

Oil & Fuel Outlook H2:2017

for: The Puget Sound Roundtable CSCMP

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Network of Global Representatives

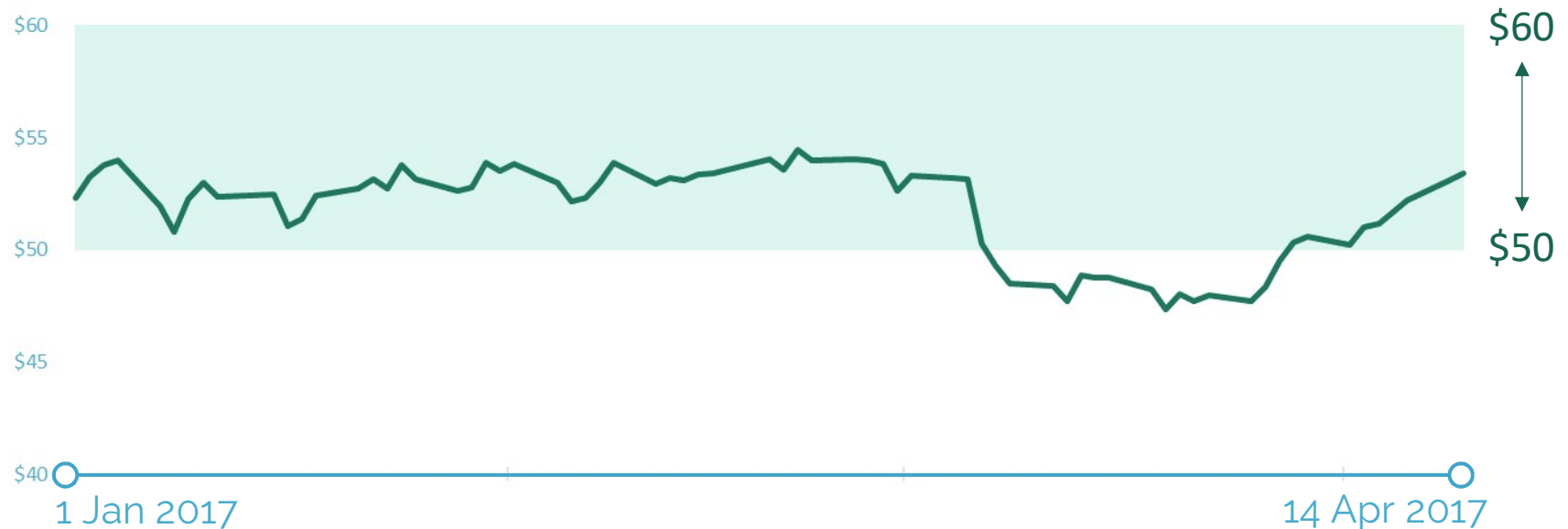


H1:2017 -- Oil Price Forecast

January presentation for Logistics Management Magazine's Annual Rate Outlook



"The most likely outcome is that oil prices remain in the **\$50 to \$60** range, and there is a better chance of the market surprising to the downside than the upside"

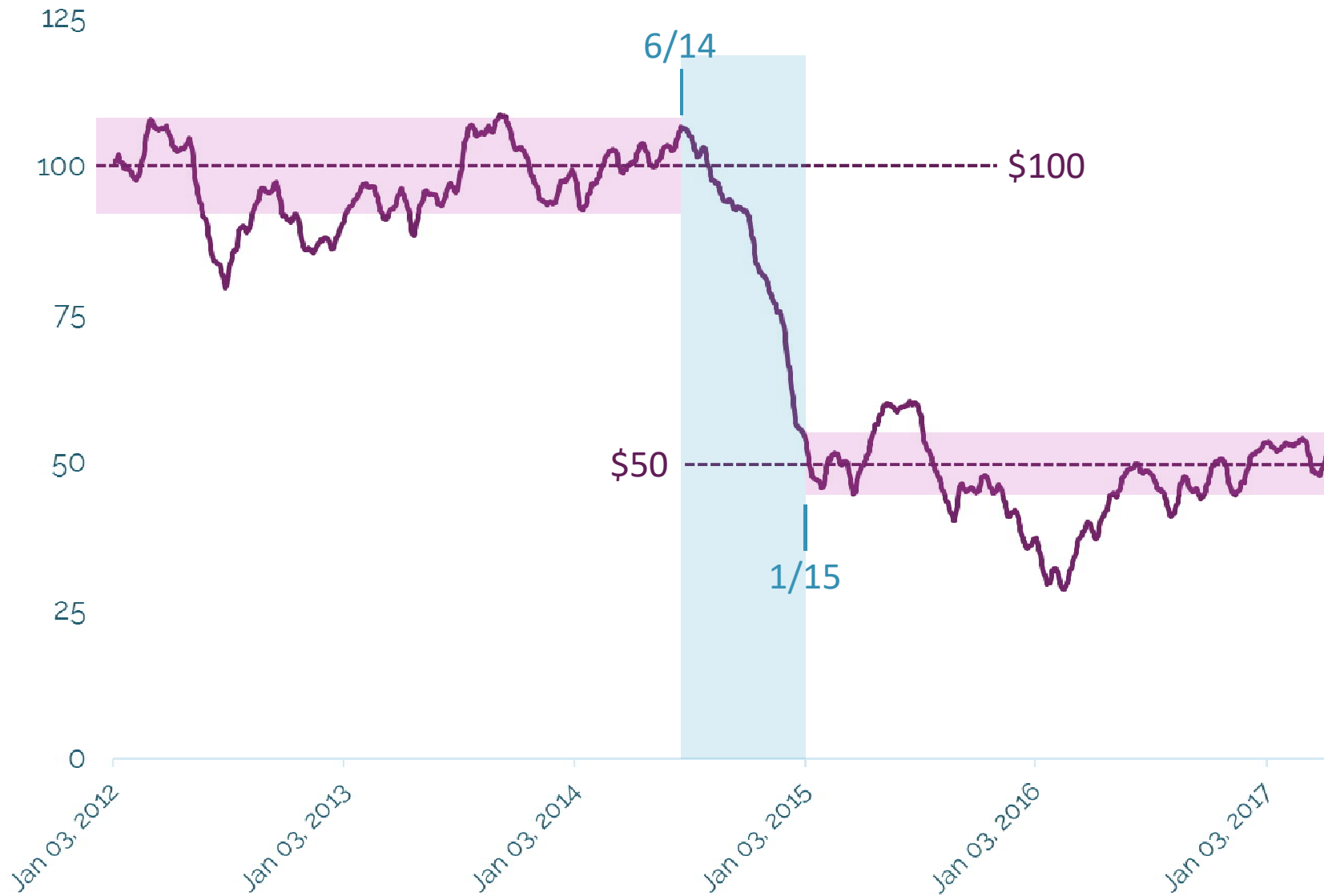




“Oil prices are going to continue to trade in the **\$50 to \$60** range, but as the market continues to balance, geopolitical risk will play an important role by impacting volatility”

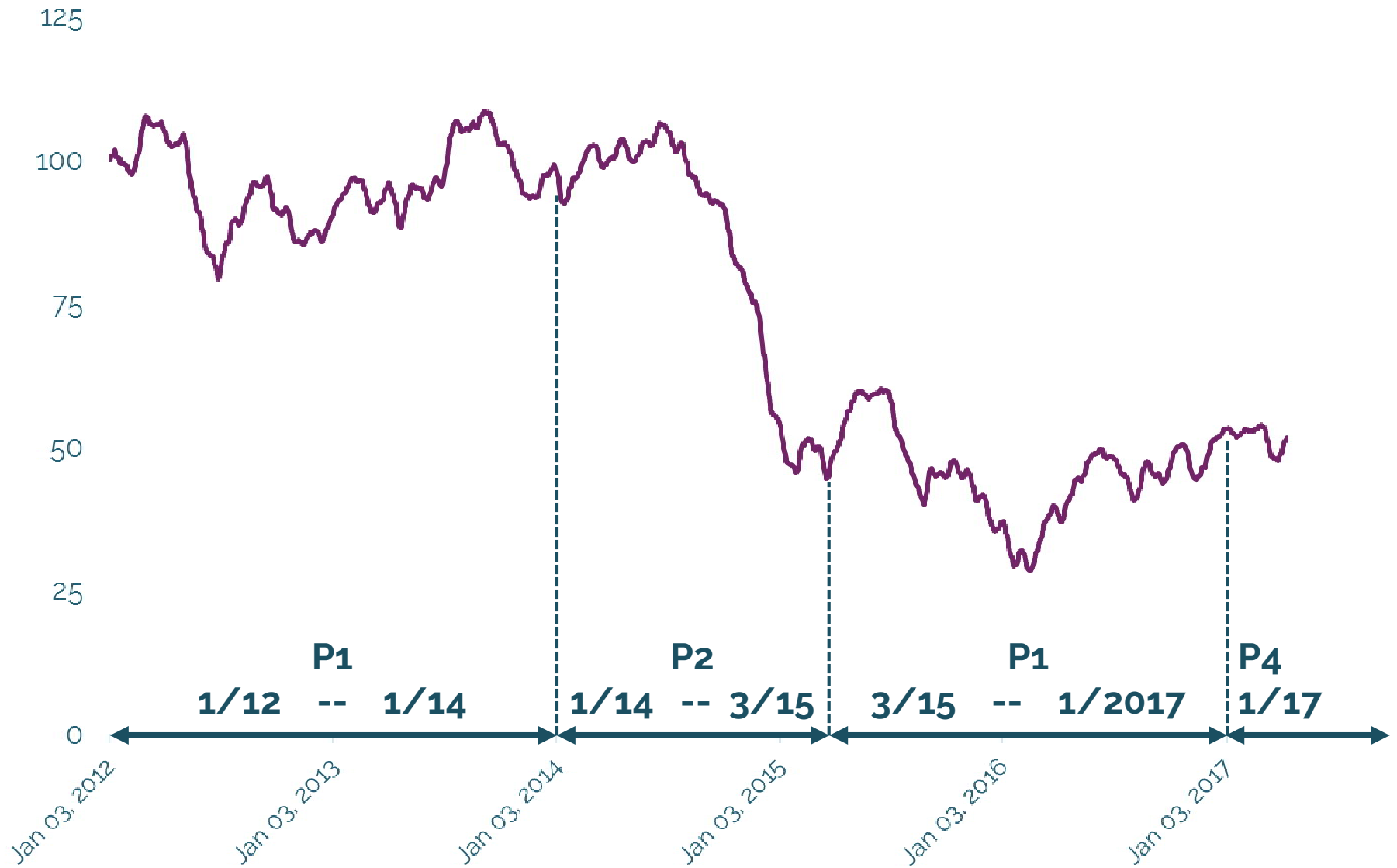
WTI -- Front Month Futures Oil Prices

Oil prices settle into a \$45 to \$55 range with a few notable exceptions

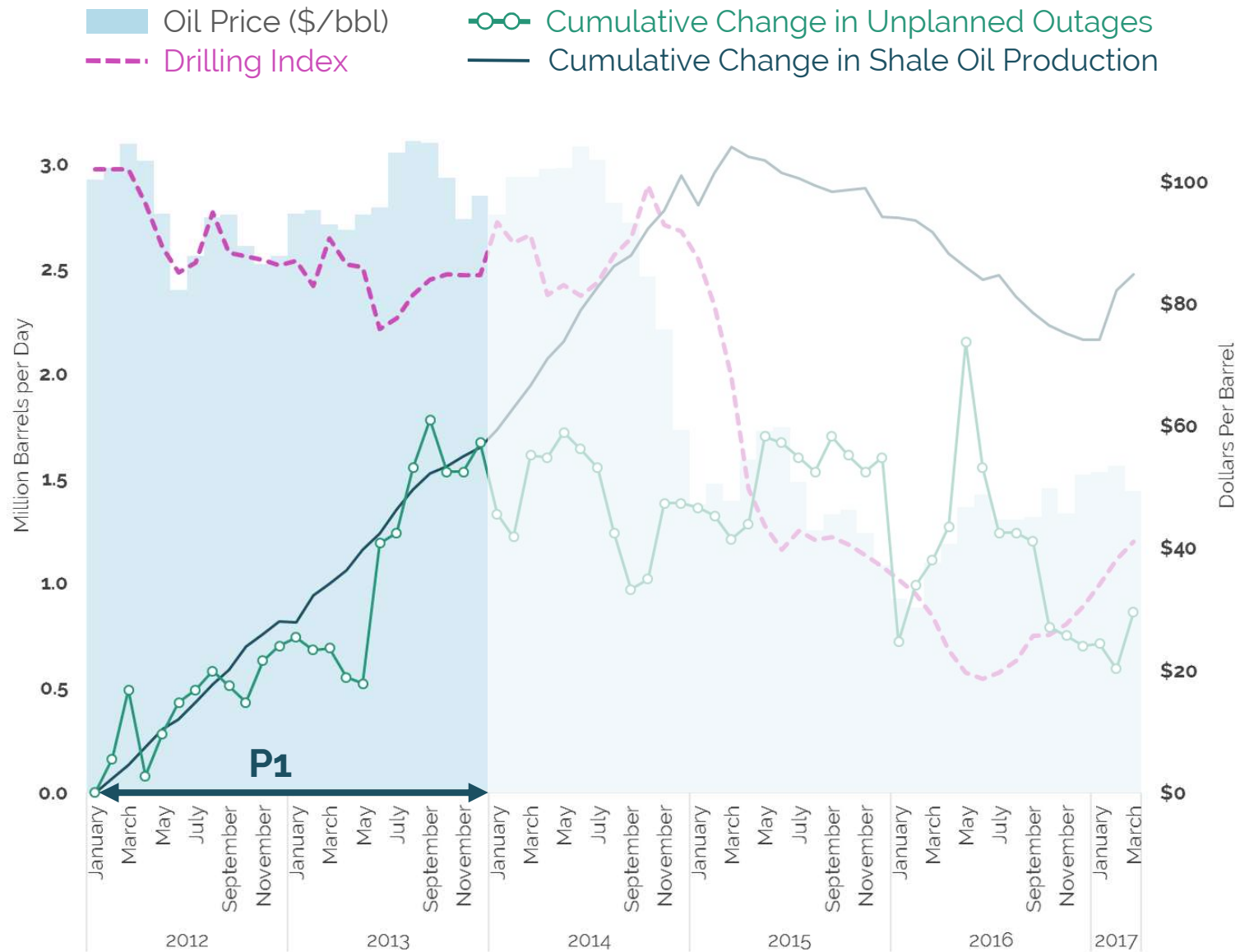


WTI -- Front Month Futures Oil Prices

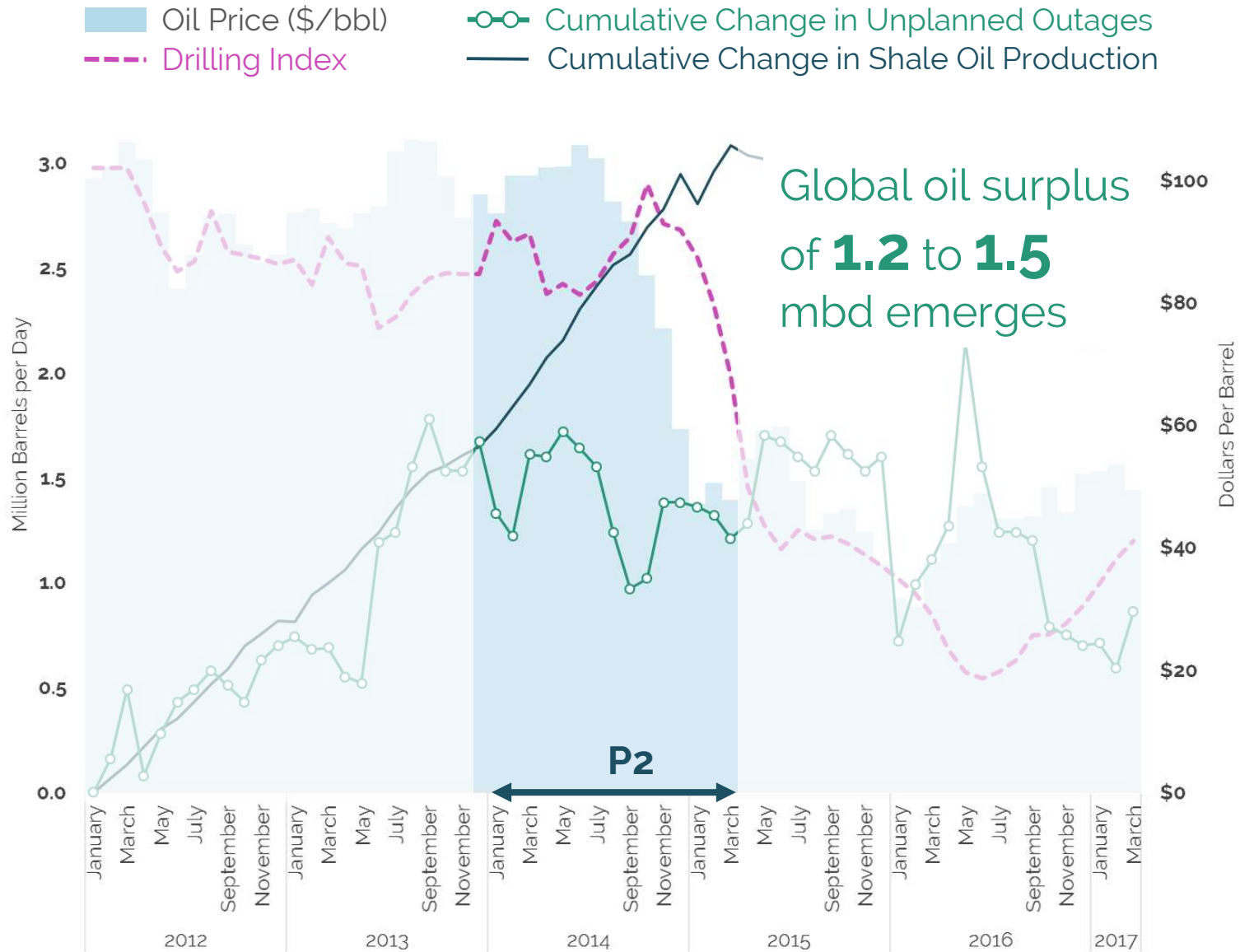
Three distinct periods



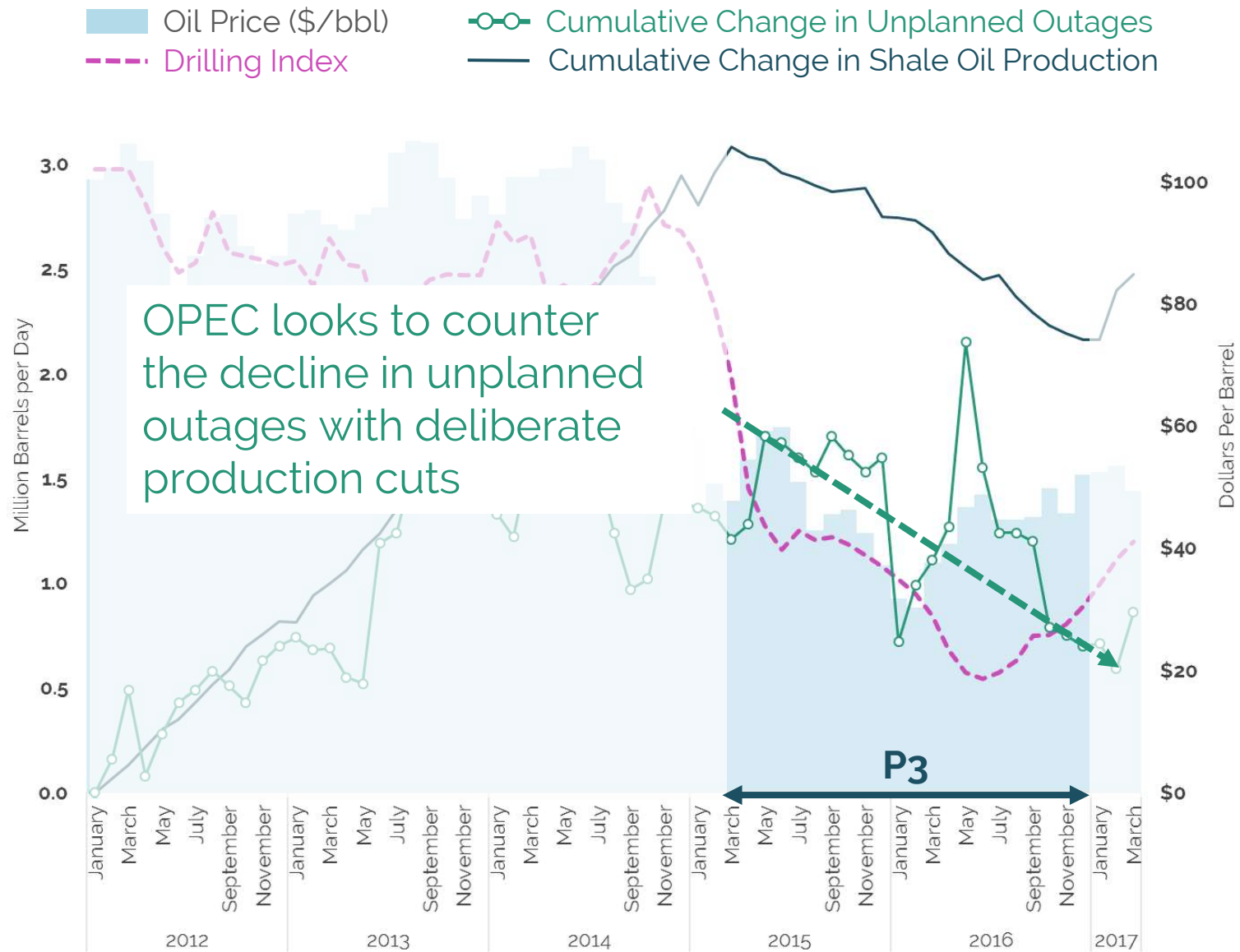
P1: Cumulative change in Shale Oil Production is counterbalanced by the cumulative change in Unplanned Outages



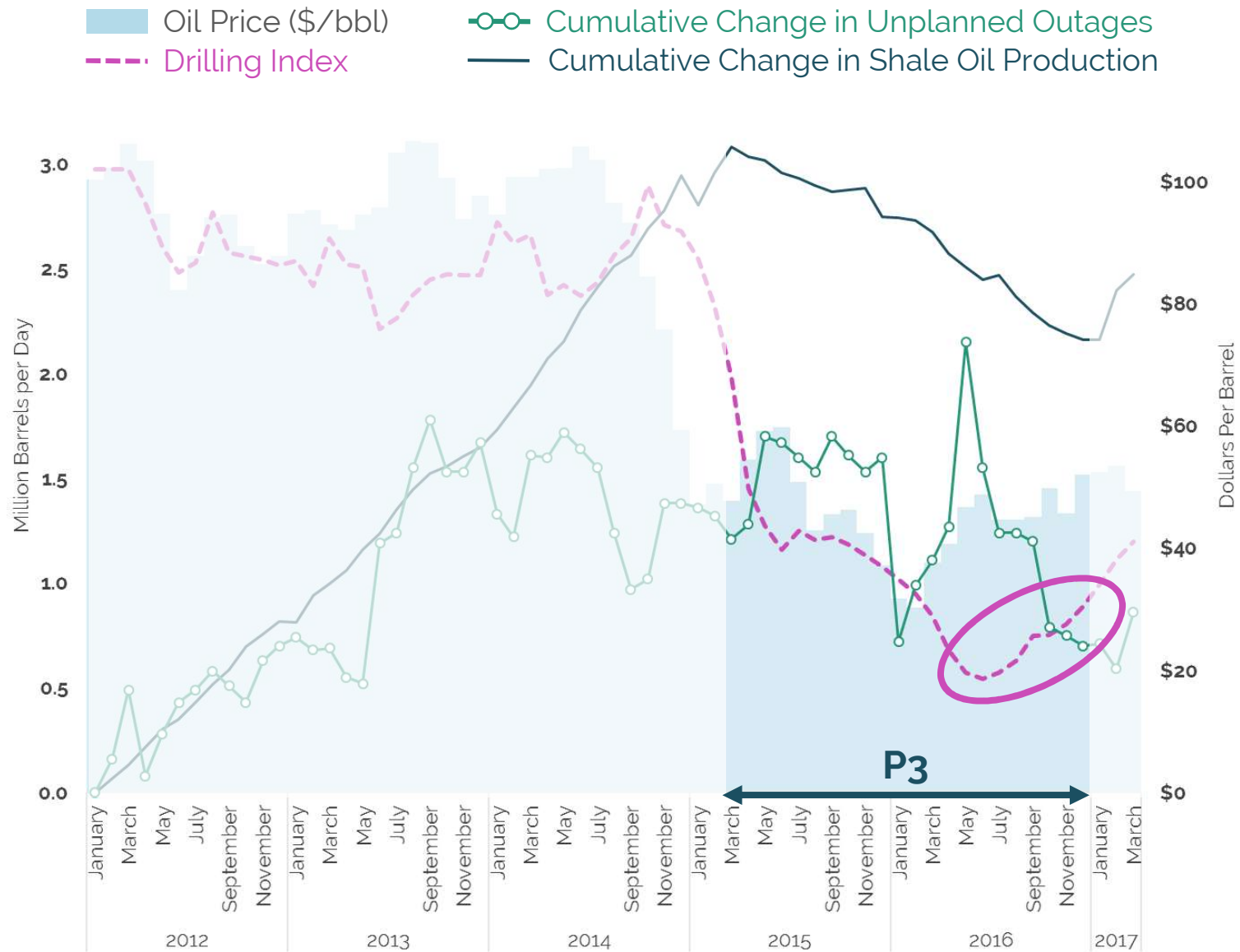
P2: Shale Production Grows while Unplanned Outages Flatten Oil surplus emerges causing prices and drilling rates to plummet



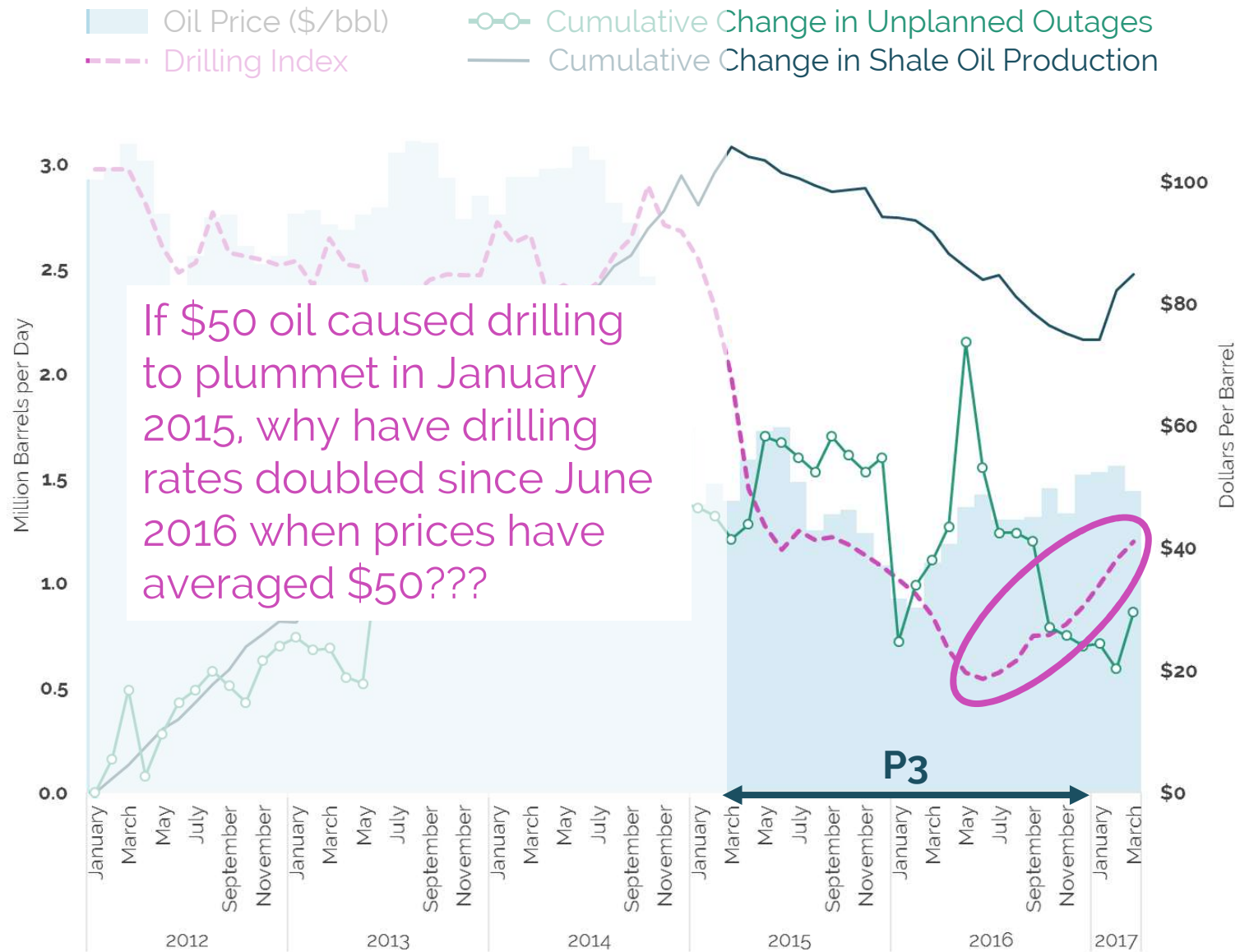
P3: Shale Oil Production and Unplanned Outages Decline, Prices reach a new equilibrium (\$50) and Drilling Rates begin to rise



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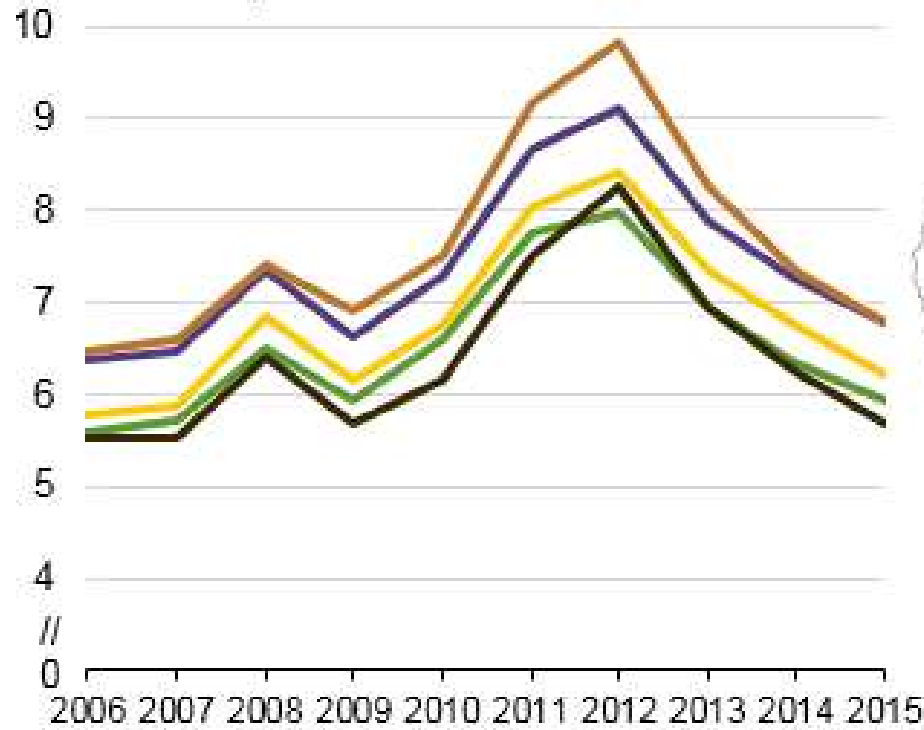
P3: Shale Oil Production and Unplanned Outages Decline, Prices reach a new equilibrium (\$50) and Drilling Rates begin to rise



20% to 30% Reduction in Well Completion Costs



Average well drilling and completion costs indexed to 2014 well designs (2006-15)
million dollars per well

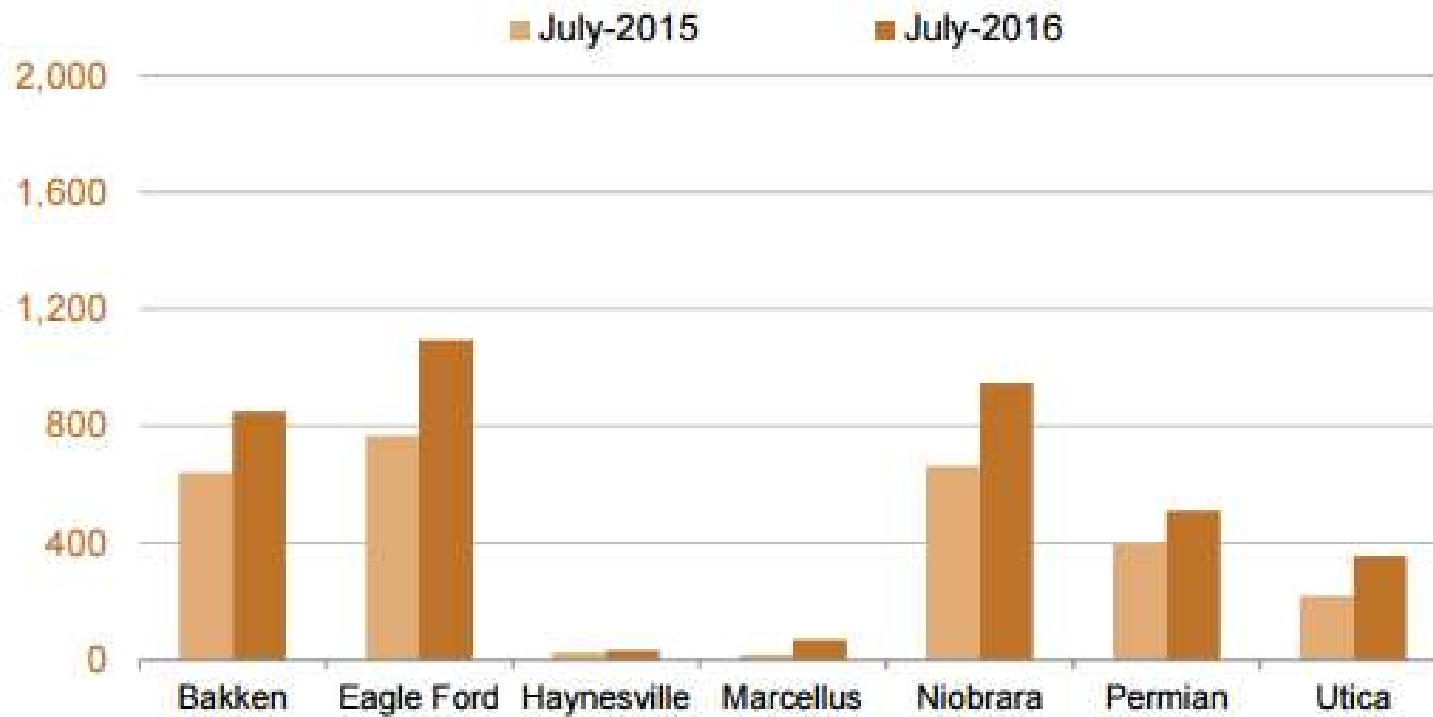


20% to 30% More Oil Produced per Shale Oil Well



New-well oil production per rig

barrels/day



Perspective on OPEC's oil cuts



OPEC-11 Oil Production and Cuts (kbd)

| | October 2016 Ref. Prod. Level | Adjustment | | 100% Adherence Prod. Level 1/17 |
|--------------|----------------------------------|---------------|--------------|------------------------------------|
| Algeria | 1,089 | -50 | | 1,039 |
| Angola | 1,751 | -78 | | 1,673 |
| Ecuador | 548 | -26 | | 522 |
| Gabon* | 202 | -9 | | 193 |
| Iran | 3,975 | 90 | | 3,797 |
| Iraq | 4,561 | -210 | | 4,351 |
| Kuwait | 2,838 | -131 | | 2,707 |
| Qatar | 648 | -30 | | 618 |
| Saudi Arabia | 10,544 | -486 | | 10,058 |
| UAE | 3,013 | -139 | | 2,874 |
| Venezuela | 2,067 | -95 | | 1,972 |
| Total | 31,236 | -1,164 | -3.7% | 29,804 |

Production cuts from the OPEC-11 are significant, amounting to 3.7% of OPEC's reference production, and to more than 1.2% of global consumption

Note that Nigeria and Libya both refrained from participating in the output cuts

How do production cuts stack up to January 2016 production levels?



OPEC-11 Oil Production and Cuts (kbd)

| | Prod. Level 1/16 | 100% Adherence | |
|-----------------------------|------------------|------------------|-----------------|
| | | Prod. Level 1/17 | 1/17 minus 1/16 |
| Algeria | 1,084 | 1,039 | -45 |
| Angola | 1,738 | 1,673 | -65 |
| Ecuador | 540 | 522 | -18 |
| Gabon* | 202 | 193 | -9 |
| Iran | 2,925 | 3,797 | 872 |
| Iraq | 4,384 | 4,351 | -33 |
| Kuwait | 2,745 | 2,707 | -38 |
| Qatar | 655 | 618 | -37 |
| Saudi Arabi | 10,091 | 10,058 | -33 |
| UAE | 2,874 | 2,874 | 0 |
| Venezuela | 2,324 | 1,972 | -352 |
| Total | 29,562 | 29,804 | 242 |
| Y/Y Growth over 1/16 | | 0.8% | |

The 1.2 to 1.5 million barrel per day surplus that caused oil prices to plummet emerged in **January 2016...**

If there is a 100% compliance rate across all 11 OPEC members, production volumes will be only 0.8%, or 242 kbd, lower than January 2016 production levels

In other words, the OPEC-11 will basically be producing as much oil as they were when the oil market entered the glut! ... and that is if they achieve 100% compliance (historically they have averaged just 60%)

Perspective on OPEC's oil cuts



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| | October 2016 Ref. Prod. Level | Adjustment | Prod. Level 1/16 | 100% Adherence Prod. Level 1/17 | 1/17 minus 1/16 |
|----------------------|----------------------------------|---------------|------------------|------------------------------------|-----------------|
| Algeria | 1,089 | -50 | 1,084 | 1,039 | -45 |
| Angola | 1,751 | -78 | 1,738 | 1,673 | -65 |
| Ecuador | 2,200 | -120 | 2,080 | 2,062 | -18 |
| Gabon* | 202 | -9 | 202 | 193 | -9 |
| Iran | 3,975 | 90 | 2,925 | 3,797 | 872 |
| 2 Iraq | 4,561 | -210 | 4,384 | 4,351 | -33 |
| Kuwait | 2,838 | -131 | 2,745 | 2,707 | -38 |
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| Total | 31,236 | -1,164 | 29,562 | 29,804 | 242 |
| Y/Y Growth over 1/16 | | | | 0.8% | |

The top-3 'cutters' account for 72% of total cuts!

835 kbd

How well have the top three 'cutters' complied with the agreement, and how does current production stack up against January 2016

Media has oversold Saudi oil cuts



March volumes were down ~600 kbd from peak, but only 100 kbd from January 2016 level



Iraqi Oil Production is Unchanged from January 2016



March volumes were down ~200 kbd from peak, but are equal to the January 2016 level

January 2005

January 2016

March 2017



UAE Oil Production is Unchanged from January 2016



March volumes were down ~200 kbd from peak, but are equal to the January 2016 level

January 2005

January 2016

March 2017



Perspective on OPEC's oil cuts



OPEC-11 Oil Production and Cuts (kbd)

| | Ref. Prod. Level | Adjustment | Prod. Level 1/16 | 100% Adherence Prod. Level 1/17 | 1/17 minus 1/16 |
|-----------------------------|------------------|---------------|------------------|------------------------------------|-----------------|
| Algeria | 1,089 | -50 | 1,084 | 1,039 | -45 |
| Angola | 1,751 | -78 | 1,738 | 1,673 | -65 |
| Ecuador | 548 | -26 | 540 | 522 | -18 |
| Gabon* | 202 | -9 | 202 | 193 | -9 |
| Iran | 3,975 | 90 | 2,925 | 3,797 | 872 |
| Iraq | 4,561 | -210 | 4,384 | 4,351 | -33 |
| Kuwait | 2,838 | -131 | 2,745 | 2,707 | -38 |
| Qatar | 648 | -30 | 655 | 618 | -37 |
| Saudi Arabia | 10,544 | -486 | 10,091 | 10,058 | -33 |
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| Y/Y Growth over 1/16 | | | | 0.8% | |

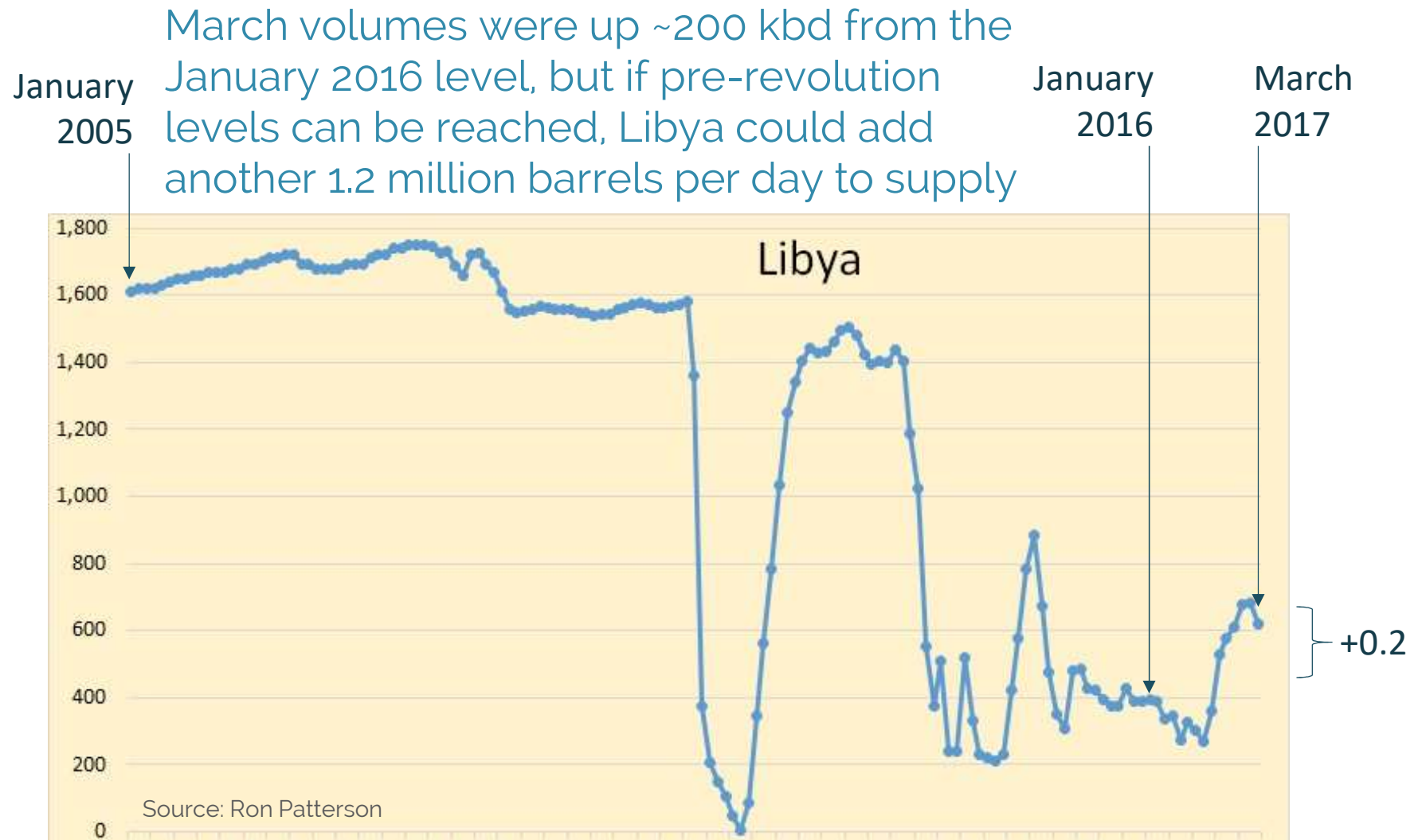
Source: OPEC Monthly Oil Market Report

*Gabon's January 2016 production not reported in MOMR - reference production level assumed

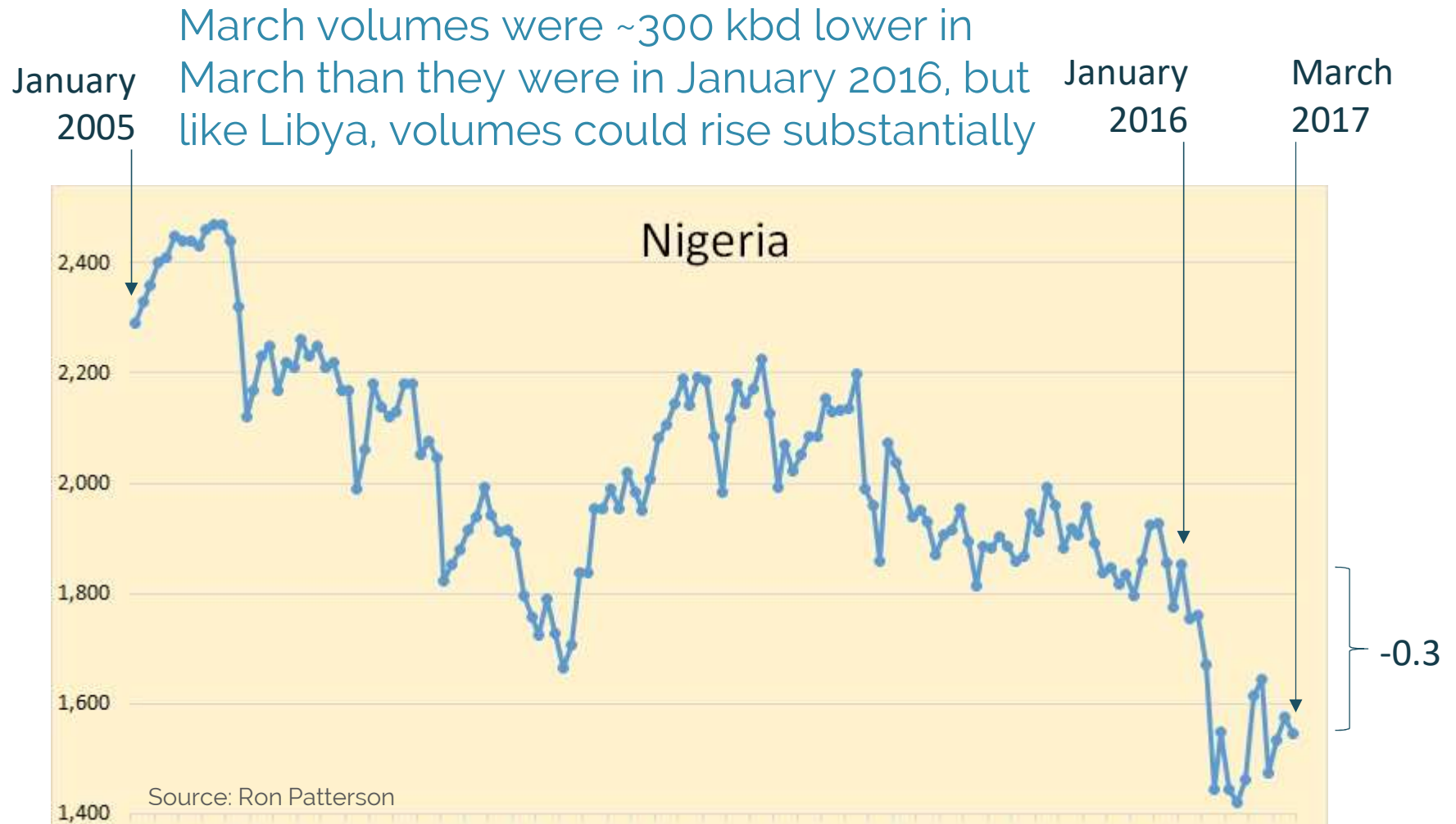
Iranian oil production is up 1 million barrels per day over January 2016



Libyan Oil Production is UP 50% over January 2016



Nigerian Oil Production has declined by more than 300 kbd since January 2016



OPEC's oil production cuts are illusory



Across all 13 OPEC members, oil production was ~35 kbd higher in March than it was in January 2016

January 2005

January 2016

March 2017



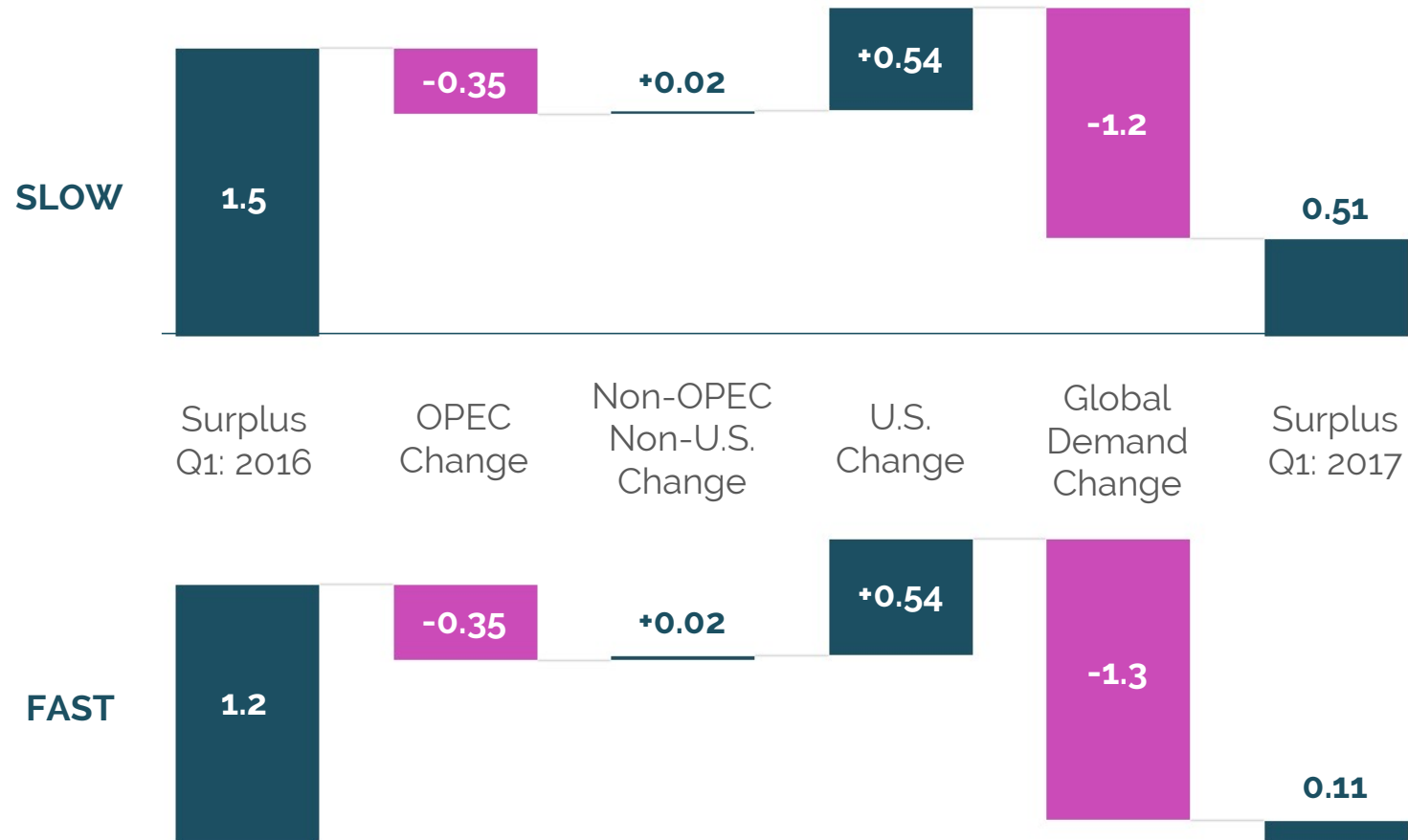


Russia real GDP -3.7% in 2015, -0.8% in 2016

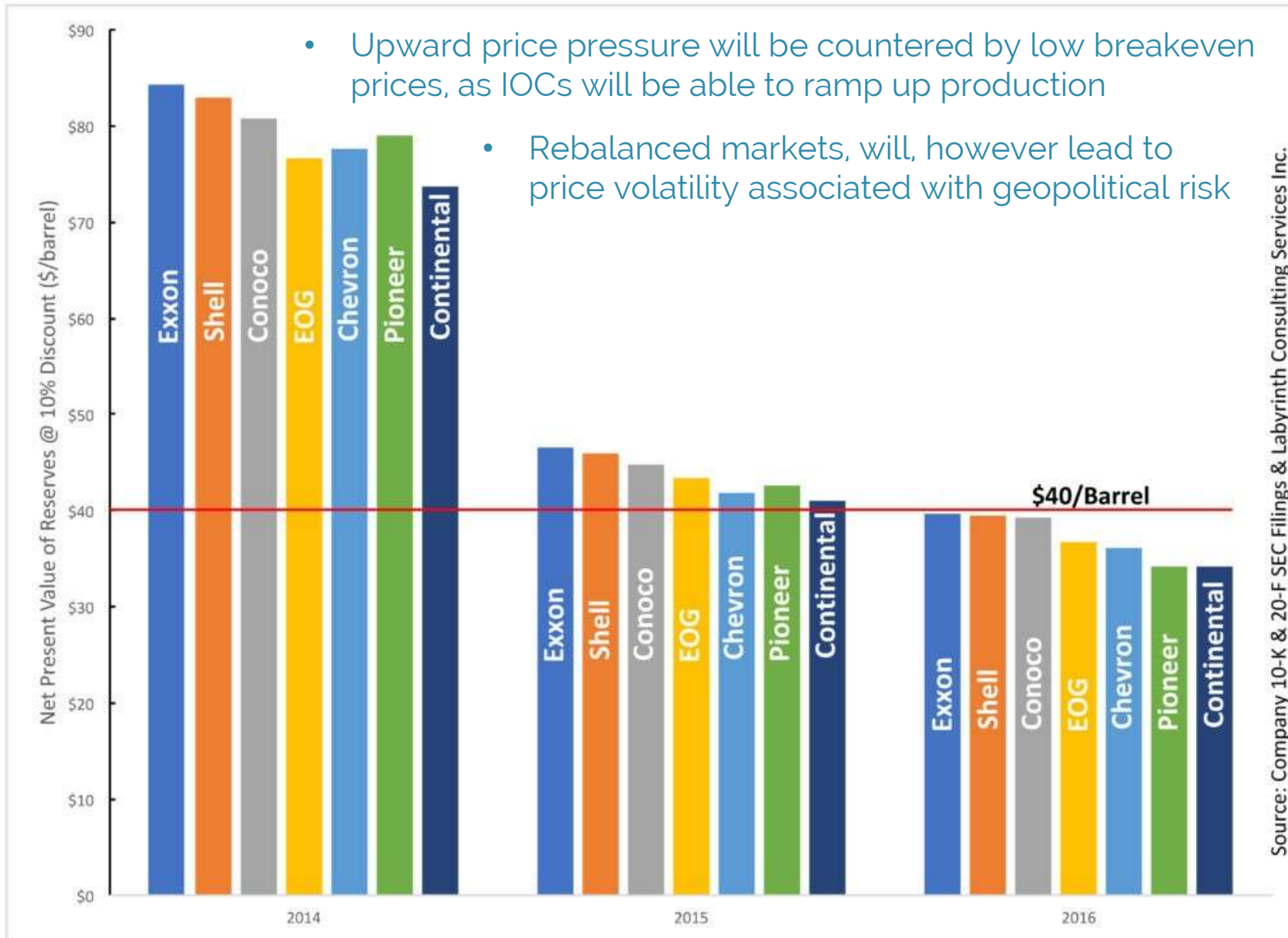


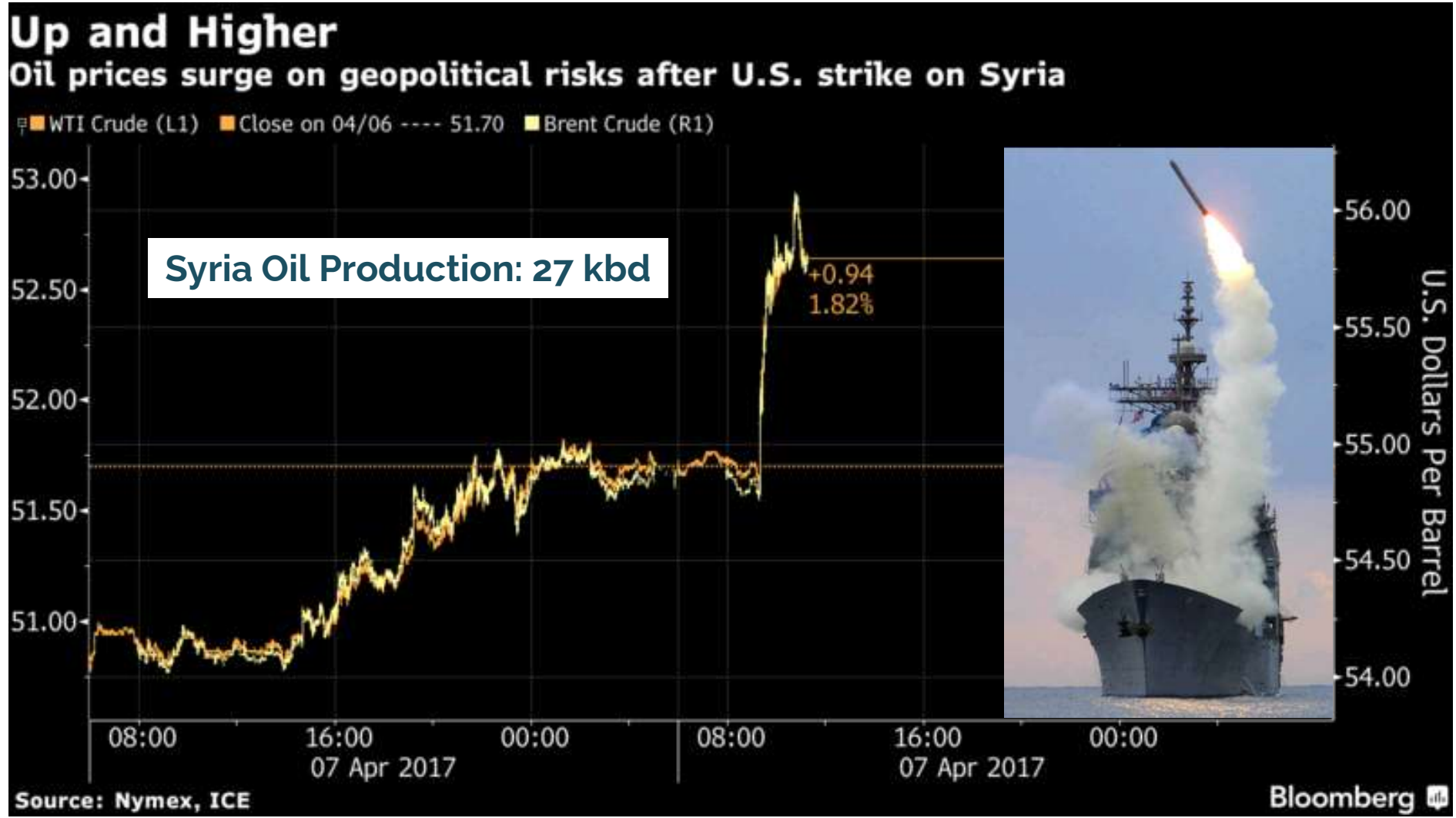
“As long as everyone else complies, we will comply too”

Rebalancing Scenarios



Breakeven Prices Declining Across All Oil Producers -- Not Just Shale Producers

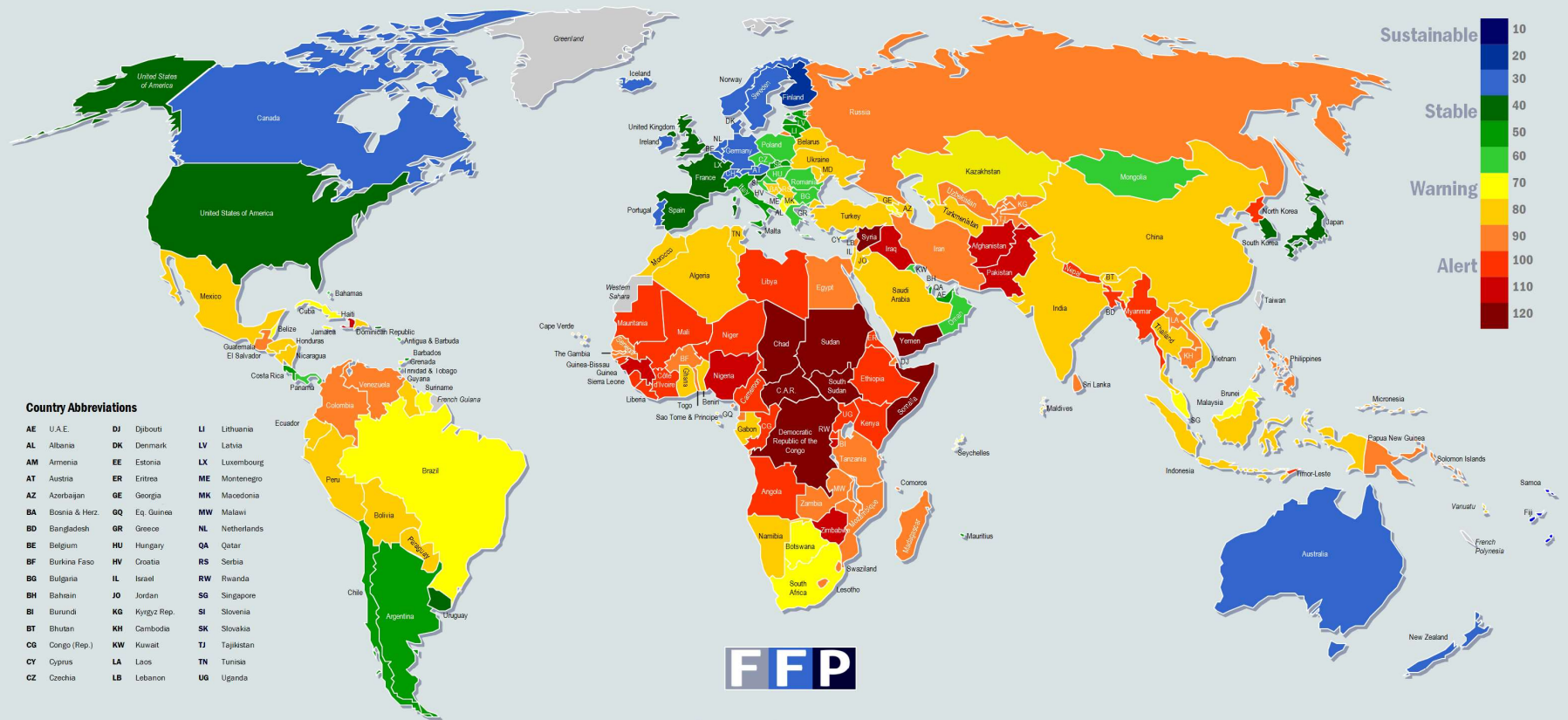




How much oil is at risk?



Fragile States Index: Fragility in the World 2016



The world's 33 net oil exporters ranked by the Fragile State Index



| | Oil Exports kbd | Exports Rank | Fragile State Index Score |
|-------------------|--------------------|-----------------|------------------------------|
| South Sudan | 147.7 | 24 | 113.8 |
| Sudan | 104.9 | 27 | 111.5 |
| Yemen | 46.6 | 31 | 111.5 |
| Syria | 27.0 | 32 | 110.8 |
| Chad | 78.5 | 28 | 110.1 |
| Iraq | 4,030.7 | 3 | 104.7 |
| Nigeria | 2,352.1 | 6 | 103.5 |
| Libya | 431.9 | 19 | 96.4 |
| Republic of Congo | 277.3 | 22 | 92.2 |
| Angola | 1,826.0 | 11 | 90.5 |
| Iran | 1,973.0 | 8 | 86.9 |
| Equatorial Guinea | 289.2 | 21 | 85.2 |
| Uzbekistan | 5.0 | 33 | 83.5 |
| Venezuela | 1,948.3 | 9 | 81.6 |
| Russia | 7,866.9 | 2 | 81.0 |
| Colombia | 676.5 | 17 | 80.2 |
| Algeria | 1,163.6 | 14 | 78.3 |
| Azerbaijan | 741.7 | 16 | 76.3 |
| Turkmenistan | 115.2 | 26 | 76.0 |
| Ecuador | 290.3 | 20 | 75.6 |
| Tunisia | 62.6 | 30 | 74.6 |
| Saudi Arabia | 8,119.2 | 1 | 72.2 |
| Gabon | 232.9 | 23 | 72.0 |
| Mexico | 661.6 | 18 | 70.4 |
| Kazakhstan | 1,398.3 | 13 | 66.5 |
| Brunei | 126.8 | 25 | 62.0 |
| Kuwait | 2,565.0 | 5 | 58.5 |
| Trinidad & Tobago | 72.6 | 29 | 57.8 |
| Oman | 952.2 | 15 | 51.6 |
| Qatar | 1,898.1 | 10 | 45.1 |
| U.A.E. | 3,000.9 | 4 | 44.5 |
| Canada | 2,063.5 | 7 | 23.8 |
| Norway | 1,714.0 | 12 | 21.2 |

ALERT

WARNING

STABLE

SUSTAINABLE

More than 9 million bpd of net oil exports (~10% of global consumption) is produced in countries that fall into the highest risk category

| Thousands of Barrels/Day at Risk | | |
|----------------------------------|-----------|-----------|
| | Worsening | Improving |
| Alert | 9,045 | 277 |
| Warning | 9,878 | 15,793 |
| Stable | 0 | 8,489 |
| Sustainable | 0 | 3,778 |

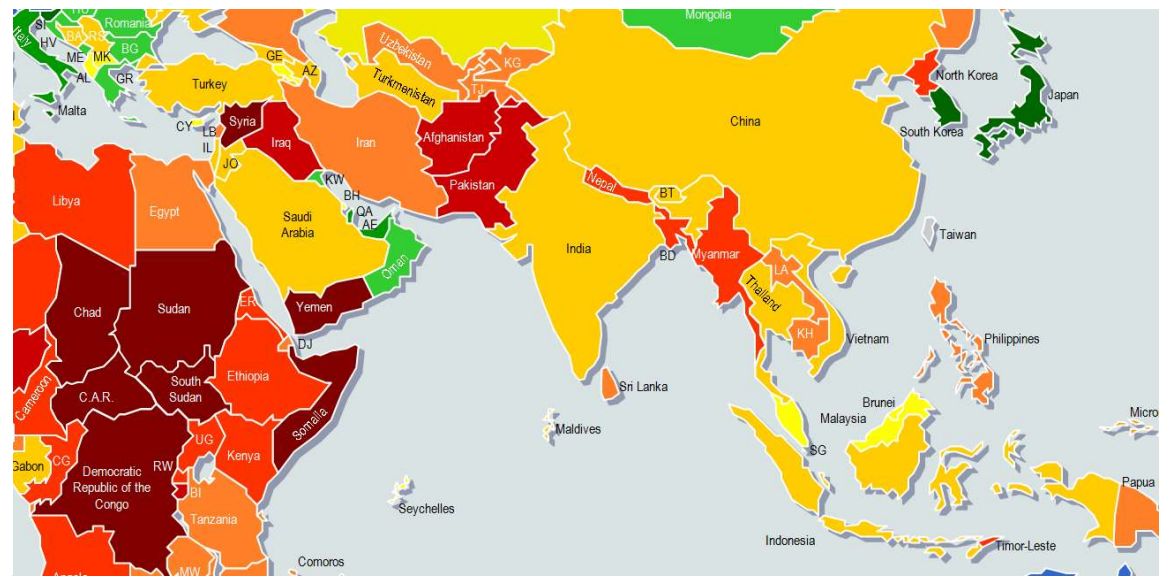
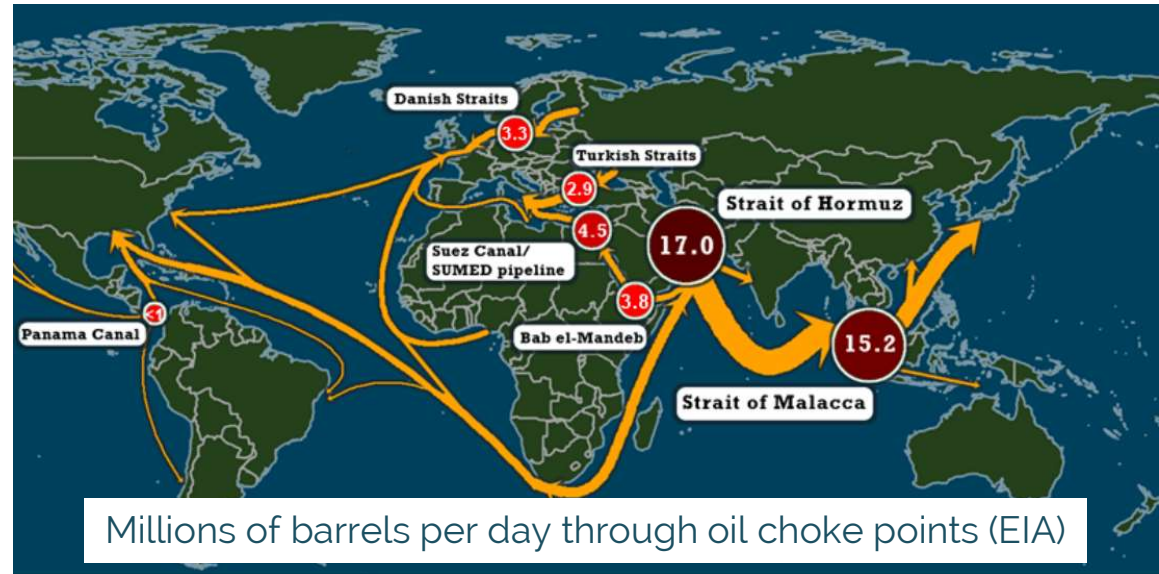
74% of global net oil exports is produced in countries that fall into either the 'warning' or 'alert' categories, and 40% is produced in countries where the FSI score is worsening

| Share of Global Net Exports | | |
|-----------------------------|-------------------|-----------|
| | FSI is: Worsening | Improving |
| Alert | 19% | 1% |
| Warning | 21% | 33% |
| Stable | 0% | 18% |
| Sustainable | 0% | 8% |

High Risk Countries and Global Oil Transportation Choke Points



| | Oil Exports kbd | Exports Rank | Fragile State Index Score |
|-------------------|--------------------|-----------------|------------------------------|
| South Sudan | 147.7 | 24 | 113.8 |
| Sudan | 104.9 | 27 | 111.5 |
| Yemen | 46.6 | 31 | 111.5 |
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| Azerbaijan | 741.7 | 16 | 76.3 |
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| Brunei | 126.8 | 25 | 62.0 |
| Kuwait | 2,565.0 | 5 | 58.5 |
| Trinidad & Tobago | 72.6 | 29 | 57.8 |
| Oman | 952.2 | 15 | 51.6 |
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