

## Oil: Bullish OPEC agreement, waiting on details

OPEC ministers meeting in Vienna today (Wednesday, November 30) reached an agreement to cut production by 1.2 mb/d from October levels to 32.7 mb/d for six months starting in January (based on OPEC secondary sources). This deal achieves a broad consensus with Libya, Nigeria and Indonesia exempt, a modest growth allowance for Iran based on secondary sources and a 4.6% cut across other producers. Non-OPEC members are expected to join as well, reducing production by 0.6 mb/d with Russia accounting for half of this cut. Discussions between OPEC and non-OPEC producers are only scheduled to take place later however, potentially on December 9 in Doha. Finally, during the press conference, the Qatar energy minister did not specify that the OPEC cut would be contingent on non-OPEC participation and stressed instead the expected commitment of Russia.

The announced 1.2 mb/d production cut with buy in from Iran and Iraq is supportive of oil prices, with WTI and Brent crude prices up \$4/bbl so far today and close to our December \$50/bbl forecast. While the inclusion of non-OPEC producers makes this a bigger headline cut than was announced in Algiers, we believe that the catalysts for a further rally in prices will need to come from confirmation of participation by non-OPEC producers, evidence of compliance by OPEC producers and more clarity on what Iran has agreed to do given conflicting numbers in the official agreement.

For the purpose of our oil price forecast, we use historical compliance to announced quotas and assume a 33.0 mb/d realized OPEC output in 1H17 as well as a freeze in Russia production. At such a compliance level, we forecast further upside in WTI oil prices to \$55/bbl in 1H17 (\$56.5/bbl Brent) with the oil market shifting in deficit through 1H17 and Brent moving into backwardation by 2Q17. Better compliance than we expect would lead to higher prices with full compliance to the stated 32.7 mb/d target and a 0.3 mb/d cut by Russia worth an additional \$6/bbl to our price forecast although we expect that producer hedging would ramp up sharply, likely partly offsetting this additional upside potential.

Finally, we reiterate our view that this is a short duration cut, targeting excess inventories and not high oil prices, which would instead unleash a sharp production response both in the US and in the rest of the world. This is consistent with today's OPEC press conference and official statement which focus on rebalancing the oil market and explicitly mention excess inventories but not higher prices.

**Damien Courvalin**  
(212) 902-3307 |  
damien.courvalin@gs.com  
Goldman, Sachs & Co.

**Jeffrey Currie**  
(212) 357-6801 | jeffrey.currie@gs.com  
Goldman, Sachs & Co.

**Abhisek Banerjee**  
+44(20)7774-8190 |  
abhisek.banerjee@gs.com  
Goldman Sachs International

**Chris Mischaikow**  
(212) 902-3053 |  
chris.mischaikow@gs.com  
Goldman, Sachs & Co.



## OPEC reaches a deal to cut production

The OPEC deal features explicit country level production adjustments that target a reduction in OPEC crude production to 32.7 mb/d, down 1.2 mb/d from October (as measured from secondary sources). Libya, Nigeria and Indonesia (an oil importer) are exempt from any adjustment and apart from Iran, the remaining country production decline is 4.6% vs. October (September for Angola). Iran's participation, while essential to this deal, still leaves questions unanswered with the agreement allowing for a 90 kb/d increase in production when compared to October OPEC secondary sources, but requiring a 180 kb/d cut from October production when measured through direct communication<sup>1</sup>. While no details were provided, non-OPEC countries are expected to join this deal with a target of reducing supply by 0.6 mb/d and Russia expected to commit to a 0.3 mb/d production cut.

### Exhibit 1: OPEC and Russia have agreed to cut production to 32.5 mb/d and 0.3 mb/d respectively

OPEC crude oil production (kb/d); Russia includes condensate. Grey shaded cells reflect countries exempt from quotas with production at the GS 2017 forecasts

	Secondary Sources			GS Forecast		Adjustment	
	1H16	Oct-16	Allocation	1H17	2H17	kb/d	%
Algeria	1,088	1,089	1,039	1,103	1,098	-50	-4.6%
Angola	1,769	1,751	1,673	1,690	1,650	-78	-4.5%
Ecuador	548	548	522	560	560	-26	-4.7%
Gabon	218	202	193	205	200	-9	-4.5%
Iran	3,318	3,707	3,797	3,782	3,842	90	+2.4%
Iraq	4,261	4,561	4,351	4,538	4,550	-210	-4.6%
Kuwait	2,748	2,838	2,707	2,724	2,913	-131	-4.6%
Libya	341	528	528	600	600		
Nigeria	1,673	1,628	1,628	1,600	1,600		
Qatar	664	648	618	597	618	-30	-4.6%
Saudi	10,222	10,544	10,058	9,893	10,538	-486	-4.6%
UAE	2,830	3,013	2,874	2,954	3,113	-139	-4.6%
Venezuela	2,227	2,067	1,972	2,040	1,988	-95	-4.6%
Indonesia	718	722	722	715	695		
<b>OPEC-14</b>	<b>32,624</b>	<b>33,846</b>	<b>32,682</b>	<b>33,000</b>	<b>33,962</b>	<b>-1,164</b>	<b>-3.4%</b>
Russia	10,870	11,205	10,905	11,214	11,339	-300	-2.7%
Oman	1,000	1,010	964	970	1,000	-46	-4.6%
<b>Total</b>	<b>44,494</b>	<b>46,061</b>	<b>44,551</b>	<b>45,184</b>	<b>46,301</b>	<b>-1,510</b>	<b>-3.4%</b>

Angola reference production is Sep-16

Iran Oct-16 secondary sources implied from OPEC agreement release

Nigeria, Libya and Indonesia 1H17 production assumed at Oct-16 secondary source

Source: OPEC, IEA, Goldman Sachs Global Investment Research

## Implementation will be key

With the deal agreed to in principle and country level quotas established, focus will now shift to implementation. The deal is effective as of January and it will take three weeks of shipping data to get a sense of how well the deal is implemented, suggesting that the full upside to oil prices will likely only materialize by late January. Looking at the last 17 production cuts (1982-2009), observed production cuts have typically come in at 60% of the announced cuts, as measured by the change in secondary source production vs. the decline announced as calculated by the difference between pre-cut production levels and the announced quota levels. Our

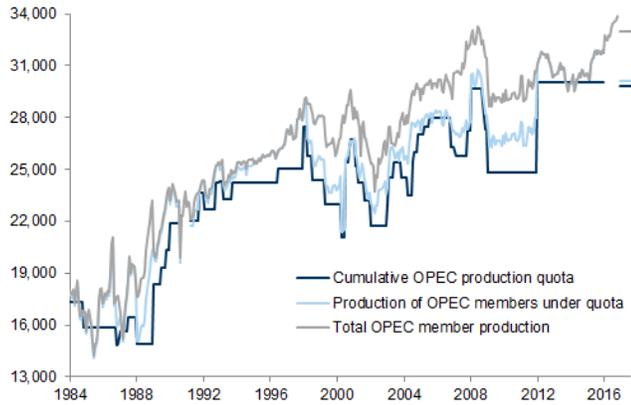
<sup>1</sup> The Iran production figures provided in the OPEC Agreement are slightly different than the production data released in the November OPEC OMR which stated October Iran production at 3.69 mb/d (secondary sources) and 3.92 (direct communication). This difference may be due to the usual revisions that occur to OPEC published production data - for example, today's October data also includes a +12 kb/d upward revision to Saudi's production.



base case oil supply demand balance which we published last week reflects a 73% compliance to today's target for OPEC members for an effective production level of 33.0 mb/d, slightly better than past compliance but still short of the announced quotas.

**Exhibit 2: The key to the remaining upside in oil prices will be determined by the compliance to the announced quotas**

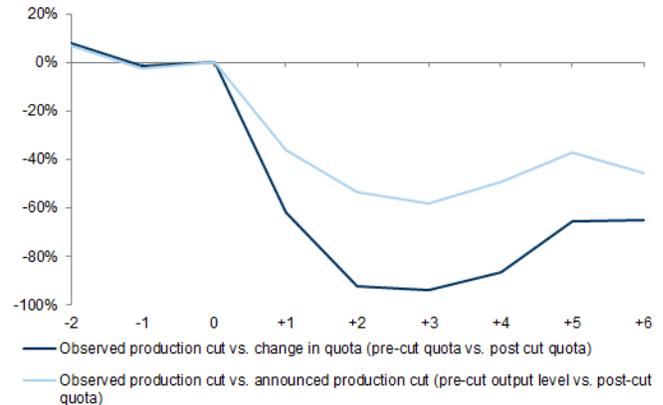
OPEC crude oil production: total, countries under quota and announced quotas



Source: OPEC, IEA, Goldman Sachs Global Investment Research

**Exhibit 3: Historically, observed production cuts have fallen short of initial targets**

Observed vs. announced production cuts



Source: OPEC, IEA, Goldman Sachs Global Investment Research

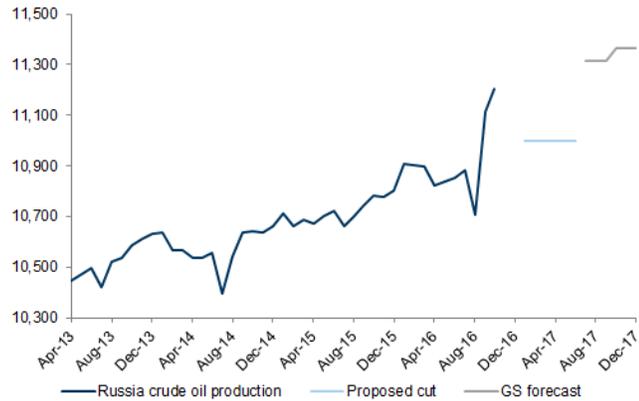
**Non-OPEC participation can help, but details are light and historical compliance poor**

The Qatar minister announced that Russia would announce a 0.3 mb/d production cut. Russia's track record in participating in OPEC production cuts is mixed however - it complied well in 1998 to the two proposed cuts but instead increased production in April 1999 and January 2002. As a result, our base case remains that Russian crude oil production will be flat and a cut would therefore be slightly bullish vs. our base case. Other non-OPEC participants likely include Oman, which has stated that it would match the OPEC cut (implying a 46 kb/d cut). Other past participants to non-OPEC cuts include Mexico, which we already expect to decline by 160 kb/d in 2017 and Norway which has stated that it would not participate this time. Kazakhstan could be another contributor where we currently expect the ramp up of Kashagan to increase production by 140 kb/d. But in the absence of details, we maintain our Kazakhstan forecast unchanged and view details on this non-OPEC 0.6 mb/d additional cut as necessary for prices to meaningfully rally from here.



**Exhibit 4: Russia is proposing to cut production by 300 kb/d; we expect flat production then strong growth in 2H17**

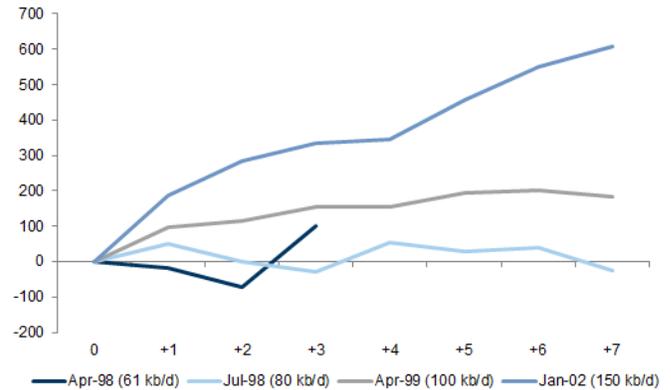
Russia crude oil production (kb/d)



Source: IEA, Goldman Sachs Global Investment Research

**Exhibit 5: Russia's compliance was strong in 1998 but not since then**

Changes in Russia crude oil production vs. agreed production cut (kb/d)



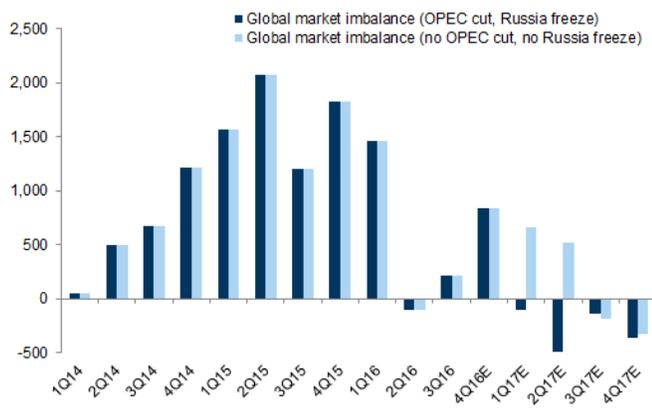
Source: IEA, Reuters

**We reiterate our \$55/bbl 1H17 forecast**

For the purpose of our oil price forecast, we assume that slippage occurs relative to the announced quotas, with realized 1H17 OPEC crude production of 33.0 mb/d and Russia production sequentially flat. This still leads to Brent backwardation by 2Q17 but the price upside is more limited to \$56.50/bbl which is our 1H17 Brent price forecast. Better compliance through 1H17 than we expect would lead to higher prices: full compliance to the country level targets, our Libya/Nigeria/Indonesia forecasts and a 0.35 mb/d cut by Russia and Oman would add an additional \$6/bbl to our price forecast, although we expect that producer hedging would ramp up sharply, likely partly offsetting this additional upside potential.

**Exhibit 6: An OPEC cut to 33 mb/d and a Russia freeze would bring the market in deficit from 1Q17 onward**

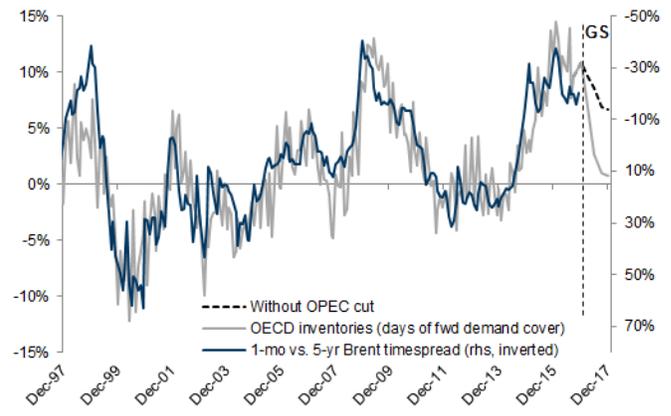
Global oil supply minus demand (thousand barrels per day)



Source: IEA, Goldman Sachs Global Investment Research

**Exhibit 7: We expect the Brent forward curve to move into backwardation by 2Q17**

OECD commercial stocks (exc. US NGLs) in days of OECD demand coverage vs. 3-yr average (lhs) vs. 1-mo to 5-yr Brent timespreads (%), rhs, inverted



Source: IEA, Goldman Sachs Global Investment Research

**A short duration cut to target excess inventories not high prices**

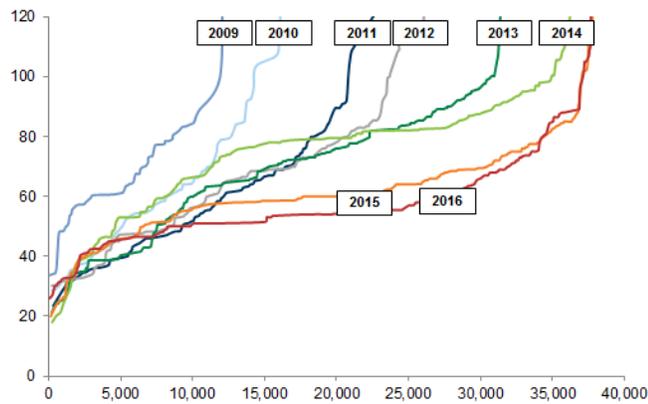
As we laid out in [our note last week](#), we believe that the goal of an OPEC production cut is to normalize excess inventory levels but not to target outright high prices. Normalization of inventories is key to low-cost producers as: (1) it generates



backwardation which removes hedging gains from high-cost producers and helps low-cost producers grow market share, and (2) it reduces oil price volatility which increases the valuation of the debt and equity they are issuing. In our view, the goal of normalizing inventories should however not target elevated oil prices as the flattening of the oil cost curve and the unprecedented velocity of the shale supply response would likely make such an endeavor rapidly self-defeating above \$55/bbl. This is consistent with today's OPEC press conference and official statement which focused on rebalancing the oil market and explicitly mentioned excess inventories, but not higher prices.

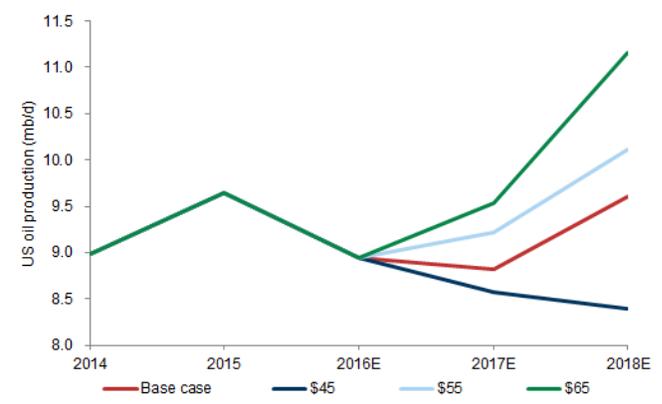
Importantly, we do not believe that oil prices can sustainably remain above \$55/bbl, with global production responding first and foremost in the US, but also through greater brownfield spending elsewhere, which is short cycle as well. In the US, our E&P equity analysts expect a sizeable shale response with 0.8 mb/d of additional supply in 2017 at \$55/bbl vs. \$45/bbl. This is also the price point below which we witnessed high-cost production rolling over and has been mentioned by such producers as the point at which activity would restart in earnest. As a result, we reiterate our 2H17 WTI forecast of \$50/bbl.

**Exhibit 8: The flattening of the oil cost curve will drive low cost producers to increase output once inventories are normalized**  
 Cumulative production of non-plateau oil assets (horizontal, thousand barrels per day) vs. their \$/bbl Brent breakeven (vertical)



Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 9: We expect healthy US production growth at \$55/bbl**  
 US oil production under various annual oil prices (5% lower reinvestment rate at \$45/bbl)



Source: Company data, Goldman Sachs Global Investment Research



## Oil supply-demand fundamentals

## Exhibit 10: Global supply-demand balance

Thousand barrels per day

Assuming an OPEC cut	1Q14	2Q14	3Q14	4Q14	1Q15	2Q15	3Q15	4Q15	1Q16	2Q16	3Q16	4Q16E	1Q17E	2Q17E	3Q17E	4Q17E
Supply	92,247	93,154	94,347	95,554	95,204	96,464	97,179	97,369	96,595	95,965	97,234	97,736	96,593	96,707	98,412	98,292
Demand	92,194	92,665	93,671	94,345	93,636	94,392	95,972	95,539	95,134	96,072	97,019	96,900	96,700	97,200	98,550	98,650
Global market imbalance	53	489	676	1,209	1,568	2,071	1,206	1,830	1,460	-107	216	836	-107	-493	-138	-358
OECD commercial stocks	227	754	756	-133	946	970	829	353	337	371	175	16	-527	-563	-118	-378
OECD commercial exc. US NGLs	141	612	677	22	928	823	723	472	348	268	135	206	-568	-659	-150	-163
OECD gvt stocks	-2	-40	-20	12	12	31	-64	70	57	9	45	15	0	0	0	0
OECD stocks	225	713	735	-121	958	1,001	765	423	393	380	221	31	-527	-563	-118	-378
Non-OECD stocks exc. China	416	236	328	451	296	320	448	147	-179	183	149	175	-100	-100	-100	0
China	740	491	162	192	658	483	475	474	1,183	775	689	430	470	170	80	20
Identified stocks	1,381	1,440	1,225	522	1,913	1,804	1,688	1,045	1,398	1,338	1,059	636	-157	-493	-138	-358
Floating Storage/Oil in Transit	211	-324	272	-174	412	436	-151	479	204	340	-203	200	50	0	0	0
GS Miscellaneous to balance	-1,539	-627	-821	861	-757	-169	-331	306	-142	-1,785	-640	0	0	0	0	0

Source: IEA, EIA, JODI, NBS, GTT, Goldman Sachs Global Investment Research

## Exhibit 11: OPEC supplies

Thousand barrels per day

	1Q2015	2Q2015	3Q2015	4Q2015	1Q2016	2Q2016E	3Q2016E	4Q2016E	1Q2017E	2Q2017E	3Q2017E	4Q2017E	2015	2016	2017	yoy 15	yoy 16	yoy 17
Ecuador	546	547	533	537	543	550	553	560	560	560	560	560	541	552	560	-11	11	8
Venezuela	2,394	2,433	2,400	2,383	2,343	2,230	2,140	2,105	2,055	2,025	2,000	1,975	2,403	2,205	2,014	-59	-198	-191
Indonesia	695	704	688	691	713	737	740	737	720	710	700	690	695	732	705	-3	37	-27
Algeria	1,107	1,110	1,120	1,110	1,103	1,093	1,120	1,113	1,105	1,100	1,100	1,095	1,112	1,108	1,100	-9	-4	-8
Gabon	230	227	225	222	220	217	215	203	205	205	200	200	226	214	203	-6	-12	-11
Angola	1,766	1,760	1,773	1,757	1,770	1,736	1,737	1,648	1,700	1,680	1,665	1,635	1,764	1,723	1,670	103	-41	-53
Nigeria	1,806	1,750	1,799	1,830	1,716	1,503	1,370	1,607	1,600	1,600	1,600	1,600	1,796	1,549	1,600	-106	-248	51
Libya	373	460	377	400	363	316	313	570	600	600	600	600	402	391	600	-56	-12	209
Iran	2,816	2,850	2,873	2,887	3,152	3,587	3,660	3,737	3,767	3,797	3,827	3,857	2,856	3,534	3,812	45	677	278
Iraq	3,515	3,966	4,276	4,309	4,322	4,313	4,416	4,547	4,525	4,550	4,550	4,550	4,017	4,399	4,544	672	383	145
Kuwait	2,700	2,723	2,783	2,780	2,830	2,817	2,893	2,844	2,854	2,874	2,905	2,895	2,747	2,846	2,882	139	100	36
Kuwait assuming cut	2,700	2,723	2,783	2,780	2,830	2,817	2,893	2,844	2,725	2,724	2,905	2,895	2,747	2,846	2,812	139	100	-34
Neutral Zone	200	86	0	0	0	0	0	0	0	0	0	0	72	0	13	-312	-72	13
Saudi Arabia	9,768	10,290	10,288	10,180	10,206	10,332	10,620	10,383	10,350	10,450	10,650	10,400	10,131	10,386	10,463	604	254	77
Saudi Arabia assuming cut	9,768	10,290	10,288	10,180	10,206	10,332	10,620	10,383	9,881	9,905	10,650	10,400	10,131	10,386	10,209	604	254	-177
UAE	2,866	2,887	2,927	2,910	2,862	2,977	3,090	3,067	3,097	3,115	3,125	3,100	2,897	2,999	3,109	139	101	110
UAE assuming cut	2,866	2,887	2,927	2,910	2,862	2,977	3,090	3,067	2,956	2,952	3,125	3,100	2,897	2,999	3,033	139	101	35
Qatar	673	663	640	663	660	660	647	606	630	625	620	615	660	643	623	-46	-17	-21
Qatar assuming cut	673	663	640	663	660	660	647	606	601	592	620	615	660	643	607	-46	-17	-36
Total OPEC Crude	31,455	32,457	32,702	32,659	32,804	33,069	33,514	33,726	33,767	33,891	34,102	33,822	32,318	33,278	33,895	1,093	960	617
Total OPEC Crude assuming cut	31,455	32,457	32,702	32,659	32,804	33,069	33,514	33,726	33,000	33,000	34,102	33,822	32,318	33,278	33,481	1,093	960	203
Total OPEC NGL	6,544	6,668	6,753	6,783	6,770	6,853	6,933	6,973	6,983	6,968	7,026	7,046	6,687	6,883	7,006	201	196	123
Total OPEC supply	37,999	39,124	39,455	39,441	39,574	39,922	40,447	40,700	40,750	40,859	41,127	40,867	39,005	40,161	40,901	1,293	1,156	740
World supply	95,204	96,464	97,179	97,369	96,595	95,965	97,234	97,736	97,409	97,698	98,412	98,292	96,554	96,883	97,953	2,731	329	1,070
World supply assuming cut	95,204	96,464	97,179	97,369	96,595	95,965	97,234	97,736	96,593	96,707	98,412	98,292	96,554	96,883	97,501	2,731	329	618

Source: IEA, OPEC, JODI, Goldman Sachs Global Investment Research

**Exhibit 12: Non-OPEC supplies**

Thousand barrels per day

	1Q2015	2Q2015	3Q2015	4Q2015	1Q2016	2Q2016E	3Q2016E	4Q2016E	1Q2017E	2Q2017E	3Q2017E	4Q2017E	2015	2016	2017	yoy 15	yoy 16	yoy 17
Lower 48 crude	7,559	7,556	7,347	7,213	7,053	6,780	6,650	6,530	6,495	6,520	6,605	6,755	7,419	6,753	6,594	554	-666	-159
Gulf of Mexico crude	1,429	1,440	1,618	1,569	1,608	1,580	1,593	1,640	1,695	1,710	1,685	1,720	1,514	1,605	1,703	117	91	97
Alaska crude	498	477	443	514	511	488	450	490	480	470	430	480	483	485	465	-14	2	-20
US crude	9,486	9,473	9,406	9,296	9,173	8,848	8,693	8,660	8,670	8,700	8,720	8,955	9,416	8,843	8,761	657	-572	-82
US NGL	3,151	3,344	3,403	3,468	3,381	3,572	3,495	3,600	3,540	3,650	3,700	3,750	3,341	3,512	3,660	328	171	148
Lower 48 other	191	231	263	254	178	190	190	185	185	180	180	180	235	186	181	13	-49	-5
US ethanol	956	959	961	987	987	973	1,008	980	990	990	990	970	966	987	985	32	21	-2
Total US	13,785	14,006	14,036	14,004	13,719	13,583	13,385	13,425	13,385	13,520	13,590	13,855	13,958	13,528	13,588	1,031	-429	59
Canada	4,563	4,040	4,436	4,503	4,609	3,860	4,580	4,600	4,630	4,350	4,675	4,700	4,385	4,412	4,589	108	27	176
Mexico	2,657	2,557	2,597	2,588	2,540	2,489	2,450	2,400	2,365	2,325	2,285	2,255	2,600	2,470	2,308	-206	-130	-162
<b>Total North America</b>	<b>21,004</b>	<b>20,603</b>	<b>21,069</b>	<b>21,095</b>	<b>20,869</b>	<b>19,932</b>	<b>20,415</b>	<b>20,425</b>	<b>20,380</b>	<b>20,195</b>	<b>20,550</b>	<b>20,810</b>	<b>20,943</b>	<b>20,410</b>	<b>20,484</b>	<b>933</b>	<b>-533</b>	<b>73</b>
Argentina	631	634	631	634	622	607	609	615	615	610	615	615	632	613	614	2	-19	0
Brazil	2,539	2,495	2,561	2,531	2,401	2,548	2,729	2,750	2,725	2,685	2,635	2,585	2,531	2,607	2,658	181	75	51
Colombia	1,033	1,026	978	1,002	957	907	847	840	830	820	810	810	1,010	888	818	16	-122	-70
Other Latam	428	403	392	404	371	376	371	365	360	355	350	345	407	371	353	-40	-36	-18
<b>Non-OPEC LatAm</b>	<b>4,631</b>	<b>4,558</b>	<b>4,562</b>	<b>4,570</b>	<b>4,351</b>	<b>4,438</b>	<b>4,556</b>	<b>4,570</b>	<b>4,530</b>	<b>4,470</b>	<b>4,410</b>	<b>4,355</b>	<b>4,580</b>	<b>4,479</b>	<b>4,441</b>	<b>158</b>	<b>-102</b>	<b>-37</b>
Norway	1,930	1,929	1,913	2,019	2,034	1,936	1,896	2,075	2,045	1,950	1,915	2,020	1,948	1,985	1,983	59	38	-3
UK	920	1,020	896	1,042	1,088	1,053	930	1,050	1,095	1,065	955	1,070	970	1,030	1,046	104	61	16
Other Europe	715	696	696	693	650	589	602	635	630	620	615	605	700	619	618	-12	-81	-1
<b>Total Europe</b>	<b>3,565</b>	<b>3,646</b>	<b>3,505</b>	<b>3,754</b>	<b>3,772</b>	<b>3,579</b>	<b>3,428</b>	<b>3,760</b>	<b>3,770</b>	<b>3,635</b>	<b>3,485</b>	<b>3,695</b>	<b>3,618</b>	<b>3,635</b>	<b>3,646</b>	<b>151</b>	<b>17</b>	<b>12</b>
Azerbaijan	874	832	852	839	853	857	823	820	815	810	805	800	849	838	808	-12	-11	-31
Kazakhstan	1,733	1,680	1,609	1,669	1,694	1,583	1,520	1,650	1,725	1,730	1,770	1,785	1,673	1,612	1,753	-19	-61	141
Russia	11,024	11,035	11,040	11,128	11,241	11,176	11,239	11,500	11,600	11,650	11,650	11,700	11,057	11,289	11,650	146	232	361
<b>Russia assuming freeze</b>	<b>11,024</b>	<b>11,035</b>	<b>11,040</b>	<b>11,128</b>	<b>11,241</b>	<b>11,176</b>	<b>11,239</b>	<b>11,500</b>	<b>11,550</b>	<b>11,550</b>	<b>11,650</b>	<b>11,700</b>	<b>11,057</b>	<b>11,289</b>	<b>11,613</b>	<b>146</b>	<b>232</b>	<b>324</b>
Other FSU	414	423	416	425	413	392	378	380	375	375	370	370	419	391	373	13	-29	-18
<b>Total FSU</b>	<b>14,045</b>	<b>13,969</b>	<b>13,917</b>	<b>14,060</b>	<b>14,201</b>	<b>14,009</b>	<b>13,959</b>	<b>14,350</b>	<b>14,515</b>	<b>14,565</b>	<b>14,595</b>	<b>14,655</b>	<b>13,998</b>	<b>14,130</b>	<b>14,583</b>	<b>128</b>	<b>132</b>	<b>453</b>
China	4,285	4,401	4,335	4,327	4,185	4,064	3,950	3,825	3,850	3,825	3,750	3,750	4,337	4,006	3,794	90	-331	-212
India	872	860	865	874	854	846	850	845	835	830	830	825	868	849	830	-8	-19	-19
Malaysia	742	715	665	702	730	712	709	715	720	720	710	715	706	716	716	59	10	0
Rest of Asia-Pacific	1,601	1,617	1,676	1,662	1,621	1,560	1,558	1,545	1,525	1,510	1,520	1,530	1,639	1,571	1,521	4	-68	-50
<b>Non-OPEC Asia</b>	<b>7,499</b>	<b>7,593</b>	<b>7,542</b>	<b>7,565</b>	<b>7,390</b>	<b>7,182</b>	<b>7,066</b>	<b>6,930</b>	<b>6,930</b>	<b>6,885</b>	<b>6,810</b>	<b>6,820</b>	<b>7,550</b>	<b>7,142</b>	<b>6,861</b>	<b>145</b>	<b>-408</b>	<b>-281</b>
<b>Non-OPEC Middle East</b>	<b>1,319</b>	<b>1,271</b>	<b>1,250</b>	<b>1,250</b>	<b>1,251</b>	<b>1,254</b>	<b>1,276</b>	<b>1,270</b>	<b>1,265</b>	<b>1,260</b>	<b>1,255</b>	<b>1,245</b>	<b>1,272</b>	<b>1,263</b>	<b>1,256</b>	<b>-73</b>	<b>-9</b>	<b>-6</b>
<b>Non-OPEC Africa</b>	<b>2,075</b>	<b>2,064</b>	<b>2,043</b>	<b>2,031</b>	<b>2,014</b>	<b>1,934</b>	<b>2,031</b>	<b>2,040</b>	<b>2,055</b>	<b>2,070</b>	<b>2,085</b>	<b>2,100</b>	<b>2,053</b>	<b>2,005</b>	<b>2,078</b>	<b>-15</b>	<b>-49</b>	<b>73</b>
Processing gains	2,240	2,240	2,240	2,240	2,267	2,267	2,267	2,267	2,294	2,294	2,294	2,294	2,240	2,267	2,294	26	27	27
Biofuels exc. US ethanol	826	1,395	1,596	1,363	906	1,448	1,789	1,425	920	1,465	1,800	1,450	1,295	1,392	1,409	-14	97	17
<b>Total non-OPEC supply</b>	<b>57,205</b>	<b>57,339</b>	<b>57,724</b>	<b>57,928</b>	<b>57,020</b>	<b>56,043</b>	<b>56,787</b>	<b>57,037</b>	<b>56,659</b>	<b>56,839</b>	<b>57,284</b>	<b>57,424</b>	<b>57,549</b>	<b>56,722</b>	<b>57,052</b>	<b>1,438</b>	<b>-827</b>	<b>330</b>
<b>Non-OPEC ex. US Lower 48 &amp; NGL</b>	<b>46,304</b>	<b>46,208</b>	<b>46,710</b>	<b>46,993</b>	<b>46,408</b>	<b>45,501</b>	<b>46,452</b>	<b>46,722</b>	<b>46,439</b>	<b>46,489</b>	<b>46,799</b>	<b>46,739</b>	<b>46,554</b>	<b>46,271</b>	<b>46,617</b>	<b>542</b>	<b>-283</b>	<b>346</b>

Source: IEA, National Sources, Goldman Sachs Global Investment Research

**Exhibit 13: Oil demand**

Thousand barrels per day

	1Q2015	2Q2015	3Q2015	4Q2015	1Q2016E	2Q2016E	3Q2016E	4Q2016E	1Q2017E	2Q2017E	3Q2017E	4Q2017E	2015	2016	2017	yoy 15	yoy 16	yoy 17
USA	19,734	19,757	20,129	19,737	19,775	19,722	20,152	20,111	19,994	19,782	20,281	20,350	19,839	19,940	20,102	429	101	161
Canada	2,434	2,332	2,453	2,405	2,390	2,373	2,492	2,428	2,439	2,392	2,523	2,452	2,406	2,421	2,452	(1)	15	31
Mexico	1,938	1,973	2,066	2,048	2,019	2,038	2,029	2,055	2,054	2,038	2,043	2,065	2,006	2,035	2,050	(33)	29	15
<b>North America</b>	<b>24,105</b>	<b>24,062</b>	<b>24,648</b>	<b>24,190</b>	<b>24,184</b>	<b>24,133</b>	<b>24,673</b>	<b>24,594</b>	<b>24,487</b>	<b>24,212</b>	<b>24,847</b>	<b>24,867</b>	<b>24,251</b>	<b>24,396</b>	<b>24,603</b>	<b>395</b>	<b>145</b>	<b>207</b>
Brazil	3,169	3,173	3,225	3,202	3,024	3,074	3,081	3,166	3,108	3,144	3,117	3,185	3,192	3,086	3,139	(51)	(106)	52
Chile	350	345	336	337	348	355	342	343	331	353	341	349	342	347	344	6	5	(3)
LatAm ex. Mexico, Brazil, Chile	3,451	3,594	3,630	3,589	3,444	3,576	3,646	3,598	3,464	3,596	3,666	3,618	3,566	3,566	3,586	(15)	-	20
LatAm ex. Mexico	6,970	7,112	7,191	7,128	6,816	7,005	7,069	7,107	6,903	7,093	7,124	7,152	7,100	6,999	7,068	(60)	(101)	69
OECD Europe	13,458	13,572	14,167	13,705	13,644	13,933	14,344	13,840	13,785	13,953	14,376	14,046	13,725	13,940	14,040	215	215	100
Non-OECD Europe	653	672	688	688	675	706	707	713	695	726	727	733	675	700	720	29	25	20
<b>Total Europe</b>	<b>14,111</b>	<b>14,244</b>	<b>14,855</b>	<b>14,393</b>	<b>14,319</b>	<b>14,639</b>	<b>15,051</b>	<b>14,553</b>	<b>14,480</b>	<b>14,679</b>	<b>15,103</b>	<b>14,779</b>	<b>14,401</b>	<b>14,641</b>	<b>14,760</b>	<b>244</b>	<b>240</b>	<b>120</b>
Japan	4,701	3,802	3,850	4,136	4,431	3,660	3,750	4,109	4,272	3,633	3,668	4,023	4,122	3,988	3,899	(148)	(135)	(88)
South Korea	2,457	2,293	2,362	2,516	2,593	2,481	2,535	2,605	2,623	2,528	2,621	2,652	2,407	2,554	2,606	59	147	52
Australia & New Zealand	1,301	1,262	1,271	1,303	1,292	1,279	1,263	1,322	1,312	1,301	1,295	1,346	1,284	1,289	1,313	9	5	25
Israel	222	223	229	225	233	224	235	247	243	234	245	257	225	235	245	4	10	10
OECD Asia Pacific	8,681	7,580	7,712	8,180	8,548	7,645	7,783	8,283	8,450	7,696	7,830	8,278	8,038	8,065	8,063	(75)	27	(1)
China																		

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### Reg AC

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