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.

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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:

US, China Trade Conflict
- The US proposed adding 10 percent tariffs on another $300 billion in imports from September 1 that has escalated the trade war between the world’s largest economies. In response, China announced plans to impose additional tariffs on $75 billion of American goods including soybeans, automobiles and oil.

Oil Price Volatility
- A slowing economy and the prolonged trade conflict between the US and China have increased oil price volatility with prices touching below $60 a barrel.

Guyana Oil Discovery
- A large discovery has been made offshore in Guyana that is expected to hold more than 100 million recoverable barrels of oil.

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

- **IEA world demand growth projections fall below OPEC assessments for first time this year.** The IEA's and OPEC growth projections decreased from last month with total growth at 1.08 mb/d and 1.10 mb/d, respectively. The IEA revised down its projection by 100 kb/d while OPEC amended its forecast by 40 kb/d. It is the first time this year that IEA world demand growth projections fell below those of OPEC. The difference in growth between both organizations is 20 kb/d. The IEA and OPEC estimates for absolute world demand in 2019 are 100.35 mb/d and 99.92 mb/d, respectively.

- **Both OECD and Non-OECD demand growth fall to their lowest point this year in both forecasts.** The IEA's estimate for OECD demand growth decreases by 70 kb/d to 0.10 mb/d and OPEC’s estimate falls 10 kb/d to 0.13 mb/d. The IEA's Non-OECD growth decreased by 30 kb/d for total growth of 0.98 mb/d, while OPEC growth also falls by 30 kb/d to 0.97 mb/d. The IEA and OPEC differ by 30 kb/d on OECD demand growth and by 10 kb/d on Non-OECD demand growth.

2.2 SUPPLY

- **OPEC Non-OPEC supply growth falls below 2.00 mb/d for the first time since June 2018.** The IEA's August 2019 assessment for Non-OPEC growth is down by 110 kb/d for a total growth of 1.88 mb/d. OPEC’s growth assessment decreases by 80 kb/d for a revised projection of 1.97 mb/d. In absolute values, OPEC and the IEA estimate Non-OPEC supply estimates at 64.39 mb/d and 64.80 mb/d respectively for 2019. OPEC reports OECD growth at 1.79 mb/d, an increase of 20 mb/d from last month. The IEA's OECD growth estimate decreases to 1.62 mb/d, a revision of 30 mb/d.

- **The IEA and OPEC report decreases in Non-OECD supply growth with identical figures.** OPEC revised down its assessment by 90 kb/d to reach a total growth of 0.16 mb/d to match the IEA's revised growth of 0.16 mb/d, down by 80 kb/d from last month. In absolute values, OPEC and the IEA non-OECD supply estimates are 32.06 mb/d and 31.28 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 2961 mb, which is close to OPEC's assessment of 2955 mb for OECD stock that is 66.9 mb and 67 mb above the five-year average, respectively. The divergence between OPEC and the IEA stands at 6 mb for August. Total US crude inventories (excluding SPR) amount to about 428 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 stock above the five-year average by about 9 mb.
### 2.4 SNAPSHOT (mb/d)

<table>
<thead>
<tr>
<th></th>
<th>IEA</th>
<th>OPEC</th>
<th>Demand</th>
<th>Δ m/m</th>
<th>Non-OPEC</th>
<th>Growth</th>
<th>Δ m/m</th>
<th>World</th>
<th>Growth</th>
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<td>Demand</td>
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<td>0.06</td>
<td>0.58</td>
<td>0.01</td>
<td>0.43</td>
<td>0.02</td>
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<tr>
<th></th>
<th>IEA</th>
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<th>Supply</th>
<th>Δ m/m</th>
<th>Non-OPEC</th>
<th>Growth</th>
<th>Δ m/m</th>
<th>NOPEC</th>
<th>Growth</th>
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<th>OPEC</th>
<th>Growth</th>
<th>Δ m/m</th>
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<td>Supply</td>
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<td>28.48</td>
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<td>OPEC</td>
<td>30.05</td>
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<td>32.06</td>
<td>0.16</td>
<td>-0.09</td>
<td>64.39</td>
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<td>-0.08</td>
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<td>Difference</td>
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### 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>
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<tr>
<td>IEA</td>
<td>2961</td>
<td>-</td>
<td>66.9 mb above</td>
<td>-</td>
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<tr>
<td>OPEC</td>
<td>2955</td>
<td>438.9</td>
<td>67.0 mb above</td>
<td>9 mb above</td>
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<tr>
<td>EIA</td>
<td>427.8</td>
<td>-</td>
<td>at the 5-year average</td>
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*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 decreased by 100 kb/d to 1.08 mb/d for an absolute demand of 100.35 mb/d in 2019. Demand growth for 2019 is driven by continuing growth in non-OECD Asia which the IEA reports at 0.84 mb/d.

OPEC’s global demand outlook decreased by 40 kb/d for a total growth of 1.10 mb/d in 2019. Absolute demand is just under the 100 mb/d mark at 99.92 mb/d. OPEC-IEA divergence in overall world demand has converged further and now stands at 0.43 mb/d.

OECD Demand

The IEA sees OECD oil demand growth at 0.10 mb/d, down from last month’s figure of 0.17 mb/d. The IEA anticipates total OECD consumption for 2019 at 47.91 mb/d. OPEC’s growth projection for the OECD region is 0.13 mb/d, a reduction of 10 kb/d with total OECD demand for 2019 at 48.05 mb/d. Divergence in overall OECD oil demand growth between the IEA and OPEC for August is 0.03 mb/d while the difference in absolute demand is 0.14 mb/d.

Non-OECD Demand

Both, the IEA and OPEC anticipate continued growth in non-OECD demand for this year at 0.98 mb/d and 0.97 mb/d respectively. Total non-OECD demand forecasts average 52.45 mb/d and 51.87 mb/d. The IEA’s and OPEC’s assessments for 2019 non-OECD demand growth and absolute demand now differ by a mere 0.01 mb/d and 0.58 mb/d, respectively.

According to the IEA, China’s demand growth in 2019 will increase by 0.50 mb/d but will decrease to 0.28 mb/d in 2020. Although China’s economic environment still shows signs of weakness, gasoil demand that is tied to industrial activity increased slightly in the first quarter of 2019. Vehicle sales declined for the 12th consecutive month due to slowing economic considerations but tighter emissions regulations are also affecting vehicle demand. Air traffic grew in May after a weak April, but the increased use of fast trains will impact demand for aviation.

According to OPEC, China’s demand saw some resurgence in June as 0.49 mb/d in June, driven by gasoline, jet fuel, and LPG demand. China’s stable economic growth with further development of its petrochemical and transportation sectors points at strong demand in the immediate term. However, risk of an economic slow-down, combined with government policies that encourage emission reductions in the use of transportation are factors that need to be monitored.

The IEA expects strong demand growth in India by 0.17 mb/d in 2019 and 0.23 mb/d in 2020. Overall demand in May and June grew likely due to reduced petroleum coke usage and environmental regulations. Access to LPG has grown rapidly from 56 percent in 2016 to 94 percent currently driven by government subsidies. Gasoline demand remains strong even as vehicle sales are falling on lower consumer confidence and implementation of new environmental standards. Air traffic saw a rise in May compared to April and the outlook seems to be positive.

From OPEC’s perspective, LPG demand declined by 7 percent for the first time since 2013 due to a high baseline and excess supply. Falling bitumen demand in June because of slower construction activity was offset by increased demand in gasoline and diesel despite decreased vehicle sales. Overall, Indian demand growth for 2019 and 2020 remains steady at 0.17 mb/d.
3.2 SUPPLY DATA

Non-OPEC Supply

OPEC’s August assessment of total non-OPEC supply for 2019 stands at 64.39 mb/d. Supply growth is down by 0.08 mb/d for a revised forecast of 1.97 mb/d driven by the US (1.87 mb/d), Brazil (0.18 mb/d) and China (0.08 mb/d). Growing output from these countries is offset by declining production from Mexico (-0.15 mb/d), Norway (-0.11 mb/d) and Kazakhstan (-0.08). This is the first time OPEC Non-OPEC growth has fallen below 2.00 mb/d since June 2018.

The IEA forecasts 2019 non-OPEC supply at 64.80 mb/d with growth of 1.88 mb/d, 110 kb/d less than last month, driven mainly by the US and Brazil. The US comprises the bulk of this growth at 1.74 mb/d with total production at 17.26 mb/d. Brazil’s production is expected to total 2.87 mb/d for 2019 with a growth of 0.17 mb/d. Other increases are due to come from Russia, China, Canada and the UK. For 2020, growth accelerates to 2.2 mb/d as Brazil production is due to increase and new projects start up in Norway and Guyana. The US will account for 1.3 mb/d of that growth.
OECD Supply

OPEC and the IEA forecast OECD growth at 1.79 mb/d and 1.62 mb/d with total supply reaching 30.05 mb/d and 28.48 mb/d respectively in 2019. The IEA’s data shows OECD Americas liquids supply growth at 1.67 mb/d to reach 24.65 mb/d in total, while OPEC reports stronger growth at 1.78 mb/d with total liquids supply reaching 25.80 mb/d in 2019. Growth within the region is led by the US for which OPEC revised its liquid supply forecast up to 1.87 mb/d to reach 18.56 mb/d in total, while the IEA projects less US growth of 1.74 mb/d to amount to 17.26 mb/d in total. OPEC’s assessment for total OECD Europe production in 2019 is 3.78 mb/d with a decline in growth by 0.06 mb/d from last year. The IEA’s assessment for OECD Europe supply decreases to 3.35 mb/d; a decrease in growth of 0.12 mb/d.

OPEC Supply

OPEC reports that total OPEC-14 preliminary crude oil production averaged 29.61 mb/d in July according to secondary sources. This is a decrease of 246 kb/d over the previous month. Crude oil output decreased mostly in Saudi Arabia, Iran, Libya, Venezuela, and Nigeria while production increased in Iraq and Algeria. The IEA reports a decrease in OPEC production by 190 kb/d in July, and more than 2 mb/d lower than a year ago reaching a total production of 29.71 mb/d. Sanctions combined with robust compliance from OPEC+ countries has oil output at a five-year low. Saudi Arabia’s continued overcompliance has seen its output fall to the lowest level since February 2015.

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

IEA and OPEC disagree on OECD supply growth
IEA and OPEC report identical supply growth for the Non-OECD region

IEF comparative analysis of IEA and OPEC Monthly Reports on the Oil Market August 2019
*monthly estimates rounded to the nearest barrel.
3.3 STOCK DATA

IEA data shows OECD commercial inventories rose by 31.8 mb month-on-month (m-o-m) in June to **2961 mb** and are 66.9 mb above the five-year average. According to OPEC, preliminary data for June showed that total OECD commercial oil stocks also rose by 31.8 mb m-o-m to **2955 mb** and are now 67 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**

![Graph showing monthly estimates of OECD total commercial oil stocks from 2017-2019](image1)

*monthly estimates rounded to the nearest barrel.

**IEA and OPEC report closely aligned OECD stock balances**

Stocks return above the five-year average

![Graph showing OECD total commercial oil stocks relative to 5-year moving average](image2)

*monthly estimates rounded to the nearest barrel.
IEA and JODI inventory data suggest crude and product stocks rose by 19.3 mb in June

- IEA estimates OECD commercial stocks increased by 31.8 mb in June to stand at 2,961 mb - 66.9 mb above the latest five-year average. However, IEA notes that in days of forward demand, stocks remain 0.3 days below the average. OPEC also estimates OECD stocks rose by 31.8 mb to stand at 2,955 mb – 67 mb above the latest five-year average, but 0.1 days below the average in days cover terms.

- JODI non-OECD* data for June imply crude stocks built by a marginal 1.2 mb and product stocks drew by 10.6 mb. Crude builds in Brazil (1.8 mb), China (0.9 mb), Nigeria (0.9 mb), Iraq (0.8 mb) and other non-OECD countries more than offset a 3.5 mb draw in Taiwan. Notably, crude stocks in Saudi Arabia increased m/m for only the third time in 18 months. On the product side, JODI showed a substantial 12.3 mb draw in China during June driven by large draws of motor and aviation gasoline (7.2 mb) and gas/diesel oil (6.6 mb).

- Together, IEA’s OECD and JODI’s non-OECD* inventory data imply global crude and product stocks rose by 19.3 mb in June making it the fourth month of builds this year. This month’s JODI update included 1H19 Chinese data and shows crude stocks rose a net 7.9 mb between January 2019 and end-June. This estimate is far below the implied crude builds reported by IEA over the past few months which total a massive 155.6 mb for 1H19.

* 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 the regularity of individual country reporting.

### Global Inventory Changes

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<thead>
<tr>
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<th>June (mb)</th>
<th>2Q19 (mb)</th>
<th>1Q19 (mb)</th>
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<tbody>
<tr>
<td></td>
<td>Crude</td>
<td>Products</td>
<td>Total</td>
</tr>
<tr>
<td>OECD Commercial (IEA)</td>
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<td>41.0</td>
<td><strong>31.8</strong></td>
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<td>OECD SPR (IEA)</td>
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<tr>
<td>Available JODI Non-OECD Data*</td>
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<td>-10.6</td>
<td><strong>-9.5</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>-8.1</td>
<td>27.4</td>
<td><strong>19.3</strong></td>
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<tr>
<td>IEA’s Implied Global Supply Surplus</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>OPEC’s Implied Global Supply Surplus</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* 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, OPEC, Rapidan Energy Group
COMPARATIVE ANALYSIS OF MONTHLY REPORTS ON THE OIL MARKET

RIYADH, SAUDI ARABIA
AUGUST 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

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Source: IEA, JODI, Rapidan Energy Group