SUMMARY FINDINGS FROM A COMPARISON OF DATA AND FORECASTS ON THE OIL MARKET BY THE INTERNATIONAL ENERGY AGENCY (IEA) AND ORGANIZATION OF THE PETROLEUM EXPORTING COUNTRIES (OPEC).

FEATUREING A COMPARATIVE ANALYSIS OF OIL INVENTORY DATA REPORTED BY JODI, THE IEA, OPEC AND SECONDARY SOURCES IN COLLABORATION WITH THE RAPIDAN ENERGY GROUP.

1. NOTE BY THE SECRETARY GENERAL ........................................................................................................... 2

2. KEY POINTS .................................................................................................................................................. 3

   2.1 DEMAND ............................................................................................................................................... 3

   2.2 SUPPLY .................................................................................................................................................. 3

   2.3 STOCKS .................................................................................................................................................. 3

   2.4 SNAPSHOT (mb/d) ................................................................................................................................... 4

3. GLOBAL ANALYSIS ....................................................................................................................................... 5

   3.1 DEMAND DATA ..................................................................................................................................... 5

   3.2 SUPPLY DATA ....................................................................................................................................... 6

   3.3 STOCK DATA ......................................................................................................................................... 8

   3.3.1. GLOBAL STOCK ANALYSIS ............................................................................................................. 9
1. NOTE BY THE SECRETARY GENERAL

The IEF conducts a comprehensive comparative analysis of the short-, medium-, and long-term energy outlooks of the IEA and OPEC, to inform the IEA-IEF-OPEC Symposium on Energy Outlooks that the IEF hosts in Riyadh as part of the trilateral work programme on a yearly basis.

To inform IEF stakeholders on how perspectives on the oil market of both organisations evolve over time more regularly, this monthly summary provides:

- Key findings and a snapshot overview of data points gained from comparing basic historical data and short-term forecasts of the IEA Oil Market Report and the OPEC Monthly Oil Market Report.

- A comparative analysis of oil inventory data reported by JODI, the IEA, OPEC and secondary sources in collaboration with the Rapidan Energy Group.

Moreover, international developments this month that will have an impact on oil market balances are as follows:

**Geopolitical Instability**

- An Iranian oil tanker SABITI was struck on Friday 11 October 2019 in the Red Sea causing an explosion and an oil spill. This is the latest in a series of attacks in the region that have destabilised energy markets and heightened geopolitical tensions.

**US-China Trade Conflict**

- The US and China are working towards a “phase 1” partial trade deal that would see China buy more US agricultural products in return for a suspension in additional tariffs (See attached IEF insight brief for further analysis).

**OPEC Membership**

- Ecuador plans to leave OPEC in January next year as it seeks to increase revenue from crude oil sales.

I trust this month’s analysis helps to sharpen focus on evolving short-term market perspectives.

Dr Sun Xiansheng  
Secretary General  
International Energy Forum
2. KEY POINTS

2.1 DEMAND

- **OPEC and IEA world demand growth estimates reach lowest levels this year.** The IEA decreased its forecast by 10 kb/d to **1.00 mb/d** and OPEC growth projections decreased from last month by 40 kb/d to reach a total growth of **0.98 mb/d**. The difference in growth between both organisations is 20 kb/d. The IEA and OPEC estimates for absolute world demand in 2019 are **100.30 mb/d** and **99.80 mb/d**, respectively.

- **OPEC and IEA OECD demand growth estimates fall to new lows while Non-OECD demand remains steady from last month.** The IEA’s estimate for OECD demand growth decreases by 90 kb/d to reach a total growth of **0.01 mb/d**, while OPEC’s estimate falls 50 kb/d to reach a growth of **0.05 mb/d**. The IEA’s Non-OECD growth decreased by 10 kb/d for total growth of **0.99 mb/d**, while OPEC growth remains the same at **0.92 mb/d**. The IEA and OPEC differ by 70 kb/d on Non-OECD demand growth and 40 kb/d on OECD demand growth.

2.2 SUPPLY

- **OPEC Non-OPEC supply estimate reaches lowest levels since May 2018.** The IEA’s October 2019 assessment for Non-OPEC growth is down by 30 kb/d and OPEC’s growth assessment decreases by 70 kb/d for an identical total growth of **1.82 mb/d** by both organisations. In absolute values, OPEC and the IEA estimate Non-OPEC supply estimates at **64.26 mb/d** and **64.76 mb/d** respectively for 2019. OPEC reports OECD growth at **1.56 mb/d**, a decrease of 20 mb/d from last month. The IEA’s OECD growth estimate decreases to **1.48 mb/d**, a revision of 90 mb/d and the sharpest drop this year.

- **The IEA and OPEC report slight increases in Non-OECD supply growth.** OPEC revised up its assessment by 30 kb/d to reach a total growth of **0.23 mb/d**. The IEA also revised its projection by 20 kb/d from last month to reach a total growth of **0.20 mb/d**. In absolute values, OPEC and the IEA non-OECD supply estimates are **32.13 mb/d** and **31.33 mb/d** respectively for 2019.

2.3 STOCKS

- **The IEA and OPEC continue to report strong alignment on stock figures. Stocks are back above the five-year average since late 2018.** The IEA reports OECD stock levels at **2974 mb** which is close to OPEC’s assessment of **2937 mb** for OECD stock that is 43.1 and 11 mb above the five-year average, respectively. The divergence between OPEC and the IEA stands at 37 mb for October. Total US crude inventories (excluding SPR) amount to about 433 mb according to the US Energy Information Administration (EIA). The EIA reports U.S. crude oil inventories are at the five-year average for this time of year. OPEC reports US stocks below the five-year average by about 1 mb.
## 2.4 SNAPSHOT (mb/d)

<table>
<thead>
<tr>
<th></th>
<th>Demand</th>
<th>IEA</th>
<th>Growth</th>
<th>0.01</th>
<th>-0.09</th>
<th>OECD</th>
<th>Growth</th>
<th>0.99</th>
<th>-0.01</th>
<th>World</th>
<th>Growth</th>
<th>1.00</th>
<th>-0.10</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEC</td>
<td>47.98</td>
<td>0.05</td>
<td>-0.05</td>
<td>51.82</td>
<td>0.92</td>
<td>99.80</td>
<td>0.98</td>
<td>-0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td>0.13</td>
<td>0.04</td>
<td>0.04</td>
<td>0.63</td>
<td>0.07</td>
<td>0.50</td>
<td>0.02</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Supply</th>
<th>IEA</th>
<th>Growth</th>
<th>1.48</th>
<th>-0.09</th>
<th>OECD</th>
<th>Growth</th>
<th>0.20</th>
<th>0.02</th>
<th>NOPEC</th>
<th>Growth</th>
<th>1.82</th>
<th>-0.03</th>
<th>OPEC</th>
<th>Growth</th>
<th>28.35</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEC</td>
<td>29.85</td>
<td>1.56</td>
<td>-0.20</td>
<td>32.13</td>
<td>0.23</td>
<td>64.26</td>
<td>1.82</td>
<td>0.17</td>
<td>28.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td>1.50</td>
<td>0.08</td>
<td>0.11</td>
<td>0.80</td>
<td>0.03</td>
<td>0.50</td>
<td>0.20</td>
<td>0.34</td>
<td>0.43</td>
<td>0.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Stocks (mb)

<table>
<thead>
<tr>
<th></th>
<th>OECD</th>
<th>US</th>
<th>OECD to 5-Year Average</th>
<th>US to 5-Year Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEA</td>
<td>433</td>
<td>At the 5-year average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPEC</td>
<td>422.6</td>
<td>1.2 mb below</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data obtained from IEA Oil Market Report, 11 October 2019; OPEC Monthly Oil Market Report, 10 October 2019 and Energy Information Administration, Weekly Petroleum Status Report, 23 October 2019

*Totals in table may not exactly reflect content due to independent rounding.*
3. GLOBAL ANALYSIS

3.1 DEMAND DATA

Absolute Demand

The IEA’s estimate for global demand growth decreased by 10 kb/d to 1.00 mb/d for an absolute demand of 100.30 mb/d in 2019. Demand growth for 2019 is driven by continuing growth in non-OECD Asia which the IEA reports at 0.80 mb/d.

OPEC’s global demand outlook decreased by 40 kb/d for a total growth of 0.98 mb/d in 2019. Absolute demand is just under the 100 mb/d mark at 99.80 mb/d. OPEC-IEA divergence in absolute world demand and demand growth is 0.50 mb/d and 0.02 mb/d, respectively.

OECD Demand

The IEA sees OECD oil demand growth at 0.01 mb/d, down from last month’s figure of 0.10 mb/d. The IEA anticipates total OECD consumption for 2019 at 47.85 mb/d. OPEC’s growth projection for the OECD region is 0.05 mb/d, a reduction of 50 kb/d with total OECD demand for 2019 at 47.98 mb/d. Divergence in overall OECD oil demand growth between the IEA and OPEC for October is 0.08 mb/d while the difference in absolute demand is 0.13 mb/d.

Non-OECD Demand

Both the IEA and OPEC anticipate continued growth in non-OECD demand for this year at 0.99 mb/d and 0.92 mb/d, respectively. Total non-OECD demand forecasts average 52.45 mb/d and 51.82 mb/d, respectively. The IEA’s and OPEC’s assessments for 2019 non-OECD demand growth and absolute demand now differ by a 0.07 mb/d and 0.63 mb/d, respectively.

According to the IEA, China’s demand growth in 2019 will increase by 0.54 mb/d but will decrease to 0.29 mb/d in 2020. China’s oil demand consumption grew at a faster pace during January-August than in 2018 suggesting that the economic slowdown has not had a major impact for the time being. Transport fuels including gasoline, diesel, and jet fuel have seen increases during this period.

According to OPEC, China’s demand was stronger than expected in August with 0.59 mb/d of growth y-o-y (year-over-year) – the highest level in 2019. This was largely driven by rising demand in petrochemicals and aviation. Although gasoline demand is marginally higher, passenger sales continue their decline for the 14th consecutive month. Overall demand growth hinges on economic growth and the outlook for the petrochemical and transportation sectors. Government policies that encourage emission reductions including fuel switching from coal to natural gas are key factors that impact demand growth and need to be monitored.

The IEA expects strong demand growth in India by 0.17 mb/d in 2019 and 0.20 mb/d in 2020. The 2019 growth rate is the slowest since 2014 due to an economic slowdown which is reflected through a slowdown in air traffic and diesel demand. Demand for diesel, responsible for more than a third of overall oil product sales, grew 40 kb/d y-o-y in January-August, less than half the rate seen during the same period in 2018. From a shorter-term perspective, oil demand grew in August due to increases in LPG consumption, but flooding across northern India reduced gasoil and diesel deliveries and restricted transport.

OPEC also saw India’s oil demand increasing in August by more than 0.12 mb/d, although growth was limited due to monsoon rains. LPG demand is mostly responsible for the increases while gasoline also increased despite continuous decrease in auto sales which has decreased by 20 percent y-o-y across all segments. Diesel demand also decreased marginally due to slower industrial activity as a result of the monsoon rains. Overall, Indian demand growth is 0.14 mb/d for 2019 and 0.16 mb/d for 2020.
3.2 SUPPLY DATA
Non-OPEC Supply

OPEC’s October assessment of total non-OPEC supply for 2019 stands at 64.26 mb/d. Supply growth is down by 170 kb/d for a revised forecast of 1.82 mb/d driven by the US (1.67 mb/d), Brazil (0.19 mb/d) and Canada (0.09 mb/d) and China (0.09 mb/d). Growing output from these countries is offset by declining production from Mexico (-0.15 mb/d) and Norway (-0.14 mb/d).

The IEA forecasts 2019 non-OPEC supply at 64.76 mb/d with growth of 1.82 mb/d, 30 kb/d less than last month, driven mainly by the US and Brazil. The US comprises the bulk of this growth at 1.59 mb/d with total production estimated at 17.13 mb/d in 2019. Brazil’s production is expected to grow by 0.19 mb/d with a total production of 2.90 mb/d for 2019. Other increases are due to come from Russia, China, Canada and the UK. For 2020, Non-OPEC growth accelerates 2.23 mb/d as Brazil production is due to increase and new projects start up in Norway including the Johan Sverdrup oil field that will add 370 kb/d in production. The US will account for 1.36 mb/d of Non-OPEC growth in 2020.
OECD Supply

OPEC and the IEA forecast OECD growth at 1.56 mb/d and 1.48 mb/d with total supply reaching 29.85 mb/d and 28.35 mb/d respectively in 2019. The IEA’s data shows OECD Americas oil supply growth at 1.56 mb/d to reach 24.55 mb/d in total, while OPEC reports stronger growth at 1.61 mb/d with total oil supply reaching 25.64 mb/d in 2019. Growth within the region is led by the US for which OPEC revised its oil supply forecast up to 1.67 mb/d to reach 18.38 mb/d in total, while the IEA projects less US growth of 1.59 mb/d to amount to 17.13 mb/d in total. OPEC’s assessment for total OECD Europe production in 2019 is 3.73 mb/d with a decline in growth by 0.11 mb/d from last year. The IEA’s assessment for OECD Europe supply decreases to 3.30 mb/d; a decrease in growth of 0.17 mb/d.

OPEC Supply

OPEC reports that total OPEC-14 preliminary crude oil production averaged 28.49 mb/d in September according to secondary sources. This is a decrease of 1.32 mb/d over the previous month. Crude oil output decreased mostly in Saudi Arabia, Venezuela, Iraq, and Iran while production increased in Libya, Angola and Congo. The IEA reports OPEC production decreased to a 10-year low of 28.83 mb/d after attacks on Saudi Arabia’s oil infrastructure affected more than half of the country’s output. Other decreases came from Venezuela, Iraq, and Nigeria.

See the graph below for the monthly revisions of IEA and OPEC annual estimates for 2018 and new estimates for 2019 supply.
3.3 STOCK DATA

IEA data shows OECD commercial inventories rose by 20.8 mb month-on-month (m-o-m) in August to 2974 mb and are 43.1 mb above the five-year average. According to OPEC, preliminary data for July showed that total OECD commercial oil stocks rose by 10 mb m-o-m to 2937 mb and are now 11 mb above the latest five-year average. While both organisations report closely aligned data on OECD stocks due to a continuous and reliable data stream and data harmonization efforts, comprehensive data on stock developments for non-OECD countries is still work in progress.

See the graphs below for monthly estimates of OECD total commercial oil stocks and the monthly comparison versus the five-year average.

**IEA and OPEC data shows convergence on OECD stock draws**
**Comprehensive non-OECD stock data remains missing**

**IEA and OPEC report closely aligned OECD stock balances**
**Stocks return above the five-year average**
3.3.1 GLOBAL STOCK ANALYSIS

IEA and JODI inventory data imply crude and product stocks rose by 12.2 mb in August led by product builds in the OECD

- IEA estimates OECD commercial stocks increased by 20.8 mb in August to stand at 2,974 mb – 43.1 mb above the latest five-year average. However, in days of forward demand, stocks remain 0.6 days below the five-year average. OPEC estimates OECD stocks rose by only 10.0 mb in August to 2,937 mb – 11 mb above the latest five-year average, but 1.2 days below the average in days cover terms.

- JODI non-OECD* data for August imply crude stocks drew by 9.4 mb and product stocks built by a negligible 0.1 mb. Crude draws were led by Saudi Arabia (-7.0 mb) and India (-2.7 mb). Saudi crude stocks have drawn in 30 of the past 36 months, falling nearly 40 percent from 281.0 mb in August 2016 to 172.8 mb in August 2019. On the product side, JODI showed draws in Saudi Arabia (-4.3 mb) and China (-1.8 mb) were mostly offset by builds in India (2.3 mb), Hong Kong (2.1 mb) and Iraq (1.1 mb).

- Together, IEA's OECD and JODI's non-OECD* inventory data imply global crude and product stocks rose by 12.2 mb in August. However, it is worth noting a large divergence between Chinese crude stock change data reported in JODI and IEA's Chinese implied crude build calculated using reported production, refinery runs, and crude import data. While Chinese data in JODI shows a 1.6 mb crude draw in August, IEA estimates a large 25.3 mb crude build for the month.

* Non-OECD data is the aggregate of country-level data through JODI. Not all non-OECD countries report inventory data and the countries in the aggregate may vary monthly depending on regularity of individual country reporting.
Comparative analysis of monthly reports on the oil market

RIYADH, SAUDI ARABIA
OCTOBER 2019

Monthly Change in OECD and Non-OECD* Crude + Product Inventories

Accumulative OECD and Non-OECD* Crude + Product Builds Since End-2014

* Aggregate of all non-OECD data available through JODI. Not all non-OECD countries report inventory data and the countries in the aggregate may vary monthly depending on the regularity of individual country reporting.
Source: IEA, JODI, Rapidan Energy Group