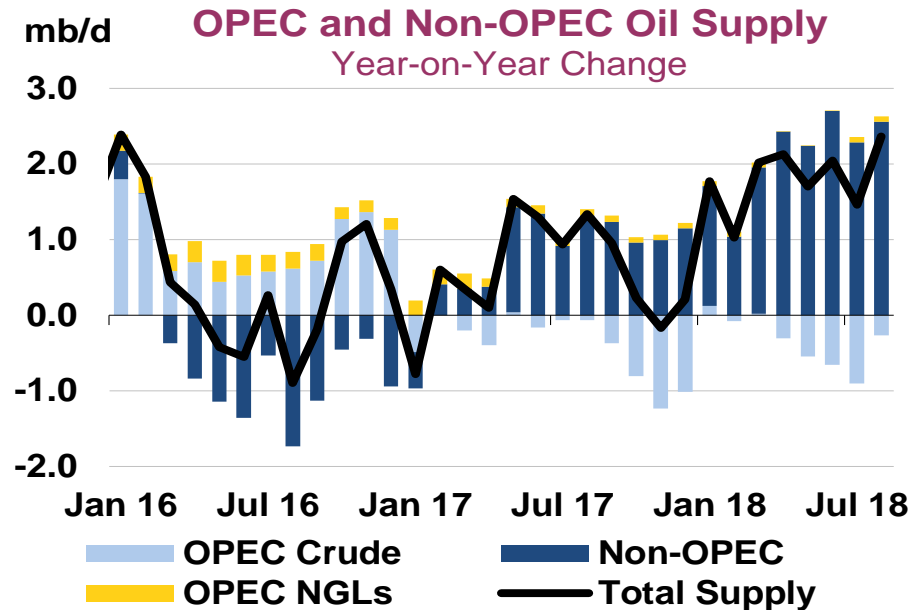
Short term update: crude prices (excl. WTI) up strongly Aug/Sep



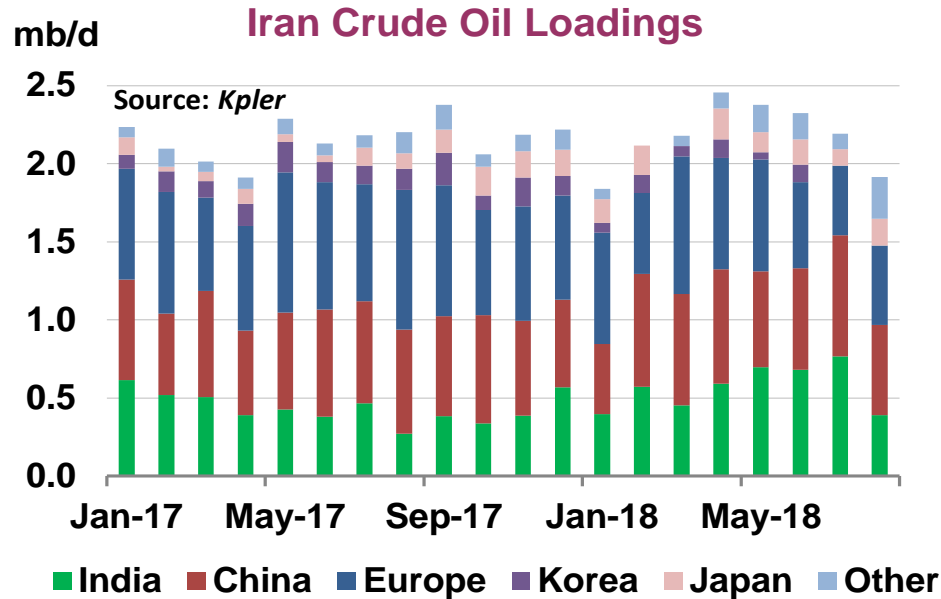
Brent crude tests \$80/bbl. US and Canadian differentials fall due to infrastructure constraints.



Demand growth 1.40 mb/d in 2018 and 1.47 mb/d in 2019, but trade wars, GDP, growth outlook, currency devaluations, are risks.

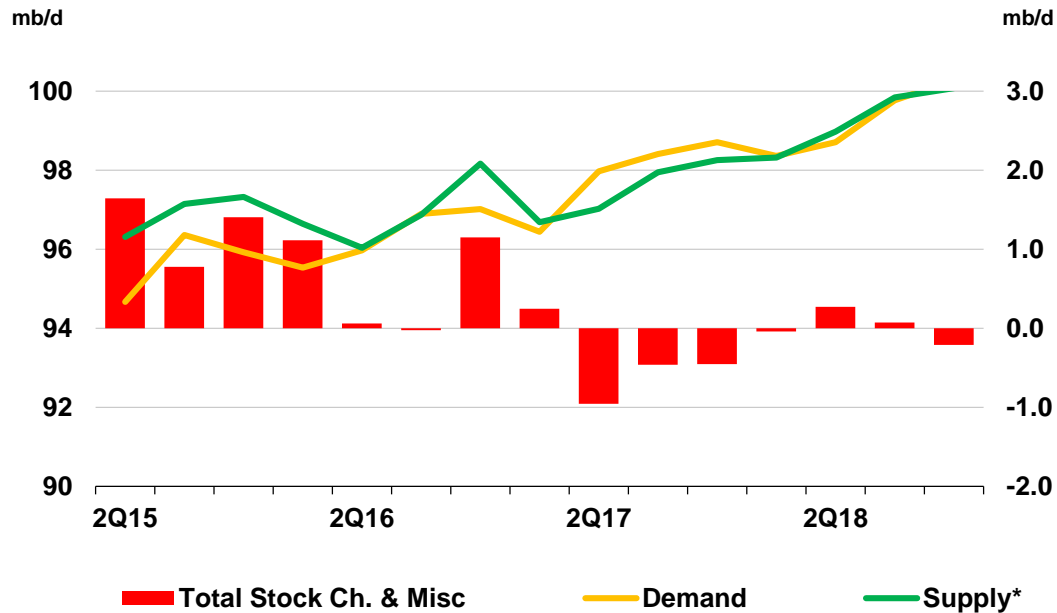


Higher OPEC output offsets seasonal non-OPEC decline. Non-OPEC output up 2.6 mb/d on a year ago, OPEC down 270 kb/d due to declines from Venezuela, Iran and Angola.



Top customers India and China make sharp cuts in August, Europe already at lower levels.

Short term update: Oil market set to tighten late in 2018

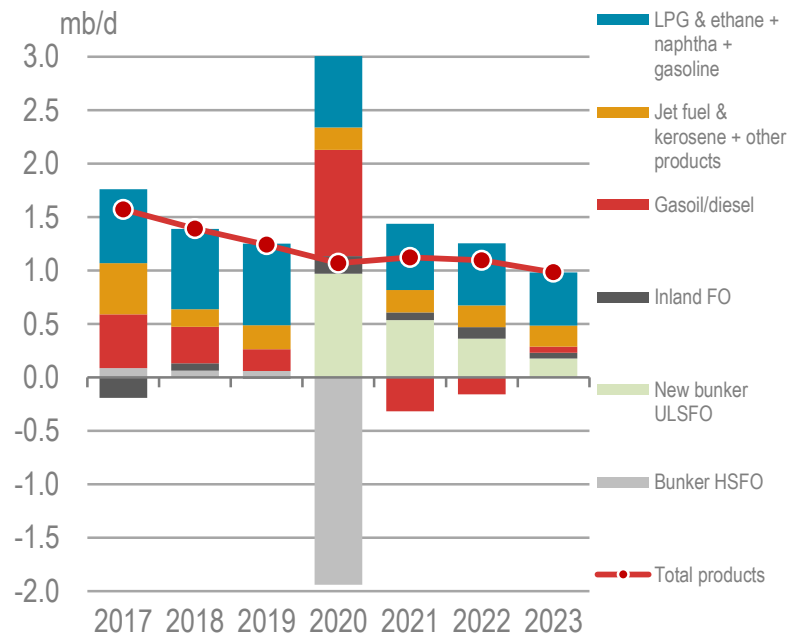
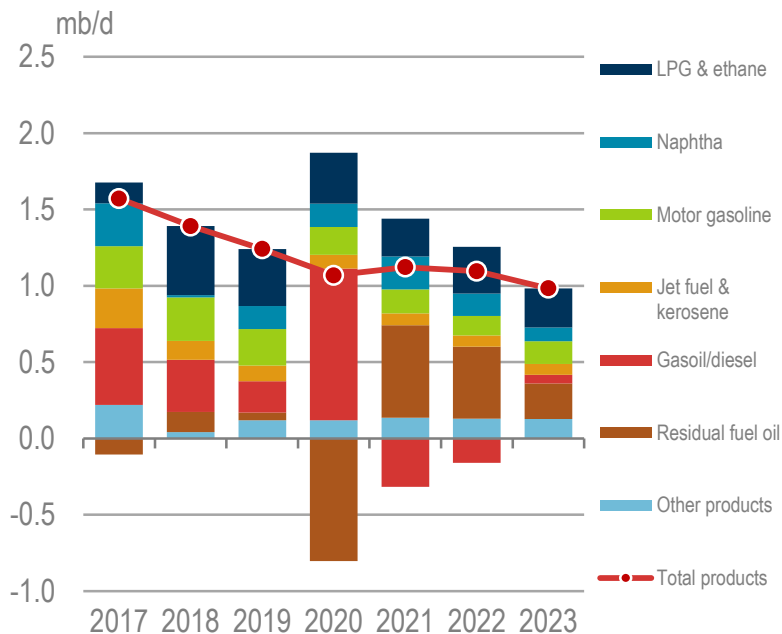


*Note: For scenario purposes, OPEC/non-OPEC cuts remain constant.

Stocks will draw 4Q18 by more than shown unless Iran/Venezuela shortfalls compensated by more output from other producers.

Back to the medium term: robust demand growth of 1.2 mb/d

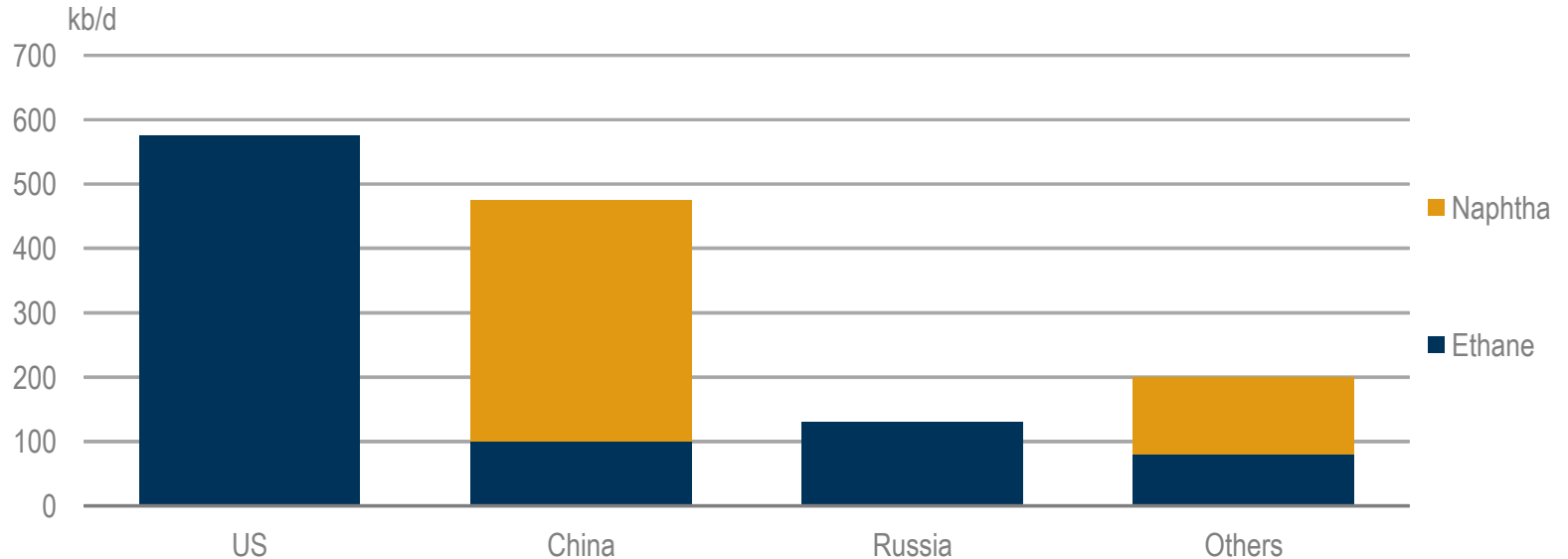
growth by product & fuel oil breakdown y-o-y changes



Very large shift in demand in 2020 and following adjustments reflect IMO induced switch

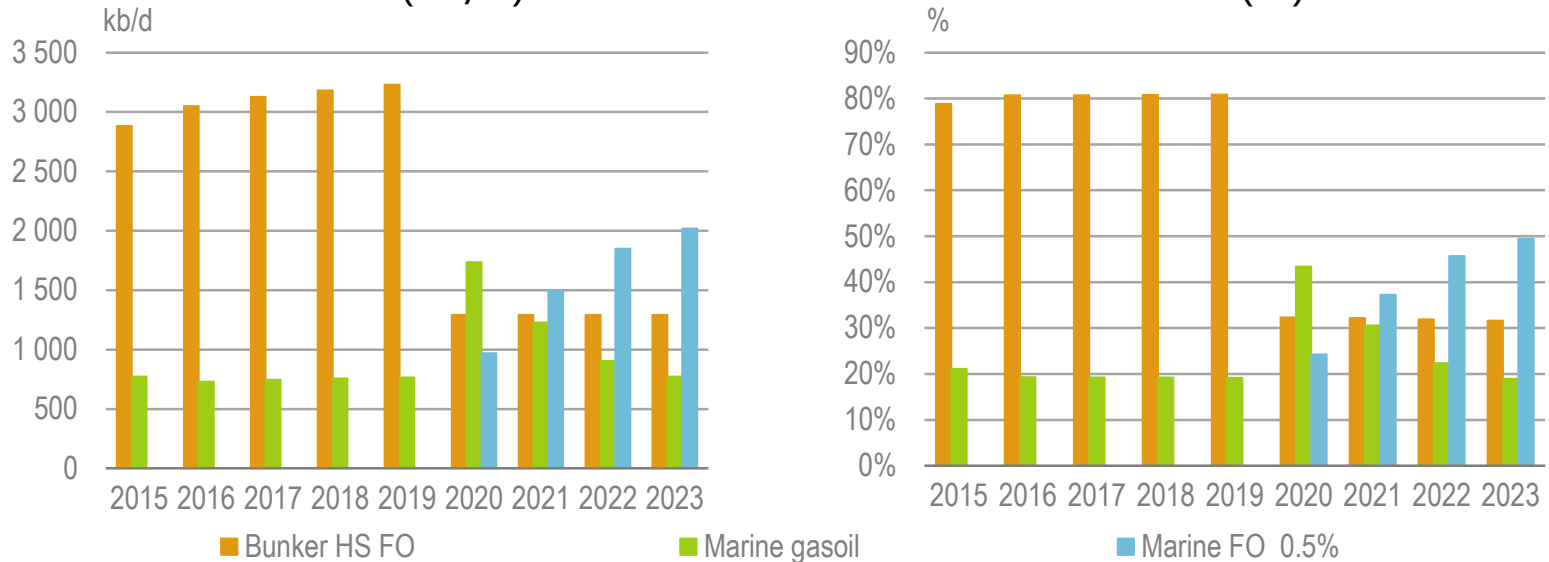
Petrochemicals drive oil demand growth to 2023

Feedstock requirements for new steam crackers



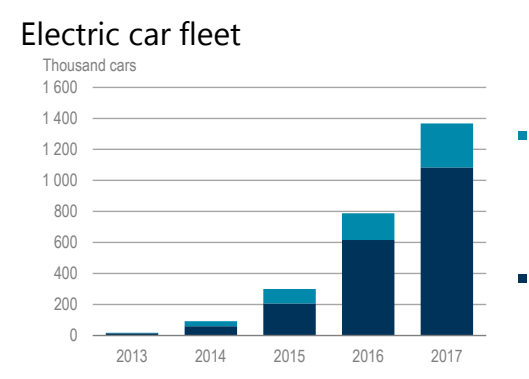
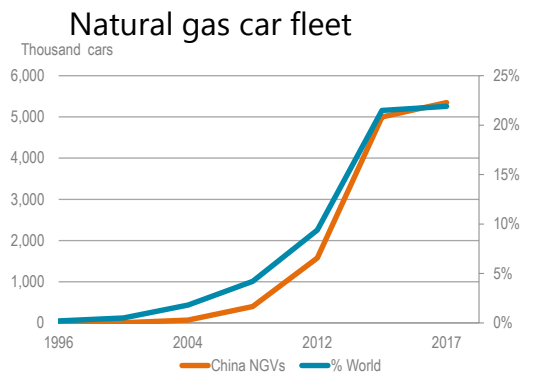
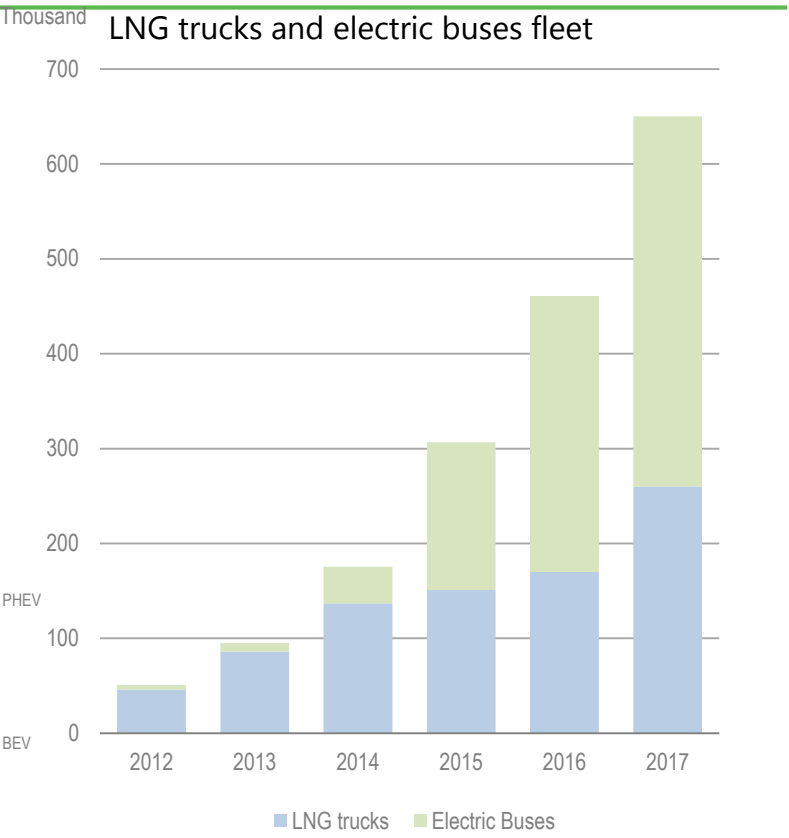
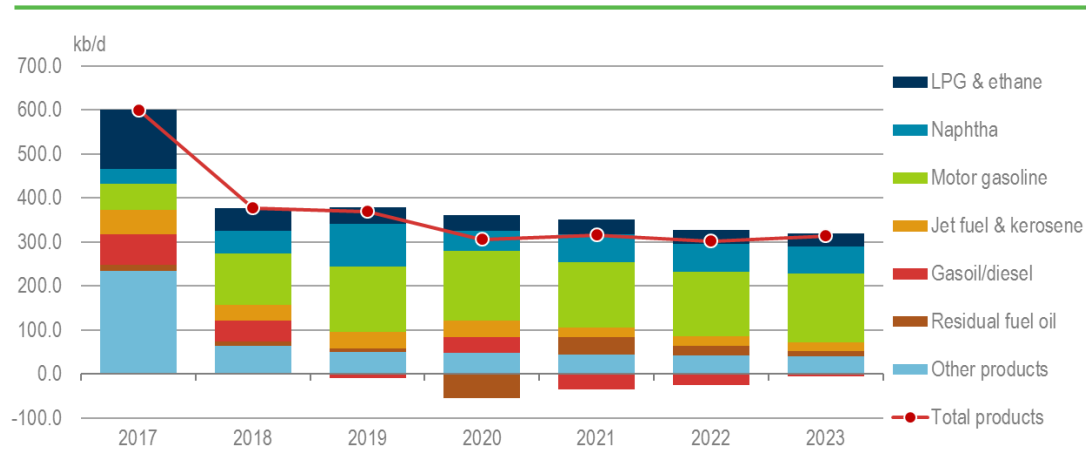
Petrochemical feedstocks (ethane and naphtha) responsible for 25% of global oil demand growth

Marine bunker in OECD and major non-OECD fuel switch Volumes (kb/d) and Shares (%)



High Sulfur fuel oil replaced by a new 0.5% fuel and gasoil. Gasoil availability is the main constraint.

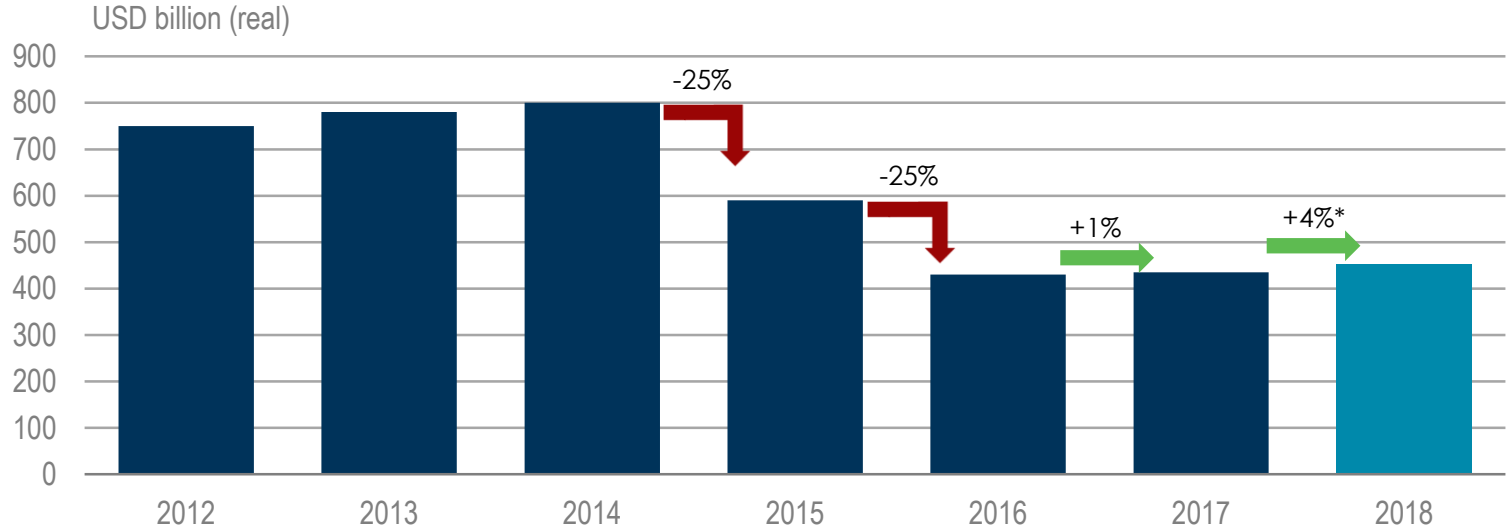
Sign of the future? China uses alternative fuels in transport



Likely to replace 20 kb/d of gasoline and 80 kb/d of diesel per year over the forecast

Supply concerns: limited increase in 2018 upstream spending

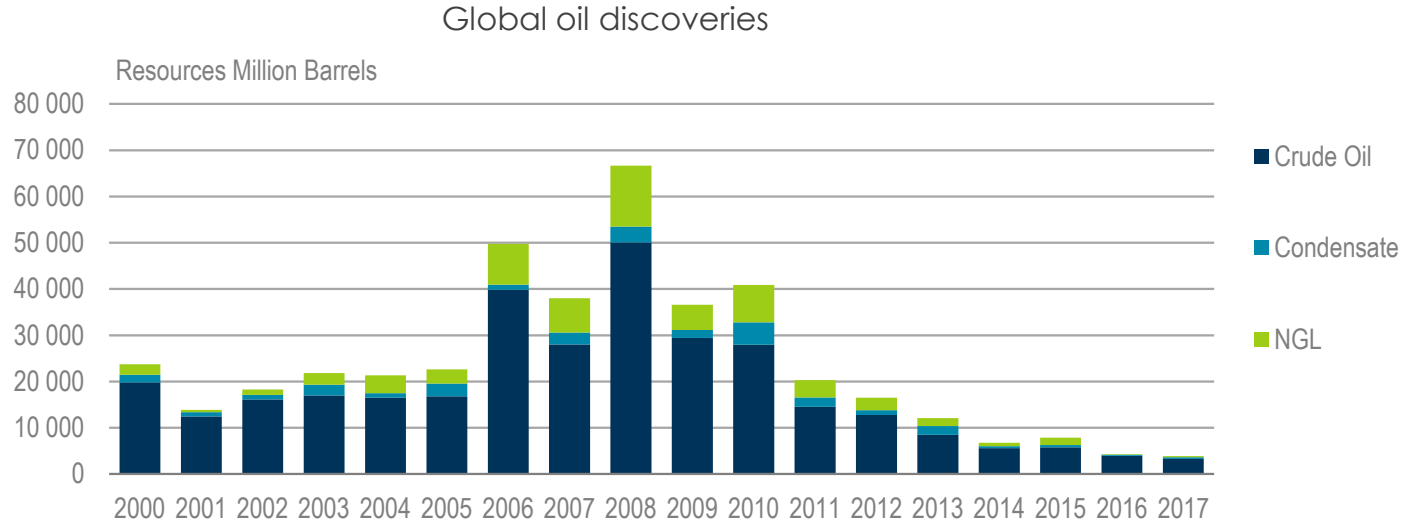
Global oil and gas upstream capital spending 2011-2018



*Preliminary based on selection of investment updates

Most companies maintain spending, increases focused on US.

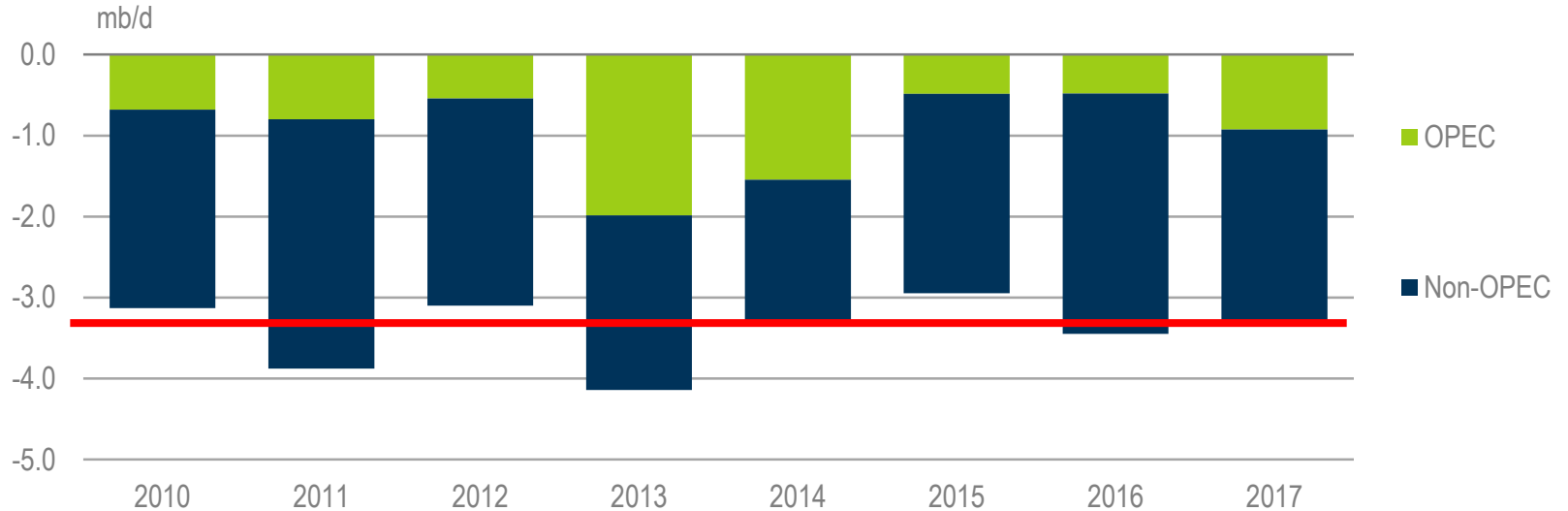
Supply concerns: global oil discoveries fall to 70-year low



Less than 4 billion barrels of crude, condensate and NGLs confirmed.

Supply concerns: industry needs to find a North Sea each year

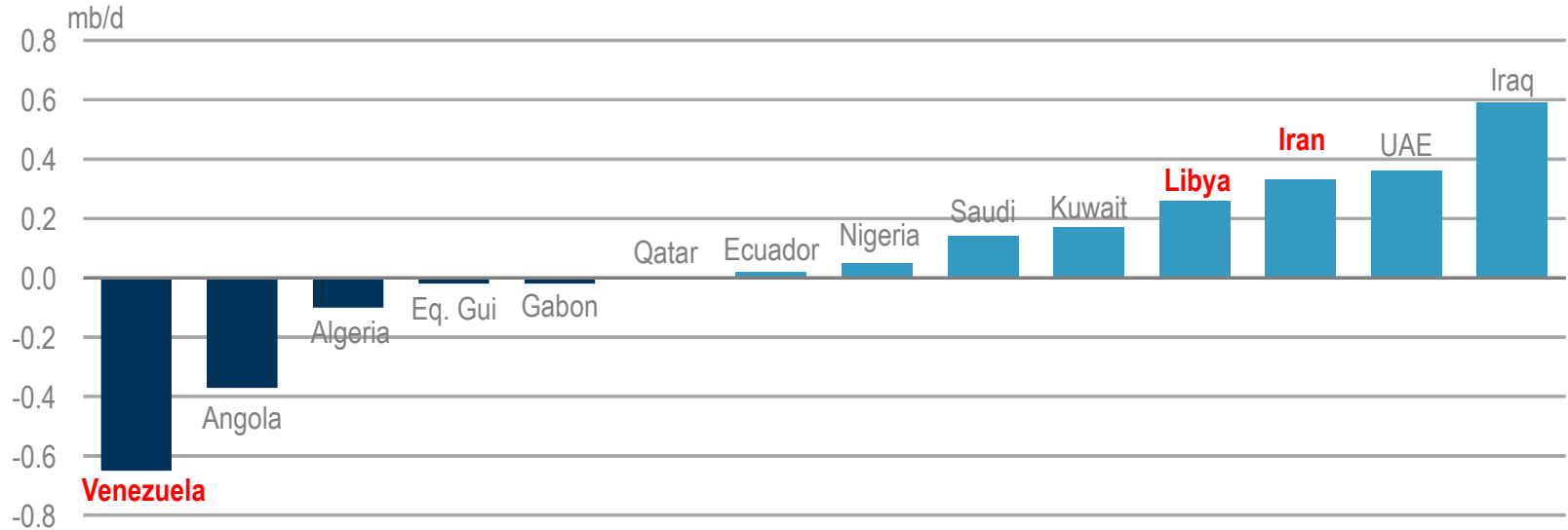
Output loss from post-peak conventional crude oil fields



Ageing oil fields lose more than 3 mb/d per year despite slowing decline rates.

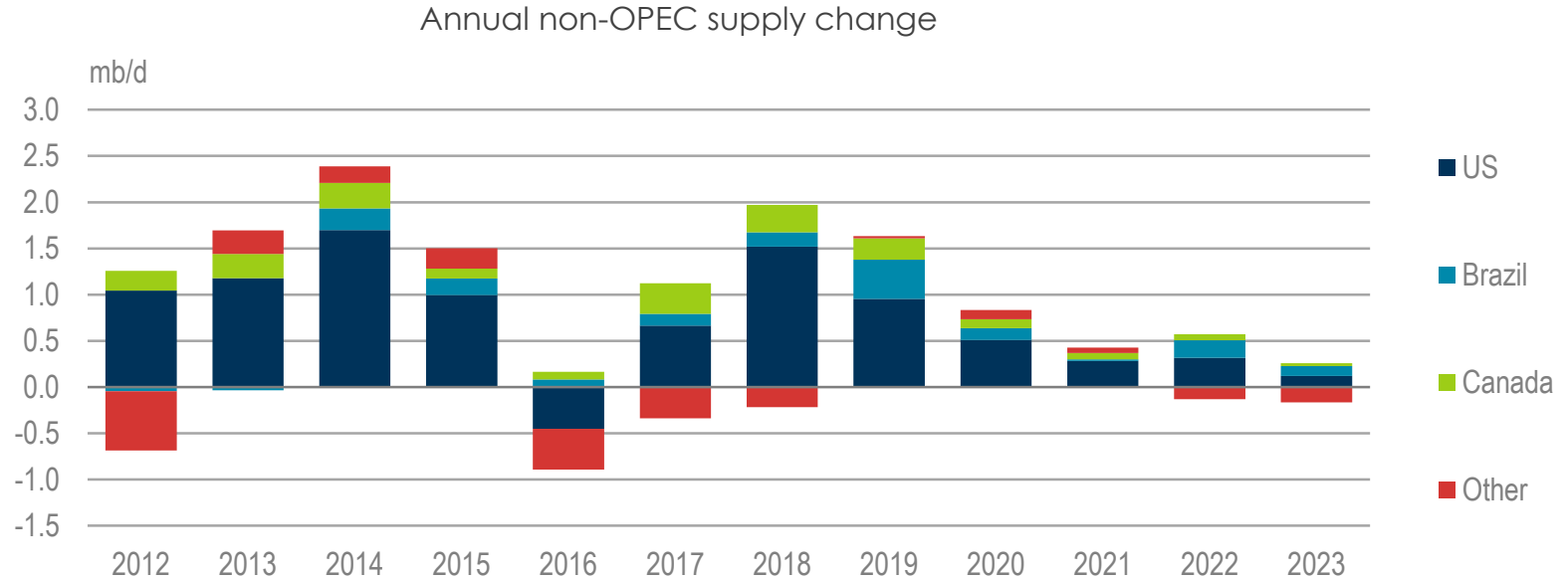
Supply concerns: Venezuela, Libya, Iran risk factors for OPEC

Changes in OPEC crude supply capacity 2017-2023



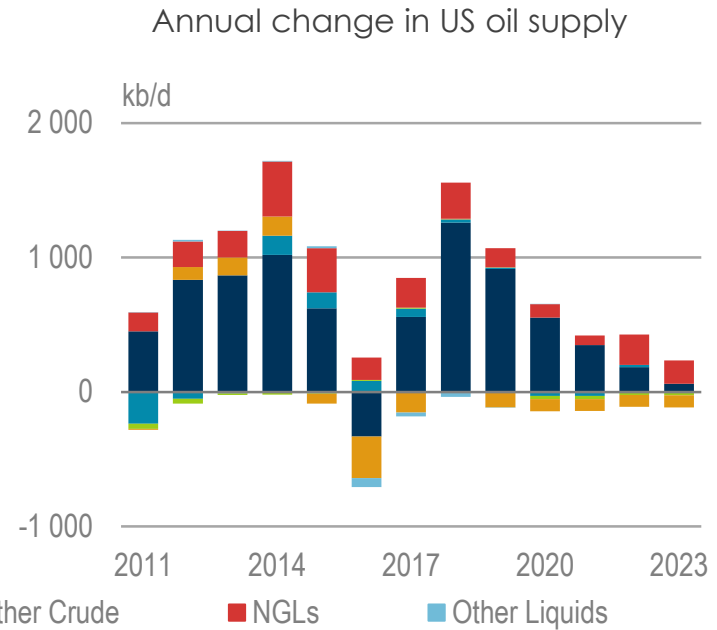
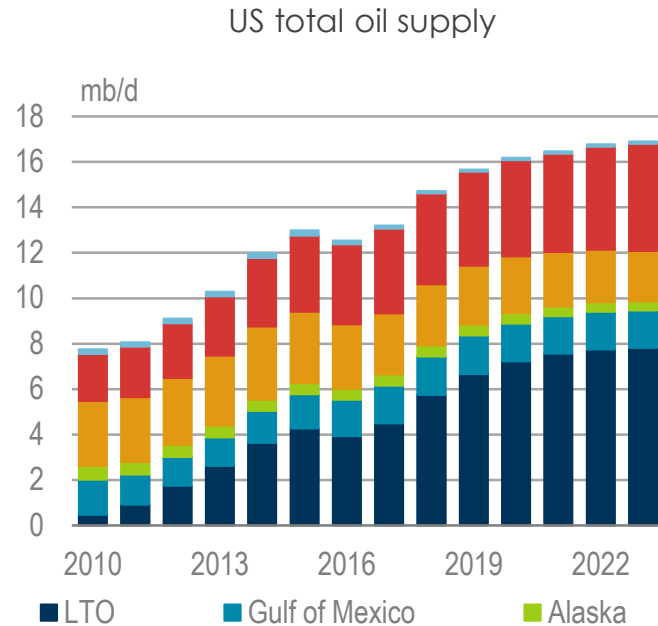
OPEC crude oil capacity rises by a mere 0.75 mb/d (130 kb/d annual). Iran sanctions make picture very uncertain as does possible collapse of Venezuela.

Strong growth in US, Brazil, Canada drives non-OPEC output



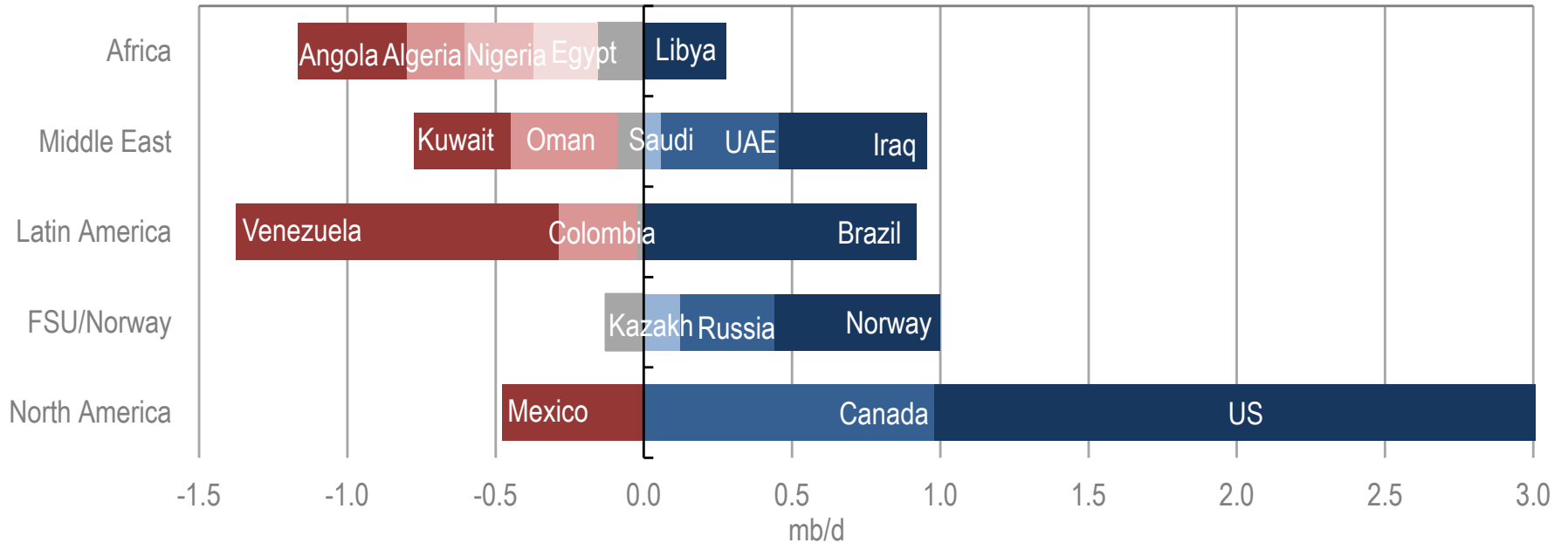
Top three expand by combined 5.5 mb/d by 2023, total non-OPEC rises 5.2 mb/d.

US oil supply hits 16.9 mb/d by 2023, up 3.7 mb/d on 2017

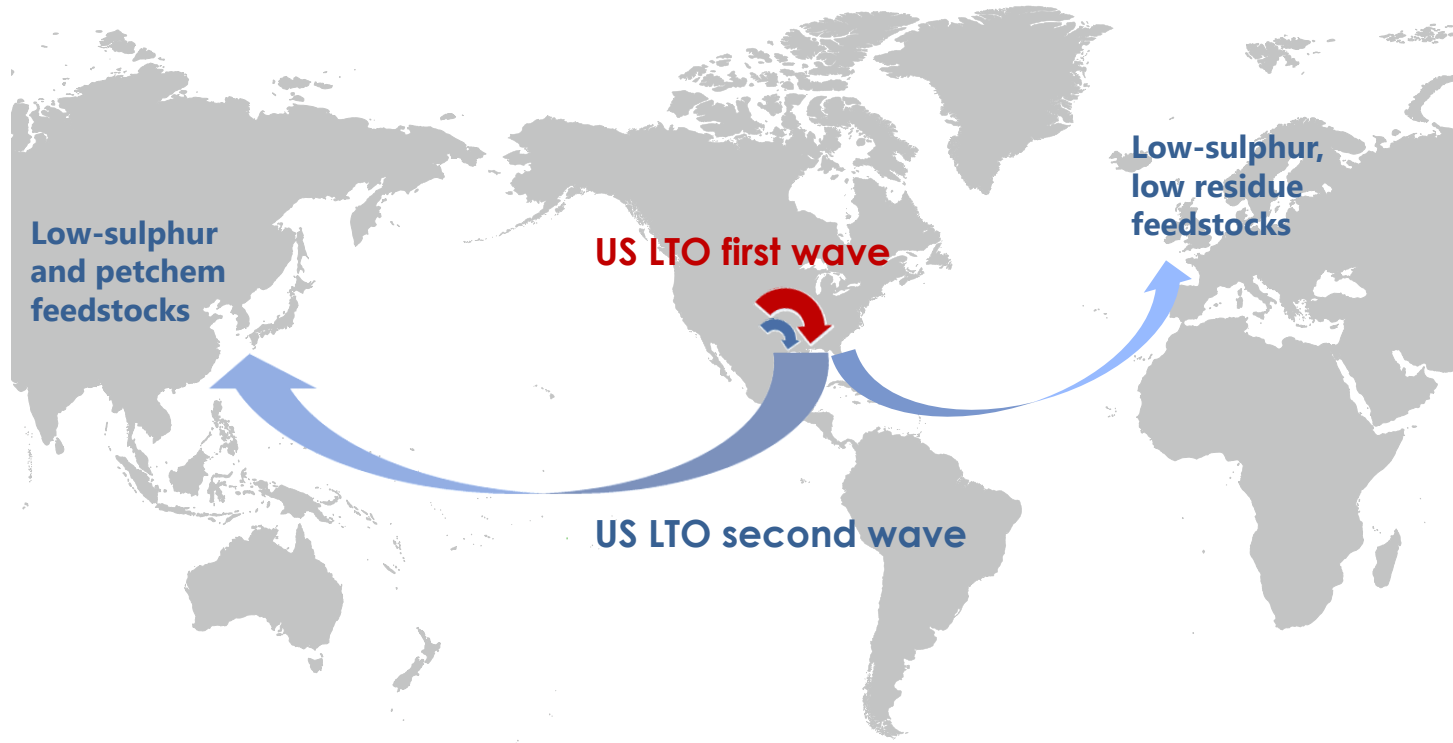


Growth stalls by early 2020s in the absence of higher prices or further technological advances.

Most incremental crude exports come from non-OPEC

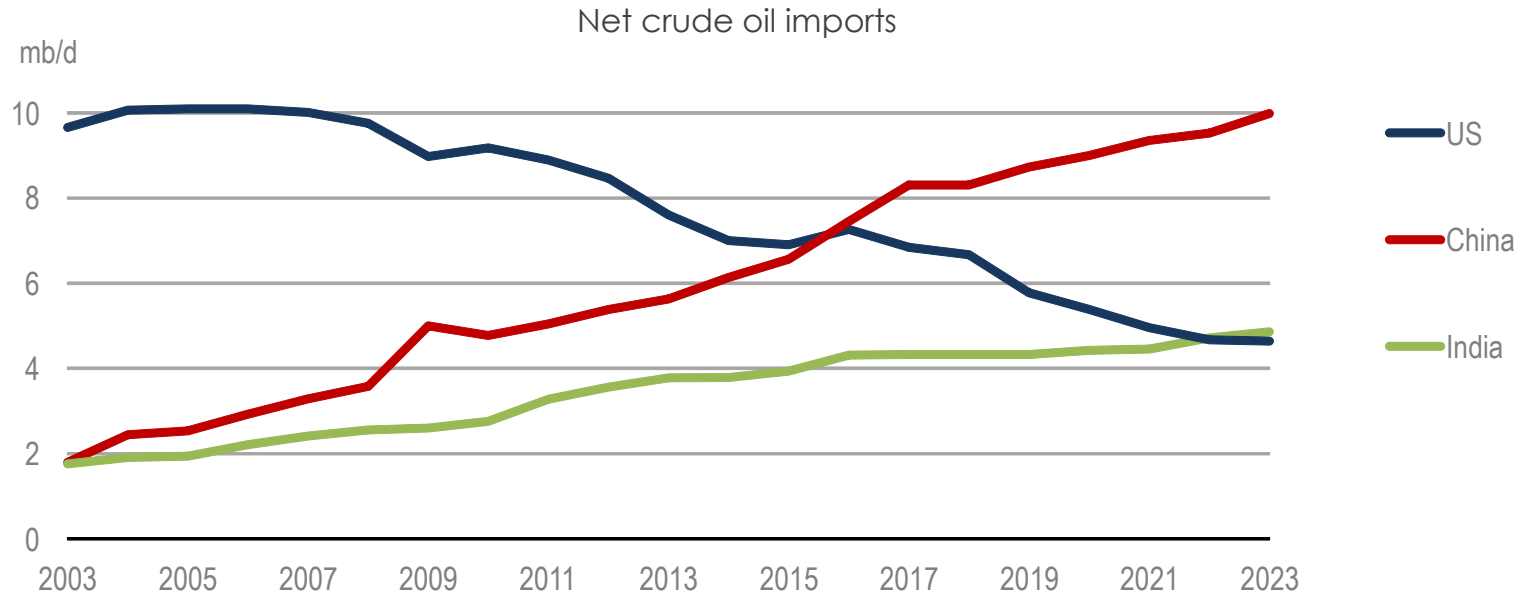


US refining capacity has absorbed most of the first wave of the Shale. Second wave goes to exports.



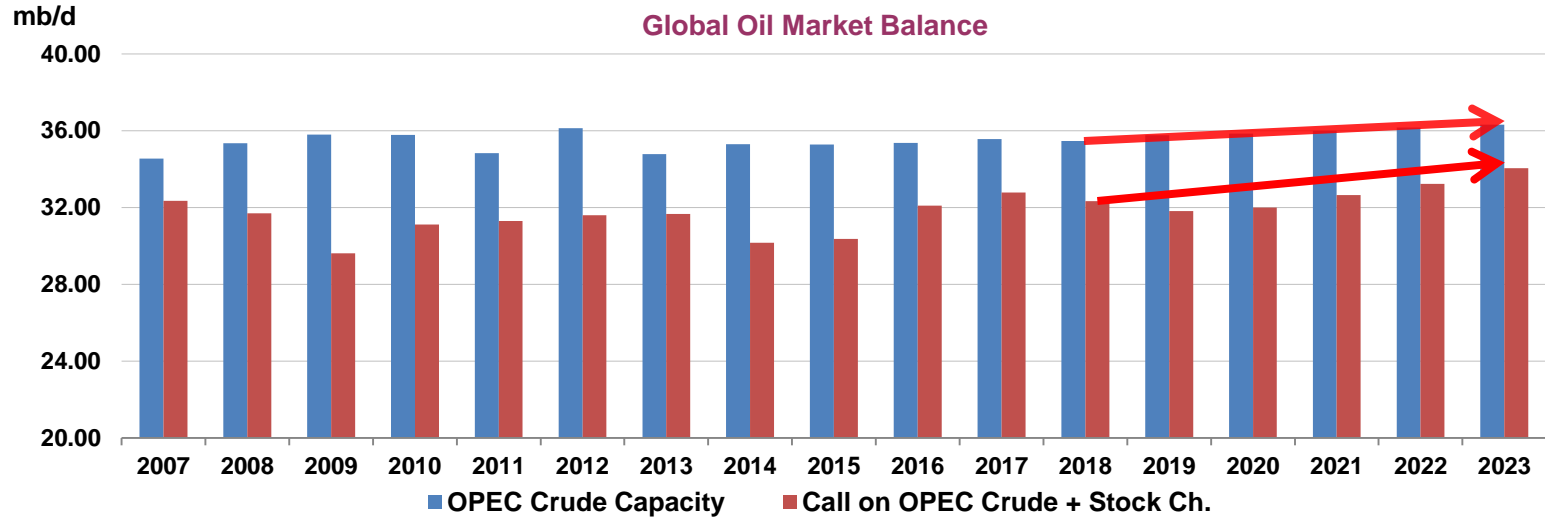
Refiners in Asia and Europe look for suitable crude oil to produce petrochemical feedstocks and low-sulphur fuels

China net crude oil imports double the US in 2023



Indian imports, too, surpass the US in 2023 as shale growth reduces US import dependence.

Tightening oil market balance



Solid demand growth alongside major uncertainties around OPEC capacity & investment elsewhere could lead to shrinking of spare production capacity cushion by 2023. Security of supply risk.

- Robust world oil demand growth to 2023 – petrochemicals key driver. IMO disruption?
- More upstream investment needed today to meet future demand and offset 3 mb/d of declines from mature oil fields each year.
- Venezuela, Libya & Iran are major OPEC supply risks
- In non-OPEC, US, Brazil, Canada, Norway dominate output growth.
- US crude finds new markets as refiners seek light, low-sulphur crude to meet petrochemical demand and IMO specifications.
- China & India overtake US as net importers.
- As spare capacity cushion shrinks, supply security concerns remain critical.