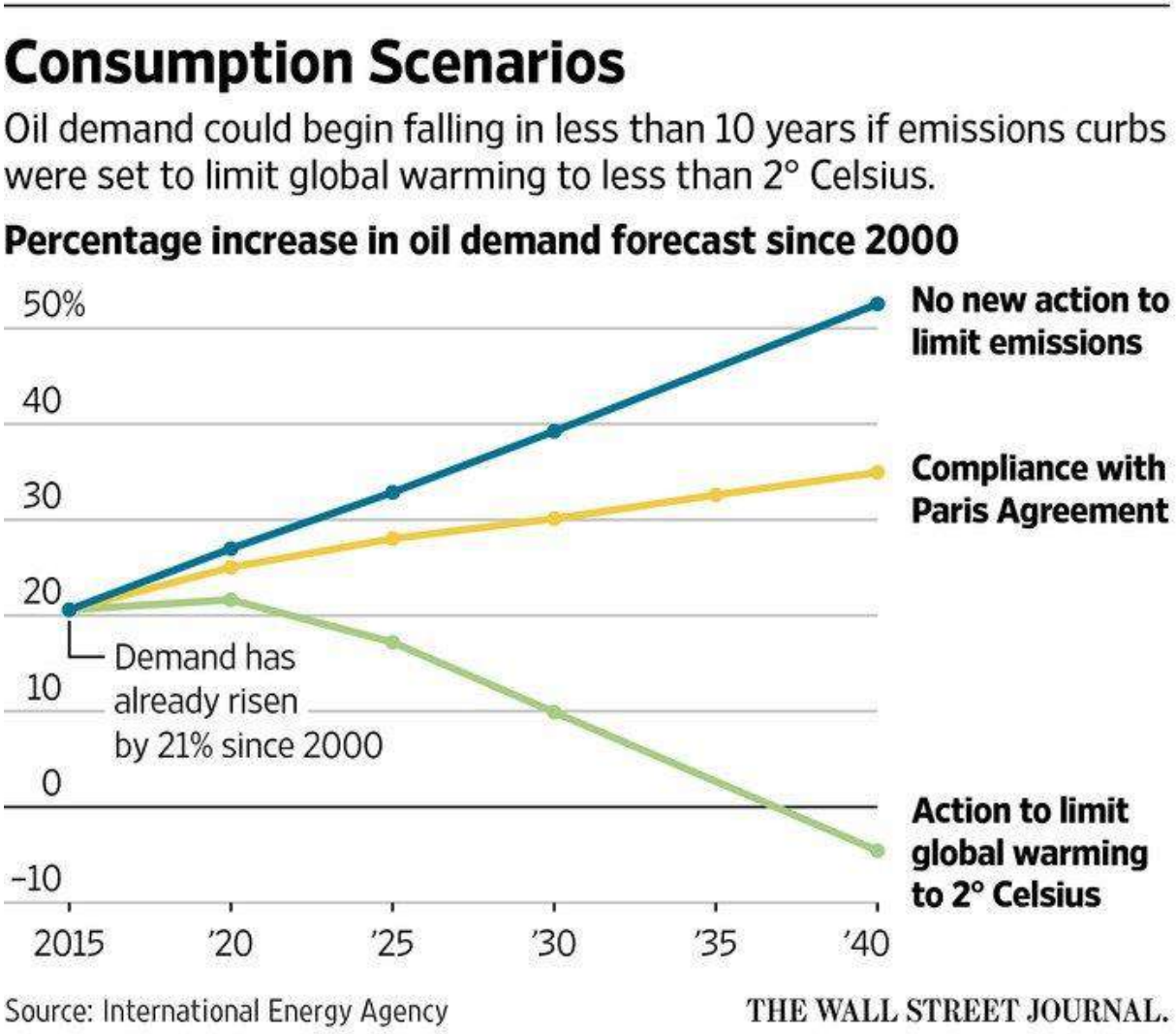
# Global Market, Oil Sector and Iraq Options

العراق للطاقة
تنشيط الاقتصاد العراقي
Iraq Energy
Energizing Iraq's Economy

Luay Al Khatteeb - Iraq Energy Institute
Al Bayan Center, Baghdad, 4th Feb 2017

# Paris Agreement: The oil industry's outlook for peak demand scenario



# OPEC 2016 Outlook: Total primary energy demand by region

| | Levels *mboe/d* | | | | Growth *% p.a.* |
|---|---|---|---|---|---|
| | 2014 | 2020 | 2030 | 2040 | 2014–2040 |
| OECD America | 55.7 | 57.9 | 58.6 | 58.0 | 0.2 |
| OECD Europe | 36.5 | 36.7 | 36.4 | 36.1 | 0.0 |
| OECD Asia Oceania | 18.4 | 19.3 | 19.8 | 19.8 | 0.3 |
| **OECD** | **110.6** | **113.9** | **114.8** | **113.9** | **0.1** |
| China | 60.2 | 68.8 | 80.9 | 88.1 | 1.5 |
| India | 16.0 | 20.3 | 30.2 | 41.2 | 3.7 |
| OPEC | 23.8 | 27.4 | 34.9 | 41.3 | 2.1 |
| Other DCs | 39.7 | 45.5 | 56.5 | 69.9 | 2.2 |
| **Developing countries** | **139.8** | **162.0** | **202.5** | **240.5** | **2.1** |
| Russia | 14.9 | 14.8 | 15.8 | 16.5 | 0.4 |
| Other Eurasia | 8.6 | 9.2 | 10.4 | 11.3 | 1.1 |
| **Eurasia** | **23.5** | **24.0** | **26.3** | **27.8** | **0.6** |
| **Total world** | **273.9** | **299.9** | **343.6** | **382.1** | **1.3** |

Energy mix continues to see fast growth for renewables, but 53% of the world's energy needs will still be satisfied by oil and gas in 2040

# OPEC 2016 Outlook: World primary energy demand by fuel type

| | Levels *mboe/d* | | | | Growth *% p.a.* |
|---|---|---|---|---|---|
| | 2014 | 2020 | 2030 | 2040 | 2014–2040 |
| Oil | 85.1 | 90.7 | 96.7 | 99.8 | 0.6 |
| Coal | 77.7 | 82.7 | 88.9 | 91.5 | 0.6 |
| Gas | 59.6 | 66.9 | 84.0 | 101.7 | 2.1 |
| Nuclear | 13.2 | 15.5 | 19.5 | 23.4 | 2.2 |
| Hydro | 6.6 | 7.6 | 8.9 | 9.9 | 1.5 |
| Biomass | 28.2 | 30.7 | 34.6 | 38.1 | 1.2 |
| Other renewables | 3.4 | 5.7 | 11.0 | 17.9 | 6.6 |
| **Total world** | **273.9** | **299.9** | **343.6** | **382.1** | **1.3** |

Million Barrel Oil Equivalent per day (mboe/d)

# OPEC Medium and Long Term Outlook

## Medium-term oil demand in the Reference Case

*mb/d*

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|
| OECD | 46.2 | 46.4 | 46.5 | 46.4 | 46.2 | 45.9 | 45.7 |
| Developing countries | 41.5 | 42.4 | 43.4 | 44.5 | 45.7 | 46.8 | 47.9 |
| Eurasia | 5.3 | 5.4 | 5.4 | 5.5 | 5.5 | 5.6 | 5.6 |
| **World** | **93.0** | **94.2** | **95.3** | **96.4** | **97.4** | **98.3** | **99.2** |

## Long-term oil demand in the Reference Case

*mb/d*

| | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|
| OECD | 46.2 | 45.9 | 44.3 | 42.1 | 39.7 | 37.3 |
| Developing countries | 41.5 | 46.8 | 52.2 | 57.4 | 62.0 | 66.1 |
| Eurasia | 5.3 | 5.6 | 5.8 | 6.0 | 6.1 | 6.0 |
| **World** | **93.0** | **98.3** | **102.3** | **105.5** | **107.8** | **109.4** |

- Medium-term oil demand revised upwards by 1 mb/d in 2021, but long-term oil demand is revised downwards by 0.4 mb/d in 2040
- Demand growth comes mainly from the road transportation, petrochemicals and aviation sectors
- Future car fleet: increasing, particularly in Developing countries, and more non-conventional
- Driving forces in the road transportation sector: increasing car fleet in Developing countries and declining oil use per vehicle in the OECD region

# EIA US Govt. Outlook: World Changing Energy Mix

Iraq Energy
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**Figure ES-1. World energy consumption by country grouping, 2012–40 (quadrillion Btu)**

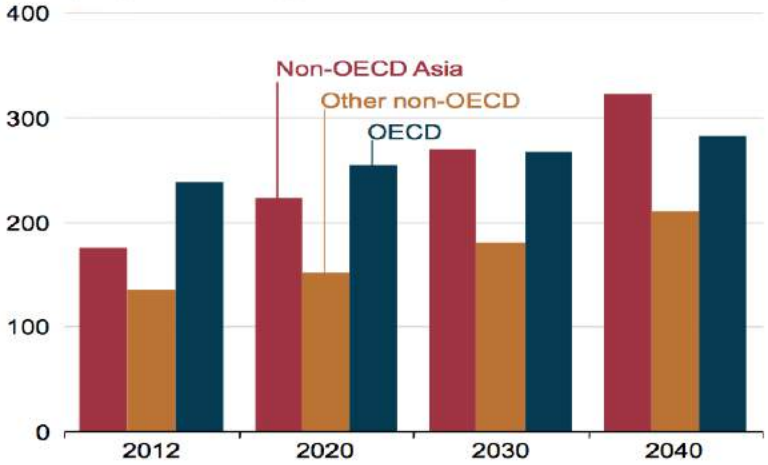
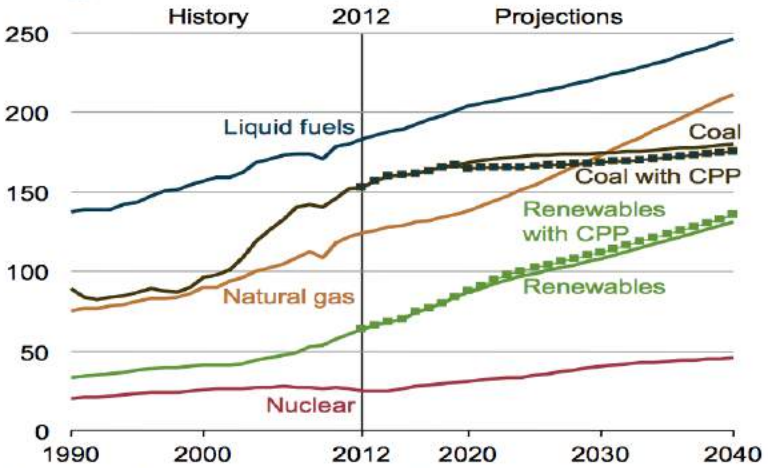



**Figure ES-2. Total world energy consumption by energy source, 1990–2040 (quadrillion Btu)**




Note: Dotted lines for coal and renewables show projected effects of the U.S. Clean Power Plan.

**Figure ES-7. World transportation sector delivered energy consumption by energy source, 2012–40 (quadrillion Btu)**

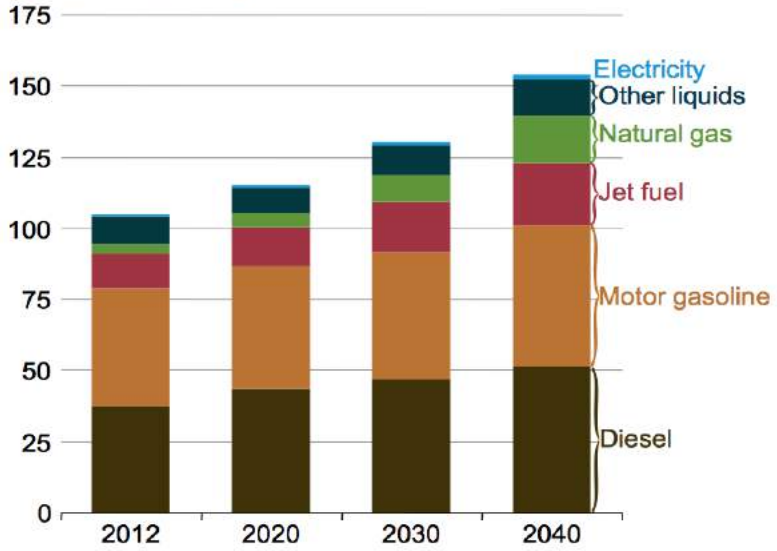
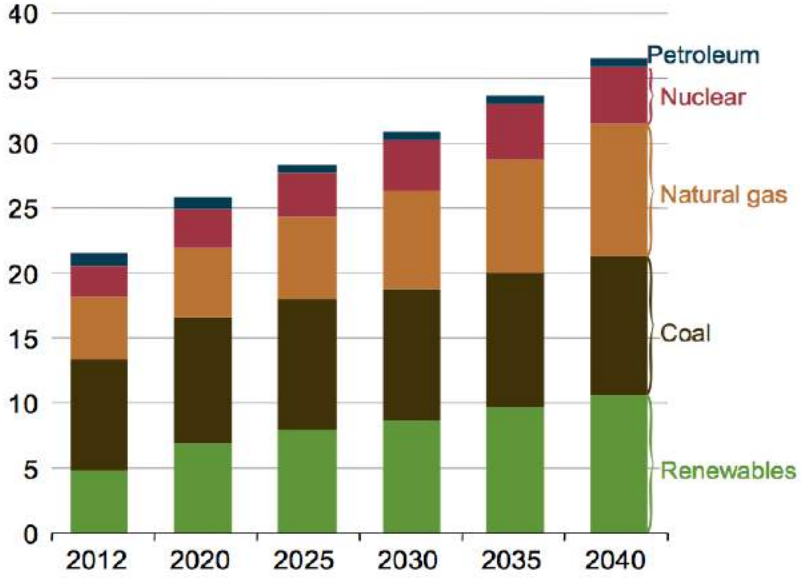



**Figure ES-6. World net electricity generation by energy source, 2012–40 (trillion kilowatthours)**



# EIA US Govt. Outlook: World Changing Energy Mix

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**Figure 5-9. Average annual capacity factors for electricity generators by IEO region and energy source, 2008–12 (percent)**

| | Coal | Natural gas | Petroleum | Nuclear | Hydropower | Solar and wind |
|---|---|---|---|---|---|---|
| United States | 66% | 26% | 13% | 90% | 40% | 27% |
| Canada | 62% | 29% | 20% | 78% | 56% | 26% |
| Mexico/Chile | 64% | 51% | 40% | 73% | 37% | 23% |
| Brazil | 44% | 29% | 28% | 85% | 56% | 24% |
| Other Americas | 43% | 31% | 53% | 80% | 57% | 26% |
| OECD Europe | 51% | 39% | 19% | 77% | 40% | 18% |
| Non-OECD Europe and Eurasia | 41% | 43% | 10% | 77% | 34% | 14% |
| Russia | 38% | 52% | 66% | 80% | 40% | 3% |
| China | 54% | 19% | 18% | 83% | 37% | 18% |
| India | 60% | 50% | 35% | 59% | 34% | 18% |
| Japan | 62% | 44% | 26% | 48% | 40% | 15% |
| South Korea | 82% | 40% | 43% | 88% | 25% | 16% |
| Non-OECD Asia | 62% | 42% | 34% | 88% | 38% | 22% |
| Middle East | 21% | 39% | 84% | 9% | 15% | 23% |
| Africa | 73% | 44% | 54% | 79% | 49% | 27% |
| Australia/ New Zealand | 65% | 31% | 33% | -- | 32% | 25% |

Note: Solar and wind capacity factors for Russia and the Other Americas region include only wind capacity. Australia/New Zealand has no installed nuclear capacity.

**Figure 1-1. World energy consumption, 1990–2040 (quadrillion Btu)**

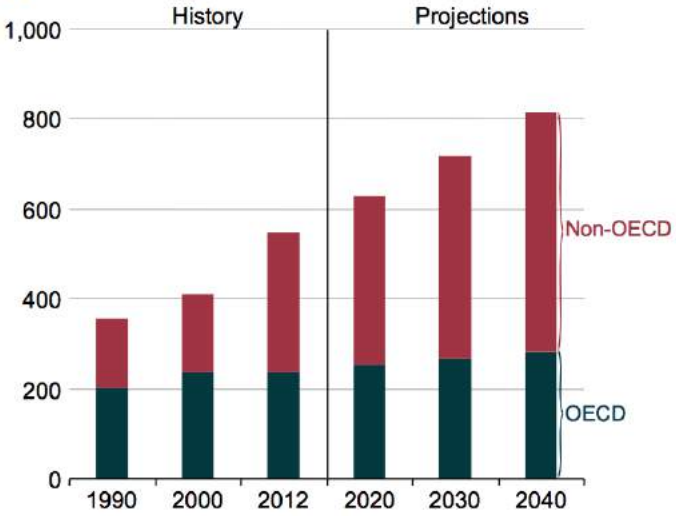
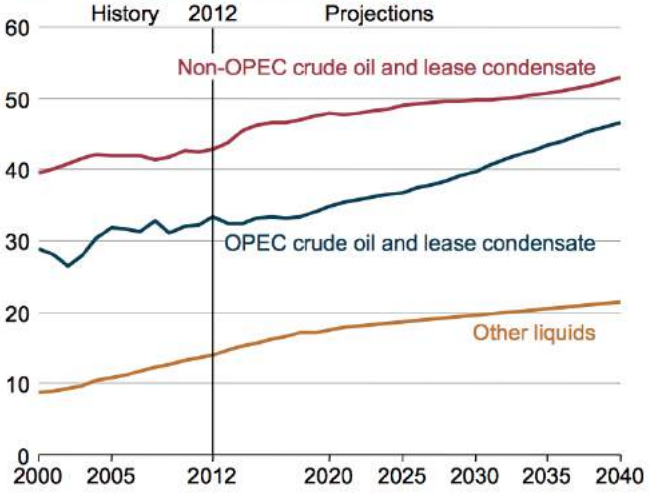
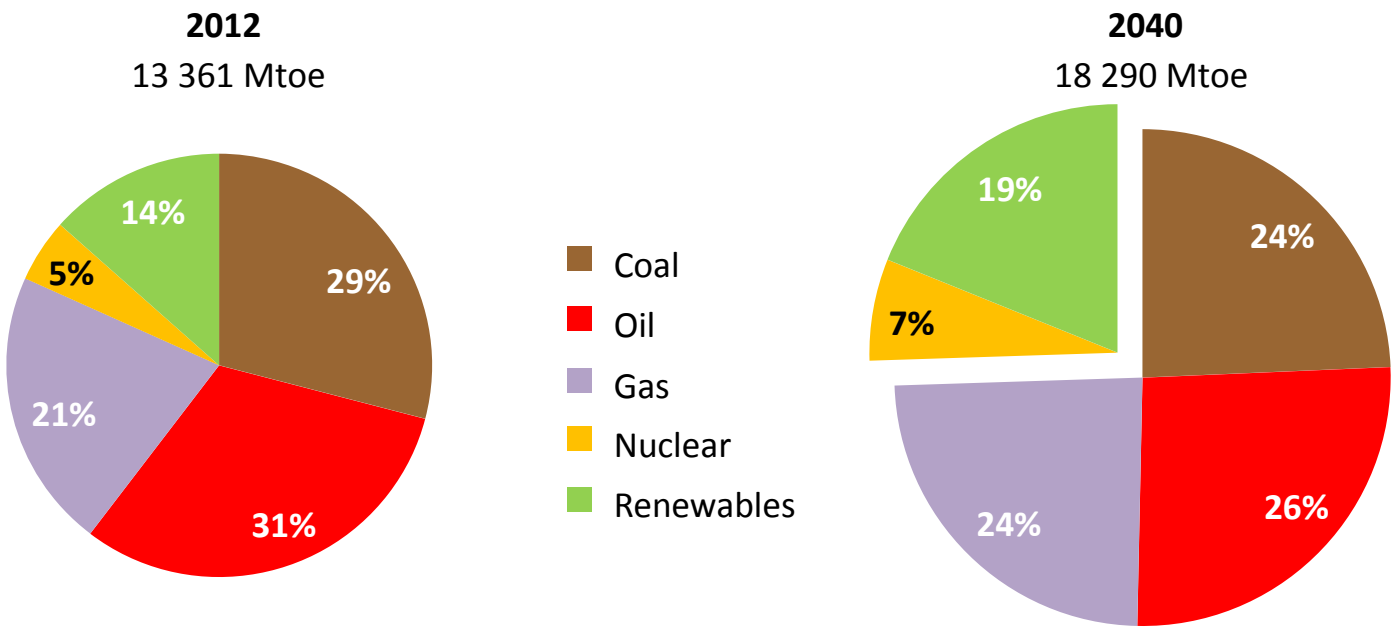



**Figure ES-3. Petroleum and other liquid fuels production by region and type in the Reference case, 2000–2040 (million barrels per day)**



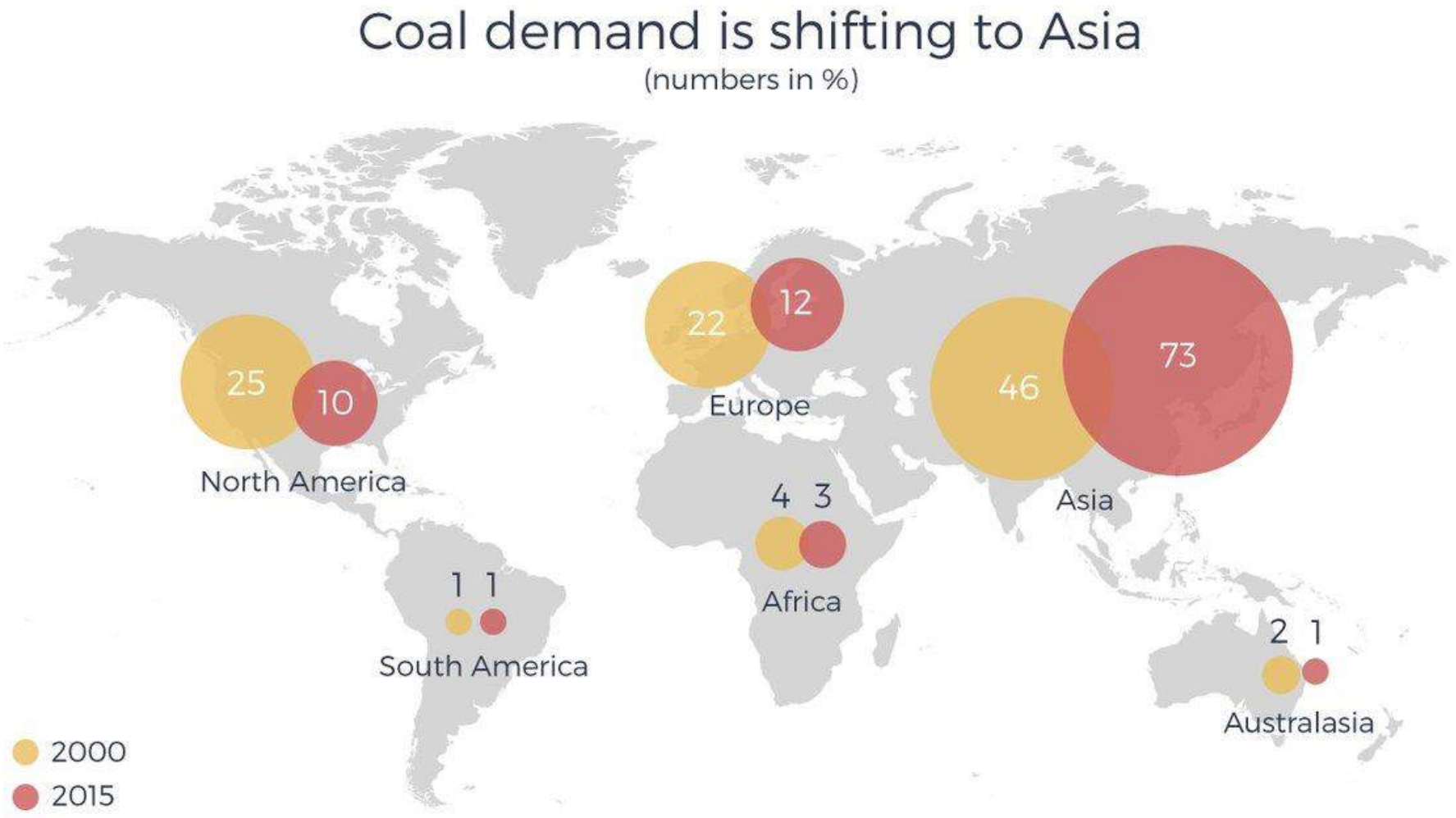
# IEA Outlook: World Changing Energy Mix

## Fuel shares in world primary energy demand in the New Policies Scenario



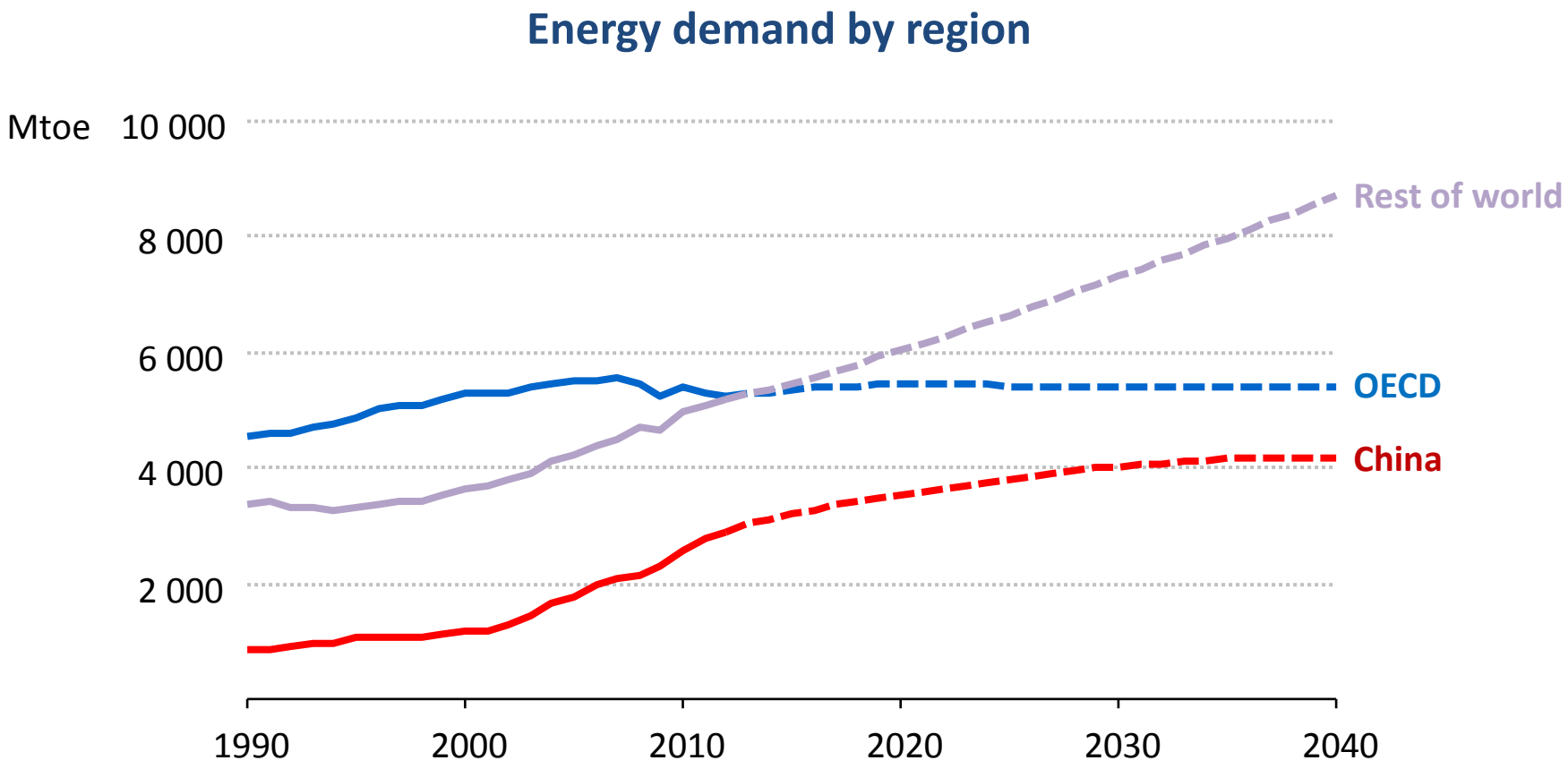

***The share of fossil fuels falls gradually through the Outlook period, though they remain dominant in 2040, each accounting for roughly one-quarter of demand***

# IEA: Coal Play




Coal continues its march towards Asia, providing much needed electricity but creating serious air quality issues

# IEA: Changing Dynamics of Global Demand



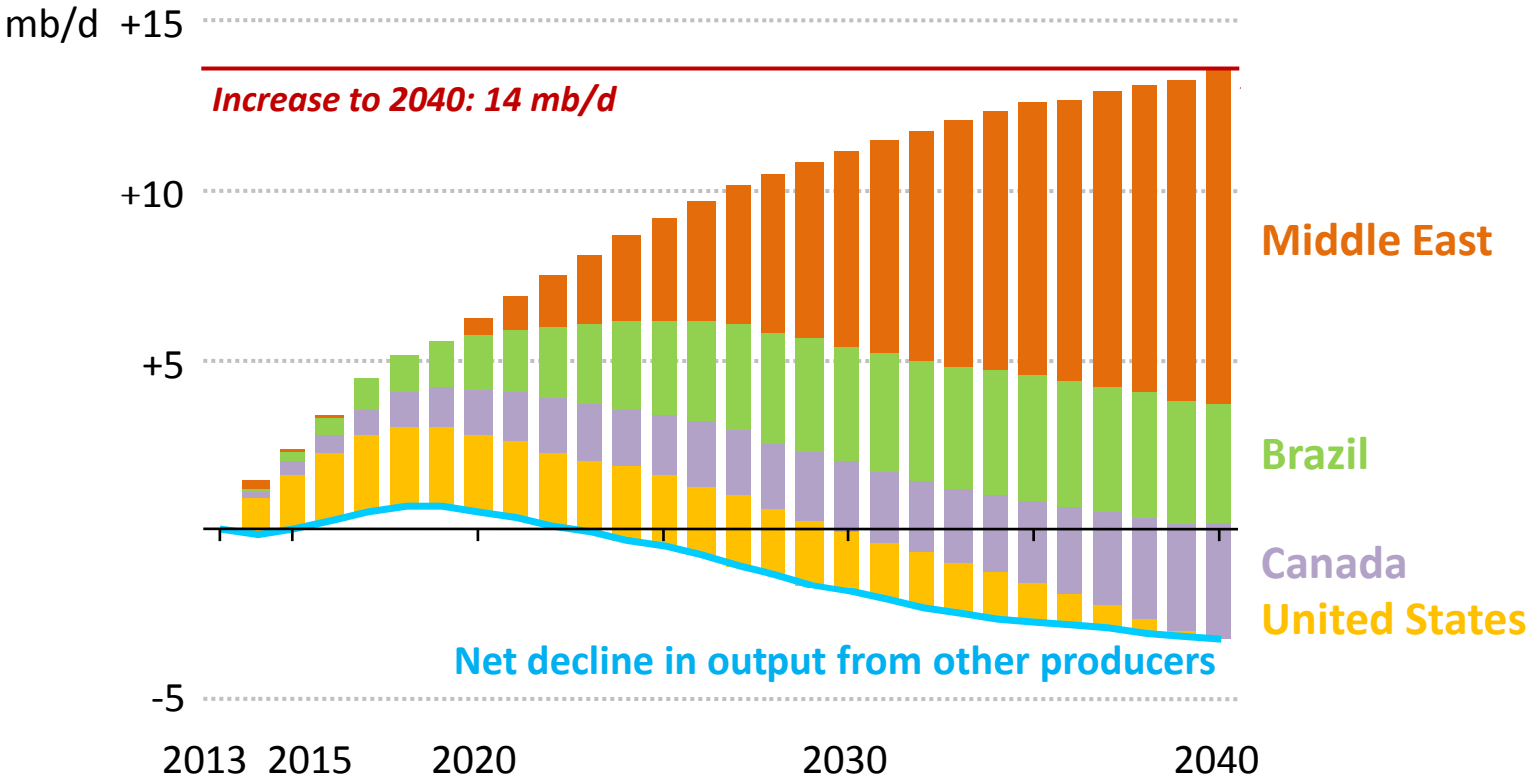

***As China slows, then India, Southeast Asia, the Middle East and parts of Africa & Latin America take over as the engines of global energy demand growth***

# IEA: Middle East Energy Outlook to 2040

- Geopolitical & market uncertainties are set to propel energy security high up the global energy agenda
- Unrest in the Middle East raises doubts about levels of upstream investment, which could spell trouble for future oil supply
- The Middle East is becoming a major driver of global oil demand – tackling fossil-fuel subsidies is a growing imperative
- Economic diversification is required for the Middle East's long-term prosperity & to reduce its exposure to oil market volatility
- The Middle East is and will remain a cornerstone of global oil production, and will continue to be vital to the energy markets

# IEA: Instability in the Middle East is a Major Risk to Oil Markets

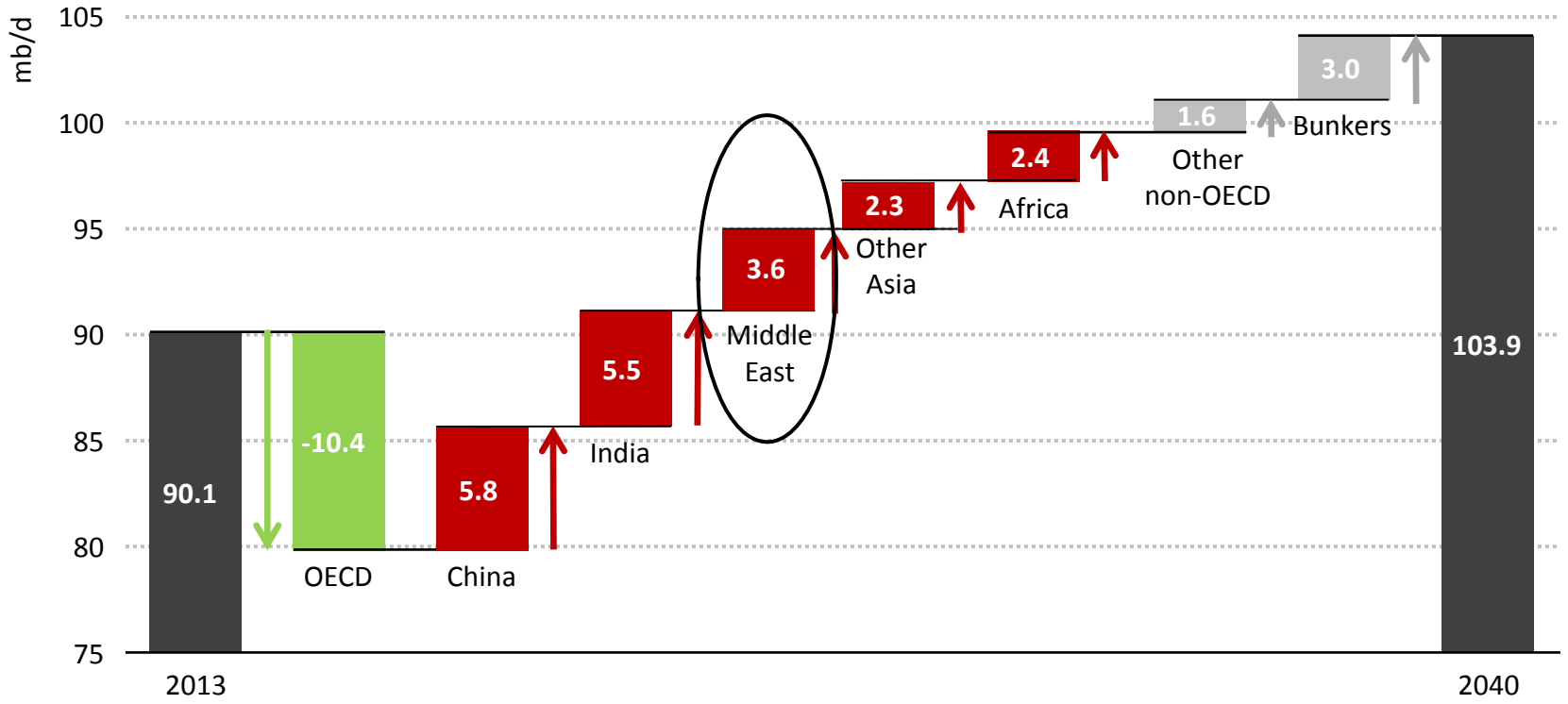
## Oil production growth in the United States, Canada, Brazil & the Middle East




***The short-term picture of a well-supplied market should not obscure future risks as demand rises to 104 mb/d & reliance grows on the Middle East, particularly Iraq***

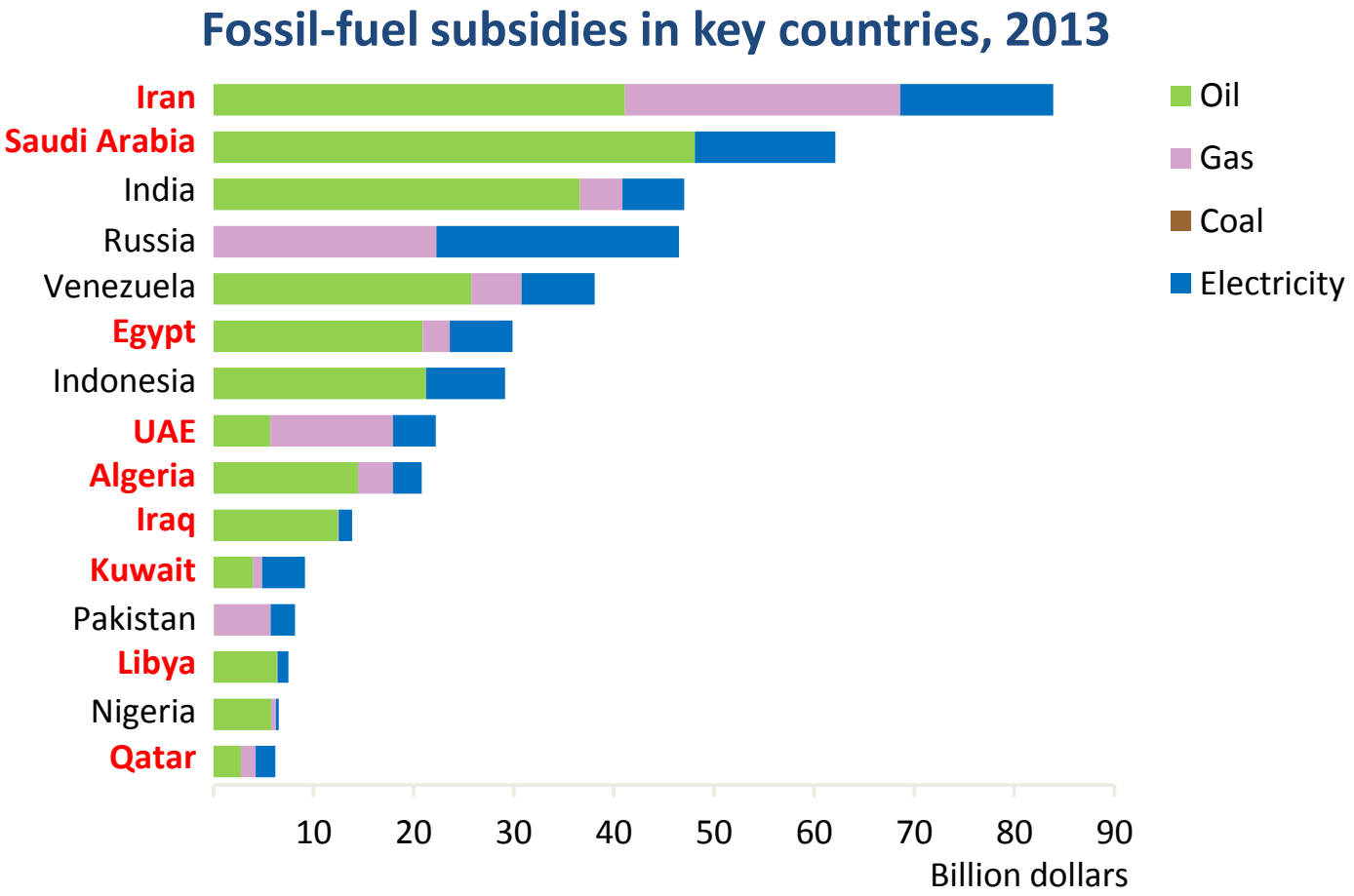
# IEA: The Changing Geography of Oil Demand

## Growth in world oil demand by region




***The Middle East makes the 3rd largest contribution to growth in oil demand, driven by robust economic growth & subsidised prices; its demand rises to 11.3 mb/d in 2040***

# IEA: Fossil-fuel subsidies remain a major problem in MENA




***Fossil-fuel subsidies totaled $550 billion & are a major barrier to improving efficiency & deploying renewables; the MENA region made up almost half of the global total***

# Changing Dynamics in Oil Markets

## Top 20 oil-consuming countries in 1994 and 2014

| Rank | 1994 | million b/d | 2014 | million b/d |
|---|---|---|---|---|
| 1 | United States | 17.7 | United States | 19.0 |
| 2 | Japan | 5.7 | China | 11.1 |
| 3 | Russia | 3.5 | Japan | 4.3 |
| 4 | China | 3.1 | India | 3.8 |
| 5 | Germany | 2.9 | Saudi Arabia | 3.2 |
| 6 | France | 1.9 | Brazil | 3.2 |
| 7 | Italy | 1.9 | Russia | 3.2 |
| 8 | South Korea | 1.9 | South Korea | 2.5 |
| 9 | Mexico | 1.8 | Canada | 2.4 |
| 10 | United Kingdom | 1.8 | Germany | 2.4 |
| 11 | Canada | 1.7 | Iran | 2.0 |
| 12 | Brazil | 1.7 | Mexico | 1.9 |
| 13 | India | 1.4 | France | 1.6 |
| 14 | Saudi Arabia | 1.4 | Indonesia | 1.6 |
| 15 | Iran | 1.3 | United Kingdom | 1.5 |
| 16 | Spain | 1.1 | Singapore | 1.3 |
| 17 | Indonesia | 0.8 | Thailand | 1.3 |
| 18 | Netherlands | 0.8 | Italy | 1.2 |
| 19 | Australia | 0.8 | Spain | 1.2 |
| 20 | Taiwan | 0.7 | Australia | 1.0 |
| **Sub-total** | | **53.9** | | **69.7** |
| **Total world** | | **69.2** | | **92.0** |

20 years of oil demand: top 20 oil-consuming countries in 1994 and 2014.

Source: BP Statistical Report 2015

# US Oil Imports

Crude oil imports (Top 15 countries)
(thousand barrels per day)

| Country | Aug-16 | Jul-16 | YTD 2016 | Aug-15 | YTD 2015 |
|---|---|---|---|---|---|
| Canada | 3,286 | 2,932 | 3,195 | 3,407 | 3,151 |
| Saudi Arabia | 1,142 | 1,051 | 1,116 | 1,004 | 1,054 |
| Venezuela | 715 | 851 | 735 | 849 | 763 |
| Mexico | 562 | 632 | 597 | 670 | 707 |
| Colombia | 481 | 497 | 481 | 339 | 416 |
| Iraq | 477 | 369 | 382 | 117 | 182 |
| Ecuador | 253 | 228 | 244 | 250 | 229 |
| Brazil | 235 | 141 | 146 | 339 | 201 |
| Nigeria | 160 | 272 | 217 | 70 | 45 |
| Kuwait | 156 | 323 | 200 | 113 | 219 |
| Angola | 137 | 287 | 172 | 102 | 97 |
| Russia | 78 | 64 | 39 | 165 | 37 |
| Chad | 61 | 32 | 76 | 46 | 74 |
| United Kingdom | 51 | 10 | 19 | 16 | 14 |
| Indonesia | 44 | 42 | 42 | 31 | 30 |

This is where the US buys its oil. In the past, Trump has said (without much clarity) it might stop buying from Saudi Arabia.

# EIA: US Oil Import and Export

## How much petroleum the United States import & export

Top sources and amounts of U.S. petroleum imports (percent share of total), respective exports, and net imports, 2015, million barrels per day

| IMPORT SOURCES | GROSS IMPORTS | EXPORTS | NET IMPORTS |
|---|---|---|---|
| Total, all countries | 9.45 | 4.74 | 4.71 |
| OPEC countries | 2.89 (31%) | 0.24 | 2.65 |
| Persian Gulf countries | 1.51 (16%) | 0.02 | 1.49 |
| TOP FIVE COUNTRIES[1] | | | |
| Canada | 3.76 (40%) | 0.96 | 2.81 |
| Saudi Arabia | 1.06 (11%) | 0.00 | 1.06 |
| Venezuela | 0.83 (9%) | 0.07 | 0.75 |
| Mexico | 0.76 (8%) | 0.69 | 0.07 |
| Colombia | 0.40 (4%) | 0.17 | 0.22 |

[1] *Based on gross imports by country of origin*

Brought to you by

GIQ Gulf Intelligence

*Source: EIA*

# OPEC Quota Pre November 2016 Oil Deal

OPEC Members' crude oil production allocations *(1,000 b/d)*

| | Mar 17, 05–Jun 30, 05 | Jul 05–Oct 06 | Nov 06–Jan 07 | Feb 07–Oct 07 | Nov 07–Dec 07 | Jan 08–Sep 08 | Oct 08 | Nov 08–Dec 08 | Jan 09–Dec 11 | Jan 12–Dec 15 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 43/ | 44/ | 45/ | 46/ | 47/ | 48/ | 49/ | 50/ | 51/ | 52/ |
| Algeria | 878 | 894 | 59 | 25 | nd | nd | nd | 71 | nd | nd |
| Angola | -- | -- | -- | -- | -- | nd | nd | 99 | nd | nd |
| Ecuador | -- | -- | -- | -- | -- | nd | nd | 27 | nd | nd |
| Indonesia | 1,425 | 1,451 | 39 | 16 | nd | nd | -- | -- | -- | -- |
| IR Iran | 4,037 | 4,110 | 176 | 73 | nd | nd | nd | 199 | nd | nd |
| Iraq | -- | -- | -- | -- | -- | -- | -- | -- | -- | nd |
| Kuwait | 2,207 | 2,247 | 100 | 42 | nd | nd | nd | 132 | nd | nd |
| Libya | 1,473 | 1,500 | 72 | 30 | nd | nd | nd | 89 | nd | nd |
| Nigeria | 2,265 | 2,306 | 100 | 42 | nd | nd | nd | 113 | nd | nd |
| Qatar | 713 | 726 | 35 | 15 | nd | nd | nd | 43 | nd | nd |
| Saudi Arabia | 8,937 | 9,099 | 380 | 158 | nd | nd | nd | 466 | nd | nd |
| United Arab Emirates | 2,400 | 2,444 | 101 | 42 | nd | nd | nd | 134 | nd | nd |
| Venezuela | 3,165 | 3,223 | 138 | 57 | nd | nd | nd | 129 | nd | nd |
| **OPEC excl Iraq** | **27,500** | **28,000** | | | | | | **1,500**** | | |
| **OPEC excl Angola, Ecuador and Iraq** | | | **1,200** | **500** | **500** | | | | | |
| **Target OPEC excl Angola, Ecuador and Iraq** | | | **26,300** | **25,800** | **27,253** | | | | | |
| **Target OPEC excl Iraq** | | | | | | **29,673** | **28,808**** | **27,308**** | **24,845** | |
| **Target OPEC** | | | | | | | | | | **30,000** |

Highest ever OPEC quota for Iran was set at 4.11m barrels a day in 2005.

Saudi Arabia quota then was 9.09m b/d.

# OPEC Oil Production: Secondary Source vs. Direct Communications

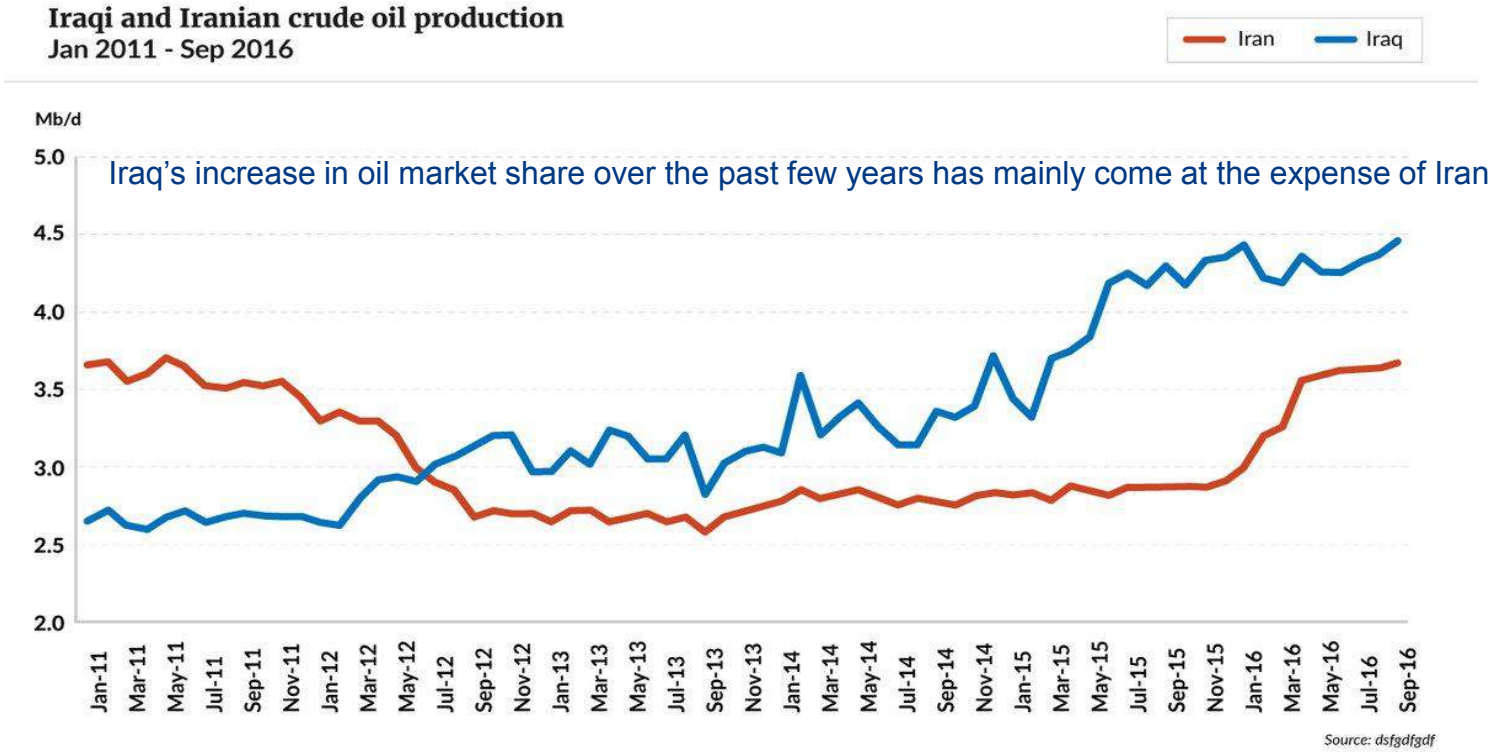
## How deep: Opec's output and possible cuts ('000 b/d)

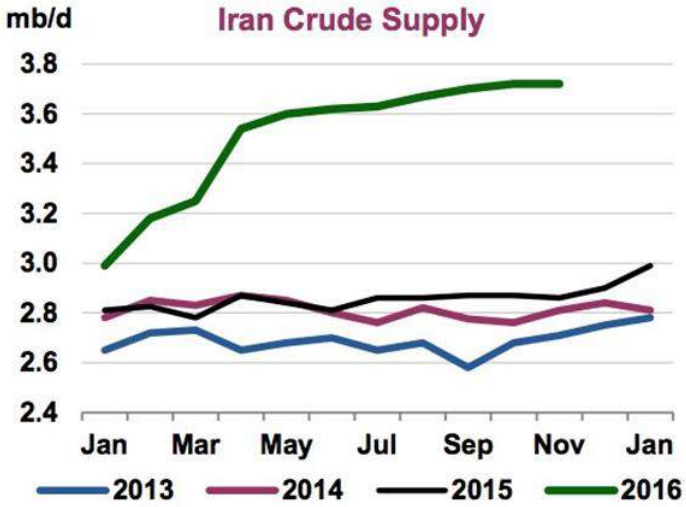
| | 2015 | Oct 2016 (secondary sources) | October 2016 (direct communication) | 4.5% cuts vs October secondary sources (excluding Libya, Nigeria and Iran) | 4.5% cuts with all exceptions |
|---|---|---|---|---|---|
| Algeria | 1,109 | 1,088 | 1,171 | 1,039 | 1,039 |
| Angola | 1,753 | 1,586 | 1,507 | 1,515 | 1,672 (a) |
| Ecuador | 544 | 549 | 542 | 524 | 524 |
| Gabon | | 202 | 202 (b) | 193 | 193 |
| Indonesia | 696 | 722 | 722 (b) | 690 | 690 |
| Iran | 2,837 | 3,690 | 3,920 | 3,690 | 3,900 (c) |
| Iraq | 3,929 | 4,561 | 4,776 | 4,356 | 4,561 (d) |
| Kuwait | 2,728 | 2,838 | 3,000 | 2,710 | 2,710 |
| Libya | 404 | 528 | 528 (b) | 600 (e) | 900 (f) |
| Nigeria | 1,851 | 1,628 | 1,476 | 1,628 | 1,851 (g) |
| Qatar | 668 | 646 | 639 | 617 | 617 |
| Saudi Arabia | 10,108 | 10,532 | 10,625 | 10,058 | 10,058 |
| UAE | 2,853 | 3,007 | 3,188 | 2,872 | 2,872 |
| Venezuela | 2,369 | 2,067 | 2,316 | 1,974 | 1,974 |
| *Total* | *31,849* | *33,644* | *34,612* | *32,465* | *33,561* |
| **Amount cut** | | | | **1,179** | **83** |

Source: *Opec*

Pre November 2016 Negotiations by OPEC Member Countries

# Iran Oil Production: The scene could change post sanctions

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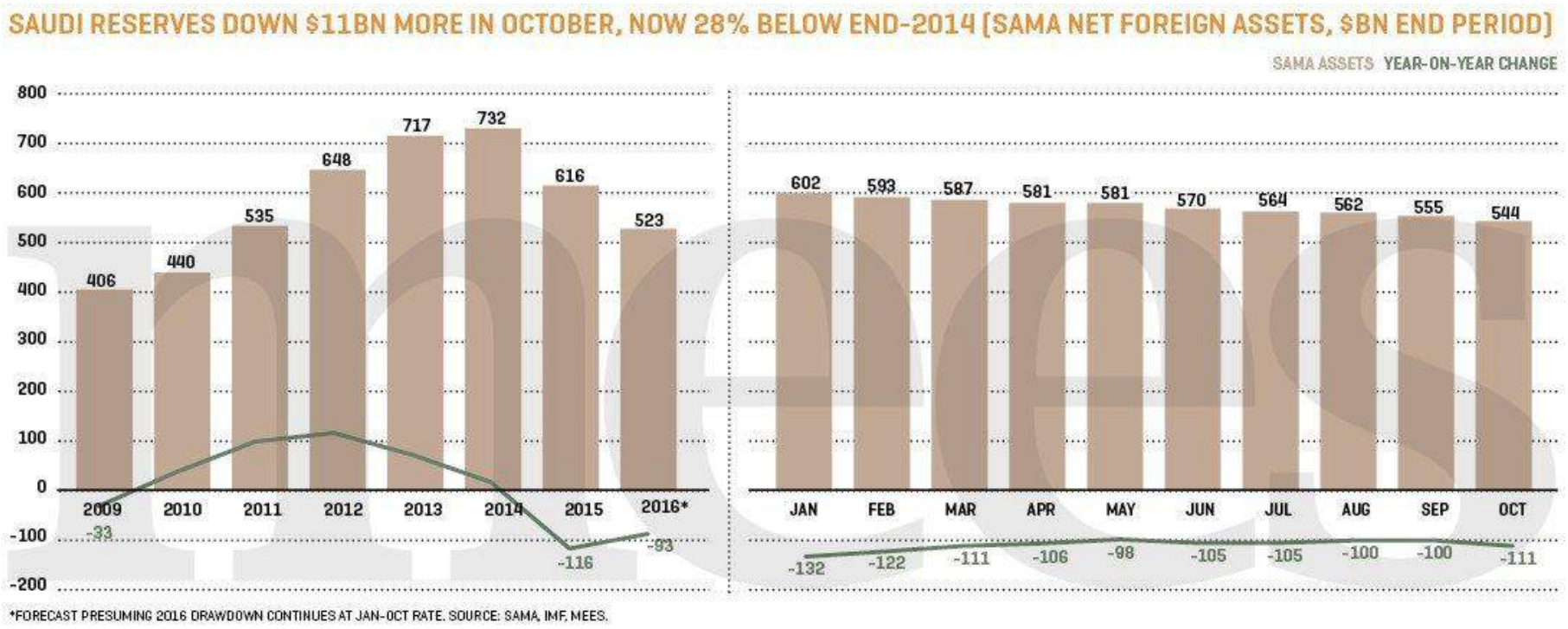
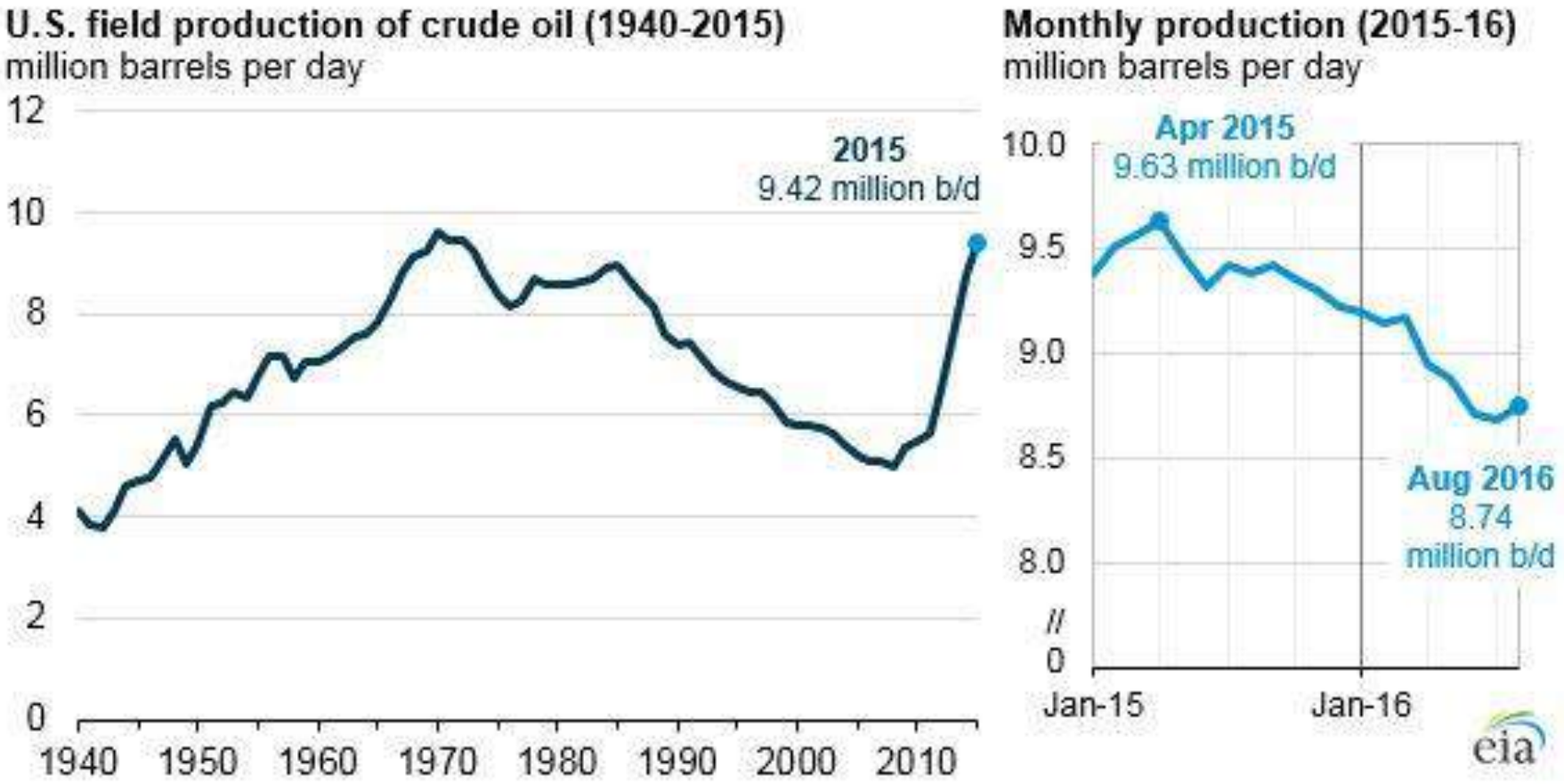
# Saudi Arabia's Economic Position




- Foreign currency reserves in significant decline
- Annual budget deficit is more than $80 billions
- Annual spending on military and security is over 30% of budget
- Planning to auction 50% of Aramco within 10 years
- Two-third of Saudi citizens on government payroll
- KSA Govt. salaries is around 45% of the annual budget
- In 2015, KSA Govt. paid $128 just for salaries
- IMF expect that KSA could loose its currency reserves within 5 years if it continues on this rate of spending and without radical reform

# EIA: US Oil Production History




U.S. crude oil production in 2015 was the highest since 1972, but has since declined

# GCC Hydrocarbon Vulnerability, 2014

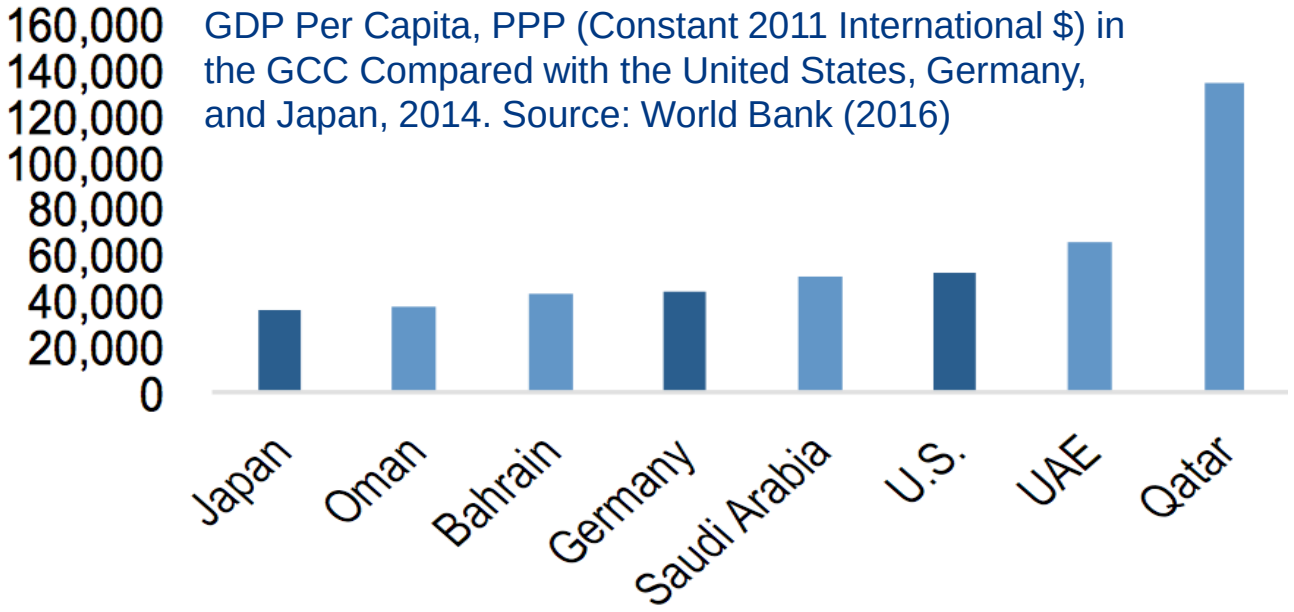
| | Fossil fuels % of GDP | Fossil fuels % of exports | Fossil fuels % of government revenue | R/P* (years) |
|---|---|---|---|---|
| Bahrain | 26.2 | 73.1 | 85 | 11 |
| Oman | 49.7 | 66.1 | 87 | 21 |
| Saudi Arabia | 45.1 | 85.7 | 78 | 66 |
| Kuwait | 62.6 | 94.3 | 80 | 91 |
| Qatar | 54.4 | 91.7 | 80 | 106 |
| UAE | 38.9 | 31.1 | 65 | 81 |

*Includes gas on BOE basis.
Source: MEES (2014), based on IMF data; IMF (2016).

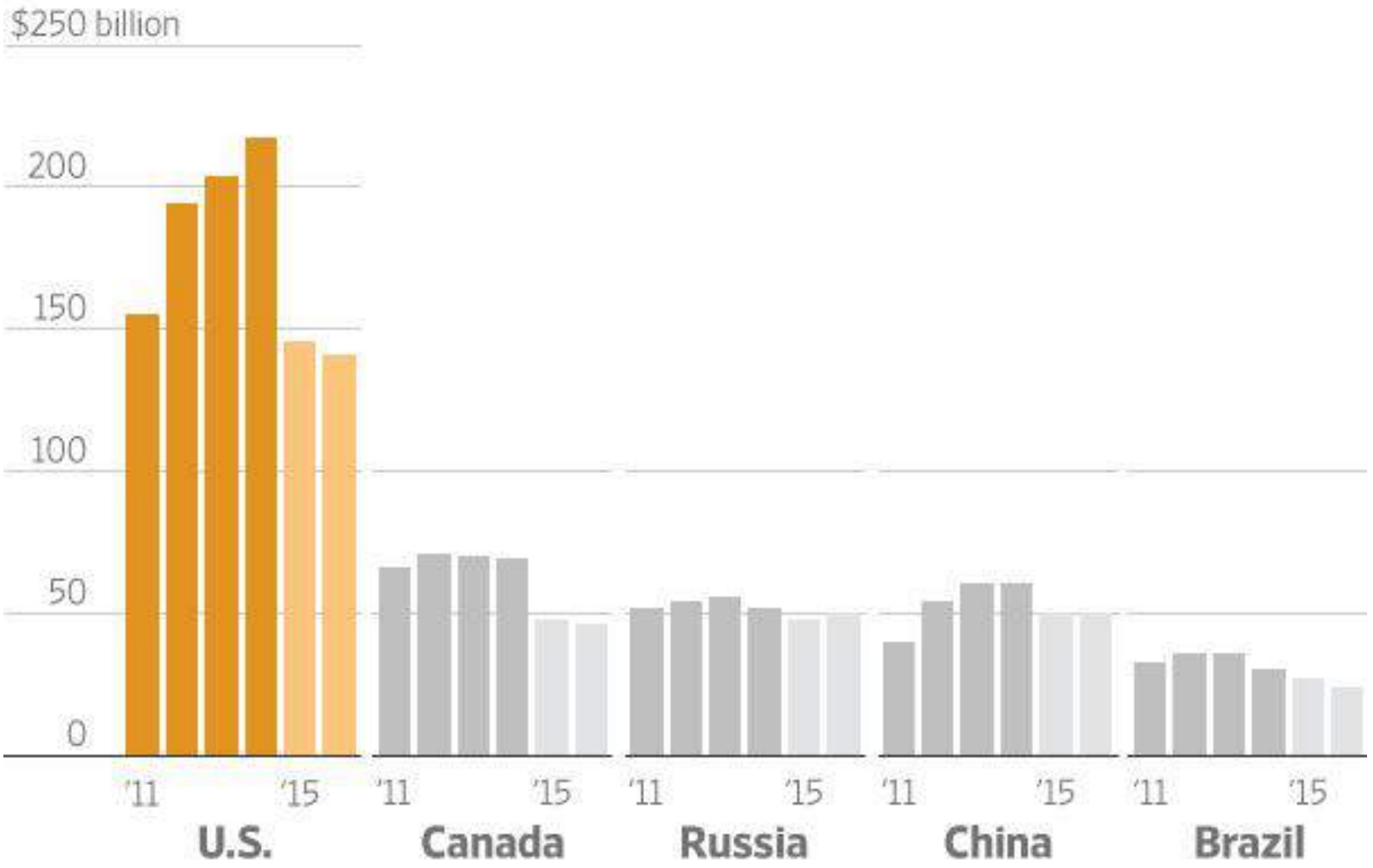
# Selected Economic Indicators for the GCC, 2013–2016

| Percent of GDP, Source: IMF (2016) | Average 2000–2012 | 2013 | 2014 | 2015 | 2016 (proj.) | 2017 (proj.) |
|---|---|---|---|---|---|---|
| Real GDP (annual growth) | 5.1 | 3.2 | 3.5 | 3.3 | 1.8 | 2.3 |
| Current Account Balance | 17.1 | 21.3 | 14.5 | 1.0 | | 4.1 |
| Overall Fiscal Balance | 10.8 | 10.2 | 3.3 | 9.9 | 12.3 | 10.8 |
| Inflation, p.a. (annual growth) | 2.8 | 2.8 | 2.6 | 2.5 | 3.3 | 1.9 |

GDP Per Capita, PPP (Constant 2011 International $) in the GCC Compared with the United States, Germany, and Japan, 2014. Source: World Bank (2016)

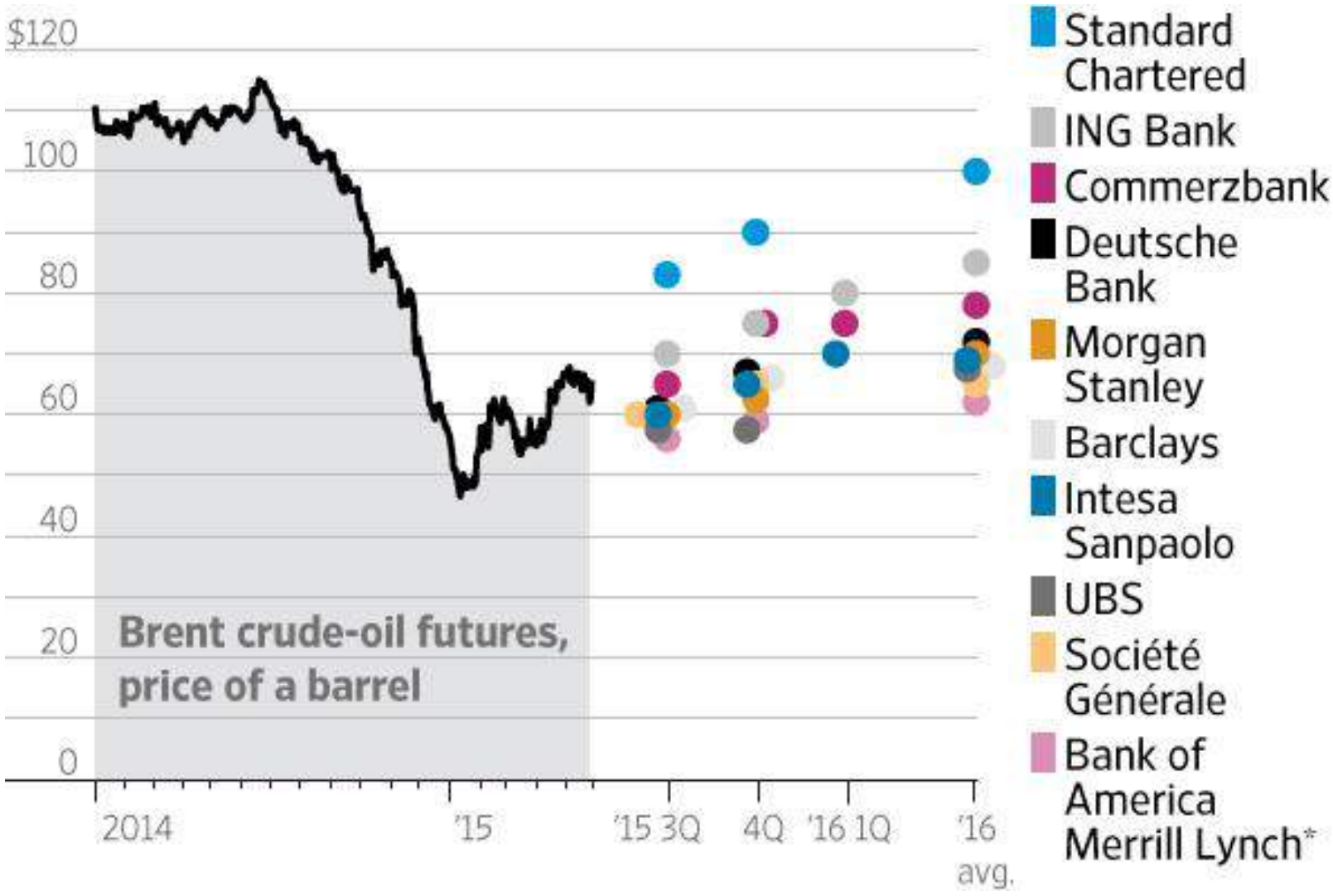


# Global oil and natural gas upstream development capital expenditure, actual and forecast (2015,2016)




Source: WSJ

# Oil Price Outlook – How Analysts Differ in Forecasting




Sources: International Energy Agency (OPEC and non-OPEC production; IEA via Thomson Reuters (production, chart 6); Thomson Reuters (Brent prices); Rystad Energy (capital expenditure); the companies (price forecasts)

# Nov 2016 OPEC "Deal"

Saudi Arabia accounts for 31% of OPEC crude oil output -- but its shouldering 41% of the cut (due to Iran, Libya and Nigeria exception)

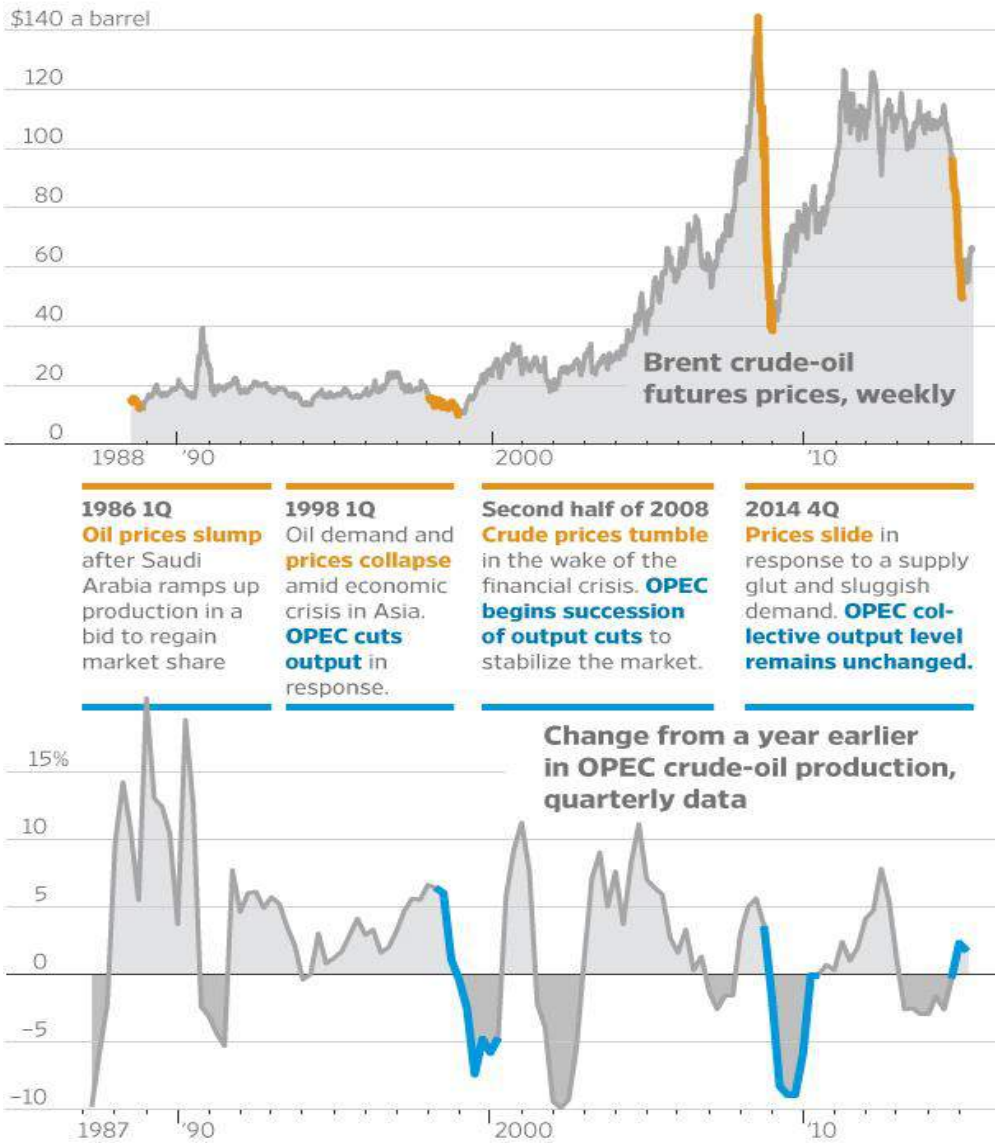
Agreed crude oil production adjustments and levels* *(tb/d)*

| Member Country | Reference Production level | Adjustment | Production level effective January 2017 |
|---|---|---|---|
| Algeria | 1,089 | –50 | 1,039 |
| Angola | 1,751 | –78 | 1,673 |
| Ecuador | 548 | –26 | 522 |
| Gabon | 202 | –9 | 193 |
| Indonesia** | | | |
| IR Iran | 3,975 | 90 | 3,797 |
| Iraq | 4,561 | –210 | 4,351 |
| Kuwait | 2,838 | –131 | 2,707 |
| Libya | | | |
| Nigeria | | | |
| Qatar | 648 | –30 | 618 |
| Saudi Arabia | 10,544 | –486 | 10,058 |
| UAE | 3,013 | –139 | 2,874 |
| Venezuela | 2,067 | –95 | 1,972 |

* *Reference base to crude oil production adjustment is October 2016 levels, except Angola for which September 2016 is used, and the numbers are from Secondary Sources, which do not represent a quota for each Member Country.*

** *Indonesia suspended its membership.*

# OPEC Past and Present




- OPEC has departed from its historic role as swing producer to defend its market share.
- Historically, OPEC could reduce or increase output to change the direction of Brent crude-oil futures prices.
- OPEC accounts for a third of the world's oil.
- Production in 2014; Includes natural-gas liquids and condensates
- But a surge in U.S. shale-oil output is challenging its dominance.
- Change since the first quarter of 2010 in crude-oil production, in millions of barrels.
- OPEC has ramped up output in 2015 and 2016
- …while OPEC's rivals are cutting investment in response to lower prices.

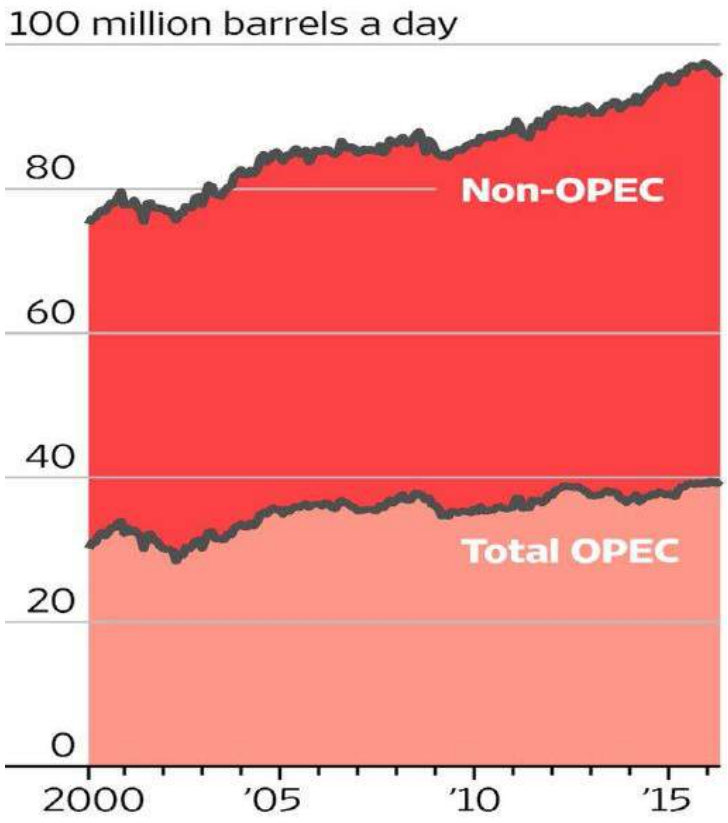
**MARKET SHARE: OPEC is no more a swing producer. It may struggle to unite members - and, just as crucially, non-members - to cut production or to commit to future promises.**

Iraq Energy
Energizing Iraq's Economy

# Oil Duel

OPEC has competed fiercely with non-OPEC producers for global market share in recent years.

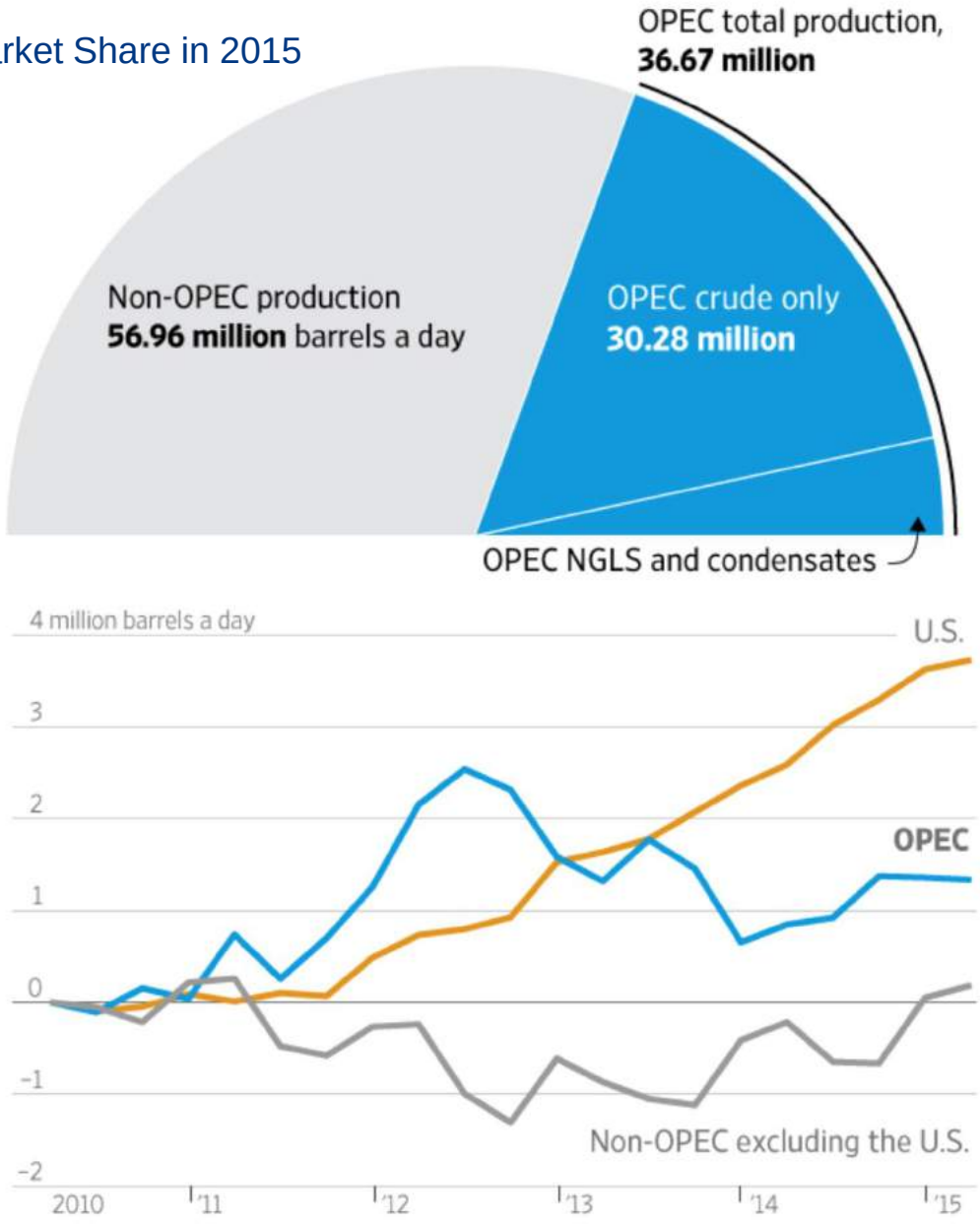
**Global oil supply**



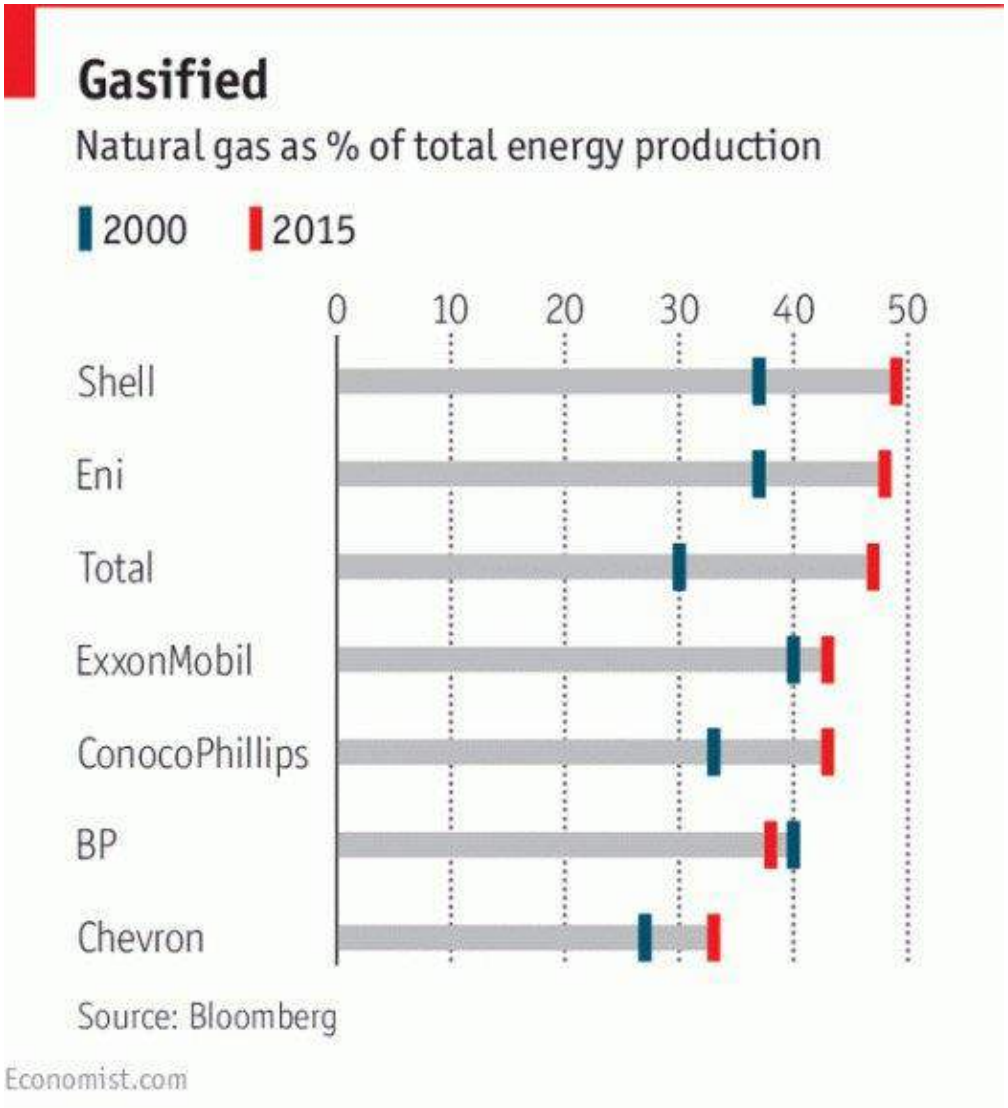

Source: International Energy Agency

THE WALL STREET JOURNAL.

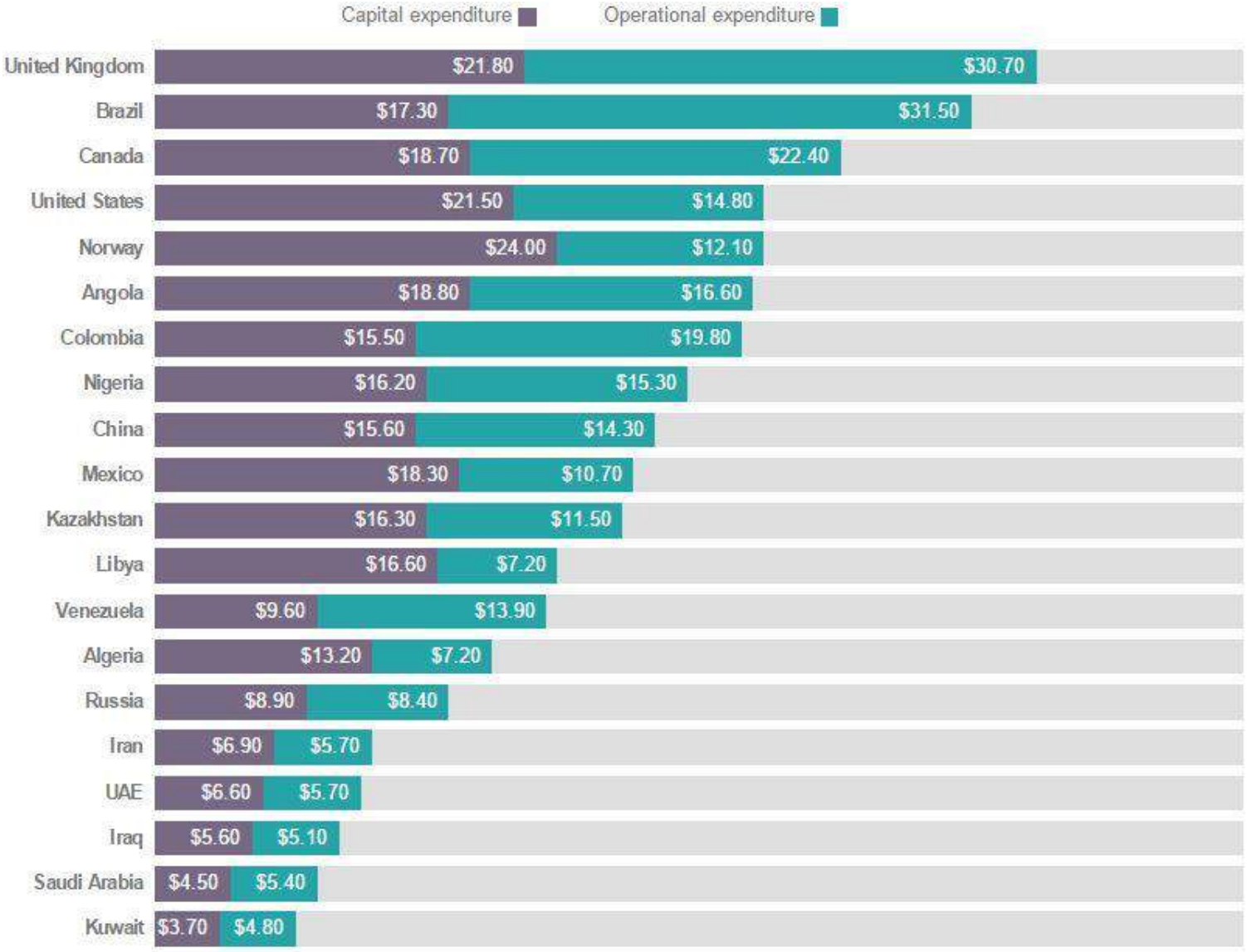
Market Share in 2015



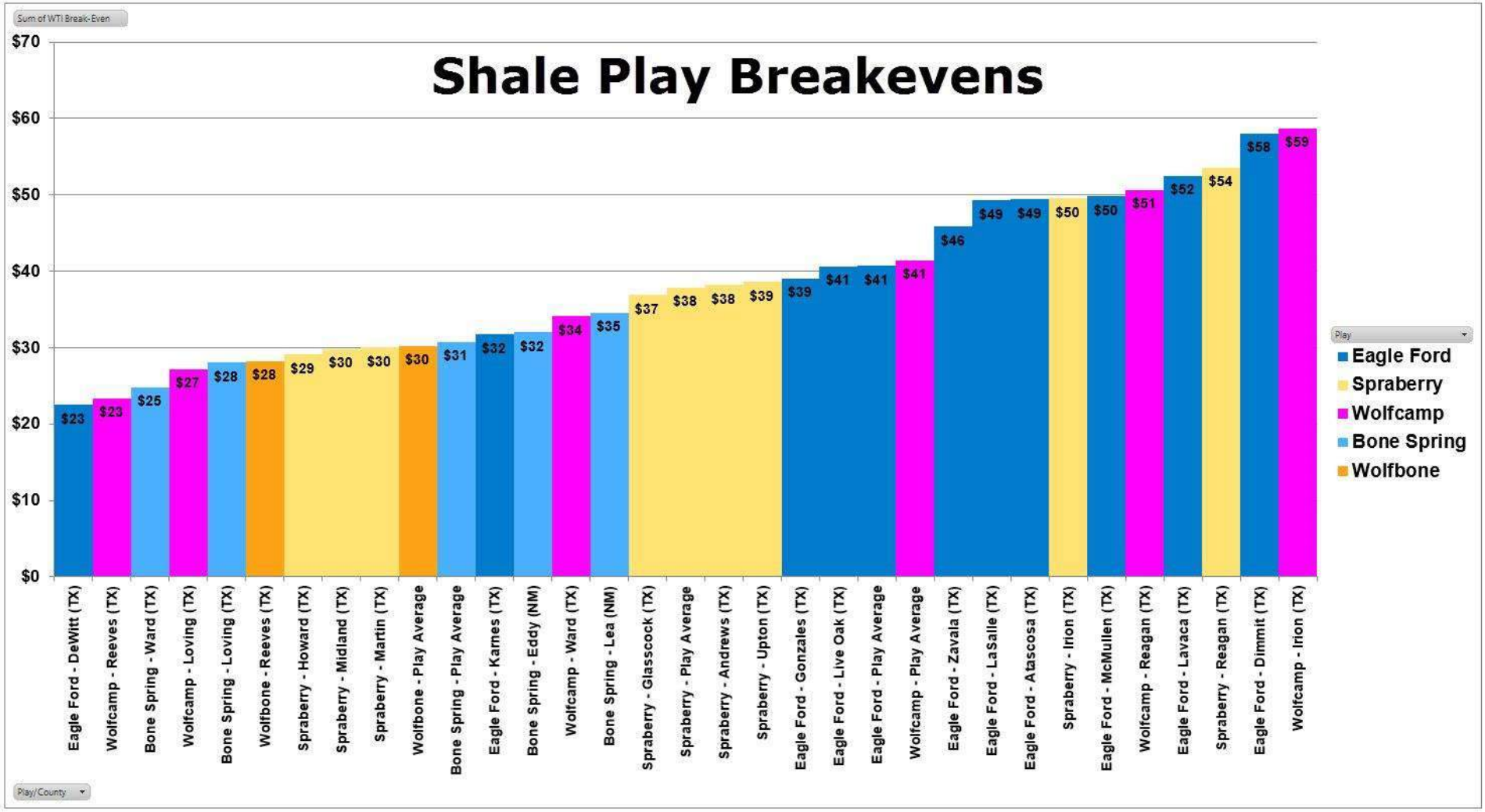
# Game Changer: From O&G companies to G&O companies



# Oil Production Cost

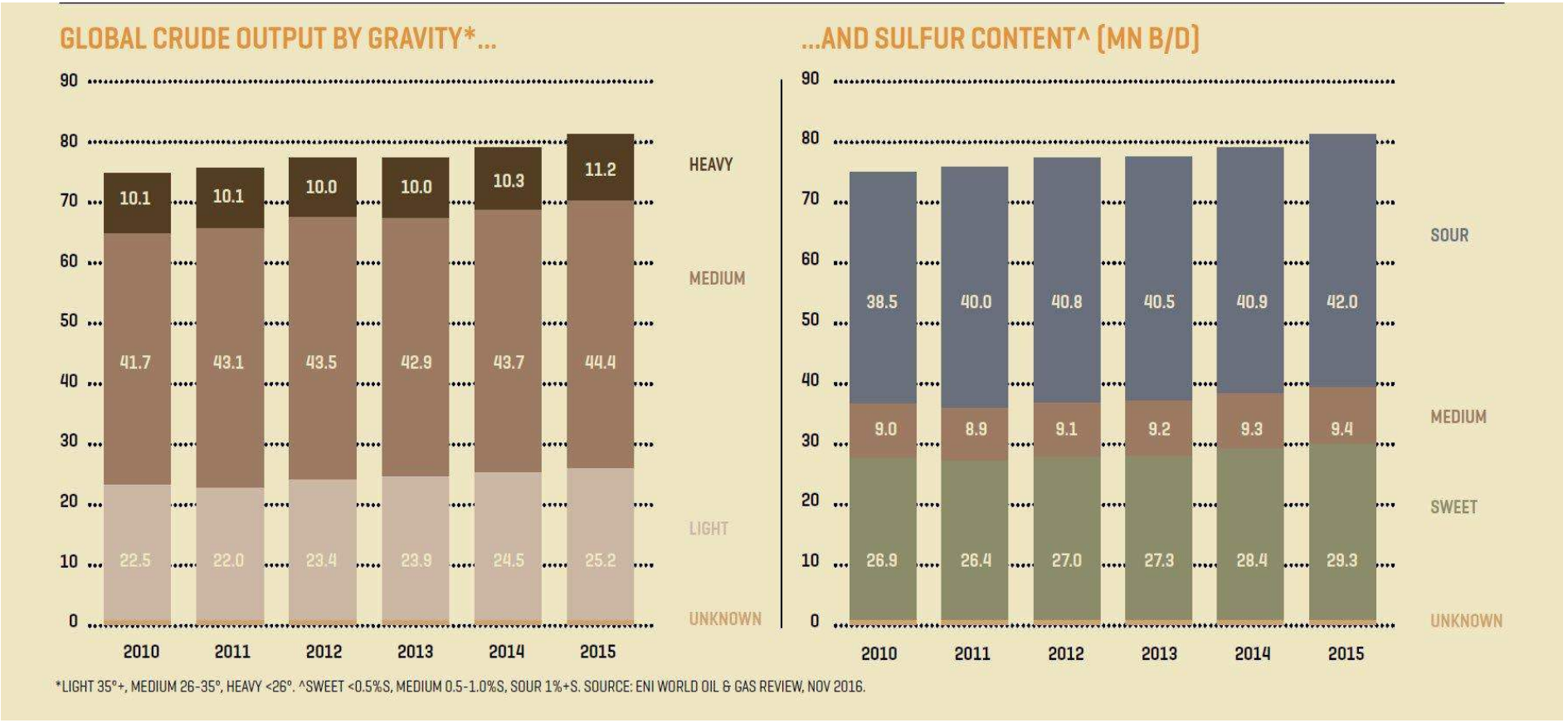


# Wait for the US Shale & non-OPEC response to $50+ oil price



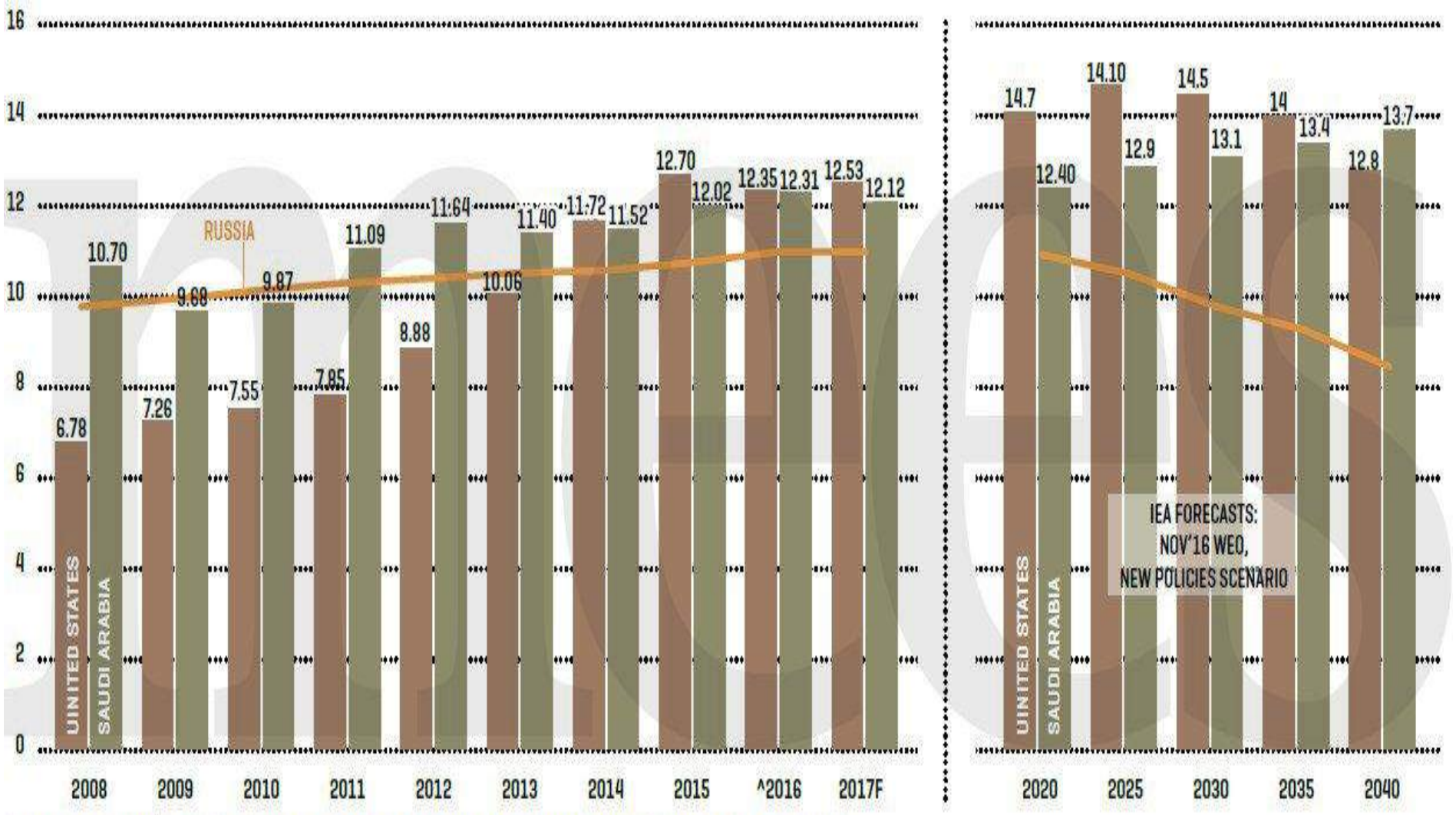

With growing competition over oil market share & producers' dependency on petrodollar, OPEC is becoming more & more meaningless.

# Dominant Production: Sour & Medium Density



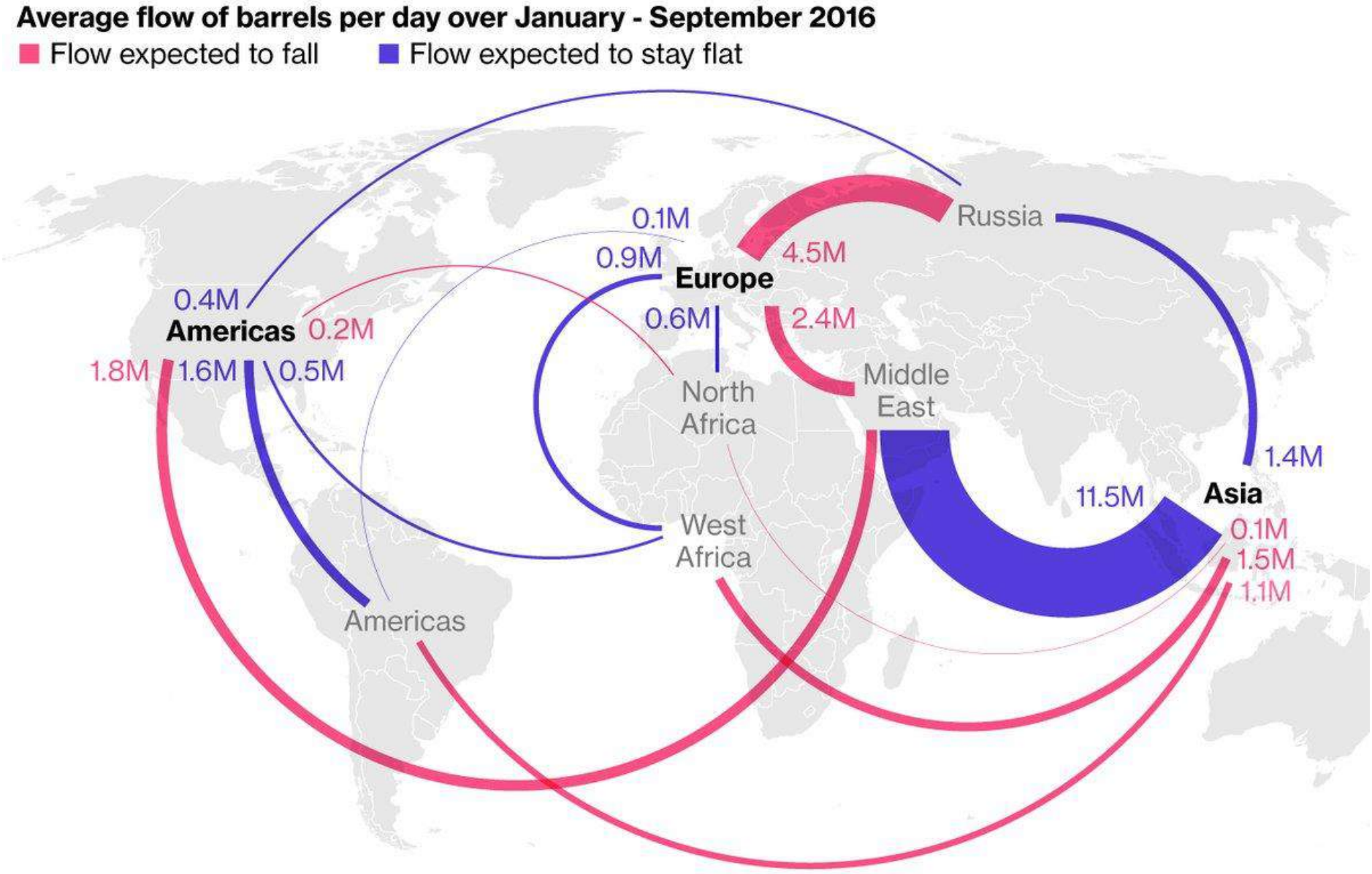

Note: WTI is a light crude oil, with an API gravity of around 39.6 and specific gravity of about 0.827, which is lighter than Brent crude. It contains about 0.24% sulfur thus is rated as a sweet crude oil (having less than 0.5% sulfur), sweeter than Brent which has 0.37% sulfur. WTI is refined mostly in the Midwest and Gulf Coast regions in the U.S., since it is high quality fuel and is produced within the country.

# World's top oil producer (mn b/d): Saudi output recently edged past the US for the first time since 2014, but US set to regain top spot



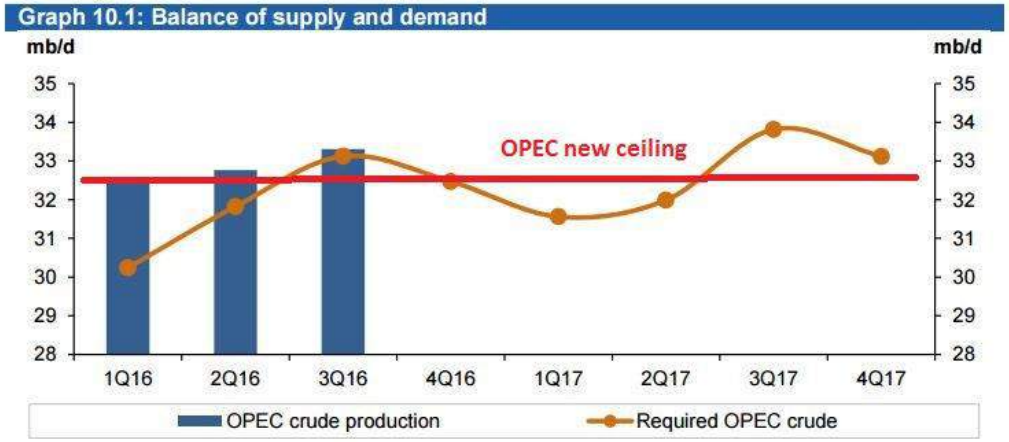

*CRUDE & NGLS. ^JAN-OCT'16. F=FORECAST. SOURCE: EIA, IEA, JODI, SAUDI ARAMCO, ENI, RUSSIAN ENERGY MINISTRY, MEES ESTIMATES & CALCULATIONS.

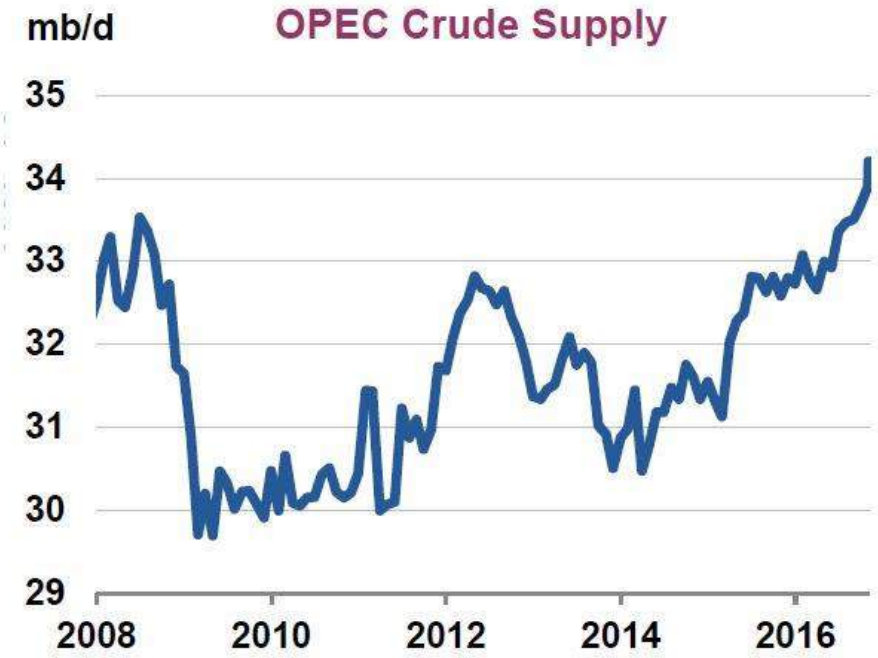
# How Global Oil Flows Might Look After OPEC's Supply Shock

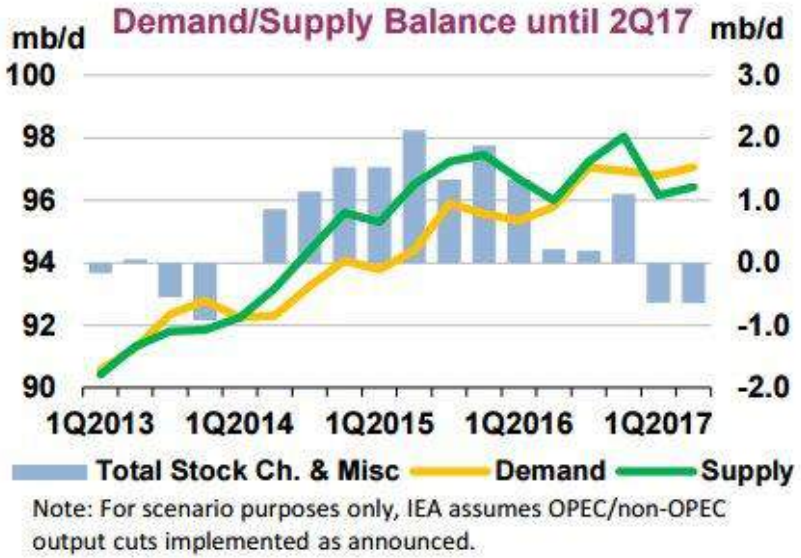


# #OPEC Says #Oil Supply Cuts Won't Re-Balance Market Until 2017 Second-Half

## IEA, EIA, OPEC – all have different views

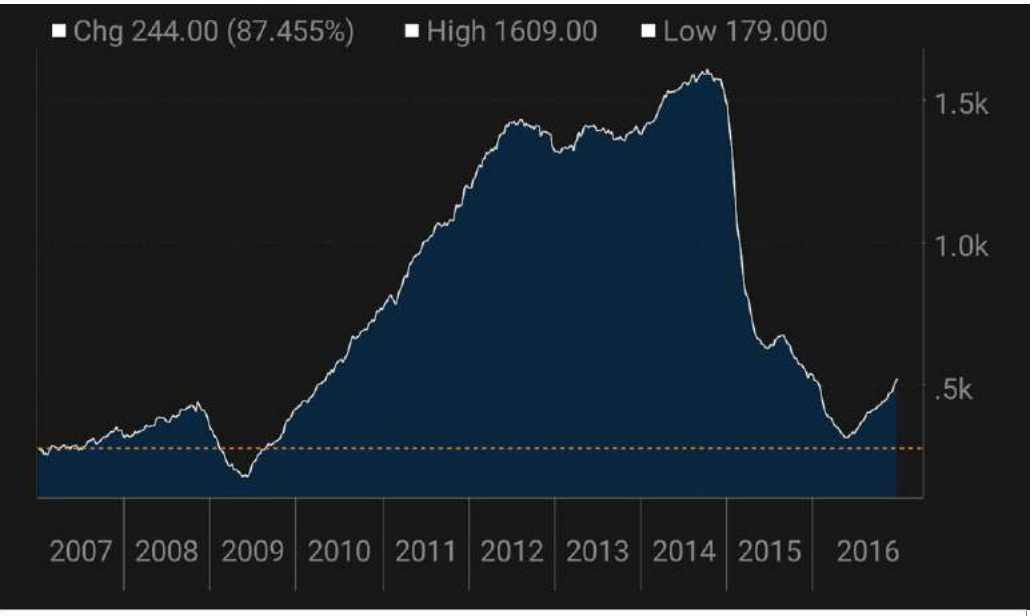


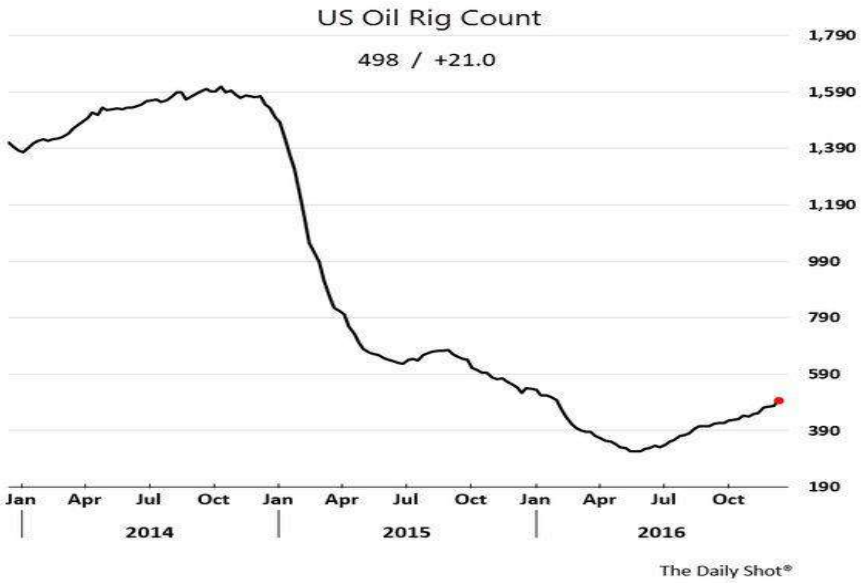



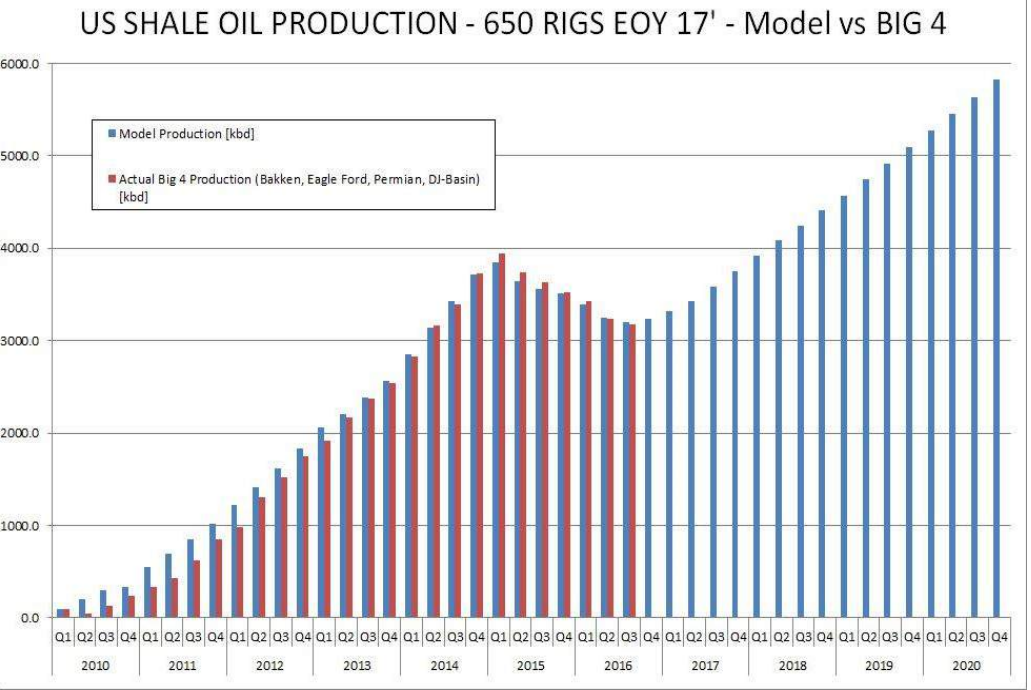




Note: For scenario purposes only, IEA assumes OPEC/non-OPEC output cuts implemented as announced.

# U.S. oil rig count rises +13 to 523 (highest since January 2016)




## Rig Count Overview & Summary Count

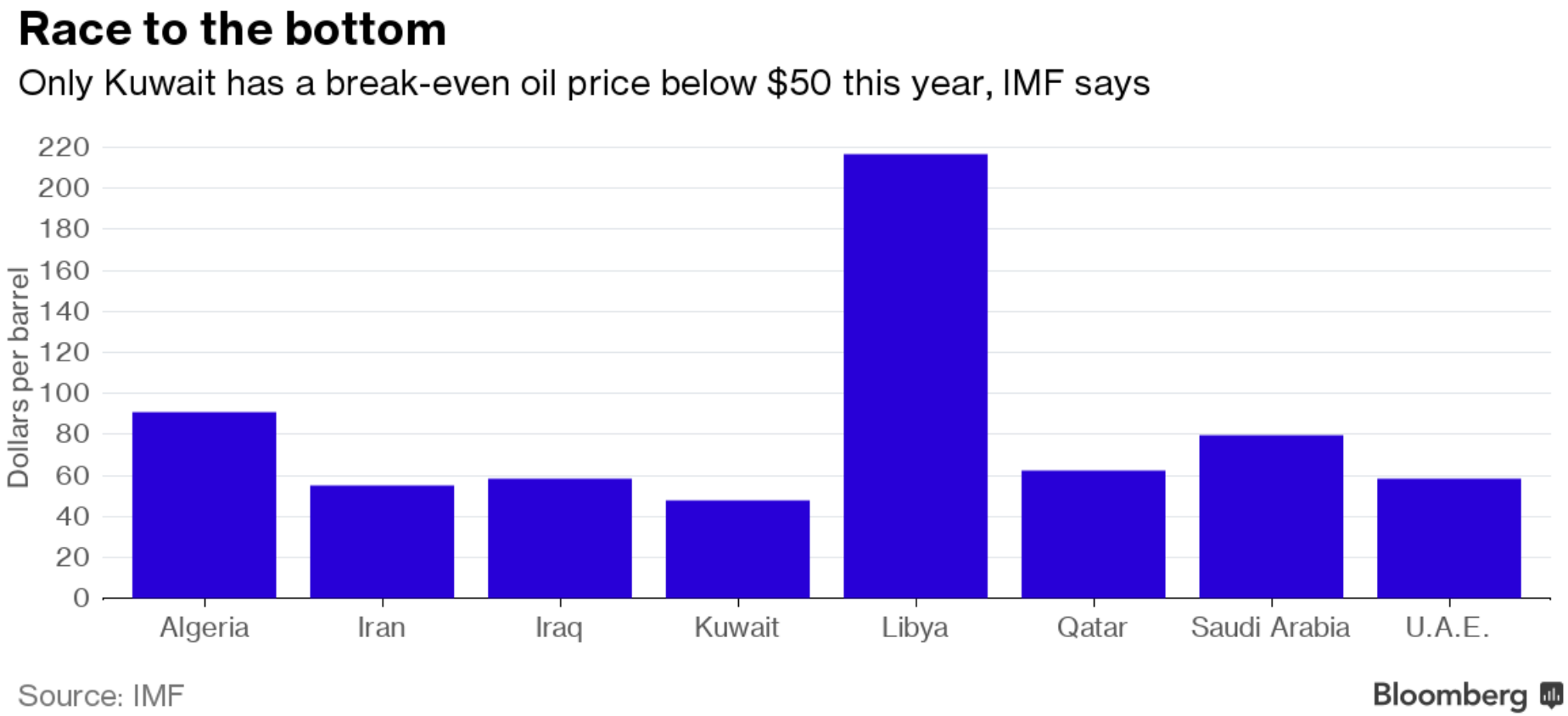
| Area | Last Count | Count | Change from Prior Count | Date of Prior Count | Change from Last Year | Date of Last Year's Count |
|---|---|---|---|---|---|---|
| U.S. | 9 December 2016 | 624 | +27 | 2 December 2016 | -85 | 11 December 2015 |
| Canada | 9 December 2016 | 230 | +30 | 2 December 2016 | +56 | 11 December 2015 |
| International | November 2016 | 925 | +5 | October 2016 | -184 | November 2015 |

# IMF Reading

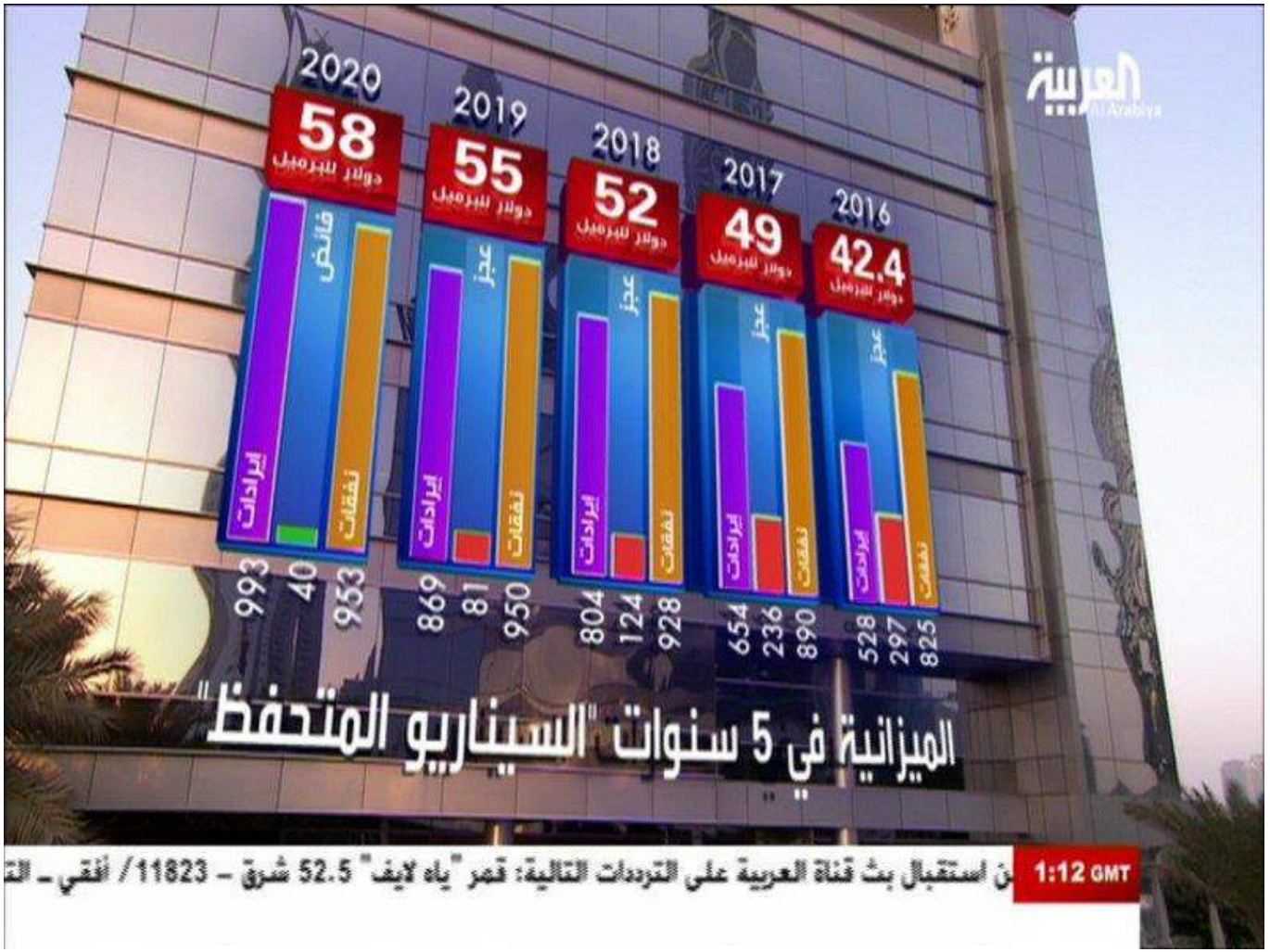
| | 2015 | 2016 | 2017 |
|---|---|---|---|
| Global Economic Growth[1] | 3.1% | 3.1% | 3.4% |
| Average Oil Price (in USD)[1] | $50.8 | $43 | $50.6 |
| Average Global Oil Demand (in Millions of Barrels per Day)[2] | 93 | 94.2 | 95.3 |
| Percentage Increase in Global Oil Demand | 4.0% | 1.3% | 1.1% |

IMF growth expectation in global economy: 3.1% (2016), 3.4% (2017) and oil price forecast for 2017 to be $50.6

# Oil Breakeven



# KSA Oil Assumptions & Budgets 2016-2020




Saudi Arabia assumption for Budget 2017 is "Conservative" $49 a barrel

# Understanding Federalism in Iraq

Federalism in Iraq is a question that's yet to be understood by all the contesting factions. The Kurds see through a "confederal lens" because they enjoyed 12 years of autonomy before 2003. The Arab majority view it through the notion of "centralism" because their mindset is still governed by the shadow of the past.

Regime change is rarely only about removing dictators, and also represents a nation's journey towards reform. This requires time and may take generations to materialise.

Source: Luay Al-Khatteeb, Brookings Article, Dec 2013

# IRAQ 2015 - Case Study

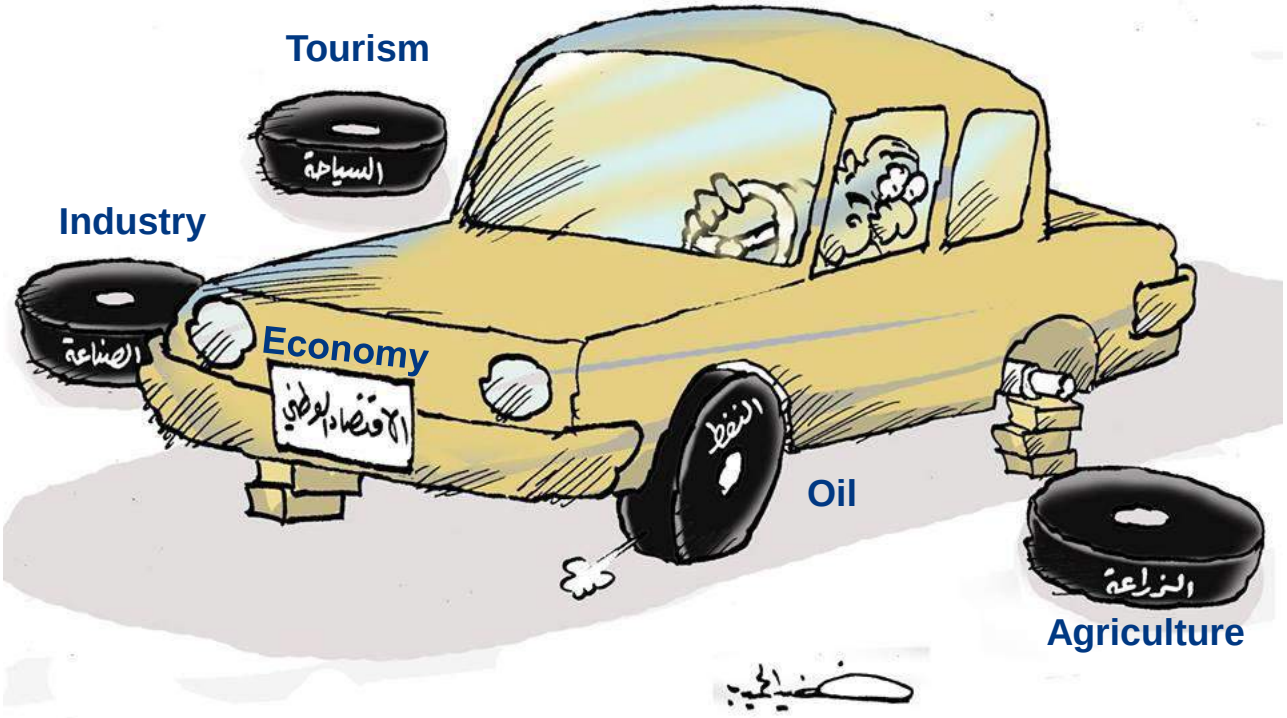
Iraq Energy
Energizing Iraq's Economy

## Economy

- 2016 Budget: $100bn
- Oil Revenue: $45bn
- Federal Reserves: $48bn
- Actual deficit: ??%
- Expenditure: 100%
- Cost of war: 20% of Iraq's GDP
- Baghdad Payroll: 7m @ $4b/month
- Erbil Payroll: 1.4m @ $750m/month
- Oil – single source of income
- Kurdistan Oil 700kb/d
- Basra Oil 3.6mb/d
- Baghdad debts to IOCs: $15bn
- Erbil debts to IOCs: $4bn
- KRG Total Debts: Over $26bn
- Other KRG Debts: $10bn
- Gas flaring 1.8bcf/day
- Subsidies: $14bn/a
- Ration: $6bn/a


## State & Nation

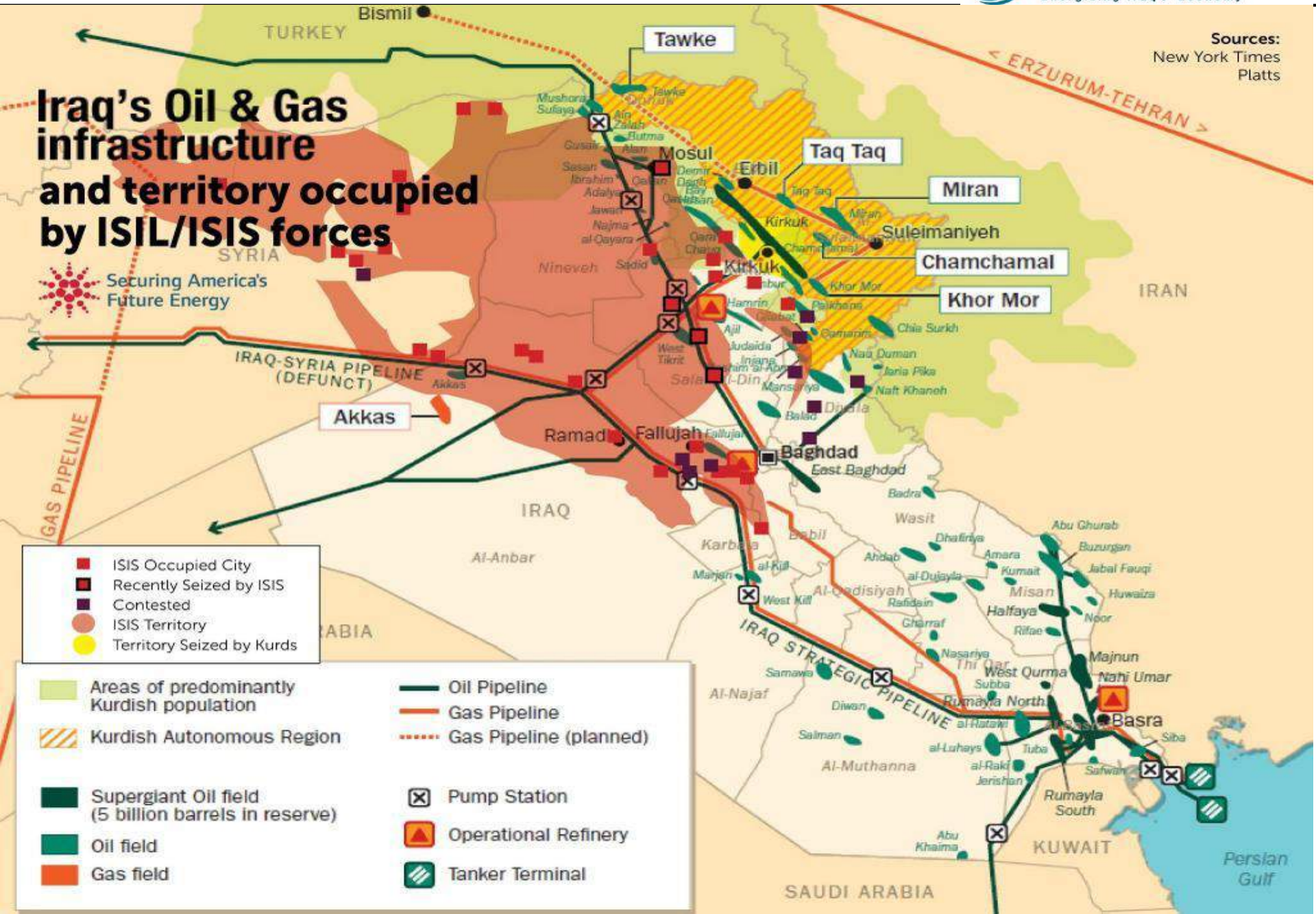
- Centralism vs. Federalism
- Anarchic Democracy
- Challenge National Reconciliation
- Legacy Regime Rules
- Security CrISIS
- 3.5m Refugees (IDPs)

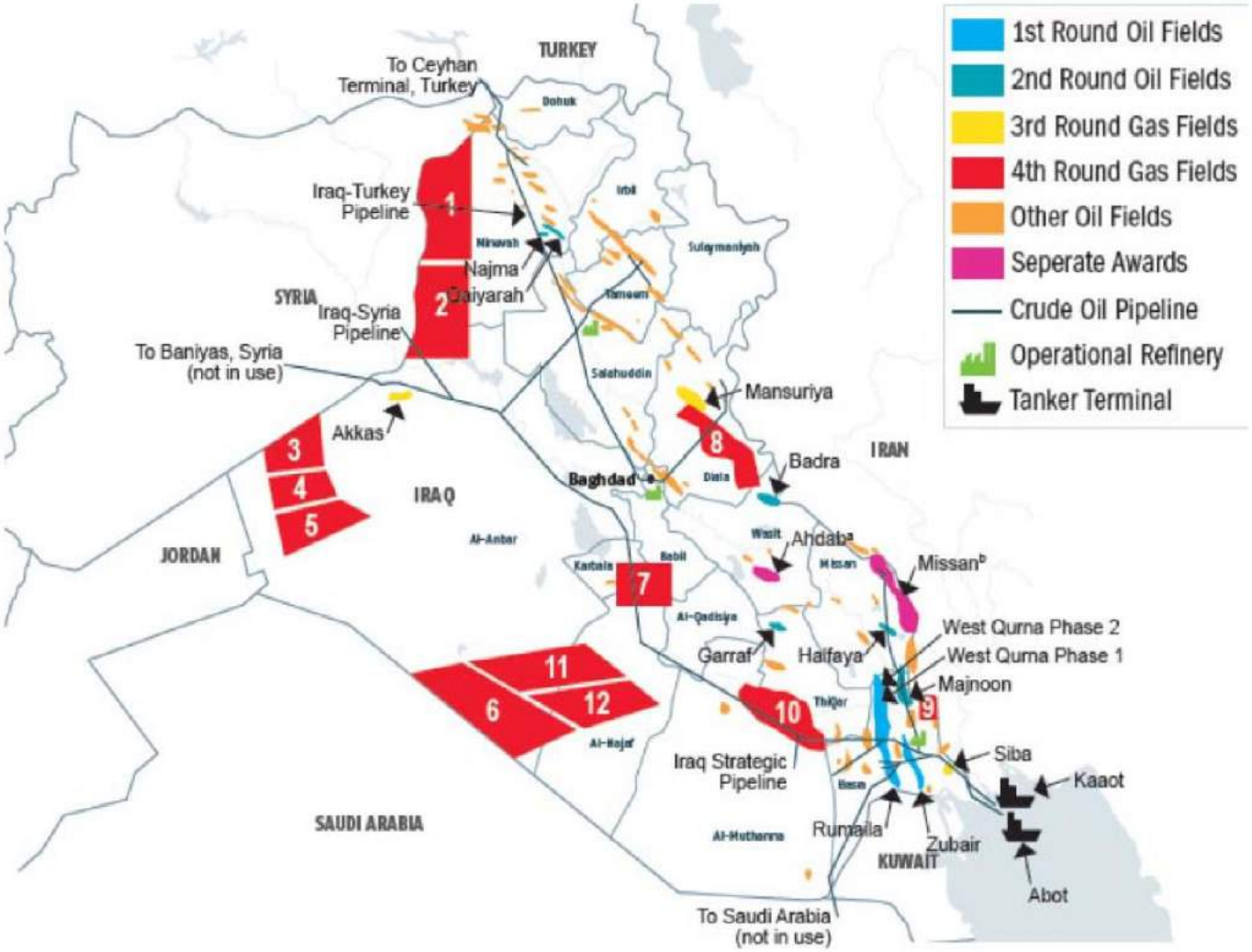



## International Politics: Conflicting Foreign Policy

- Troubled Region
- 6 Difficult Neighbors
- UNSC Members: Clash of Coalitions

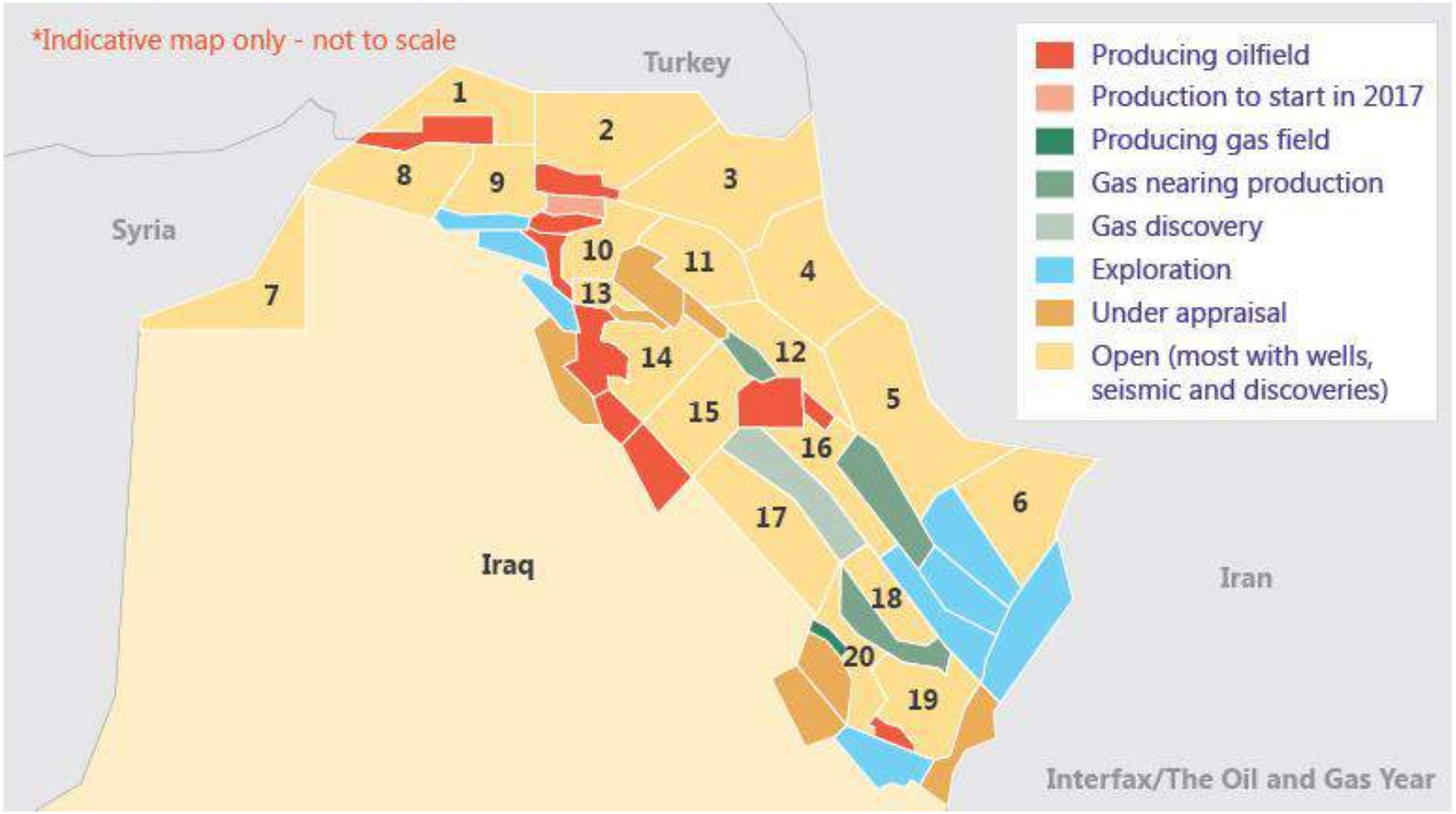
# Oil Security Jun-Oct 2014

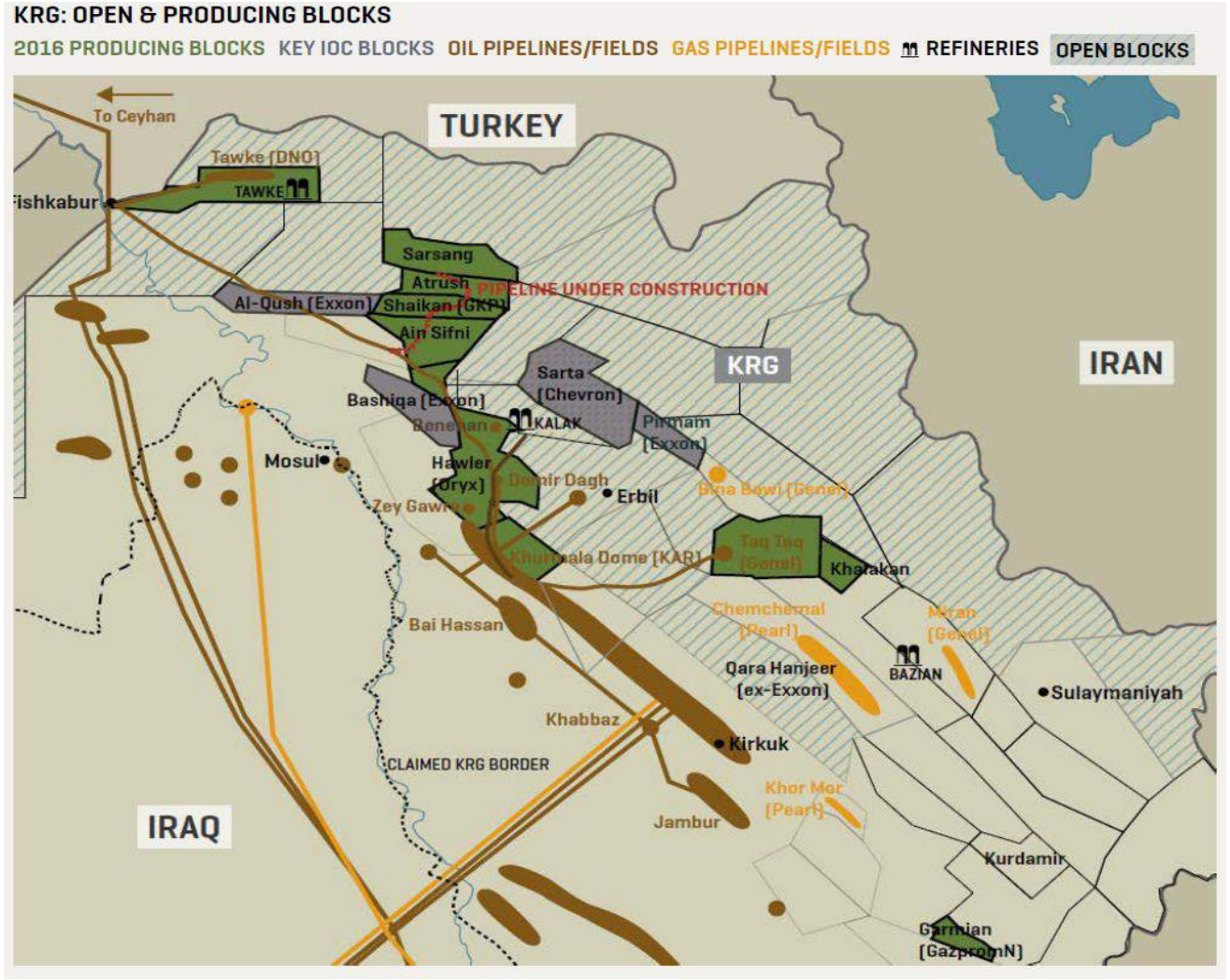





**Iraq Petroleum Map (Ministry of Oil - MoO)**

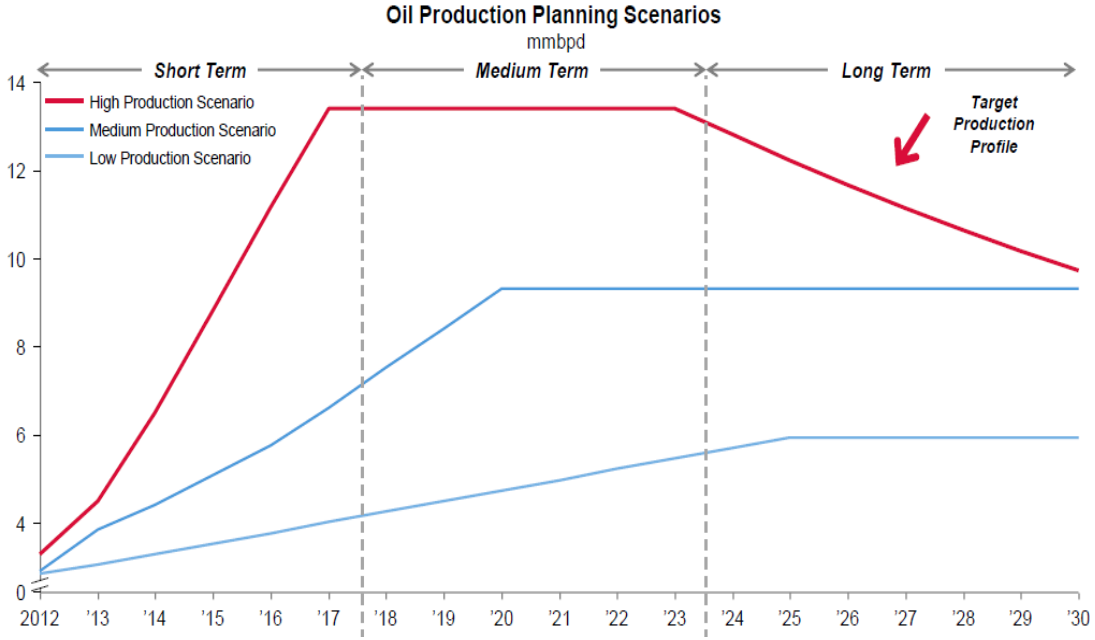
# Kurdistan to offer 20 blocks in licensing round (2016)

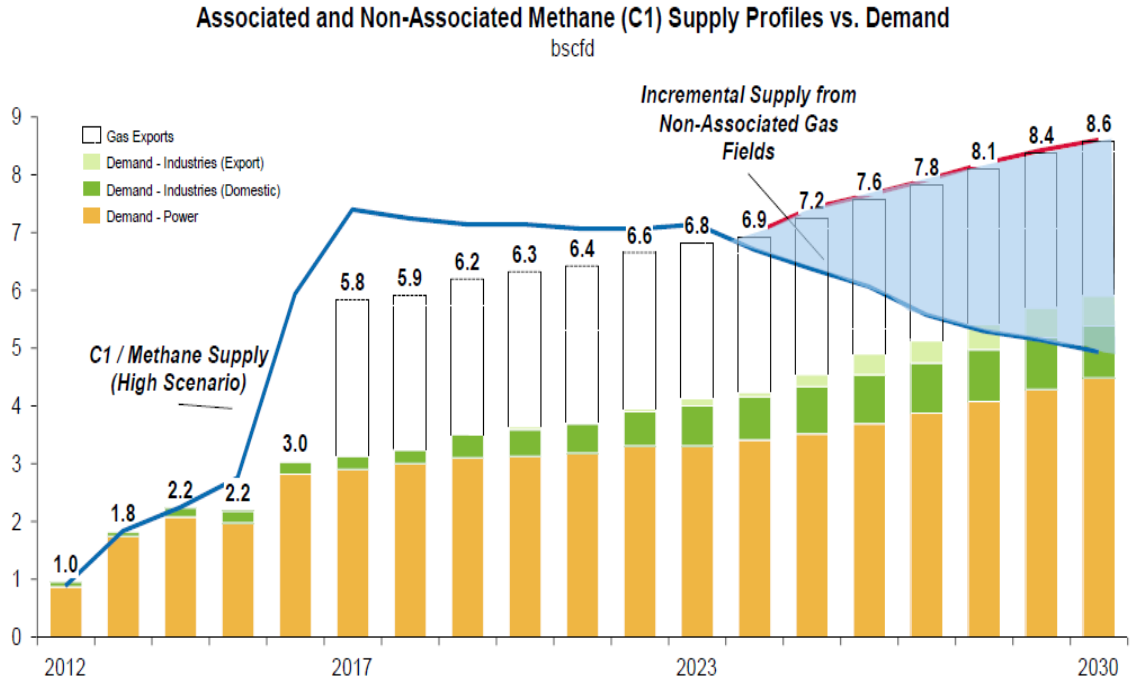




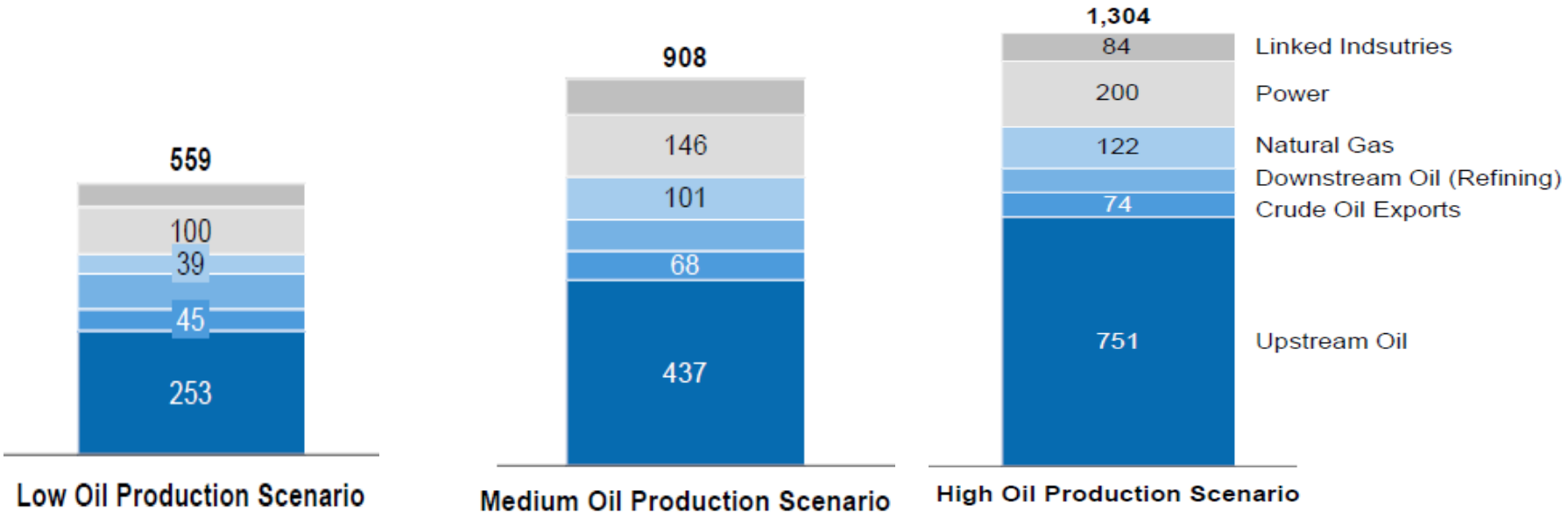

**Kurdistan of Iraq Petroleum Map (MEES, MNR)**

# Oil & Gas Iraq National Energy Strategy Scenarios 2012:



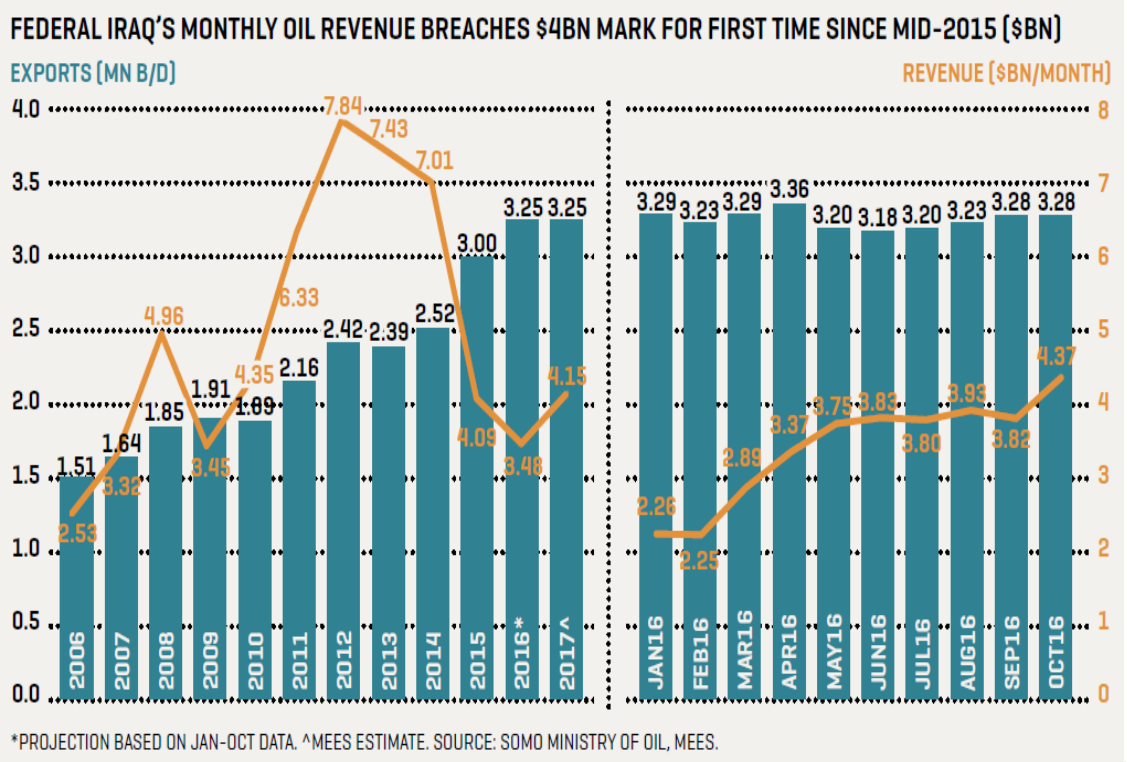



# INES 2012: Iraq's Oil & Gas Development Cost ($bn)

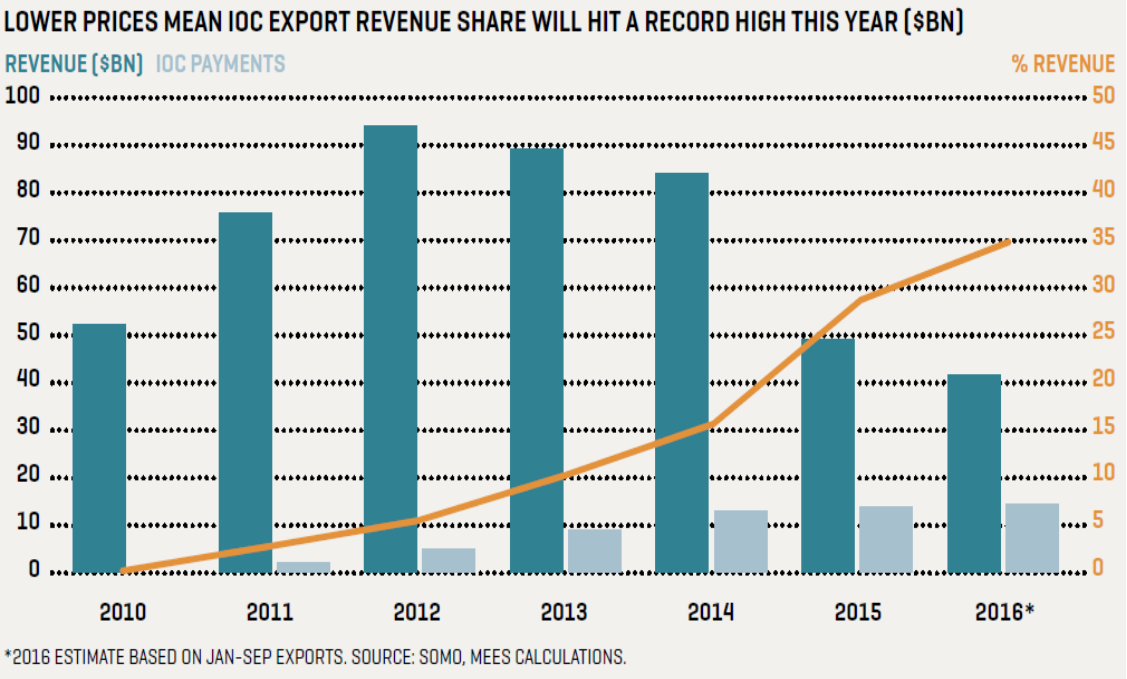



## Cumulative Capital Expenditures by Sector

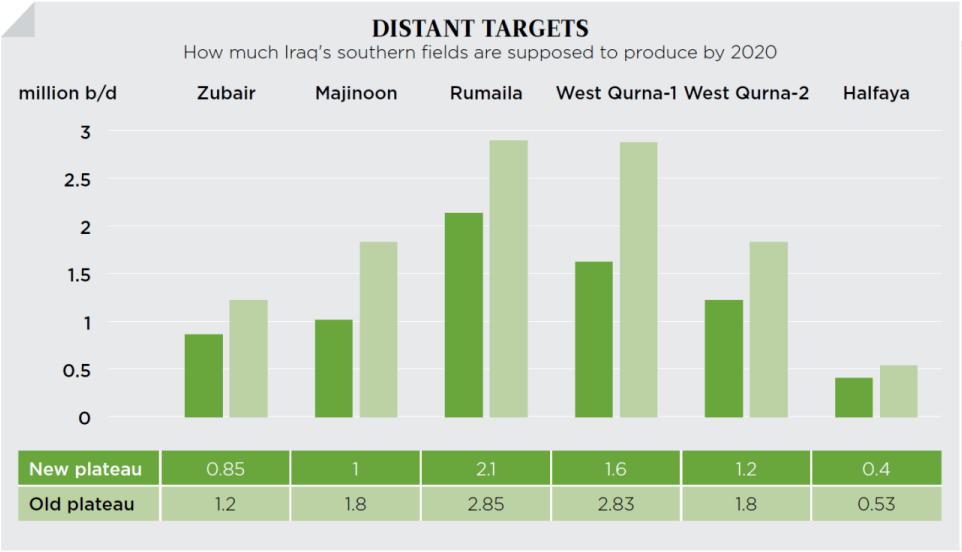
USD Bn, 2012-2030



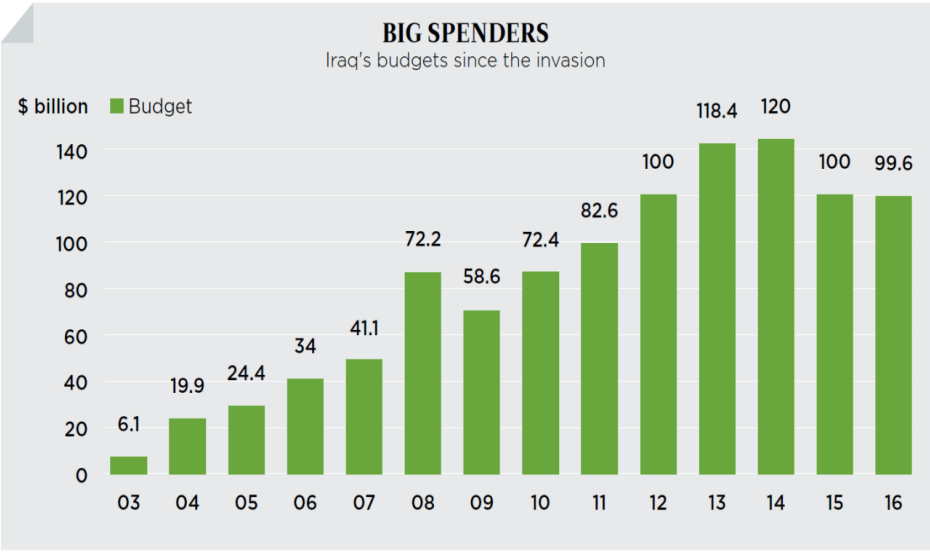

**Iraq's Total Oil Production Peak in 2016 (MEES, MoO)**




**IOCs Revenues from Southern Oil Fields (MEES, MoO)**




The 1st Revision of Southern Oil Fields (MoO)




Iraq's Federal Budgets 2003-2016 (Ministry of Finance)

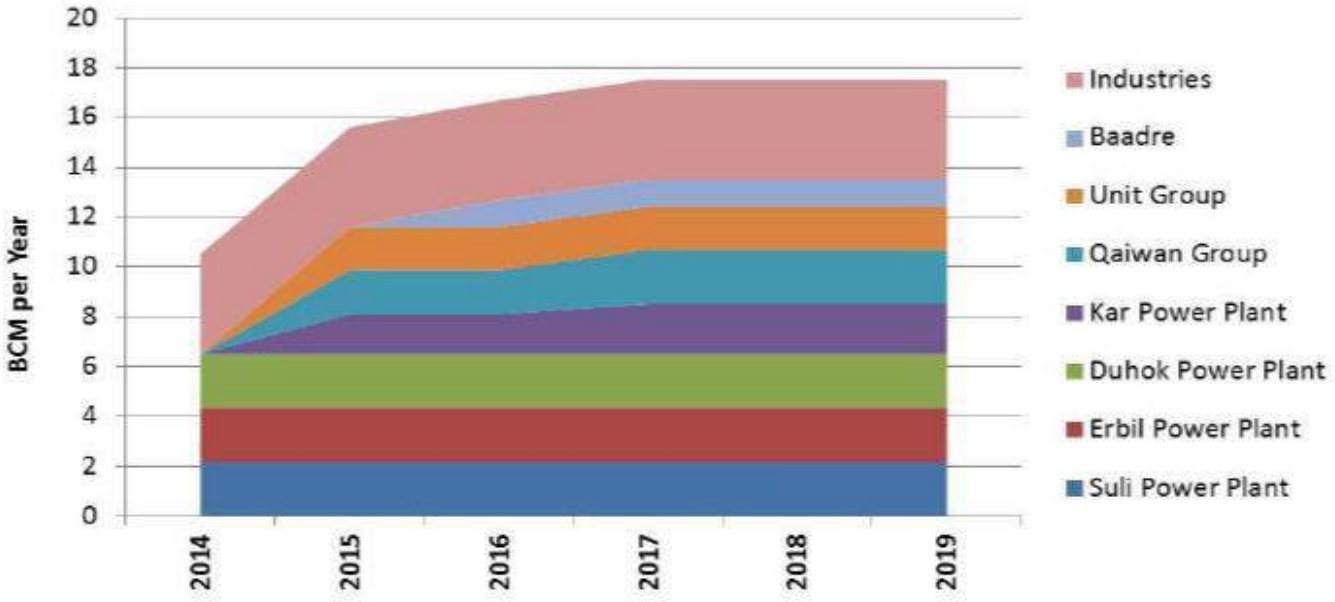
**MISSING BARRELS:**
Iraq's total oil output, September 2016

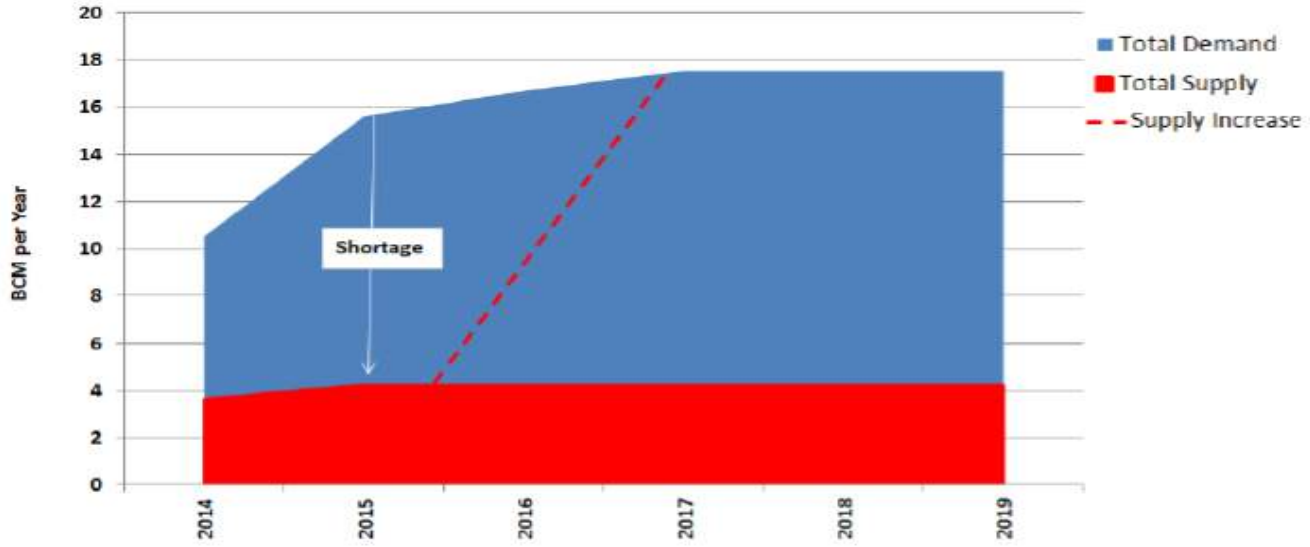
| Company | Number of fields | Production ('000 b/d) |
|---|---|---|
| South Oil Company | 12 | 3,234 |
| Missan Oil Company | 6 | 364 |
| Midland Oil Company | 4 | 196 |
| North Oil Company | 5 | 434 |
| Kurdish Iraq | N/A | 546 |
| Total Iraq production | | 4,774 |

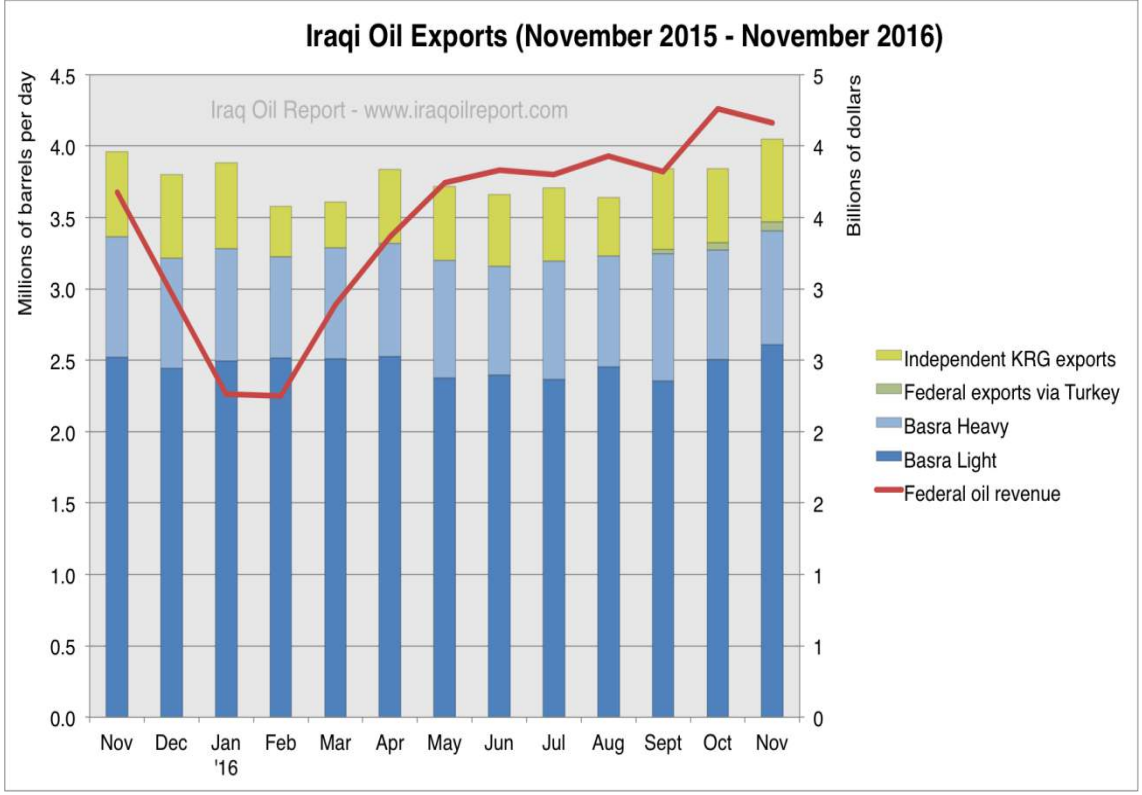
Source: Ministry of Oil

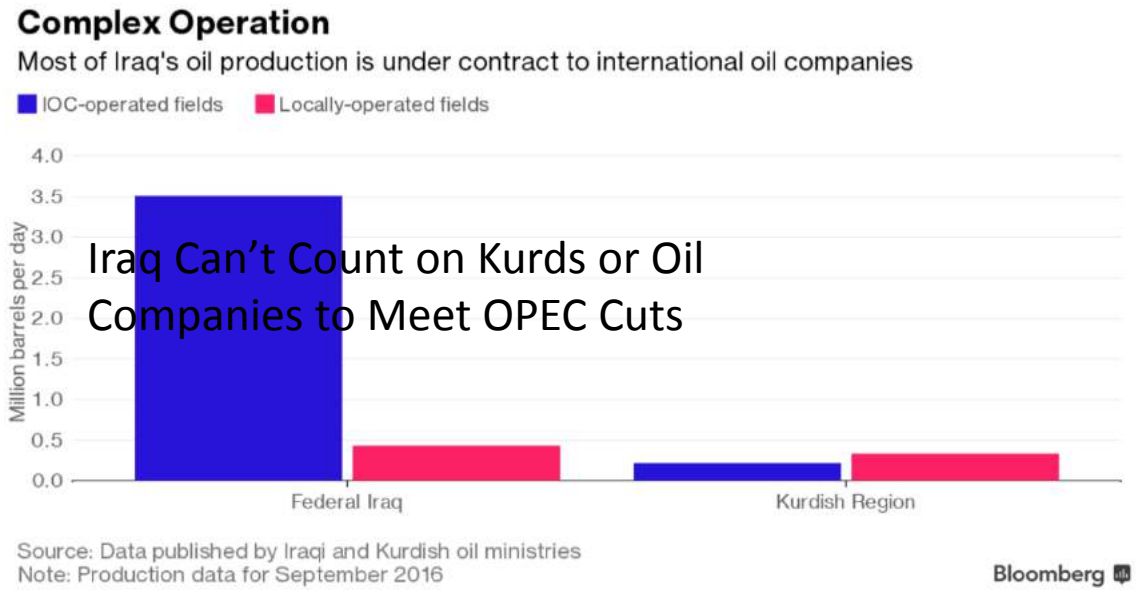
Iraq's Total Oil Production Peak in 2016 (MoO)

# KRG Gas & Power Sector

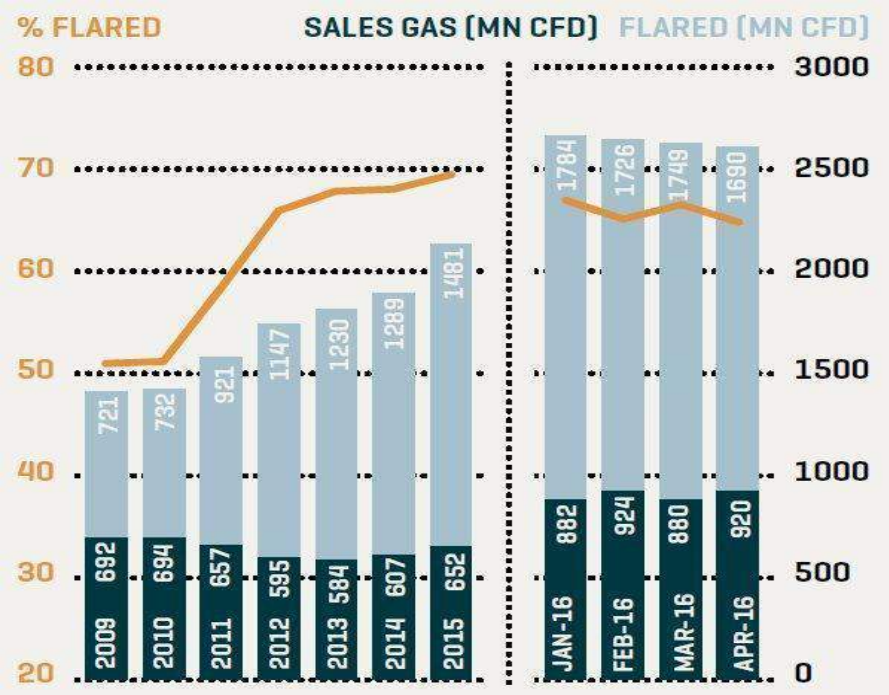


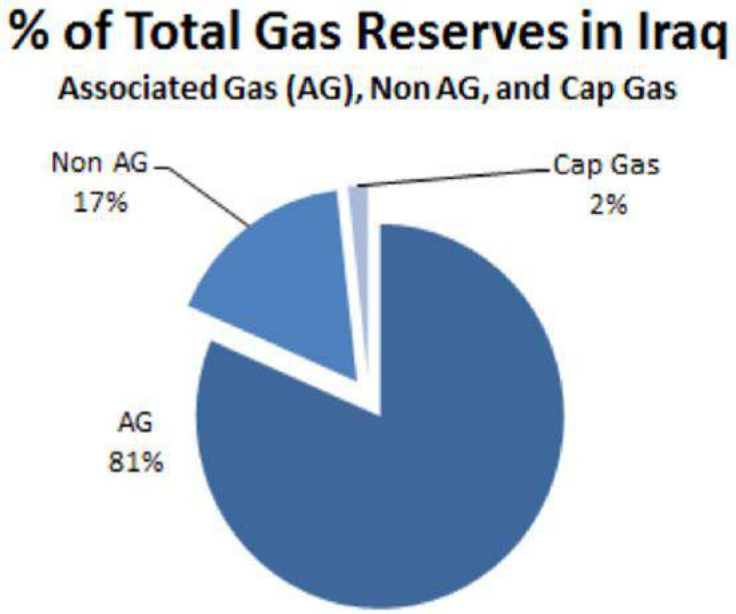






Iraq Can't Count on Kurds or Oil Companies to Meet OPEC Cuts




| Scenario Analysis | 2015 | 2020 | 2030 |
|---|---|---|---|
| Oil Prod. Plateau (Mb/day) | 4.5 | 7 | 10 |
| Dry Gas Prod. Plateau (Bcf/day) | 4 | 6.3 | 9 |
| Total Power Gen. (GW) | 18 | 23 | 37 |
| Power Gen. by Dry Gas (GW) | 8.5 | 16.5 | 32 |
| Dry Gas Volume for Power Gen. (Bcf/day) | 2.2 | 4.2 | 8 |
| Dry Gas Volume for Industry, Oil Installations (Bcf/day) | 1 | 1.3 | 1.5 |
| Total Local Dry Gas Demand (Bcf/day) | 3.2 | 5.5 | 9.5 |
| Surplus Dry Gas Bcf/day | 0.8 | 0.08 | -0.5 |

**IEI Gas Supply and Demand Scenarios (Iraq Energy Institute)**

## IRAQ'S KEY TECHNICAL SERVICES CONTRACTS AND THEIR PLATEAU PRODUCTION TARGETS (MN B/D)

| Field | Operator | New PPT | Was | Finalized? |
|---|---|---|---|---|
| West Qurna-1 | ExxonMobil | 1.60 | 2.825 | Yes |
| Zubair | Eni | 0.85 | 1.2 | Yes |
| West Qurna-2 | Lukoil | 1.20 | 1.8 | Yes |
| Rumaila | BP | 2.10 | 2.85 | Yes (July14) |
| Halfaya | PetroChina | 0.40 | 0.535 | Yes (July14) |
| Majnoun | Shell | 1.00 | 1.8 | Iraq says 1mn agreed, Shell says not |
| Gharaf | Petronas | unknown | 0.23 | No |
| **Total** | | ***7.15-7.35** | **11.24** | |

*EXCLUDES GHARAF. SOURCE MEES.

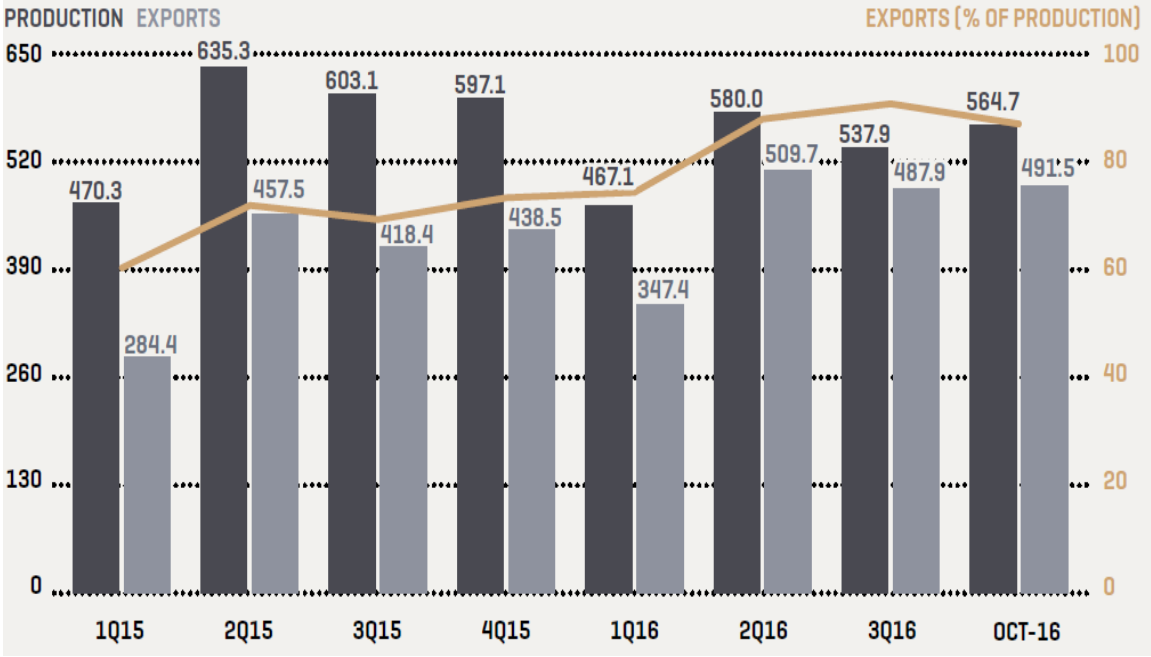
## IRAQ GAS PRODUCTION (MN CFD)

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | Jan-Aug 16 | v 15 |
|---|---|---|---|---|---|---|---|---|---|
| **Gross Gas Output** | **1,413** | **1,426** | **1,577** | **1,742** | **1,814** | **1,896** | **2,133** | **2,650** | **+628** |
| of which: Flared | 721 | 732 | 921 | 1,147 | 1,230 | 1,289 | 1,481 | 1,683 | +277 |
| Sales Gas | 692 | 694 | 657 | 595 | 584 | 607 | 652 | 967 | +351 |
| *flaring % of production* | *51.1* | *51.3* | *58.4* | *65.9* | *67.8* | *68.0* | *69.4* | *63.5* | *-6.0* |
| Southern Oil & Maysan Oil | 968 | 998 | 1,152 | 1,278 | 1,354 | 1,596 | 1,826 | 2,208 | +470 |
| of which: Flared | 552 | 571 | 767 | 951 | 1,008 | 1,153 | 1,324 | 1,476 | +210 |
| Sales Gas | 415 | 427 | 385 | 327 | 346 | 443 | 502 | 732 | +260 |
| *flaring % of production* | *57.1* | *57.2* | *66.6* | *74.4* | *74.4* | *72.2* | *72.5* | *66.8* | *-6.0* |
| Northern & Midland Oil | 445 | 427 | 426 | 464 | 457 | 300 | 308 | 442 | +158 |
| of which: Flared | 169 | 160 | 154 | 196 | 222 | 136 | 158 | 207 | +67 |
| *Sales Gas* | *276* | *267* | *272* | *267* | *234* | *164* | *150* | *235* | *+91* |

SOURCE: IRAQ OIL MINISTRY, MEES CALCULATIONS.

## KRG MAINTAINS EXPORT LEVELS DESPITE PRODUCTION WOES ('000 B/D)

SOURCE: MNR, MEES.



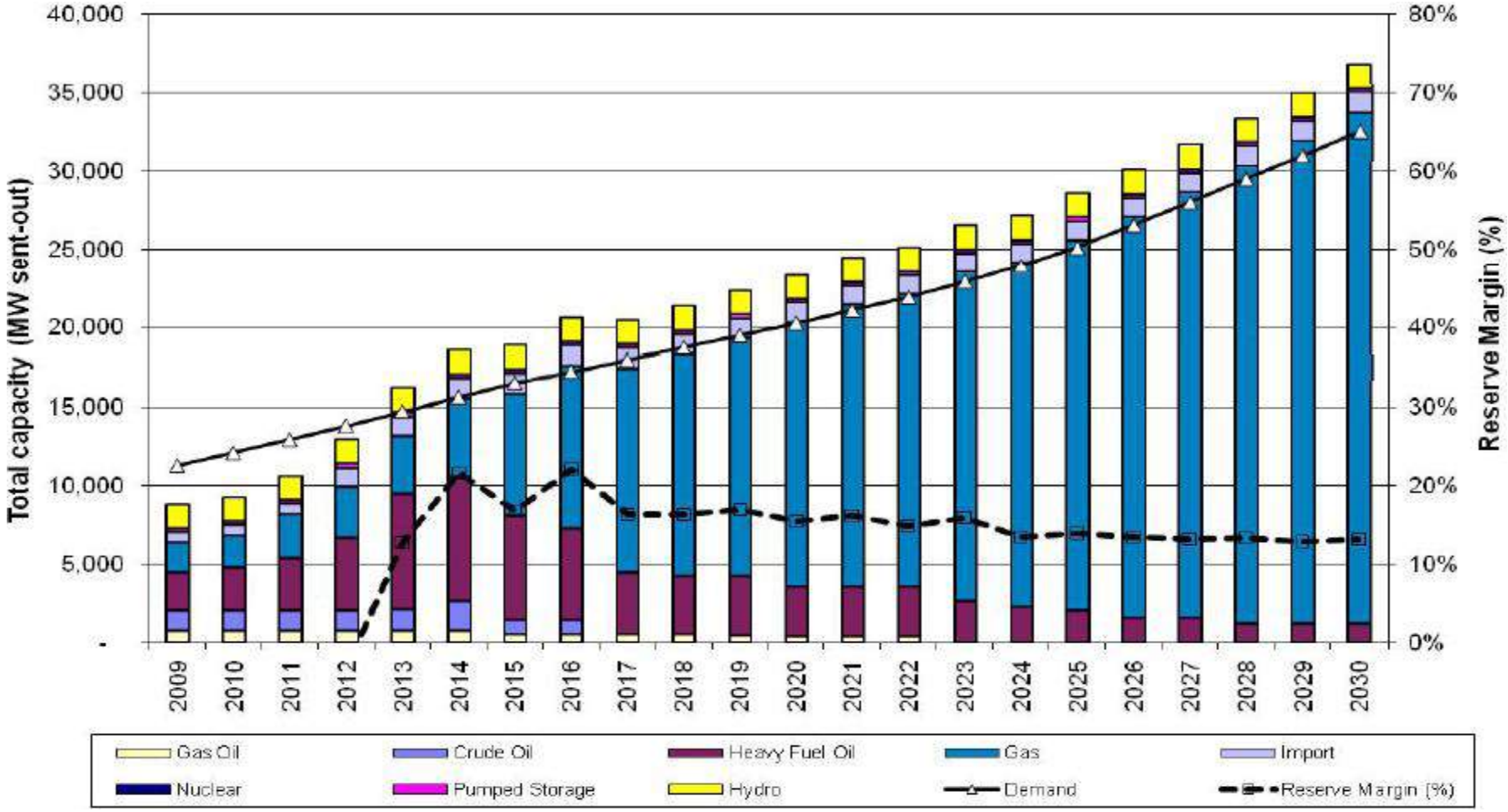

## KRG 2016 MONTHLY CRUDE OIL SALES OVERVIEW

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|
| Sales at Ceyhan ('000 B/D) | 614 | 414 | 300 | 515 | 515 | 514 | 490 | 412 | 565 |
| Exports to Ceyhan ('000 B/D) | 602 | 350 | 327 | 512 | 513 | 500 | 511 | 484 | 524 |
| Value of Exports* ($mn) | $423 | $294 | $270 | $489 | $555 | $562 | $495 | $414 | $612 |
| Payments for Liftings ($mn)^ | $650 | $304 | $407 | $376 | $391 | $591 | $433 | $433 | $423 |
| Implied Overpayment ($mn) | $227 | $10 | $137 | -$113 | -$164 | $29 | -$62 | $19 | -$188 |
| IOC Payments ($mn) | $75 | $71 | $36 | $59 | $75 | $112 | $43 | $83 | $96 |
| Amount to KRG ($mn) | $575 | $233 | $332 | $305 | $315 | $479 | $390 | $350 | $328 |

*INCLUDES OFFSET LIFTINGS ^INCLUDES PREPAYMENTS SOURCE: MNR, MEES CALCULATIONS.

# Ministry of Electricity vision on Gas & Power (2011)

*Ministry of Electricity Power Master Plan (not including Kurdistan) - Parsons Brinckerhoff*




| *Analysis by: Iraq Energy Institute (IEI)* | **Oil** Production MMBBL/D | **Dry Gas** Production Bcf/d | Total Power Generation GW | Power Generated using Dry Gas In GW | Dry Gas Volumes for Power Gen Bcf/d | Industry & Oil Installations Dry Gas Requirements Bcf/d | Total Local Dry Gas Demand Bcf/d | **Surplus Dry Gas** Bcf/d |
|---|---|---|---|---|---|---|---|---|
| **Scenario 2015** | **4.5** | 4 | 18 | 8.5 | 2.2 | 1 | 3.2 | **0.8** |
| **Scenario 2020** | **7** | 6.3 | 23 | 16.5 | 4.2 | 1.3 | 5.5 | **0.8** |
| **Scenario 2030** | **10** | 9 | 37 | 32 | 8 | 1.5 | 9.5 | **-0.5** |

# Conclusion: Be Ready for 2040 – a world after oil dependency

1. Implement Federalism and establish the Federal Energy Council
2. Adopt aggressive strategy on E&P, Down-Mid/stream, IPP before 2020
3. Offer better commercial terms to attract foreign investment
4. Explore best offers through direct negotiations with multinationals
5. Develop all non-associated gas assets by 2025 to meet local demand,
6. Utilize gas for local industries and monetize surplus for export
7. Consider competent consortiums for integrated mega projects,
8. By 2020, must achieve zero flaring target and oil outlet diversity
9. Develop competitive international marketing strategy for petroleum
10. Review budgets with radical reform, cap spending, and implement serious plan to shift public employment to private sector.

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Iraq Energy
Energizing Iraq's Economy

***Thank you for your attention***

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