International Energy Agency

OIL Medium-Term Market Report 2014

The Institute of Energy Economics, Japan

Tokyo, 20 June 2014

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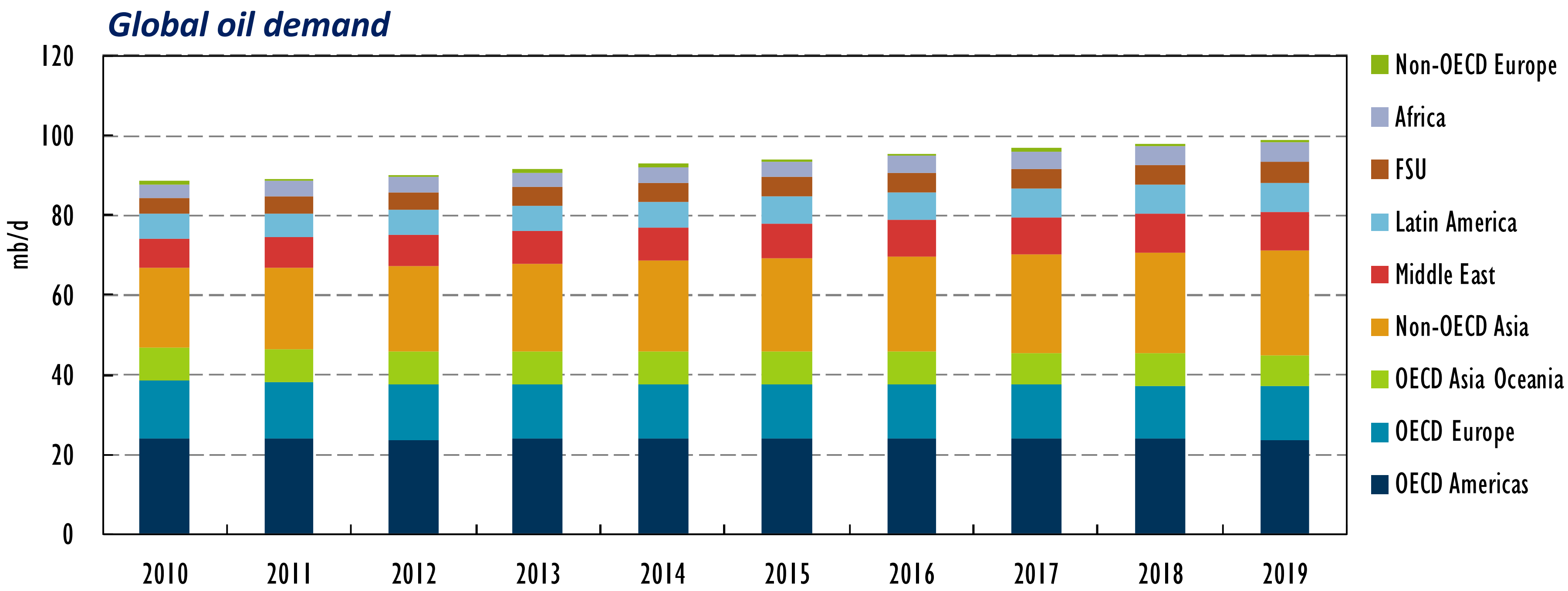
Market Analysis and Forecasts to 2019

The oil market at a junction

- Balances loosen up on paper but must be seen in perspective
- The unconventional supply revolution enters a new stage - matures into an increasingly global phenomenon, not just a US success story
- Political and social change in the MENA raises OPEC supply risk, partly offsetting the impact of higher non-OPEC supply
- The economic recovery buoys demand, but the dynamics of demand growth undergo a structural shift - efficiency gains and fuel switching increasingly balance income and population impacts
- Asia is by far the largest magnet for global crude exports as North America grows into a net oil exporter
- The refining industry faces a new round of restructuring and a potential glut of light products

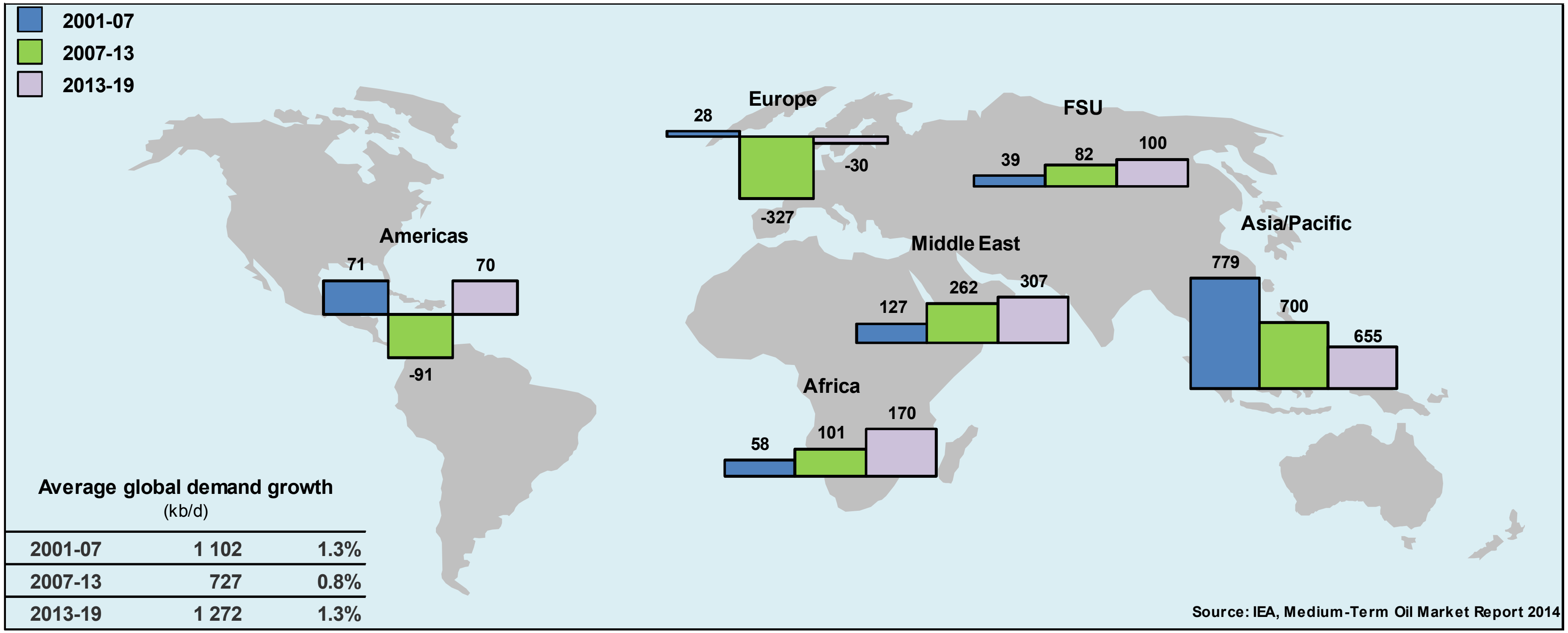
Demand

Oil demand nears 100 mb/d by 2019, but growth seen slowing down post-2015



- +1.3% per annum, 2013-19, as macroeconomic momentum builds

Asia and the Middle East are forecast to dominate growth

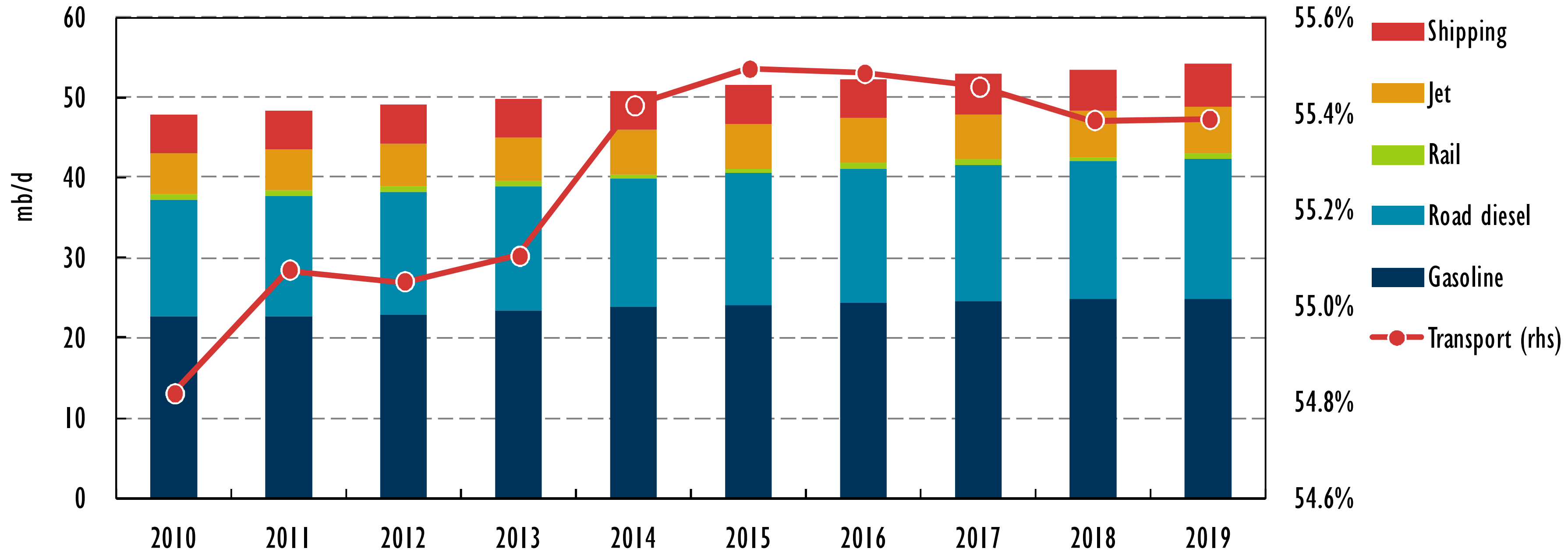


This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Strong gains are also foreseen in Africa, the FSU and the Americas

Transport demand keeps growing despite increasing inter-fuel competition

Relative share of transport use is global oil demand



- Road transport accounting for 4 in every 10 barrels in 2014

Petrochemicals also underpin global LPG demand growth

International Energy Agency 1974•2014
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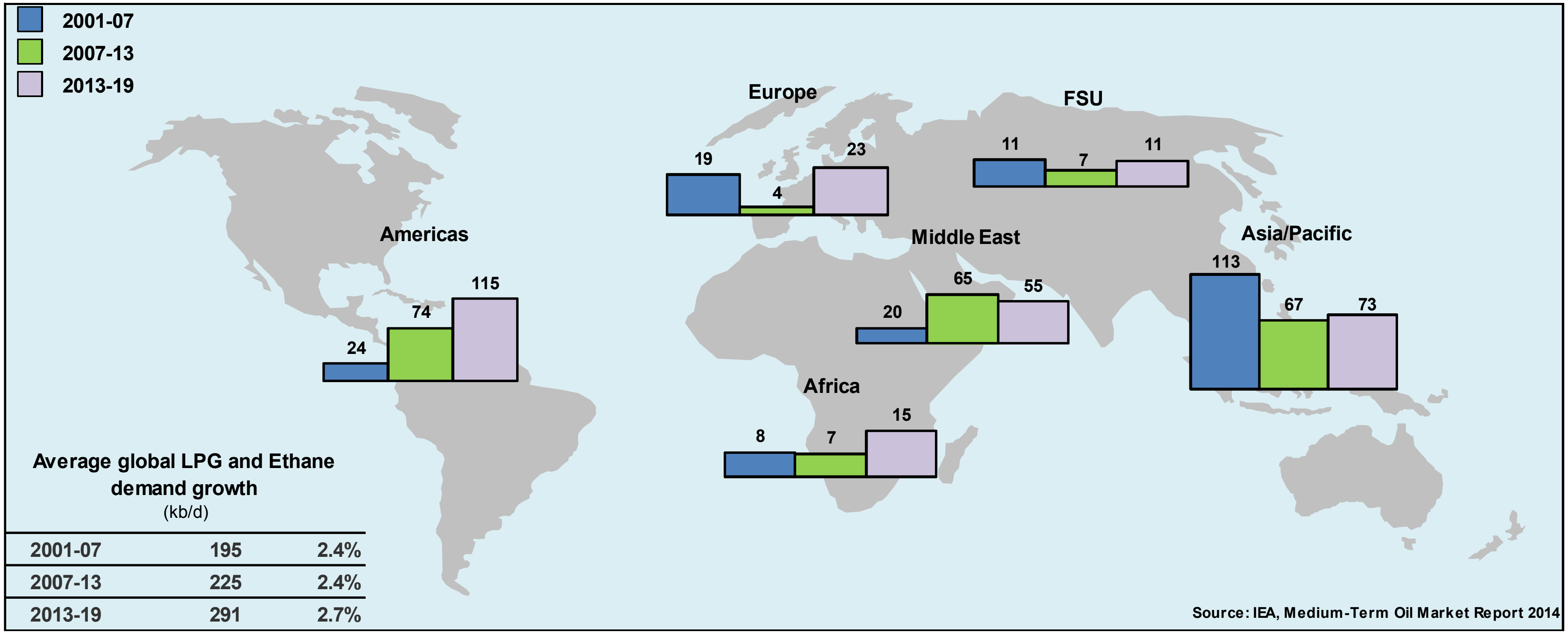

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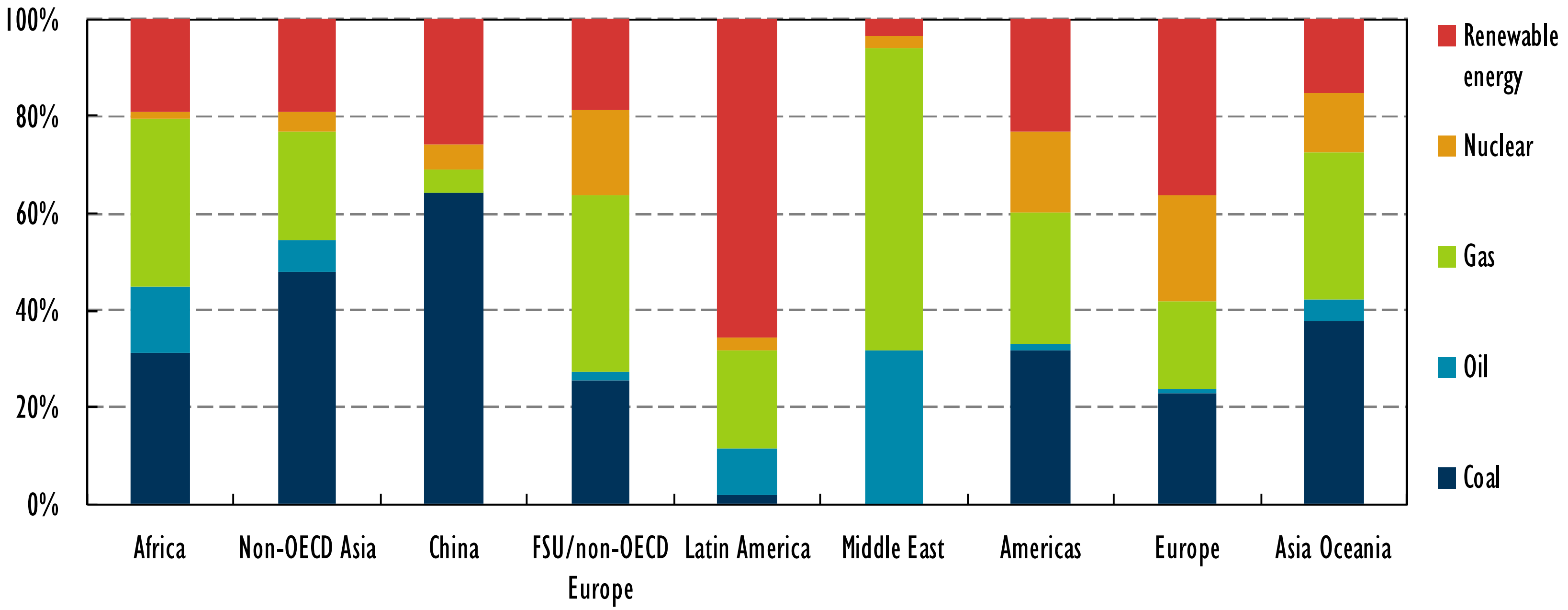
Underpinned by relatively low-cost LPG (+ ethane) from the US

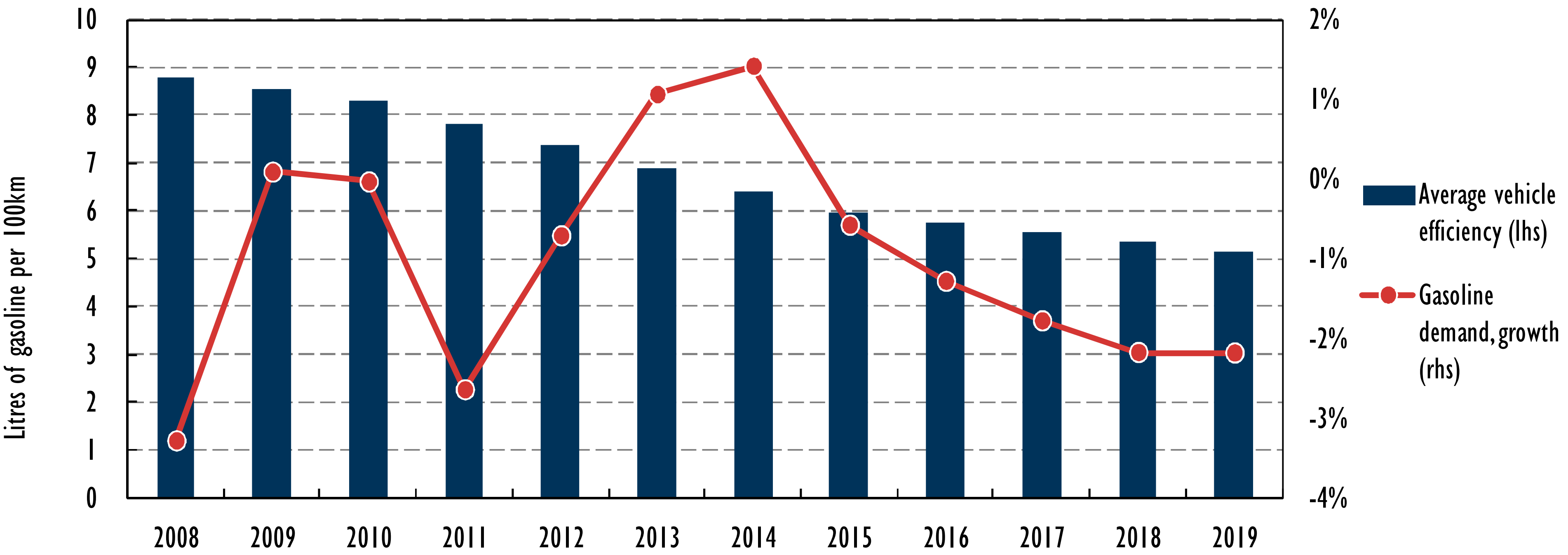
Oil use extends decline in the power generation and residential sectors

Power generation mix by region, 2019



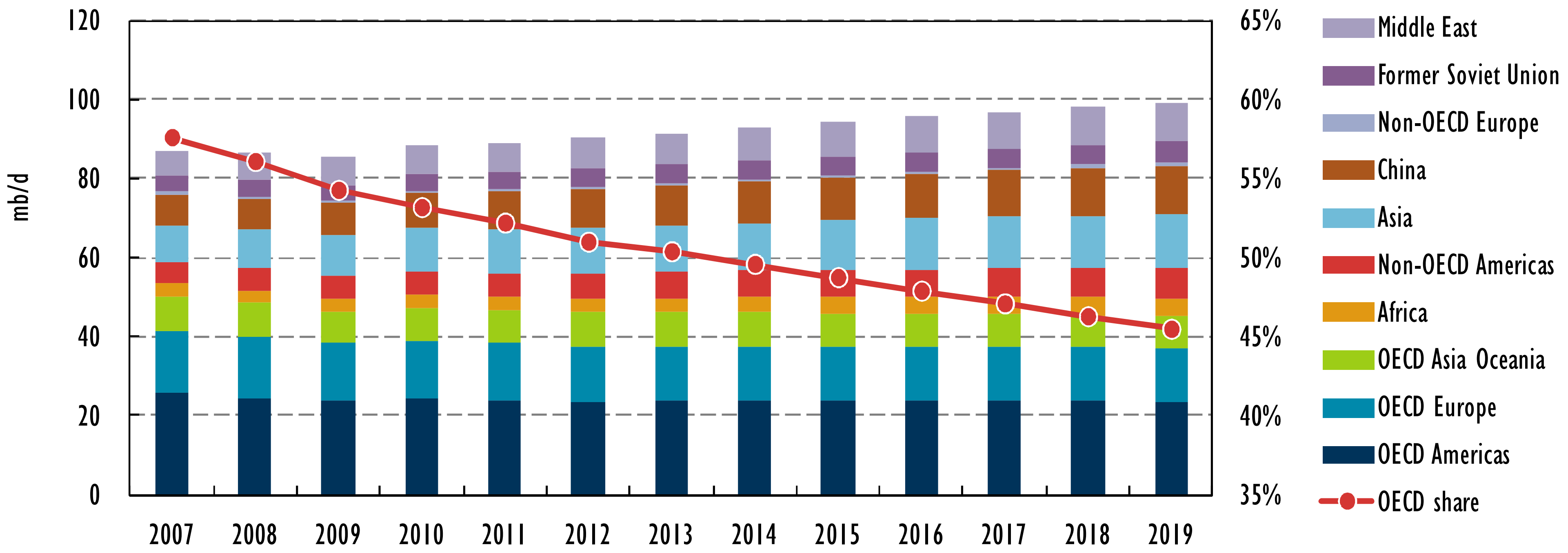
- Power sector oil-use falls everywhere bar Middle East

US gasoline demand is forecast to lead the OECD downtrend



Ongoing vehicle efficiency gains outweigh US population growth

Demand's dominant market share to be taken by non-OECD

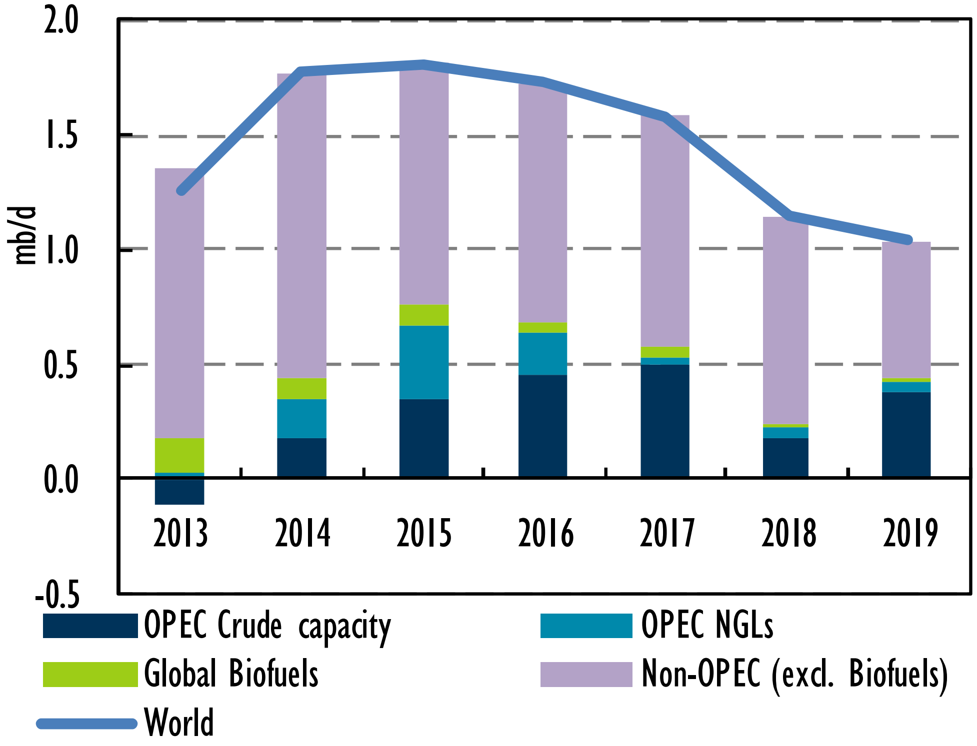


Traditional OECD/non-OECD split will lose relevance

Supply

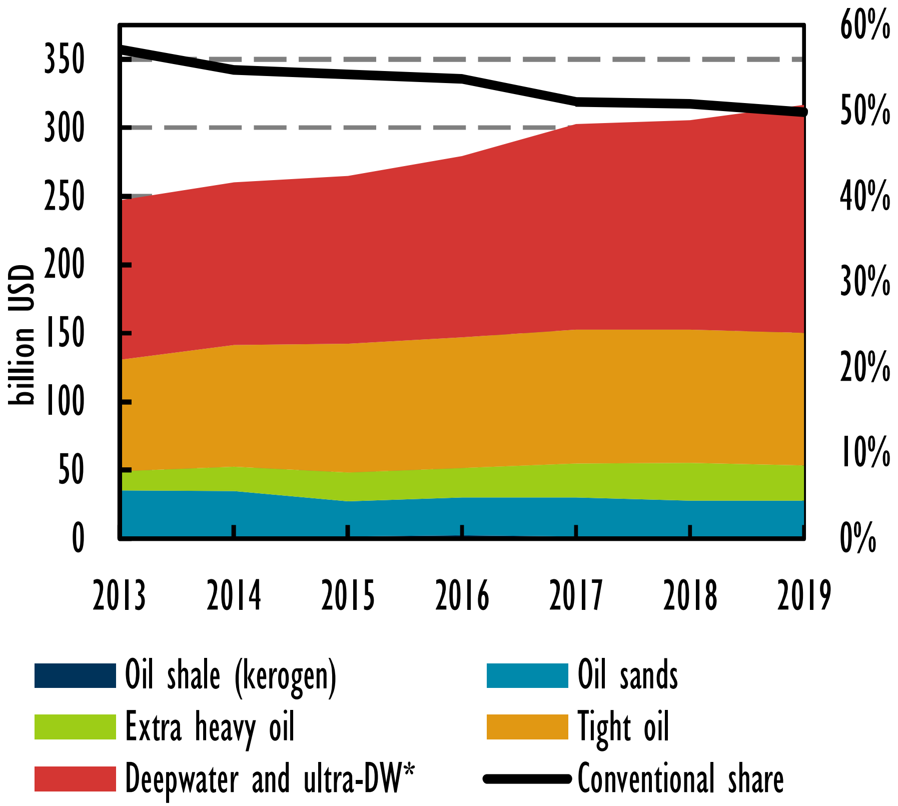
World oil supply capacity continues to expand, led by non-OPEC

Global oil supply capacity growth



- Total oil supply capacity grows by 9 mb/d to 105 mb/d
- Exceptionally strong non-OPEC growth, but slowing later in the forecast period

World trends in capex



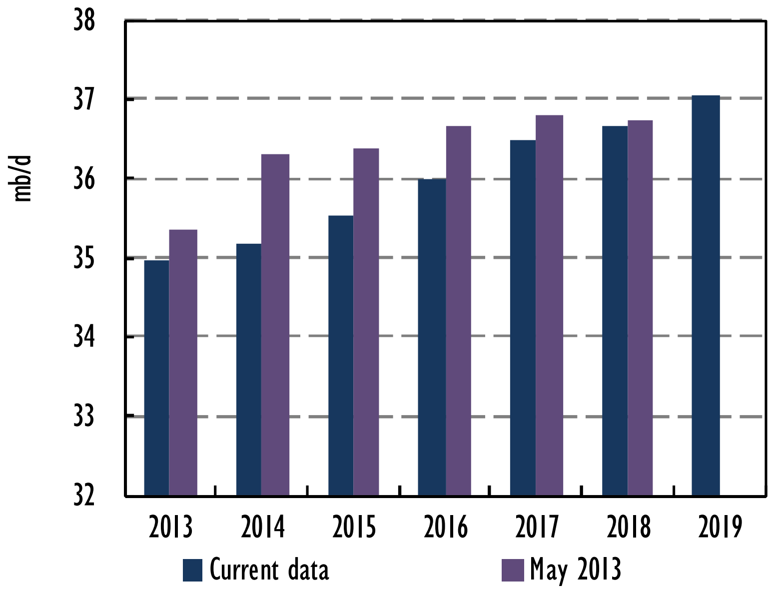
Source: IEA analysis of Rystad Energy data.

*NB: That which excludes the other four non-conventional categories.

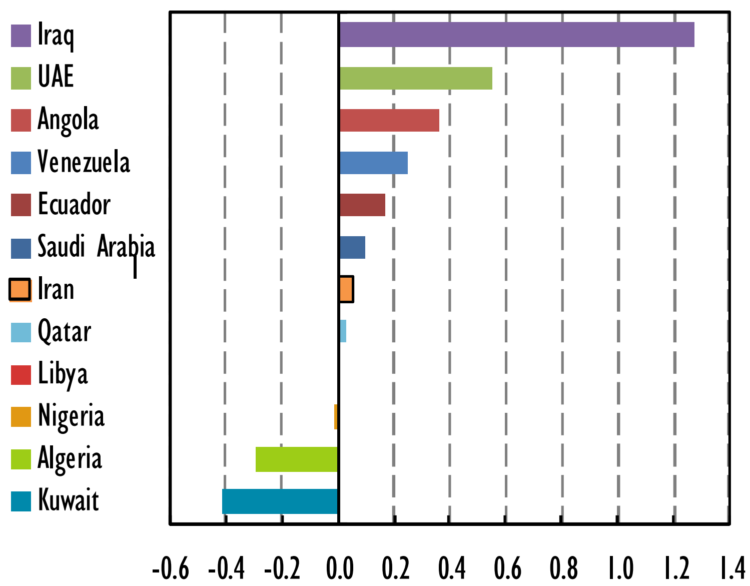
- **Global capital expenditure (including exploration capex) is increasingly targeted at non-conventional/difficult resources**

OPEC production capacity grows 2.1 mb/d

OPEC crude production capacity



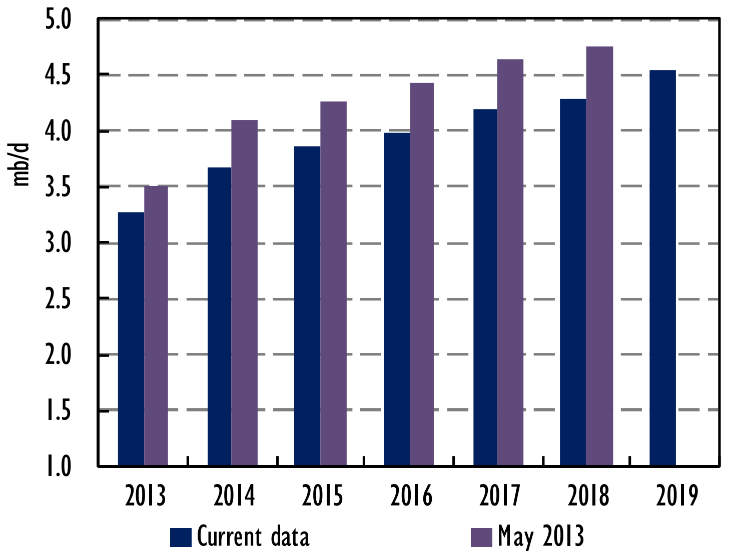
Incremental OPEC crude production capacity 2013-19 (mb/d)



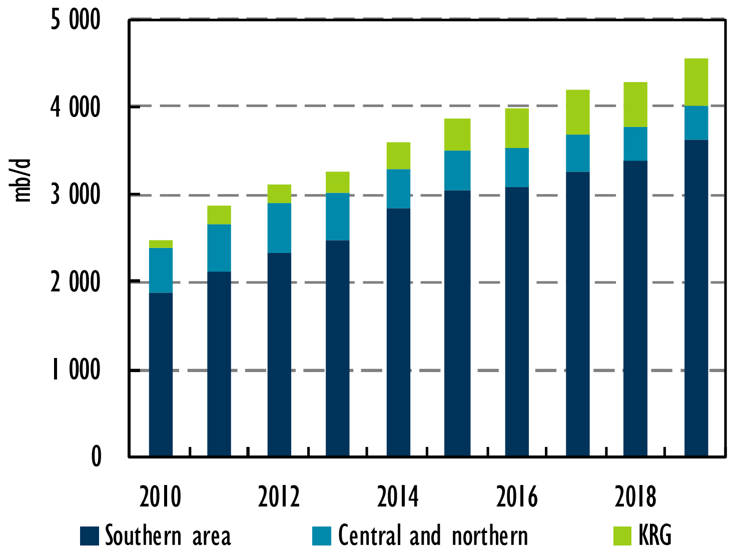
- Reaches 37.1 mb/d by 2019 with Iraq to supply 60% of growth
- Worsening political stability and security issues add downside risk in Iraq as well as Libya

Iraq faces formidable challenges in meeting ambitious production targets

Iraq crude production capacity growth

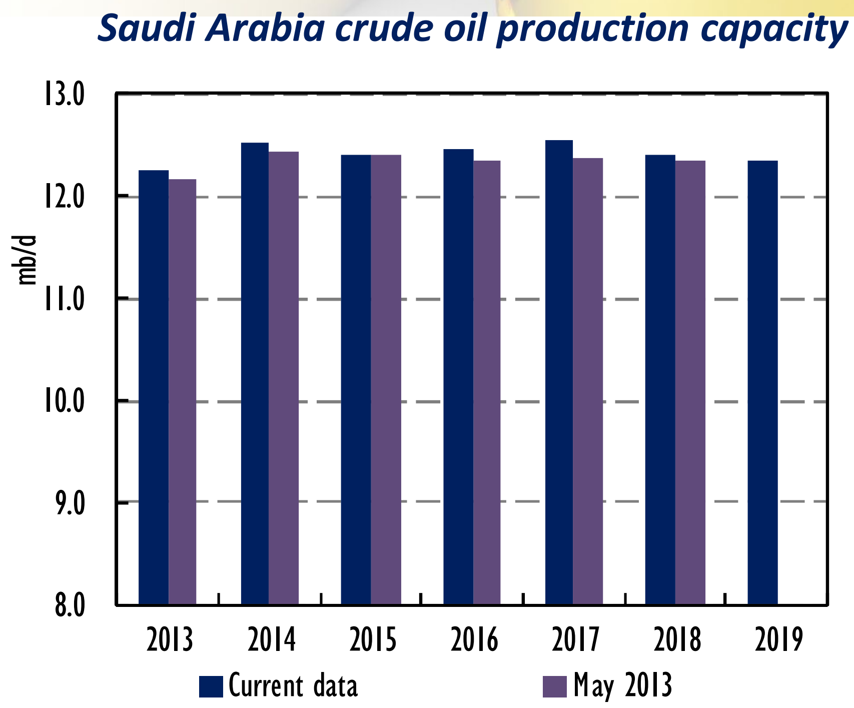


Iraq crude oil production by region



- Iraq production capacity to rise by 1.28 mb/d to 4.54 mb/d by 2019
- Weak institutions have lead to delays in contract awards for infrastructure plans that anchor projects

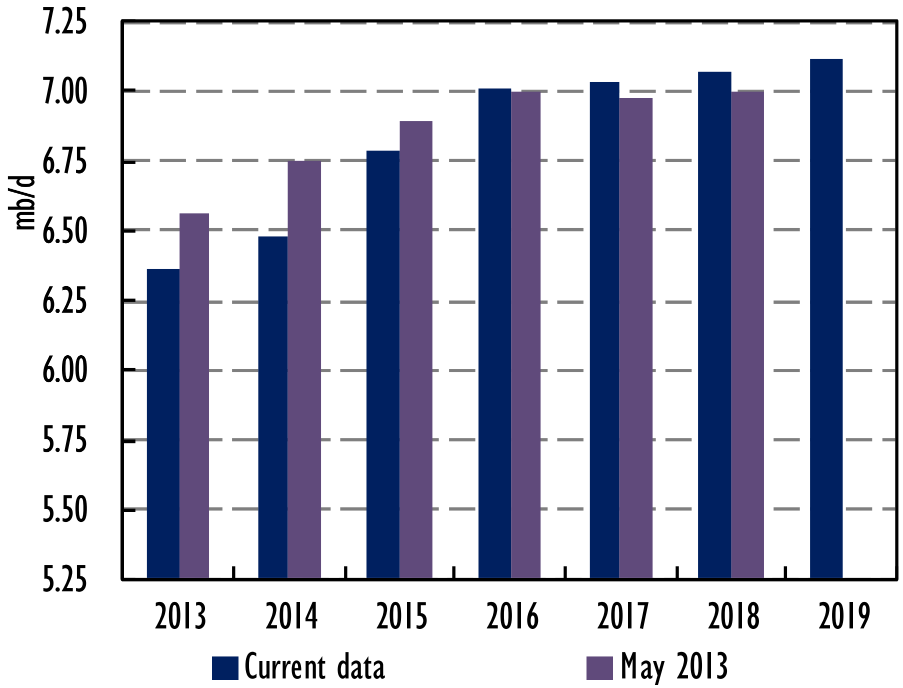
Saudi Arabia maintains capacity around 12.5 mb/d



- Gross capacity increase of 1.45 mb/d offset natural decline rates and allows mature field capacity reductions
- Could notionally increase capacity beyond target if needed, with plans on the back burner to add a further 1.9 mb/d

Natural gas developments lift OPEC NGLs

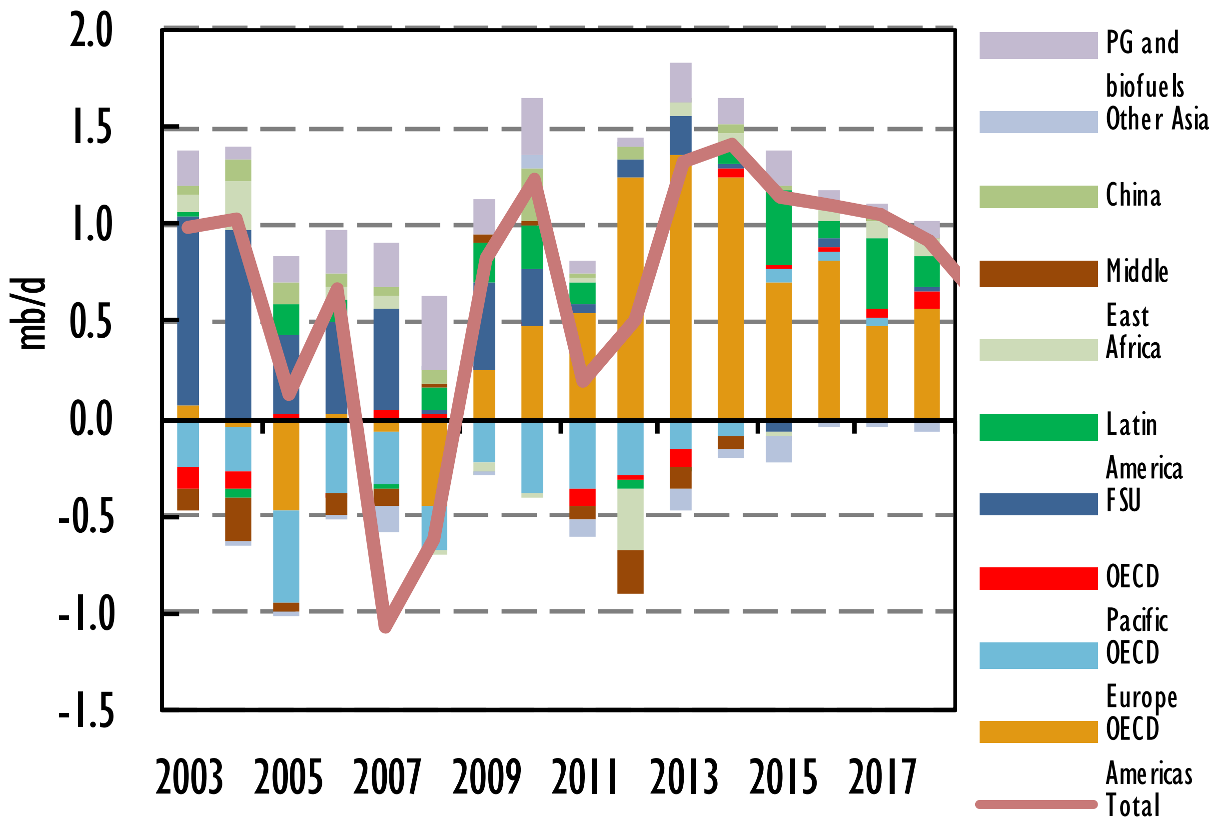
OPEC NGL production capacity



- OPEC NGLS rise by 810 kb/d to 7.12 mb/d
- Iran provides the majority of increase, with further gains from Saudi Arabia, the UAE and Qatar

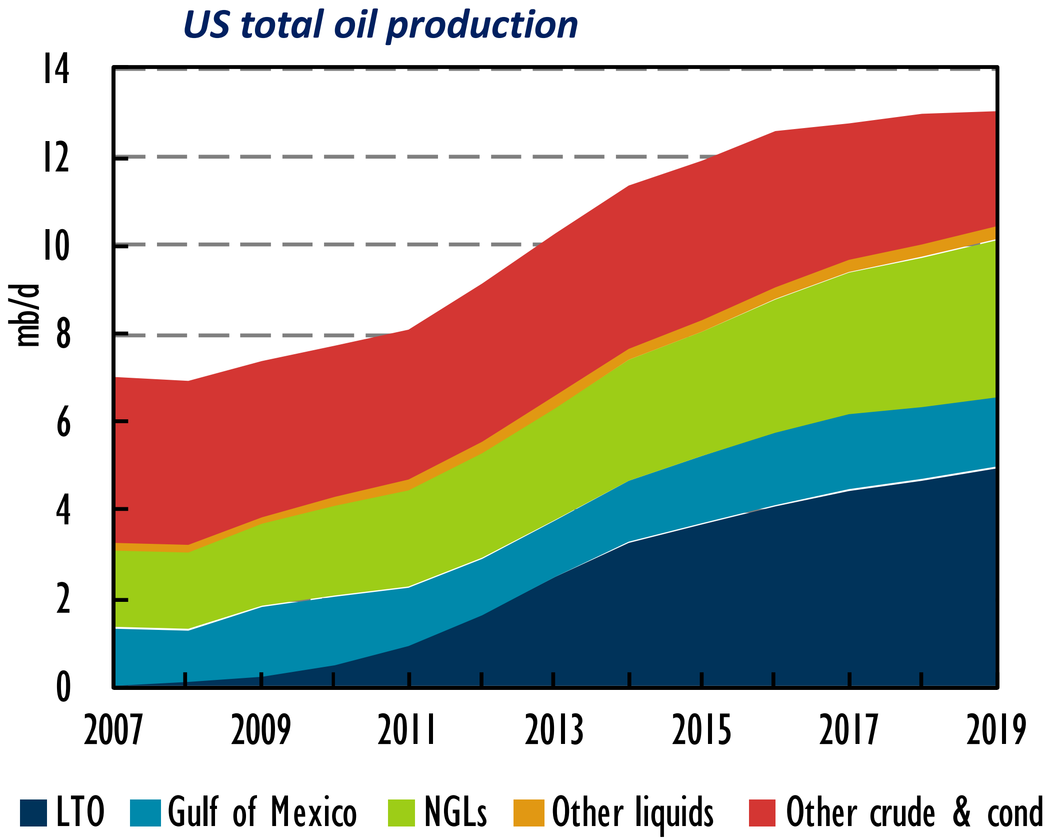
North America continues to lead non-OPEC supply growth

Annual non-OPEC supply growth



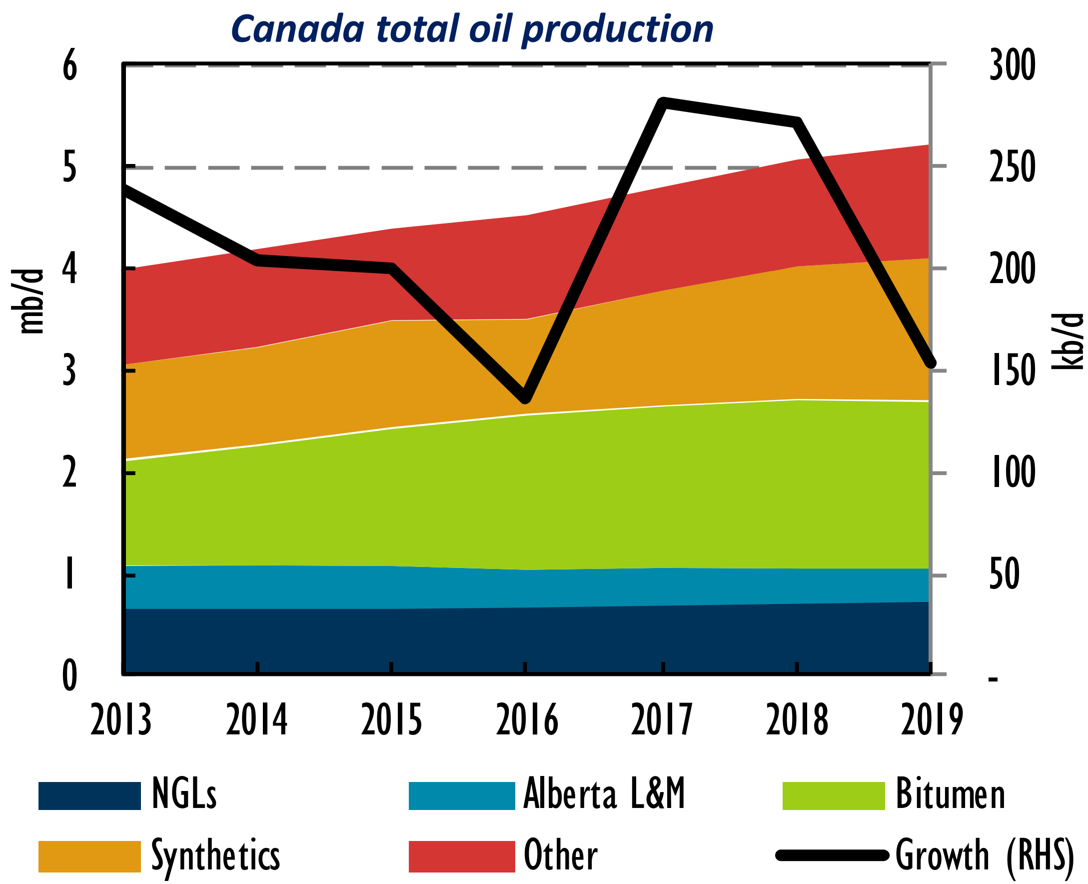
- Growth diversifies later in the period
- Non-OPEC supply grows by 6.2 mb/d to 60.9 mb/d

US oil production driven by LTO and NGLs



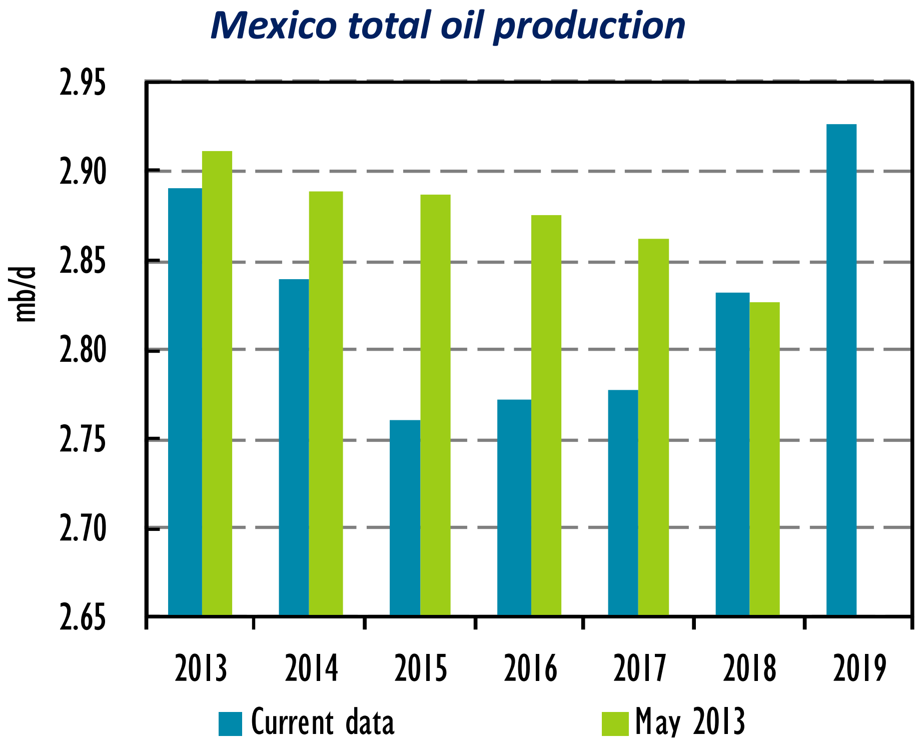
- By the end of the decade, the majority of US liquids output consists of LTO and NGLs, and total production exceeds 13 mb/d.

Canadian oil production driven by oil sands



- Bitumen and synthetics lead growth, while core Alberta light and medium production continues to decline.

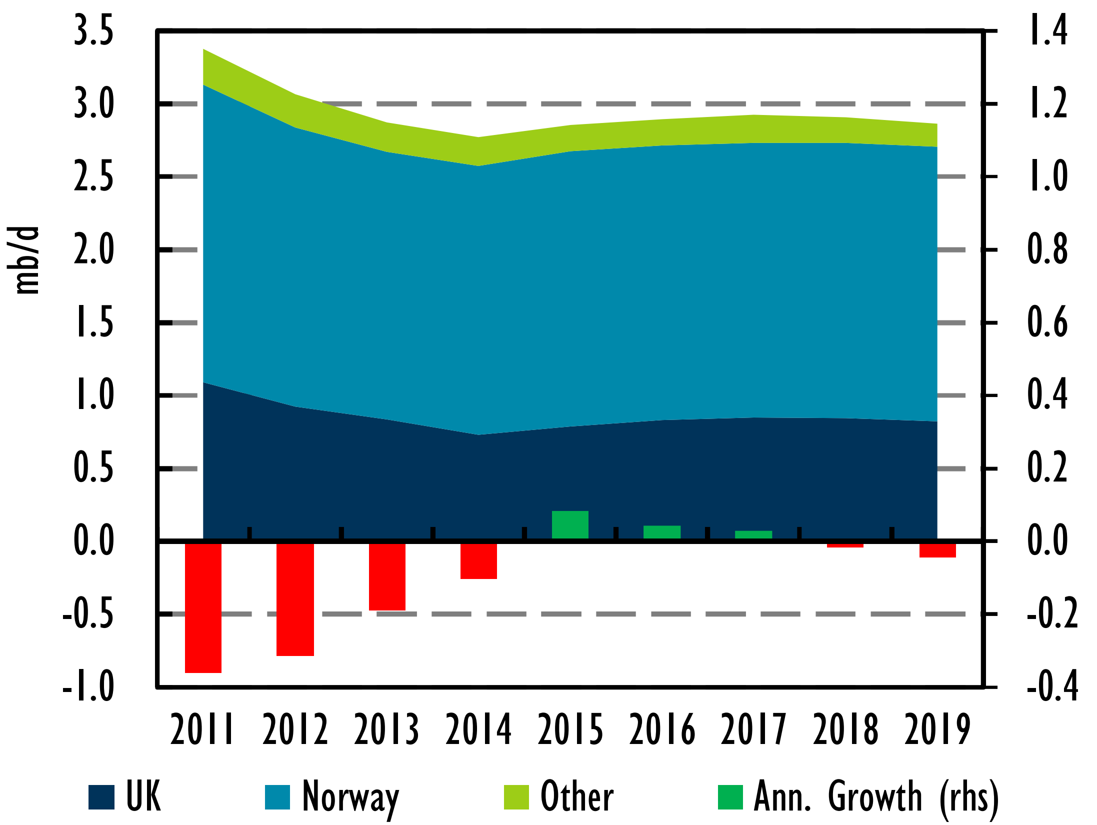
Mexican reform to lift production



- In a change from the last Report's forecast, production forecast to increase in 2018
- Some of this is long-planned Pemex projects, but the reform process is seen to affect production in 2019 and beyond

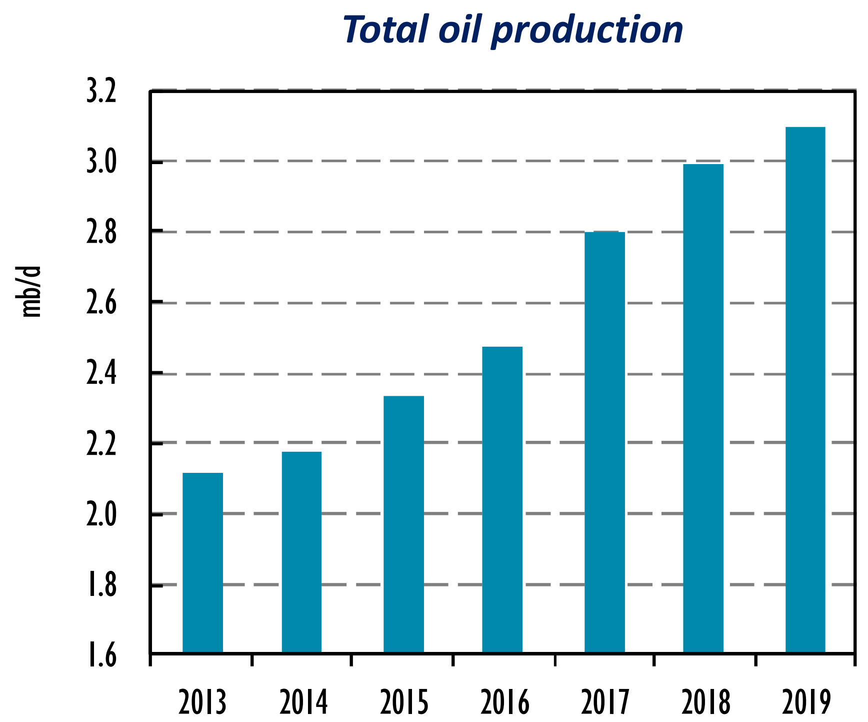
North Sea oil production flattens out

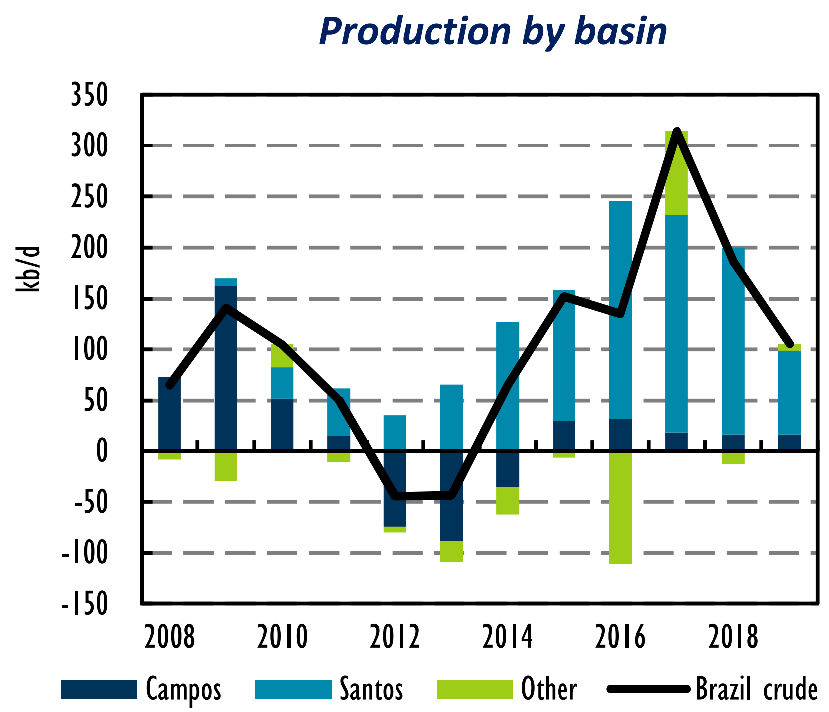
North Sea total oil production



- Growth set to resume in 2015 for the first time since 2000, as numerous new fields are brought online, though declines marginally again in 2018-2019

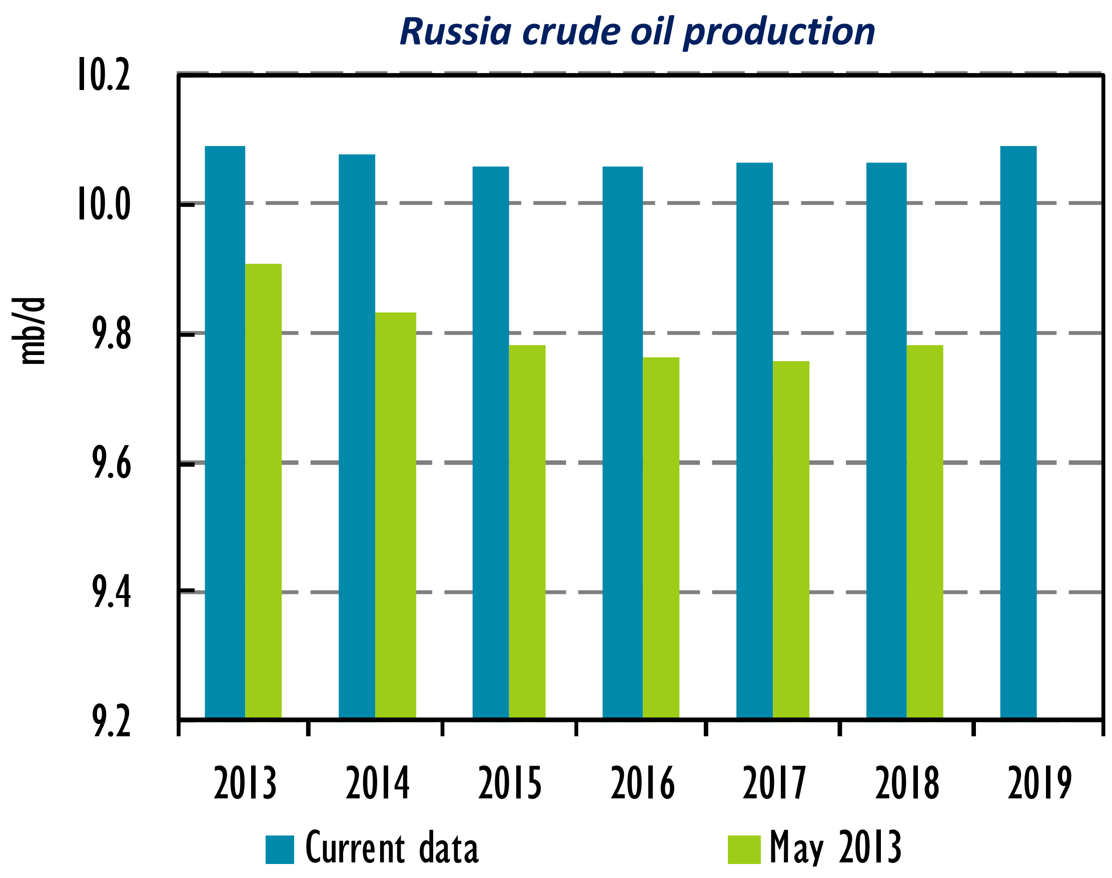
Brazil turnaround in sight





- Despite challenges, including an indebted and overstretched Petrobras and high decline rates on mature offshore
- Increases to average about 160 kb/d per year given major project start ups in the Santos basin

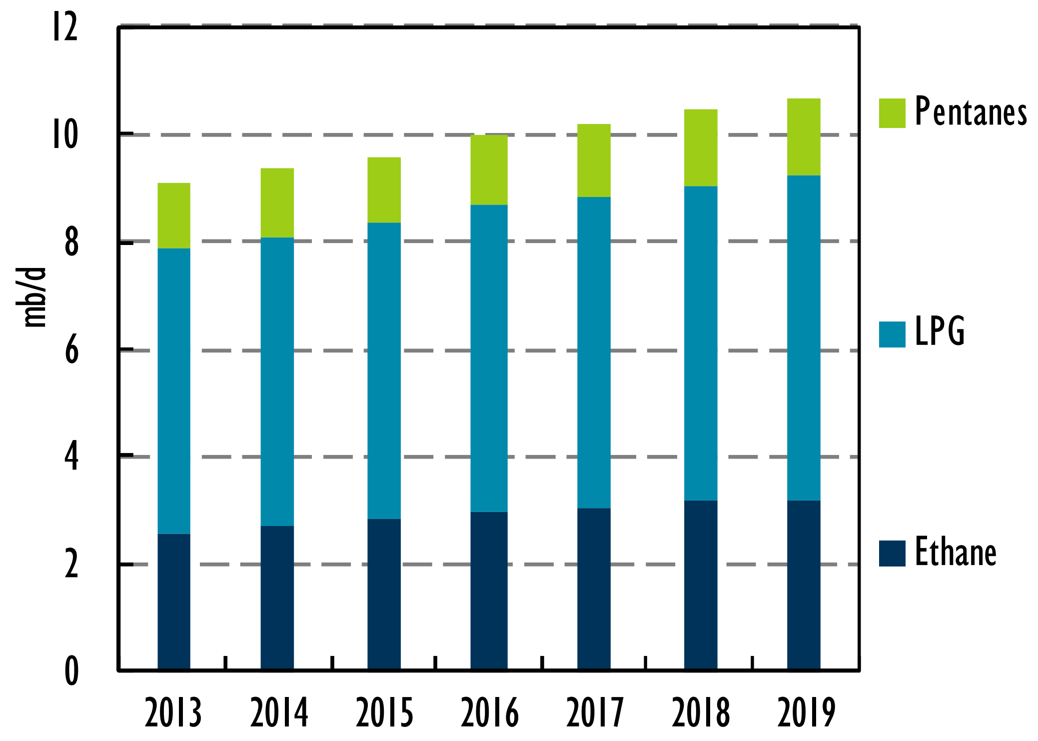
Russia crude oil steady but on a higher baseline



- Russia is expected to maintain the highest crude oil production capacity in the world after Saudi Arabia.

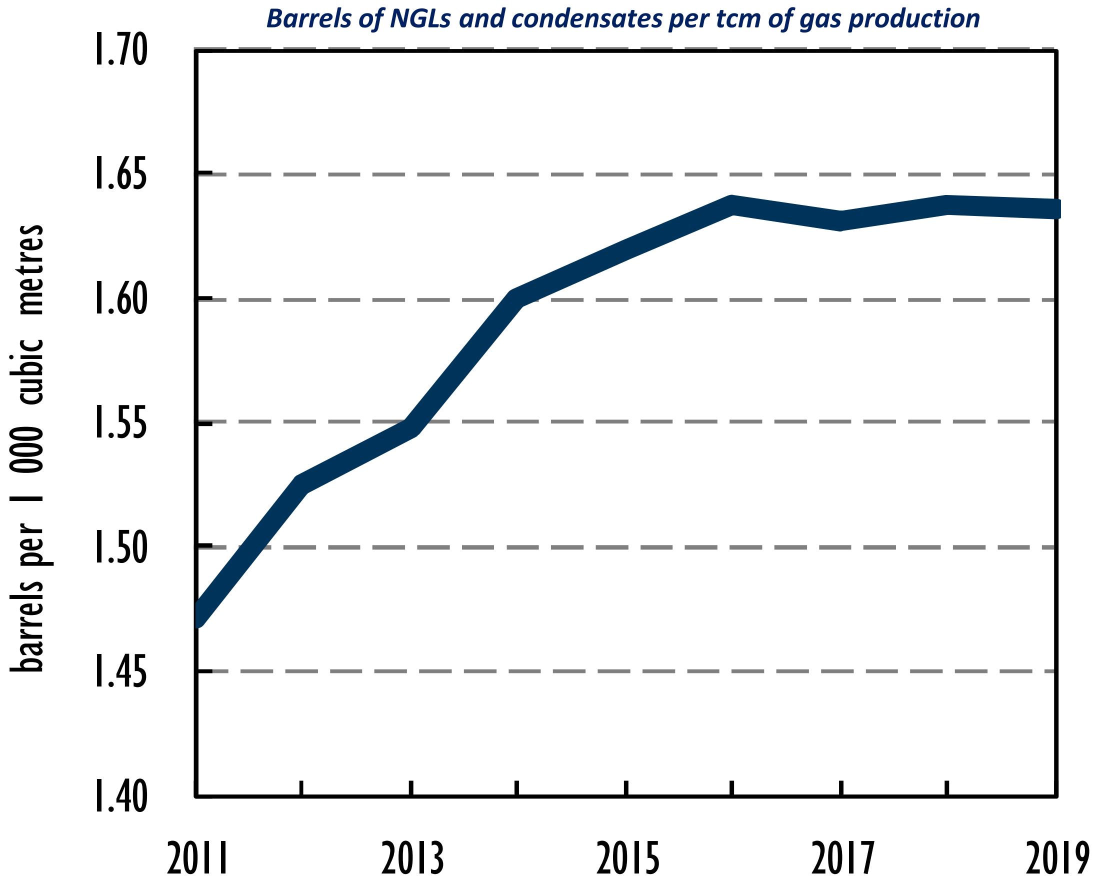
NGLs gain share of global supply

World NGLs production



- NGL capacity grows by 1.6 mb/d to 10.7 mb/d in 2019;
- NGLs, field condensate grow to 17% of global supply, from 16%

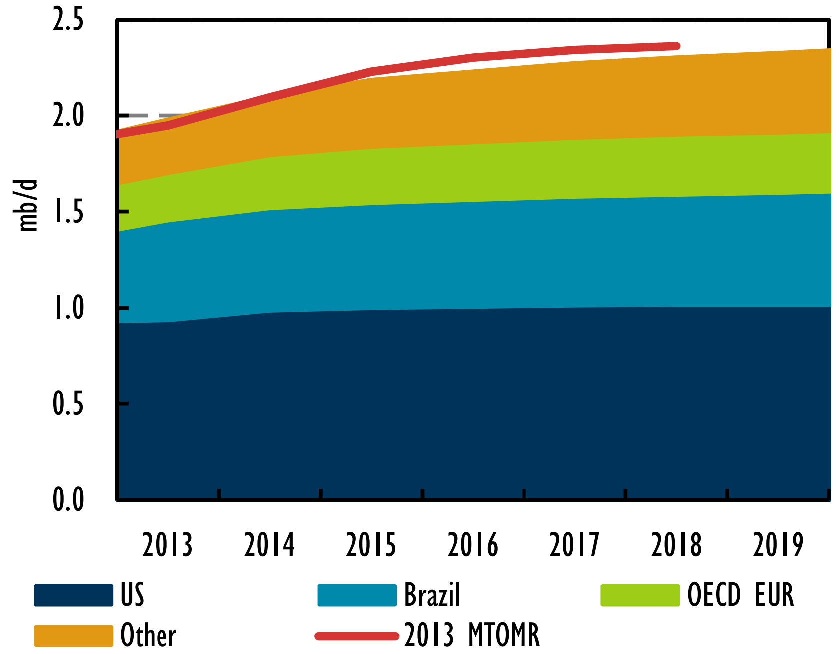
The world gas supply getting wetter



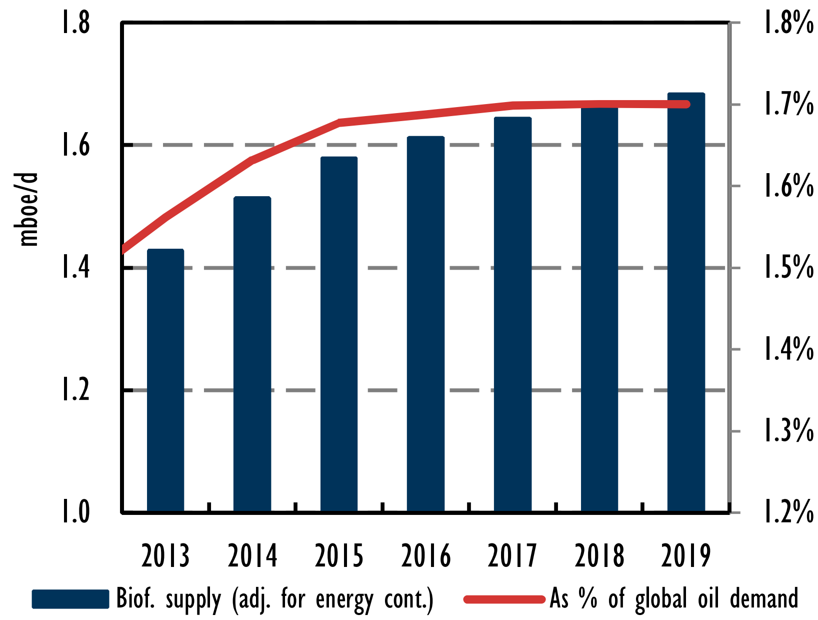
- Driven by liquids-rich plays in North America, tempered by dry gas increases in Asia later in the period

Biofuels growth shift away from OECD and Brazil

World biofuel production



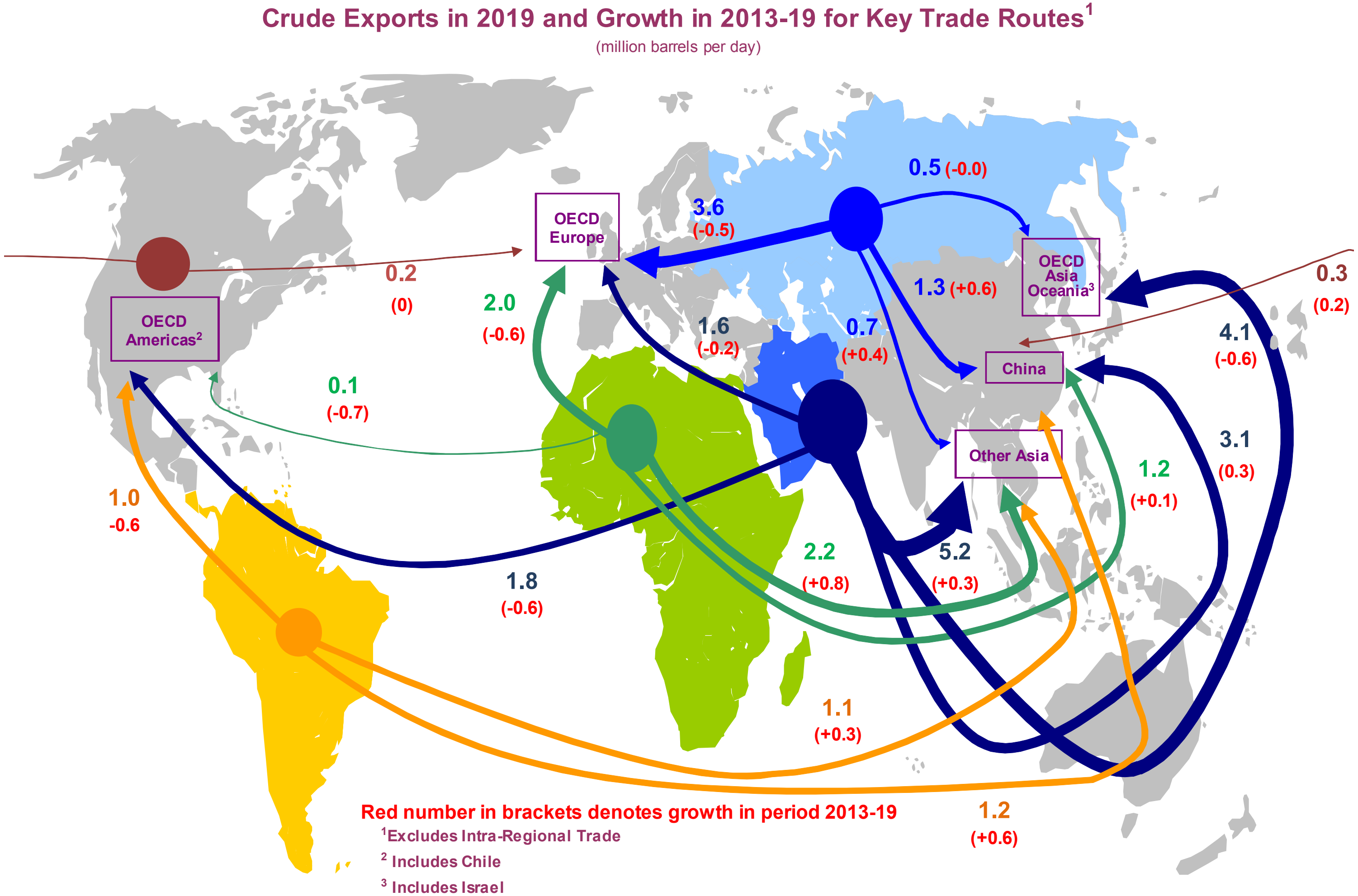
World biofuel production adj. for energy content as a % of global oil demand



- Policy support is waning in OECD countries, while their demand growth is already weak. Gasoline subsidies and a weak sugar market are impacting Brazil
- Can be advantageous in countries with large product import bills and extant subsidies

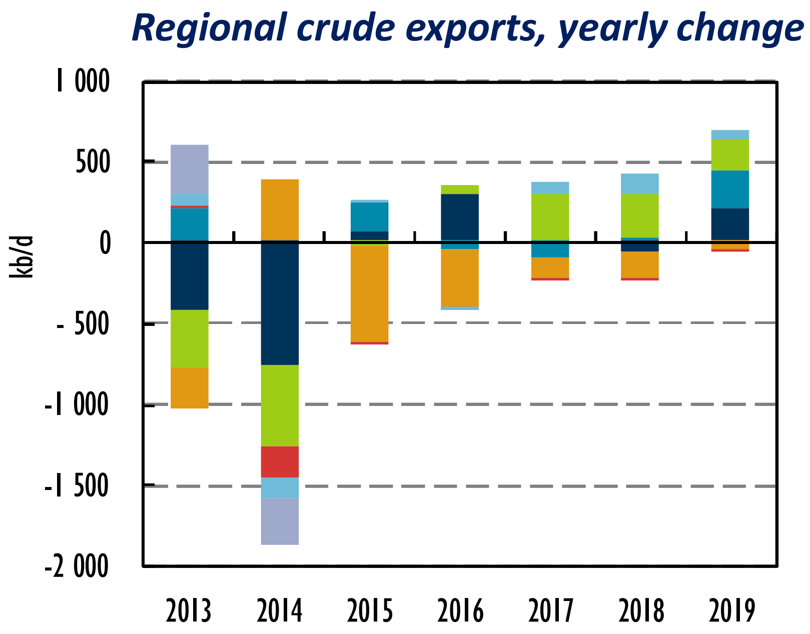
Crude trade

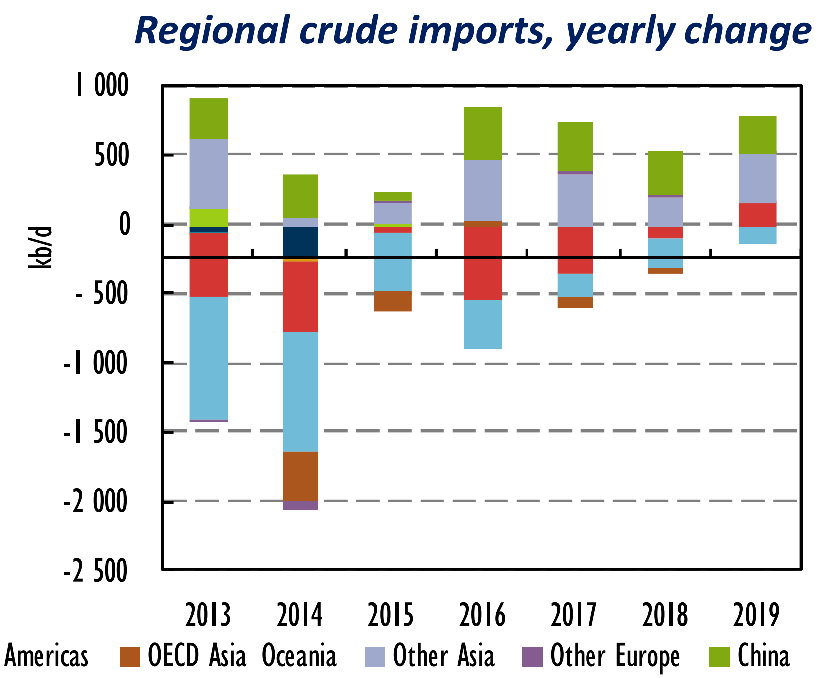
Crude trade shifts further east



- Asia imports increase by 2.6 mb/d to 22.1 mb, or 65% of the international crude market

Global crude trade to contract by 1.1 mb/d by 2019

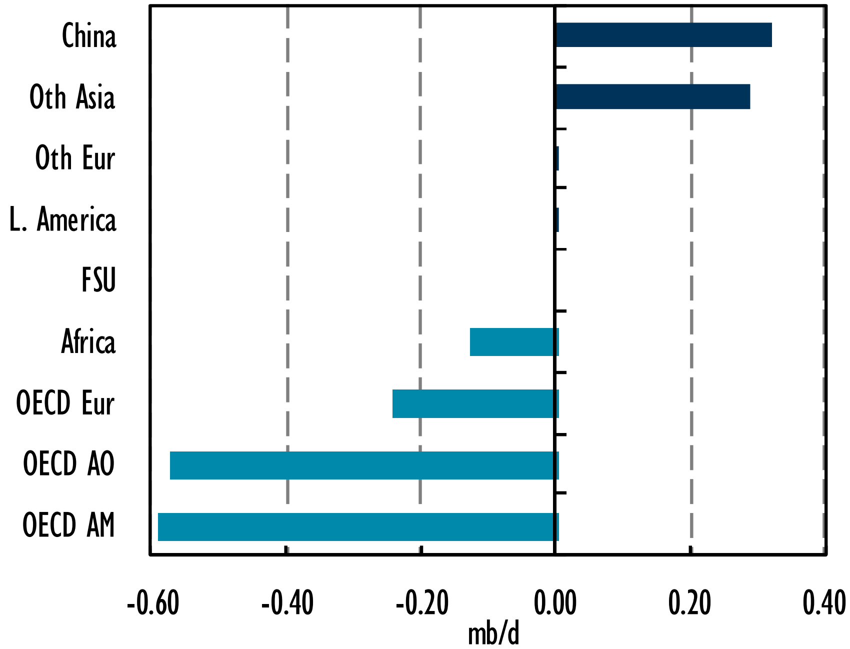




- Increased North American and Middle Eastern crude seen being refined close to the wellhead and subsequently exported as products

Middle East to remain key crude exporting region throughout the forecast

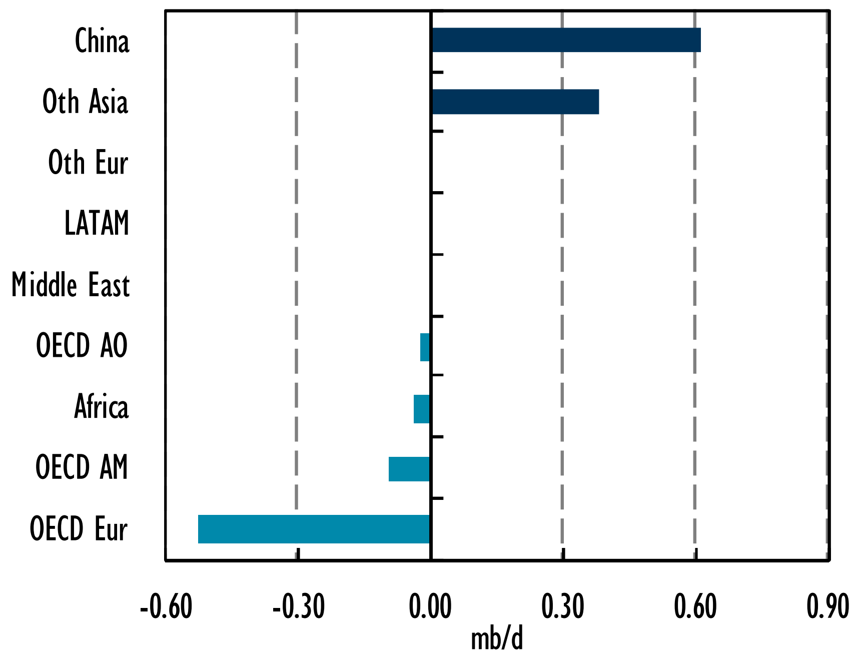
Middle East export growth 2013-19



- **BUT its exports are forecast to decline to 16.1 mb/d (-900 kb/d) as regional producers refine more oil close to the wellhead**
  - **Regional refinery capacity growth set to outstrip production growth**
  - **Decrease in crude shipments will be offset by an anticipated increase in product exports**
- **Exports projected to be redirected eastwards to non-OECD Asia**

FSU to continue to diversify exports eastwards

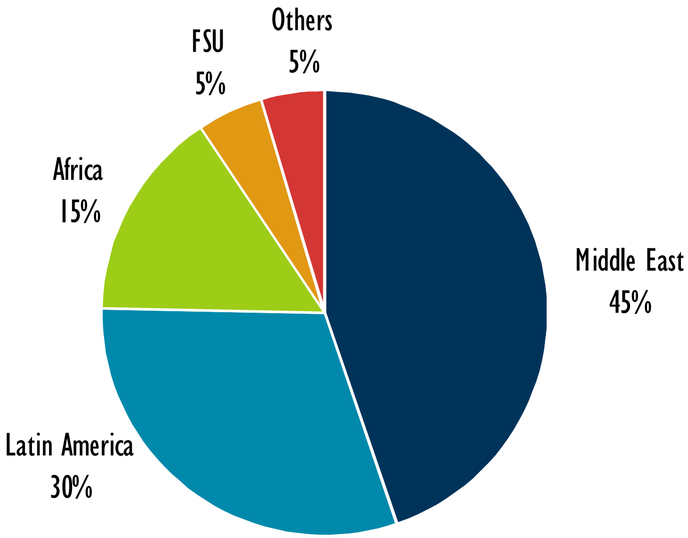
FSU export growth 2013-19



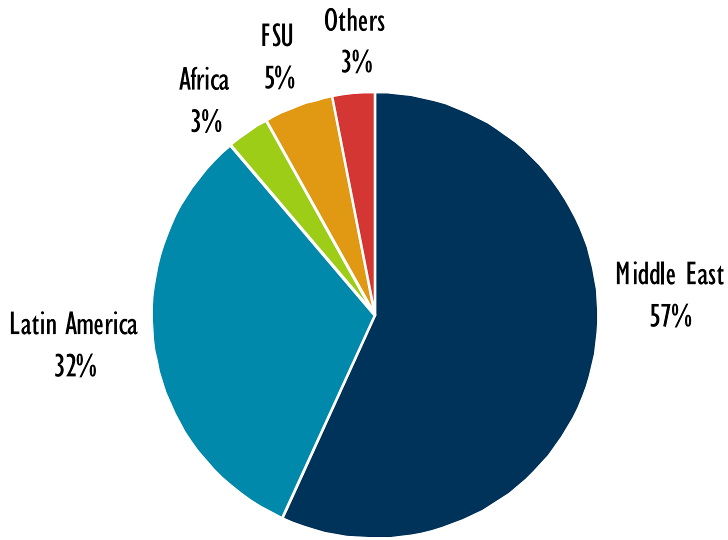
- Shipments to Asia will hit 2.6 mb/d by 2019
- Exports to Europe to fall by over 500 kb/d to 3.9 mb/d by 2019
  - Europe will remain the region's largest customer, but its share of FSU exports will fall to 54% in 2019 from 65% in 2013

Americas to become a net crude exporter by 2019

OECD American crude imports, 2013

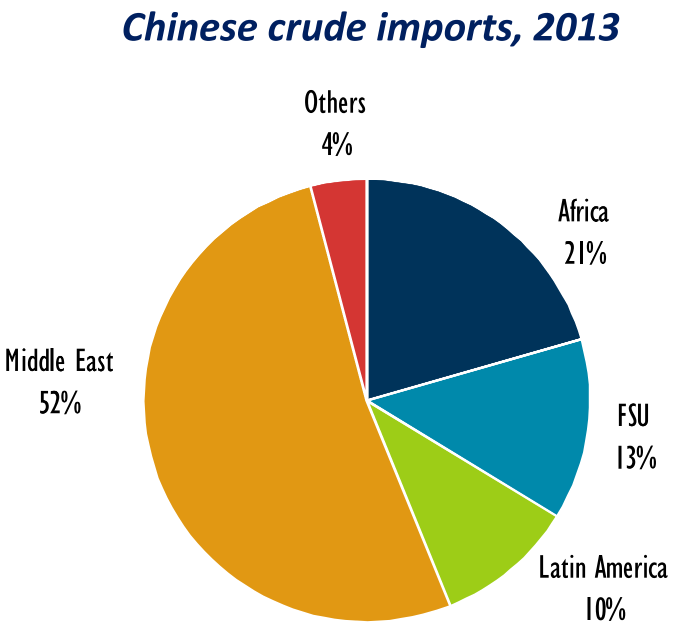


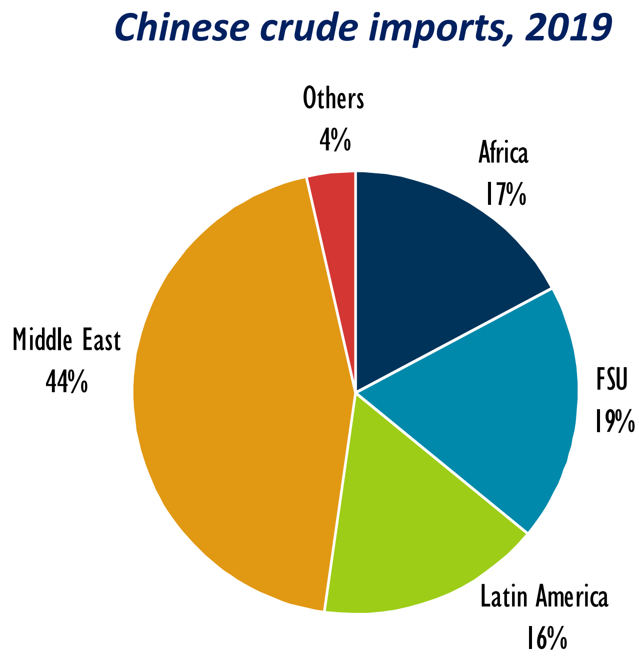
OECD American crude imports, 2019



- In response to soaring supplies from US, Canada and Brazil
  - Which will outstrip regional refinery capacity growth
- OECD Americas still to import 3.1 mb/d of mainly heavy sour crudes in 2019, 2.2 mb/d lower than in 2013
- Middle East will account for 57% of regional imports
  - But absolute volumes will drop by 600 kb/d

China to consolidate its position as the world's largest importing country



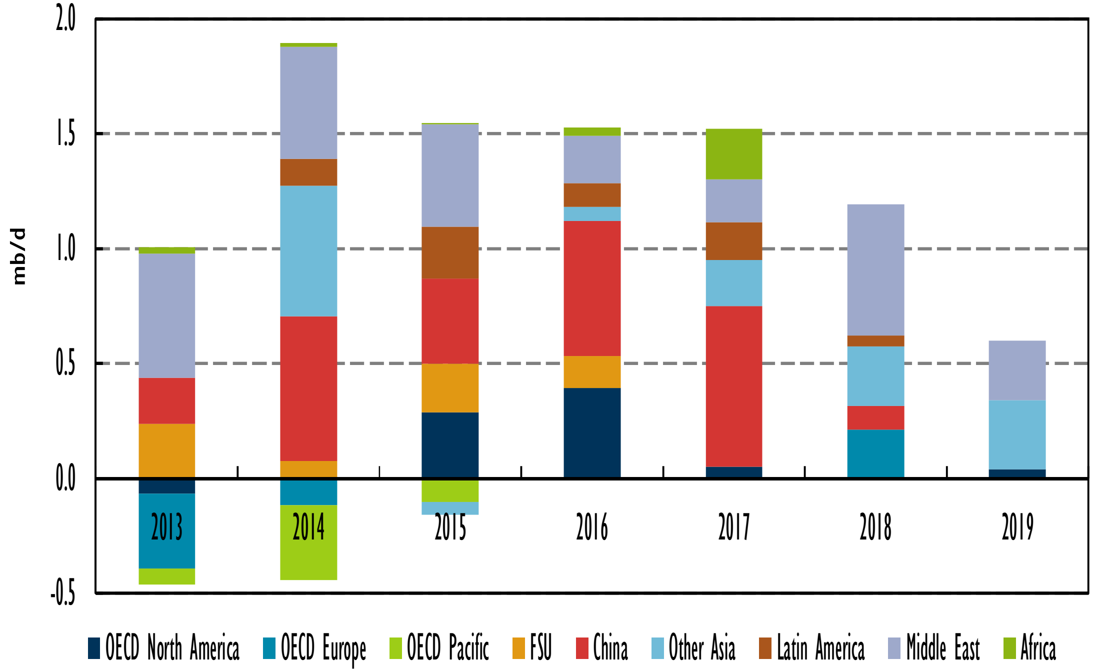


- China to import 7.1 mb/d in 2019
- China to continue diversifying its crude imports
  - Imports from the FSU to reach 1.3 mb/d
- Most of the growth will be long-haul trade

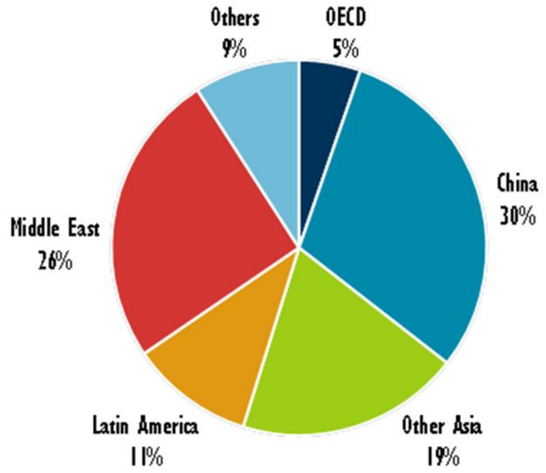
Refining

Refinery capacity expansions continue…

Crude Distillation Expansions



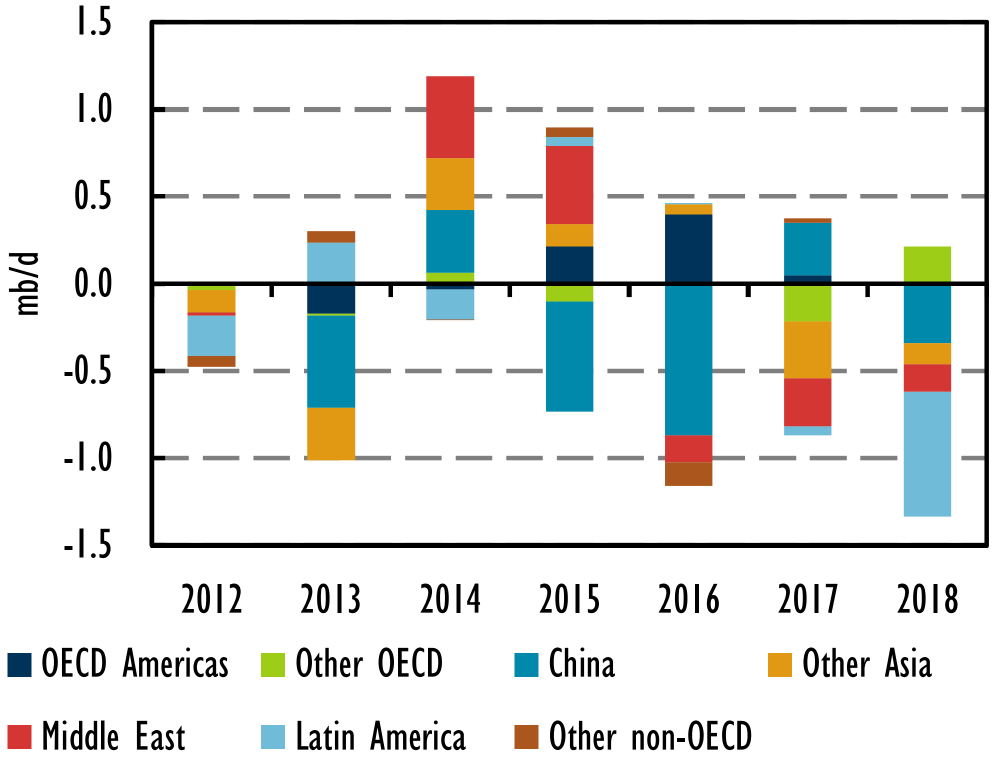
CDU Expansions 2013-2019 by Region



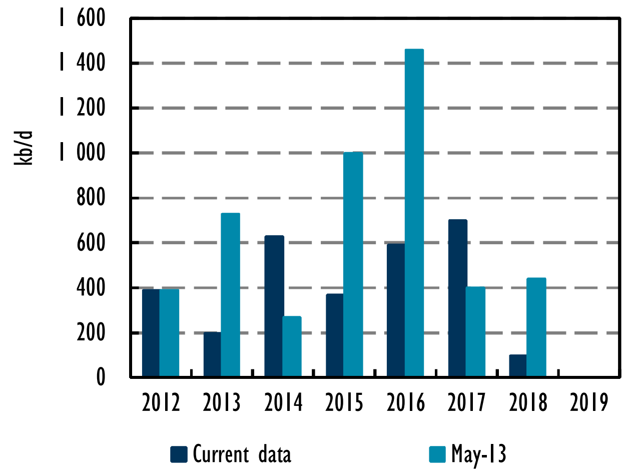
- 95% of new capacity comes from the non-OECD, of which Asia accounts for half

…but plans are getting scaled back in the face of rising over-capacity

Revisions to capacity expansion plans since 2013 MTOMR

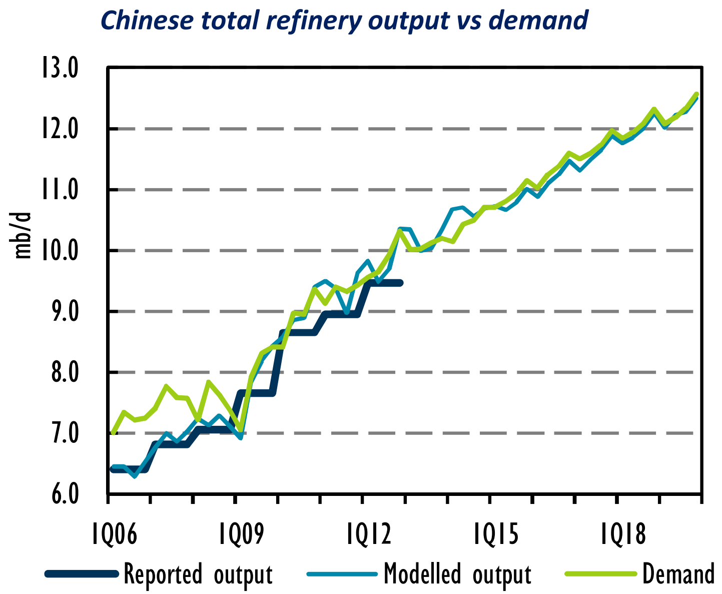


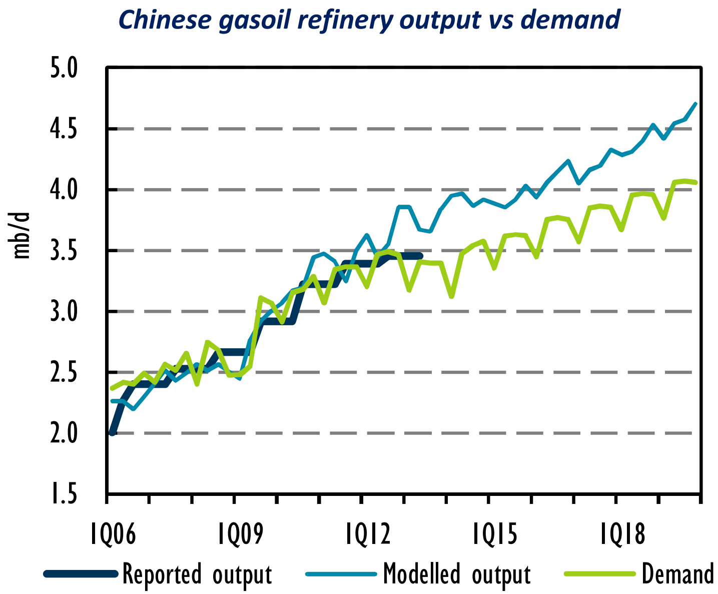
Chinese CDU expansions vs . previous



- Projects slip in Latin America; China stalls new projects on looming surplus capacity, corruption scandals, pollution concerns

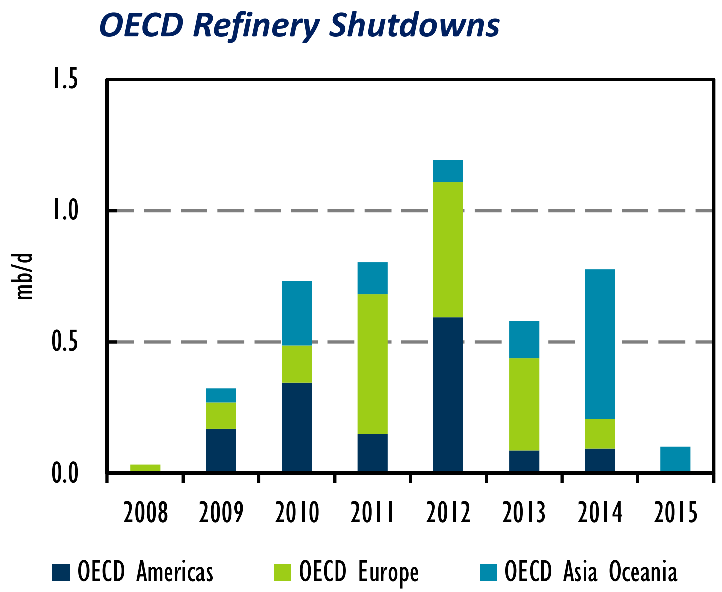
Chinese product output to balance demand as projects scaled back

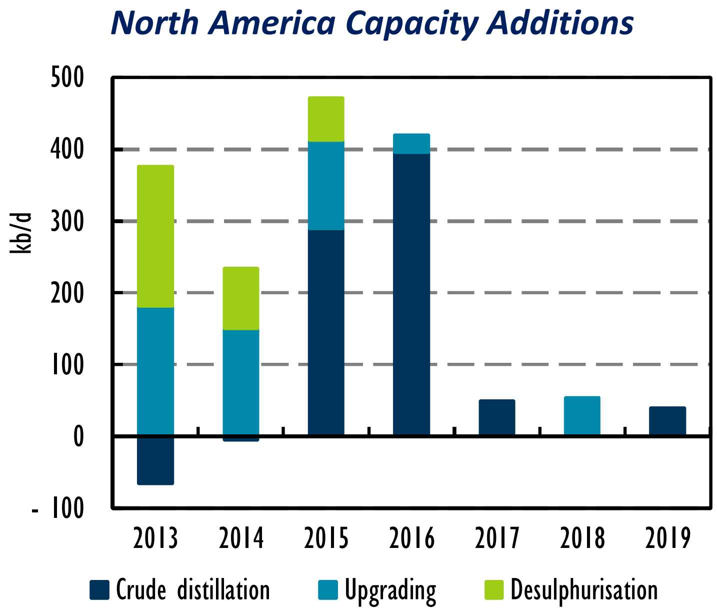




- **Apparent slowdown in gasoil demand growth sees product surpluses emerging. Indeed, China turned net gasoil exporter in 2013**

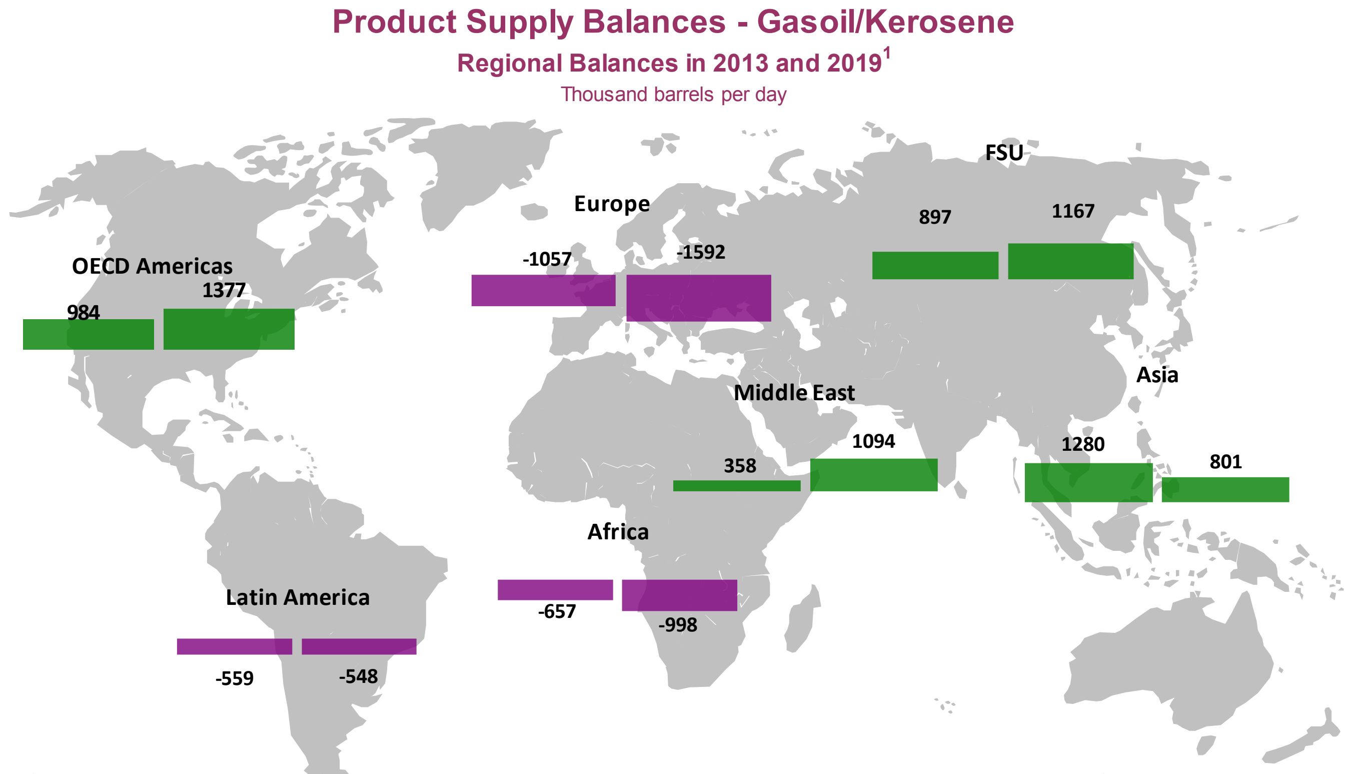
Diverging trends in OECD refining: Europe & Asia versus North America





- 4.5 mb/d of OECD crude distillation capacity shut since 2008
- Surging US LTO, condensate supplies lead to 750 kb/d expansion in US in 2015-2017

Europe's middle distillate deficit balloons to 1.6 mb/d by 2019

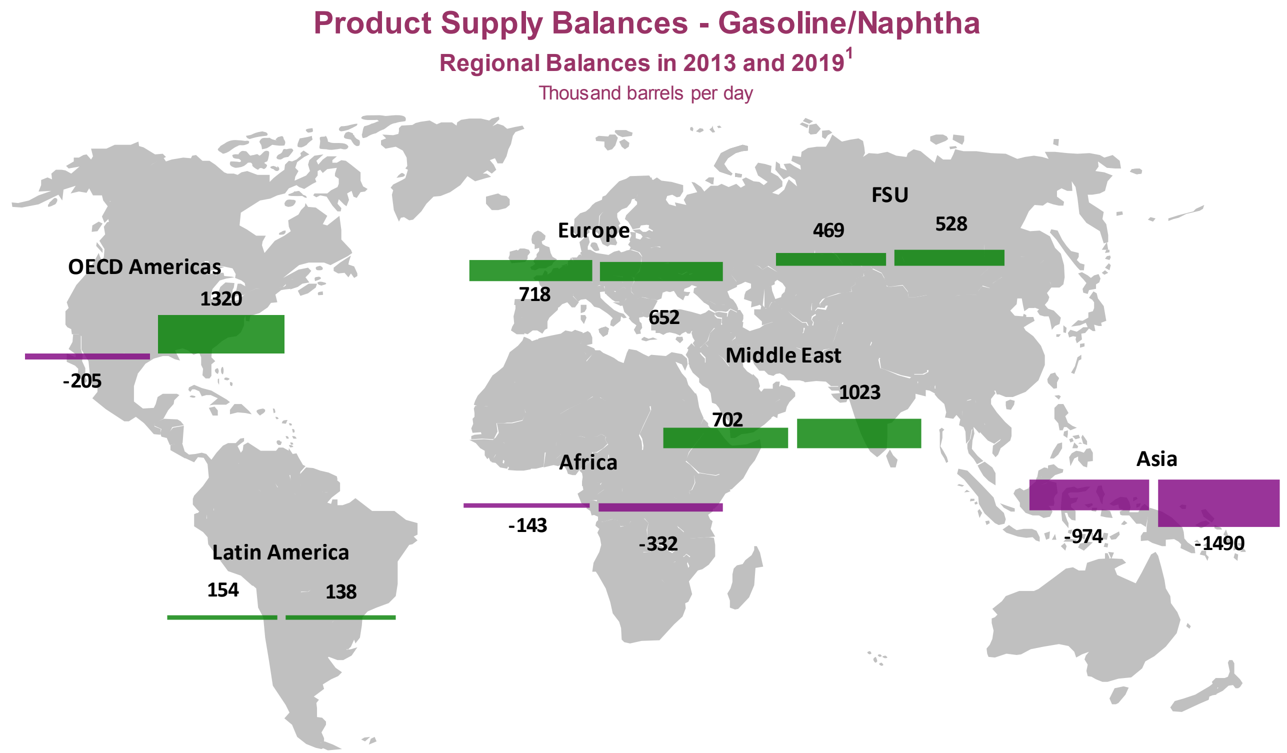


Refinery production and supplies from other sources vs. end-user demand. Regional total does not add to zero due to feedstock trade and differences in product classifications.

1. Positive number indicates net-export potential, negative number net-import requirement

- Increased supplies are coming from Middle East, North America and Russia

North American gasoline glut emerging

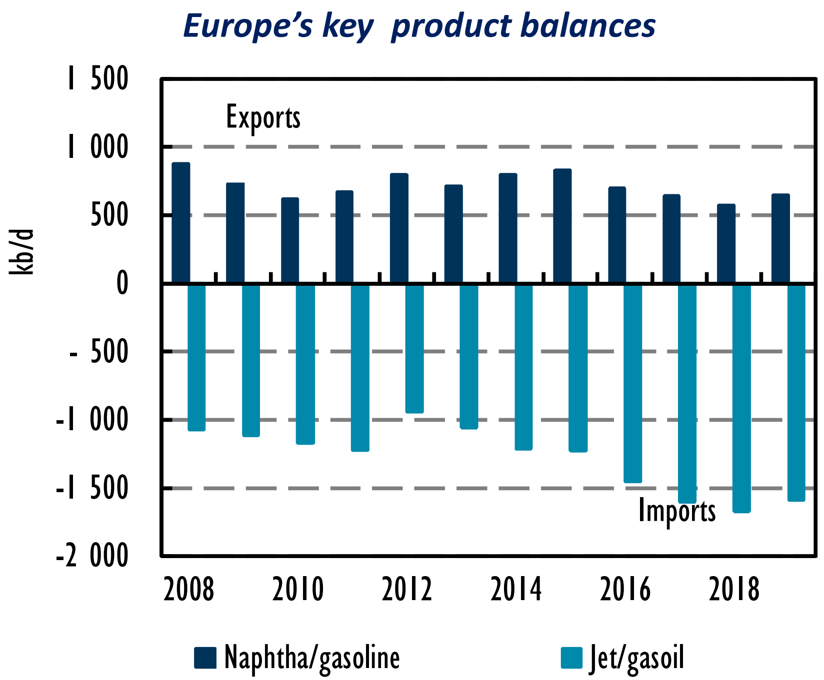


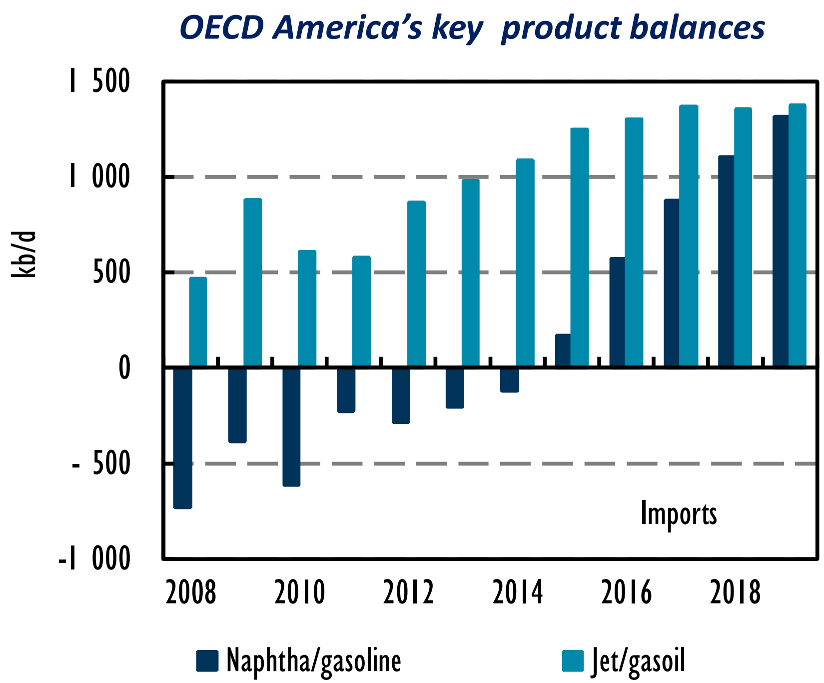
Refinery Production and supplies from other sources vs. end-user demand. regional total do not add to zero due to feedstock trade and differences in product classifications.

Positive number indicates net-export potential, negative number indicate net-import requirement

- North America faces excess light distillate supply of 1.3 mb/d in 2019, in search of export outlets

Atlantic Basin product trade to increase

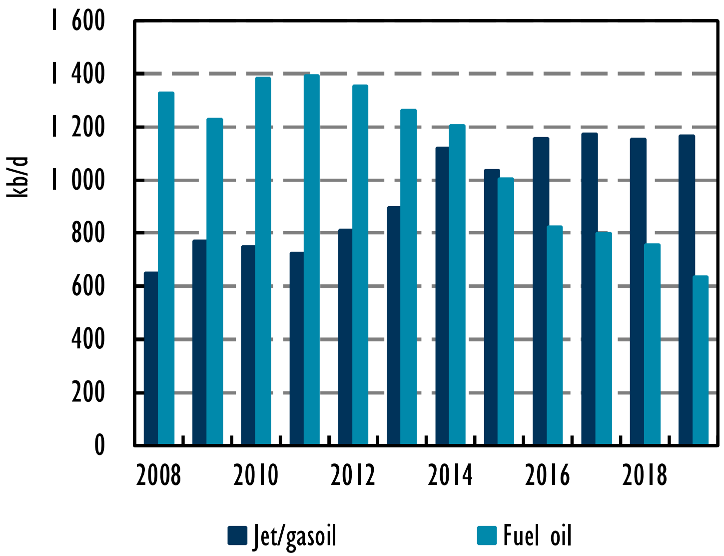




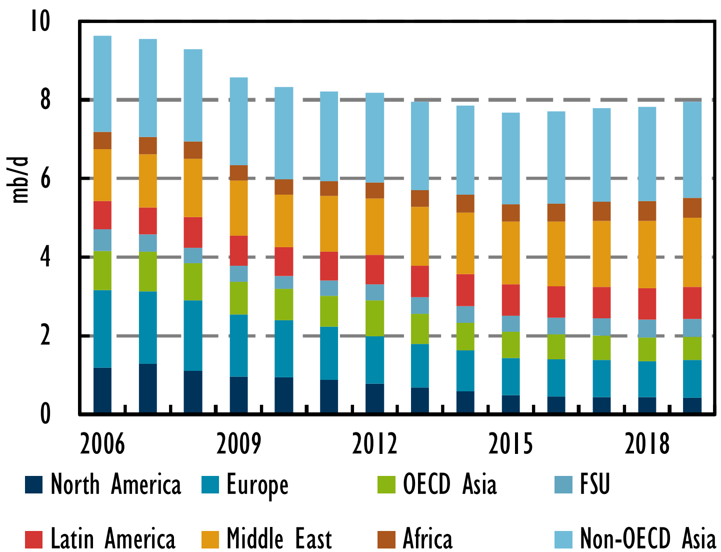
- European middle distillate deficit balloons to 1.6 mb/d by 2019,but region struggle to rid itself of surplus gasoline supplies
- US refinery industry renaissance, coinciding with sharp drop in demand, takes US to top global naphtha/gasoline supplier

FSU fuel oil supplies cut back as refiners upgrade and export duties changed

FSU key product exports

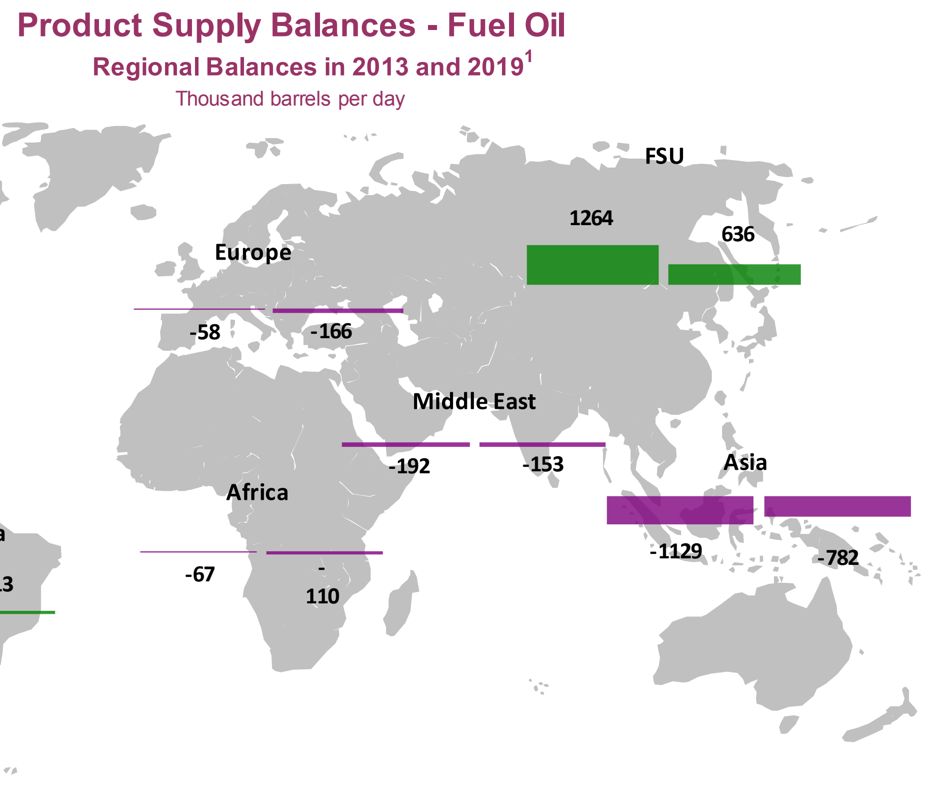


Global fuel oil demand



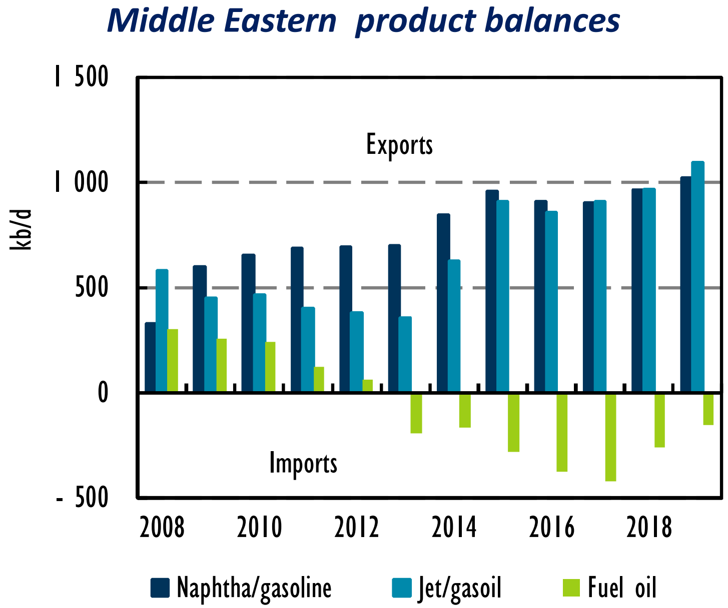
- Equalization of Russian fuel oil export duties with crude oil from Jan 2015, has led to refinery upgrading investments
- New duties make simple refiners, with high fuel oil yield, uneconomical to run
- Fuel oil demand stays unchanged through 2019,as non-OECD offset improvement in OECD

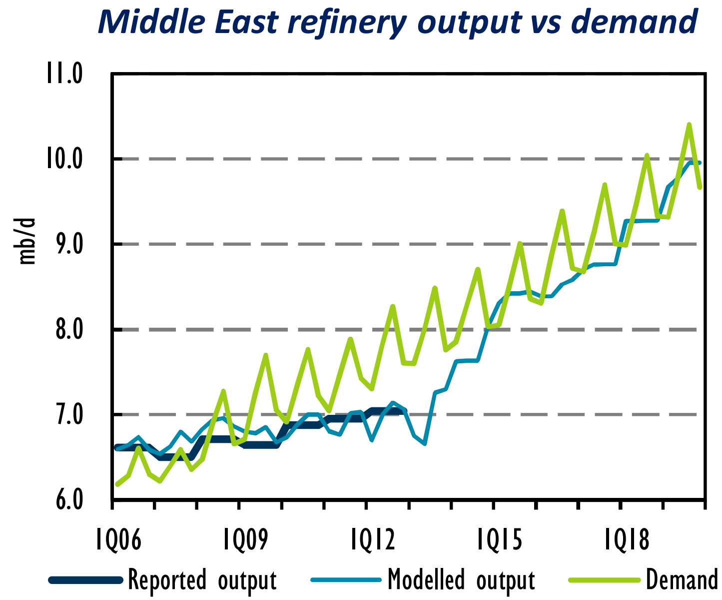
Fuel oil markets could tighten



- Russian export duty reform, refinery investments curb output while global demand stays flat – unless marine bunker markets shift away from fuel oil ahead of new IMO sulphur standards

Middle East emerges as large product exporter

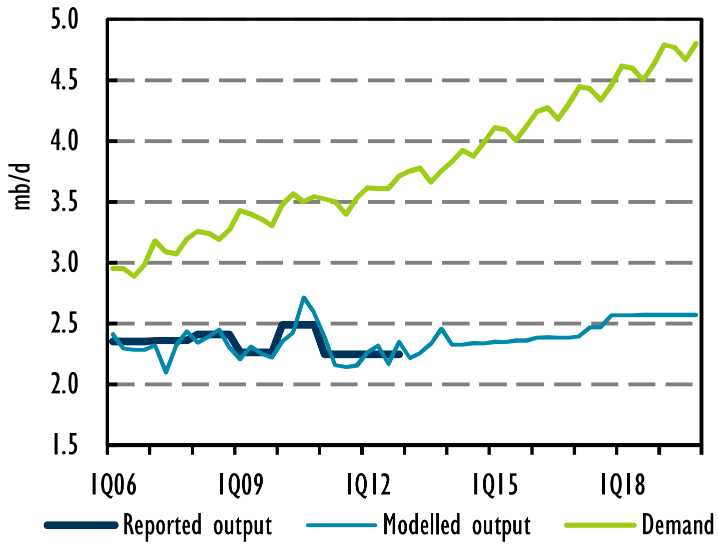




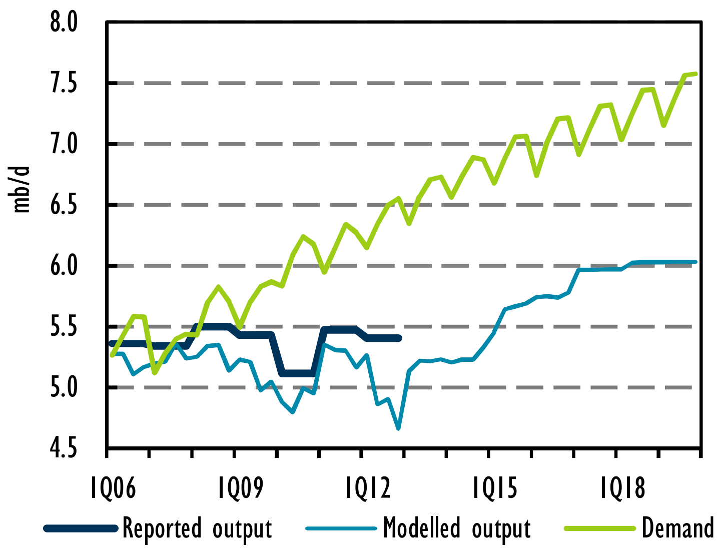
- New refinery projects coming on stream in the Middle East exceed regional demand growth, resulting in increased product exports – in particular of middle distillates

Africa and Latin America remain importers

Africa refinery output vs total oil demand

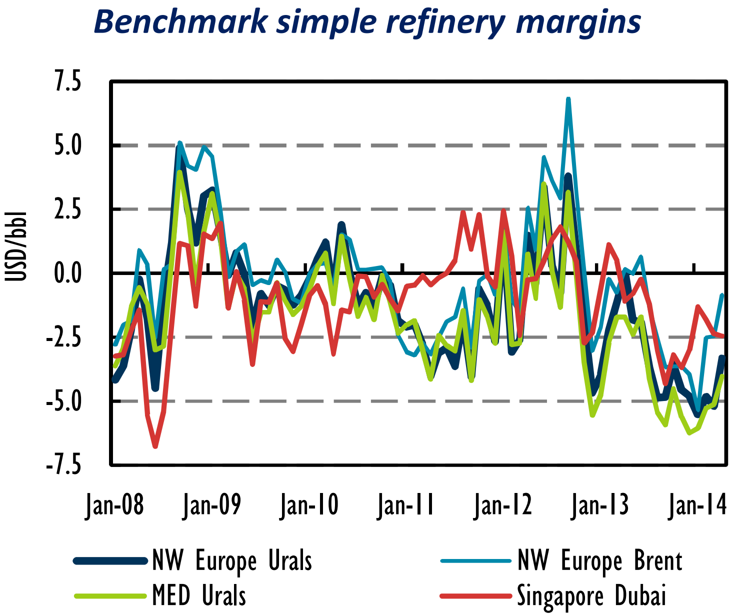


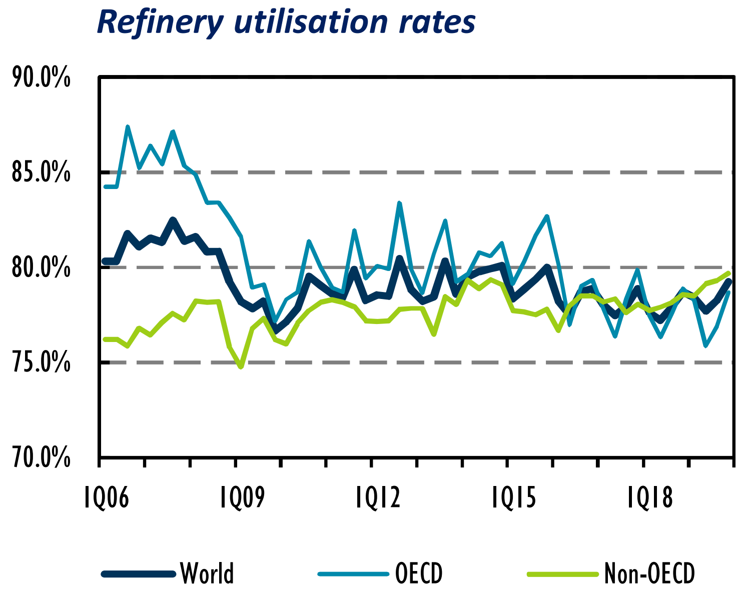
Latin American refinery output vs total oil demand



- **Difficulties in bringing new refinery projects on stream, leaves Africa and Latin America with large product import requirements**
- **Heavy financial burden on governments subsidising fuels**

Refinery margins, utilisation rates remain under pressure amid surplus capacity



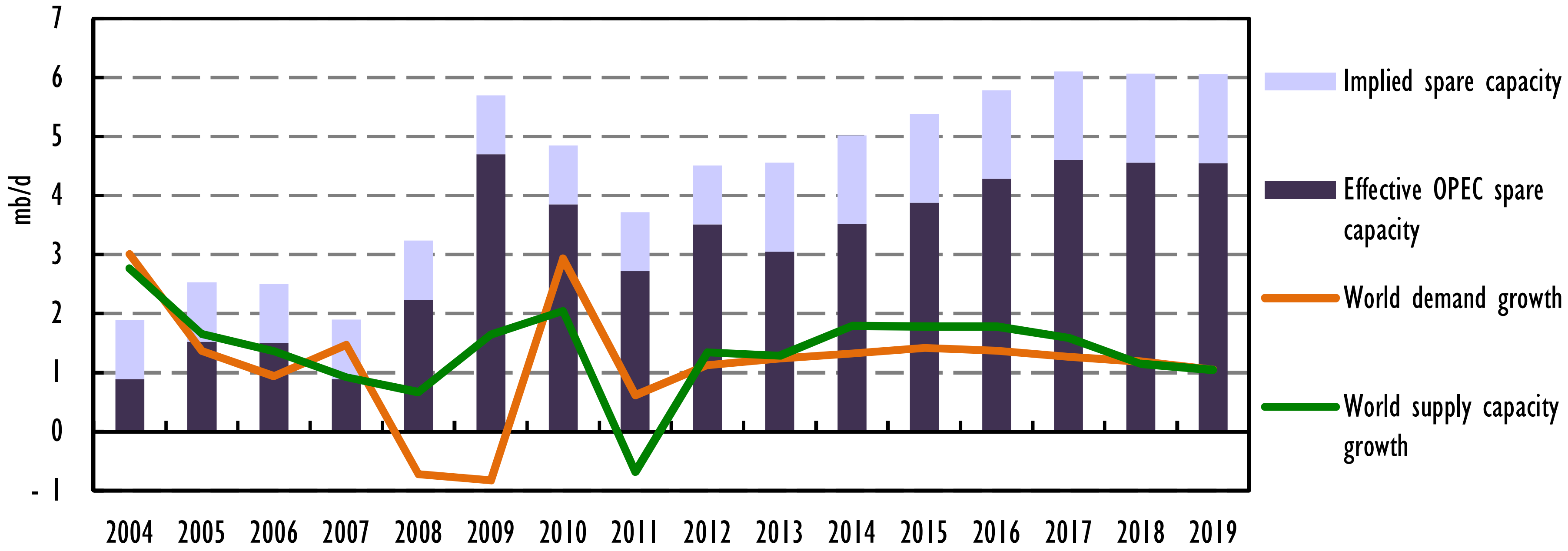


- To bring utilisation rates up to 2006-2008 levels (when margins were healthy), another 4.8 mb/d of capacity would have to be cut, whether through plant closures, projects delays or cancellations

Summary

On paper, oil market balance eases, but risks and challenges abound

Medium-term oil market balance



- Nominal spare OPEC capacity to rise from 2013
- But high risk remains

Thank you

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