

OIL

Medium-Term Market Report 2015

**The Norwegian Ministry of
Petroleum and Energy**

Oslo, 17 February 2015

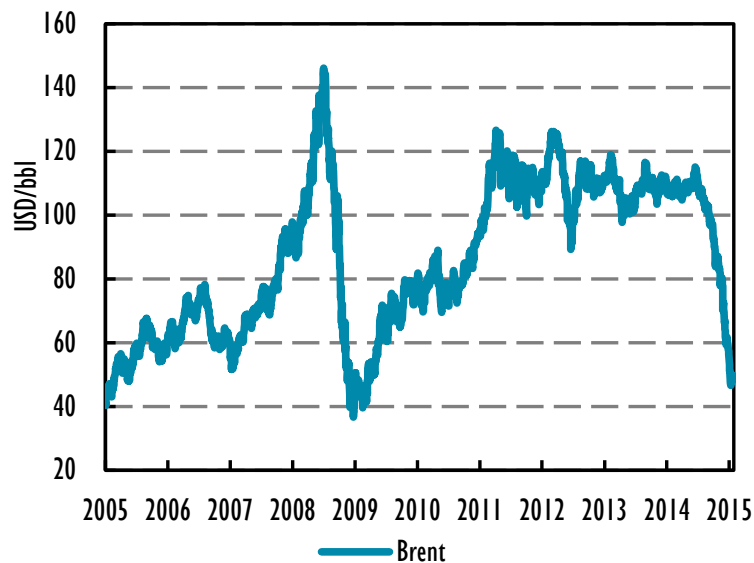


Market Analysis and Forecasts to 2020

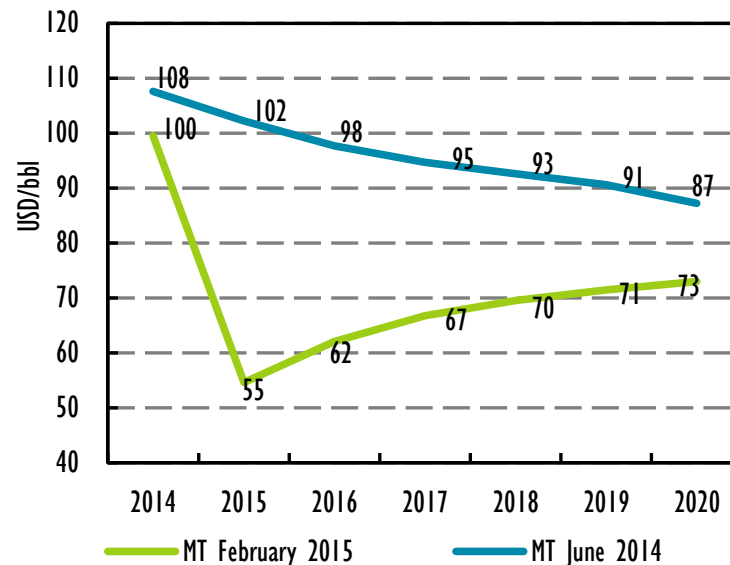
Oil price plunge triggers market reset

Medium-Term
Market Report
2015

Historical Brent crude oil prices



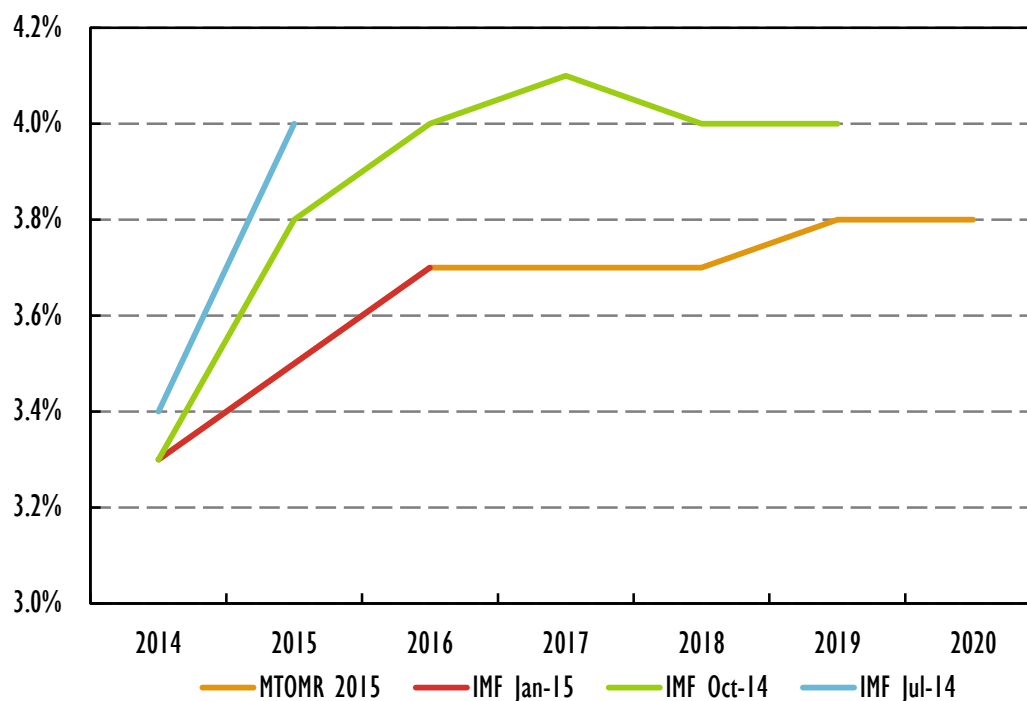
IEA import price assumptions



- 60% drop in crude oil prices June 2014 - early January 2015
- Partial rebound since then, but market does not expect full recovery
- From backwardation to contango
- Is the age of triple-digit oil prices over?

IMF backpedals on economic recovery

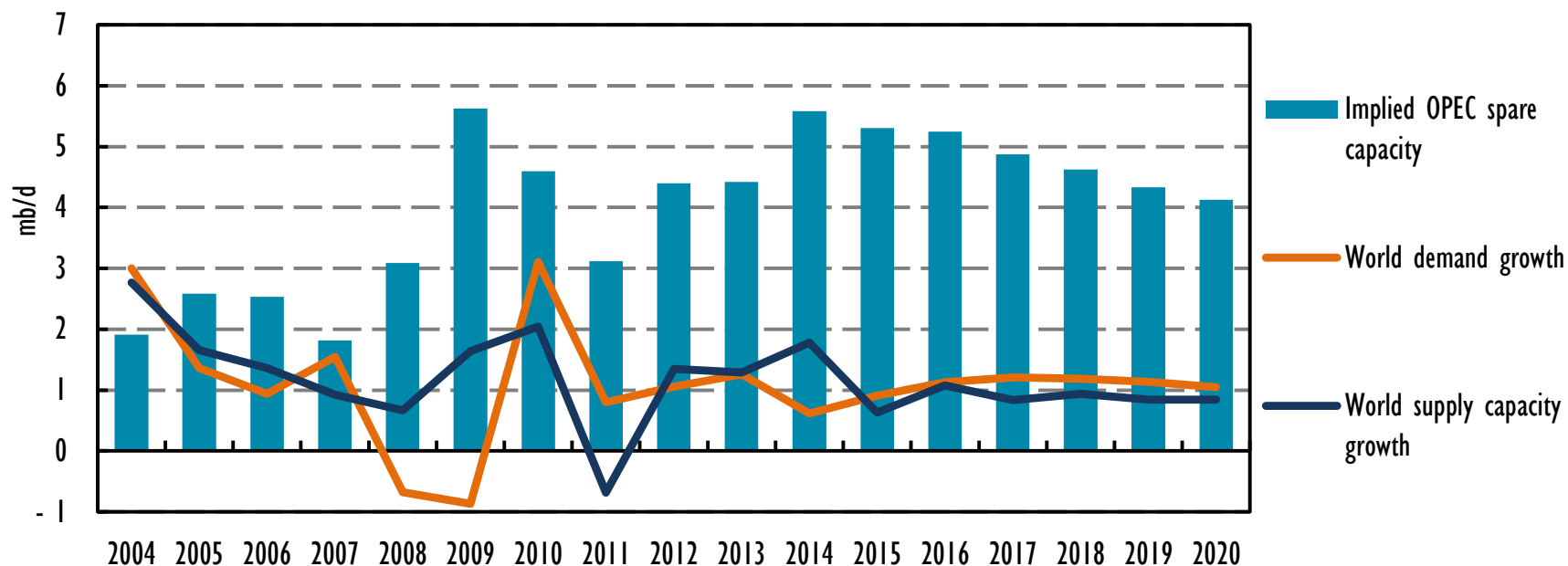
Medium-Term
Market Report
2015



**2015 economic growth revised from 4% to 3.8% and again to 3.5%
over a six-month period**

Business as unusual

Medium-Term
Market Report
2015



The market response to lower prices is asymmetrical
Supply has become more price-elastic, demand less so

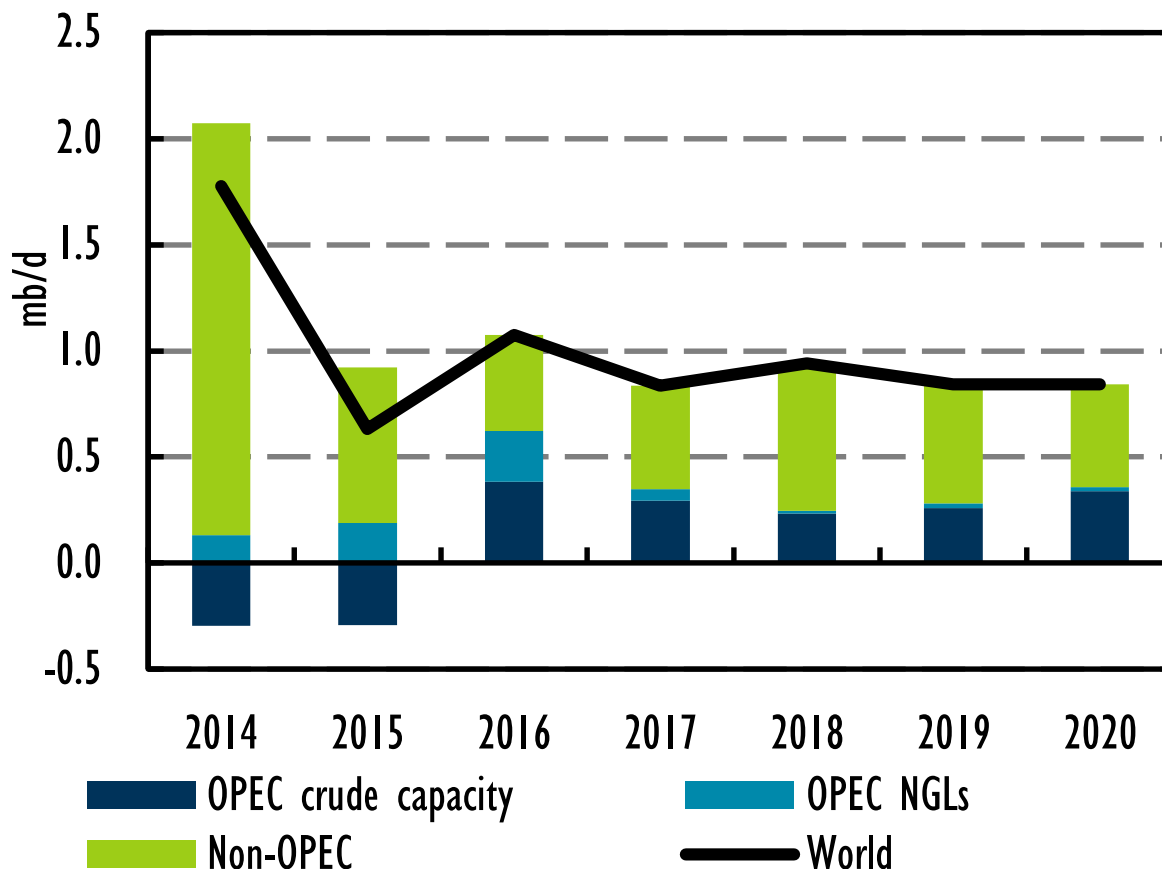


Medium-Term Market Report 2015

Supply

Slowing supply growth

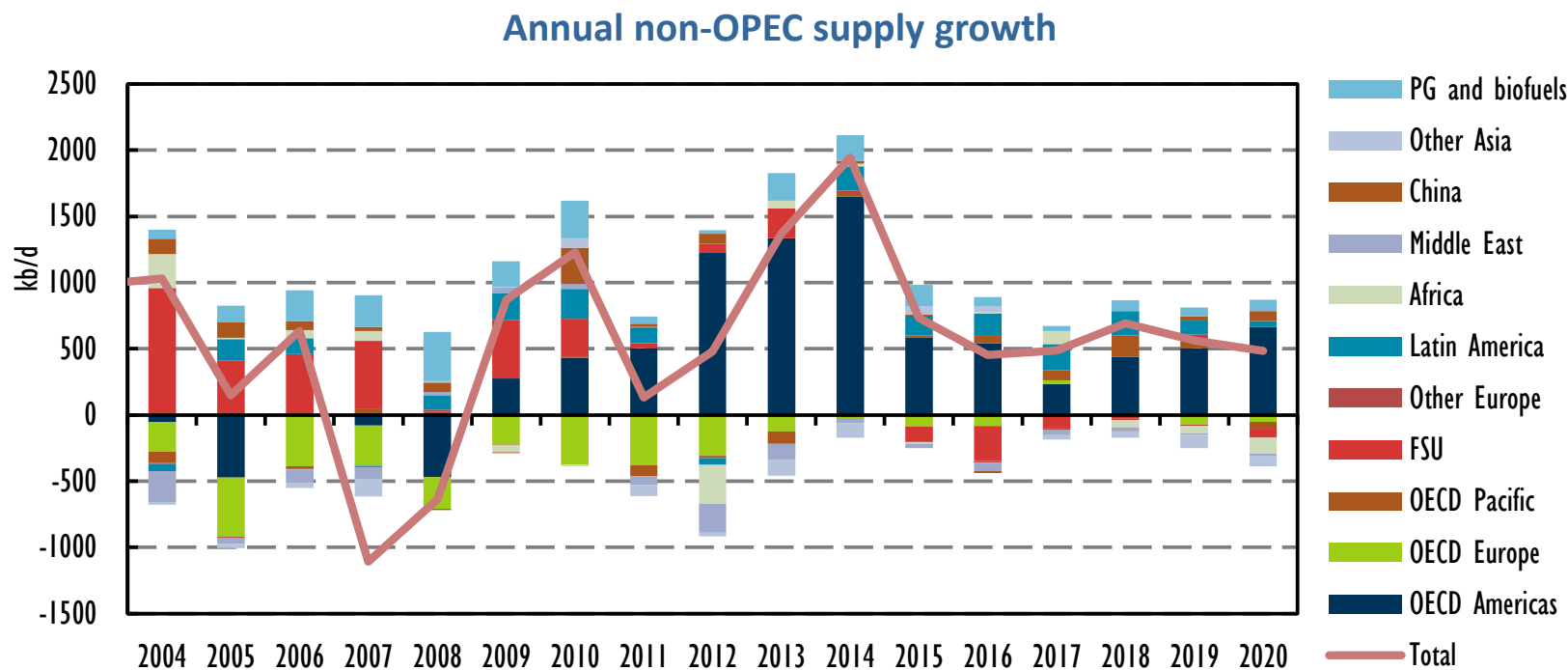
Medium-Term
Market Report
2015



**Global capacity growth cut to annual average 860 kb/d through 2020,
down from 1.4 mb/d in 2008-14**

Non-OPEC growth drops from record high

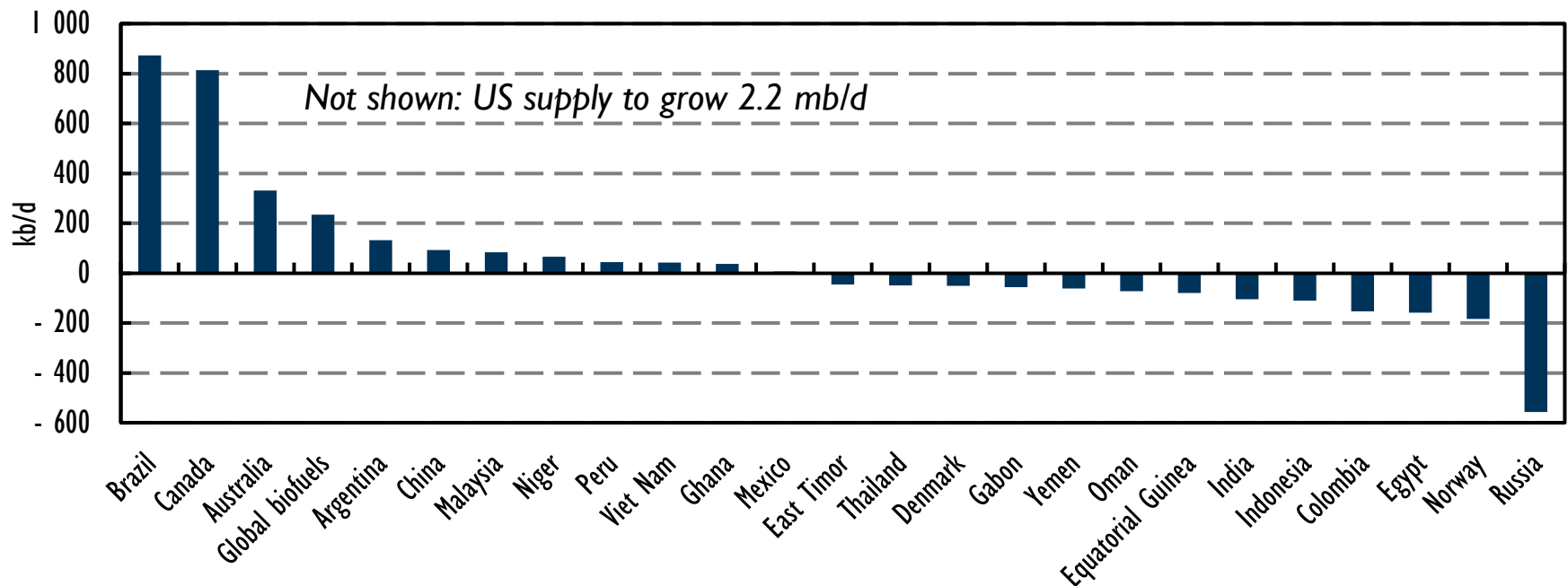
Medium-Term
Market Report
2015



- Non-OPEC supply grows by 3.4 mb/d to 60 mb/d by 2020
- Annual growth slows to average 560 kb/d vs 1.9 mb/d in 2014

US, Brazil and Canada top sources of growth

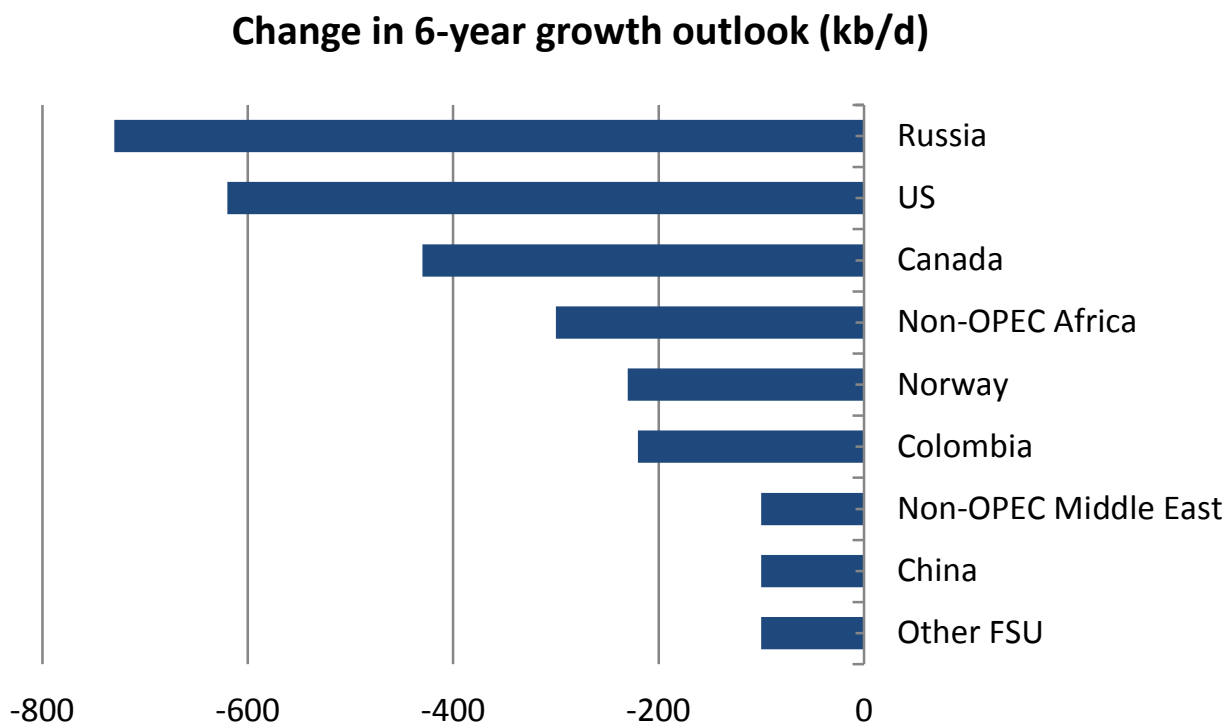
Medium-Term
Market Report
2015



Main growth sources remain the same as before the price drop

Low price cuts mid-term non-OPEC growth expectations by 2.8 mb/d

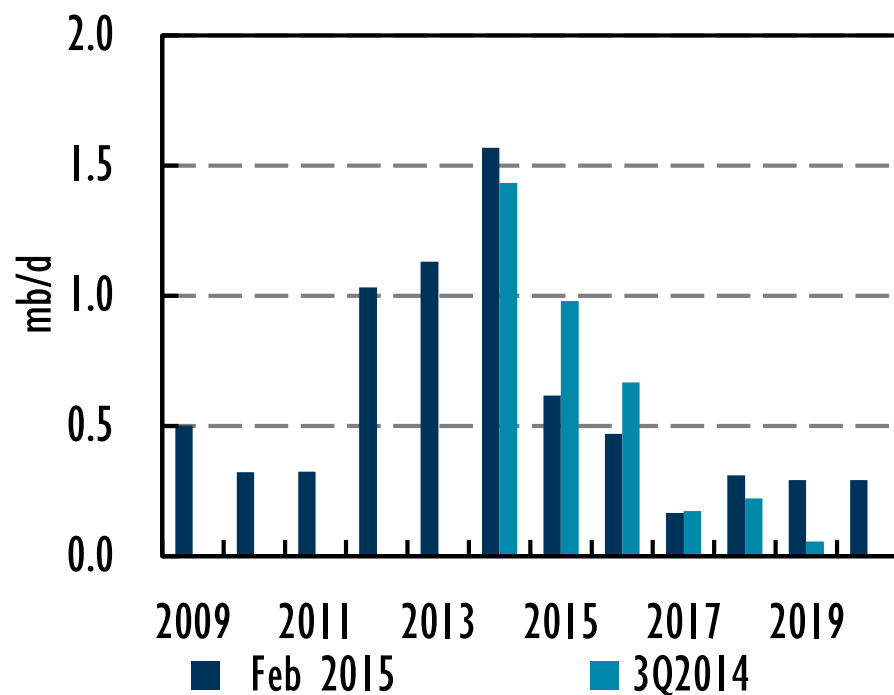
Medium-Term
Market Report
2015



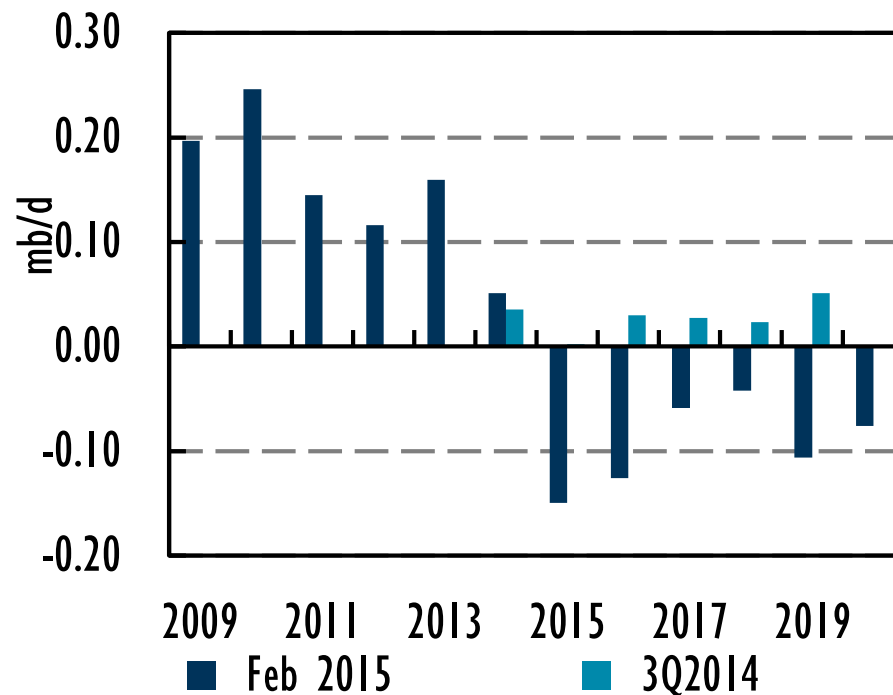
Diverging supply paths

Medium-Term
Market Report
2015

Change in US liquids production



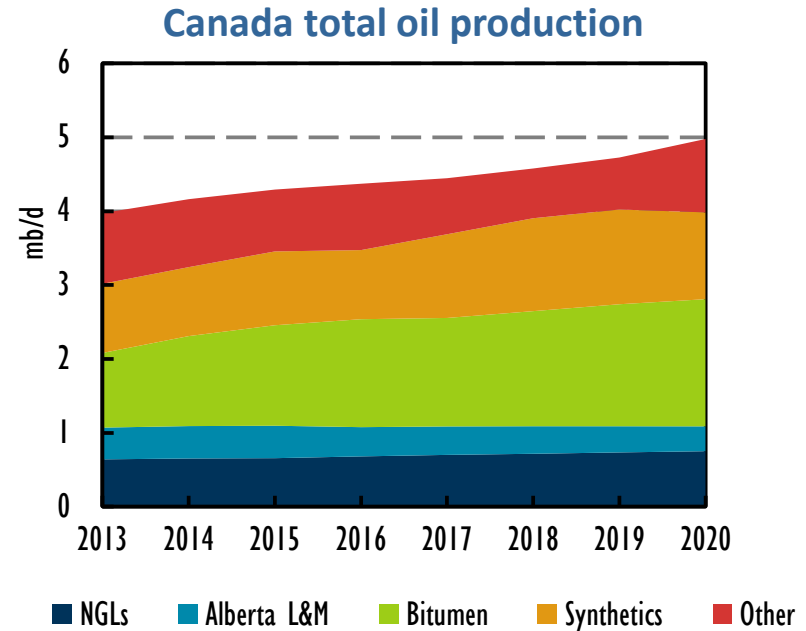
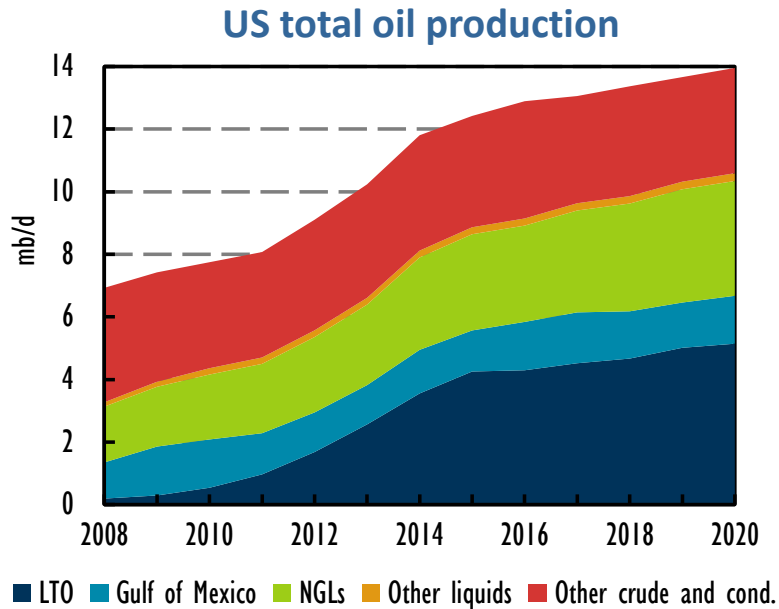
Change in Russian liquids production



- US production growth slows in 2015-17, then rebounds
- Russian output contracts by 560 kb/d by 2020

North America remains backbone of non-OPEC growth

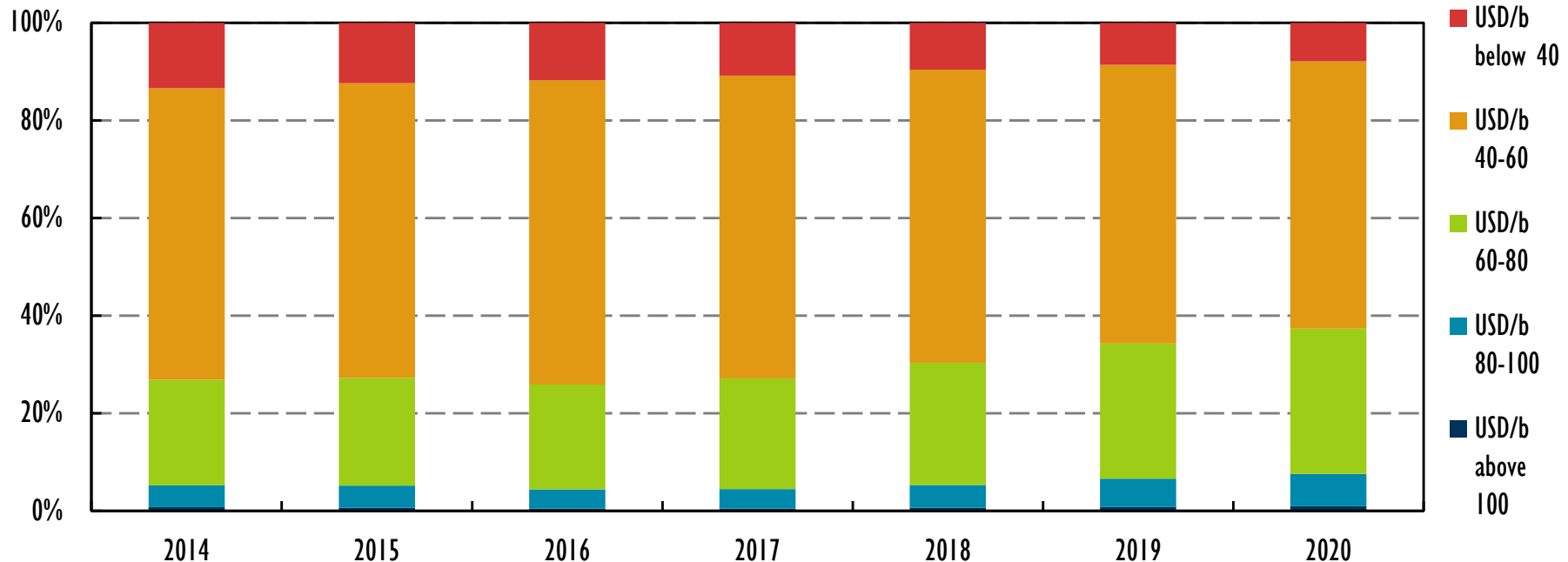
Medium-Term
Market Report
2015



- US production nears 14 mb/d, Canada 5.0 mb/d by 2020
- Most of US output is LTO and NGL by the start of next decade
- Bitumen, synthetics make up 60% of Canada's production by 2020

US LTO and shale-play condensate breakevens rise

Medium-Term
Market Report
2015

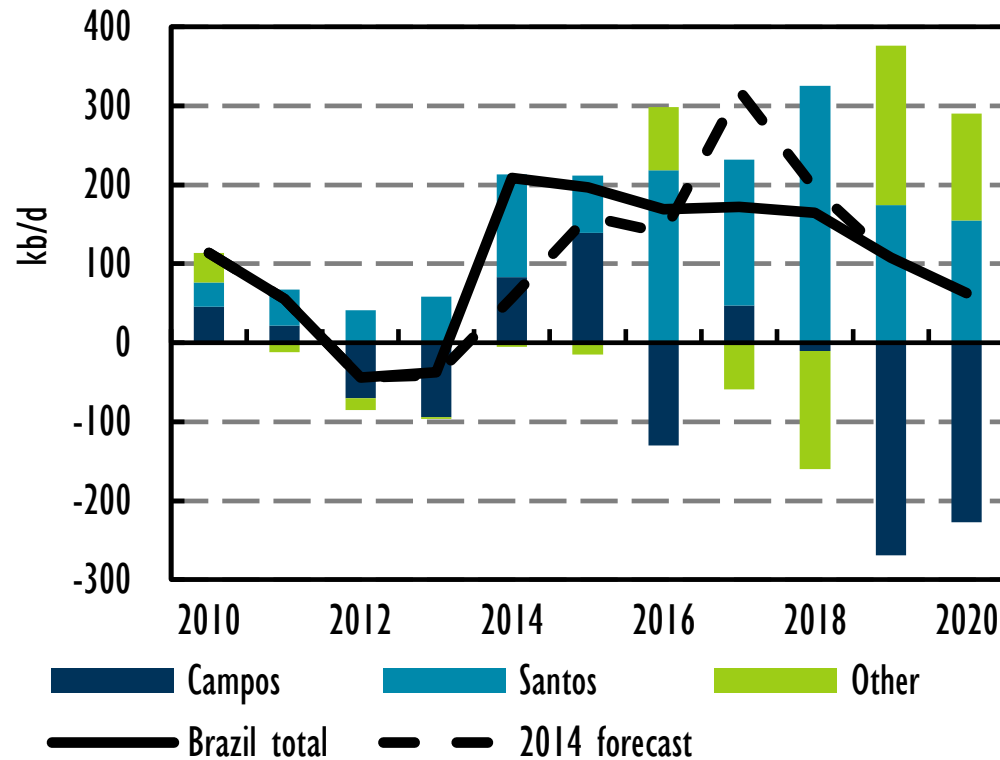


Source: Rystad Energy

- About 41% of US LTO and shale condensate breakeven prices at \$50/bbl or lower in 2014
- Depletion of sweet spots to offset efficiency gains and lower costs

Brazil hit by project delays, low prices

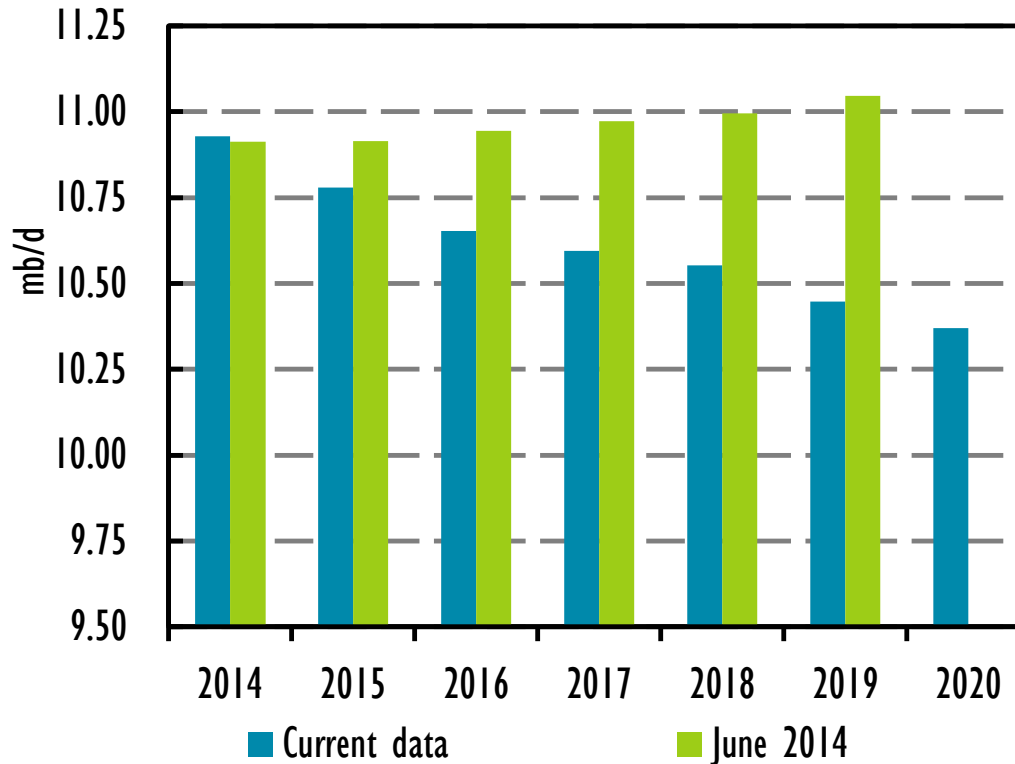
Medium-Term
Market Report
2015



- Supply swung back into growth in 2H14
- Petrobras debt and legal problems raise hurdles

Russia biggest casualty of price fall

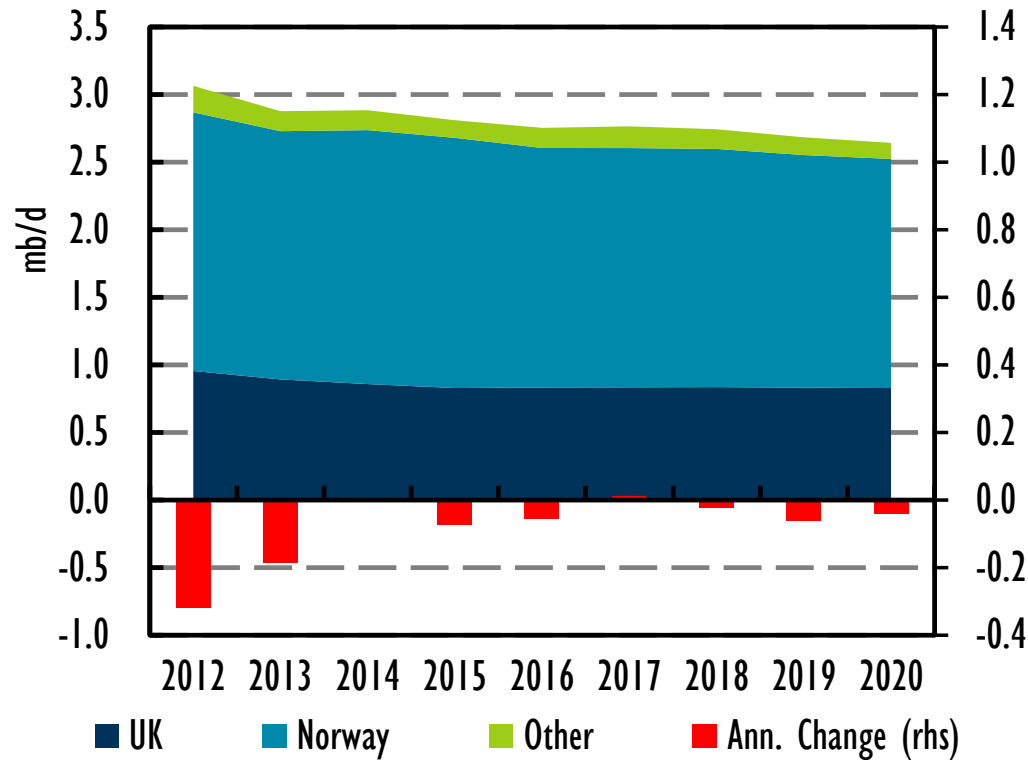
Medium-Term
Market Report
2015



- Ruble collapse partially offsets drop in dollar prices
- Tax regime blunts impact on companies; government takes biggest hit
- Greenfield startups delayed
- Sanctions hit Arctic and LTO

North Sea suffers setback

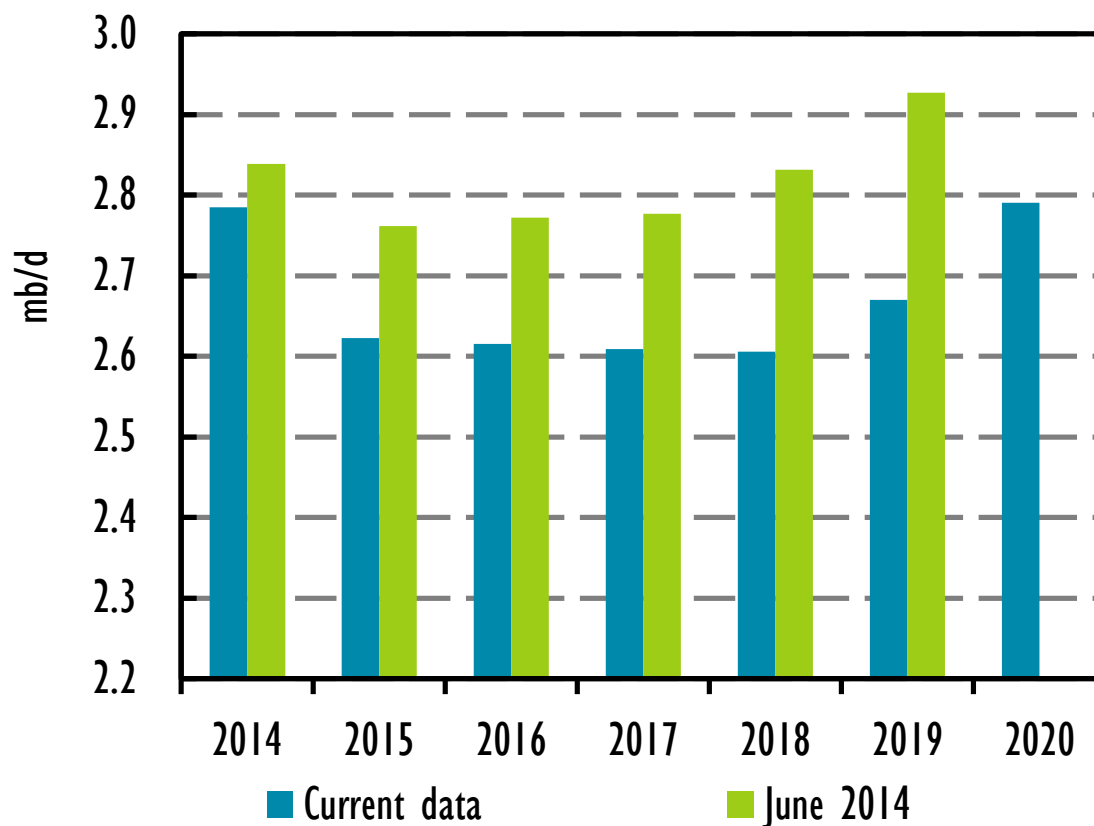
Medium-Term
Market Report
2015



Price slump delays projects, production contracts through 2020

Low price delays impact of Mexican reform

Medium-Term
Market Report
2015

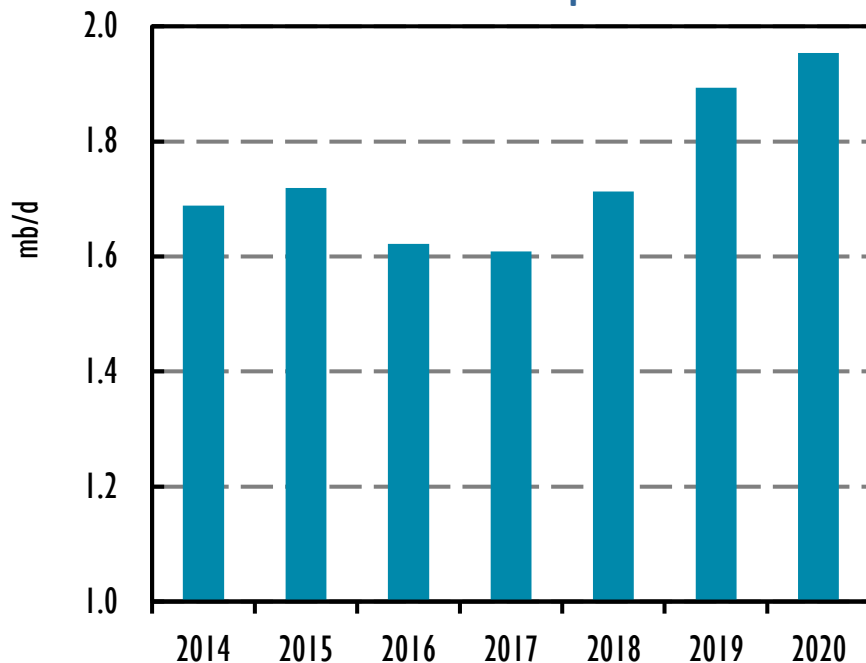


Growth expected to kick in in 2018-20

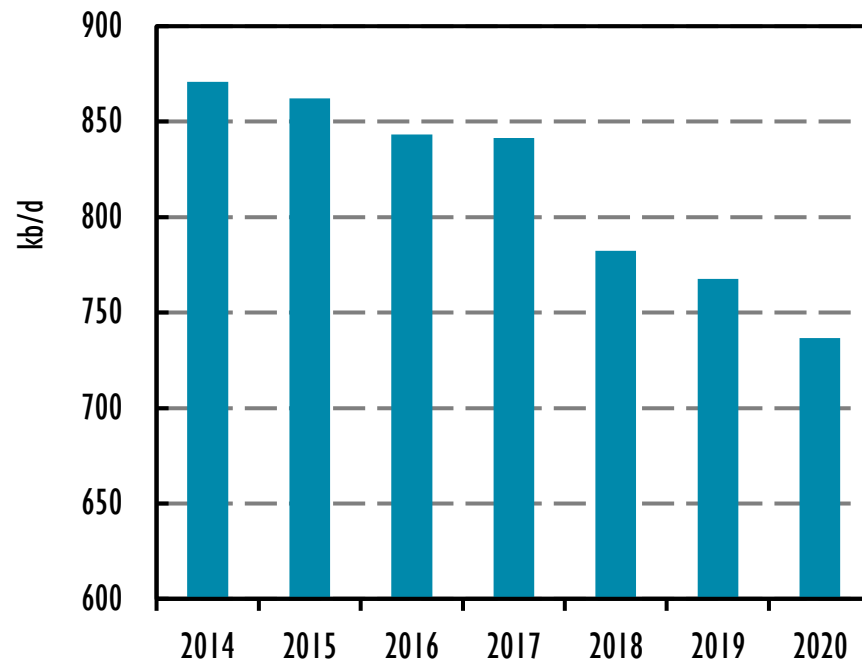
Caspian growth elusive

Medium-Term
Market Report
2015

Kazakhstan total oil production



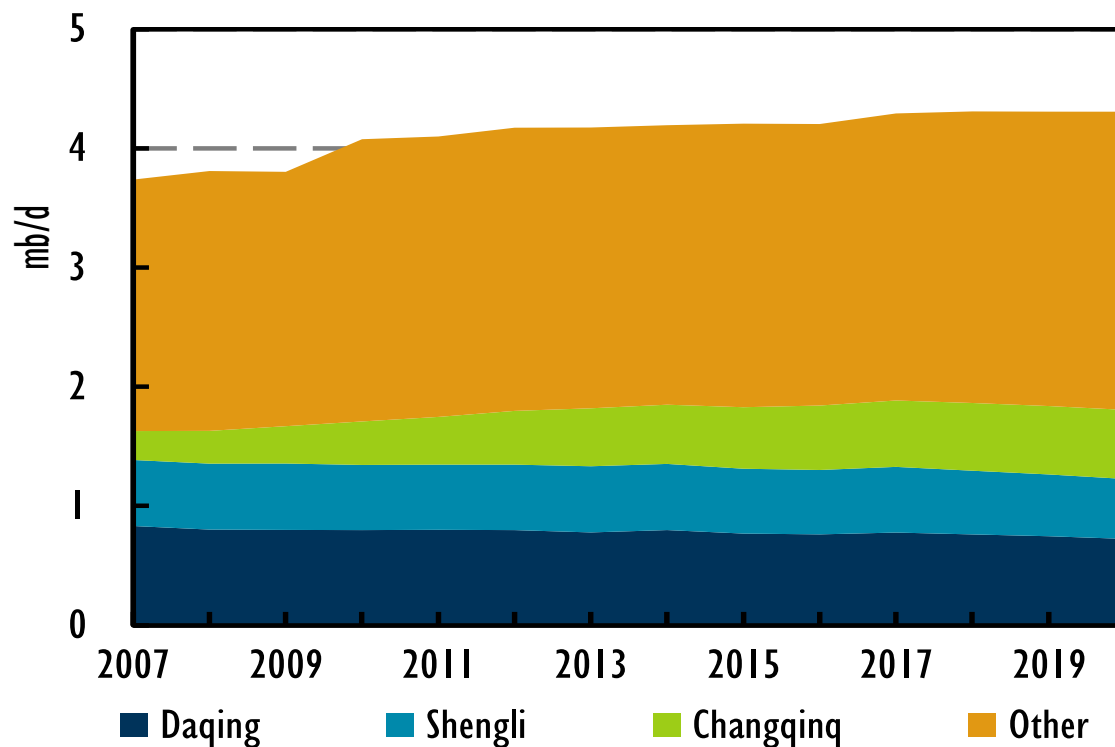
Azerbaijan total oil production



- Production gains post-2017 after Kashagan comes online
- Limited success in stemming rapid declines in Azerbaijan's ACG fields

China's production holds steady on EOR

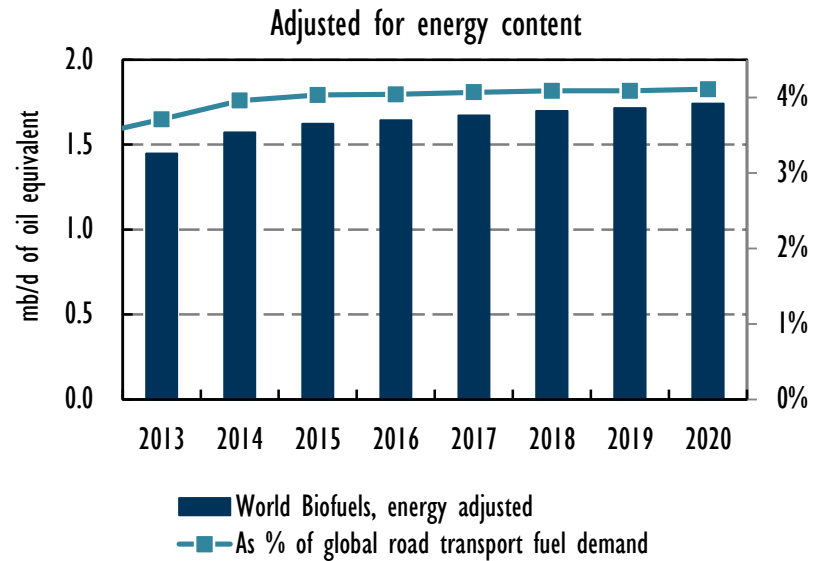
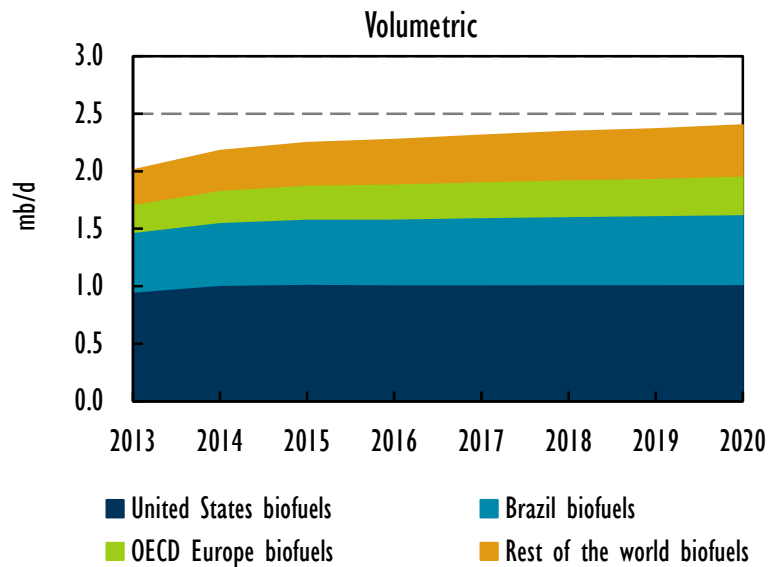
Medium-Term
Market Report
2015



**Legacy fields, especially Daqing and Changqing,
see EOR benefits through 2020**

Biofuels production inches higher

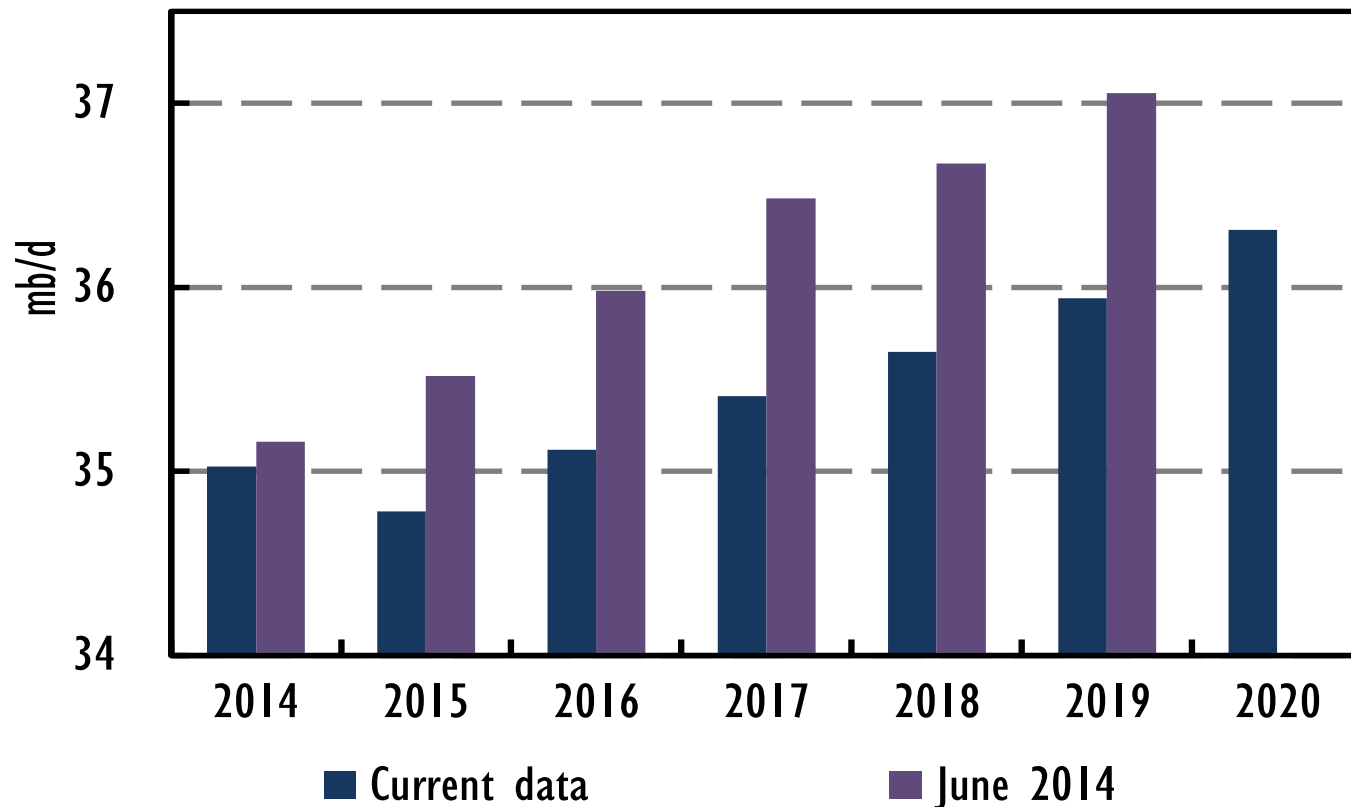
Medium-Term
Market Report
2015



Biofuel consumption is mandate-driven

Price drop curbs OPEC crude capacity growth

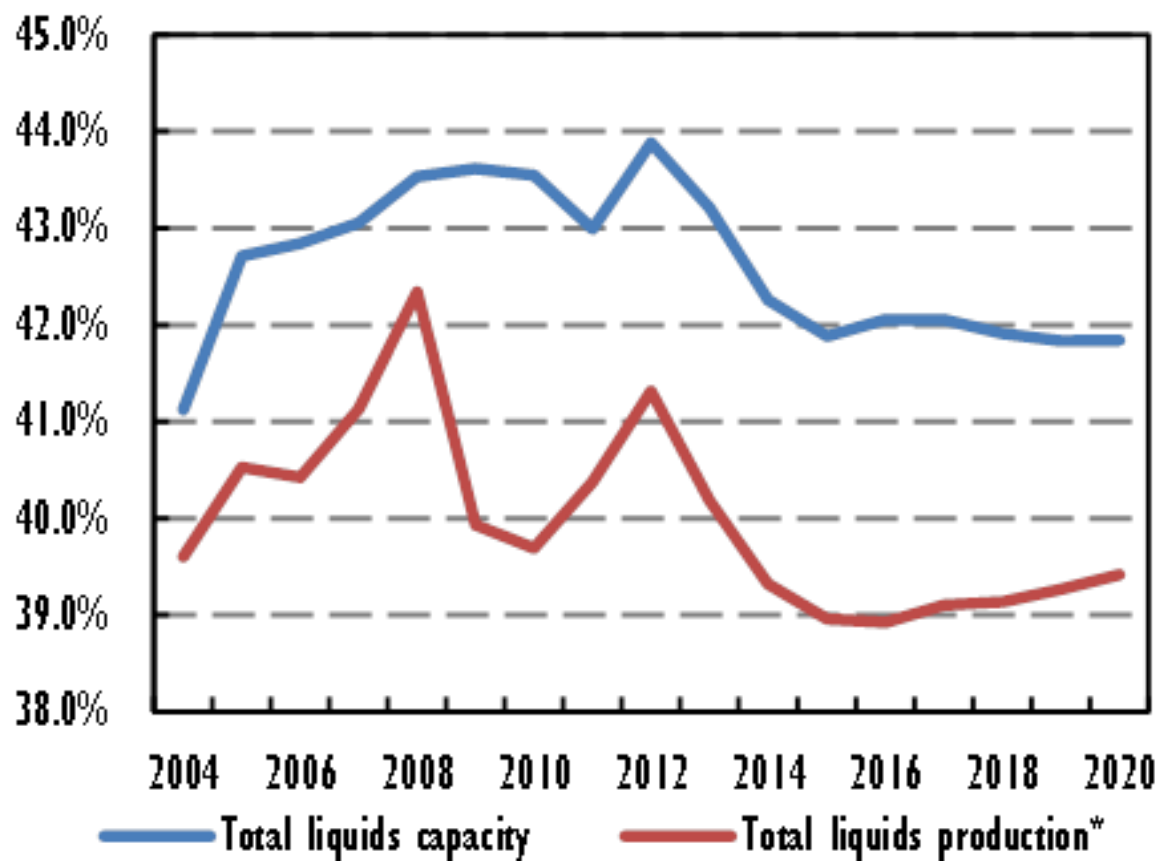
Medium-Term
Market Report
2015



**Growth expectations reduced to 200 kb/d annually,
vs 350 kb/d prior to the price drop**

OPEC wins back some market share

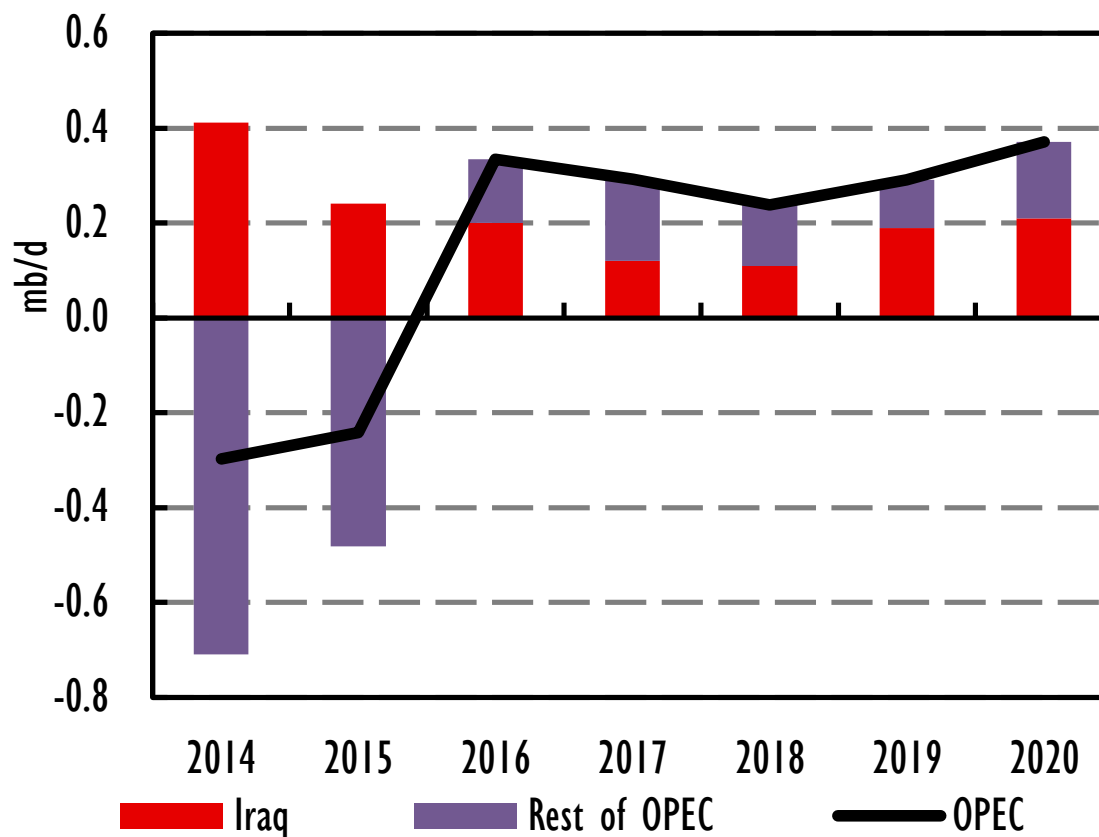
Medium-Term
Market Report
2015



Share of total supply inches back up,
but not the share of global capacity

OPEC growth hinges on Iraq

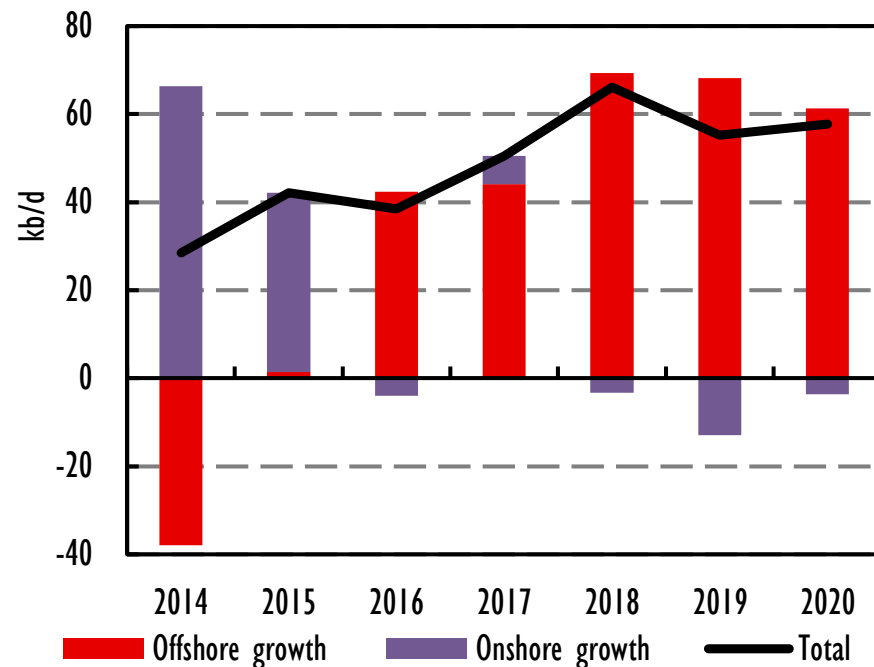
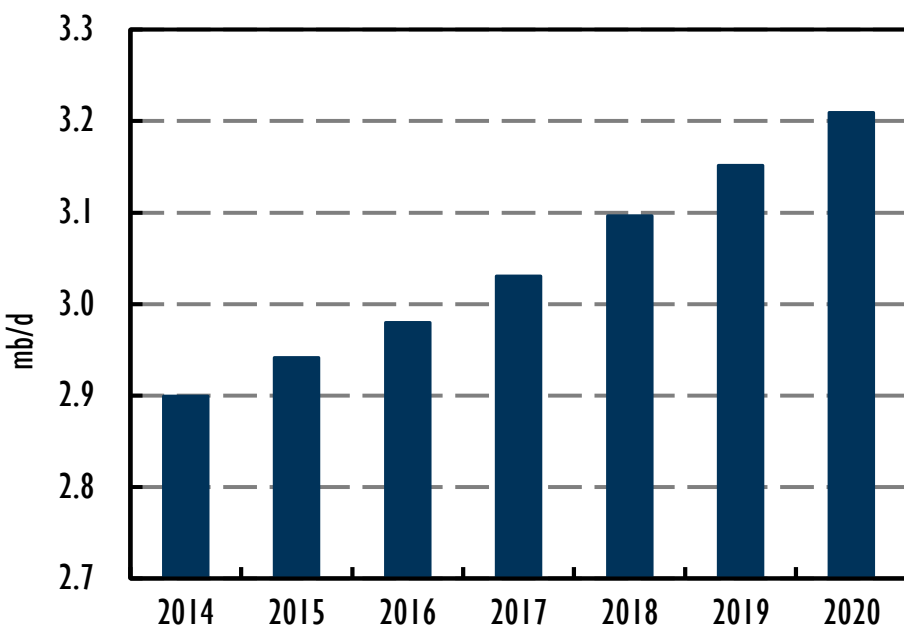
Medium-Term
Market Report
2015



- Price drop, ISIL add to Iraq institutional and infrastructure constraints
- Total Iraq growth estimated at 1.1 mb/d in 2014-2020; elevated risks
- Low prices can be double-edged

UAE to post notable growth

Medium-Term
Market Report
2015



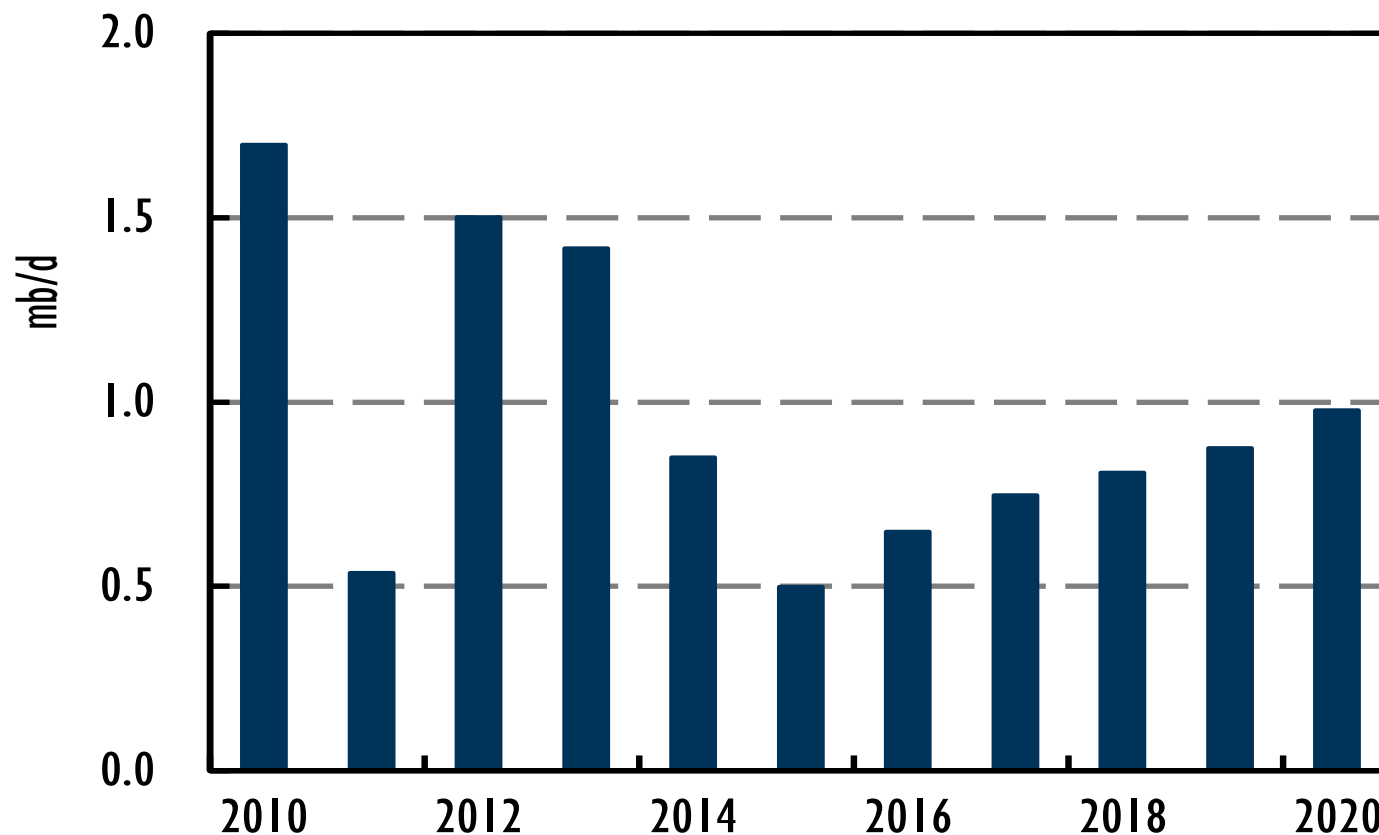
- Abu Dhabi, IOCs press ahead with expansion plans
 - Upper Zakum due to add 250 kb/d by 2017
- Stakes in giant onshore Adco concession being awarded



- Low oil price further delays costly deep-water projects
- Investment already set back by long-running deadlock over Petroleum Industry Bill

Libya: OPEC's wildcard

Medium-Term
Market Report
2015



- Militants target energy industry

Battle for market share just starting

Medium-Term
Market Report
2015



- How will OPEC make room for expanding Iraq and an Iran freed from sanctions?



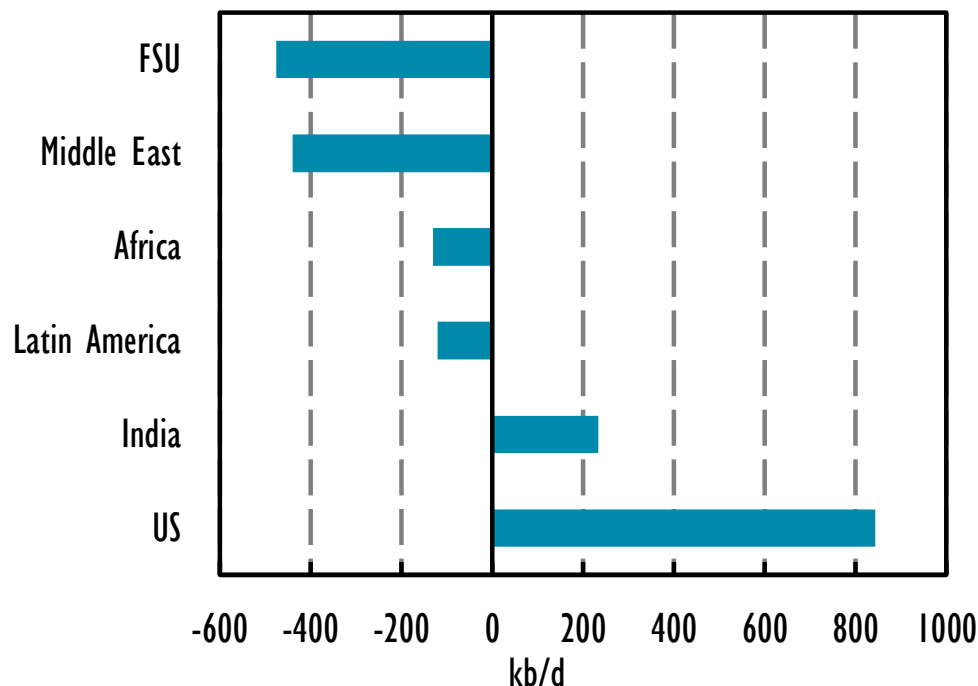
Medium-Term Market Report 2015

Demand

Mixed demand response

Medium-Term
Market Report
2015

Revised demand growth prospects 2014-2019

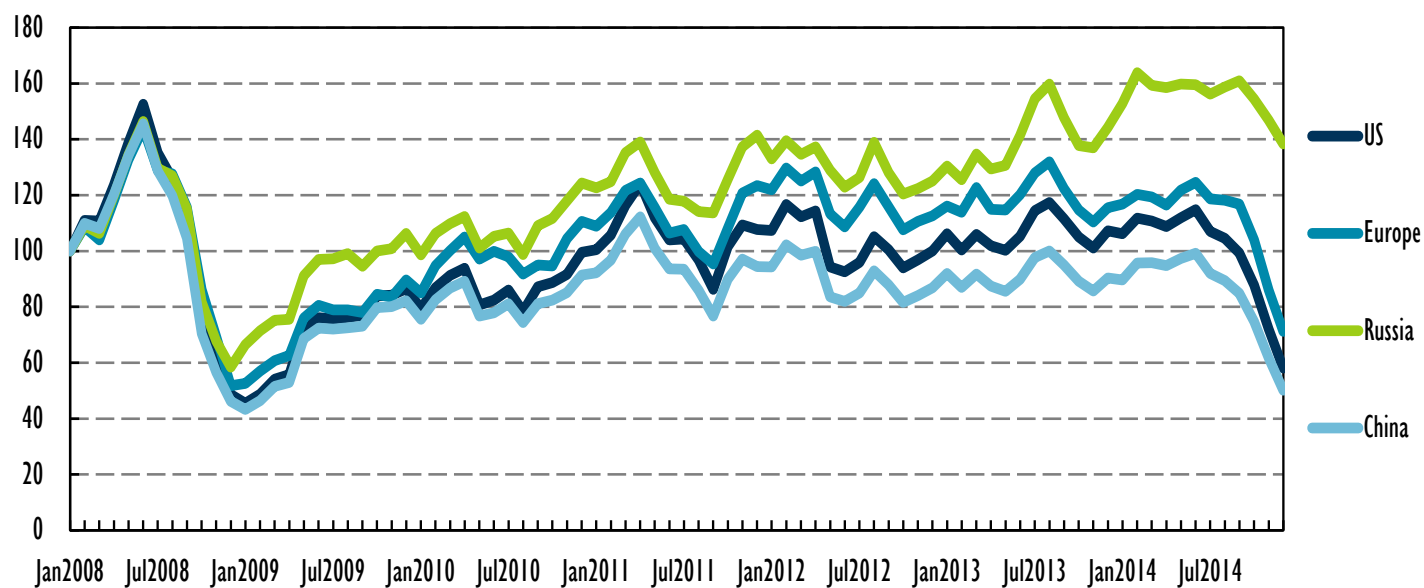


- Low price dampens outlook for oil exporters
- Oil importers enjoy benefits but ...
- ... weak economic recovery, subsidy cuts, forex, fuel-switching provide offset

Currency weakness dampens price effect in many countries

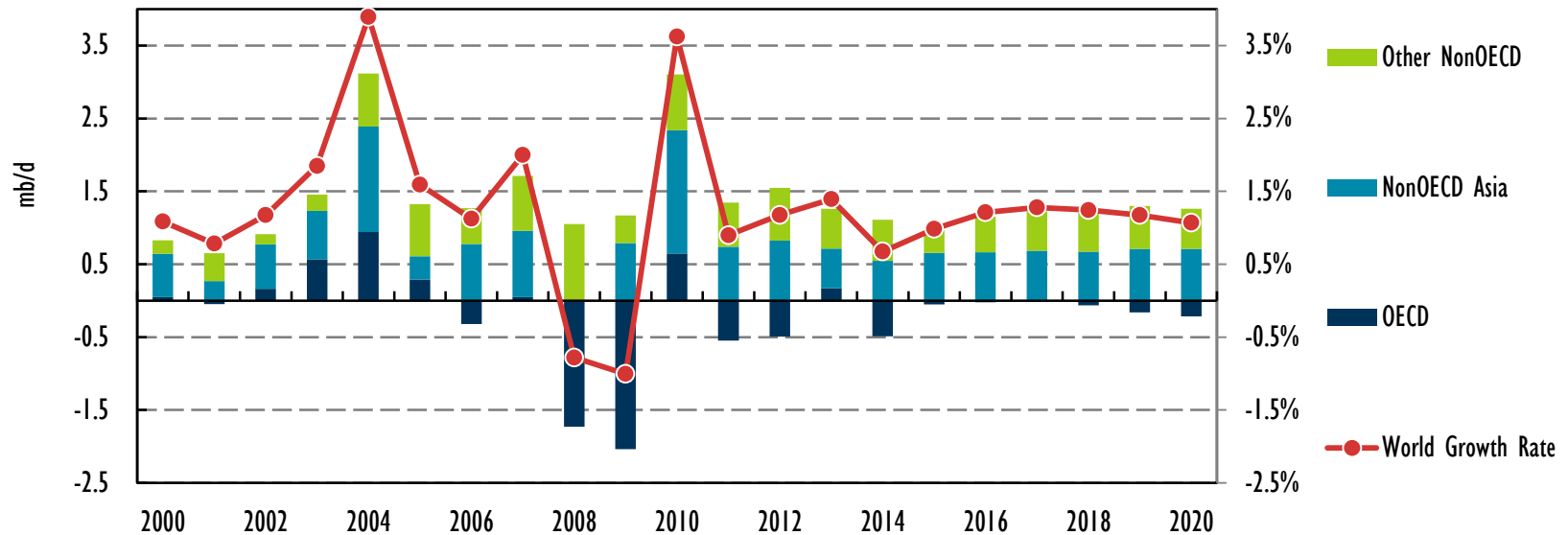
Medium-Term
Market Report
2015

Domestically-priced Brent crude indices, 2008-14



Modest demand growth still foreseen

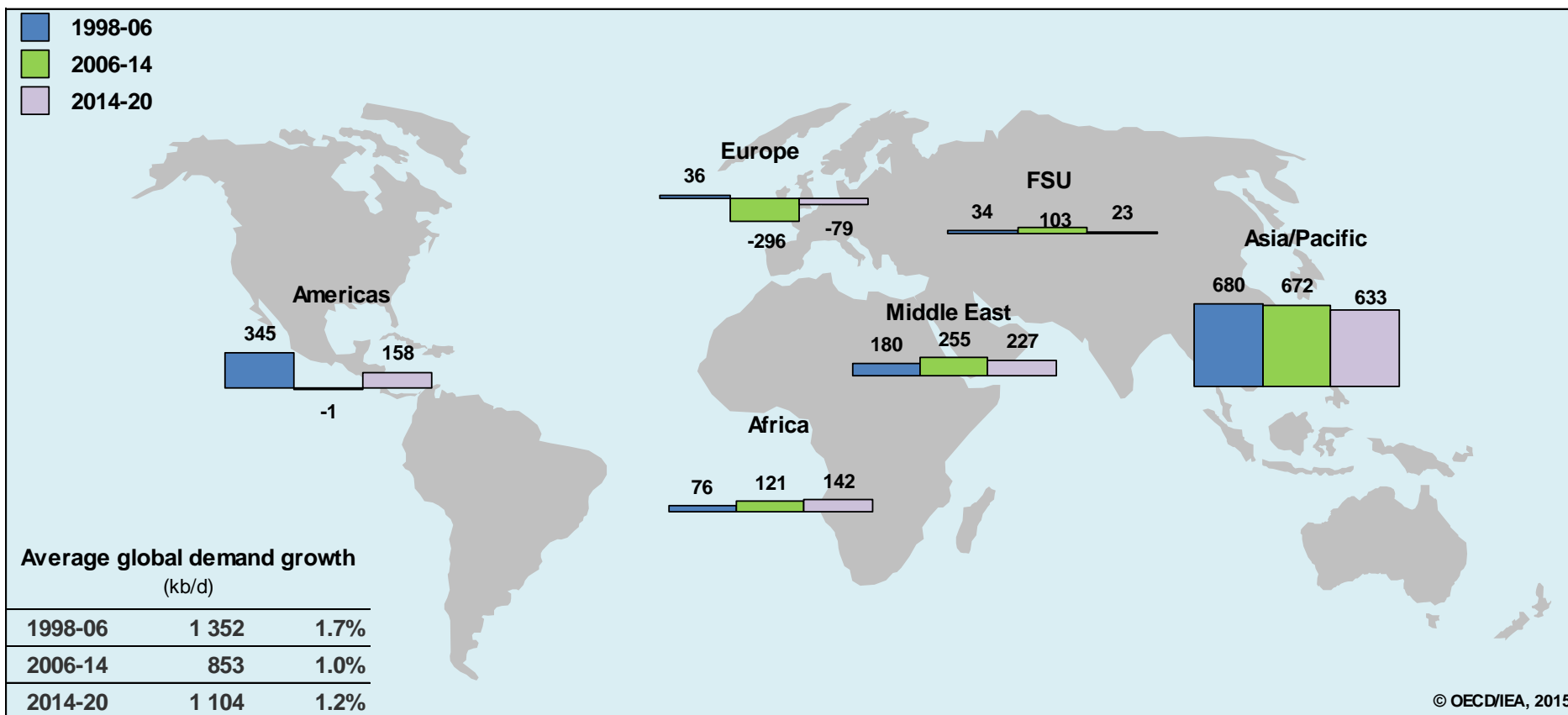
Medium-Term
Market Report
2015



- **+1.2% per annum, 2014-20**
- **Below pre-Great Recession trend (1.9%, 2001-07)**
- **Net gain of 6.6mb/d, nearly 1 mb/d above supply capacity growth**

Eastward pull unabated

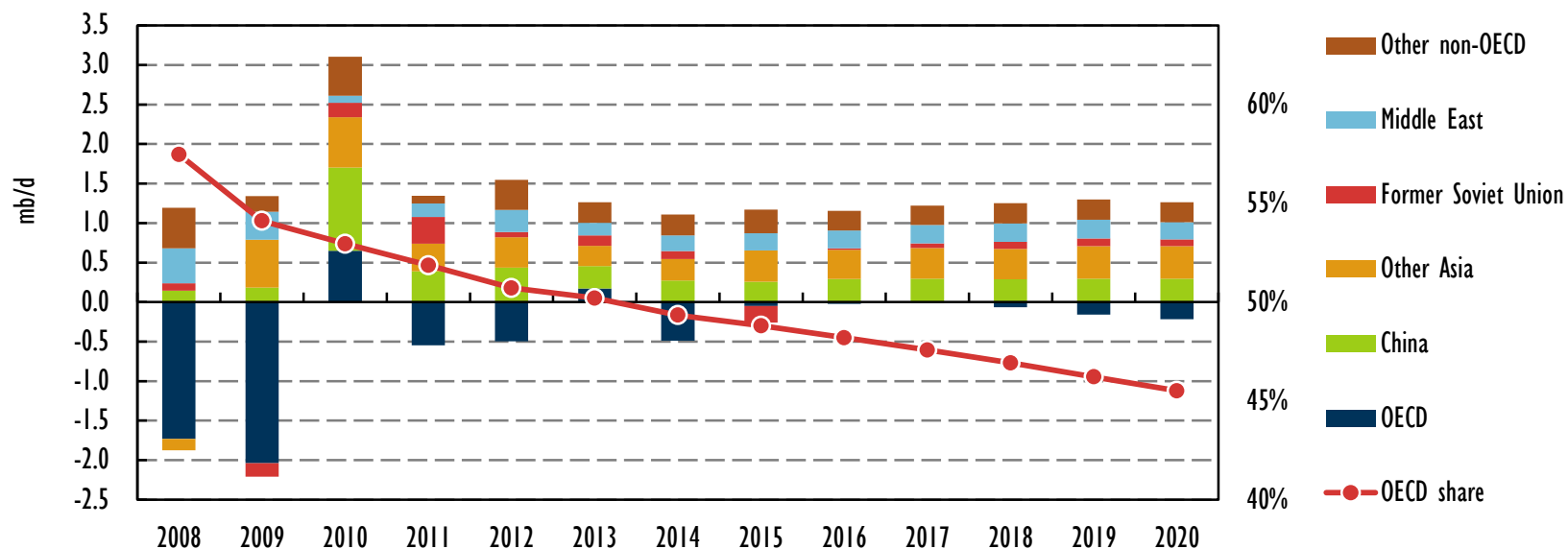
Medium-Term
Market Report
2015



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.

OECD share of demand continues to decline

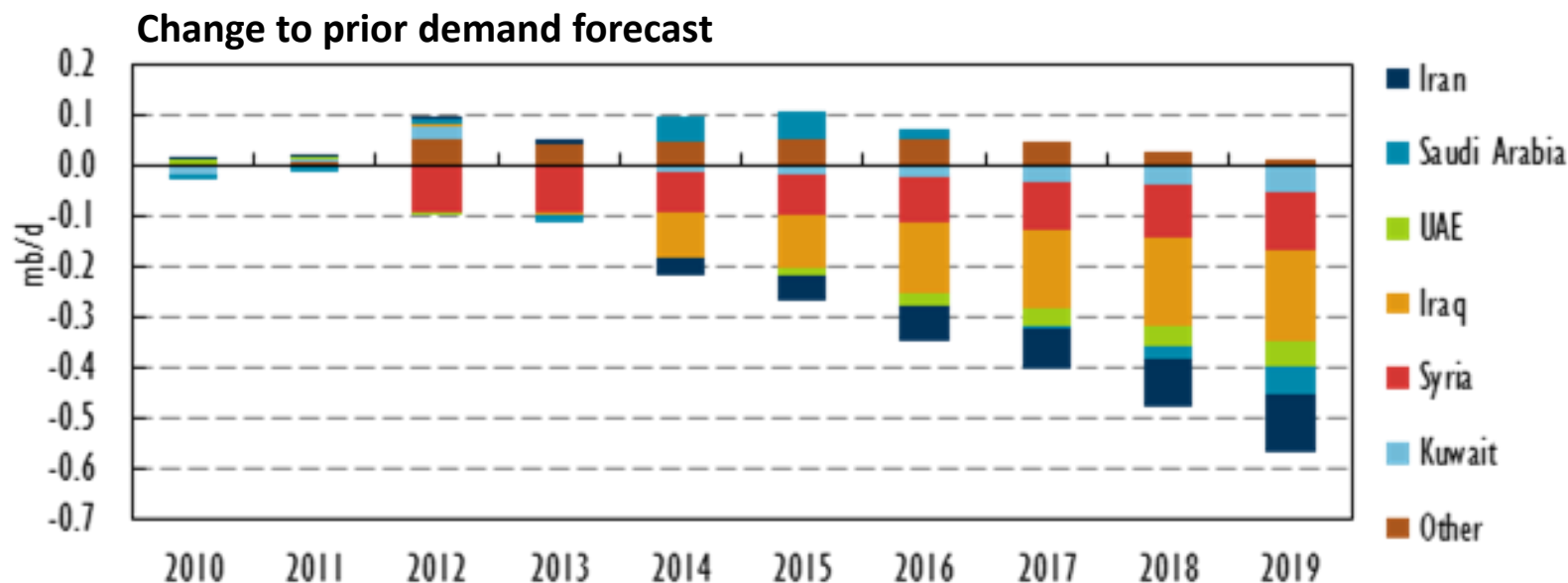
Medium-Term
Market Report
2015



- Non-OECD demand overtook OECD in 2014
- OECD declines further overall
- Non-OECD continues to grow, but at slower rate

Middle Eastern demand growth expectations reduced by turmoil, price

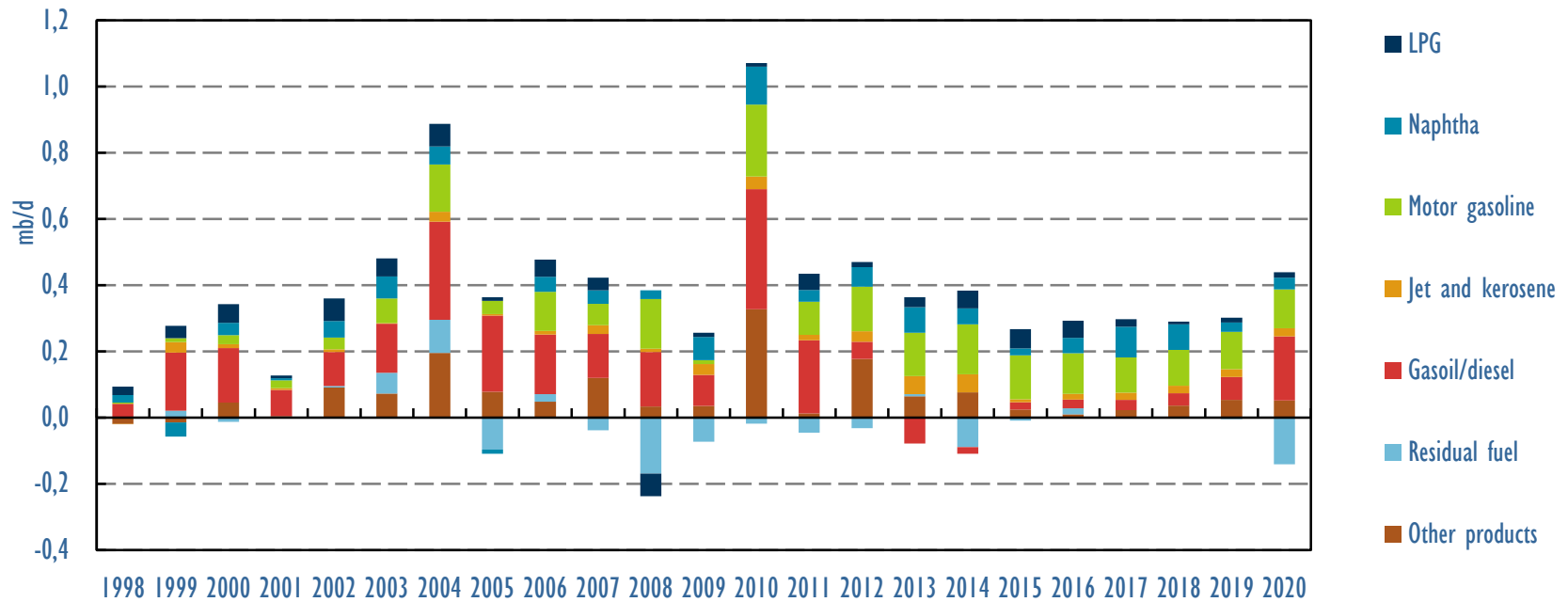
Medium-Term
Market Report
2015



- Still key growth area at 2.6% gains per annum, or 1.4 mb/d total over 2014-20
- War and unrest take toll
- Lower price cuts exporter-country GDP
- Countries with low buffers harder hit
- Subsidy reductions

China shifting gears

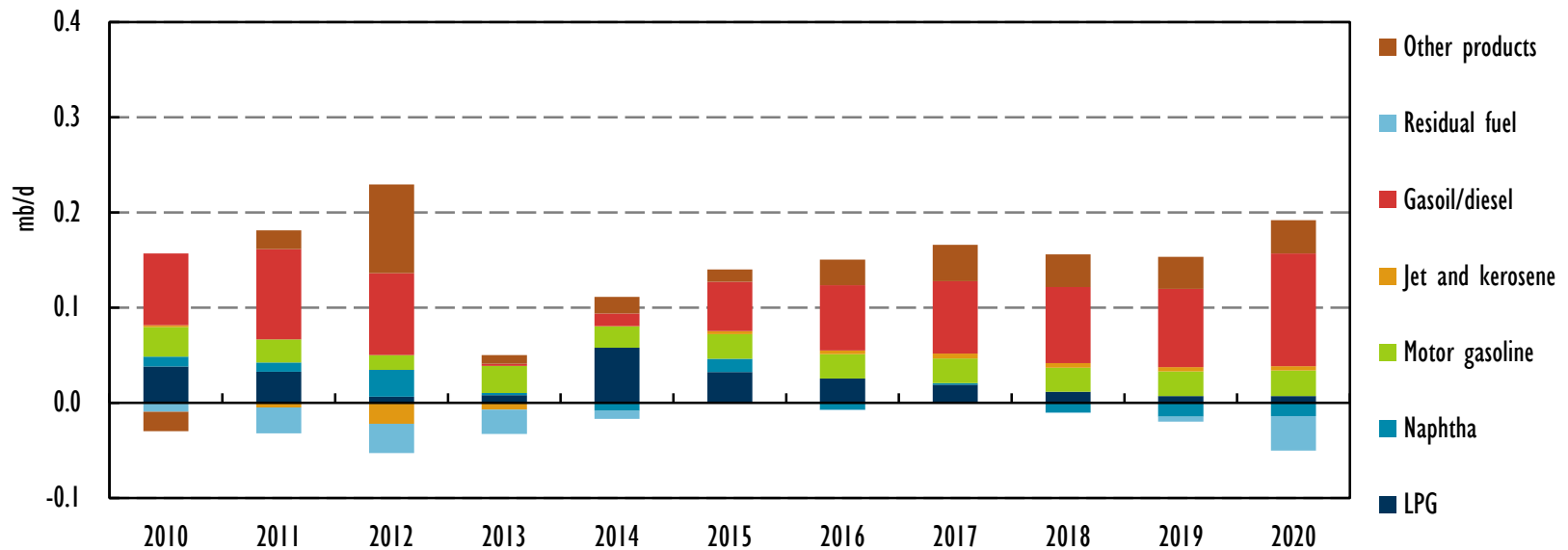
Medium-Term
Market Report
2015



- **+2.6% per annum, 2014-20**
- **Slower stage of economic growth, IMF foresees sub-7% GDP trend**
- **Focus shifts from oil-intensive exports to consumer sector**
- **Diesel less dominant**

Indian demand seen gaining momentum

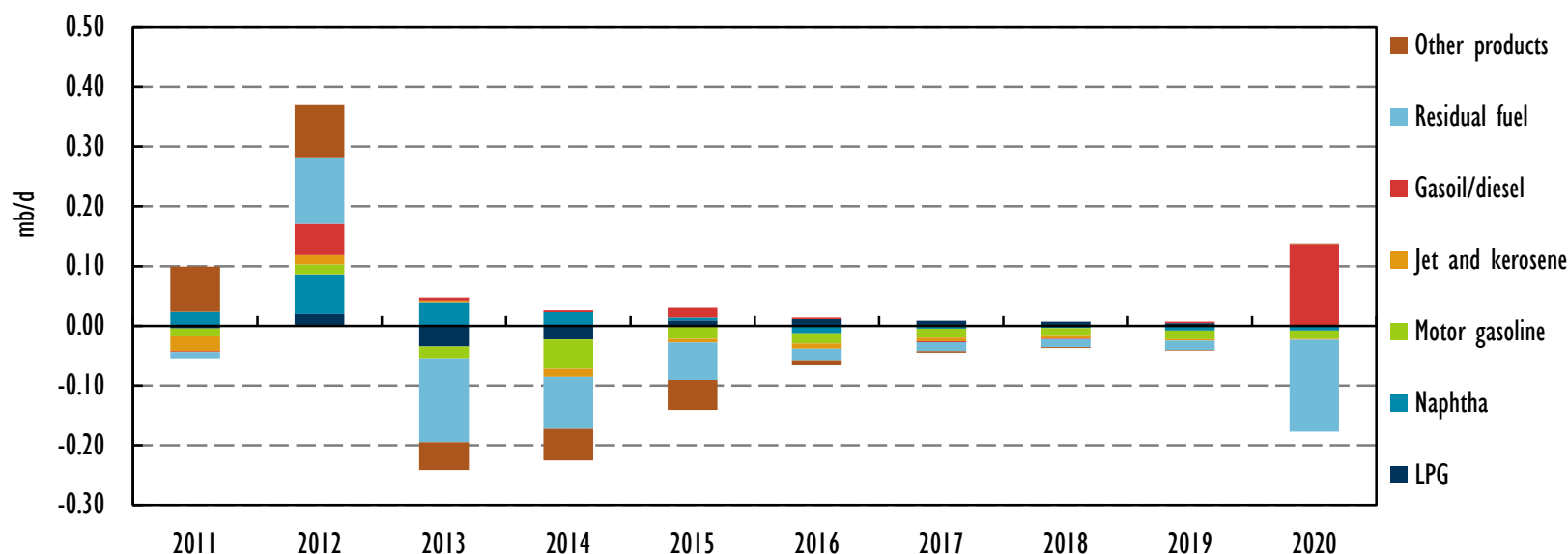
Medium-Term
Market Report
2015



- **+3.4% per annum, 2014-20**
- **Growing confidence in economy**
- **'Worst' of subsidy cuts has passed**

OECD Asian demand contracts further

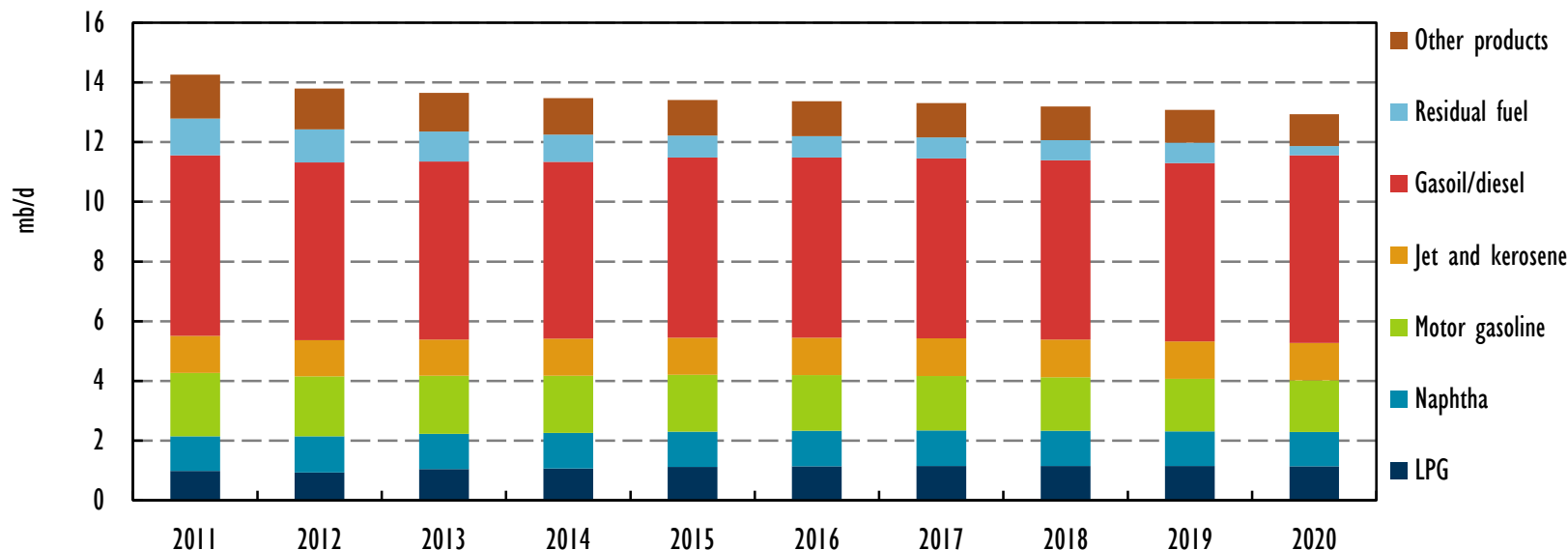
Medium-Term
Market Report
2015



- **Non-OECD Asia Oceania -0.6% per annum, 2014-20**
- **Ongoing power-sector switching, out-of-oil**
- **Weak macroeconomic momentum and heady efficiency gains**

European demand outlook weak on slow rebound

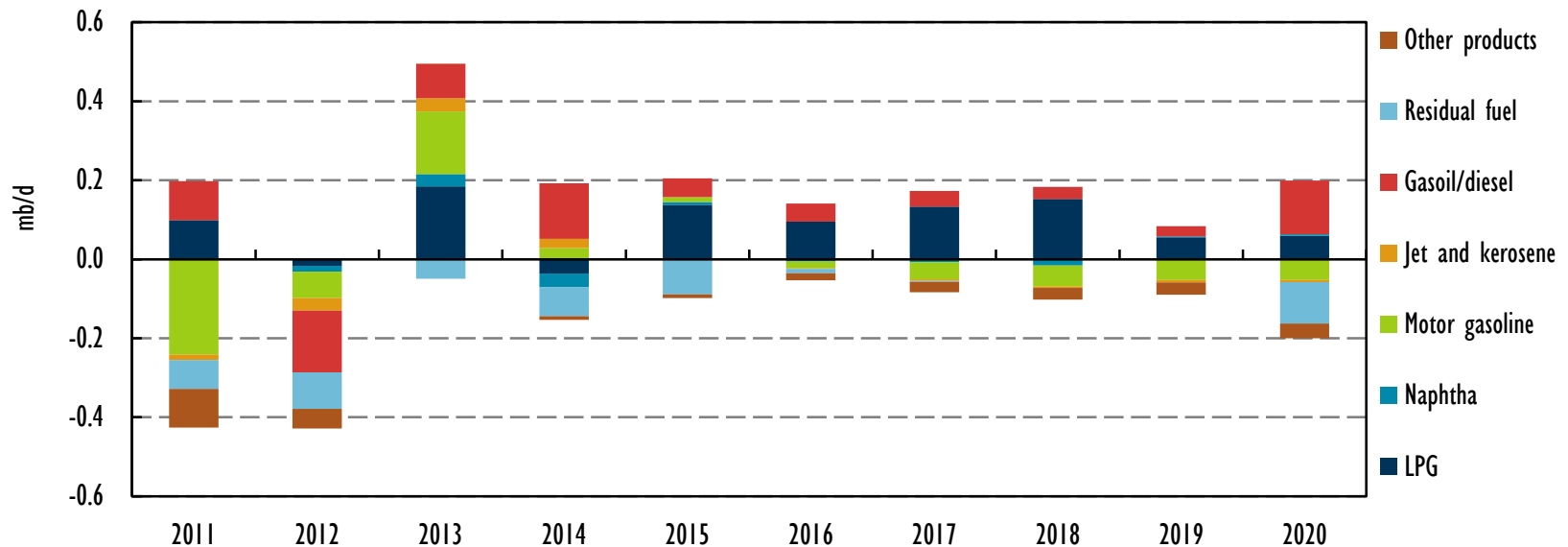
Medium-Term
Market Report
2015



- **-0.7% per annum, 2014-20**
- **Persistent macroeconomic weakness curbs demand**
- **Deflation concerns**
- **Efficiency gains**

US bucks the OECD demand trend

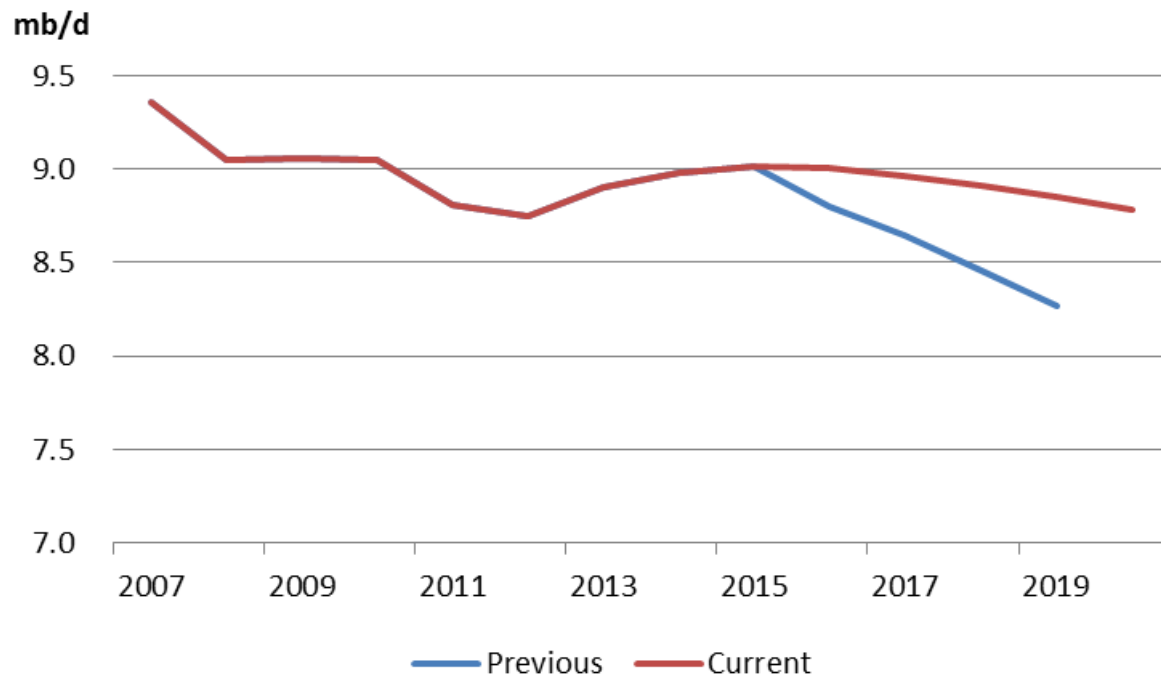
Medium-Term
Market Report
2015



- **+0.3% per annum, 2014-20**
- **Supported by robust macroeconomic backdrop**
- **Efficiency gains trim gasoline and jet/kerosene**

Lower prices at the pump lift US gasoline demand outlook

Medium-Term
Market Report
2015

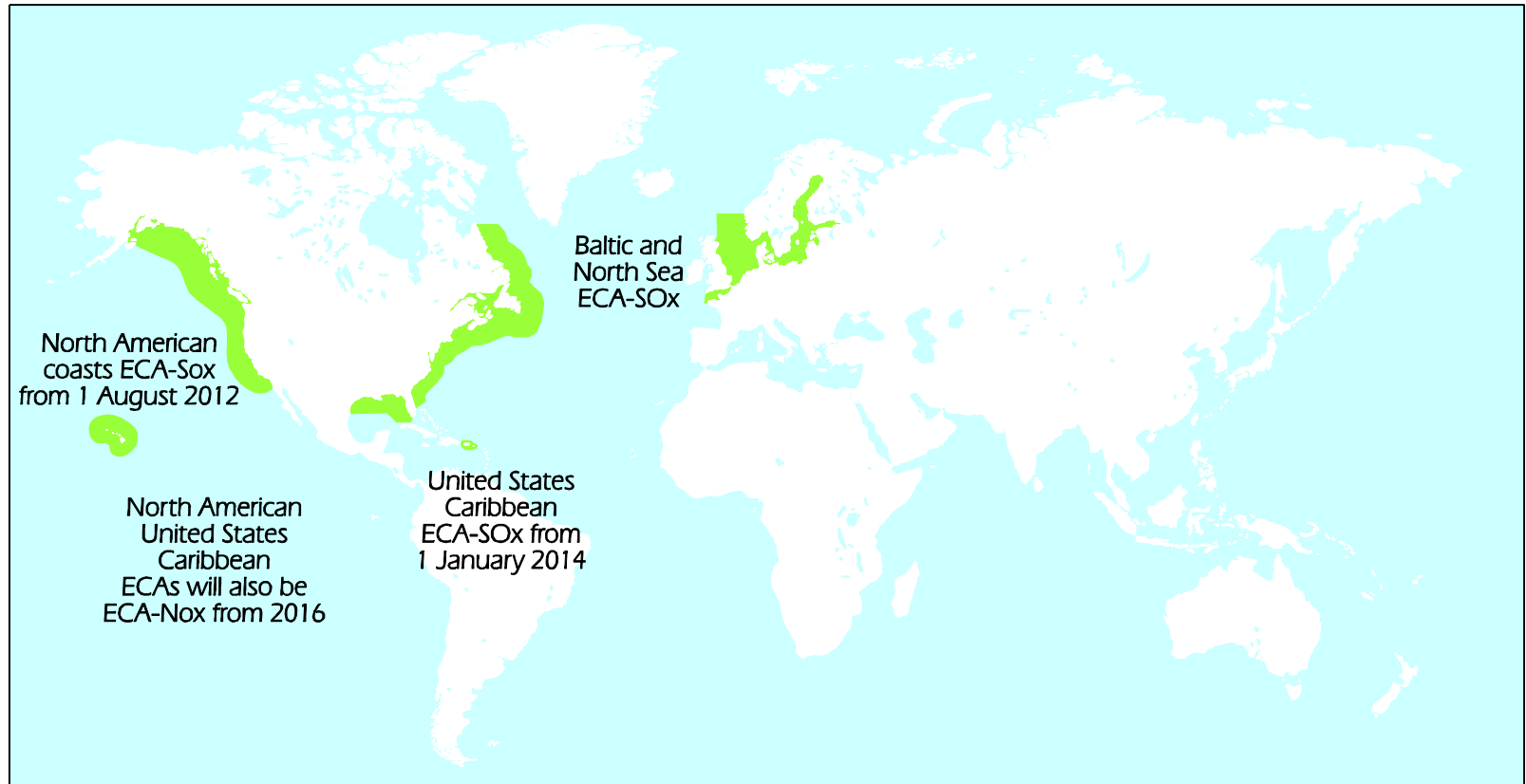


Efficiency gains still cuts use



Marine Bunkers

Emission rules catch up with marine sector



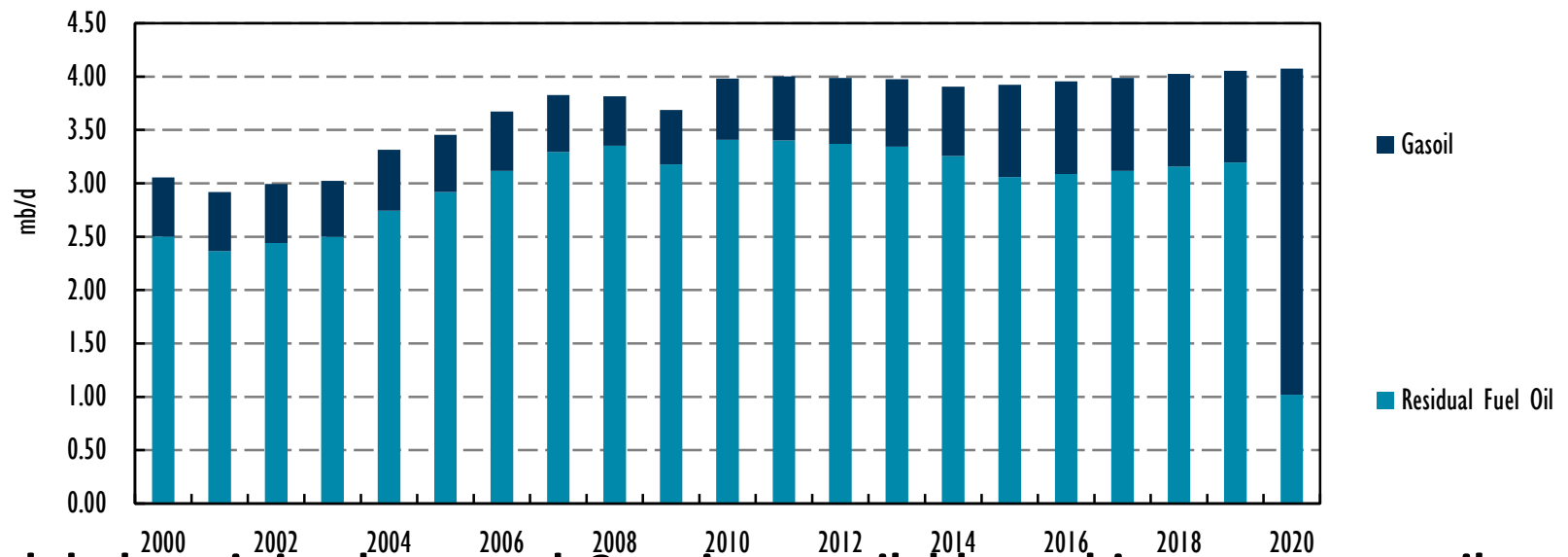
This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

- **0.1% sulphur-content cap in ECAs effective 1 January 2015**
- **Elsewhere 3.5% cap since 2012, to be cut to 0.5% in 2020 or 2025**
- **Uncertainty on timing**

Bunker fuel mix to undergo step change

Medium-Term
Market Report
2015

Oil-based marine fuel consumption in international navigation

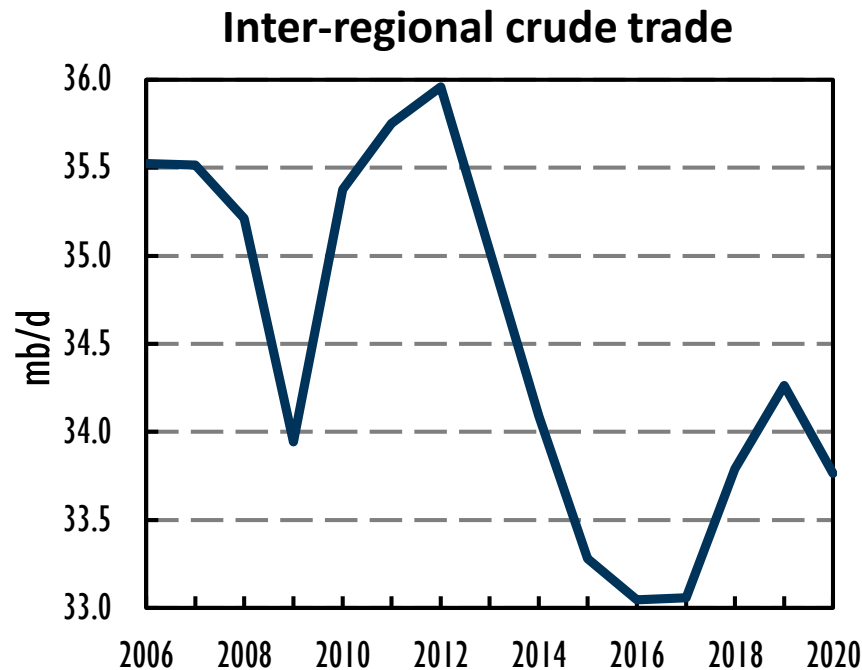


- As the global cap is implemented, 3 options available to ship owners: gasoil, scrubbers, LNG
- Up to 2.2 mb/d could switch from fuel oil to marine gasoil:
 - Marine gasoil notionally set to rise to 3.1 mb/d
 - Residual fuel oil set to decrease to 1 mb/d



Oil Trade and Refining

Crude trade has peaked



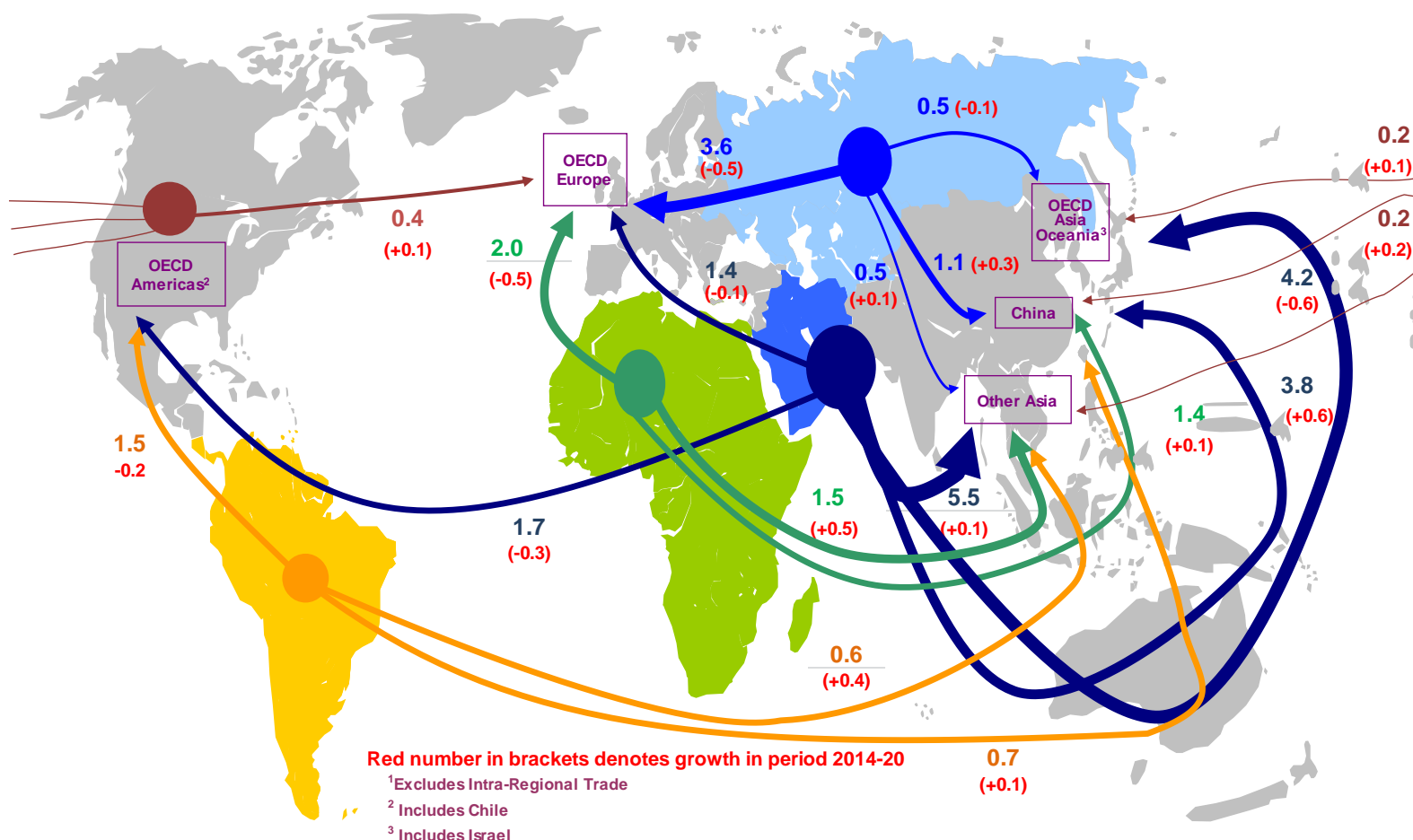
- Crude trade peaked at 36 mb in 2012 and declined swiftly over 2012-2014 on lower US import needs, higher Middle East runs
- Declines expected to moderate and partially reverse in the medium term

World crude markets fragmenting

Medium-Term
Market Report
2015

Crude Exports in 2020 and Growth in 2014-20 for Key Trade Routes¹

(million barrels per day)

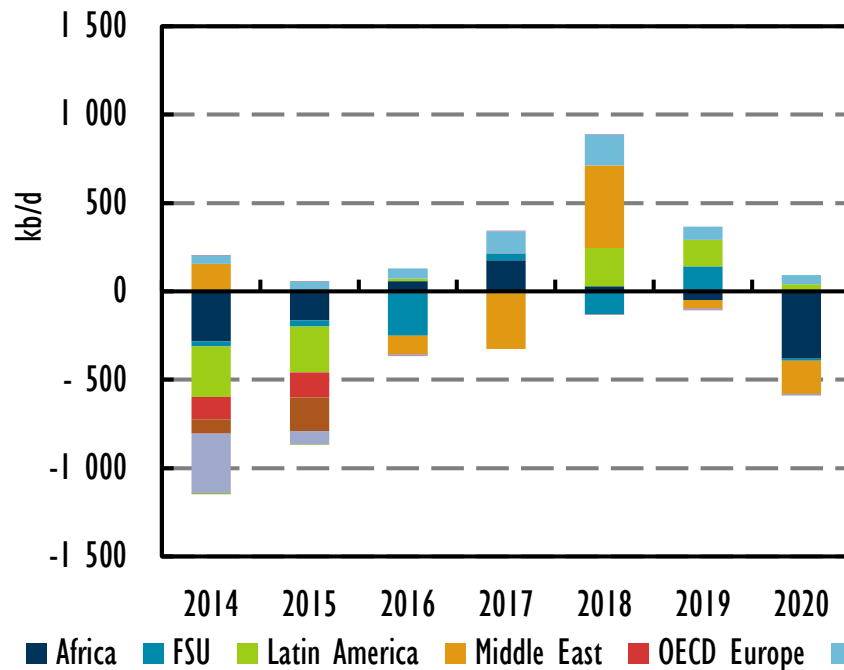


Crude trade will continue to shift eastwards

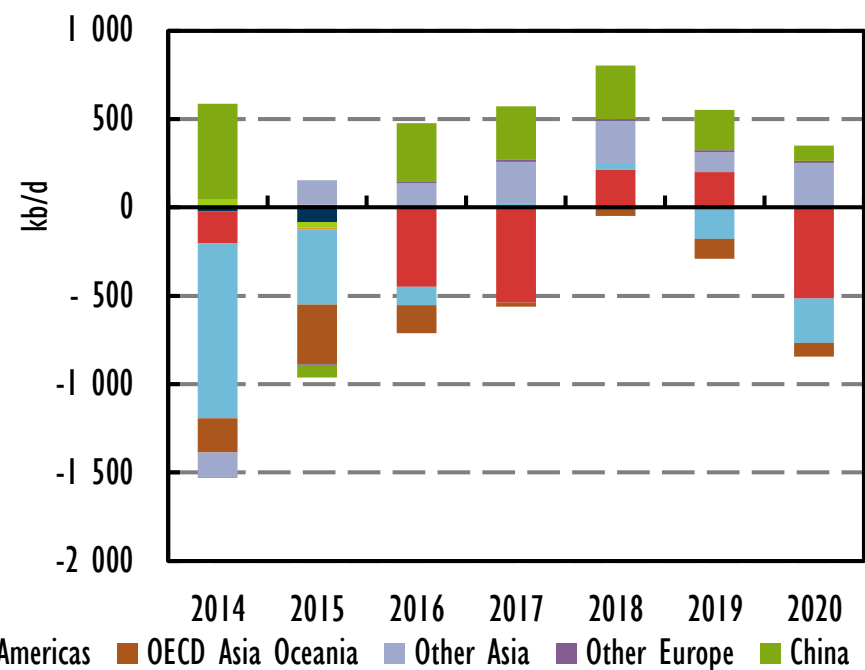
Non-OECD crude imports expected to overtake the OECD in 2020

Medium-Term
Market Report
2015

Regional crude exports, yearly change



Regional crude imports, yearly change

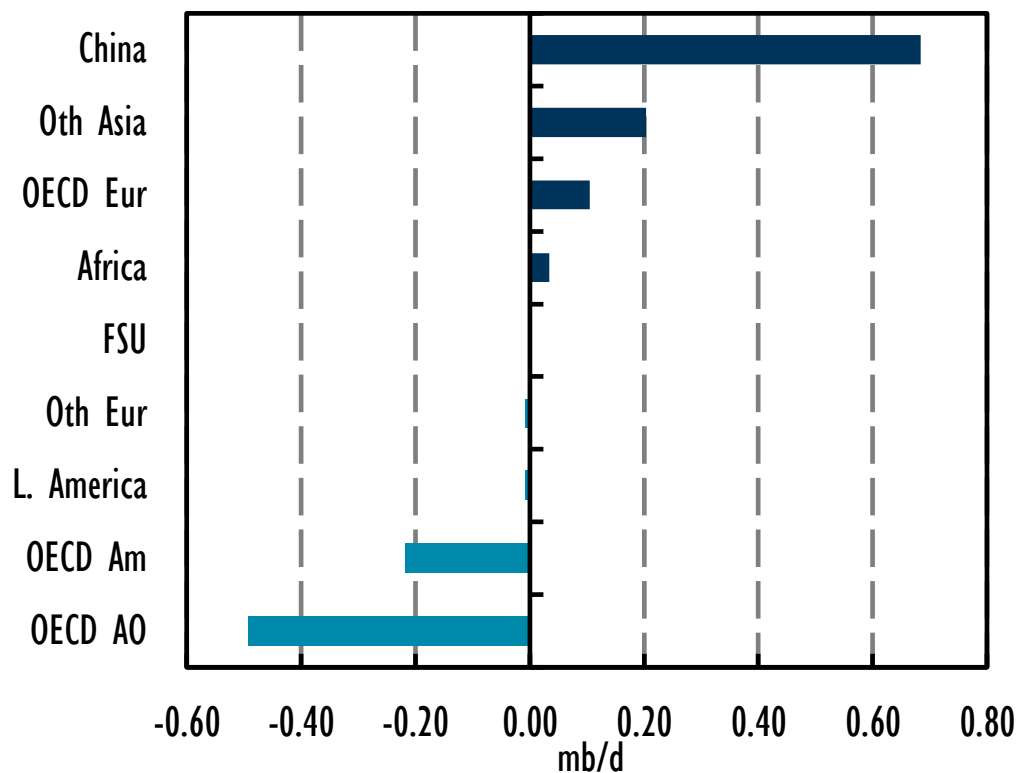


- Later than previously expected following:
 - Impact of low prices on North American and North Sea production
 - Slowing non-OECD demand growth

Middle Eastern producers compete for market share in Asia

Medium-Term
Market Report
2015

Middle East export growth, 2014-20

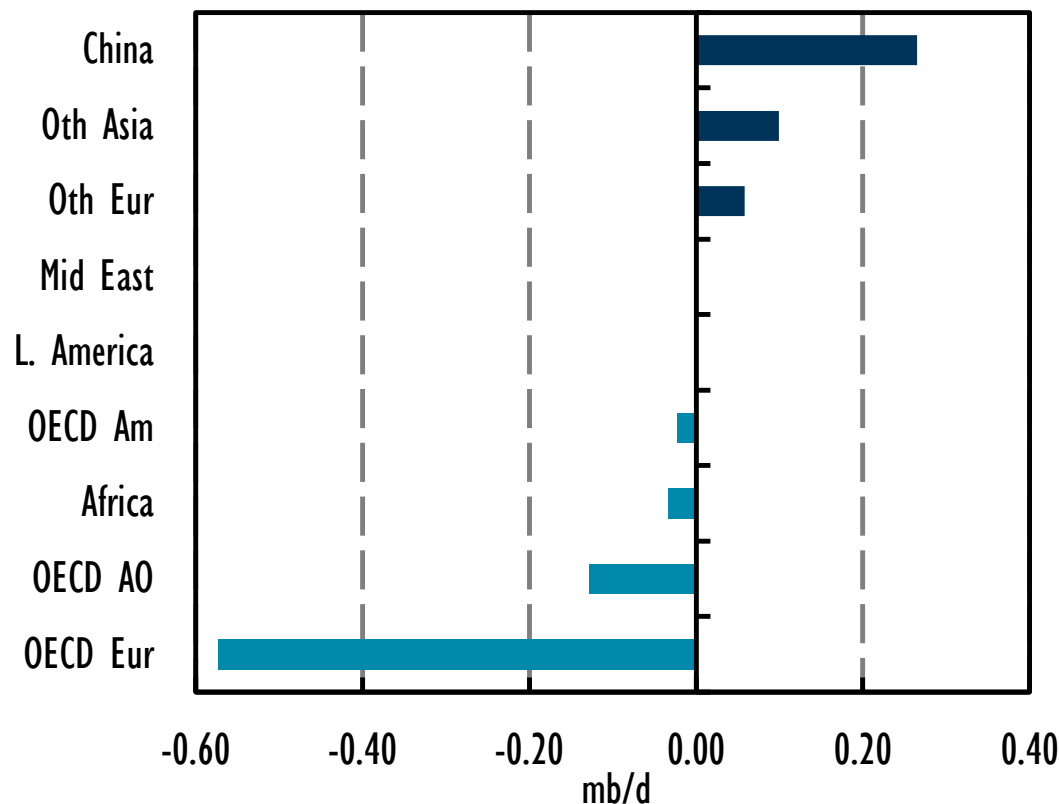


End in sight for the “Asian premium”?

Russia's "pivot to Asia"

Medium-Term
Market Report
2015

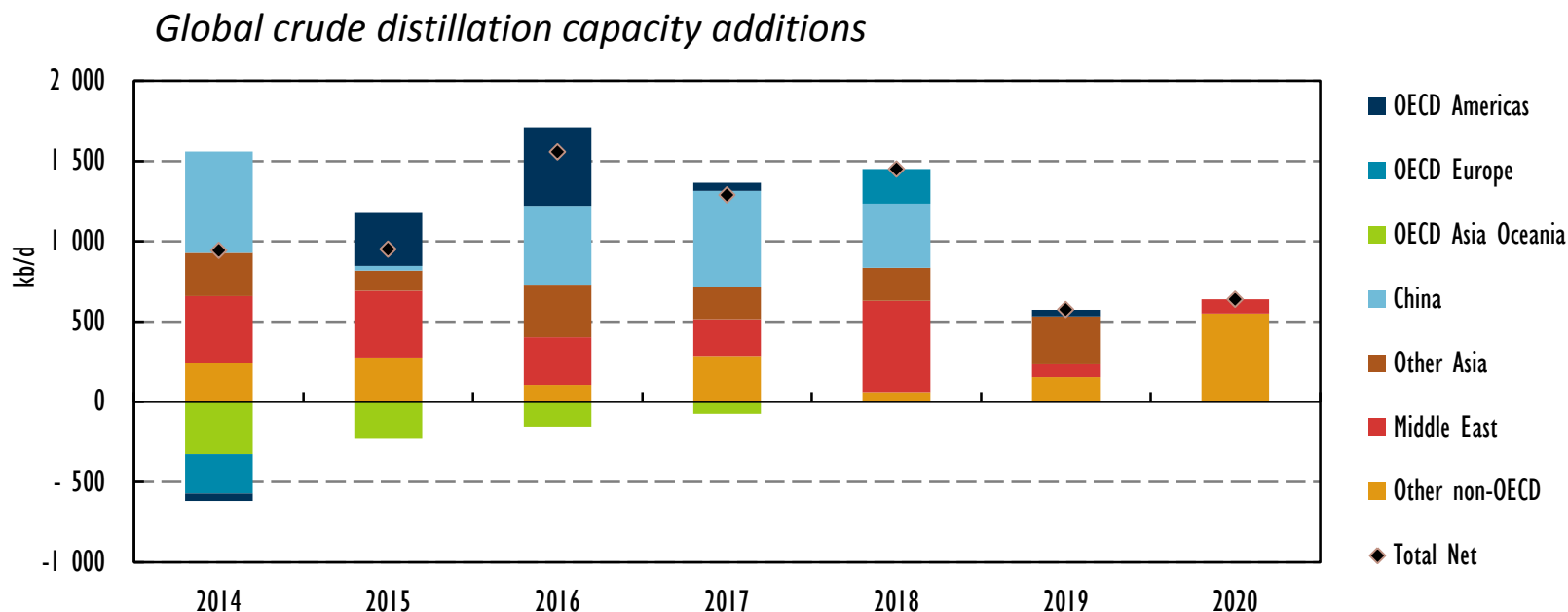
FSU export growth, 2014-20



- Rosneft supply deals with CNPC, Sinopec, Essar, PetroVietnam
- European crude demand attrition

Refining surplus lingers despite scaling back

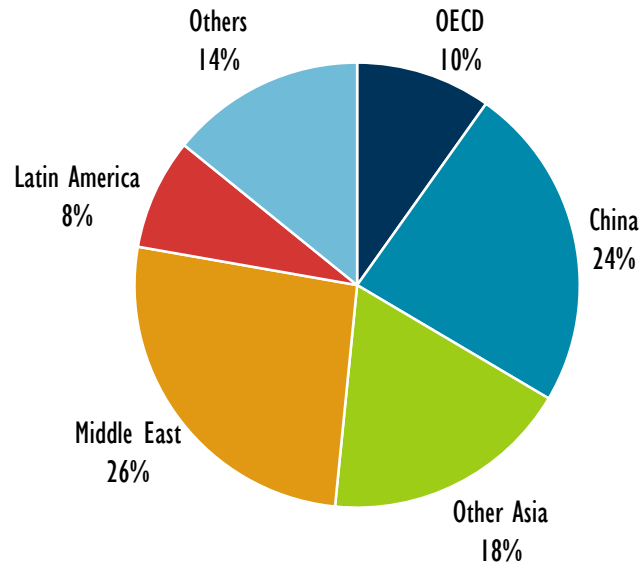
Medium-Term
Market Report
2015



- New capacity of 6.4 mb/d by 2020, led by non-OECD Asia, Middle East
- Brief margin respite in 2014 on shutdowns

Non-OECD accounts for 90% of growth

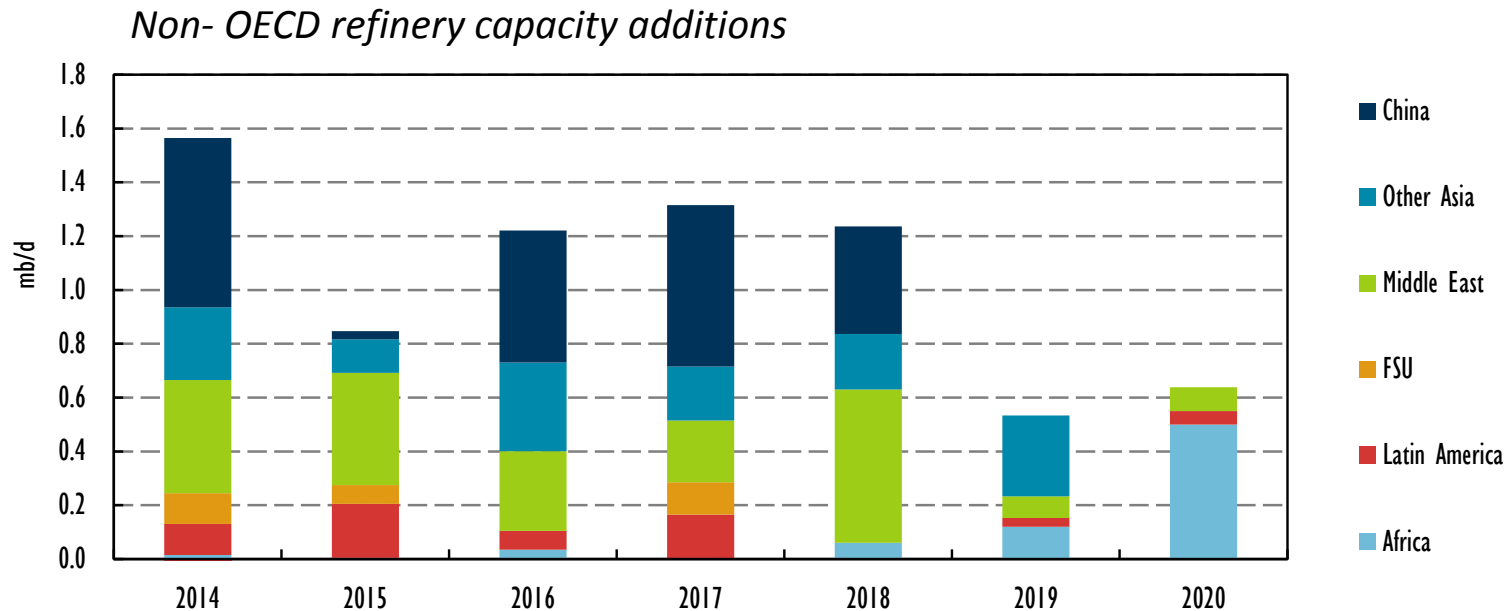
Medium-Term
Market Report
2015



- **Non-OECD Asia adds 42% of total, or 2.7 mb/d of crude distillation capacity**
- **Middle East expands capacity by a further 1.7 mb/d, taking total capacity to 10.3 mb/d at the end of the decade**

Non-OECD expansions front-loaded

Medium-Term
Market Report
2015

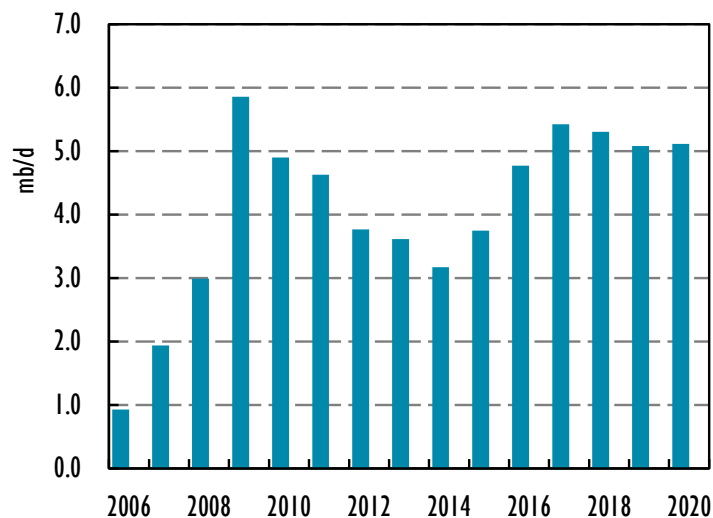


- Projects planned during boom years are now being completed – strong growth in 2014 despite weak product demand
- Expansions slow at the end of the forecast period, but many projects could be revived if conditions allow

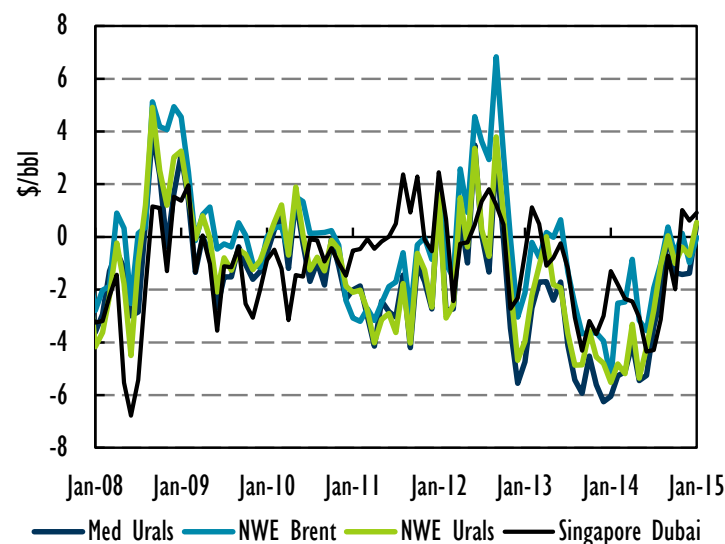
Lower surplus capacity props up margins

Medium-Term
Market Report
2015

Global surplus refinery capacity



Simple refining margins

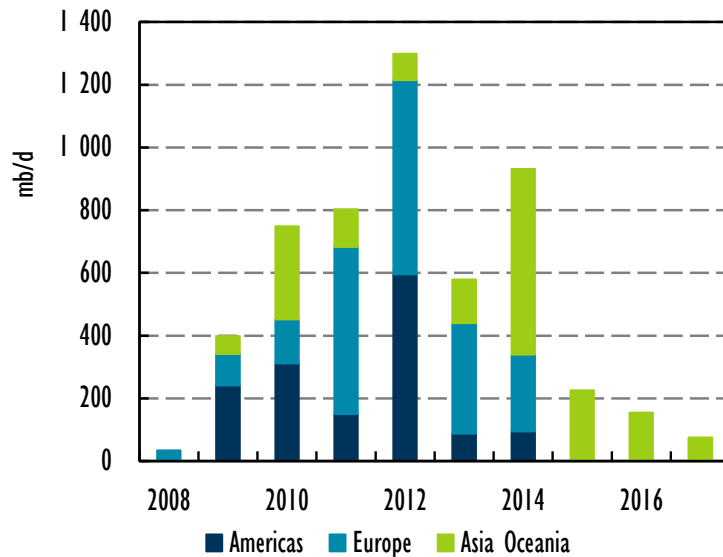


- Surplus global refining capacity hit 6-year low ~3 mb in 2014 as OECD refinery closures offset new non-OECD capacity
- Refinery margins gets significant boost from mid-year
- New capacity puts system under renewed pressure from 2015 onward

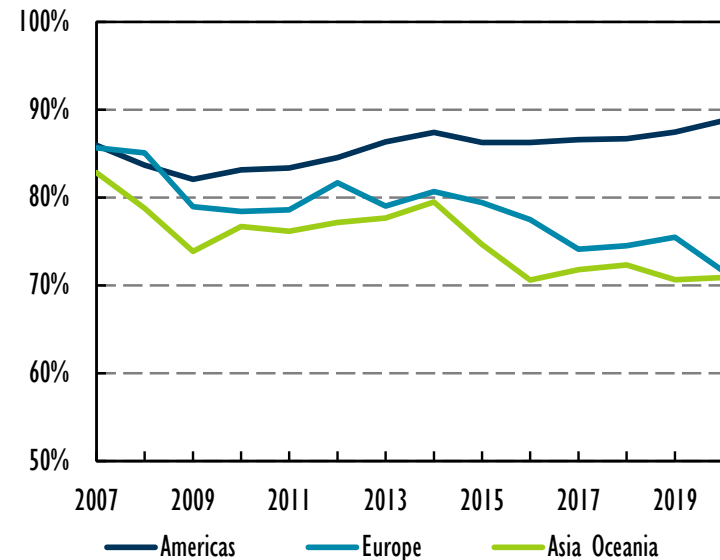
More OECD closures in the cards

Medium-Term
Market Report
2015

OECD refinery closures



OECD refinery utilisation rates

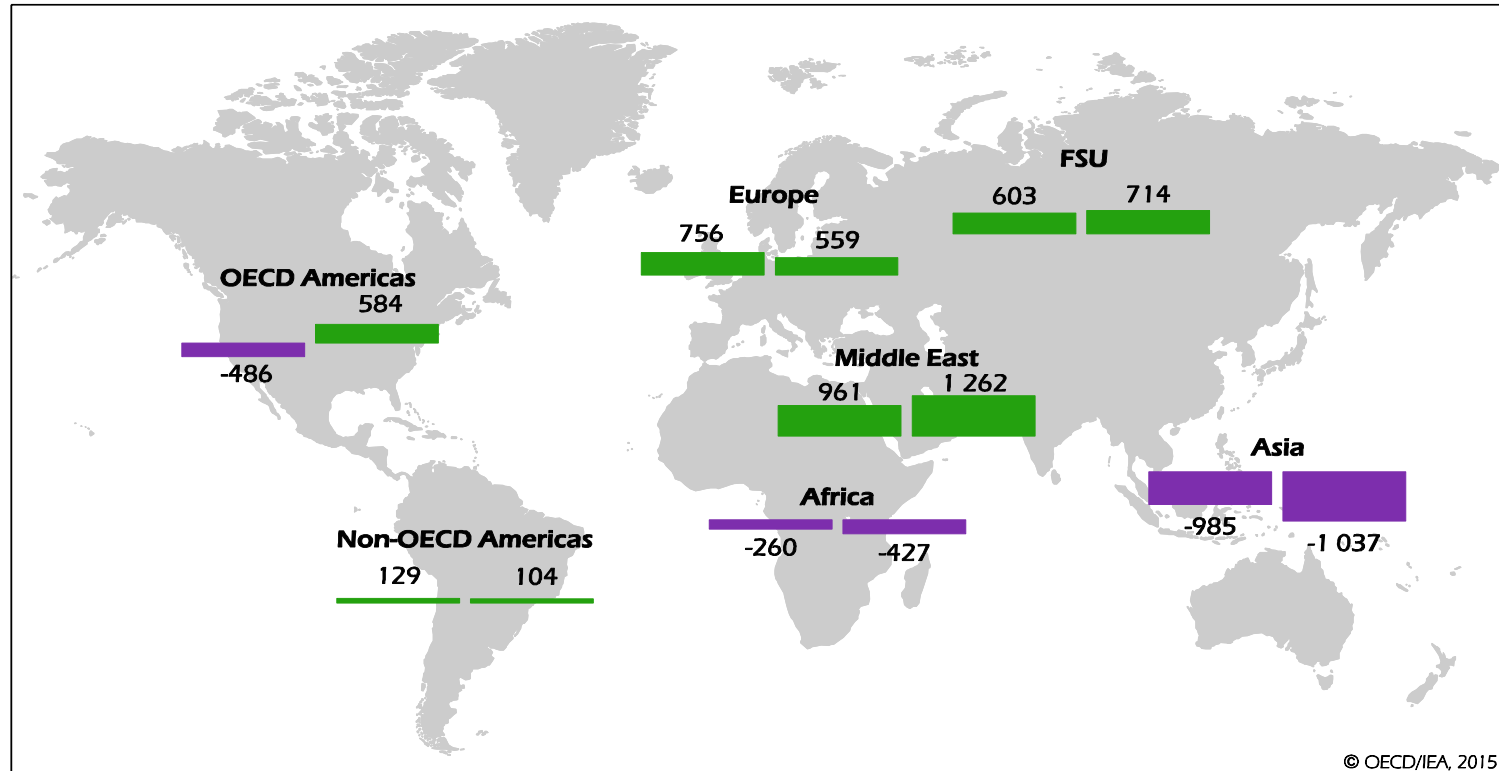


- Total of 4.8 mb/d of capacity shut in OECD since 2008
- Additional 450 kb/d announced in Asia Oceania through 2017
- More shutdowns likely to be announced

Light distillate surplus emerge

Medium-Term
Market Report
2015

Product supply balances: naphtha / gasoline
Regional balances in 2014 and 2020 (kb/d)



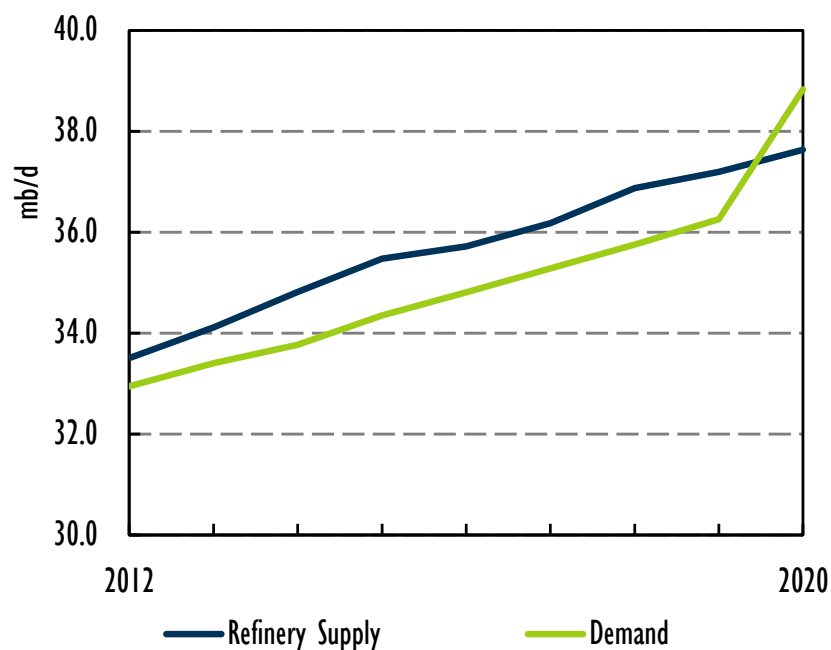
This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

- OECD Americas turning naphtha/gasoline net exporter
- European excess persist despite refinery shutdowns

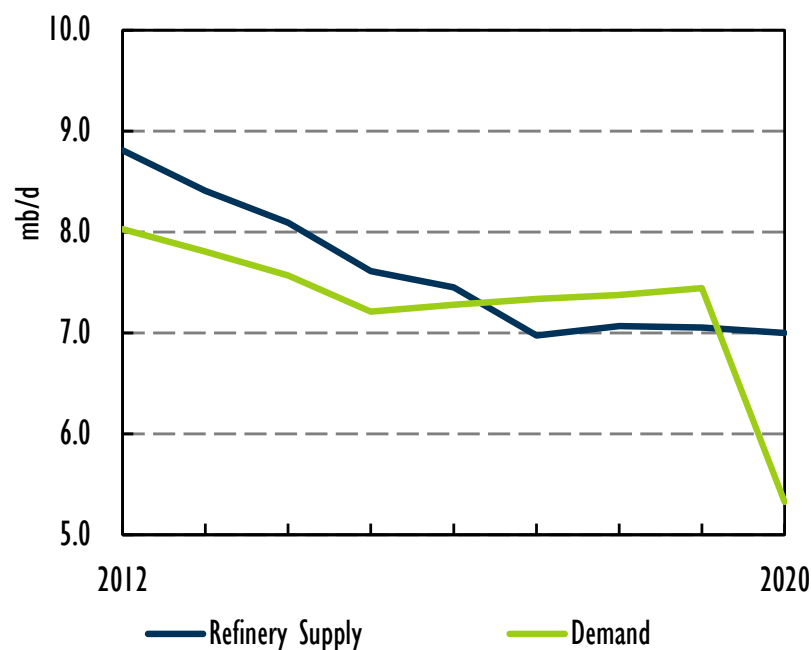
Looming diesel wall

Medium-Term
Market Report
2015

Middle distillate supply/demand balance



Fuel oil supply/demand balance

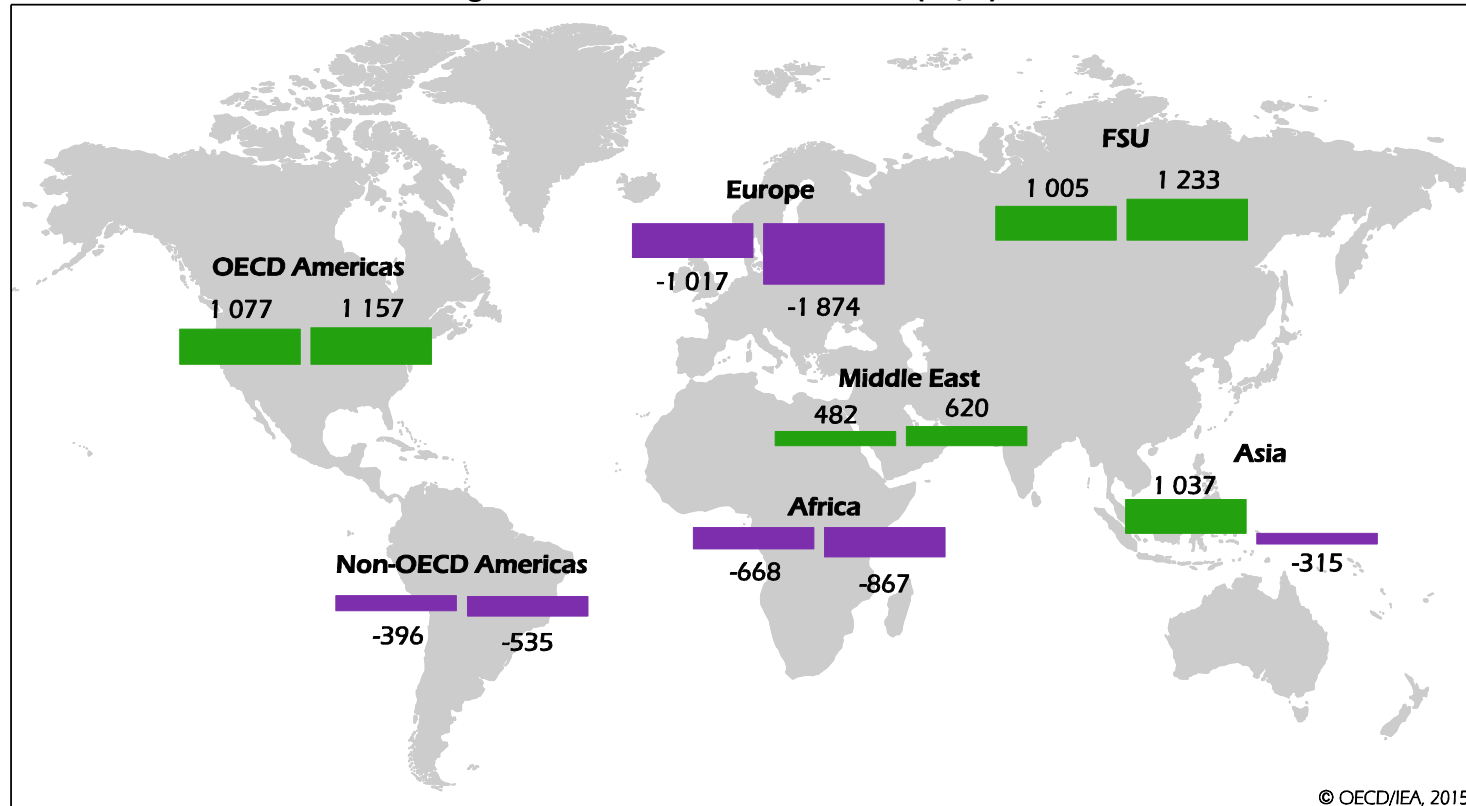


- Further refinery investments are required to produce the necessary gasoil
- Higher middle distillate demand will increase distillate cracks and shipping costs
- Adjustments in midstream infrastructure required

Europe's middle distillate import dependence

Medium-Term
Market Report
2015

Product supply balances: gasoil / kerosene
Regional balances in 2014 and 2020 (kb/d)



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.

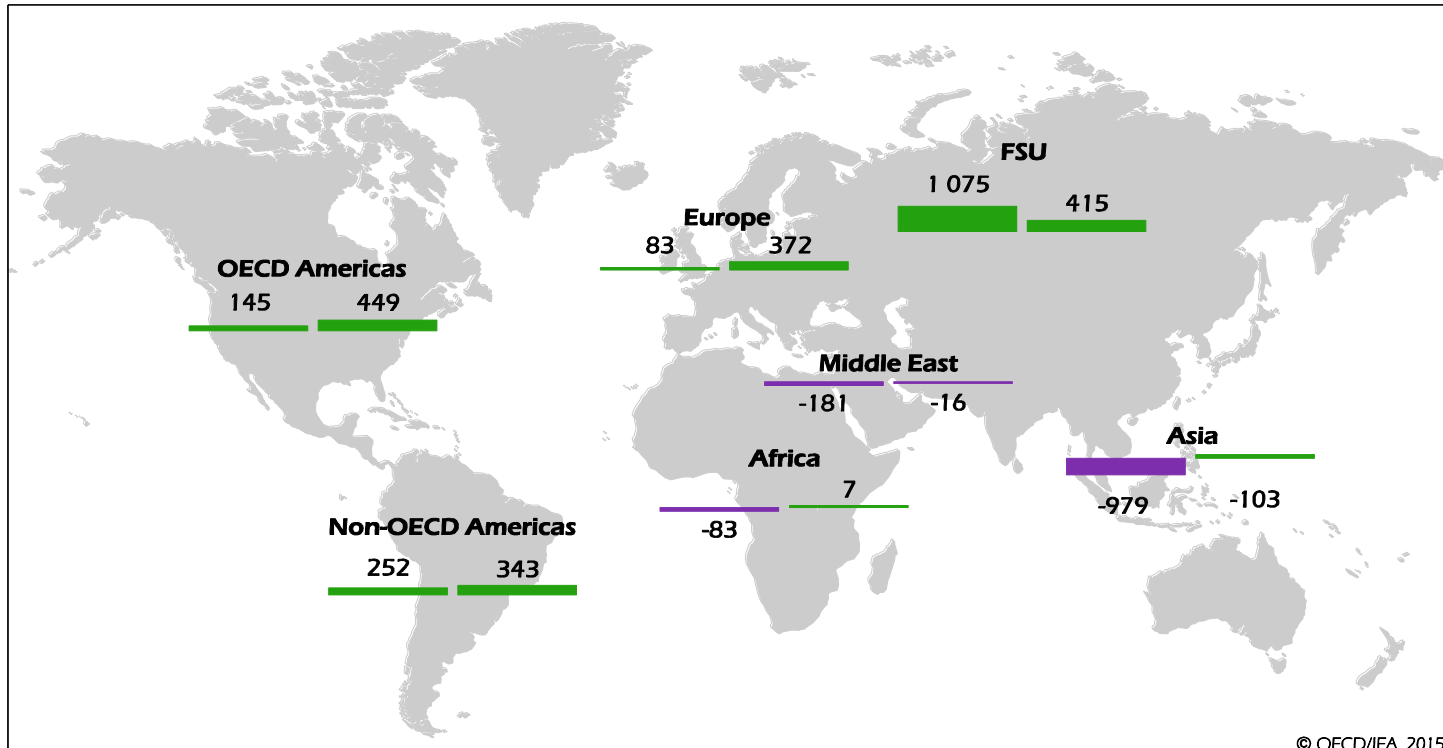
Asia set to become a middle distillate net-importer

- China to become a gasoil exporter?

Fuel oil challenges

Medium-Term
Market Report
2015

Product supply balances: fuel oil
Regional balances in 2014 and 2020 (kb/d)



© OECD/IEA, 2015

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.

- Fuel oil tightens ahead of 2020, as refiners upgrade but then become massively oversupplied on marine shift
- Global fuel oil demand remains remarkably stable through 2019



<https://www.iea.org/oilmarketreport/>