

# Navigating the Future in Energy: Rhetoric vs. Reality

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BAKER & MCKENZIE THIRD ANNUAL GLOBAL OIL & GAS INSTITUTE – HOUSTON

18 MAY 2016

# Facts are Facts

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# Facts are Facts

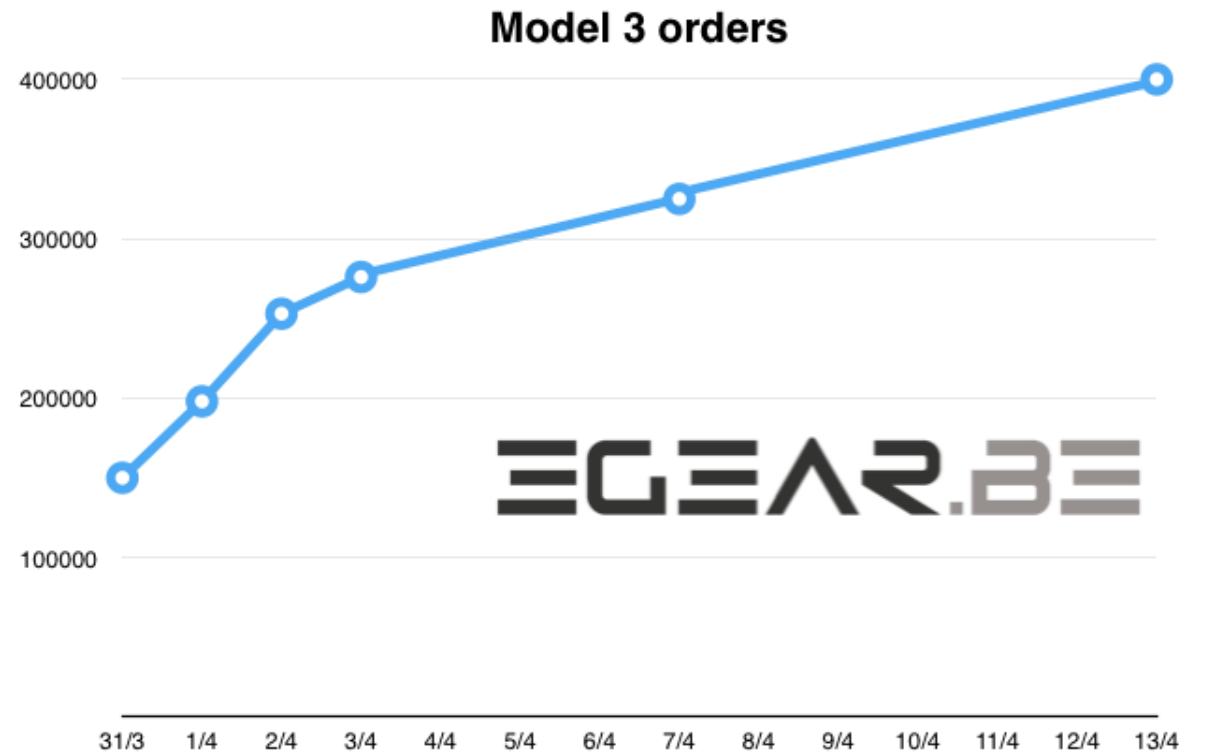
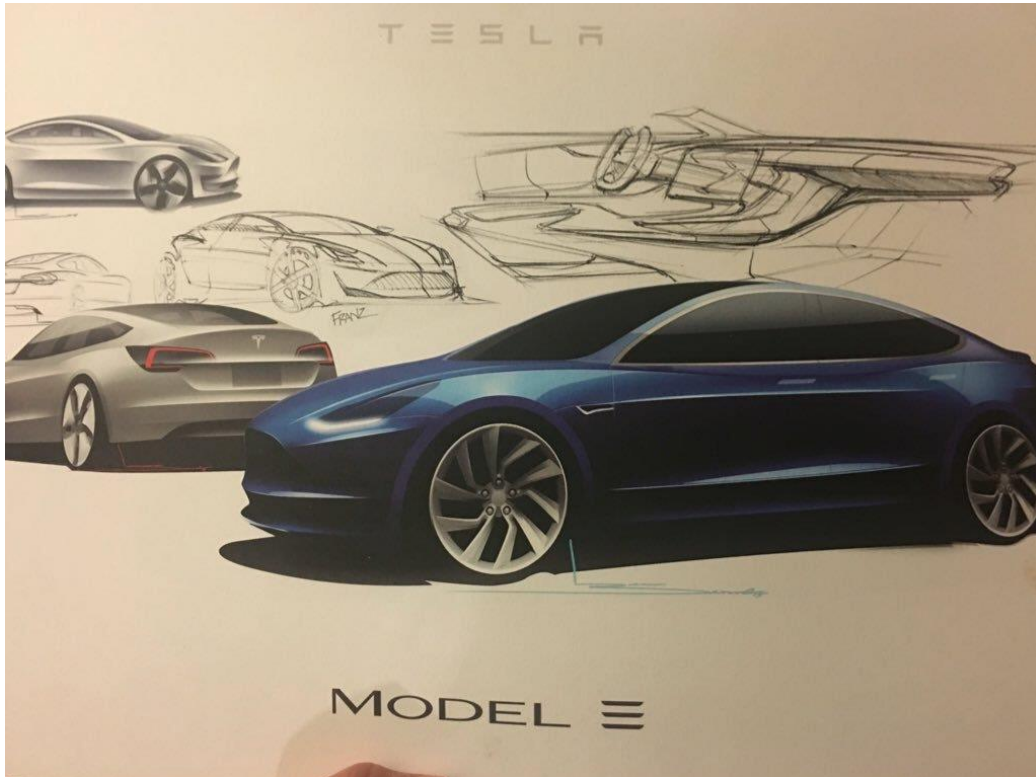
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# Facts are Facts



# Tesla – The Dawn of Hydrocarbon-free Transportation





# Ford on Track to Sell 700,000 F-150 Trucks in 2016

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## Ford Posts Record Q1 2016 Quarterly Profit on Strength of Trucks, SUVs

If Ford's first-quarter 2016 financial results are any indication, Dearborn has a bright outlook ahead of it for the rest of the year. The company earned an all-time-record pretax profit of \$3.8 billion, up \$2.1 billion from Q1 of 2015, and a net income of \$2.5 billion, up \$1.3 billion.

Europe, which was once a drag on the company's financial performance, was a bright spot in the Q1 results, posting a fourth-consecutive quarterly profit and the region's best quarter since 2008.

As usual, North America was the biggest contributor to Ford's profits, with a quarterly pretax profit of \$3.1 billion and a record operating margin of 12.9 percent. Much of the North American growth was driven by full availability of the F-150 and strong sales of the Transit and its SUV models.

# Shell Completes \$50 Billion Acquisition of BG

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The acquisition of UK-based BG will bolster Shell's already significant position in the fast-growing liquefied natural gas market...

MarketWatch - February 15, 2016

# Shell Cancels FLNG Order

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Samsung Heavy Industries has revealed that Shell cancelled a multi-billion order for three floating LNG (FLNG) units on Thursday.

Shell is also expected to cut around 2,800 jobs worldwide following its takeover of BG Group.

MaritimeExecutive - April 28, 2016



# January 2016 Stock Market Review: The Bear Awakens?

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## First 6 weeks of 2016:

- **DJIA – Falls 11% loss**
- **S&P 500 – 10.5% loss**

The first month of 2016 is now in the books and it was just plain ugly for most financial markets. As many commentators noted this was one of the worst January's in the history for US equities.

Despite January's market correction, equity valuations remain elevated, corporate earnings are mixed at best, the corporate debt picture is not pretty, and from the technical/price structure perspective all major stock market indices are now in downtrends.

It is impossible to predict the future, but the reasonable conclusion from this is that the downtrend is likely to continue to unfold over the coming months and possibly longer.

Seeitmarket.com February 1, 2016

# Facts are Facts & Timing Matters

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U.S. EQUITIES - SECOND 6 WEEKS OF 2016

- DJIA – Rose 13%
- S&P 500 – Rose 11.2%

U.S. EQUITIES – FULL Q1 2016

- DJIA – Flat - .5% gain
- S&P 500 – Flat - .8% gain

# Facts are Facts – Conclusions are the Tricky Part

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- Implicit bias
- Selected bias
- Timing bias
- Investment in the outcome

# Navigating the Future

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## Executive Dilemma:

- What are the facts?
- How should they guide our decisions?

# Navigating the Future in Energy

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## THE FUNDAMENTALS

- Supply
  - Where
  - How much
- Demand
  - Where
  - How much
- Price
  - Short term
  - Long term

## INFORMATION SOURCE

- Many sources, massive volume of data
- Tens of millions of dollars annually to track and analyze
- Who in the world could and would take this on?



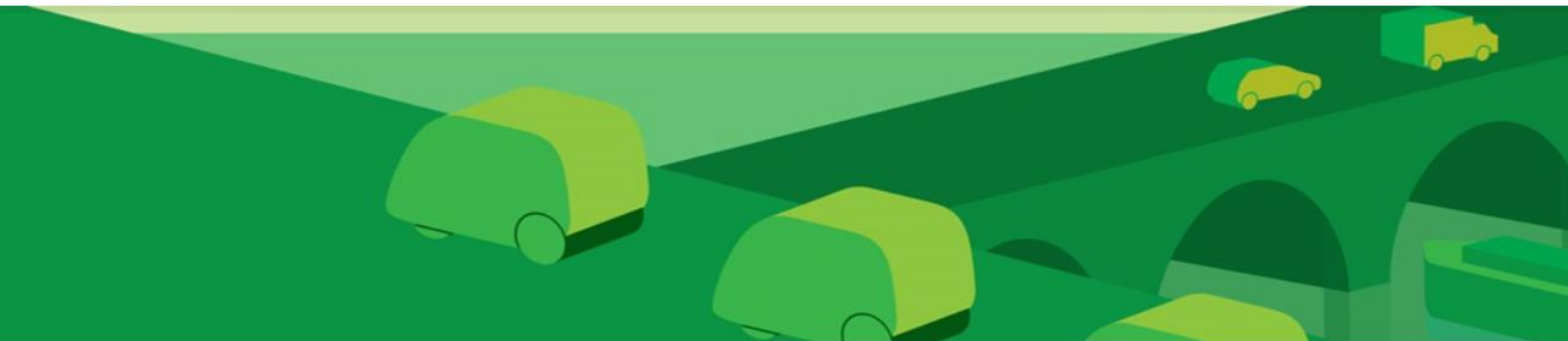
# BP Energy Outlook 2016 edition



Outlook  
to 2035

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

# The Outlook for Energy: A View to 2040 › Global fundamentals ›



## Global fundamentals



# Shell Scenarios

**What might the world  
look like in 2100?**

**▶ Download our New Lens Scenarios to find out**

**NEW LENS  
SCENARIOS**





## International Energy Outlook 2016

Projections of world energy supply and demand through 2040 >



### What's New

[Financial Review: Annual 2015](#) >  
May 13

[International Energy Outlook 2016](#) >  
May 11

[Short-Term Energy Outlook](#) >  
May 10

[More](#) >

### Coming Up

[India Country Analysis Brief](#) >

[Uranium Marketing Annual](#) >

[Annual Energy Outlook](#) >

[More](#) >

### Today in Energy

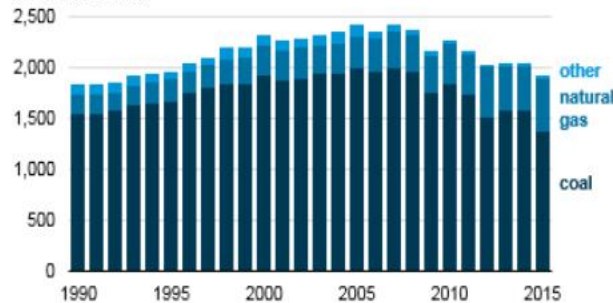
Posted May 13, 2016

#### Carbon dioxide emissions from electricity generation in 2015 were lowest since 1993 >

Carbon dioxide (CO<sub>2</sub>) emissions from electricity generation totaled 1,925 million metric tons in 2015, the lowest since 1993 and 21% below their 2005 level. A shift on the electricity generation mix, with generation from natural gas and renewables displacing coal-fired power, drove the reductions in emissions.

[More](#) >

Carbon dioxide emissions from the electric power sector (1990-2015)  
million metric tons



### Data Highlights

#### WTI crude oil futures price

5/12/2016: **\$46.70/barrels**

↑ \$2.38 from week earlier

↓ \$13.80 from year earlier

#### Natural gas futures price

5/12/2016: **\$2.155/MMBtu**

↑ \$0.079 from week earlier

↓ \$0.780 from year earlier

#### Weekly coal production

5/7/2016: **10.949 million tons**

↓ 0.310 million tons from week earlier

↓ 5.104 million tons from year earlier

#### Natural gas inventories

5/6/2016: **2,681 Bcf**

↑ 56 Bcf from week earlier

↑ 816 Bcf from year earlier

#### Crude oil inventories

5/6/2016: **540.0 million barrels**

↓ 2.4 million barrels from week earlier

# Supply

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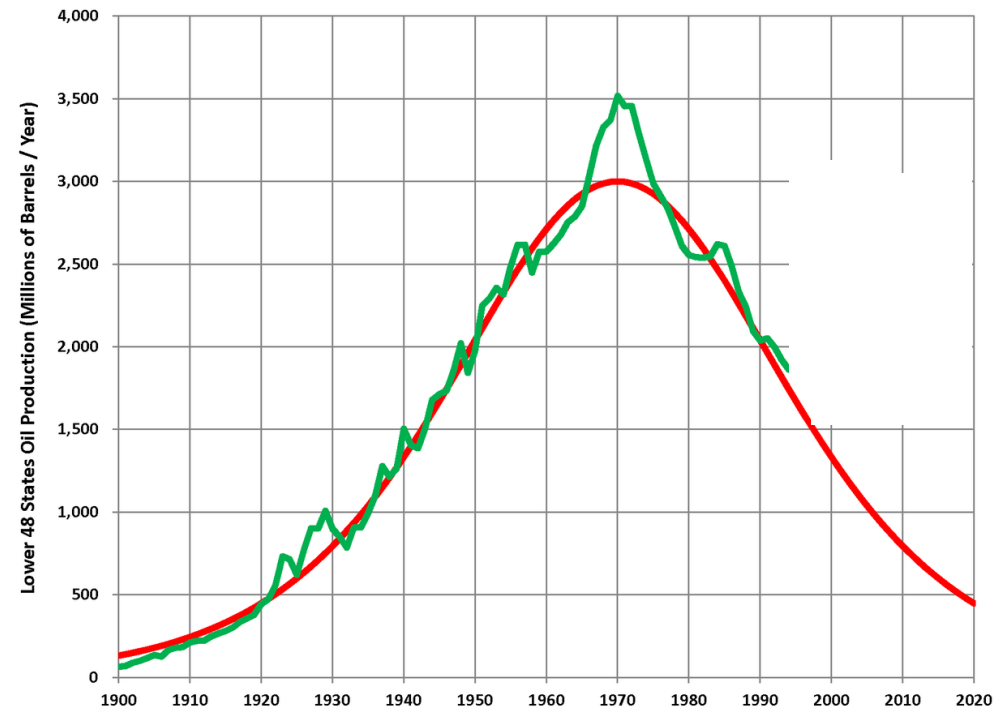
# Supply – Peak Oil

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**Energy Independence and the Myth of Peak Oil** - Wall Street Daily, November 12, 2012

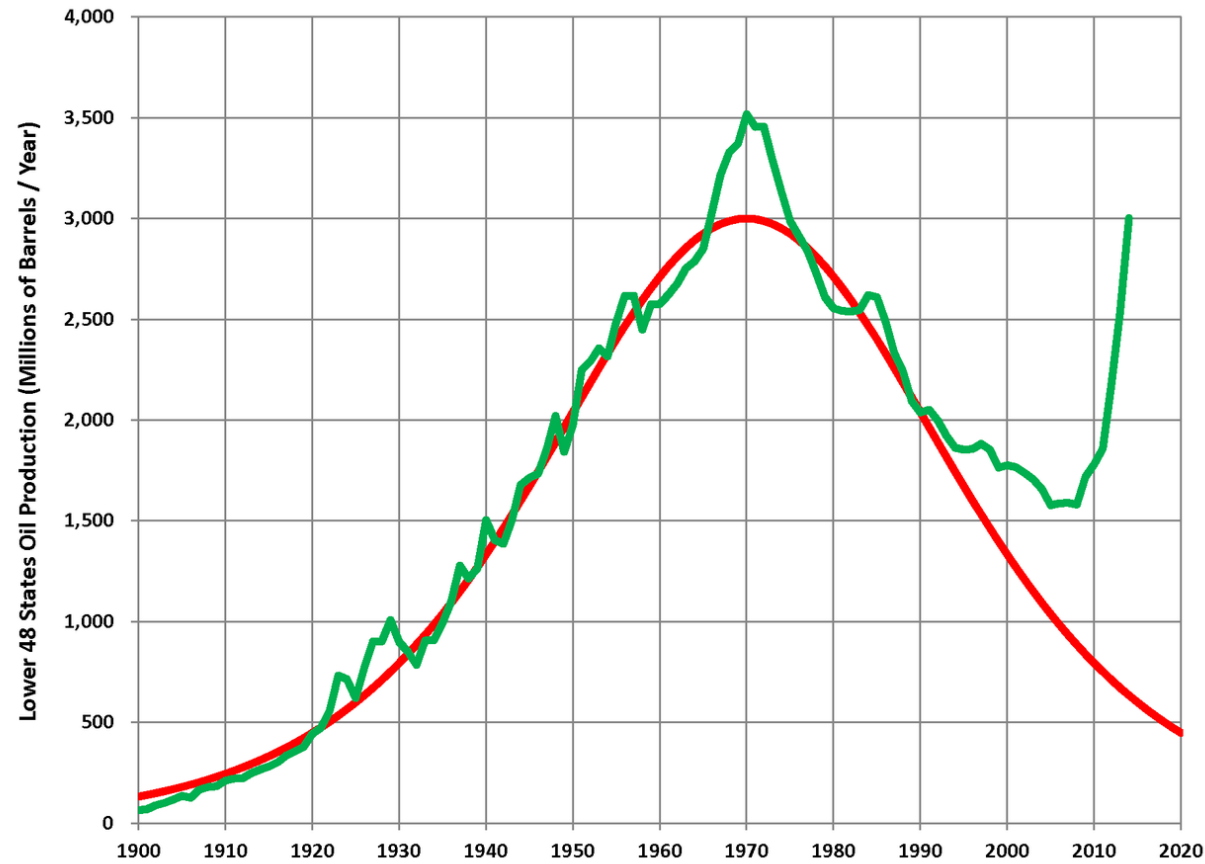
**Peak Oil is not a Myth** - Chemistry World, 20 February 2014

**Peak Oil: Theory or Myth?** - Live Science, February 11, 2015



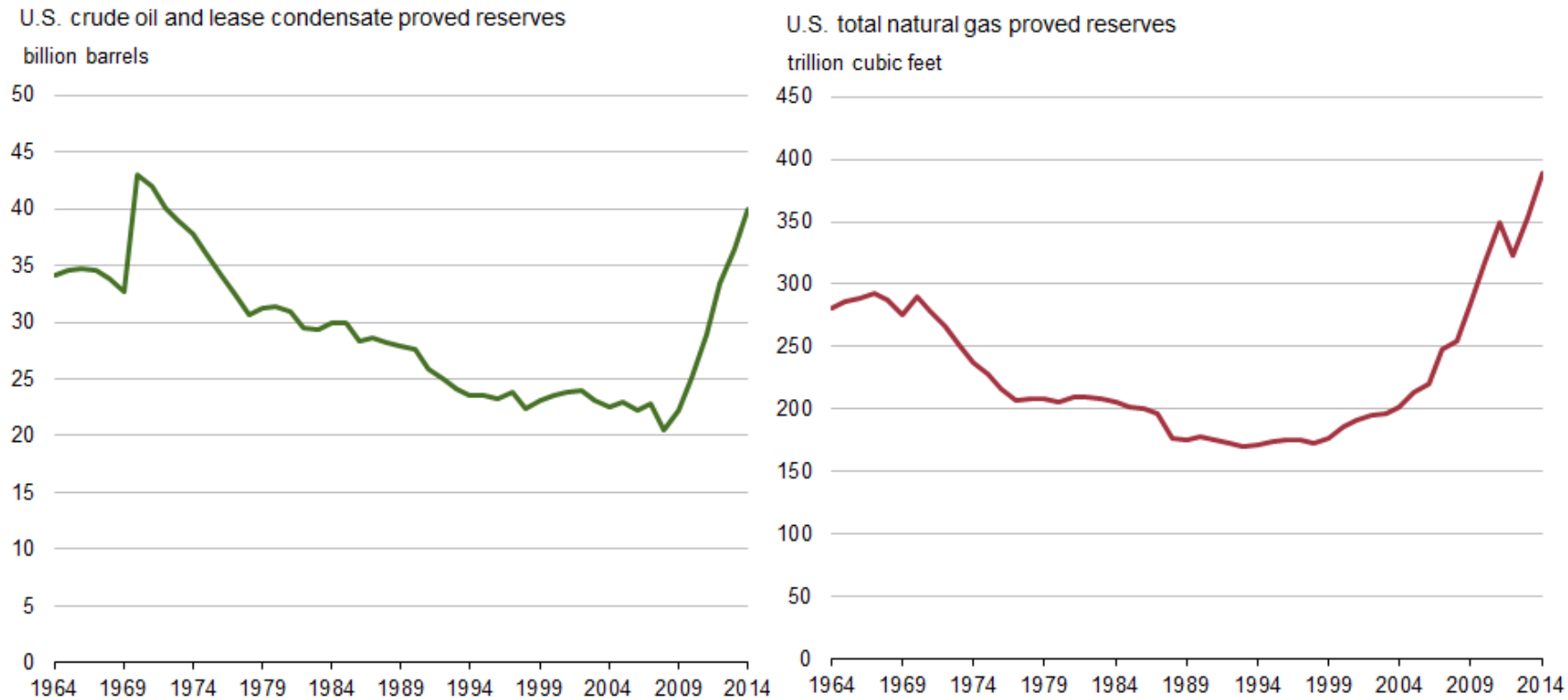
# Supply – Peak Oil

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# Proved Oil & Gas Reserves – U.S.

Figure 1. U.S. oil and natural gas proved reserves, 1964-2014



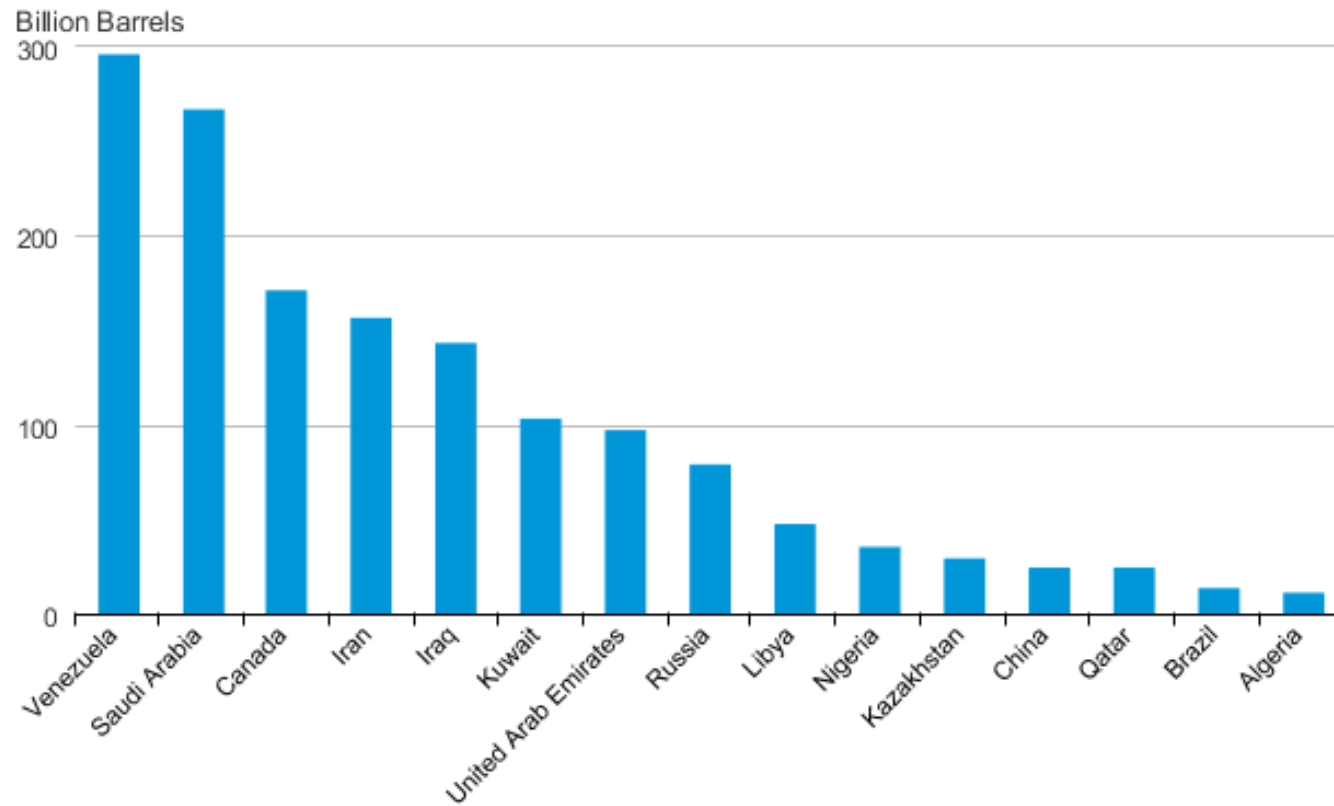
Sources: U.S. Energy Information Administration, Form EIA-23L, Annual Survey of Domestic Oil and Gas Reserves, 1977-2014, American Petroleum Institute, 1964-76



# Proved Oil Reserves - Global

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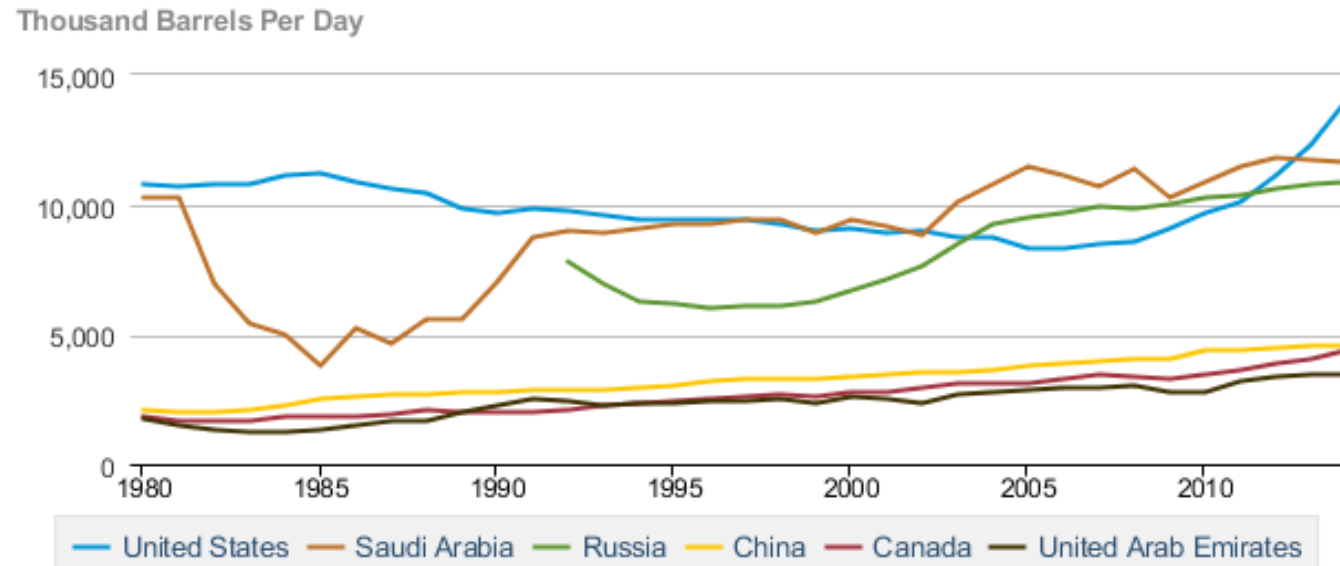
**Crude Oil Proved Reserves - 2015**



Source: U.S. Energy Information Administration

# Oil Production – Top 6 Producers

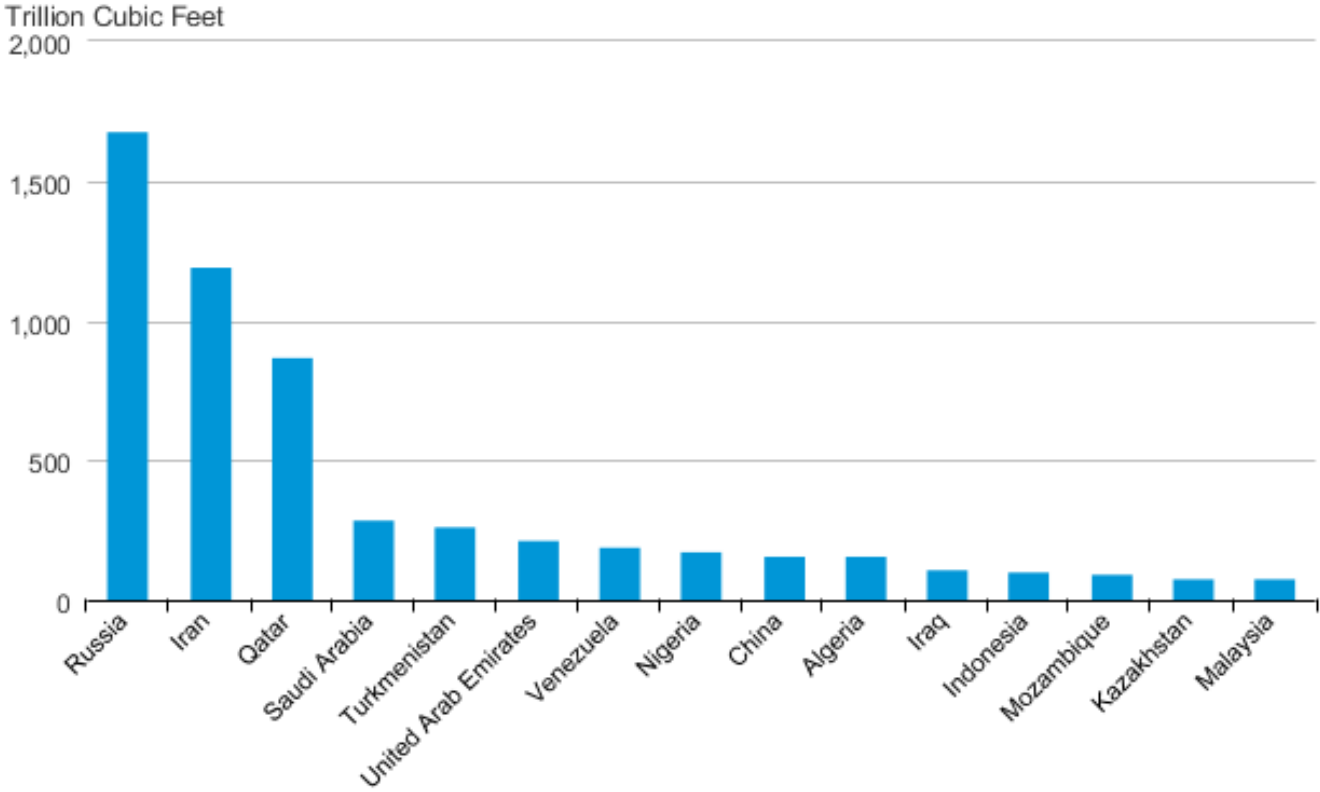
2014 U.S. and other top 5, total petroleum and other liquids production





# Proved Gas Reserves - Global

**Proved Reserves of Natural Gas - 2015**



Source: U.S. Energy Information Administration

# “Proved Reserves”

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SEC disclosure requirement intended to help investors evaluate the relative value of oil and gas companies.

Proved Reserves are defined as: “those quantities of oil and gas, which, ... can be estimated with reasonable certainty to be economically producible ... from known reservoirs, and under existing economic conditions...”

The existing economic conditions for determining the economic producibility of oil and gas reserves include the 12-month average price, calculated as the unweighted arithmetic average of the first-day-of-the month price for each month within the 12-month period prior to the end of the reporting period.

Price changes therefore can have a large impact on the classification of proven reserves.

Not used by companies for acquisitions, divestments or planning. (2P - proved & probable; and 3P – proved, probable and possible)

# BP – 2015 Annual Report

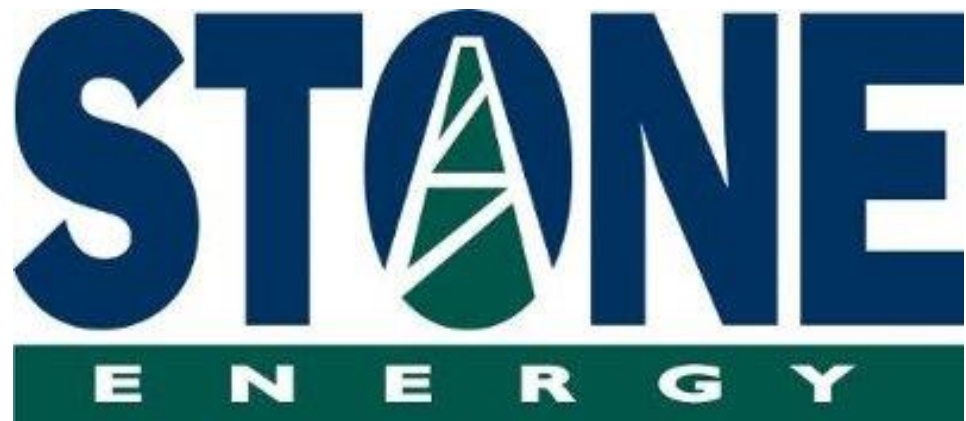
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## Group reserves and production

	2015	2014	2013
Estimated net proved reserves <sup>a</sup> (net of royalties)			
Liquids★ (mmb)	<b>9,560</b>	9,817	10,070
Natural gas (bcf)	<b>44,197</b>	44,695	45,975
Total hydrocarbons★ (mmboe)	<b>17,180</b>	17,523	17,996
Of which: Equity-accounted entities <sup>b</sup>	<b>7,928</b>	7,828	7,753

# Reduction in Proved Reserves

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On April 13, 2016, Stone was notified that the borrowing base under its bank credit agreement has been redetermined from \$500 million to \$300 million. Stone had outstanding borrowings of \$457 million and letters of credit of \$18.3 million under its credit agreement as of April 13, 2016, resulting in a borrowing base deficiency of \$175.3 million.

On April 19, 2016, the Independent Directors of Stone's Board of Directors named current board member David T. Lawrence as a Special Liaison of the Independent Directors to work together with the management of Stone to help with assessing strategic alternatives and restructuring alternatives for Stone.

# Demand

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INDUSTRY



TRANSPORTATION



## The future of oil

Yesterday's fuel

The world's thirst for oil could be nearing a peak. That is bad news for producers, excellent for everyone else

Aug 3rd 2013



Jon Berkeley



# Peak Oil Demand

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RENEWABLE ENERGY

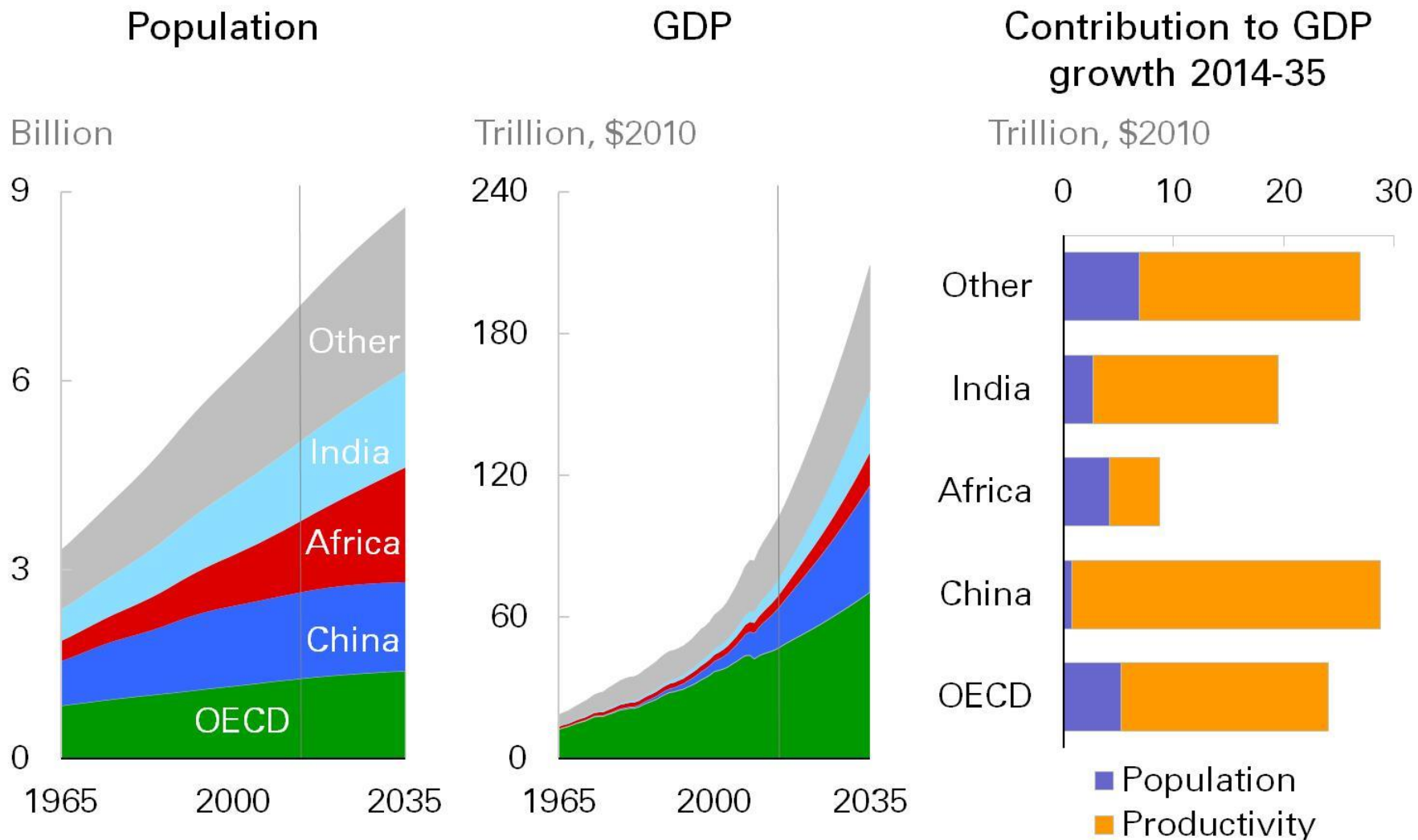


ENERGY EFFICIENCY





## Global GDP is expected to more than double...

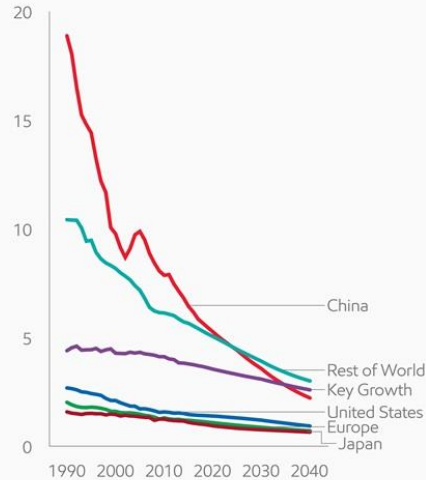




# ExxonMobil – Outlook for Energy

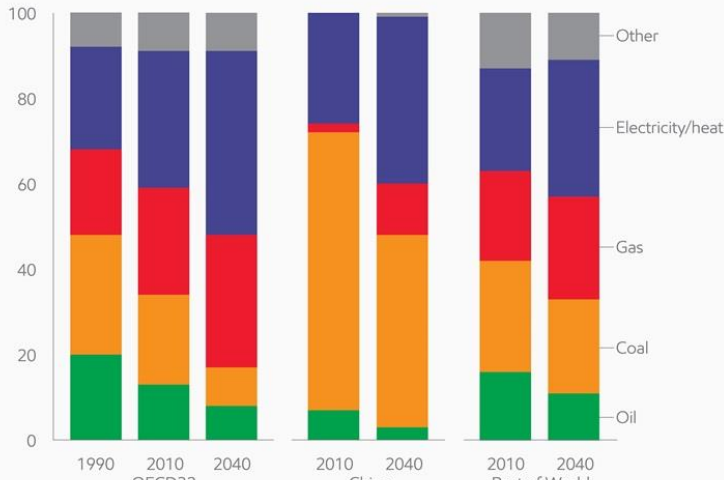
## Industrial energy intensity

Thousand BTUs per dollar of GDP (2010\$)



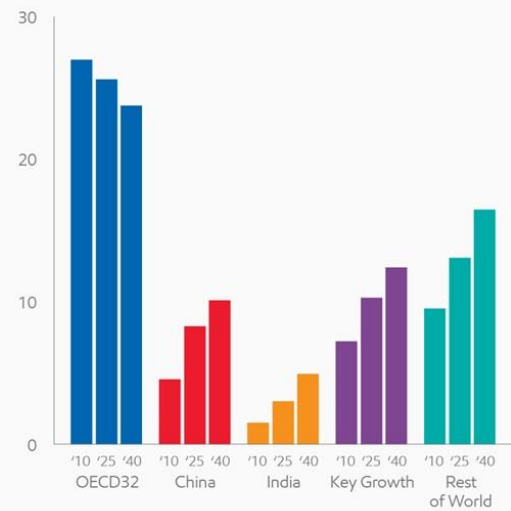
## Heavy industry fuel mix transition

Fuel share in percent

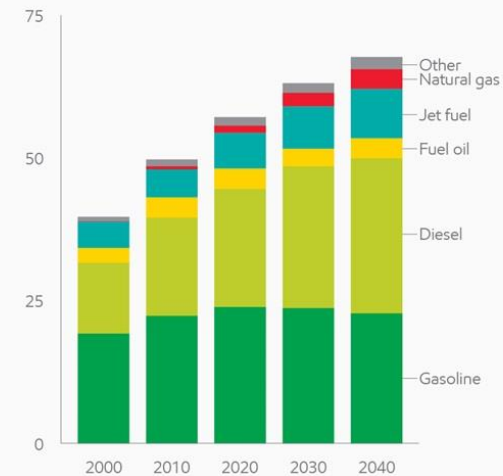


# ExxonMobil – Outlook for Energy

Transportation demand by region  
MBOE

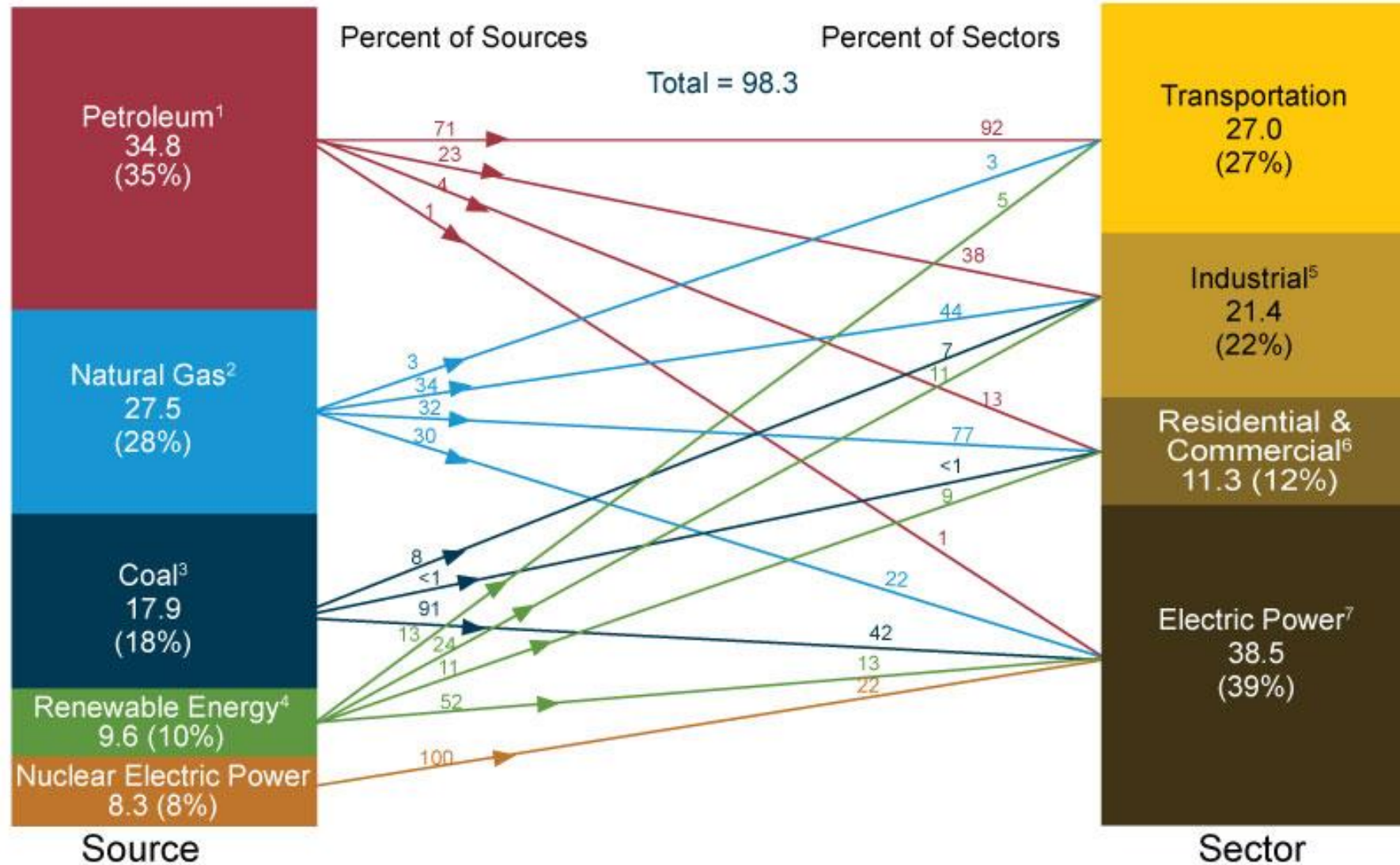


Global transportation demand by fuel  
MBOE



# Primary Energy Consumption by Source and Sector, 2014

(Quadrillion Btu)



# Price

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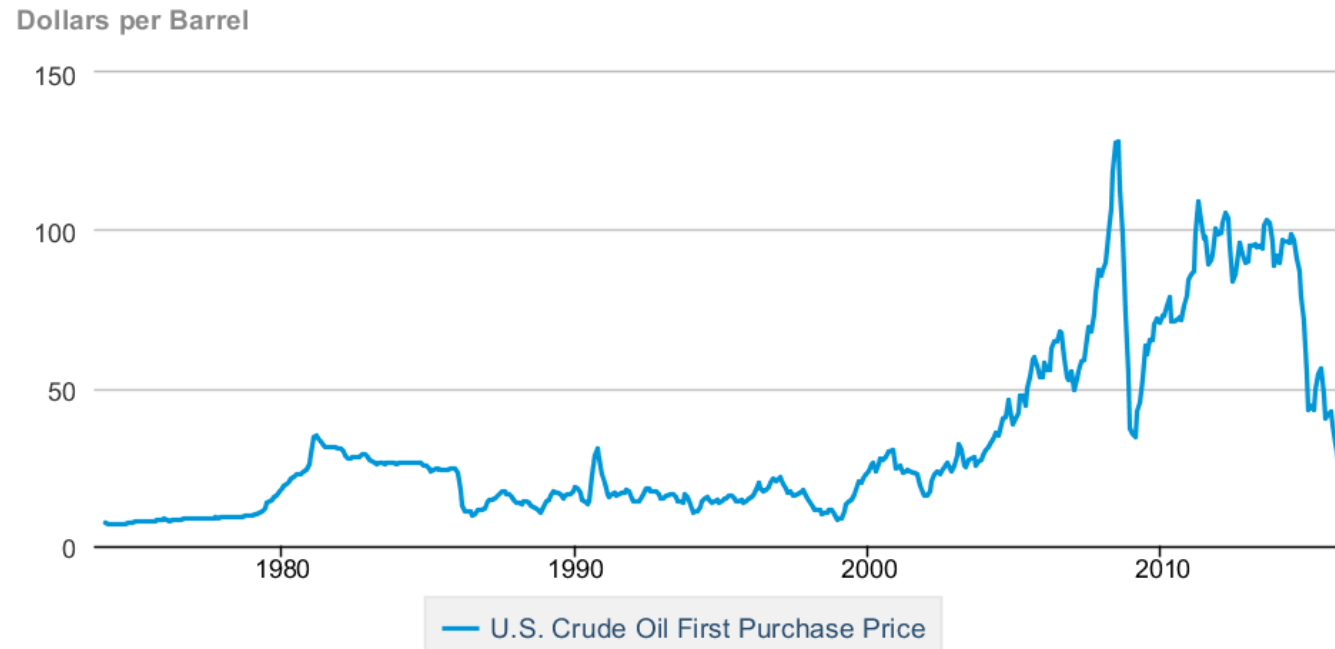




# The Price of Oil - History

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## U.S. Crude Oil First Purchase Price

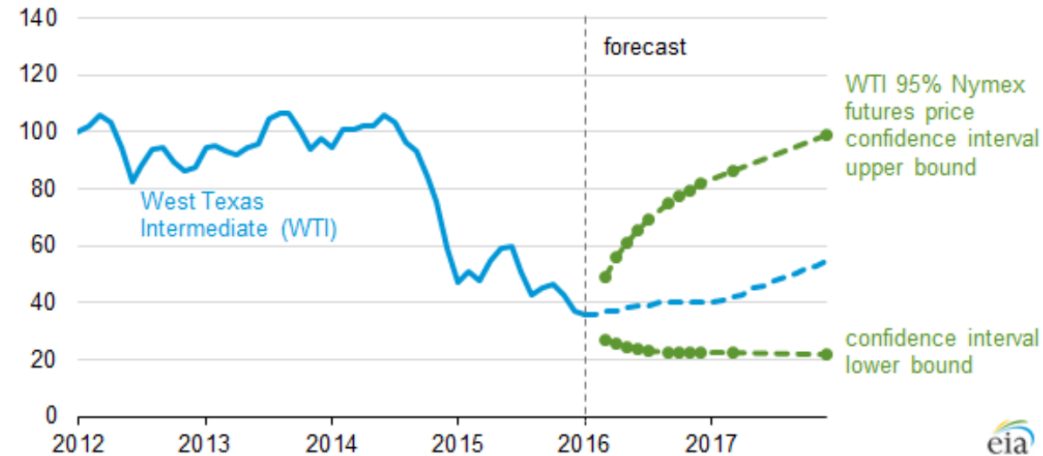


# The Price of Oil - Short Term Outlook

## Crude oil prices to remain relatively low through 2016 and 2017

West Texas Intermediate crude oil price and Nymex confidence intervals (2012-17)

dollars per barrel

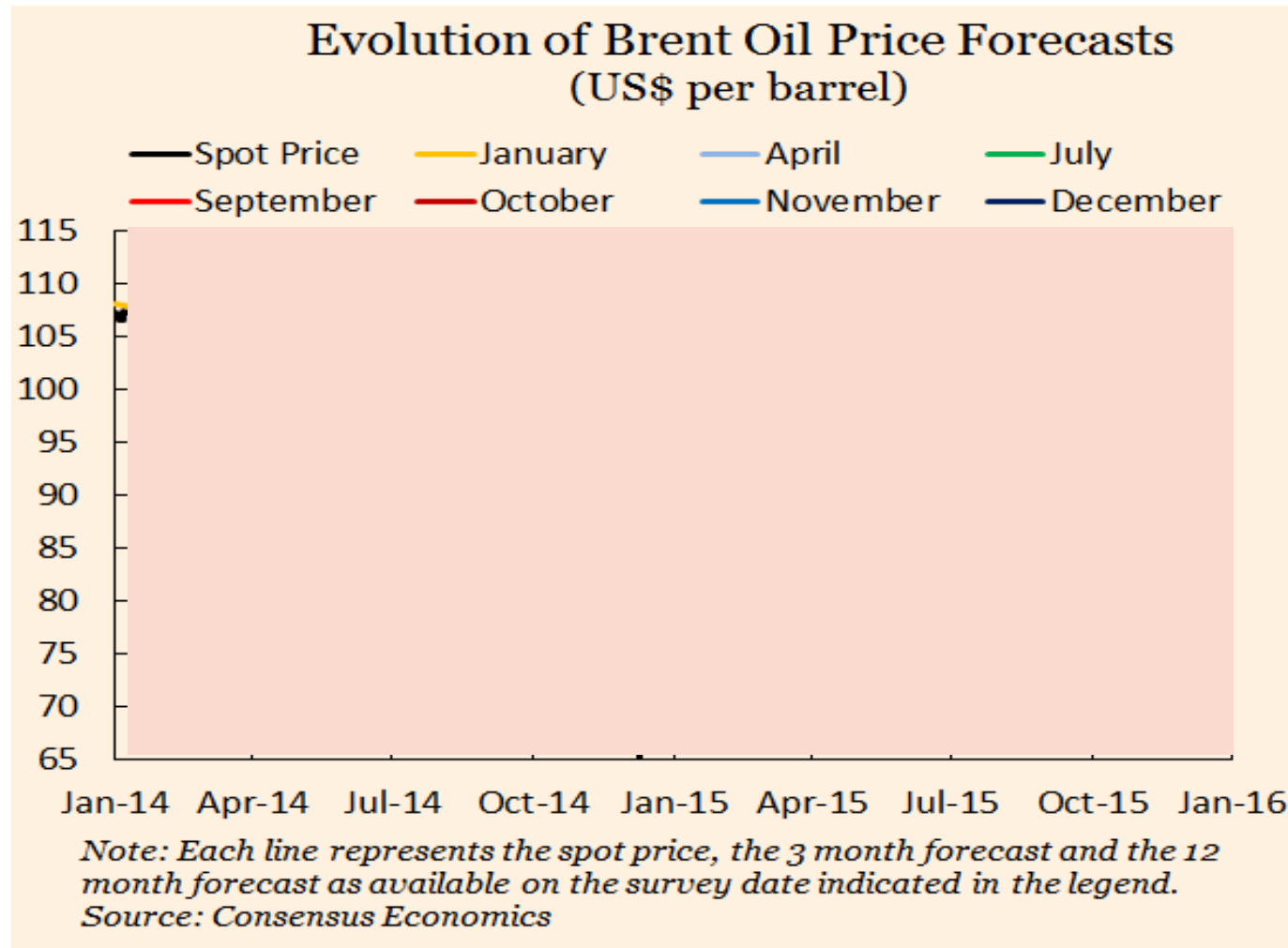


Source: U.S. Energy Information Administration, [Short-Term Energy Outlook](#), January 2016

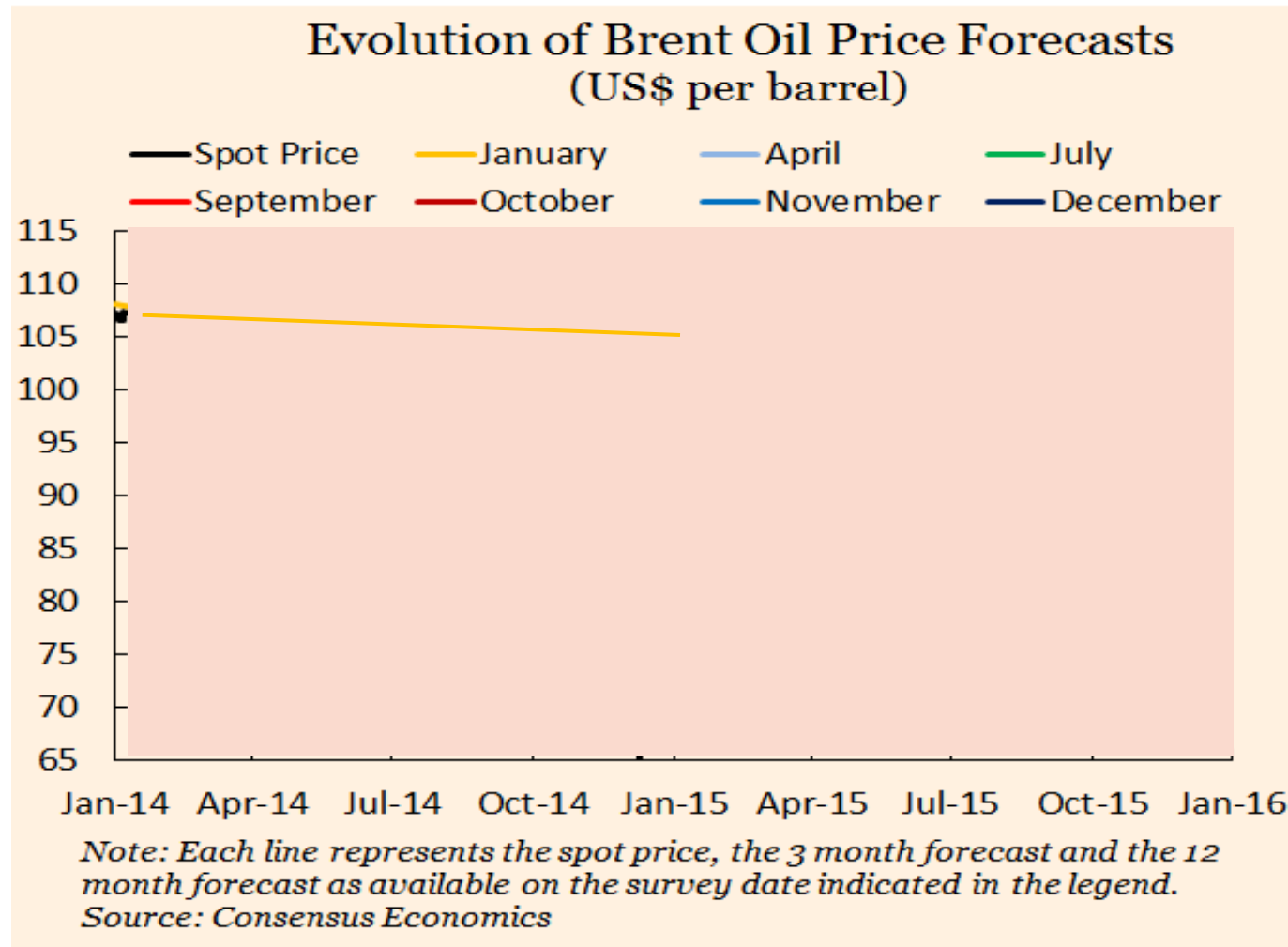
Note: Confidence interval derived from futures options prices for the five trading days ending Jan. 7, 2016. Intervals not calculated for months with energy trading in near-the-money options contracts.



# The perils of forecasting

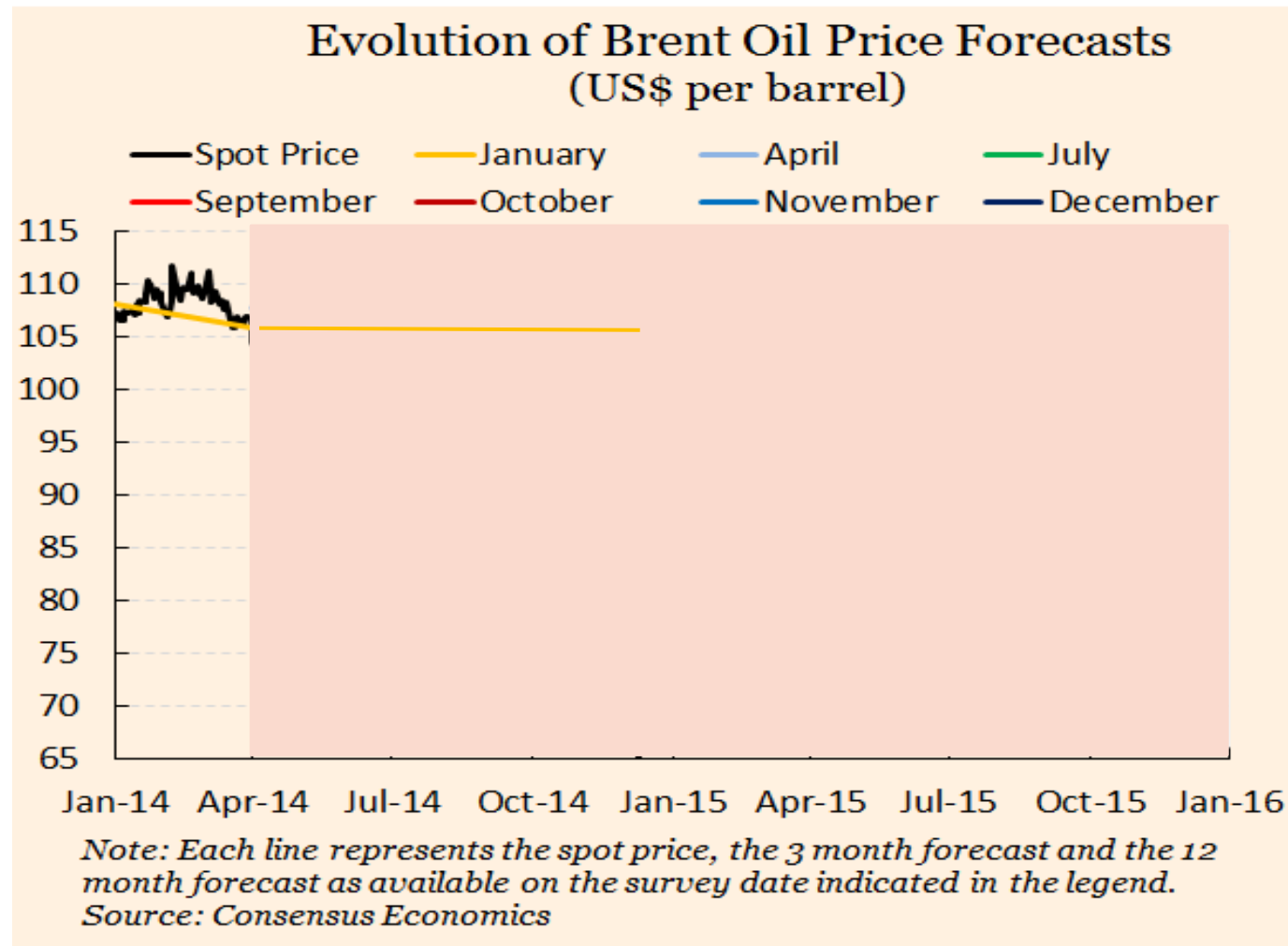


# The perils of forecasting

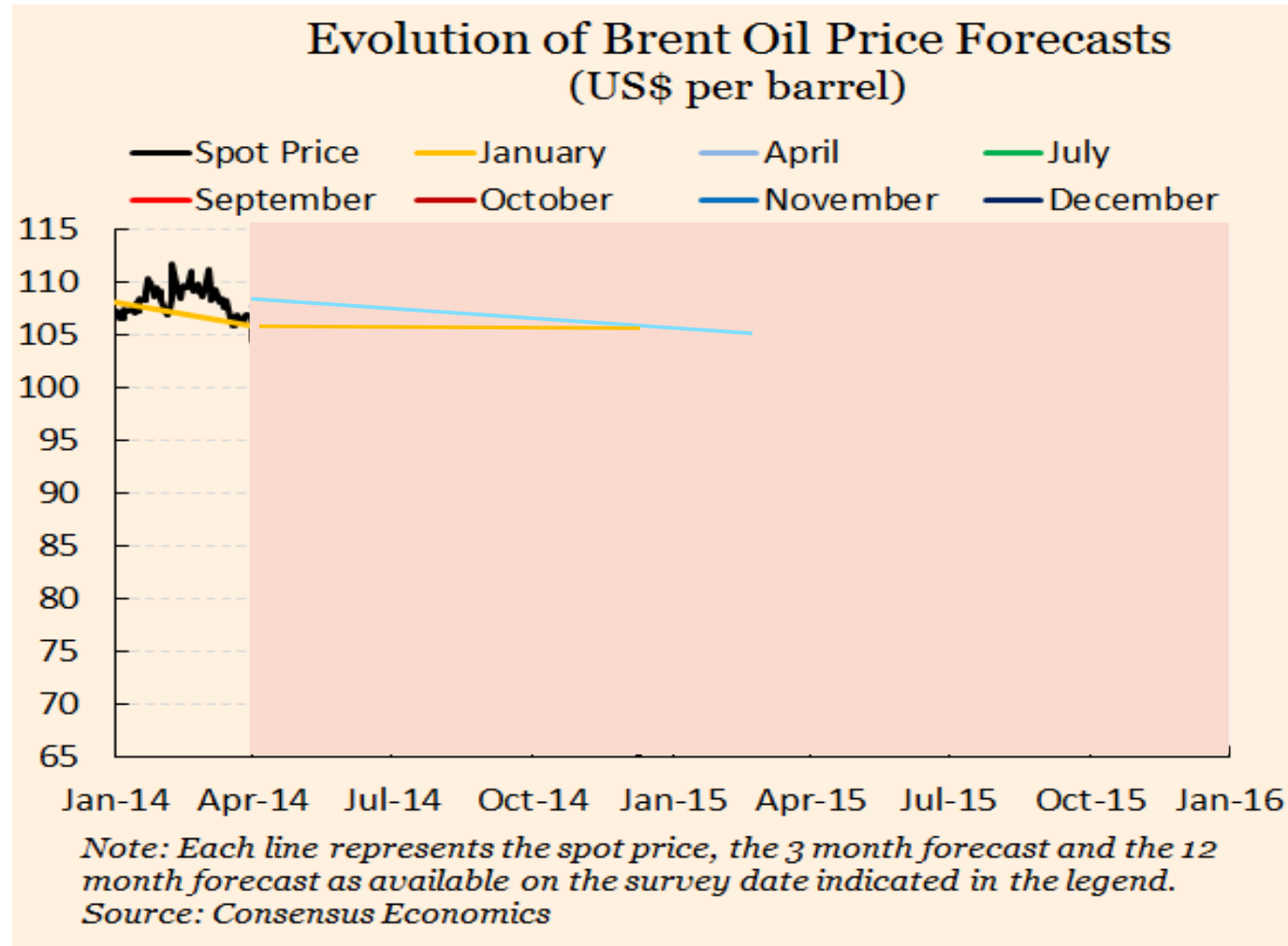




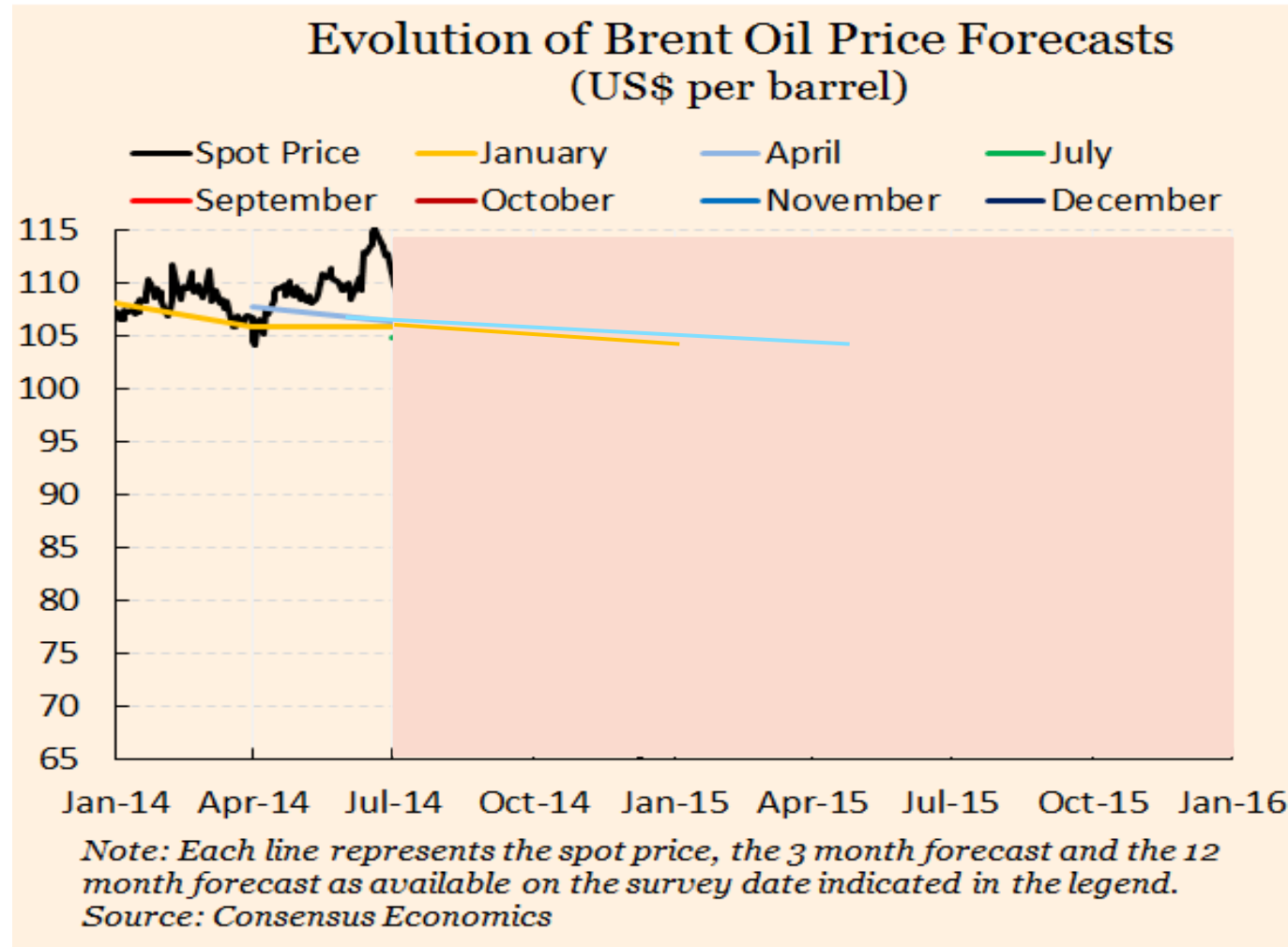
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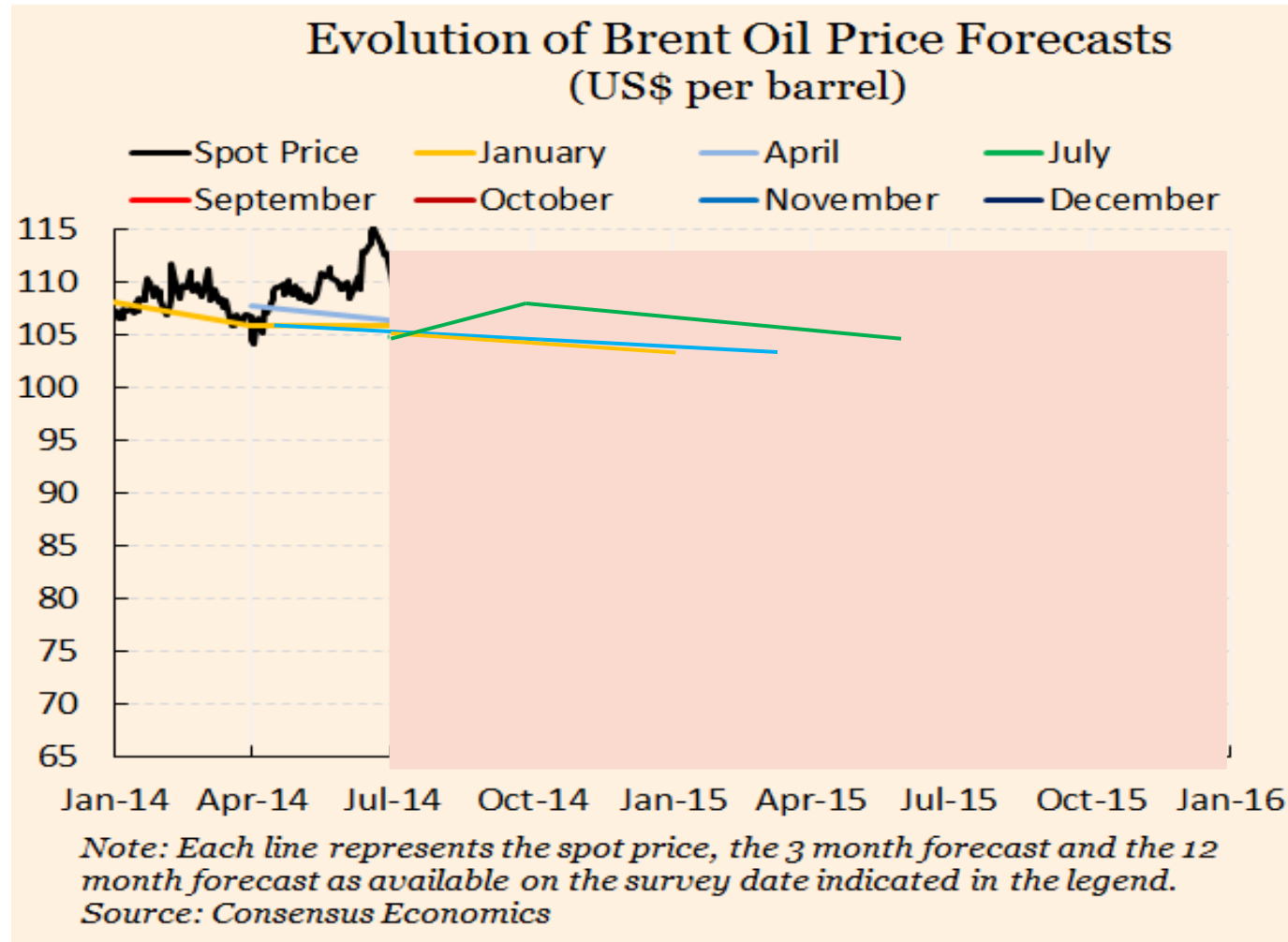
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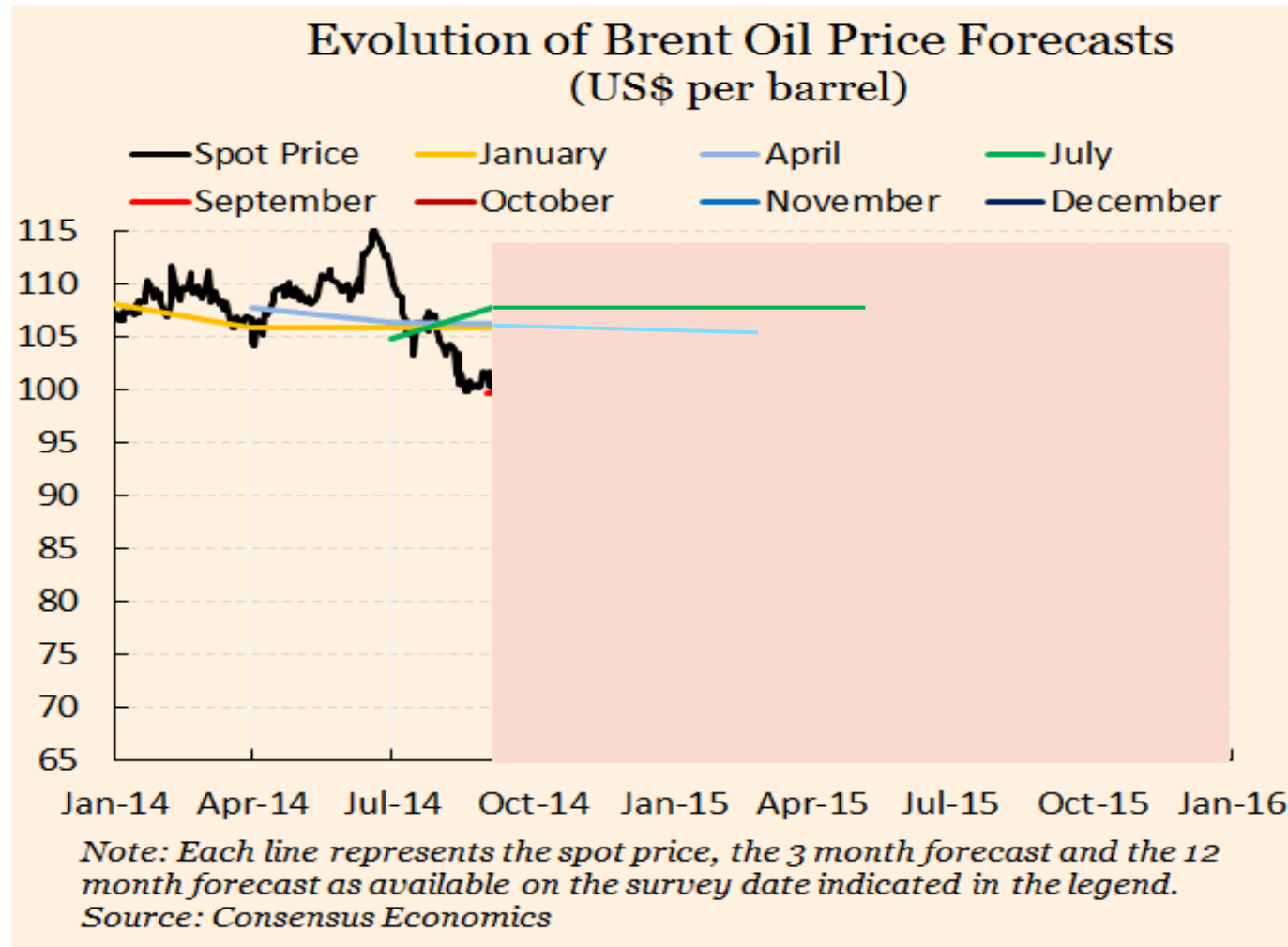
# The perils of forecasting



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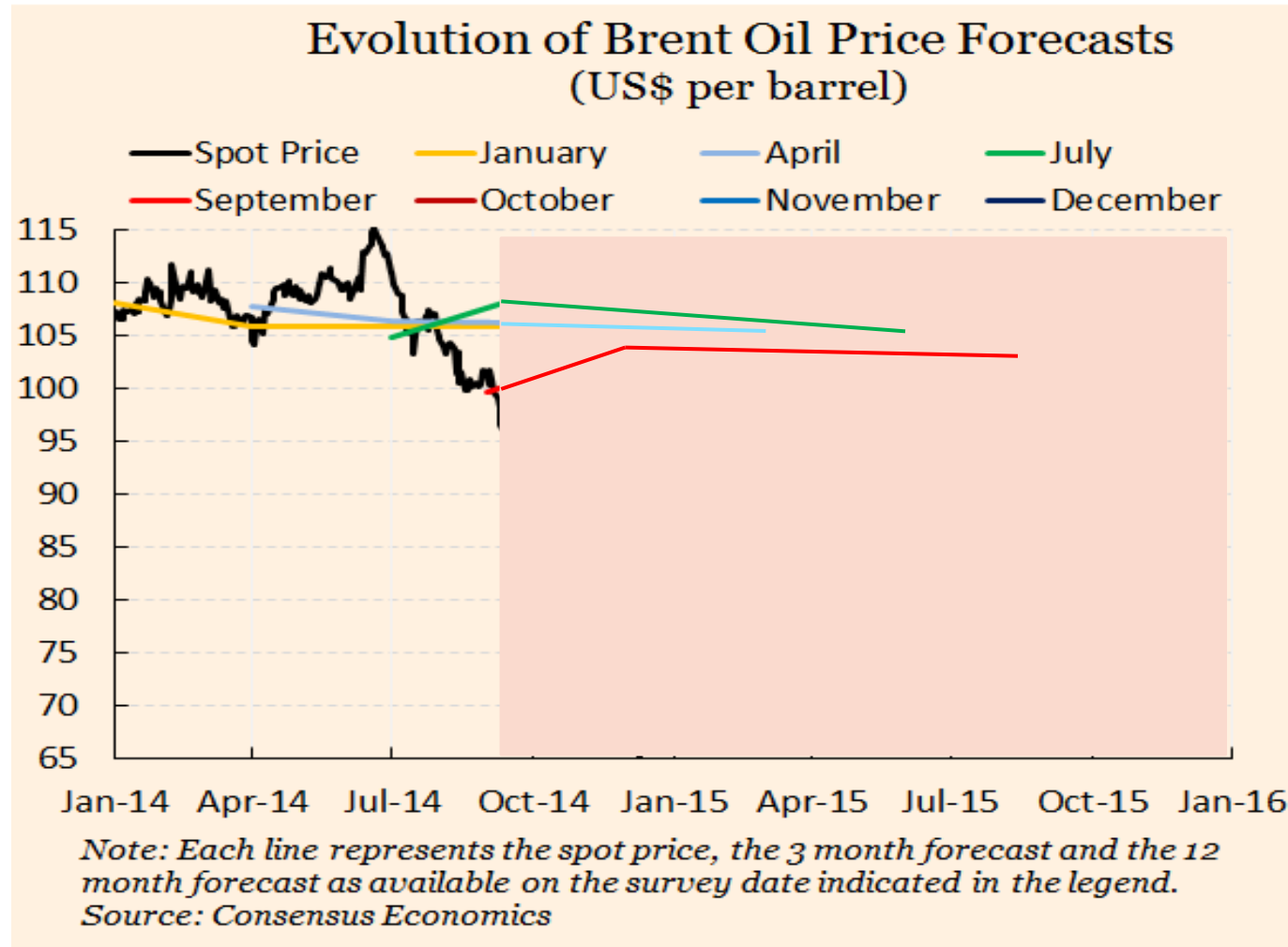


# The perils of forecasting

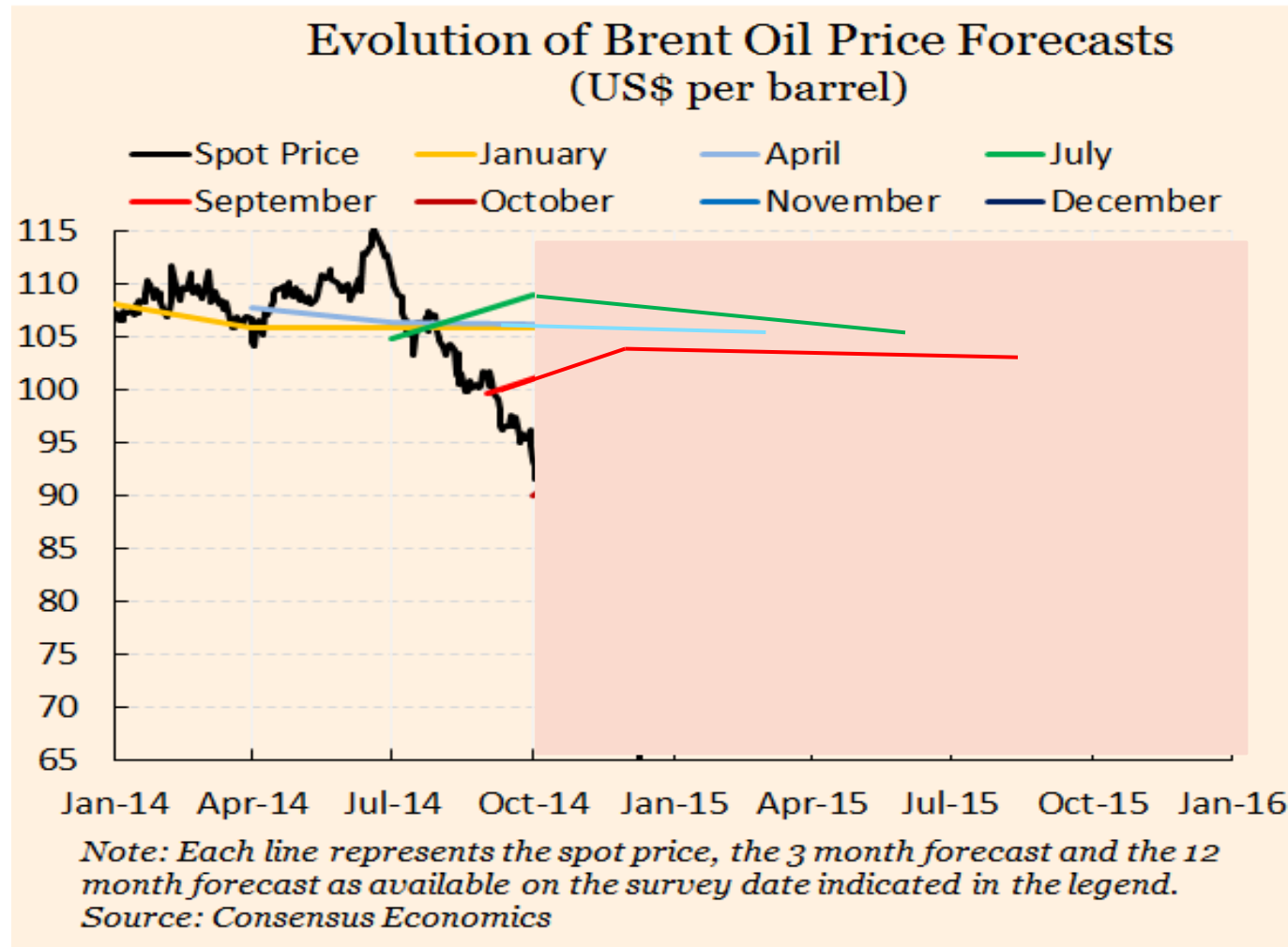




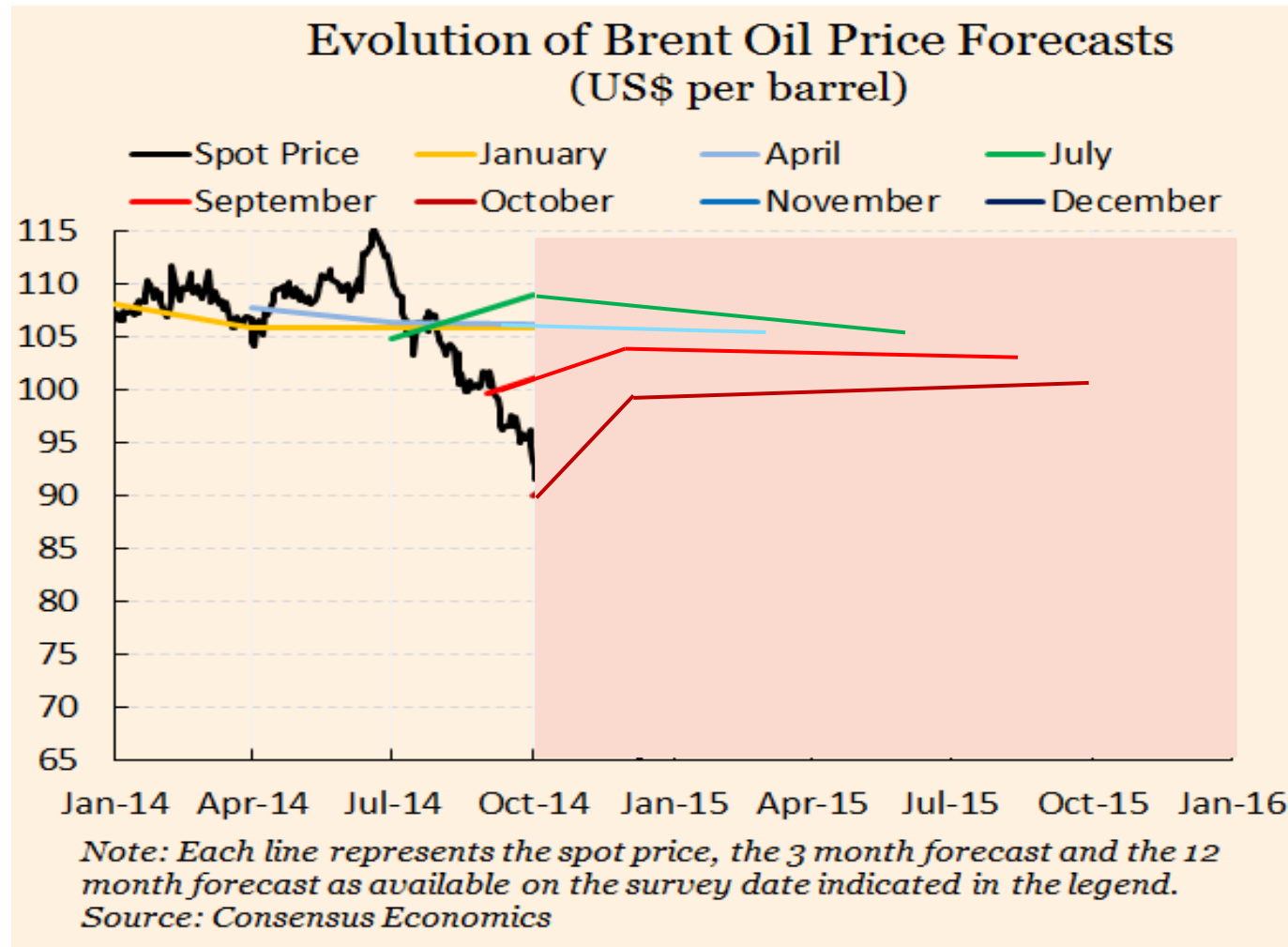
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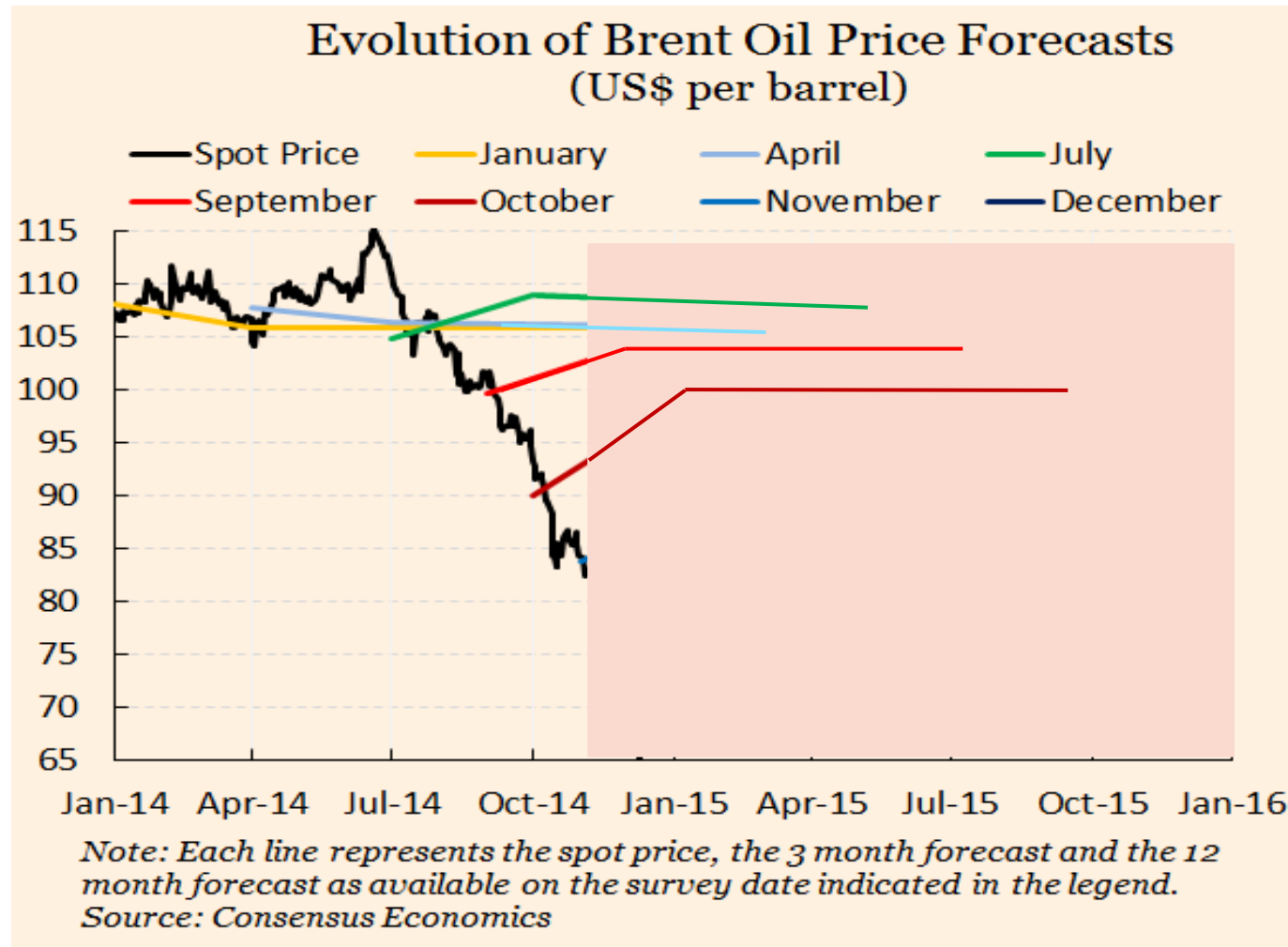
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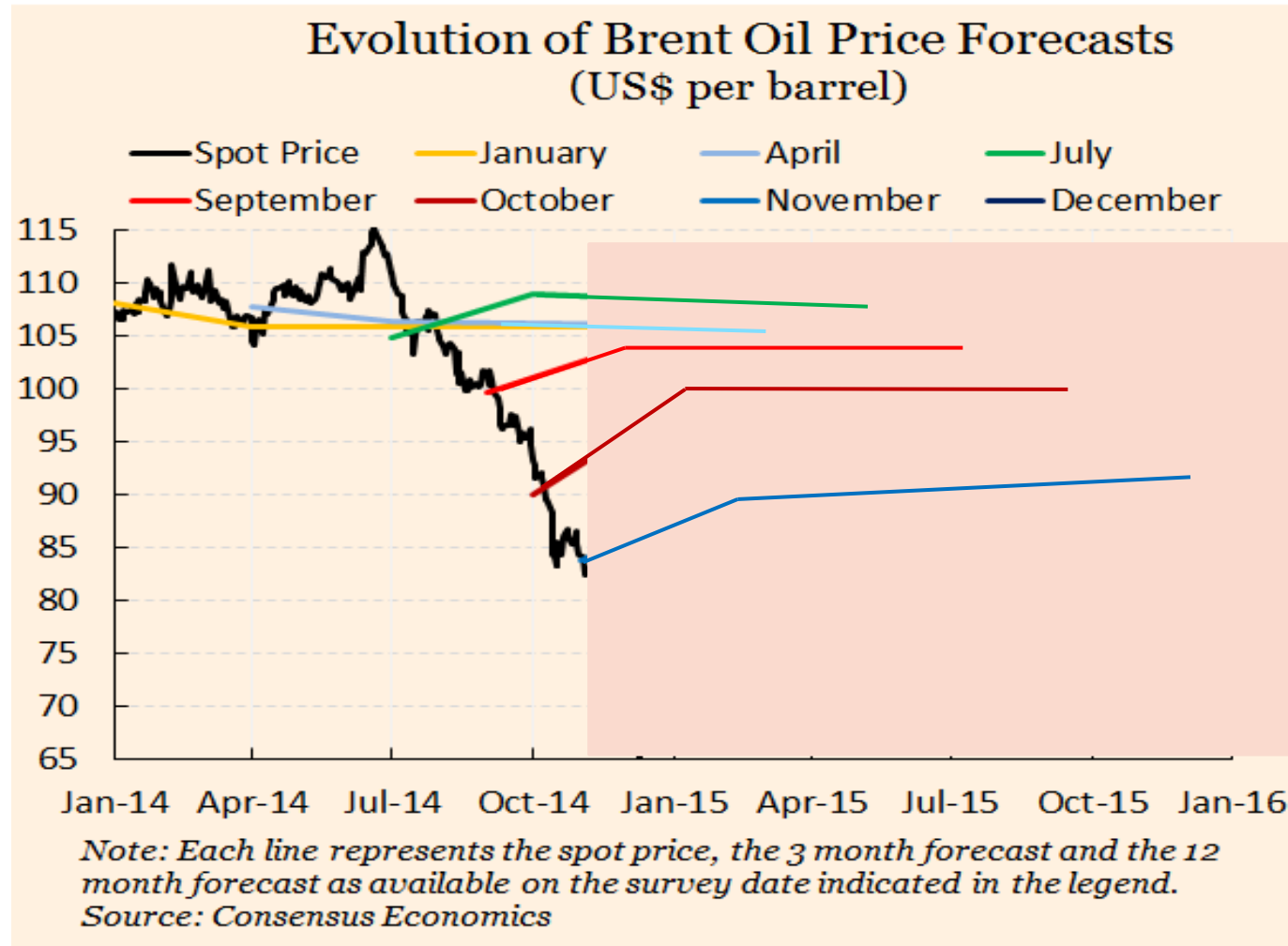
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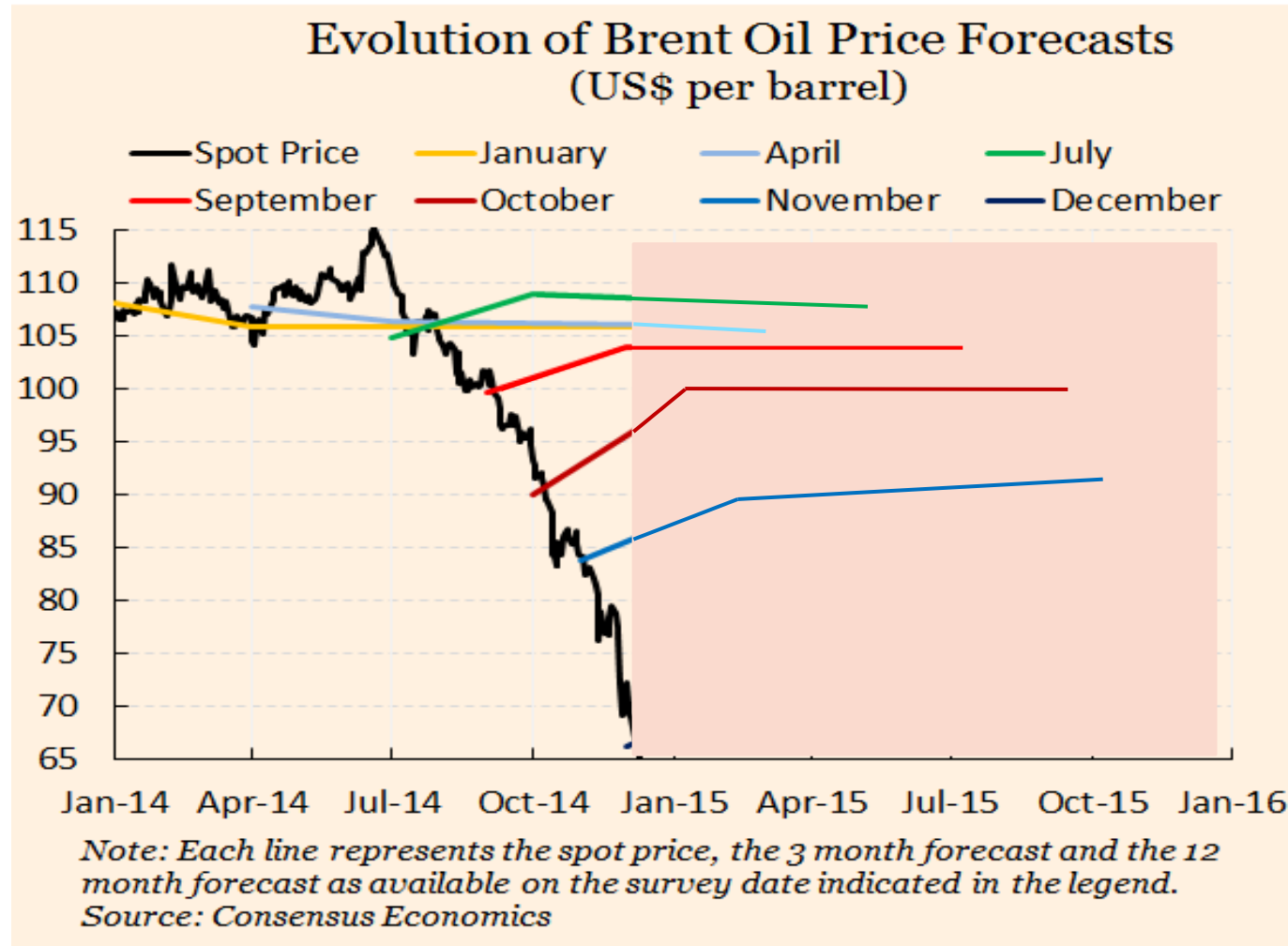
# The perils of forecasting



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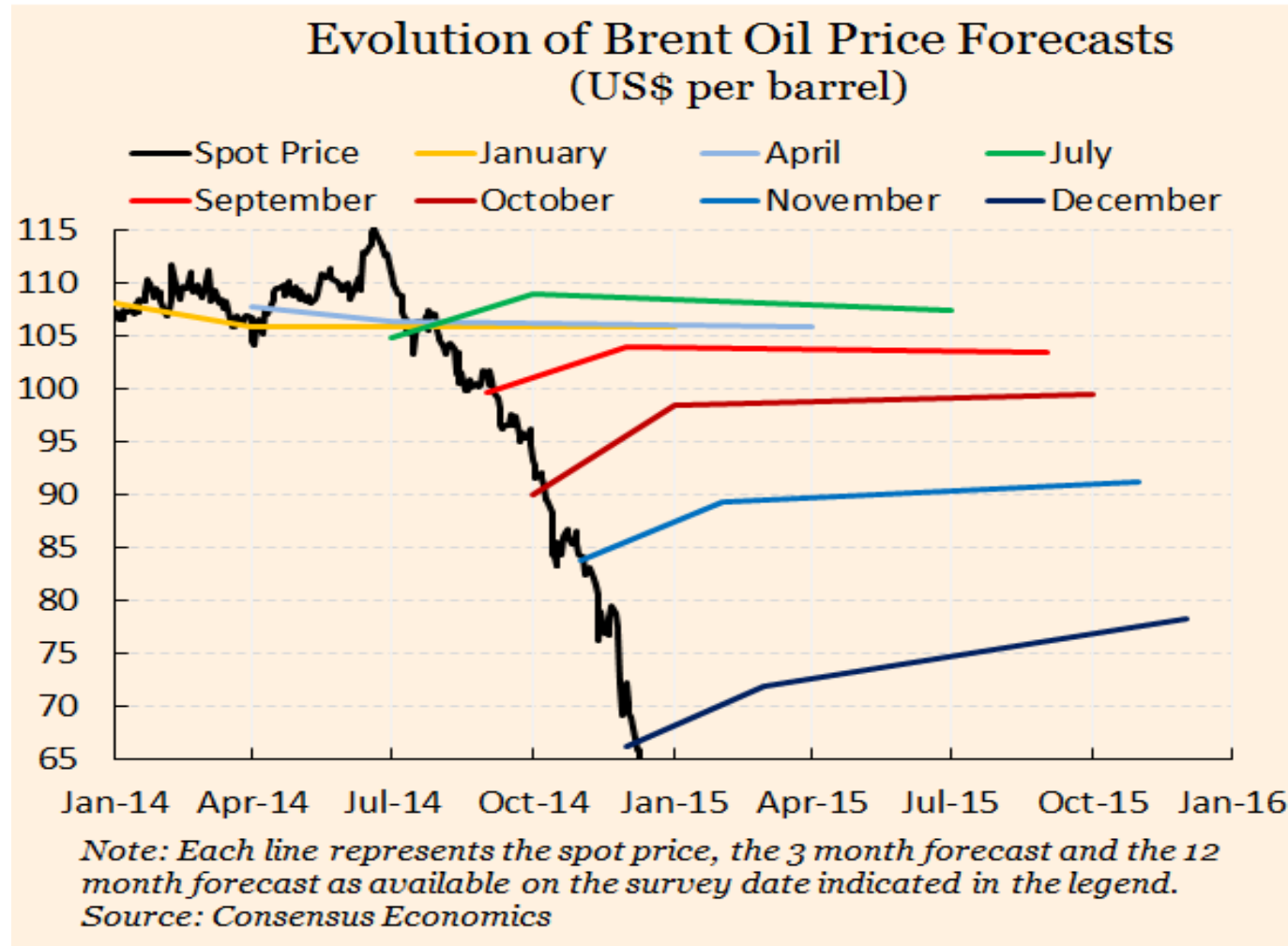


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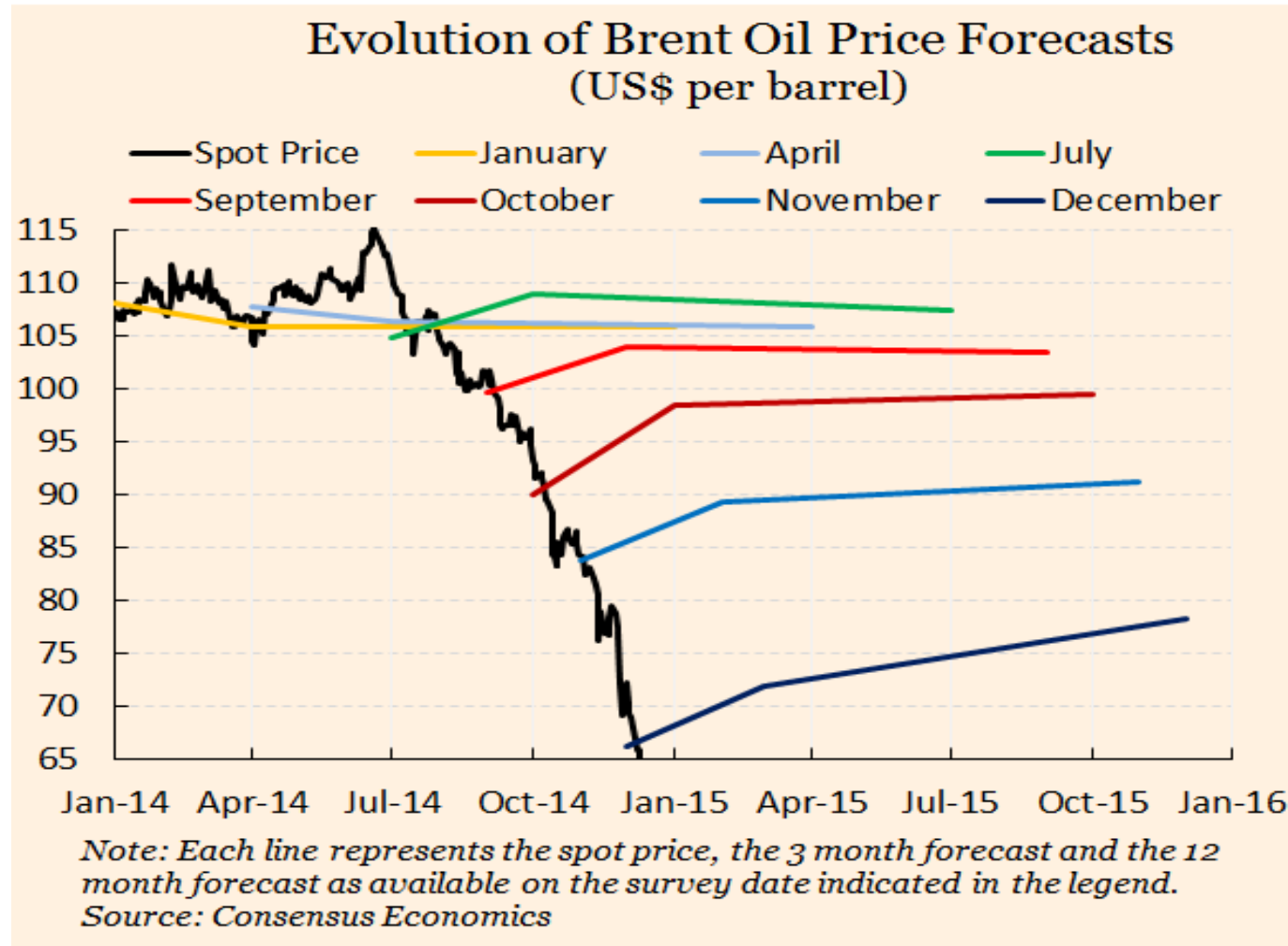




# The perils of forecasting



# The perils of forecasting



\$37.13

# Works Both Ways

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# Works Both Ways

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## **EIA Revises Crude Oil Price Forecast Up \$6/Barrel**

By Charles Kennedy

May 10, 2016

The US Energy Information Administration (EIA) has revised its earlier crude oil price forecast, originally issued in April, but now expected to be around \$40.52 per barrel, up \$6 from its April estimates of only \$34.73 per barrel for the average price of crude in 2016.

# WHY SCENARIOS?

## Decision-making in the face of uncertainties

The Present

The Path

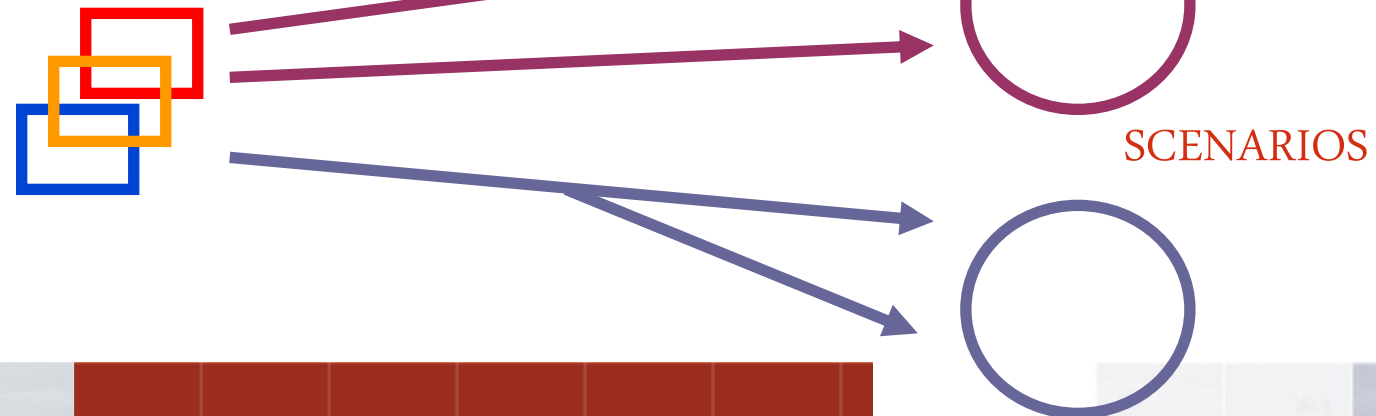
The Future



Current  
Realities  
(mental models)

Multiple  
Paths

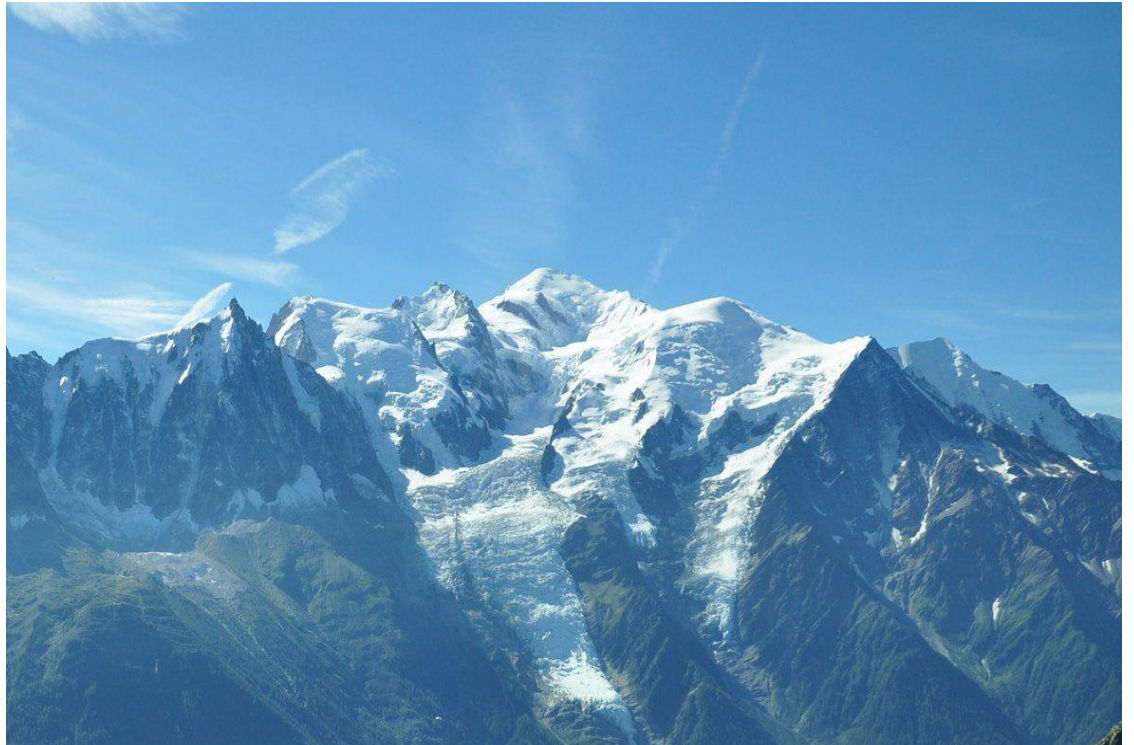
Alternative  
Future Images



# Shell Scenarios - 2060

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Mountains - imagines a world where government policy significantly influences society and largely shapes energy and environmental pathways. Cleaner-burning natural gas becomes the backbone of the energy system, mostly replacing coal for power generation and seeing wider use in transport.





# Shell Scenarios - 2060

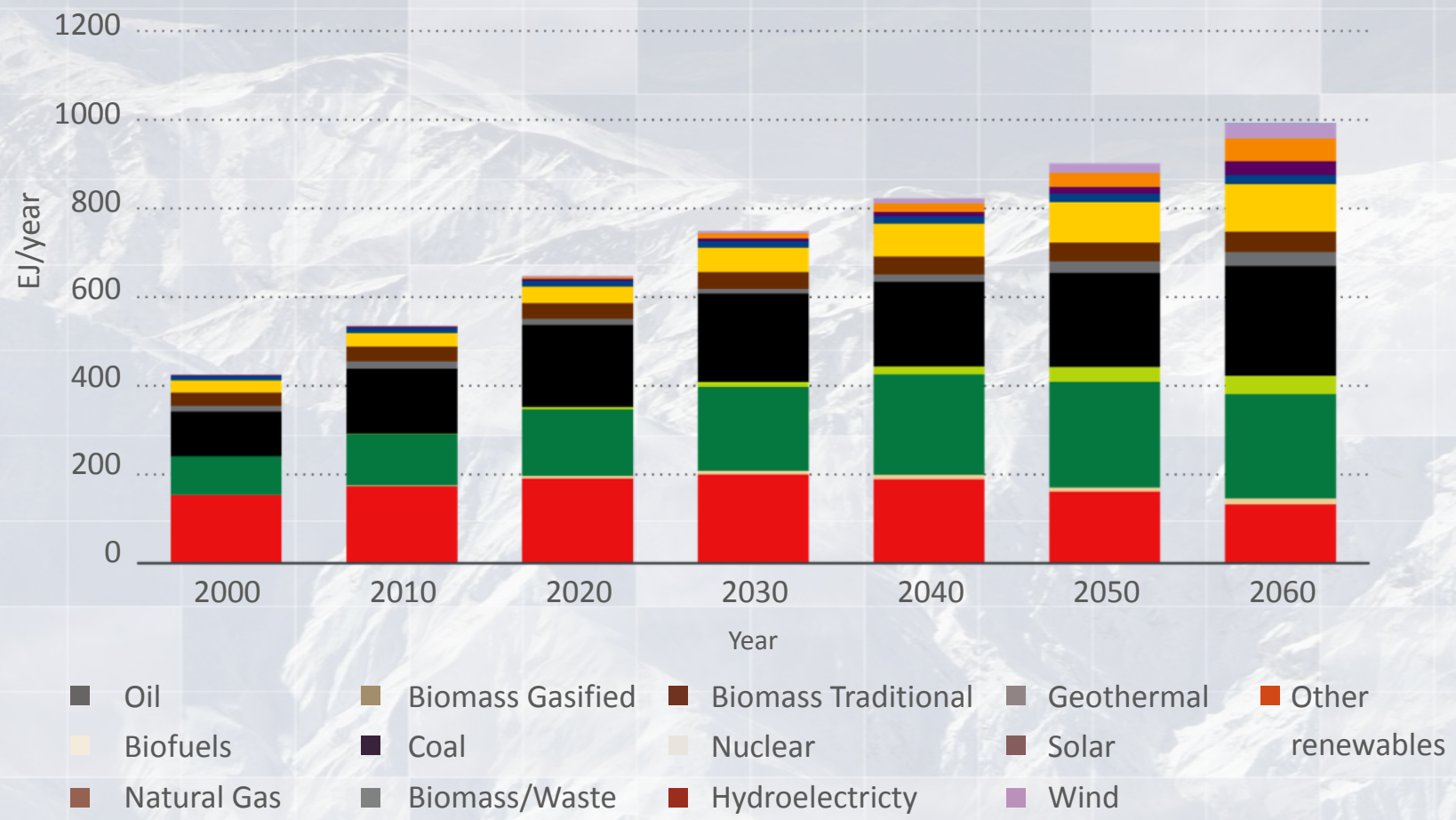
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Oceans- envisions a landscape shaped by market forces and civil society. Public resistance and the slow adoption of policies and technology limits the development of nuclear power and restricts the growth on natural gas. Coal remains widely used in power generation until mid-century.



# MOUNTAINS

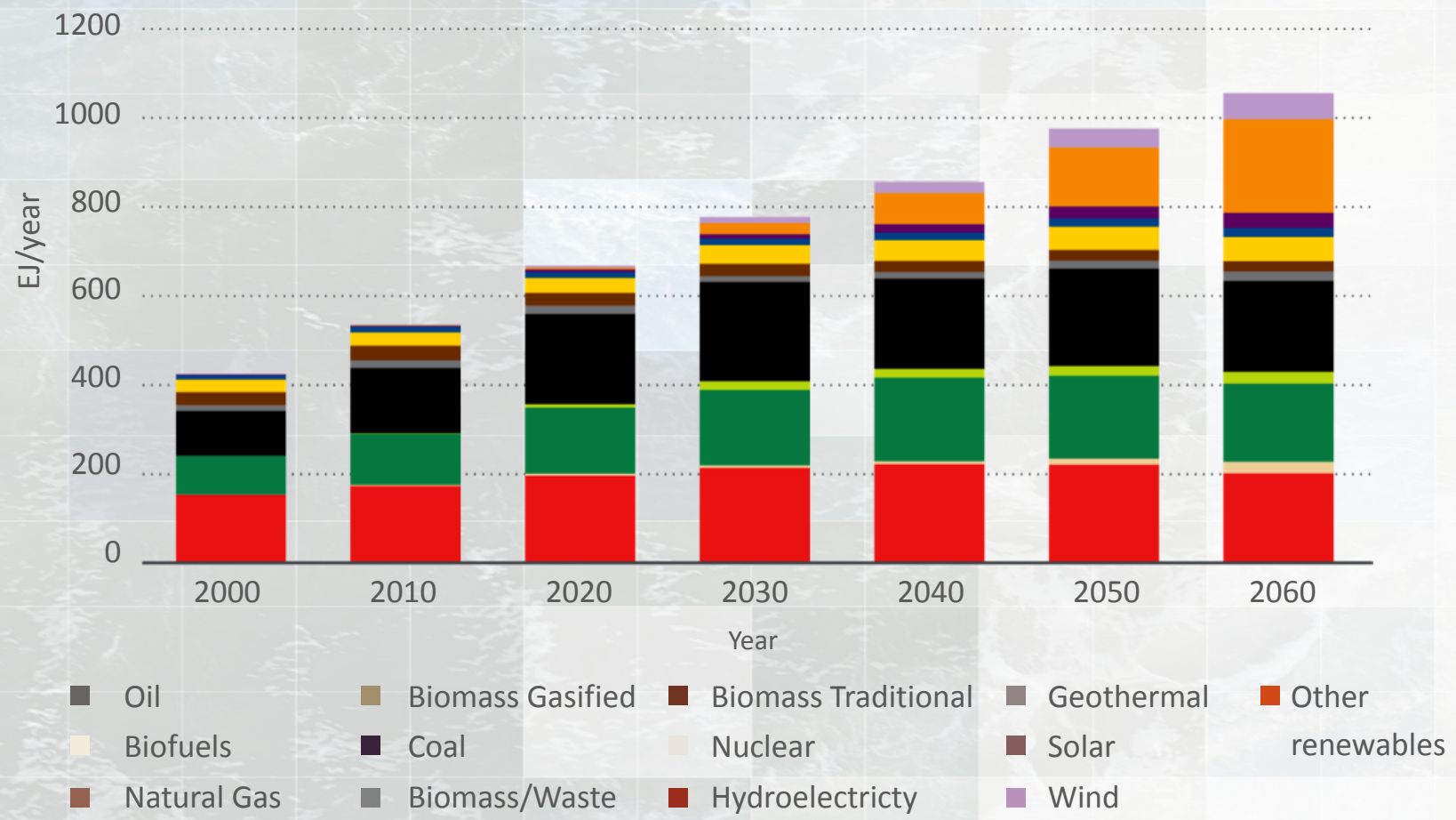
## TOTAL PRIMARY ENERGY BY SOURCE



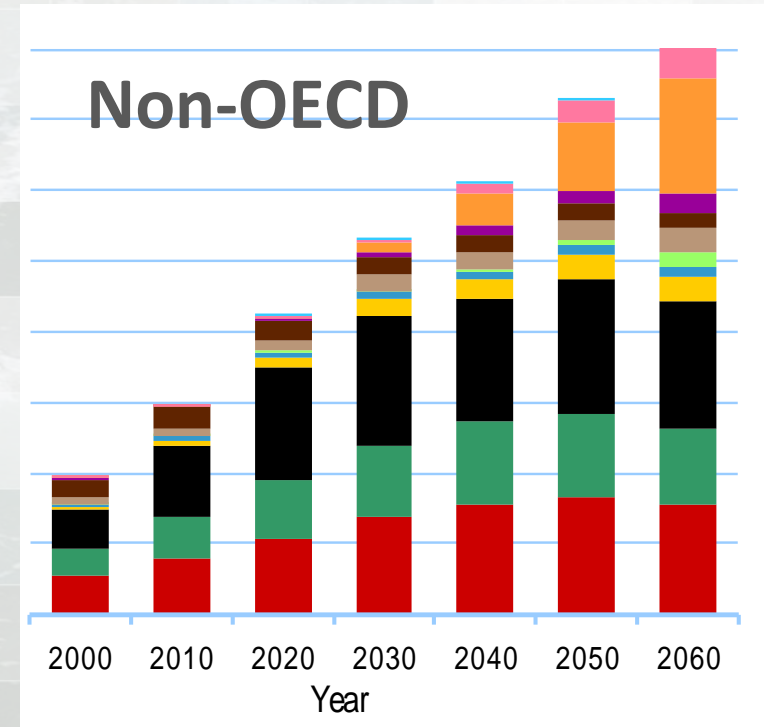
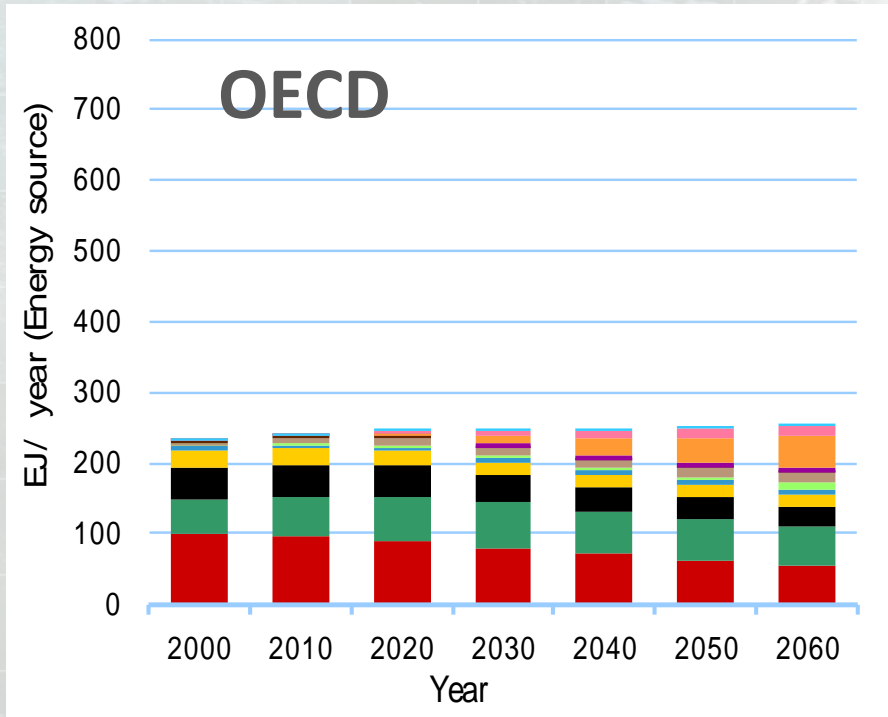


# OCEANS

## TOTAL PRIMARY ENERGY BY SOURCE



# A REGIONAL CONTRAST: TOTAL PRIMARY ENERGY IN OCEANS



- Oil
- Biomass Gasified
- Biomass Traditional
- Geothermal
- Other renewables
- Biofuels
- Coal
- Nuclear
- Solar
- Natural Gas
- Biomass/Waste
- Hydroelectricity
- Wind



# Conclusions

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- Global demand for energy continues to rise
  - to power increased levels of activity as the world economy continues to grow
- Fuel mix changes significantly
  - coal losing, renewables gaining, and oil and gas combined holding steady
- Growth rate of carbon emissions slows sharply
  - but not by enough without further policy changes



# ExxonMobil – Outlook for Energy

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# International Energy Outlook 2016

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*For  
Center for Strategic and International Studies  
May 11, 2016 | Washington, DC*

*By  
Adam Sieminski, Administrator*

## Key findings in the IEO2016 Reference case

- World energy consumption increases from 549 quadrillion Btu in 2012 to 629 quadrillion Btu in 2020 and then to 815 quadrillion Btu in 2040, a 48% increase (1.4%/year). Non-OECD Asia (including China and India) account for more than half of the increase.
- The industrial sector continues to account for the largest share of delivered energy consumption; the world industrial sector still consumes over half of global delivered energy in 2040.
- Renewable energy is the world's fastest-growing energy source, increasing by 2.6%/year; nuclear energy grows by 2.3%/year, from 4% of the global total in 2012 to 6% in 2040.

## Key findings in the IEO2016 Reference case

- Fossil fuels continue to supply more than three-fourths of world energy use in 2040.
- Among the fossil fuels, natural gas grows the fastest. Coal use plateaus in the mid-term as China shifts from energy-intensive industries to services and worldwide policies to limit coal use intensify. By 2030, natural gas surpasses coal as the world's second largest energy source.
- In 2012, coal provided 40% of the world's total net electricity generation. By 2040, coal, natural gas, and renewable energy sources provide roughly equal shares (28-29%) of world generation.

# Navigating the Future in Energy

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## NEAR TERM

### ➤ Capex

- Reduced Investment
- Increased Divestment Activity

### ➤ Opex

- Staff Reductions
- Contract Management

### ➤ Cash

- Dividends
- Debt

## LONG TERM

### ➤ Strategic Capital Investments

### ➤ Portfolio Management

### ➤ Preserve High Return Human Capital

### ➤ Restructuring Industry Cost

### ➤ Corporate Finance - Opportunity and Risk Management