

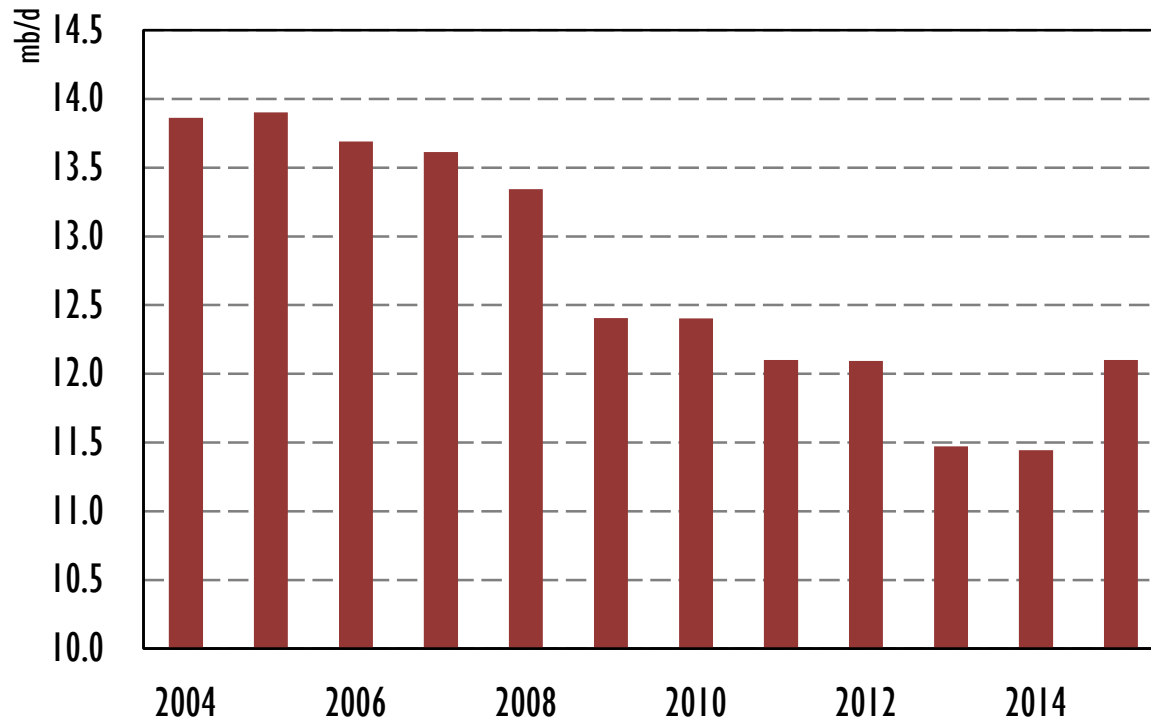
# A global perspective on the refining industry



CIEP Refining Conference  
*The Hague, 12 May 2016*  
*Kristine Petrosyan, International Energy Agency*

# European refiners: busy 2015

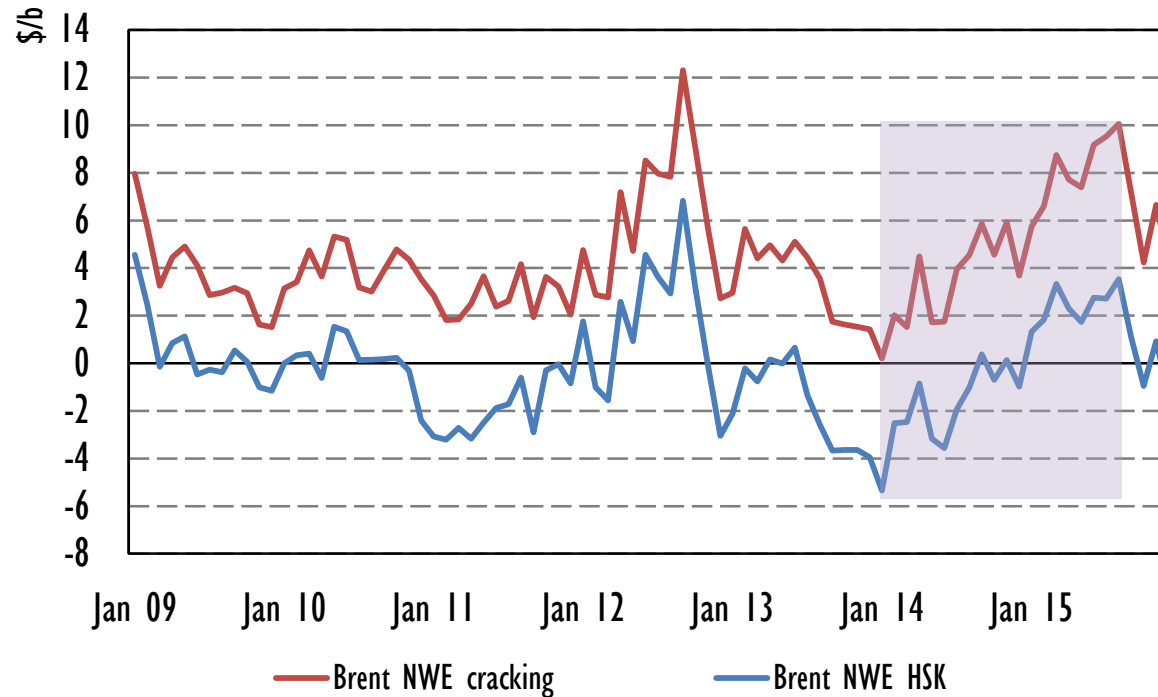
OECD Europe refinery intake



- First annual average runs increase since 2005.
- Robust 700 kb/d yoy: third of global gains last year.
- Beat China, US, Middle East gains.
- Healthy 85% utilisation rates, after an average of 78% for two previous years.

# Grab the margins while they last

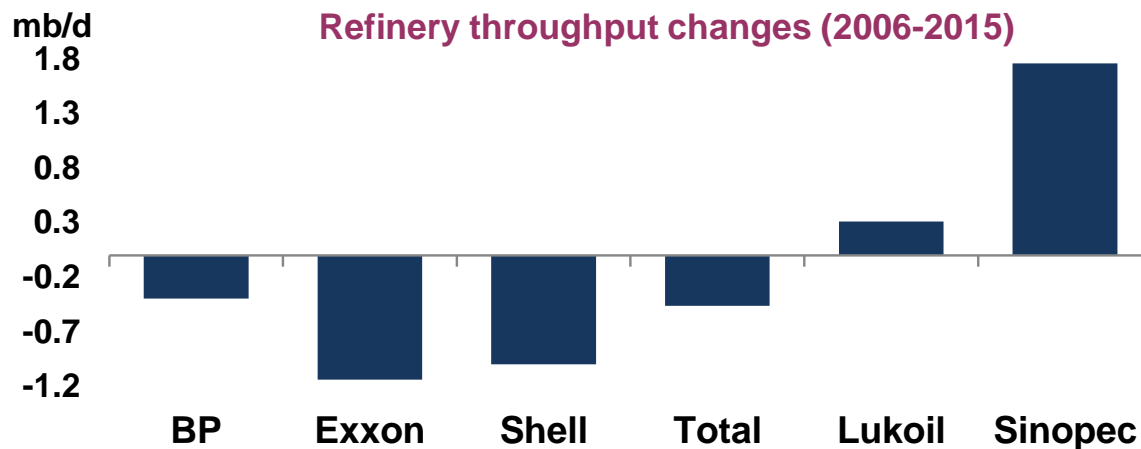
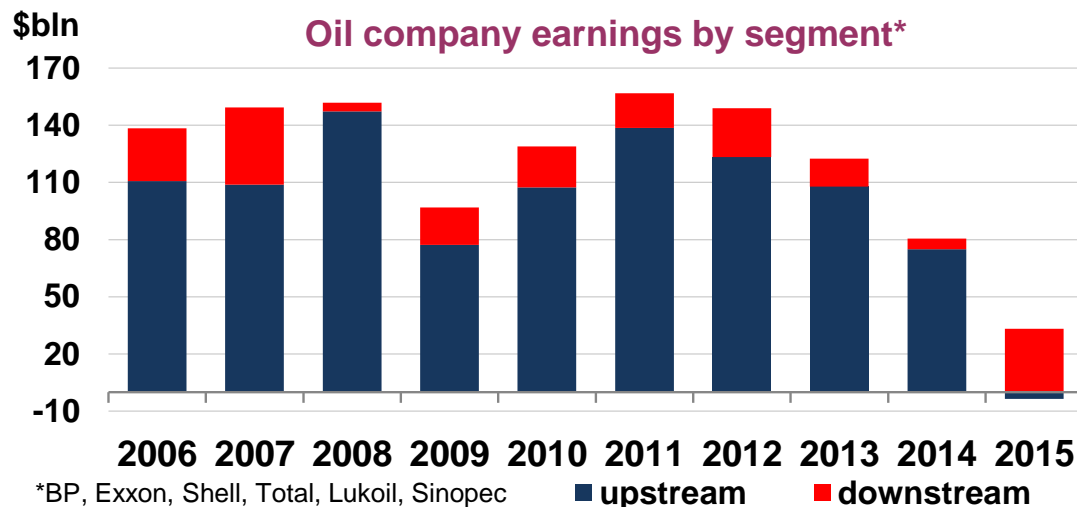
## NWE margins



- Sustained margin recovery from historical lows of early 2014.
- Even NWE hydroskimming margins were positive most of 2015.
- Same picture worldwide – refiners are earning, while the upstream profits plummet.

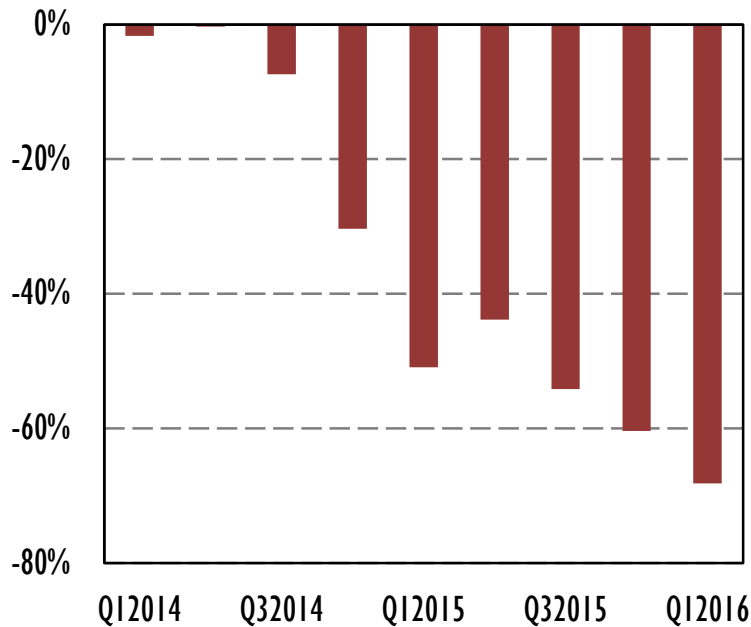
# Refining saves the day

## Upstream vs downstream earnings

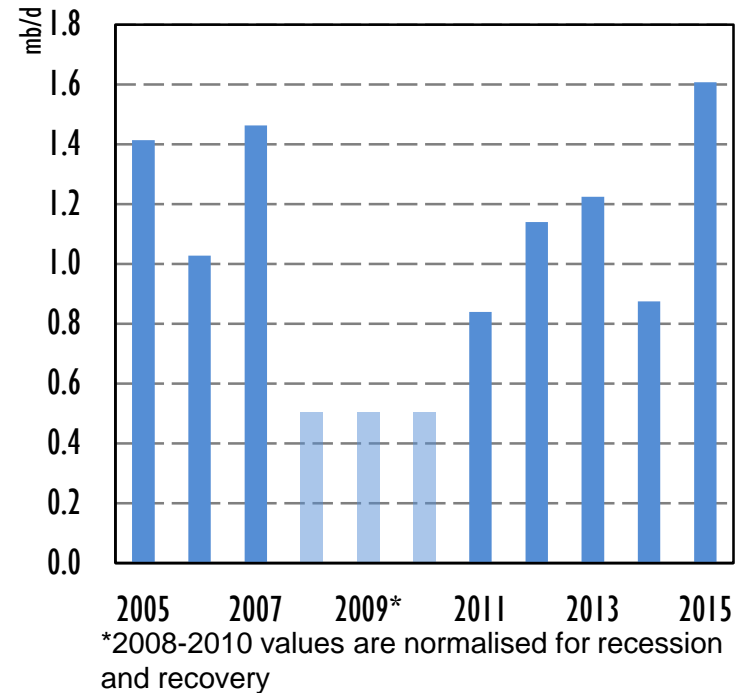


# Enthusiastic demand response to price

## Oil price vs 2011-2013 average



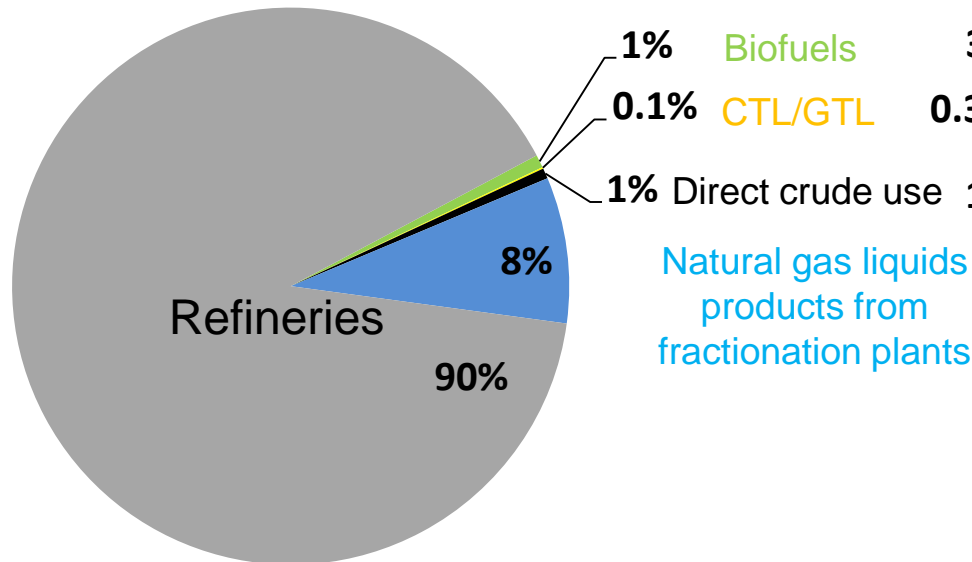
## Annual global demand growth



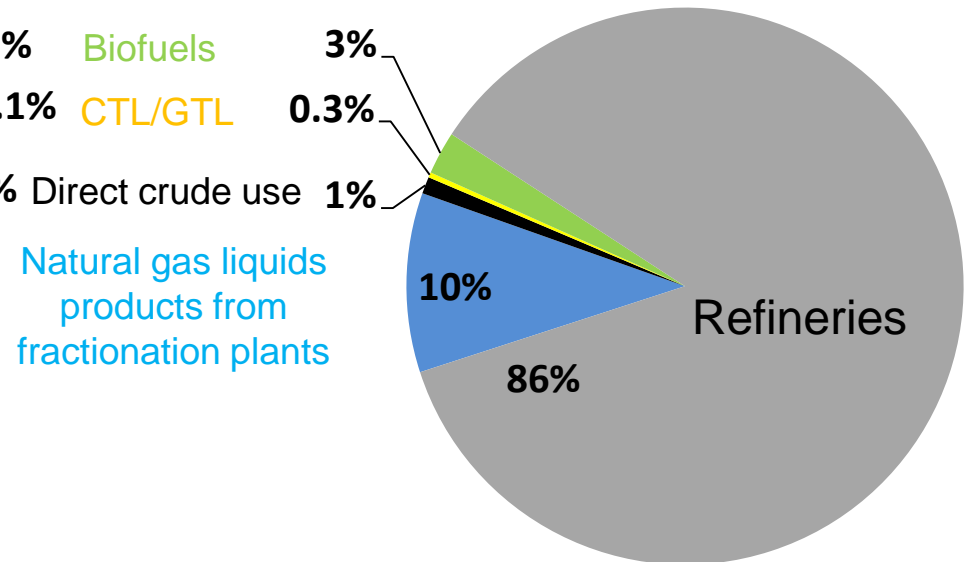
- By end-2014 oil prices had lost 30% vs the previous 3 year avg.
- By end-2015, losses amounted to 60%.
- 2015 saw biggest annual demand growth rate in 10 years (excluding post-recession recovery of 2010).
- OECD demand growth was led by the US, but Europe added some 200 kb/d too.

# Not all demand growth matters to refiners

Breakdown of oil demand 2005

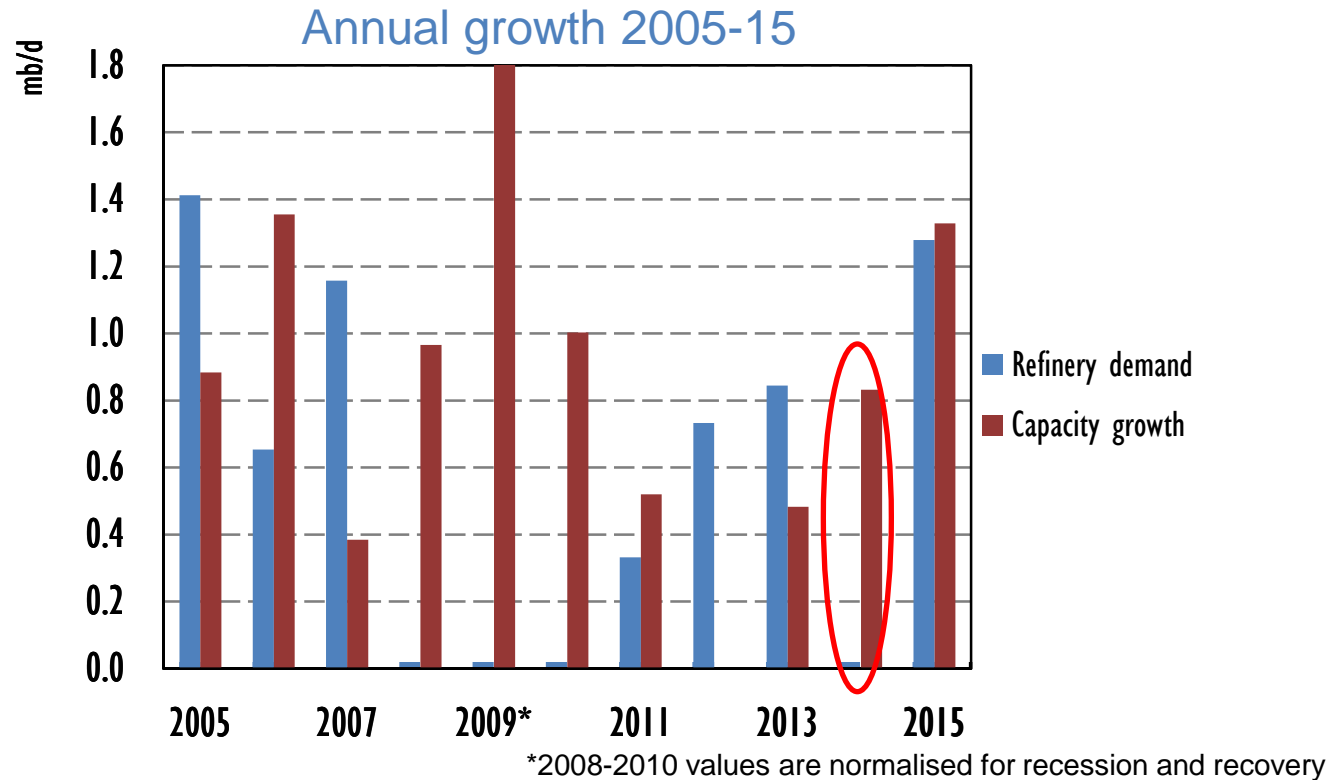


Breakdown of oil demand 2015



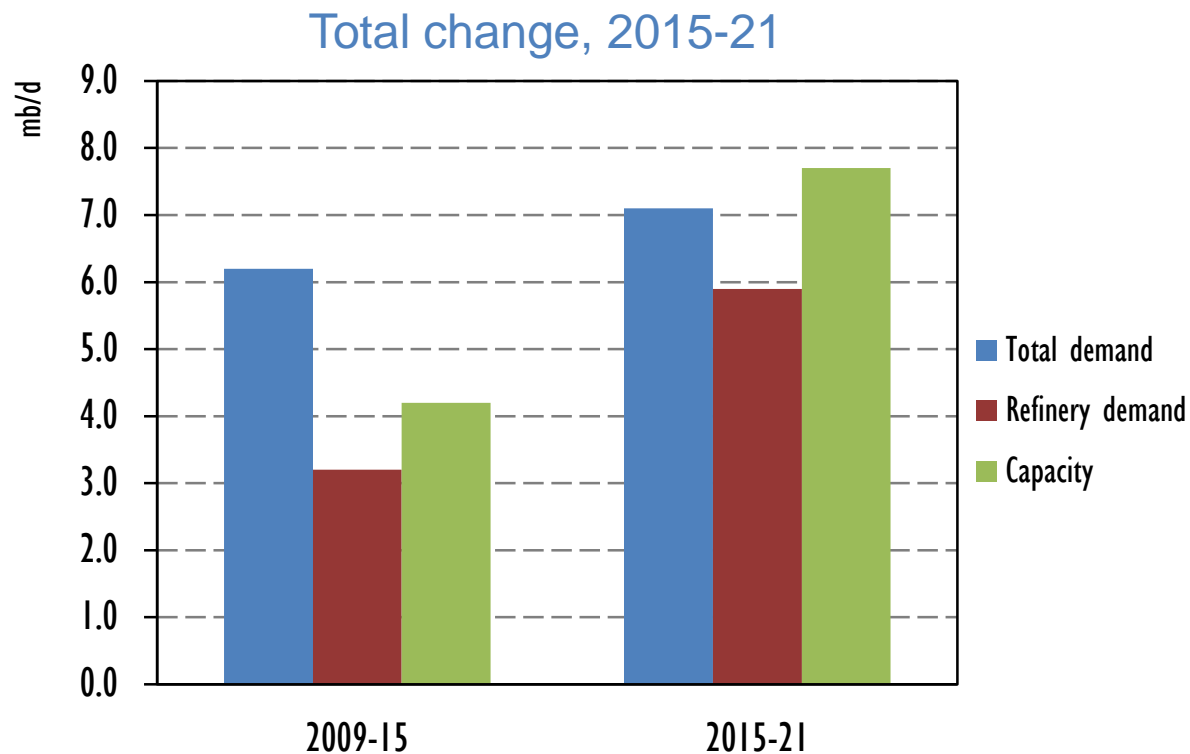
- 1/7 of oil demand is taken by non-refinery products.
- Biofuels are the visible part of the iceberg, fractionation products (ethane, LPG and naphthas) – the invisible..
- Gradual erosion of refineries' market share.
- Total demand growth 2005-2015: **9.7** mb/d.
- Growth of refinery product market: **4.9** mb/d.

# Capacity growth –two steps ahead of demand?



- Total oil demand grew a 'reasonable' 10 mb/d in the last 10 years.
- Refined product demand only grew by 5 mb/d. It didn't grow at all during 2008-2010, neither in 2014.
- Refinery capacity grew by 8.7 mb/d (4 mb/d in 2008-2010...)

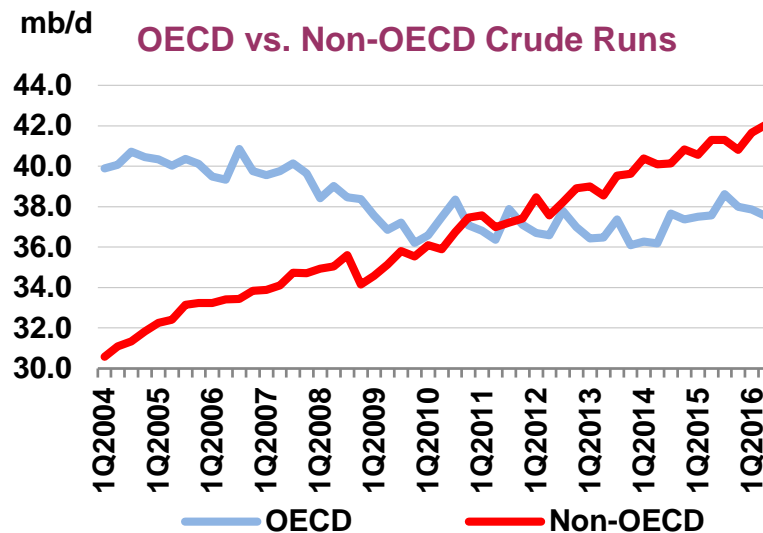
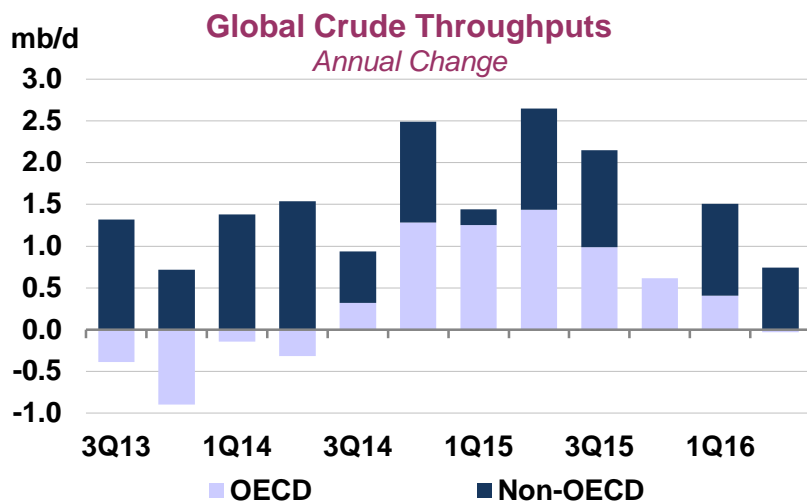
# Refinery market share next five years: good news and bad news



- The good news: higher total demand growth, higher refined product demand growth (5.9 mb/d vs 3.2 mb/d)
- The bad news: more aggressive capacity expansion: 7.7 vs 3.2.
- Spare capacity to increase by at least 1 mb/d.

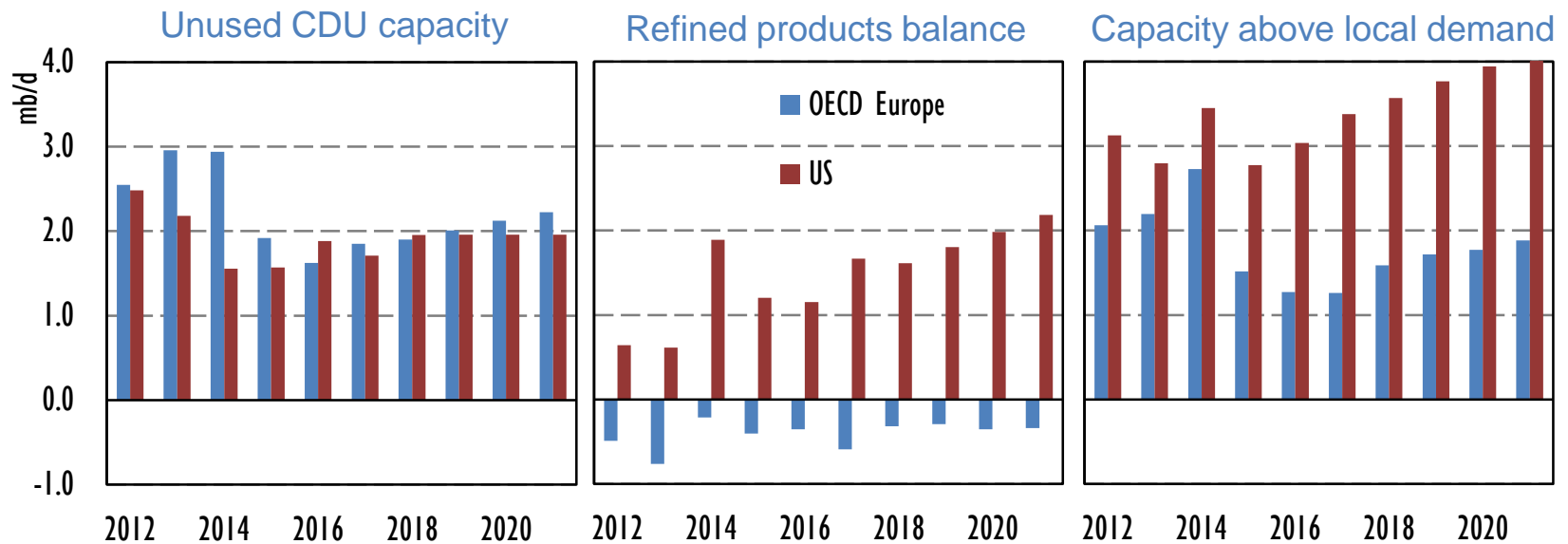


# Non-OECD refiners back to the driving seat



- In 2Q16 non-OECD runs are forecast to rise to 42 mb/d, a level never reached by OECD refiners before.
- Despite bright spots – (Korea, US), OECD runs resume declining trend.

# Europe and the US – worlds apart?



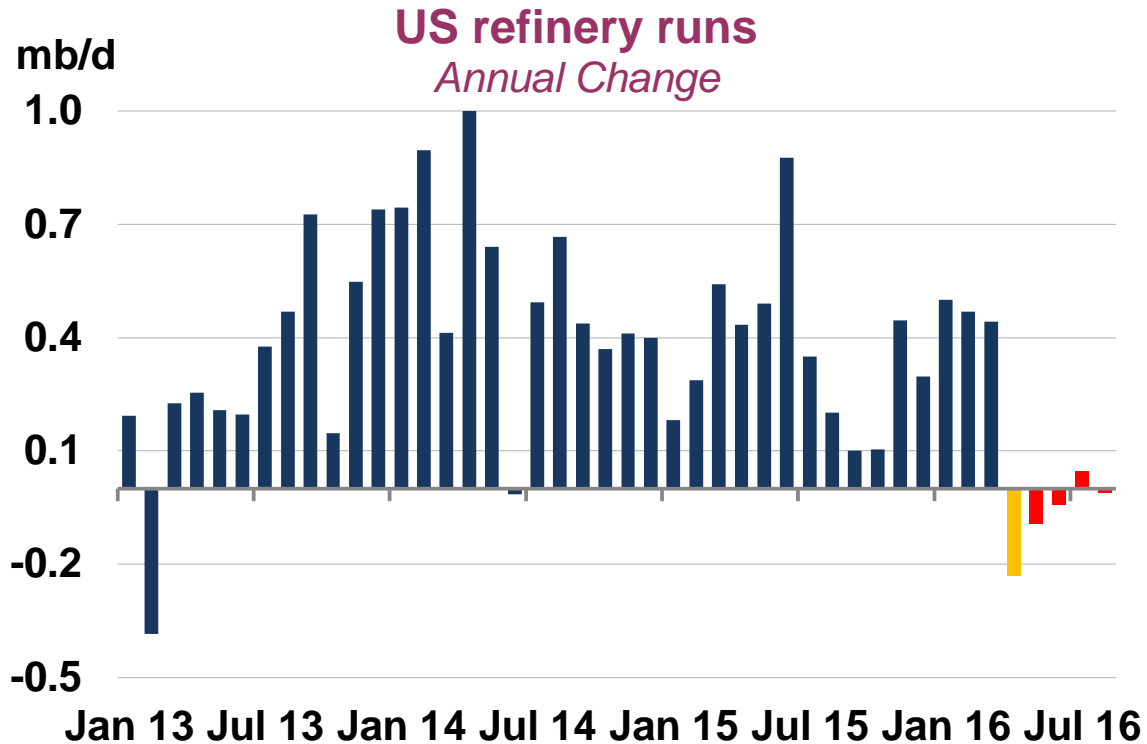
## Capacity shutdowns since 2007

OECD Europe: 2 mb/d

US: 1.2 mb/d

- Both OECD Europe and the US face declining demand, with growing capacity overhang.
- Europe went through more aggressive rationalisation.
- Europe could expand refinery runs to cover remaining imports?
- While the US, if deprived of export markets, would face bigger overcapacity.

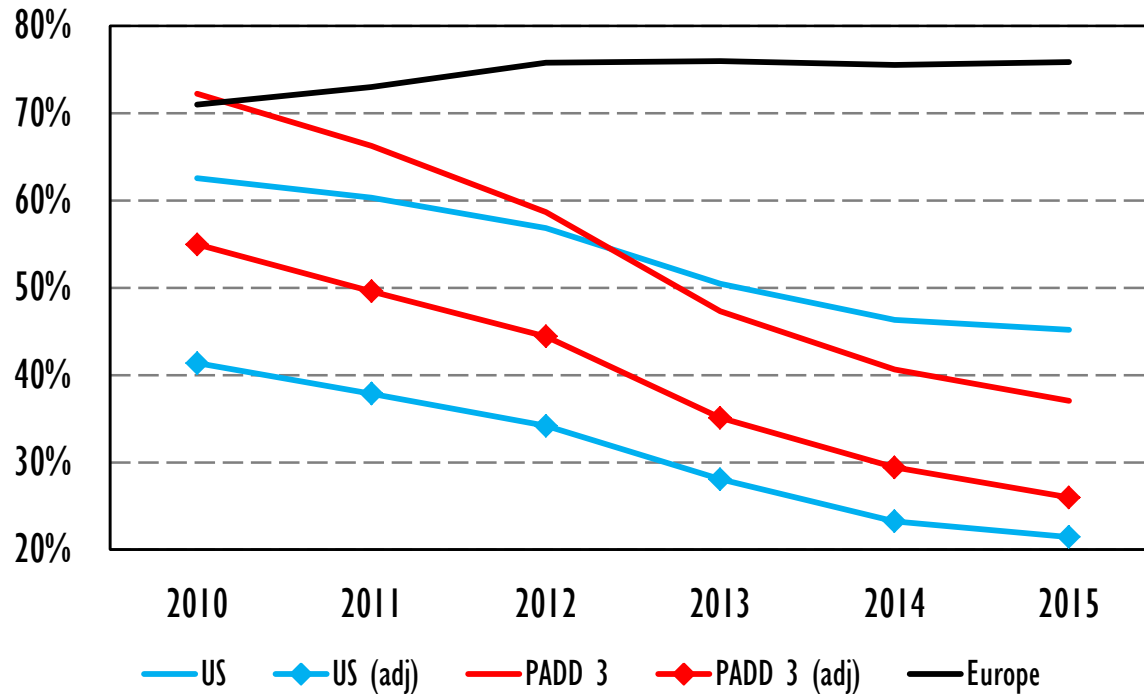
## But both running out of steam?



- April US runs down yoy first time in three years.
- 2Q16 projected with first annual decline in 4 years.
- European runs down in 1Q16 first time in five quarters.

# Crude supply – the weakest link?

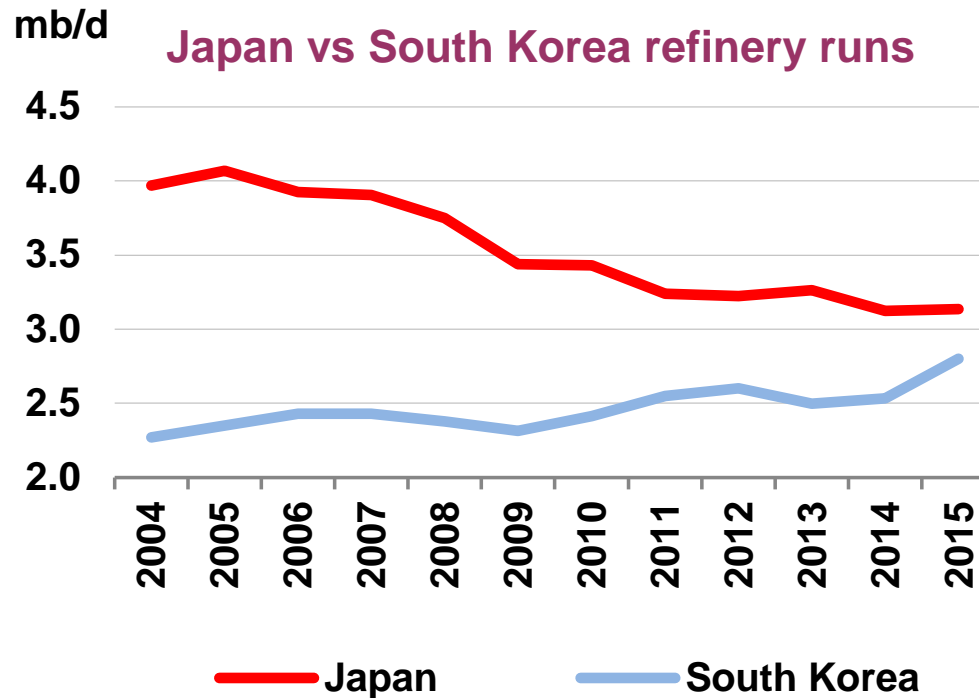
## Crude import dependency of US and European refiners



Adjusted values are net of Canadian and Mexican imports

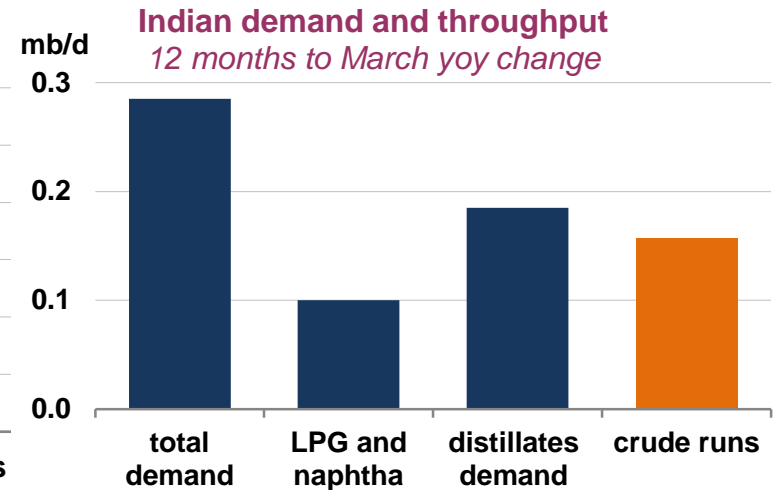
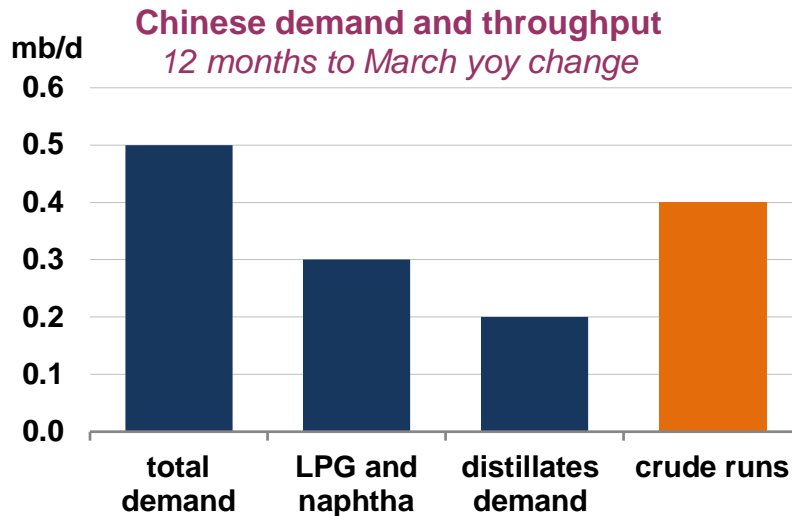
- US shale revolution vs Europe's declining North Sea.
- Diverging paths of crude imports.
- US market's captive Canadian and Mexican suppliers
- Europe's suppliers more and more courted by Asian buyers (Russia, Caspian, Middle East, West Africa)

# Japan and Korea – worlds apart?



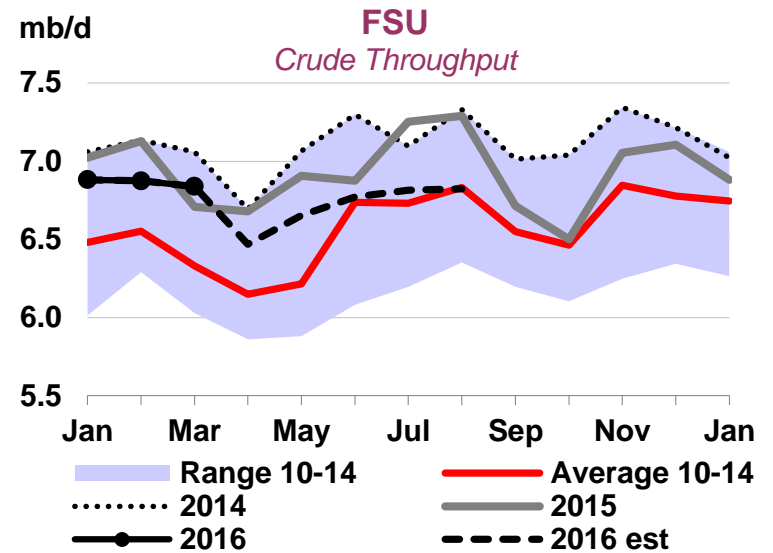
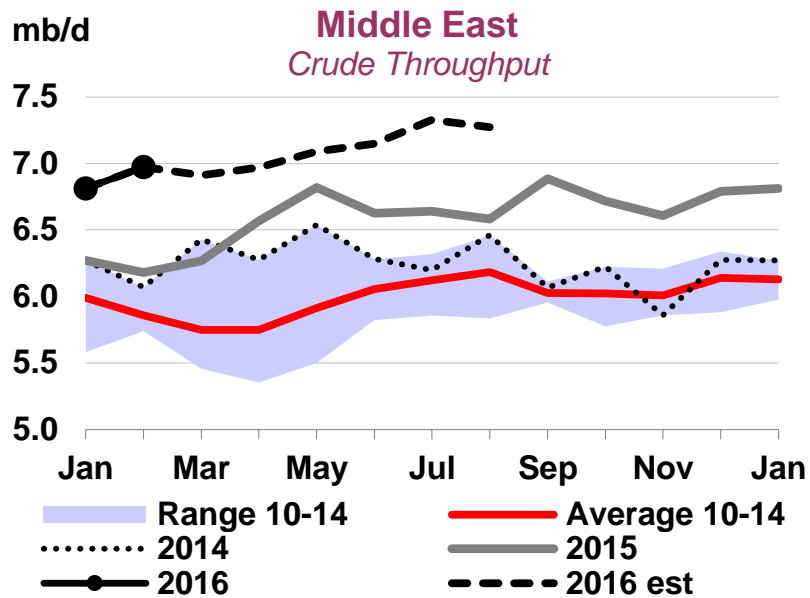
- Japanese runs were steady last year after years of decline.
- But expected to resume decline trend this year.
- Korea faring much better, having run a record 3 mb/d in 1Q16.
- Supported by Australian closers and aggressive petchem expansion.

# India and China – worlds apart?



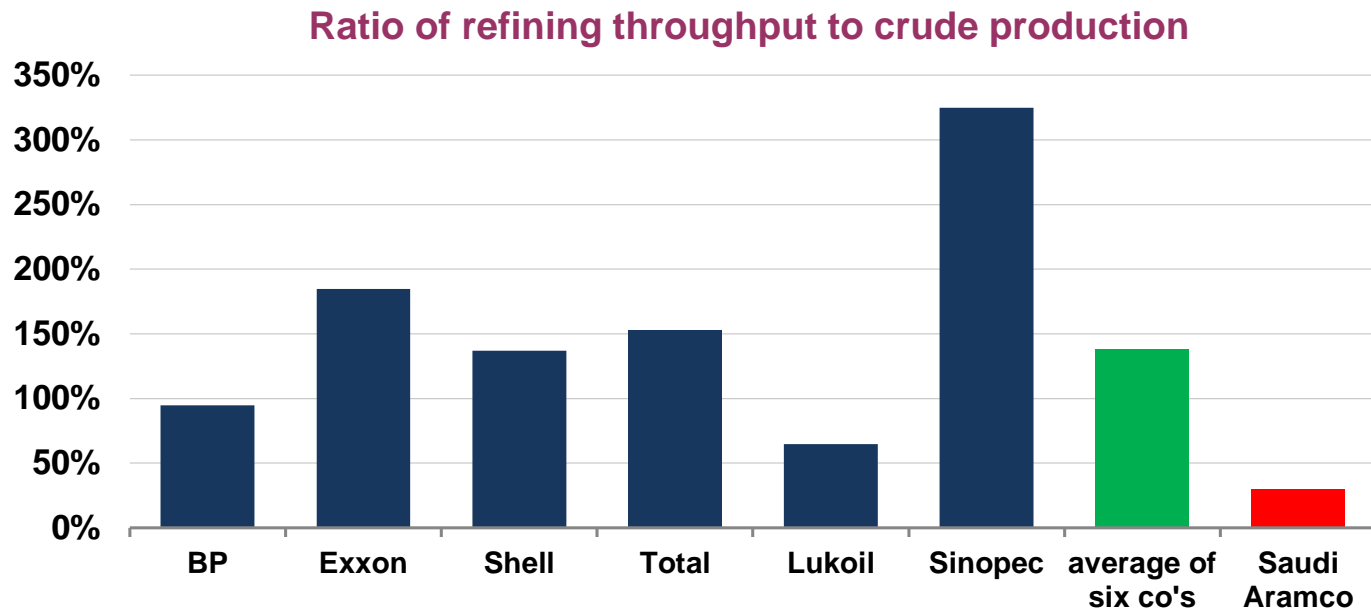
- Chinese overcapacity – vs India stretched capacity (72% vs 110% utilisation rates).
- Increase in crude runs in China recently in excess of refined product demand. Higher exports/stockbuild.
- In India, refineries can't keep up? Lower exports.

# Middle East and FSU- worlds apart?



- Both regions are major crude oil exporters.
- But FSU total runs are retreating from 7 mb/d levels as more crude is sent to export markets.
- Middle East, on the contrary, is breaking through the 7 mb/d as it increases refining capacity at home.

# Middle East producers going more downstream?

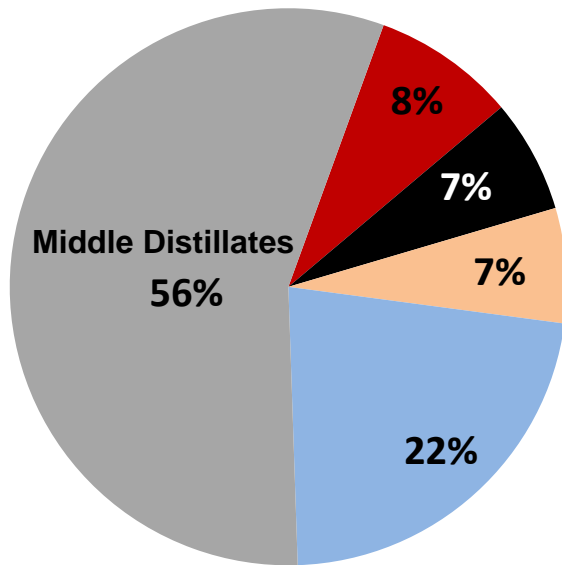


- Saudi Aramco's downstream ambitions to double its global refining capacity
- Kuwait, Iranian NOCs also interested in overseas projects.

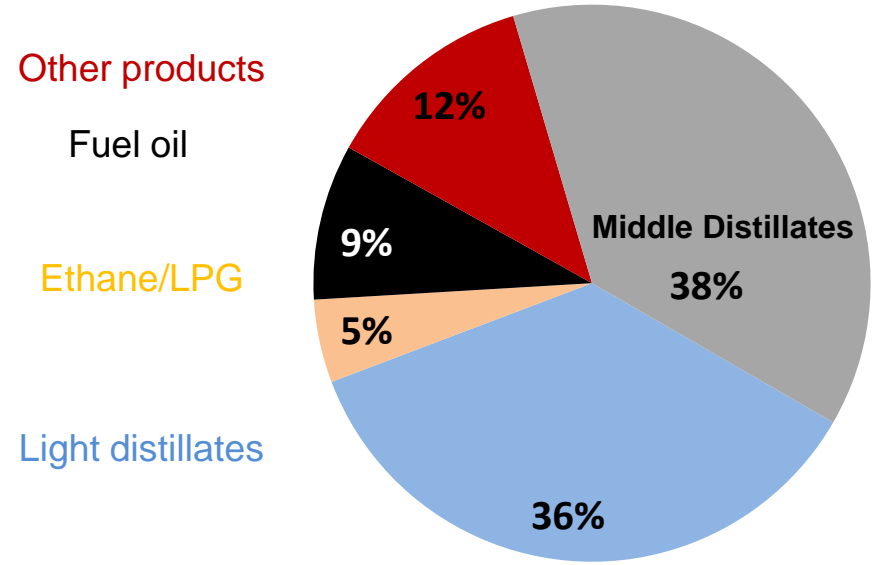


# European bias towards middle distillates

OECD Europe demand barrel



Rest of world demand barrel

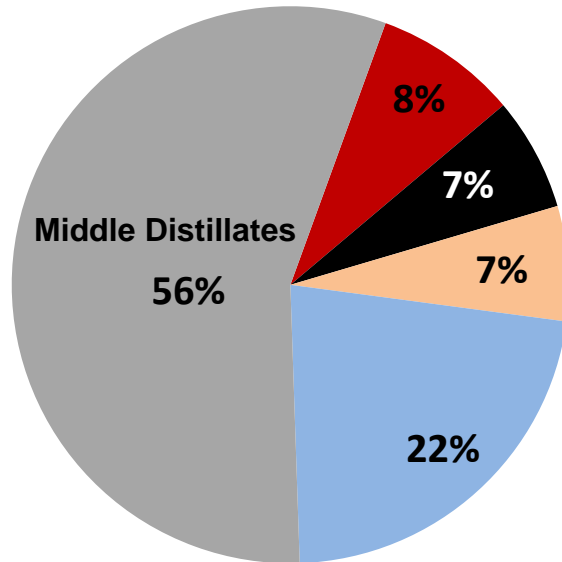


## Ratio of middle distillates demand to gasoline demand

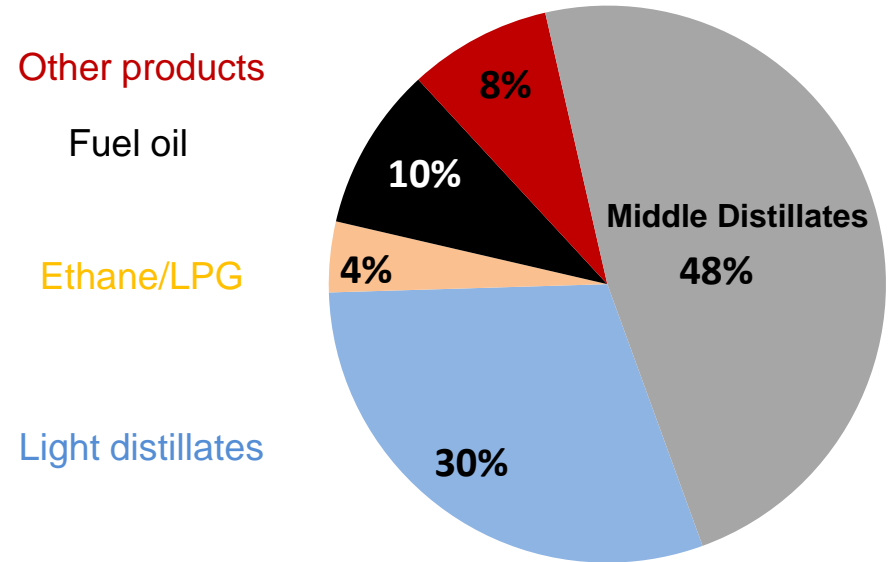
World average	1.4
<b>Europe average</b>	<b>4</b>
France, Spain	6-7
UK, Germany, Italy	3
US	0.7

# Refining impasse?

OECD Europe demand barrel



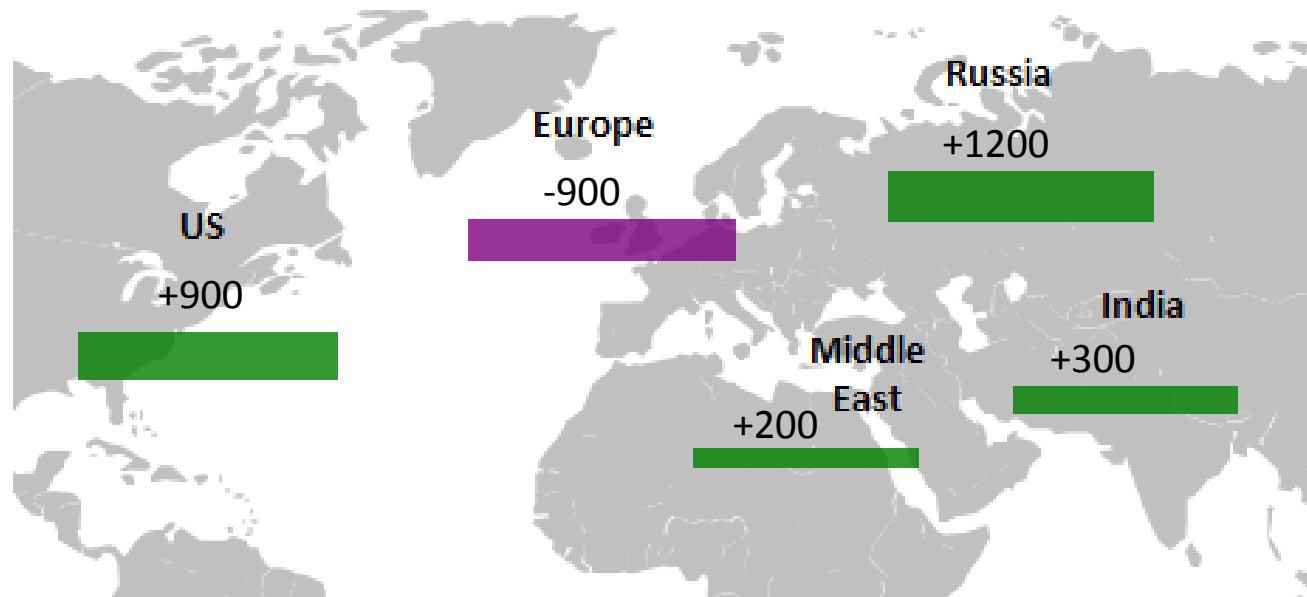
OECD Europe refinery yields



- Euro refiners have some of the highest middle distillates yields.
- But the region still imports almost fifth of middle distillates consumed (1.3 mb/d)
- Exports third of gasoline output (1 mb/d).
- Gasoline export markets are shrinking, US already balanced/exports.

# Diesel deluge

Regional diesel balances (2015), kb/d

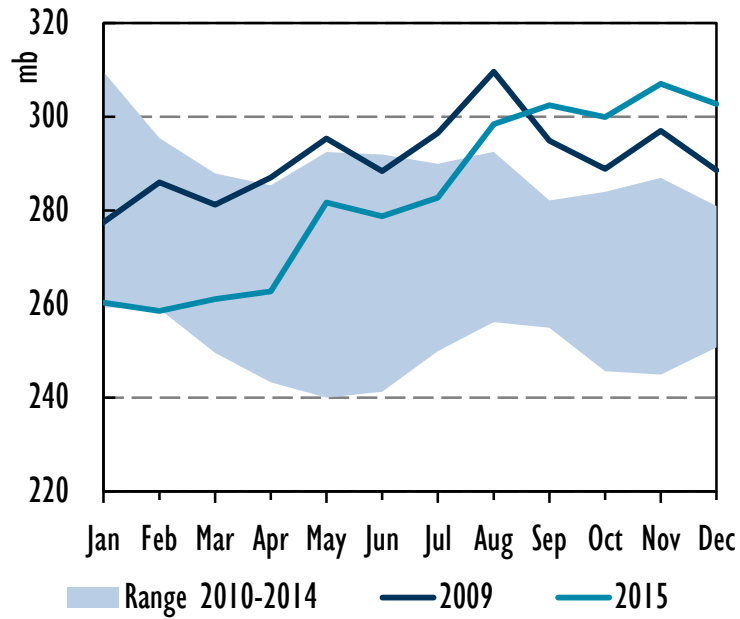


Middle East values show export-oriented output

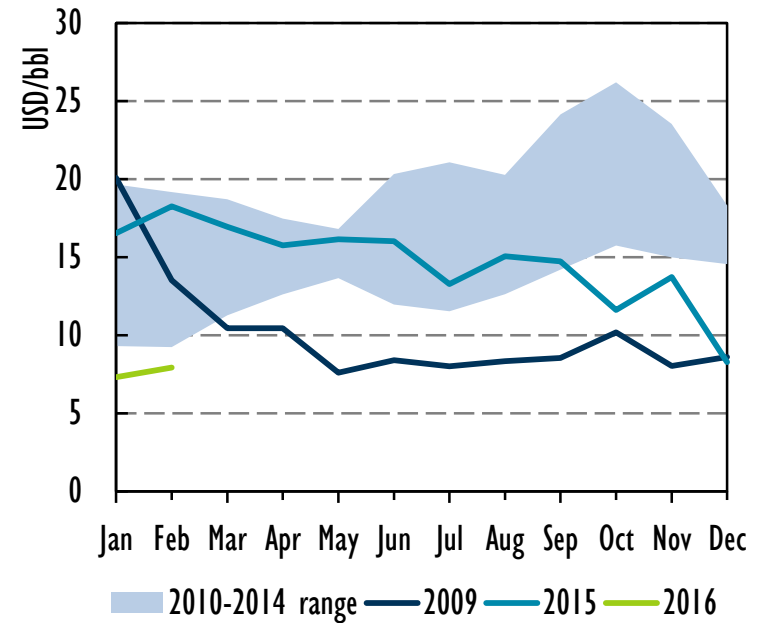
- For every barrel of European import requirement: 2-3 barrels competing as Europe remains the primary target.
- Russian switch to 10 ppm over last few years – big blow to European cracks.
- New Middle East volumes – full impact not seen yet, more pressure in summer.

# Echoes of 2009

## Diesel stocks in OECD Europe



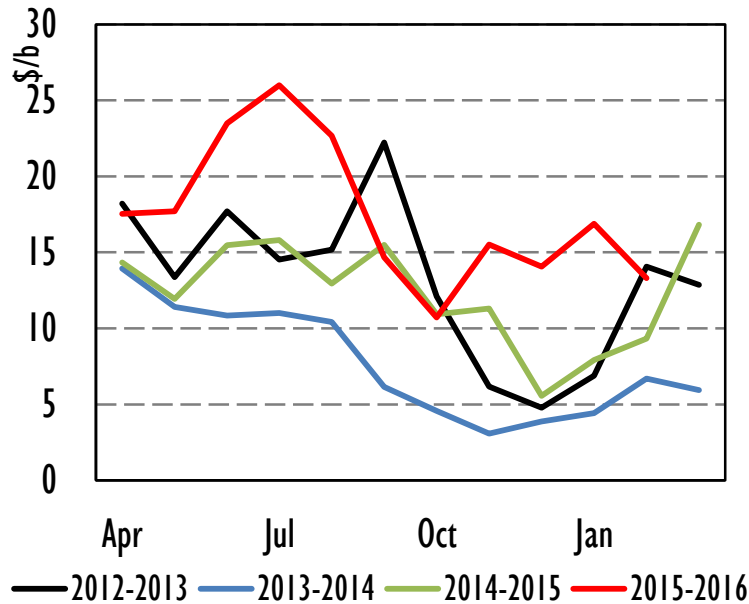
## ULSD 10 ppm cracks, NWE barges



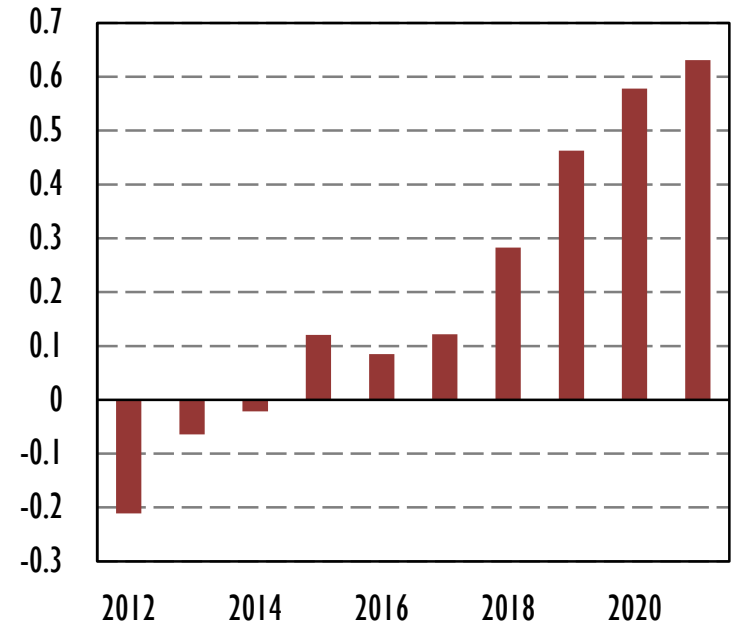
- High imports, high refinery runs, warm winter = record seasonal stock builds in Europe in Q4.
- Floating storage reported, Asian cargoes taking longer routes.
- ULSD 10 ppm NWE barges cracks at historical lows.

# Gasoline performance – disappearing act?

## NWE gasoline cracks

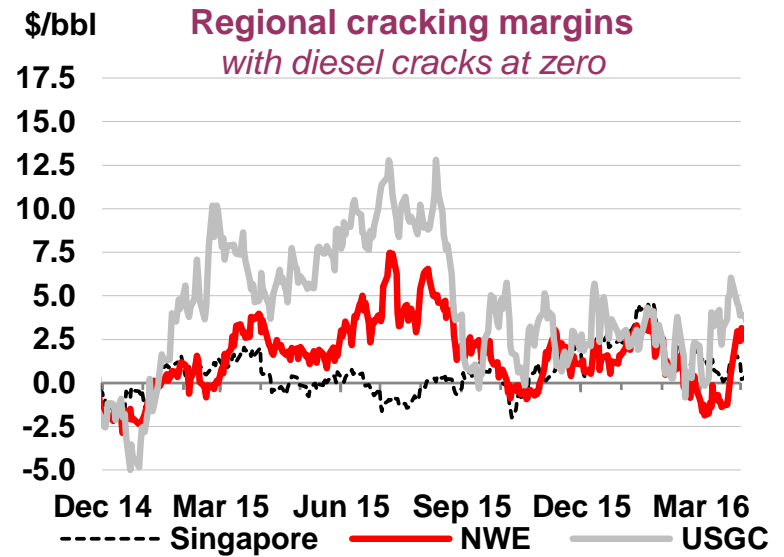
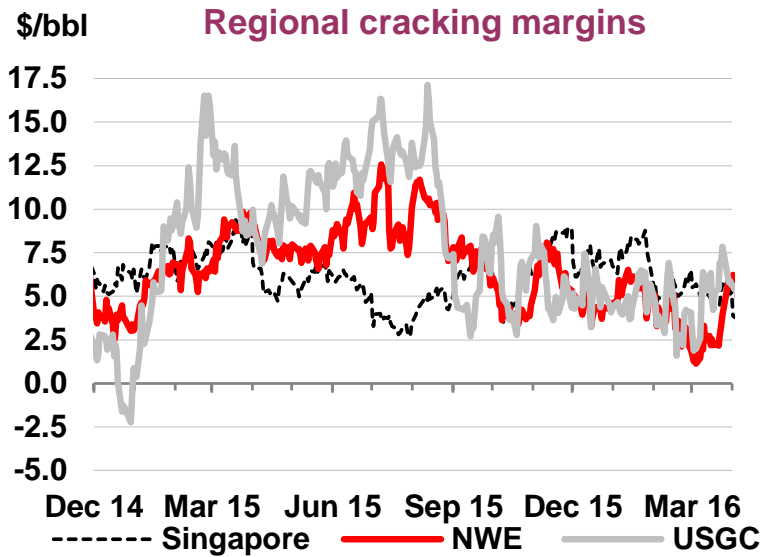


## Atlantic basin gasoline balance



- Impressive performance of gasoline cracks last year.
- US net exporter now but East Coast still dependant on Europe.
- Atlantic Basin turned net long gasoline last year, surplus will grow rapidly as demand for refinery gasoline stagnates.
- By 2021, Europe's net length will be double the net short of Atlantic basin importers.

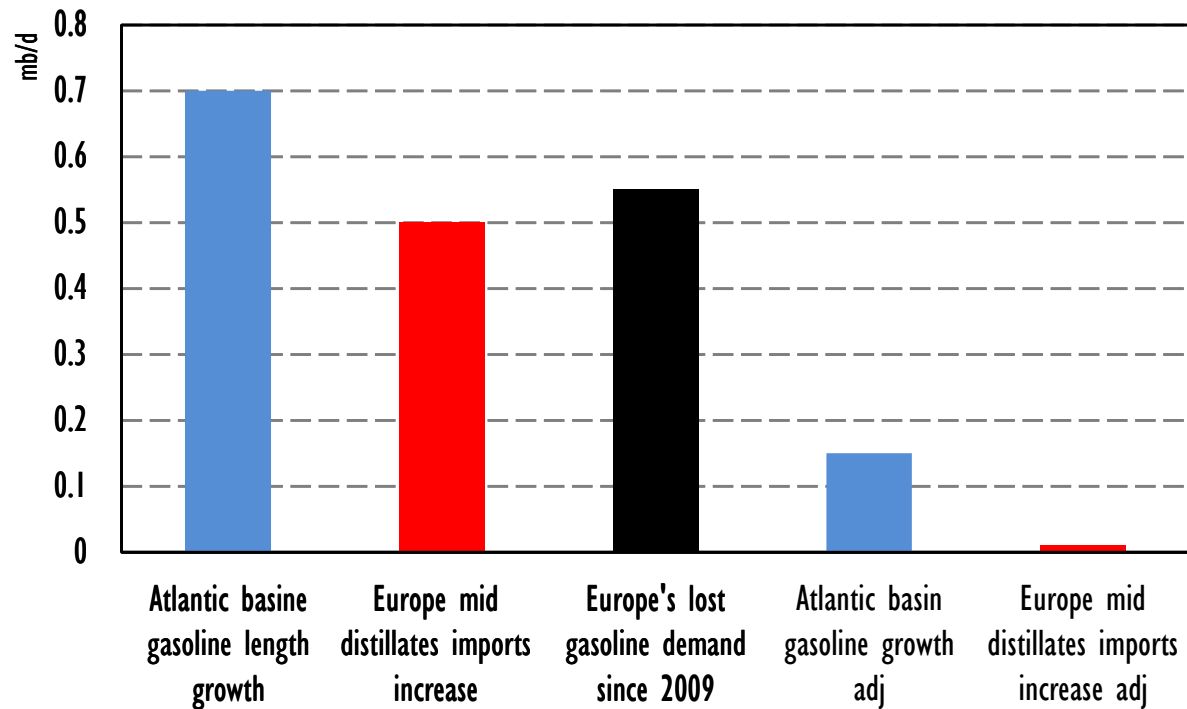
# Diesel has become irrelevant?



- Diesel cracks are so low,
- And gasoline cracks are so high..
- That were diesel to go to parity with crude, complex margins in NWE and USGC would still be positive..

# More rationalisation yet to come

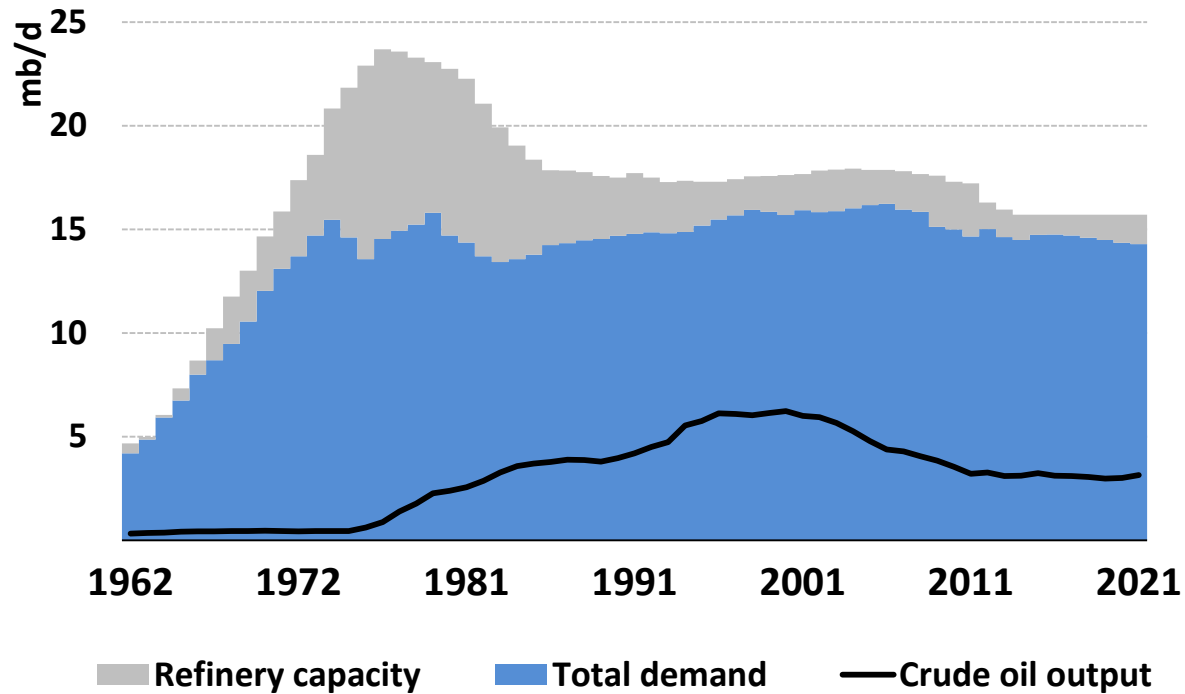
2015-2021 changes



- By 2021, half of Europe's gasoline length will have no market in the Atlantic basin.
- Middle distillates imports expected to grow by 600 kbd.
- If dieselisation is reversed, and lost gasoline volumes come back – European diesel/gasoline balances will improve.

# More rationalisation to come

## European refining capacity, demand and crude output

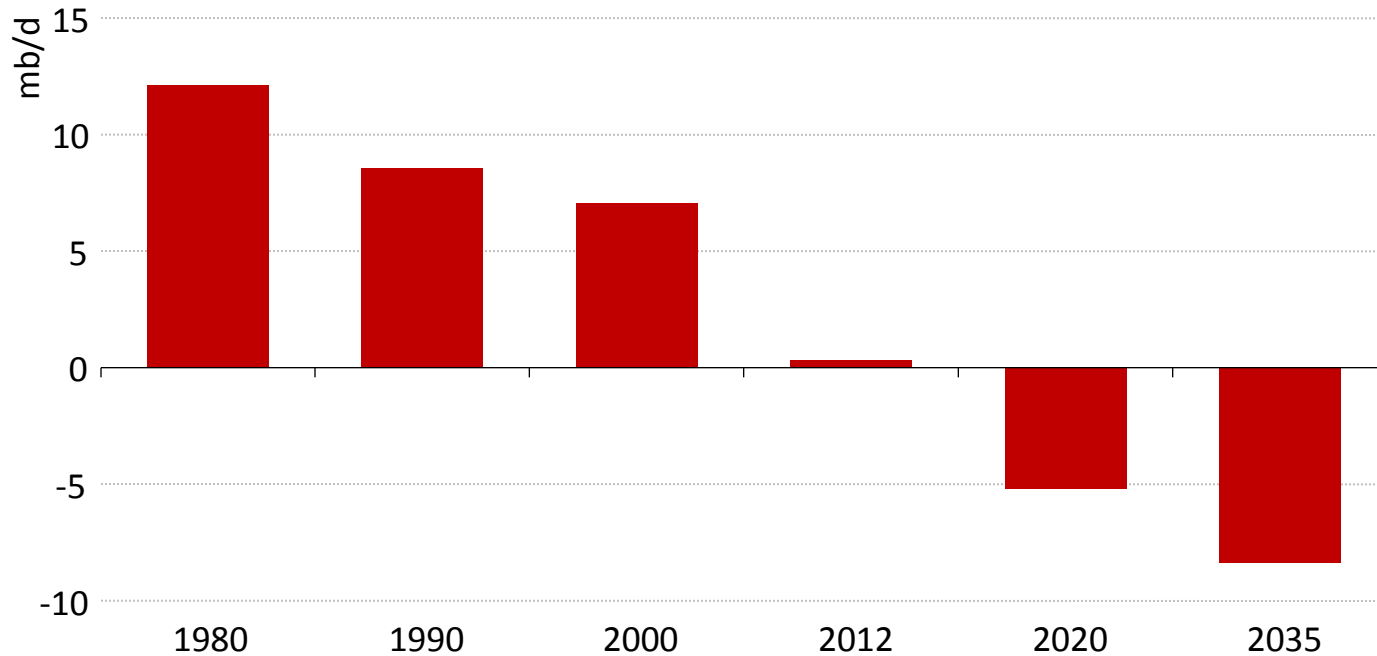


- Since 2008 Europe closed 2 mb/d of capacity.
- In historical terms, this is not much – 7 mb/d was shut in 1970s-80s.
- Oil price recovery will be mostly supply driven (as Non-OPEC output adjusts) - negative implications for margins.



# East of Suez crude oil balance

## Combined crude oil trade balance of Middle East & Asia



***Middle East crude exports cease to be sufficient for Asian oil imports, and by 2035, additional 8 mb/d are needed from all over the world to fill the gap***



Thank you

[kristine.petrosyan@iea.org](mailto:kristine.petrosyan@iea.org)