KAPSARC Oil Market Outlook (KOMO)

Q3, 2020
Foreword

The oil market of 2020 has been a very challenging one to forecast. The words ‘unprecedented’ and ‘uncertain’ have been used in almost every news item concerning energy for the last six months. This increased uncertainty has made the difficult job of forecasting even more difficult. Various participants in the market have made wildly differing and ever-shifting predictions, which has been confusing for everyone.

In producing this quarter’s KOMO, we discussed how to interpret the model’s results at length. The potential for different scenarios to play out, and the consequent assumptions that went into the model, shifted the model’s results significantly and in ways that tested the limits of our confidence interval. With this in mind, it became very difficult to settle on a central case.

Our model was originally designed and built in a less volatile time, as were all models currently used for forecasting. The demand and supply shocks to the oil market in 2020, and their responses, are so unprecedented that all of our mathematical and statistical models are struggling to cope with them. The adjustments to our model to account for the current conditions were extensive, and they began to test the limits of how it operated. Negative oil prices, for example, as seen earlier this year, were a particularly odd occurrence that required some serious thought on how to integrate them into our model’s existing structure.

With this in mind, we have decided that we will not issue a full update for this quarter. Our previous forecast for Q2, issued on May 5, continues to remain our base case.

So for this quarter, we present a qualitative discussion of the market with minor updates from Q2, and we look forward to releasing a full report next quarter.
Summary

The global oil market is likely to move into deficit as early as this quarter. The most significant driver of this shift has been strong compliance with the production cuts agreed by OPEC and its partners (OPEC+) at the group’s historic April meeting. The cuts agreed at that meeting were reinforced at the recent 19th Joint Ministerial Monitoring Committee (JMMC) meeting, which extended the large, initial cuts by one month. It also laid out a mechanism whereby non-compliant members would add compensatory cuts in July, August and September in addition to their already agreed production adjustments for these months. These efforts were accompanied by recovering demand, and declines in United States (U.S.) shale and oil sands, with other conventional production expected to help balance the market going forward.

These cuts come at a time when demand in Q3 of 2020 is expected to grow by around 7.2 million barrels per day (MMb/d) quarter-on-quarter (QoQ) as economic activity recovers, while supply continues to decline by a further 1.8 MMb/d.

That said, the impact of COVID-19 and its spillover effects worldwide, with countries taking extreme measures to contain the virus, is expected to result in a year-on-year (YoY) decline in consumption of around 6.99 MMb/d in 2020 (400 thousand barrels per day [Kb/d] less than our Q2 forecast). By any measure, this remains by far the largest annual decline ever recorded. The production cuts agreed and delivered by OPEC+, along with other natural declines elsewhere, are likely to reduce supply further if compliance remains strong. While this suggests the global oil market will move into a large deficit in the second half (2H) of 2020, it will take quite some time to balance global inventories due to the large increase seen in 1H 2020, which should limit further upward pressure on world oil prices.

We will continue to update our forecast as needed as the oil market responds to the evolution of COVID-19 and the measures taken to limit its spread. Unusually large uncertainties surround this outlook, and there is a wide range of potential pathways for both global demand and supply.
Summary continued...

- Total global oil demand is expected to decline YoY by 6.9 MMb/d in 2020 and rebound by 5.2 MMb/d in 2021, returning to 2019 levels by Q2 2022. These declines are due to the measures taken to address COVID-19 and the deepest global recession of the post-war era. The economic recoveries of many OECD countries, as well as those in the Middle East, Africa and Latin America, are expected to take longer, while Asia is expected to lead the rebound in demand in 2021.

- Total global oil supply is expected to be down for 2020, with a slow recovery into 2021 and 2022. OPEC++ members will bear the majority of the decline and enjoy most of the rebound. The cuts, as stated, could be eased earlier than planned, depending on how quickly inventories can be drained. Low prices generally will mean delayed projects worldwide. Shale, in particular, is a wildcard when it comes to a potential oil price recovery during this period as it adds significant uncertainty to the supply forecast. The resilience of the shale sector is being tested by low prices and a very low rig count, while shut-in production has begun to return as pricing has become more favorable. The ability to resume drilling will be the biggest factor for supply in the immediate future.

1. Total global liquids production is expected to decline by 7.2 MMb/d in 2020 and rebound by 2.3 MMb/d in 2021. However, the rebound will likely not be driven by new projects, but by ramping up existing assets.

2. Shale production is expected to decline by 1.4 MMb/d in 2020, and the outlook for 2021 is entirely dependent on the resumption of drilling operations to combat shale’s long-term decline.

- The supply/demand trends suggest that there will be an average global surplus of 500 Kb/d in 2020. However, we expect a deficit of 3.5 MMb/d for this quarter, suggesting stronger withdrawals of stock and inventory as well as oil refined products, and a deficit of 2.4 MMb/d in 2021 to draw down the inventory overhang. The current 2021 balance outlook assumes that OPEC+ members will maintain their announced production cuts throughout 2021. However, compliance will be a significant factor if pricing improves and fiscal realities test the resolves of some members. Nevertheless, KOMO assumes that OPEC+ members will continue with their cuts, but maintaining the absolute level of cuts may be harder, as the projected imbalances are estimated to reach a deficit of 2.4 MMb/d. As a result, there is an opportunity for OPEC+ members to ease their cuts as soon as 1H 2021. This would allow for a shift in strategy to gain market share from shale and other producers.

- Under these assumptions, target inventory levels for the OECD are expected to rise by 95 MMb to reach 4,542 MMb in 2020 and increase by 37 MMb in 2021. Actual inventory levels are expected to reach 4,715 MMb in 2020 and decline by 392 MMb in 2021, remaining below their target levels and creating a conducive environment for prices to rise gradually.

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
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<th>Δ</th>
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</table>
Summary (prices)

The confidence interval is derived from options market prices and the futures curve, which represent the views of a wide array of market participants, such as speculators, producers, refiners, airlines, among others.

The market has been experiencing a flattening contango since April. We estimate that prices will gradually increase and be supported in 2H 2020. By far the biggest variable is demand. The depth and duration of the economic downturn in 2020 and 2021, and the policy measures to manage the spread and impact of COVID-19, including the physical stimulus packages, will dwarf the impact of the supply cuts on oil prices.

Sources: KAPSARC calculations based on NYMEX data, CME Group, FINCAD, July 2020.
Key issues for the oil market in 2020 and 2021

As the world heads into the third quarter of 2020 and tries to go back to normality, fears over a second wave of the COVID-19 virus, changing spending patterns, permanent oil demand loss, and other effects of the current economic slowdown continue to resonate. Despite these fears, emerging data from recent months brings two things to our attention. First, oil demand declines for the second quarter were perhaps overestimated, and, second, the recovery in transportation demand, alongside successful economic restarts, and the effectiveness of the stimulus packages, among other factors, have been more positive than many had expected. Accordingly, the 2020 global oil demand assessment should trend slightly higher (even though it will still be a record annual decline).

Nevertheless, it is estimated that road transport activity for 2020 will decline by more than 34%, while aviation is expected to decline by more than 50%. However, the recent 19th Joint Ministerial Monitoring Committee (JMMC) for OPEC+ meeting highlighted an 87% compliance rate and commitments from members to reach 100% compliance in July while making up for the recent shortfalls. These measures have proven effective in balancing the markets. Indeed, S&P Global Platts recently estimated that OPEC+ achieved 106% compliance for June.

Over three billion people remained in quarantine for several weeks and, although some restrictions are being eased, that period of wealth creation has been lost. As a result, both the private and public sectors are expected to continue to minimize spending, resulting in further job losses, cuts to companies, etc. throughout the rest of this year. Although some outlooks estimate that by 2021 economic growth will not only recuperate the losses of 2020 and even surpass the previous estimates for 2020 growth, KOMO’s survey revealed a different perspective, with almost half (47%) of its respondents expecting a ‘square root’ shaped recovery. This means that the recovery will take longer. Nevertheless, economic recoveries will be different for each country and region.

Indeed, some may argue that most assets have not fallen in value and that there should be a strong rebound after the crisis passes. However, it is prudent to highlight the number of jobs lost and the investments that have lost value. The unemployment levels in some countries have very likely surpassed those of the 2007-2008 financial crisis, which took over two years to recover from. However, the economic impact of the pandemic will depend on the development levels and economic resilience of countries and sectors (i.e., tourism, industry, agriculture, financial, etc.).

The International Monetary Fund (IMF) forecasts that global gross domestic product (GDP) for 2020 will decline by 4.9%, compared with its growth of 2.9% in 2019. It also forecasts that a majority of countries (over 170) will witness negative per capita income growth in 2020.

Fiscal stimulus packages that support consumers, businesses and the banking system are expected to play the most important role in driving economic recoveries. The uncertainty surrounding the potential for low, or even negative, short-term interest rates in many OECD countries indicates a more modest recovery, despite the generous stimulus measures.

Geopolitical tensions may have eased in Q2, with many countries facing domestic challenges. Nevertheless, disagreements between the U.S. and China and between China, Pakistan and India may re-emerge, alongside weakening European Union (EU) solidarity, sluggish growth in Latin America and Turkey’s provocations in the Middle East.

Further progress on resolving the U.S.-China trade war, alongside other international resolutions on trade, geopolitics, intellectual property, and increasing financial market sentiment and investor confidence through tailored stimulus packages, could help promote crude oil demand and increase crude oil prices throughout the forecast period. Ultimately, finding a viable vaccine and/or citizens returning to work early remain the most important factors behind a demand recovery. Indeed, all countries, including many OECD countries, should focus on the economic recovery after the COVID-19 pandemic, as it is estimated that their recoveries may be slower than those of many developing countries.
Key issues for the oil market in 2020 and 2021 continued...

On the supply side, U.S. shale production and drilling have been declining significantly, and large volumes of existing production have been shut-in. Moreover, the shale industry is facing more bankruptcy filings due to COVID-19, as investments in the sector tighten. However, filing for bankruptcy does not necessarily mean lost production, but rather the potential, in some cases, for the transformation of assets to more resilient companies. Nevertheless, bankruptcies would imply a slowdown or even a stalling of capital expenditure (capex) and hence slower growth going forward. U.S. capex indicates that only 30%-40% of existing shale companies will be able to withstand a sustained low-price environment below $45 per barrel (b).

It is a given that the continued drop in well numbers will make shale production decline in the coming months, given the high decline rates of the existing production base. Any near-term uptick in production as shut-in wells come back online will prove temporary. At the time of writing, we are in a price environment above $40/b, which is likely to allow shale to re-emerge gradually. Indeed, while many observers feel that the industry’s capacity to realize further production cost reductions and improve productivity is limited, operators have defied expectations for years and may surprise us again.

While the announced OPEC+ commitments of June 18 are probably insufficient to bounce prices back to their January levels, and may provide a lifeline to some shale producers in the U.S., the overall decline in investment and drilling should result in continued declines in North American shale production throughout 2020.

Alongside these declines, countries such as Norway, Brazil and Guyana were expected to increase production significantly in 2020. Even though these countries are expected to grow their production this year, it will be far less than was anticipated before the pandemic. This could either be due to natural declines from slowing investment in oil and/or low prices delaying production.

However, what is most surprising is not what is expected to happen in 2020, as this has already been decided to a certain extent, but rather what we presume will happen in 2021. During 2021, some producing countries are estimated to witness weaker production than in 2020, as recent investment reductions will impact future supply. Falling non-OPEC supply from some countries, combined with recovering demand, may create space for OPEC+ members to ease their announced production cuts (around 2 MMb/d) sooner than currently planned. Some investors have made big bets on the oil price, due to the increasingly bullish talk of underinvestment in the sector and the potential for a price spike within the coming years due to a lack of supply.

Expected balances suggest that OPEC+ may consider adjusting its cuts in the coming year, but this would be based on an attenuation of the pandemic. Nonetheless, our current balance estimate is built around the assumption that the announced cuts will hold and that the pandemic will gradually abate.

KOMO’s supply/demand forecast is an average for each period and does not take into account short-term volatility. Actual changes to supply and demand will, of course, remain volatile in light of the responses to and the duration of the COVID-19 pandemic. Other challenges may include unexpected oil supply cuts, OPEC+ compliance, and global geopolitical uncertainty, among others.
Factors influencing price

- Successful coping strategies for COVID-19 (vaccine, behavioral, etc.)
- Increasing fiscal stimulus and more liquidity for emerging markets
- Faster OECD recovery
- Stronger non-OECD rebound/growth
- Capex reductions for upstream investments

Future catalysts (+/-) for price strength
- Level of OPEC++ compliance
- Recovery from COVID-19 and loosening restrictions
- Recession recovery and restoring market confidence
- Large declines in non-OPEC production due to falls in investment
- Multilateral and national actions and policies

- Extended global recession
- Renewed quarantine measures for COVID-19 and/or a second wave of the virus
- Global inventory stockpile overhang
- Prolonged financial tightening and unsustainable debts
- Stronger non-OPEC supply (shale and conventional)
A demand forecast is usually dependent on historical data. In the last publication of KOMO we provided our general assumption on the COVID-19 mitigation measures as well as the recovery rates for different countries and regions. Here we take our assumptions a step further and look at the sectoral dimension of oil demand, which, while broadly in line with our previous assumptions, results in a modest revision from 7.3 MMb/d to 6.9 MMb/d for 2020.

Based on data from the Joint Organisations Data Initiative (JODI) and other recent reports, the decline in demand may not have been as strong as we had anticipated. Nevertheless, a relapse in economic activity or a second wave of COVID-19 would change these assumptions.

KOMO estimates that the crisis has most impacted oil demand in the transport sector. We estimate it will decline by 25% this year. Road transport, which declined by around 50% at the peak of the crisis, will gradually increase in 2H 2020, with an annual average decline of 33%. However, the aviation sector is expected to stagnate throughout 2020 and to function at an average of 53% of its capacity. Both rail and maritime transportation sectors are expected to be impacted to a lesser extent. Furthermore, petrochemicals and oil used in industry are expected to have an average annual decline of only 5.25% thanks to a rebound in Asian markets and their low prices. On the other hand, oil demand for electricity generation and the residential and commercial sectors is estimated to increase throughout the year by 1.6% and 1.8%, respectively.

Discussion

Source: KAPSARC, July 2020.
Demand forecast

YoY global oil demand is estimated to decline by 6.99 MMb/d in 2020 and rebound by 5.19 MMb/d in 2021. The expected 2020 decline contrasts with the expected increase of 1.23 MMb/d in our Q1 2020 KOMO release, before the impact of COVID-19 became apparent. The largest decline in 2020 is expected to be during Q2, with an estimated decline of -14.3 MMb/d due to the quarantine measures taken globally. Asia is expected to witness the strongest YoY decline of 2.3 MMb/d, followed by OECD Americas at 1.9 MMb/d, then OECD Europe at 1.3 MMb/d.

OECD nations will have a proportionally larger impact on demand declines this year, and will rebound faster next year, because much of their consumption is more discretionary than that of non-OECD countries. Demand from OECD members is expected to decline by 3.8 MMb/d, whereas the demand from non-OECD members is expected to decline by 3.19 MMb/d. GDP for 2021 is expected to bounce back and prices are expected to continue to gradually rise, although at a slower pace, which we expect will encourage higher demand. Thus, we expect demand growth in OECD countries in 2021 to reach 3.1 MMb/d, and 2.2 MMb/d in non-OECD countries. We estimate that there will be a stronger rebound from OECD countries as a whole since not all developing countries and emerging markets will recover in 2020. Indeed, Eurasia and the Middle East are expected to stagnate, while Asia, Latin America and Africa are expected to show modest growth.

In 2020, all OECD countries are expected to see oil demand declines. Demand from OECD Americas is expected to decline by 1.9 MMb/d, OECD Europe is expected to decline by 1.3 MMb/d and OECD Asia-Oceania is expected to decline by 580 Kb/d. However, in 2021, OECD Americas is expected to rebound and grow by 1.7 MMb/d, with the U.S. taking the lead at 1.49 MMb/d. OECD Europe is expected to rebound by 930 Kb/d and OECD Asia-Oceania by 450 Kb/d. Among OECD members, we expect Asia-Oceania to reclaim its 2019 level the fastest.

Asia is expected to drive non-OECD demand for oil in 2021, with growth of 1.9 MMb/d, contrasting with its decline of 1.7 MMb/d in 2020. The growth rates of other non-OECD countries are expected to decline in 2021 of -10 Kb/d and -150 Kb/d, respectively. This is due to these regions being highly energy-income focused. Low prices reduce demand because there is less money available to invest in the tools of consumption (cars and chemical plants, among others).

Africa will also take a hard economic hit from the COVID-19 crisis since its tools of consumption are highly dependent on foreign investment, which is expected to tighten. However, African demand is expected to grow in 2021.

Annual global oil demand growth, MMb/d, 2020-2021

Source: KAPSARC, July 2020.
Demand levels

<table>
<thead>
<tr>
<th>Year</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
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<tr>
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<td></td>
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<tr>
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Non-OECD countries are expected to retain their 52% share of global oil demand in 2020 and 2021. They will also represent 46% of the demand decline in 2020 and 41% of oil demand growth in 2021, with OECD countries experiencing greater variability.

The Americas and Asia will face the largest fluctuations in oil demand growth between 2020 and 2021, due to the large volumes they consume. They will be followed by OECD Europe and the Middle East.

Current demand assumptions are susceptible to significant changes, depending on the impact and duration of COVID-19. Further revisions to these assumptions will be needed as we progress through this quarter, particularly for non-OECD countries. See this edition’s editorial for a discussion of the potential downside case for demand, driven by a resurgence of COVID cases.

Source: KAPSARC, July 2020.
United States

<table>
<thead>
<tr>
<th>MMb/d</th>
<th>2019</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>2020</th>
<th>Q1</th>
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</table>

**Yearly**

U.S. oil demand is expected to decline by 1.7 MMb/d in 2020 and bounce back by 1.49 MMb/d in 2021, remaining below its 2019 levels. This increment correlates with its expected modest GDP growth for 2021 and continued elevated unemployment rates. These assumptions are also dependent on the country’s post-pandemic fiscal recovery policies to address its economic recession. Transportation fuels are expected to be hit the hardest, as they represent more than 60% of U.S. daily consumption.

In 2020, the greatest decline in U.S. demand is expected to be for gasoline (-2.6MM/d), followed by jet fuel (-430 Kb/d) and then gas/diesel oil, albeit to a limited extent. However, these declines are expected to be compensated by incremental demand for liquefied petroleum gas (LPG) and naphtha during the quarantine phase.

**Q3 2020**

Q3 is expected to see steep demand growth of 2 MMb/d (QoQ) due to the country coming out of lockdown and people taking summer vacations. There is expected to be strong growth for diesel (870 Kb/d) and gasoline (450 Kb/d). Indeed, demand for all fuels is expected to grow in Q3, except for LPG and naphtha. Laila El-Ashmawy, Kayrros’ vice president of market strategy, stated on July 9 that “regular driving demand rose in every state last week except for Arizona, Texas and Florida. The rest of the U.S. edged toward recovery and is returning to seasonal trends.”

Source: KAPSARC, July 2020.
OECD Europe

<table>
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<tr>
<th>MMb/d</th>
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<th>Q2</th>
<th>Q3</th>
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<th>2020</th>
<th>Q1</th>
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Yearly

OECD Europe’s oil demand is expected to decline by 1.3 MMb/d in 2020 and recover by 920 Kb/d in 2021. It was expected that OECD Europe was going to face the slowest recovery of all the regions due to its continuously prolonged negative short-term interest rates, and the high COVID-19 death tolls in Italy and Spain. However, recent growth forecasts are optimistic for the region, and we have raised our forecast by more than 600 Kb/d. EU members’ successful responses to the crisis and the early opening of their borders may encourage economic activity above the level we previously expected.

Demand declines are expected to come from gas/diesel oil (-1.2 MMb/d), followed by motor gasoline (-620 Kb/d) and aviation fuels (-370 Kb/d). Although we may witness an increase in demand for naphtha and LPG, it will not be enough to recover these losses.

Q3 2020

Demand in Q3 is expected to grow by 1.4 MMb/d, following a large decline in Q2, during which time Europe experienced the impact of COVID-19. This increment will be driven by the expected growth in land transport (gas/diesel oil +1.5 MMb/d and gasoline +180 Kb/d), and to a lesser extent aviation at 50 Kb/d. Demand for LPG and naphtha, however, is expected to decline by 120 Kb/d and 180 Kb/d, respectively.

Source: KAPSARC, July 2020.
China

China’s oil demand is expected to decline by 350 Kb/d in 2020 and pick up again in 2021 by 570 Kb/d. Unlike the OECD countries, China’s 2021 demand is expected to exceed that of 2019. China began planning for a decline in its oil projects growth in 2019 and had been focusing on several coal-based projects. However, given that China’s COVID-19 outbreak occurred early in 2020, we would assume that many of its projects have been delayed. Moreover, its recovery has progressed and there have been positive reports of healthy refinery throughput in China as early as April, with long queues at some ports.

Although we expected stronger demand declines in China for 2020, it has had a more rapid recovery than we expected. There has also been some opportunistic buying by Chinese refiners of low-priced crude.

Q3 2020

China’s total fuel consumption is expected to grow in Q3 2020, with motor gasoline rising by 325 Kb/d, diesel by 300 Kb/d and naphtha by around 220 Kb/d. Demand for jet fuel, though recovering, remains very modest since most countries have continued to limit air travel.

Note: recent World Health Organization (WHO) numbers have reported re-emerging numbers of COVID-19 cases in China, along with a few outbreaks of the bubonic plague, which have put the country on high alert. As such, this forecast is subject to change.

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>Q1</th>
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Yearly

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Q3 2020

China’s total fuel consumption is expected to increase by 1 MMB/d in Q3 2020. It seems as if the most draconian of China’s quarantine measures have already passed, with the country continuing to emerge from its lockdown. Indeed, Q1 2020 accounts for most of China’s demand declines. Demand for most transport products is expected to grow in Q3 2020, with motor gasoline rising by 325 Kb/d, diesel by 300 Kb/d and naphtha by around 220 Kb/d. Demand for jet fuel, though recovering, remains very modest since most countries have continued to limit air travel.

Note: recent World Health Organization (WHO) numbers have reported re-emerging numbers of COVID-19 cases in China, along with a few outbreaks of the bubonic plague, which have put the country on high alert. As such, this forecast is subject to change.

Source: KAPSARC, July 2020.
India

India’s oil demand is expected to decline by 400 Kb/d in 2020 and rebound by 520 Kb/d in 2021.

India started its severe quarantine measures in March 2020, and they continue today as COVID-19 cases continue to rise. The measures comprise multiple forms of quarantine regulations and zoning measures constricting transport. This year India was expected to shift its product demand portfolio from consuming heavy infrastructure products (i.e., asphalt, petcoke, etc.) to transport, but the pandemic has derailed these plans. KOMO’s preliminary analysis indicates that India’s demand for LPG and products used for infrastructure will stagnate this year. Demand for transportation fuels and naphtha is expected to decline.

India’s infrastructure projects for 2020 were geared toward gas distribution, in line with the government’s plan to reduce crude oil imports by 10% in the near future and to increase the share of electric vehicles (EVs) on the roads. However, India, like the rest of the world, is currently facing prolonged quarantine periods. As a result, we assume delays in these initiatives. India may also witness an increase in LPG demand of around 150 Kb/d, whereas the strongest decline in demand will be for transportation fuels.

We estimate that India’s demand this quarter for all products will increase by 375 Kb/d, led particularly by motor gasoline at 150 Kb/d. The only declines are expected in fuels used in infrastructure, classified as ‘other products’ (-5 Kb/d). Nevertheless, a recovery in India’s demand to its 2019 levels is not expected until the end of 2020.

<table>
<thead>
<tr>
<th>MMb/d</th>
<th>2019</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>2020</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>2021</th>
<th>Q1</th>
<th>Q2</th>
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<td>India</td>
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<td>4.2</td>
<td>4.4</td>
<td>4.7</td>
<td>4.6</td>
<td>5</td>
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<td>4.9</td>
<td>5.3</td>
<td>5.1</td>
<td>5.5</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Source: KAPSARC, July 2020.
Yearly

Saudi Arabia’s oil demand is expected to contract by 180 Kb/d in 2020 and bounce back by 130 Kb/d in 2021.

As we move out of the COVID-19 quarantine period, which started in March 2020 and eased in June, we expect declines across all products except for fuel oil, LPG and naphtha. Gasoline should take the largest hit (-160 Kb/d), followed by gas/diesel oil (-130 Kb/d) and jet fuel (-50 Kb/d).

Q3 2020

Despite the recent rise in gasoline prices, Saudi Arabia is expected to increase its oil consumption QoQ by 300 Kb/d in Q3 2020, as the summer season kicks in. With higher demand for cooling and transportation fuels, we expect that it will introduce higher demand for all products, with gasoline and diesel taking the lead at 120 Kb/d and 80 Kb/d, respectively.
Despite the ongoing crisis, the market appears to be returning to more normal operations. Confidence in the cuts made by OPEC+ and other players, reducing production for purely economic reasons, is bringing supply and demand within more predictable bounds. We have probably seen the bottom for demand, even if there are secondary waves of the COVID-19 virus (see the editorial section, Aftershocks), so the uncertainty now is over the recovery, not further declines in supply.

The behavior of the different market players is a major issue for the immediate future of supply. The panic of the initial oil price crash has passed, and producers have had time to formulate strategies going forward. The cuts by OPEC+ are unprecedented, and members’ compliance levels are under greater scrutiny than ever before. Non-OPEC+ members have also pledged cuts. However, the majority of these cuts appear to have been likely anyway, due to economic and infrastructural factors. The commitment of non-OPEC+ members to these cuts is likely to be much weaker than those from members of the group, and they are likely to be abandoned quickly if pricing improves.

Pricing strategies employed by some players are also having an impact, with competition for key markets shifting importers’ and exporters’ usual portfolios.

Quality impacts are feeding into this, with heavy and sour crude grades at a pricing premium compared to more abundant light grades due to starved complex refiners. This is feeding into the decisions of operators with limited budgets to focus more on heavier grades. Interrupting normal operations with a temporary shut-in is somewhat unusual in normal times and has not been seen before at the current scale. How and when to return to operations, whether a permanent shut-in is warranted, and whether assets could suffer production losses are all worth examining.

Infrastructure has the potential to either alleviate or exacerbate supply concerns, with innovation coming from already stressed Canadian oilsands. There are threats to supply elsewhere, such as the ongoing legal challenge to the Dakota Access Pipeline. Saturated storage capacity, thankfully, may not be a factor that affects the upstream sector, unless there is another deep demand decline.

There are concerns surrounding shale’s ability to rebound. Investment in shale projects is drying up, there is a very low rig count, and there are increasing infection rates in areas like Texas. Meanwhile the threat of well declines is already beginning to be felt.

Lastly, non-technical risks to supply are emerging. The U.S. election in November is becoming a more competitive race and could negatively impact shale policy, and increasing tensions between nations, including between India and China, India and Pakistan, and China and the U.S., are overtaking domestic concerns.
Supply forecast

Global liquids supply is expected to fall by about 7.2 MMb/d in 2020 to 93.4 MMb/d. That said, OPEC++ cuts have successfully returned confidence to the market. The low price environment of Q2 has improved, and some shut-in production will return in the coming months. This supply figure for 2020 is high due to the oversupply experienced during Q1. It would be closer to 91 MMb/d if Q1 were excluded. In 2021, global liquids supply is expected to recover by 2.3 MMb/d to 95.7 MMb/d as prices slowly trend upwards. However, the increase in supply is much less than the expected increase in demand, allowing the massive increase in inventories accumulated in 2020 to be worked through.

The initial OPEC+ cuts, which were extended slightly after their announcement, were partly offset by some members’ under-compliance. The more recent effort to increase scrutiny and raise overall compliance (including compensation for previous under-compliance) has been taken seriously by the KOMO team. We assume that any shortfalls may once again be offset by deeper cuts by other members, among other ways of making up the shortfall. Non-OPEC players that have committed to cuts are expected to follow a more economic decision-making model, whereby they would adjust their production more quickly in response to a significant increase in oil prices.

Our survey respondents highlighted geopolitical challenges and production from exempted OPEC members (Iran, Venezuela, but most likely Libya) as the most likely sources for upward risks to production growth. They also highlighted that a conflict between some of the major powers, while low-probability, would be a high-impact downward risk to supply.

Tight oil supply has dropped significantly in 1H of 2020, with dwindling rig counts indicating that growth rates may not return to their 2019 levels for some time. A rebound, however, could be seen in 2021 as drilling resumes. Temporary shut-ins and other buffers to the system, such as uncompleted wells, may help to regain about half of the net losses for 2020. Beyond this, the lost ground from slowed drilling, permanent shut-ins of less productive assets, and likely higher risk premiums will hinder any rapid growth in supply after the rebound. Our initial results indicate that shale supply could grow or decline in 2021, depending largely on the response of countries to a potentially surging infection rate. We explore some of this in our editorial, Aftershocks.

Conventional crudes will take the largest supply cut in 2020 (largely due to OPEC+ cuts) but will rebound in 2021 in response to increased demand and price signaling. In the short term, there may be a focus on heavier grades returning to the market first, as they have been priced at a premium to feed complex refineries.
OPEC+

The supply cuts by OPEC and partners, while not enough to balance the market, have been a significant factor in reestablishing stability. While initial compliance was somewhat sluggish, increased attention to the compliance level of members (over 100% in June), along with a willingness to adjust the schedule, has restored confidence that OPEC+ as a whole is complying with the agreed cuts. Individual members’ compliance is less important than the group meeting the targets collectively, with some core members usually picking up the slack. However, going forward, it appears that scrutiny on compliance will be high, and the tolerance for non-compliance will be low.

The seriousness with which the COVID-19 crisis is being taken has not changed our initial interpretation that compliance should be high in the near term. However, it may face some challenges in 2021 as the opportunity to grab market share presents itself. This could take the form of an adjustment to the group’s target, or individual members breaking ranks to seize increased demand. The likely driver for a relaxation of compliance is price, which is in turn related to the speed with which the inventory overhang is drained. The biggest threat to an early exit from the cuts is the behavior of shale players, and their ability to return to the market. The level of cuts among OPEC+ members means that underlying declines in production are unlikely to be a factor for now. However, if investment in capacity is not maintained, the cessation of the cuts may significantly impact the market.

The exempt members of OPEC (Venezuela, Iran, and Libya) have the potential to significantly increase supply if sanctions against Venezuela and Iran are lifted and Libya’s internal conflict abates. However, it is unlikely that Venezuela and Iran will see their sanctions lifted in the immediate future without a change in either their national leadership or that of the U.S., the source of the sanctions. Libya, however, has seen a change in its fortunes, with a reopening of its ports. It could add approximately 1 MMb/d if it returns to its November 2019 production level.

Source: KAPSARC, July 2020.
OPEC+ spare capacity

OPEC+ spare capacity should increase slightly in the coming quarter, as compliance increases, and the deeper supply cuts are extended into at least July. This would put core OPEC member spare capacity at about 5.83 MMb/d, with OPEC+ partners at around 2.29 MMb/d. These levels, albeit with some variation, should hold until the end of the year when the next relaxation of cuts is planned. The relaxation of additional cuts made by Saudi Arabia and other Gulf Cooperation Council countries should not make a major difference, as they will be offset by greater compliance and longer-term cuts of other members. We usually expect that OPEC+ will meet their targets, but how that is accomplished is of less concern.

A slight degradation of capacity may be experienced in 2021 and 2022 if OPEC+ decides to relax cuts early, or individual members falter in their compliance levels. This expectation is in line with our recent survey results, which showed that high compliance with the cuts falls over time as market conditions change (confidence in compliance falls by almost half during the next eight quarters). Despite the announced end of cuts in Q2 2022, the chart below retains them. The process by which approximately 6 MMb/d rejoins the market will probably be quite gradual and orderly.

Sources: Rystad; KAPSARC, July 2020.

Note: The definition of spare capacity here is based on the target cuts of the current OPEC+ agreement. Additional capacity in Saudi Arabia, stated as either 12 MMb/d or 12.5 MMb/d, would add either 1 MMb/d or 1.5 MMb/d to the figures across the entire chart.
Non-OPEC+

Non-OPEC+ growth:
- In 2020, the supply of tight oil is expected to fall by 1.44 MMb/d, with the supply of unconventional gas liquids and oil sands declining by 120 Kb/d and 350 Kb/d, respectively.
- The distribution of the rebound in 2021 is less clear, with the activity of shale producers impacting the production balance required by OPEC+.
- Key features of the non-OPEC+ production story in 2020-2021 will be the struggle to operate under low-price conditions, infrastructure constraints for storage, and possibly defending market share.
Non-OPEC (tight oil and oil sands)

Tight oil production is in a difficult position, but not as difficult as it looked a few months ago. The uncertainty of the pandemic and collapse in prices in 1H 2020 has caused a significant acceleration in bankruptcies, write-downs and other negative outcomes. However, more recently, improved pricing and reduced operational costs have improved the outlook somewhat. Resilience is a key trait of the U.S. producers, and they may well begin regaining ground before the end of 2020.

A declining rig count, shut-in wells, and limited access to finance have impacted the growth rate of tight oil in the recent past. However, as the reopening of the global economy continues, prices stabilize, and some of the offline capacity proves to be more temporary in nature, the ability to reclaim production and fight for market share could limit the ability of the market to drain the inventory overhang quickly and push prices up to pre-pandemic levels.

Prices have already broken through $40/b for West Texas Intermediate (WTI), with some producers already bringing some shut-in production back online. If the price of WTI continues to increase, almost all shut-in barrels should return (hopefully slowly) to the market. For 2020, we now see a smaller decline in shale than we anticipated, and the potential to reclaim ground further in 2021 if the price of WTI surpasses the key $45/b level that will incentivize the restart of drilling operations.

The historical difficulties in transporting oil sands have been eased slightly, with waivers given to the “Coasting Trade Act,” in light of the COVID-19 pandemic. The waivers allow foreign tankers to transport crude from the west to the east coast of Canada through the Panama Canal. Some producers have also employed creative strategies, such as using old pipelines to increase storage capacity, while they wait for prices to improve.

The price of Western Canadian Select (WCS) traded as high as $37.15/b in early July, bringing some semblance of normality back to the Canadian oil markets. With operating costs for steam-based oil sands projects as low as $7-$8/b, the prospects for an early recovery of shut-in production have brightened significantly. In addition to this, starved complex refiners have been paying a premium for heavier grades of crude. We expect oil sands to regain the majority of its declines for 2020 in 2021 as the price of WCS improves, assuming other factors such as infrastructure do not deteriorate.
Risk scenarios, June 2020

KOMO’s risk categories are based on current events impacting the oil industry. KOMO uses the risk table below to estimate potential impacts, taking two components into account: probability and impact.

**Probability:** A shaded chart at the top right of the table shows the probability of a risk occurring (the darker the shade, the more likely it is to happen).

**Impact:** The impact is calculated as a percentage of exports (as domestic supply is often protected), or estimated into the demand model through a multiplier or a change in GDP.

For supply risks, we multiply the probability by the potential impact.

For demand risks, the model either (i) examines historical incidents as multipliers then applies a similar response to future demand, or (ii) estimates the potential impact on GDP and channels it through the model, via changes in the exogenous variables, to determine the implications for future oil demand.

<table>
<thead>
<tr>
<th>Risk category</th>
<th>Item</th>
<th>Supply/demand Impact (Kb/d)</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Producer supply risks</strong></td>
<td>Stronger OPEC compliance</td>
<td>Supply</td>
<td>↓ 250 - 420</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exempt OPEC production</td>
<td>Supply</td>
<td>↑ 80 - 180</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shale rebound</td>
<td>Supply</td>
<td>↑ 220 - 470</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oil Sands rebound</td>
<td>Supply</td>
<td>↑ 50 - 210</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Major conflict</td>
<td>Supply</td>
<td>↓ 120 - 730</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Demand risks</strong></td>
<td>Prolonged economic crisis</td>
<td>Demand</td>
<td>↓ 5000 - 8000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2nd wave of quarantine</td>
<td>Demand</td>
<td>↓ 1000 - 4000</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Transport behavioral changes</td>
<td>Demand</td>
<td>↓ 400 - 750</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Extreme weather</td>
<td>Demand</td>
<td>↓ 0 - 220</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IMO sulfur regulations</td>
<td>Demand</td>
<td>↑ 0 - 300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Demand recovery shape**
- V-shaped: 12%
- L-shaped: 6%
- W-shaped: 38%
- Square root: 47%

The results are based on a biannual survey.
Balances in the time of COVID-19...

Our assessment shows that, over the next eight quarters, the market is likely to remain in deficit, assuming OPEC++ members comply with their cuts. However, we expect that inventory withdrawals will have little impact on prices until the former reach more normal levels.

KOMO predicts an average global surplus throughout 2020 (albeit moving into deficit in 2H 2020) and a continued and deepening deficit in 2021. Again, this assessment is predicated on the basis that OPEC+ members will adhere to their agreement post-2020. However, it may be possible to balance the market by the beginning of 2021 through shallower cuts as inventory levels are drawn down.

We anticipate that cuts will be primarily focused on conventional oil this year. However, tight oil production will struggle the most in 2020 since most of it will be involuntary. It was estimated in January that U.S. shale was already facing difficulties and that the sector’s growth would slow to a still robust 1 MMb/d, despite prices being around $60/b. However, given the situation now, shale’s difficulties have only accelerated. This will create space for more conventional oil to come on stream in 2021 than previously expected. If current trends continue and inventories are unable to be withdrawn any faster, and shale production shows more resilience than expected, then OPEC+ members may be required to maintain their cuts in order to balance the markets.

KOMO predicts that, due to the low-price environment, it is not only shale that will face investment-driven declines, but the majority of producers worldwide. As a result, OPEC+ members may have the opportunity to reverse their cuts and even gain market share in soaking up much of the demand growth.

Indeed, if OPEC+ members kept production levels similar to those of 2019, the market surplus could surpass 5 MMb/d in 2020. However, the market would balance in 2021 because many other producers would halt production if prices collapsed even further. In all scenarios, this balancing act is expected to create a favorable environment for prices to eventually rise, albeit slowly. However, this may also come at the risk of supporting the shale industry, particularly at levels above $45/b.

Source: KAPSARC, July 2020.

*The chart above is a refinement over our Q2 numbers.
Inventory behavior will indicate the direction of prices. Preliminary data for July 2020 shows declines in real OECD inventories. Target inventories in the KOMO model are expected to stagnate due to several downward risk factors. These include fears of a prolonged COVID-19 pandemic adversely impacting demand prospects, reduced investment, and the focus of countries on health systems rather than energy security.

The target inventory is a theoretical construct reflecting the aggregated ‘normal’ level of inventories the oil industry needs to meet contractual obligations, provide a cushion for the complex supply chain that tends to deliver the product in ‘batches,’ and buffer unanticipated changes in the supply of and demand for crude oil. It is derived from OECD inventory data using a trend component reflecting long-term economic growth, and a seasonal component reflecting phenomena such as the winter heating season, and summer driving and cooling seasons.

In this outlook, with the market moving into deficit from Q3 20, inventories are expected to continue declining throughout the next eight quarters. We currently expect real OECD inventories to fall below target inventories in 2021 as the global deficit supports withdrawals (i.e., actual onshore and floating storage) during the first half of 2021. Since high inventories indicate bearish prices and vice versa, KOMO expects that the strong OPEC++ cuts will begin to rebalance inventories, resulting in prices rising slowly over the next eight quarters. Indeed, since mid-June, floating storage appears to have been declining.

The KOMO model estimates that real OECD inventories will grow by just 95 MMb in 2020 and by 37 MMb in 2021. Target inventories, on the other hand, are expected to grow by 244 MMb in 2020, then decline by 392 MMb in 2021 as demand exceeds supply.

Sources: EIA; KAPSARC, July 2020.
*The chart above is a refinement of our Q2 numbers
**Price fundamentals (Brent)**

<table>
<thead>
<tr>
<th></th>
<th>Q3 2020</th>
<th>Q4 2020</th>
<th>Q1 2021</th>
<th>Q2 2021</th>
<th>Q3 2021</th>
<th>Q4 2021</th>
<th>Q1 2022</th>
<th>Q2 2021</th>
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<tr>
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<td>61.66</td>
<td>61.66</td>
<td>64.50</td>
<td>66.00</td>
<td>59.00</td>
<td>65.00</td>
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<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
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<tbody>
<tr>
<td>Bloomberg</td>
<td>39.13</td>
<td>49.09</td>
<td>54.54</td>
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<tr>
<td>Market sentiment</td>
<td>56.82</td>
<td>63.50</td>
<td></td>
</tr>
</tbody>
</table>


*Market sentiment is based on publicly available forecast data.

*The chart above is a refinement of our Q2 numbers.
Price fundamentals (forward and future curves)

The graph below depicts confidence intervals derived from options market data for at-the-money options contracts.

The graphs represent boundaries calculated at 50%, 68% and 95% confidence intervals.

Sources: KAPSARC calculations based on NYMEX data, CME Group, FINCAD, July 2020.
**Price fundamentals (markets)**

**Hedging pressure (HP):** The graph below shows the settlement price for Brent against hedging pressure. Hedging pressure is a measure of physical commercial (producers/merchants/processors/users) net short positions relative to net managed money long positions. It currently indicates a negative relationship between Brent prices and market hedgers. The fact that HP continued to decline during the second quarter could indicate that the market remains unsettled by the OPEC++ cuts, or perhaps skeptical about a second wave of COVID-19 and fears of declining prices as the contango curve flattens.

**Trader class shares:** Since hedger shorts did not appear to shrink on January 7, the money manager (MM) long traders filled the hedging pressure void created by the reduction in swap dealer (SW) longs. The following quarter the SW longs returned to roughly their prior level, and MM longs similarly shrank back and stagnated since then. Based on trader class shares data, money managers have recently increased their long positions slightly, and both producers and swap dealers took long positions when offsetting hedger shorts. Nevertheless, it is expected that money manager long positions will increase gradually as prices rise.


Note: PM = producers/merchants/processors/users; SW = swap dealers; MM = money managers; OR = other reporters; NR = non-reporters
Price fundamentals (markets)

As the U.S. Dollar Index continued to stabilize during Q2 2020 and Brent prices are not expected to rise significantly, oil demand will rise gradually after Q3 2020, except from those countries recovering from the COVID-19 pandemic. For example, China is currently taking advantage of the low prices of both Brent and the US$ to fill its inventories.

Editorial: Aftershocks, KOMO’s second wave scenario…

As the world endeavors to return to normality, an inconvenient truth remains: the coronavirus continues to spread. Luckily, its severity seems to be diminishing, and the improved treatment of severe cases lowering the mortality rate significantly. Conversely, other evidence suggests that transmissibility may be increasing in some of the newer strains of the virus, with a large share of asymptomatic cases. Nevertheless, we all share the same fear that there could be a second or even third wave, as was seen with the Spanish flu.

To examine the potential outcomes of a second wave, the KOMO team ran a second version of the model with the following assumptions:

• Large numbers of new cases would appear at the end of Q3 2020, and second quarantine measures would be taken in Q4 2020, with economies only opening up again at the beginning of Q1 2021. Vaccine development and distribution on the scale necessary to halt the spread of the virus may require a smaller lockdown in Q2 of 2021 for areas that have not gained immunity.

• Global oil demand would decline in Q4 2020, but the decline would be significantly smaller than in Q2 due to more effective public responses (masks, social distancing, etc.) and faster governmental interventions. The Q2 2021 impact would be smaller still, as it would be a temporary measure while a vaccine was distributed, assuming it was ready by this time.

• OPEC++ would need to step up its resolve and balance the market by maintaining its deep June cuts throughout the entire period.

Quarterly supply demand balance, Q1 2020 - Q2 2022, (MMb/d)
Editorial: Aftershocks, KOMO’s second wave scenario continued...

Throughout our analysis of this scenario, we found that the assumption of continued aggressive OPEC++ action could restore confidence to the market, while production from other sources such as shale and oil sands would continue to decline further. Although prices may hit a $20/b low in 1H 2021, they would begin to increase slowly from late 2021 as the market moves back into deficit, but they would remain in the range of $25-$37/b until 2022.

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2020</th>
<th>Δ</th>
<th>2021</th>
<th>Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>99.9</td>
<td>90.3</td>
<td>-9.55</td>
<td>92.7</td>
<td>2.36</td>
</tr>
<tr>
<td>Supply</td>
<td>100.6</td>
<td>93.2</td>
<td>-7.39</td>
<td>93.1</td>
<td>-0.09</td>
</tr>
<tr>
<td>Δ</td>
<td>0.716</td>
<td>2.882</td>
<td>0.430</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In our base case scenario, although a few shale companies have filed for bankruptcy, we estimate that some may have their loan payments extended and be able to continue producing/expanding their production in an improving price environment above $40/b. However, in a second wave scenario, some shale production will be lost for good, allowing OPEC+ members to increase their market shares over time.

In hindsight, the OPEC+ cuts did not just benefit OPEC members and partners, but all energy producers. Fears over a second wave persist as the number of COVID-19 cases keeps rising, so, on behalf of KAPSARC, keep calm, carry on and stay well.
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MMb/d</strong></td>
<td>One million barrels of oil per day</td>
</tr>
<tr>
<td><strong>Kb/d</strong></td>
<td>One thousand barrels of oil per day</td>
</tr>
<tr>
<td><strong>Target inventories</strong></td>
<td>A theoretical construct reflecting the aggregated ‘normal’ level of inventories desired by the oil industry to meet contractual obligations, provide a cushion for the complex supply chain that tends to deliver the product in 'batches,' and buffer unanticipated changes in the supply of and demand for crude oil. It is derived from OECD inventory data using a trend component reflecting long-term economic growth, and a seasonal component reflecting phenomena such as the winter heating season, and summer driving and cooling seasons.</td>
</tr>
<tr>
<td><strong>Real inventories</strong></td>
<td>Represents the real inventory levels based on KOMO’s forecast of supply/demand and inventory surplus/deficit balances.</td>
</tr>
<tr>
<td><strong>Hedging pressure</strong></td>
<td>HP = PMnS – MMnL, where PMnS is producer/merchant/processor/user net short, and MMnL is managed money net long. Note that HP is always positive, meaning that managed money net longs are insufficient to meet all of the desired hedging of the PM traders. Also, a negative relationship between price and HP is expected. This is because as HP increases, there is expected to be downward pressure on price: more shorts seeking counterbalancing longs will put downward pressure on the price. The increased hedging pressure costs the short hedgers more because they have to accept lower prices.</td>
</tr>
<tr>
<td><strong>PM</strong></td>
<td>Producers/merchants/processors/users</td>
</tr>
<tr>
<td><strong>SW</strong></td>
<td>Swap dealers</td>
</tr>
<tr>
<td><strong>MM</strong></td>
<td>Managed money</td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td>Other reporters</td>
</tr>
<tr>
<td><strong>NR</strong></td>
<td>Non-reporters</td>
</tr>
<tr>
<td><strong>OPEC partners</strong></td>
<td>Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, South Sudan and Sudan</td>
</tr>
</tbody>
</table>
About KAPSARC

The King Abdullah Petroleum Studies and Research Center (KAPSARC) is a non-profit global institution dedicated to independent research into energy economics, policy, technology and the environment across all types of energy. KAPSARC’s mandate is to advance the understanding of energy challenges and opportunities facing the world today and tomorrow, through unbiased, independent, and high-caliber research for the benefit of society. KAPSARC is located in Riyadh, Saudi Arabia.

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The KOMO team usually uses the IMF’s GDP forecasts. However, due to the timing of this publication, Oxford Economics’ GDP forecast numbers were used, rather than those of the IMF.

Information correct as of July 2020 was used in the preparation of this report.