

# Changing World of Oil and Gas

March 23<sup>th</sup>, 2017



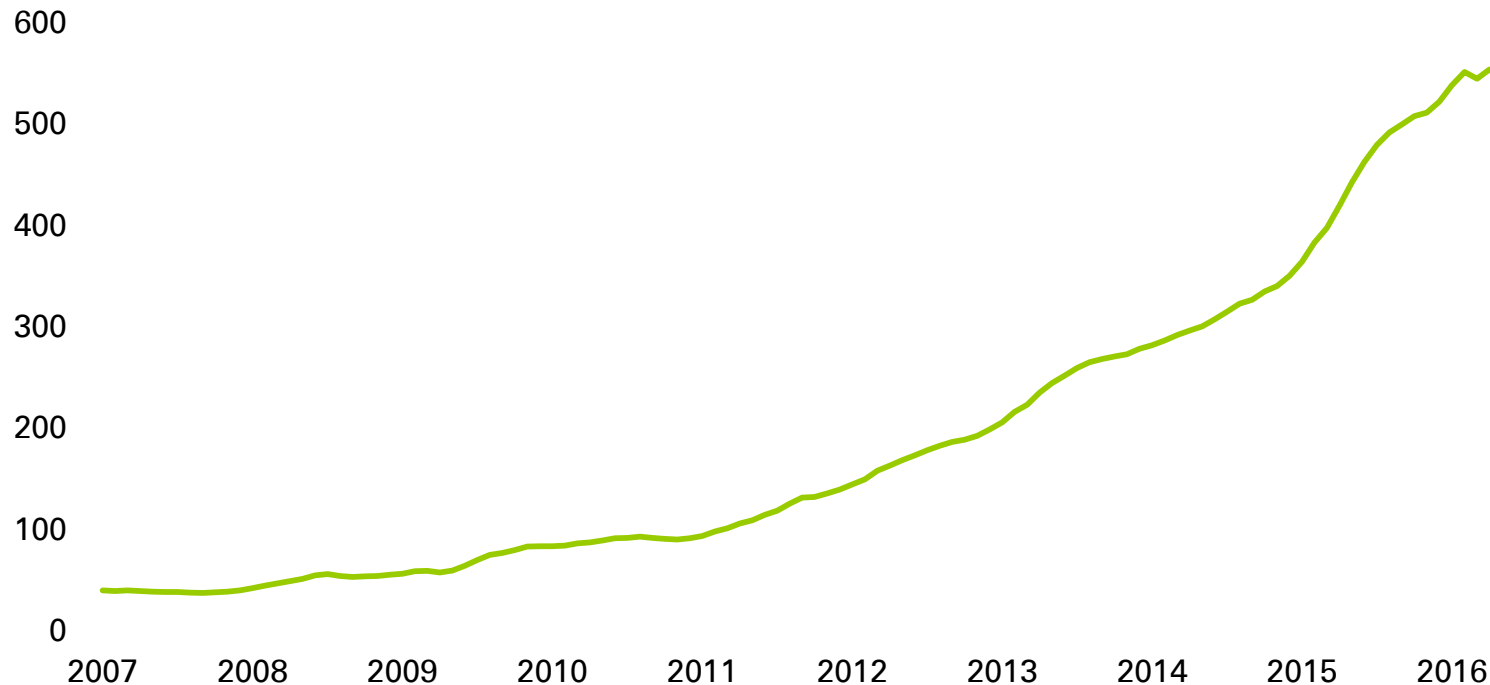
Vladimir Drebentsov  
Head of Russia and CIS Economics, BP plc



[bp.com/statisticalreview](http://bp.com/statisticalreview)  
[bp.com/energyoutlook](http://bp.com/energyoutlook)  
#Bpstats

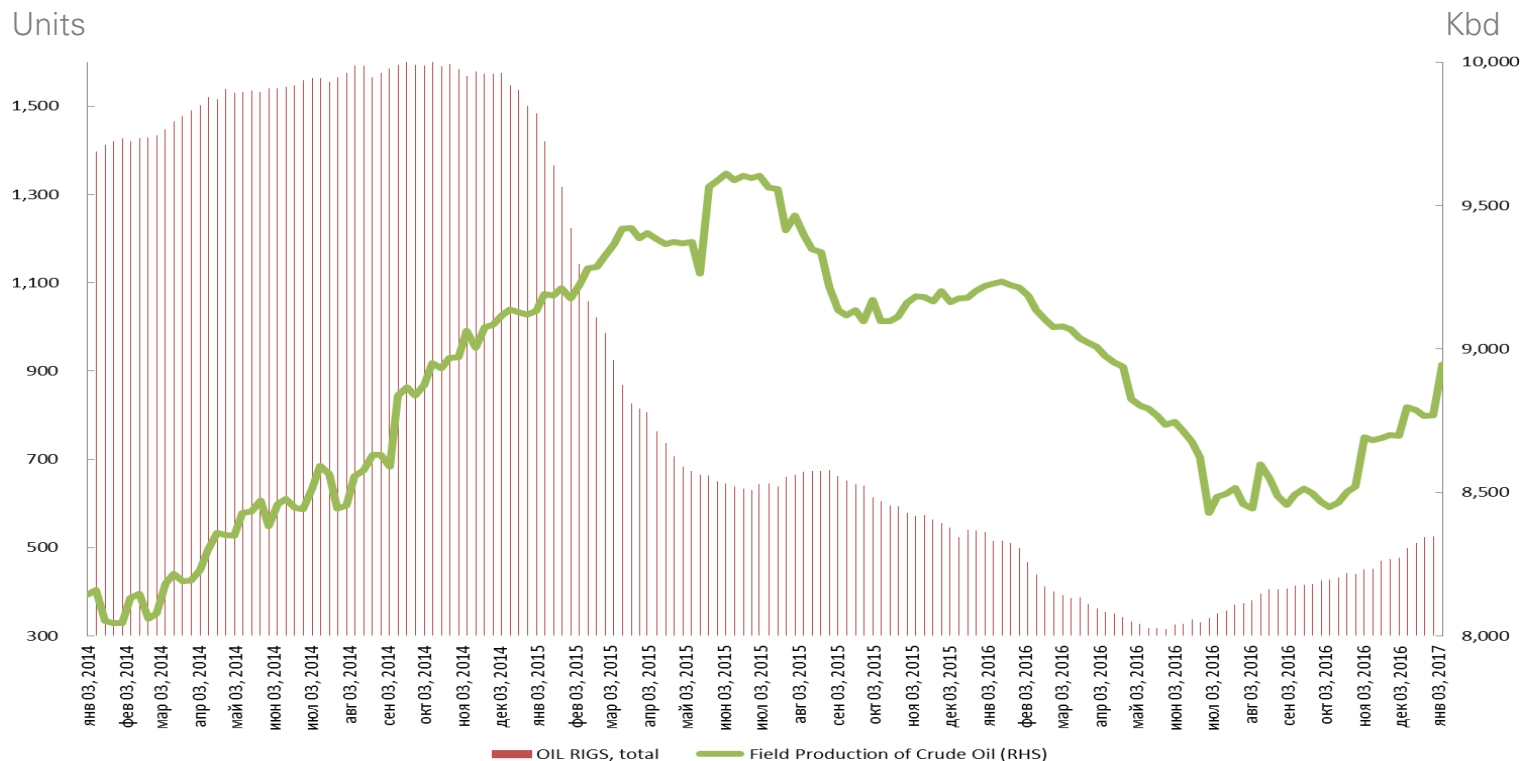
# US new-well oil production per rig hasn't peaked yet

Boe/d per rig



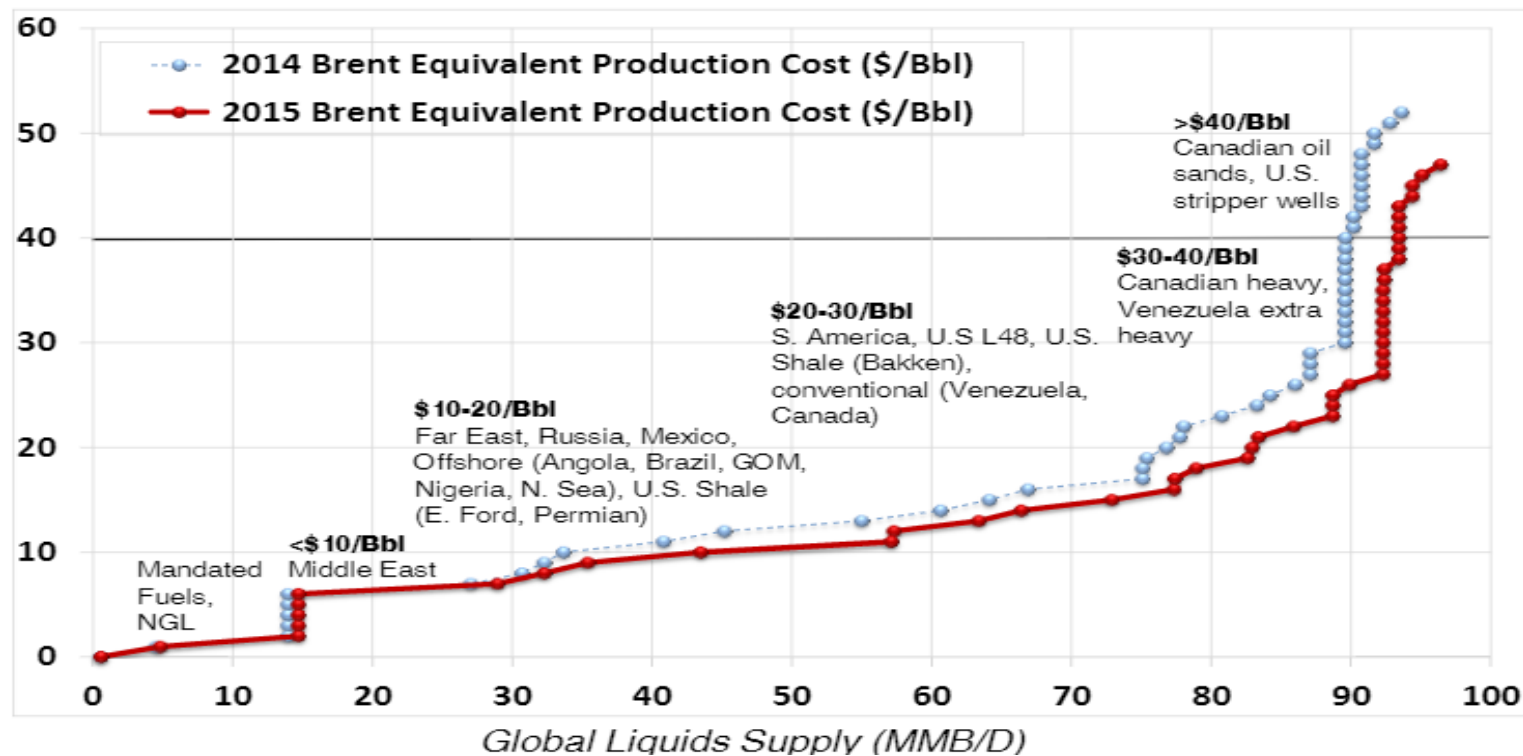
Source: US EIA

# US oil output has declined, yet has been demonstrating resilience since September 2015



Source: US EIA, PIRA

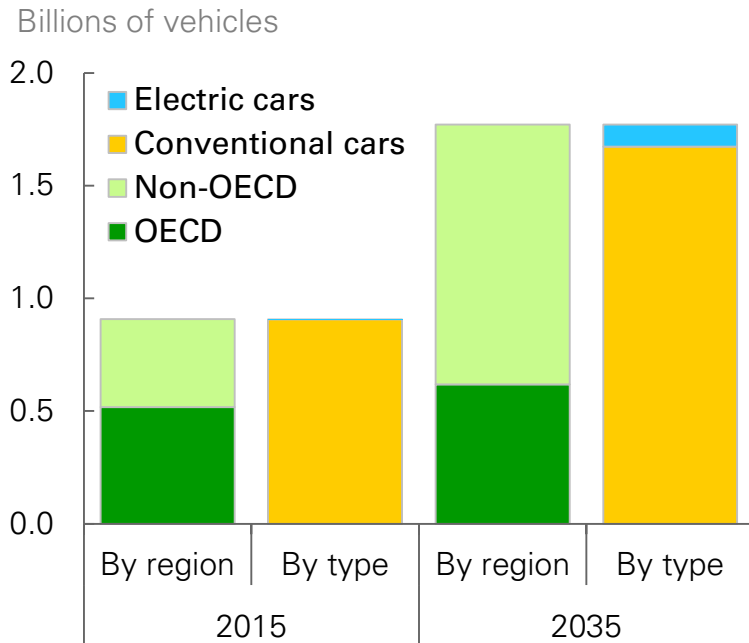
# PIRA's estimate of the global production cost curve



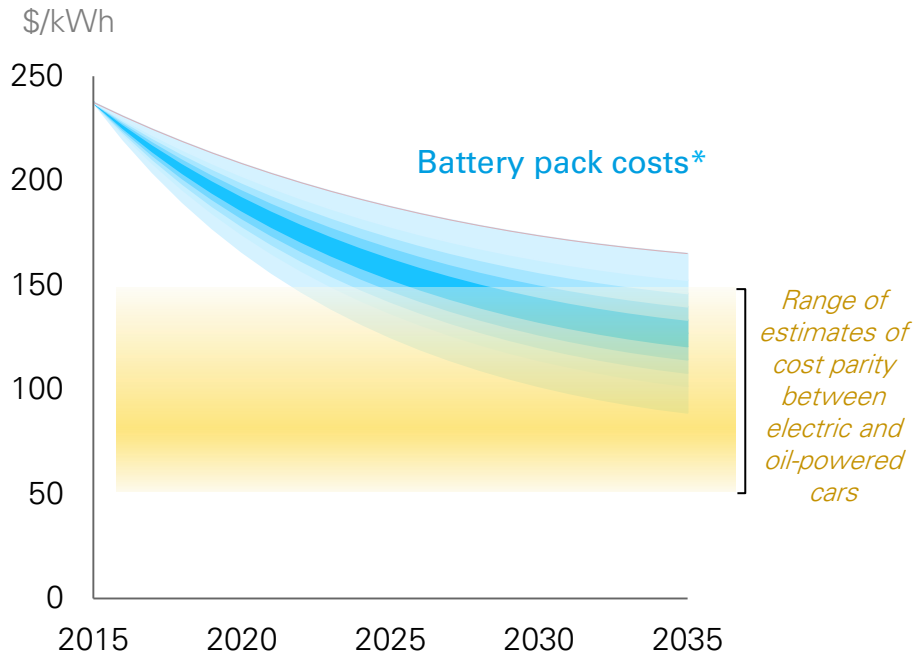
Source: PIRA

# Growth of electric cars

## The global car fleet: 2015-2035



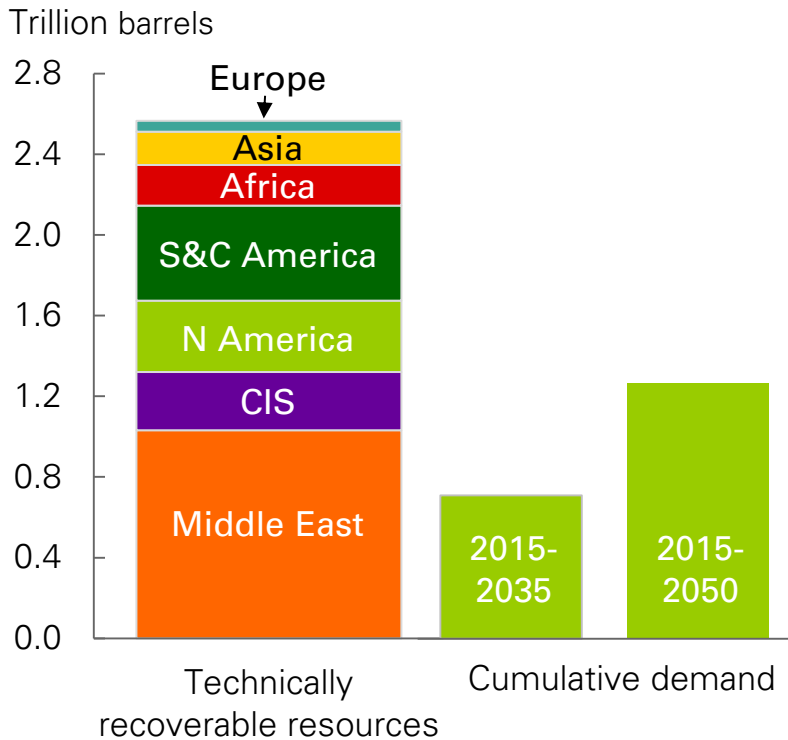
## Illustrative path for battery pack costs



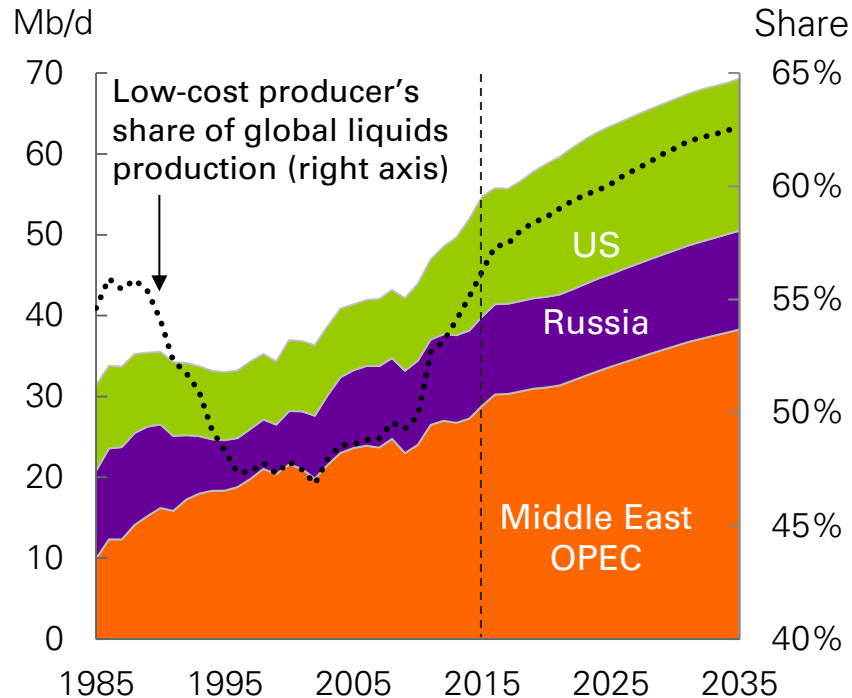
\*For a Battery Electric Vehicle with a 60 kWh pack. Cost projections depend heavily on the degree of EV uptake, which is uncertain, so ranges should be treated as illustrative only. Current estimates of battery costs also vary widely, but this uncertainty is not shown

# Abundance of oil resources

Estimates of technically recoverable resources and cumulative oil demand

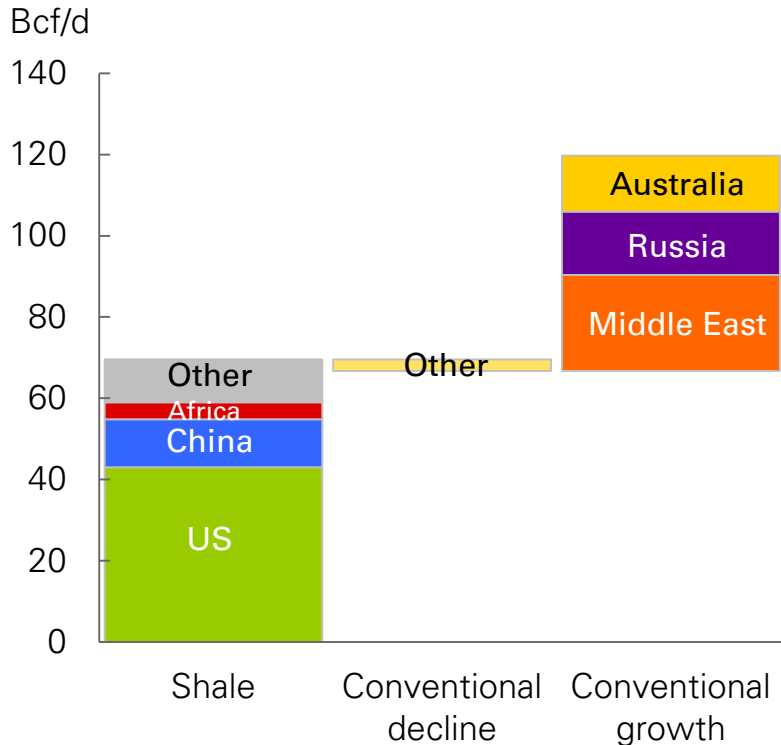


Oil supply of lower-cost producers

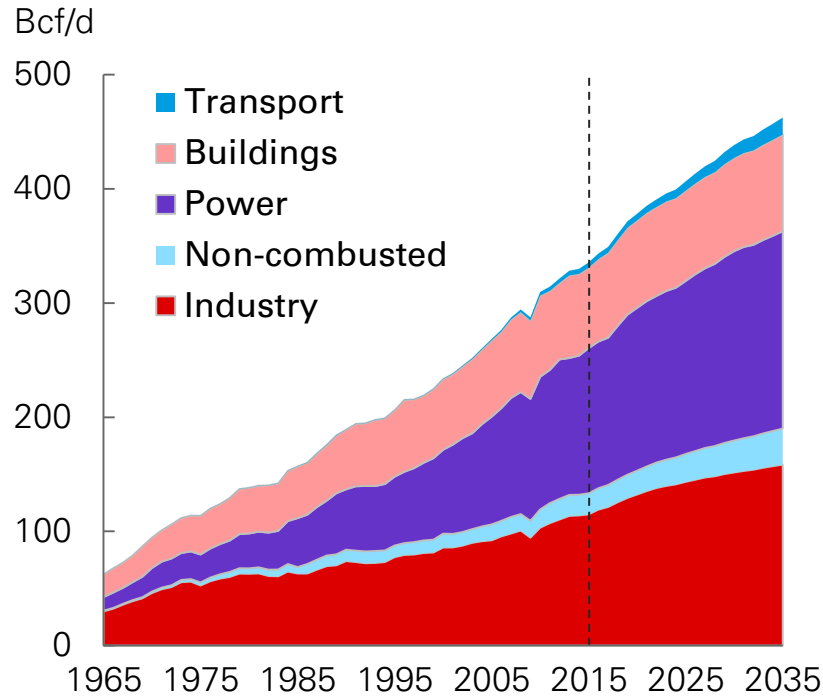


# Natural gas

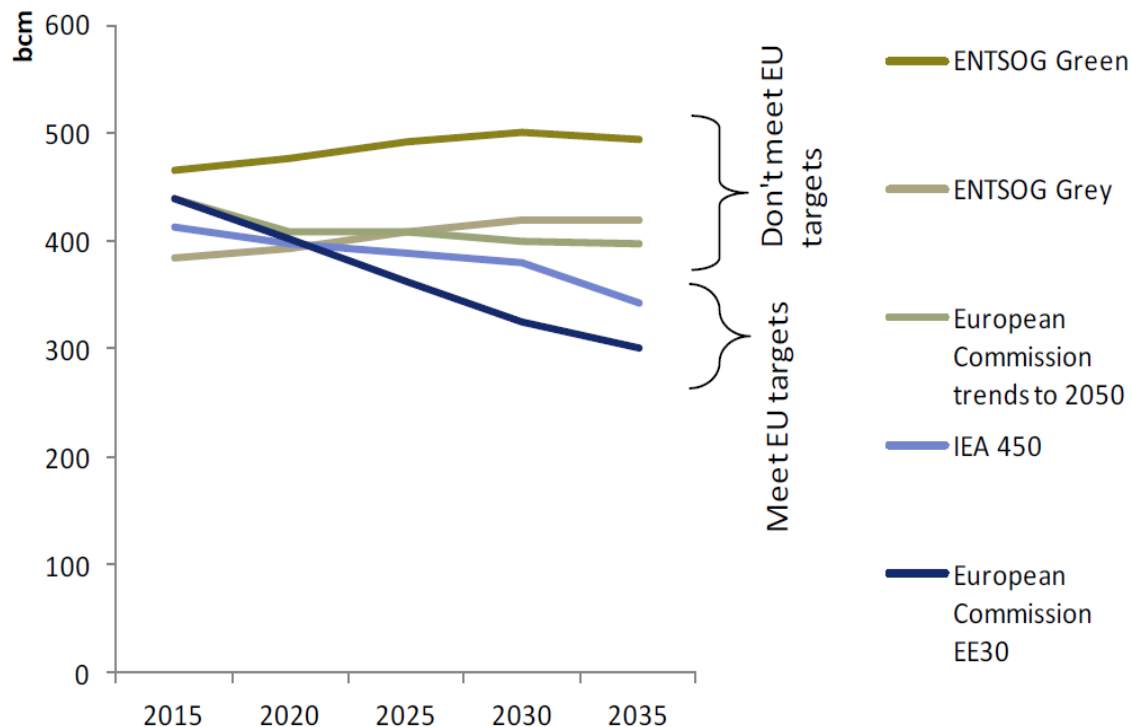
## Gas supply growth: 2015-2035



## Gas consumption by sector



# Gas demand projections to 2035



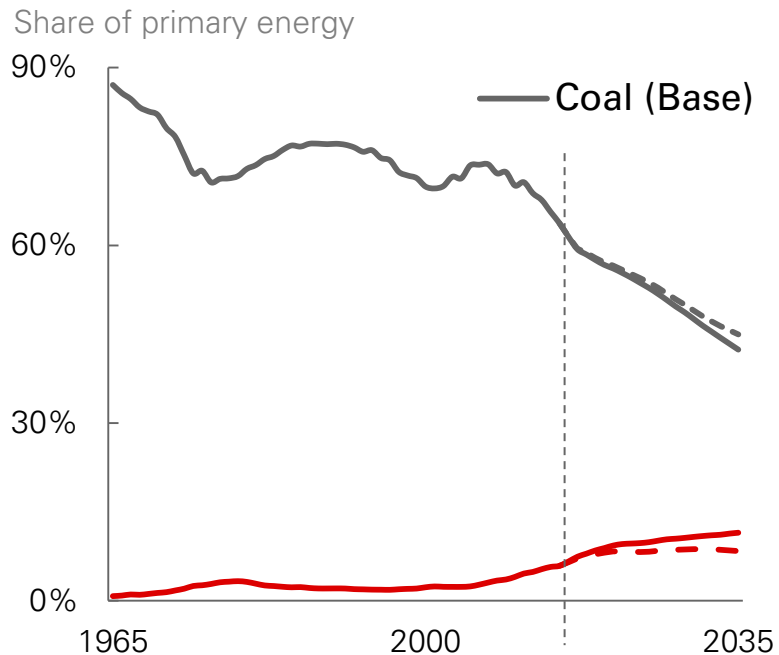
The *European Commission EE30* scenario applies meets 30% energy efficiency target, as well as a 27% renewable energy target and a 40% greenhouse gas target. In this scenario gas demand is **23-35% lower** than in the ENTSOG scenarios for 2035.

Source: Jonathan Gaventa, Manon Dufour, Luca Ergamaschi More Security, Lower Cost: A Smarter Approach To Gas Infrastructure In Europe, March 2016

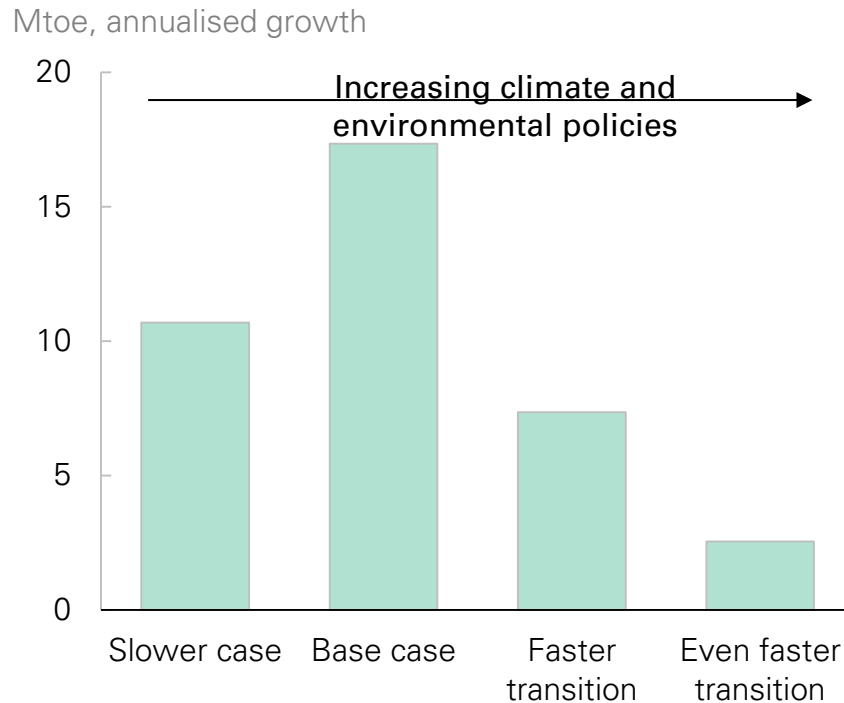


# The strength of natural gas demand could be challenged

## China

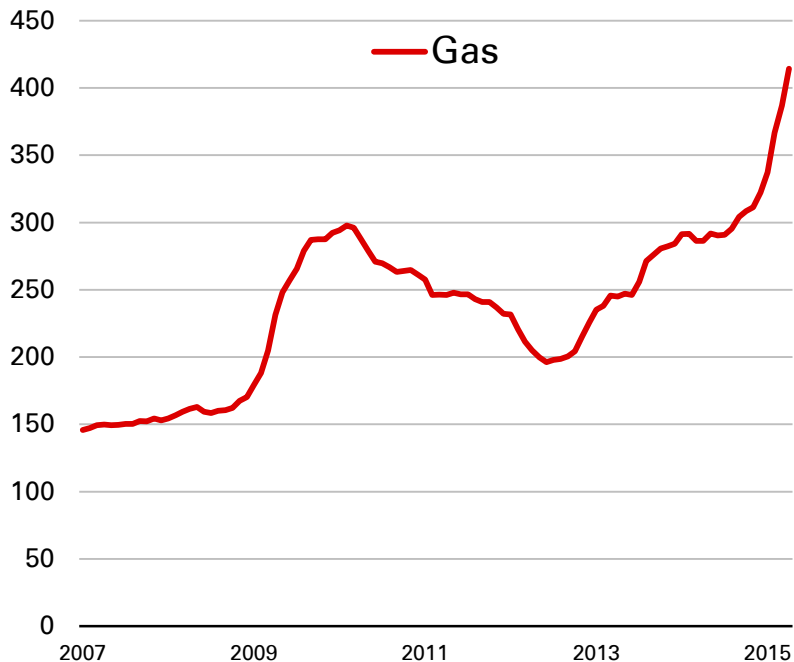


## Natural gas growth 2015-2035

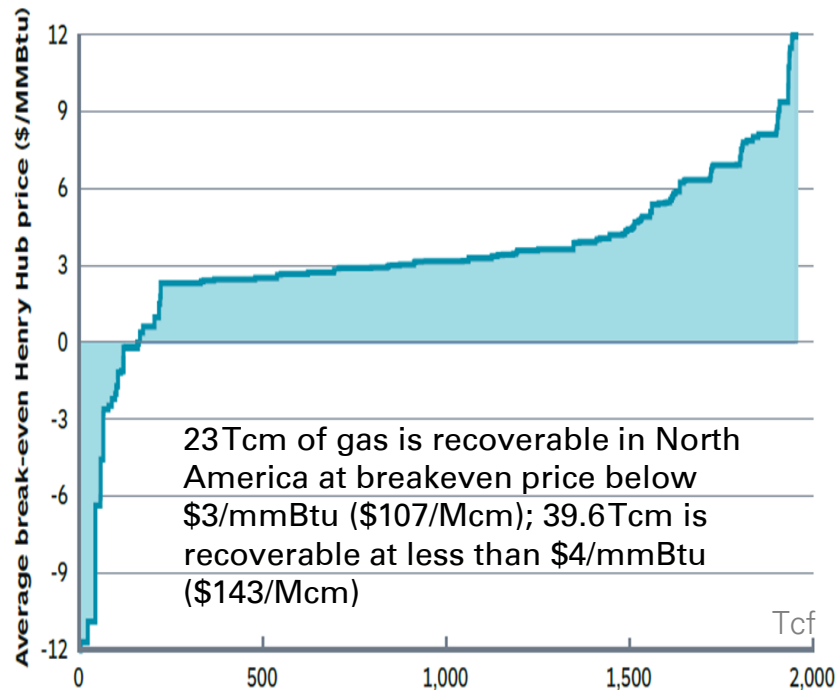


# US new-well production per rig and breakeven price

Boe/d per rig



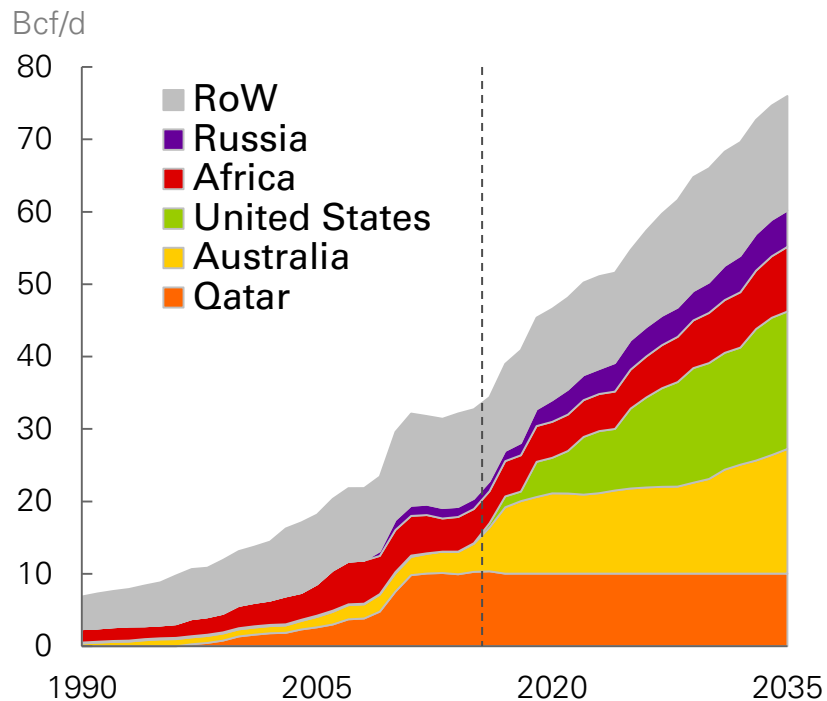
Constant \$2014



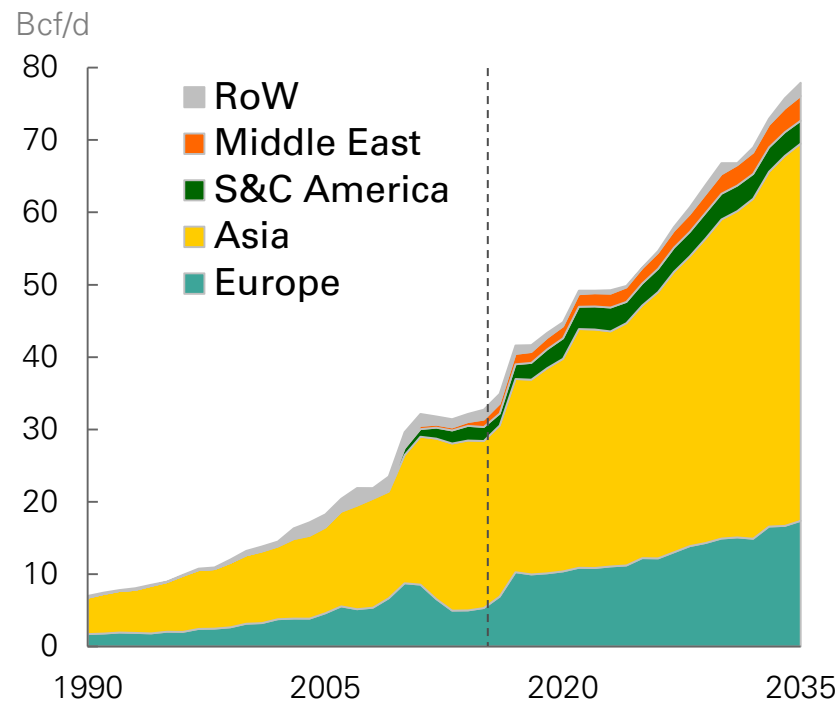
Source: US EIA

# LNG supplies grow strongly led by US and Australia

LNG supply

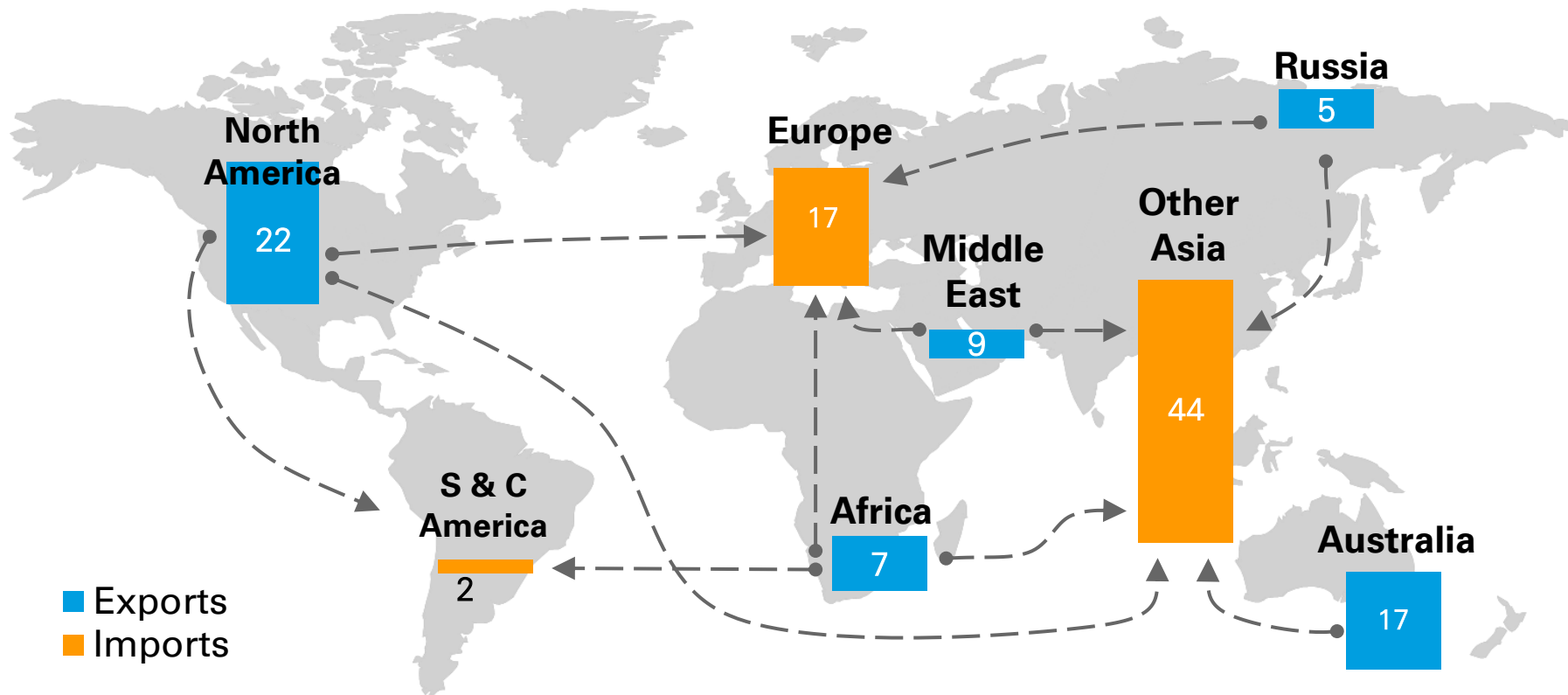


LNG demand

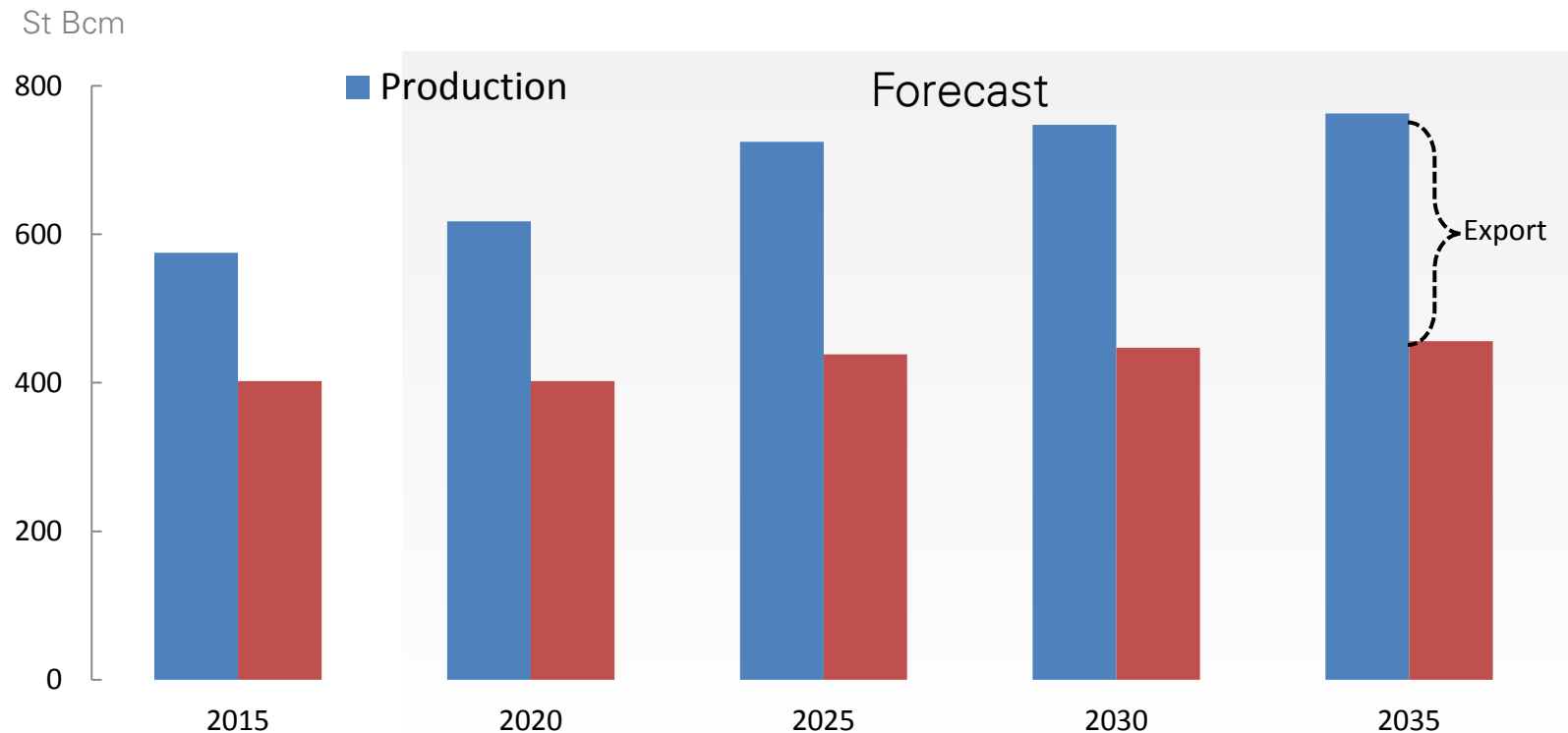


# LNG's share in traded gas increases sharply

Net LNG exports/imports 2035 (Bcf/d)



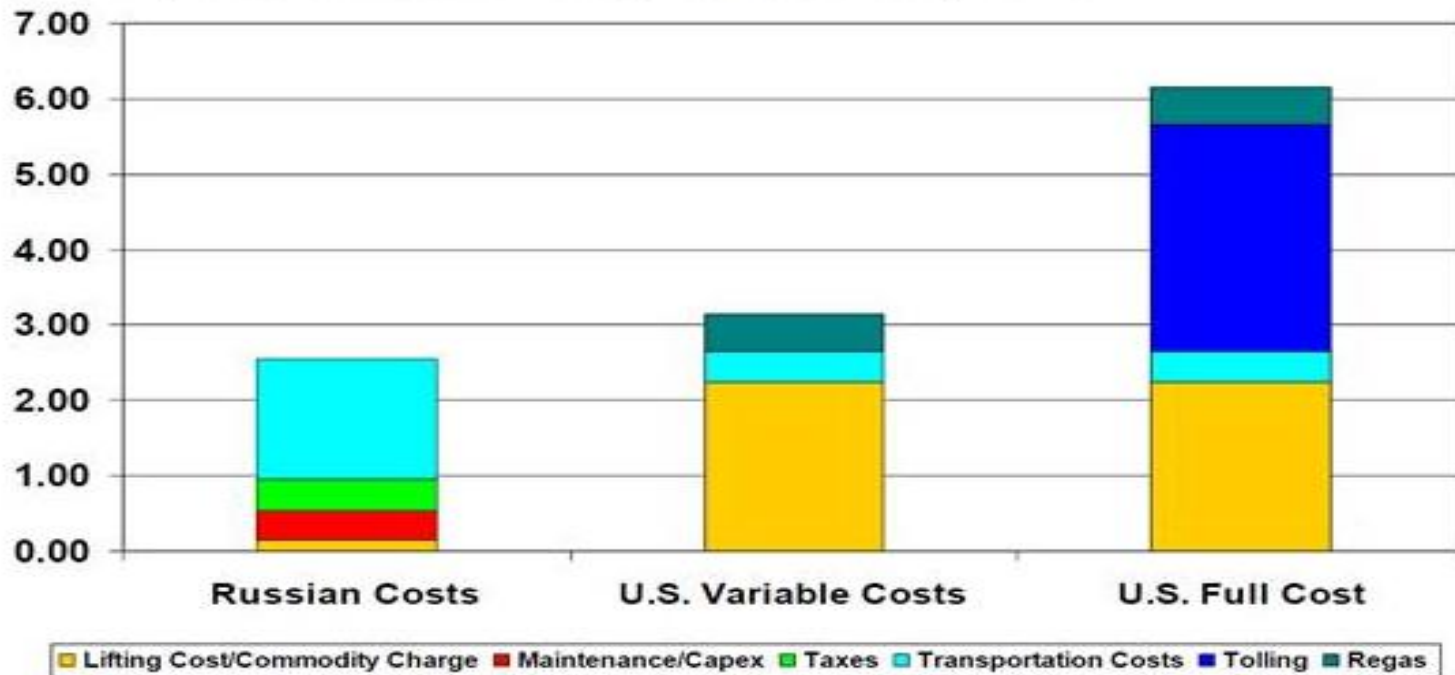
# Russian gas industry needs export markets to grow



Source: Gazprom, Ministry of Energy

# Russian pipeline gas may remain competitive, yet pressure from LNG offered at variable cost is likely

\$/MMBtu, assumes 115% of Henry Hub at current prices

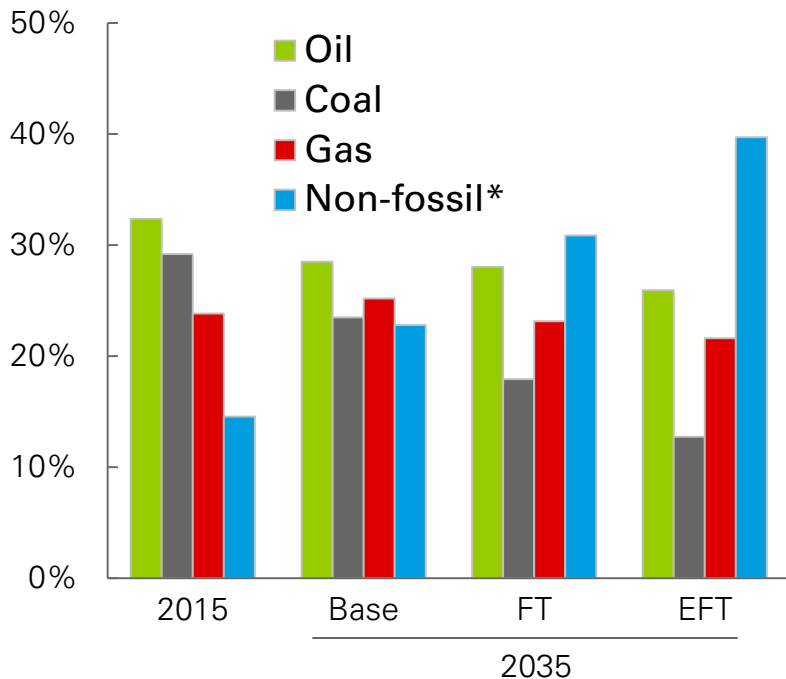


Source: PIRA

# The speed of transition has a significant impact

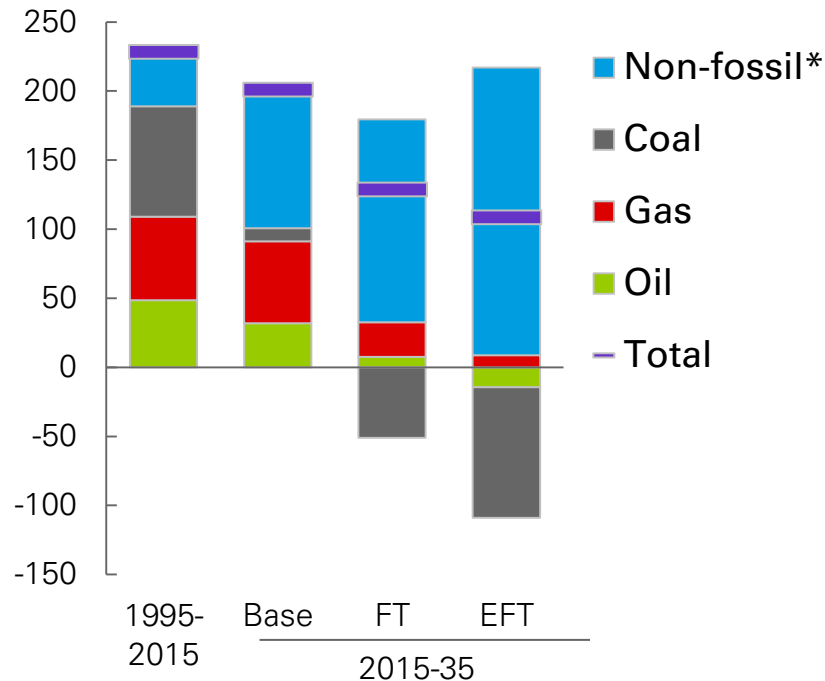
## The changing fuel mix

% of primary energy



## Annual demand growth by fuel

Mtoe per annum



\*Includes biofuels