OIL MARKET FORECAST – SEPTEMBER 2020

Summary

This forecast sees some adjustments to supply and demand, but no change in overall direction - demand is recovering and excess inventories are being worked off, due mainly to compliance with OPEC+ production curbs.

As things stabilize and the energy transition moves back to center stage for the industry, it seemed a good time to look at some longer-term demand forecasts and try to identify the most credible. This discussion forms the bulk of this report.

One area of change is the US onshore oil rig count, which seems to have stabilized over the last couple of months, resulting in an increased estimate of US production at year end.

The other point worth noting is that this forecast tests the impact of a return to market of Iranian production, an event which looks like it would have the potential to extend supply and demand balance in the market for a year or two.

A few key points:

- Oil inventories will fall to 2019 levels around the end of 2020.
- US oil production bottomed out at 14.8 MMbbl/day in May and should start to rise slowly to 15.6 MMbbl/day by year end.
- Under current assumptions, the oil market is broadly in balance in 2021 and 2022 as oil demand recovers.
- The IEA 'Stated Policies' forecast seems like the most realistic expectation case, while the OPEC forecast looks like an upside demand case and the IEA 'Sustainable Development' or bp's 'Rapid' could represent a credible lower bound forecast.
- In the expectation case, a structural supply deficit emerges in 2023 and continues beyond as demand recovers while supply stagnates. The structural supply deficit is exacerbated by higher demand in the OPEC case.
- There is no demand recovery in the IEA 'Sustainable Development' / bp's 'Rapid' case, here supply would outstrip demand substantially over medium term.
- A return of Iranian production to the markets would address the supply deficit and maintain market balance through 2023.

Oil Supply and Demand

The demand estimates from the latest IEA report[i] are in line with prior months, they estimate demand at 91.5 MMbbl/day and 97.0 MMbbl/day for 2020 and 2021 respectively. The latest EIA report[ii] is also in line with prior months, with demand at 93.1 MMbbl/day for 2020 and 99.6 MMbbl/day for 2021 respectively. The key difference between the two estimates concerns the return of air travel in 2021. The IEA do not see a return to 2019 air travel levels until 2022, whereas the EIA are more optimistic, seeing demand recovering more quickly.

While demand has been in line with previous estimates, revised data for April, May and July indicates that supply levels were higher than anticipated. The latest EIA data for June shows a bounce back in US production to 15.6 MMbbl/day, from 14.8 MMbbl/day in May. This was offset by declines elsewhere, leaving estimate of June supply flat from month to month. US supply is expected to fall in August and September as a result of hurricane activity in the US Gulf of Mexico, before rising slowly to 15.6 MMbbl/day by year end. Recent rig count data indicates that the US onshore oil rig count has stabilized at about 160 units, which suggests higher than previously predicted US production in the fourth quarter of the year.

The latest production updates indicate that supply bottomed out at 86.9 MMbbl/day in June and started to rebound in July. It is expected to average 95.4 MMbbl/day through the second half of the year. These production levels leave the market undersupplied through the second half of the year, as the surplus inventories that were accumulated in the first half of the year are worked off. Libyan production has yet to return to the market, but the base forecast assumes that it will ramp up through the fourth quarter of the year. Concern about a second wave of COVID-19 infections, especially in Europe, appears to be on the rise again and this seems to have pushed WTI back below $40 per barrel over the last week.

Looking forward, the US presidential election in November introduces the potential for movement in policy on Iran, aside from Libya the only substantial source of supply being involuntarily withheld from the market. If Iran were to begin to ramp production back up in the second half of 2021, this could eliminate the medium-term supply deficit.

Long Term Demand Forecast

bp published three long term oil demand forecasts early last week[iii]. These are the first long term oil demand forecasts that have been published since COVID-19 impacted demand earlier this year, so this presents the first opportunity for comparison.

One of the challenges of comparing these with the other major long-term demand forecasts – IEA[iv], EIA[v] and OPEC[vi] – is that all of those were published before COVID-19 and so need to be adjusted to a new baseline. The approach taken was to assume the latest IEA demand estimates for 2020 and 2021, then assume a return to 2019 demand levels, 99.8 MMbbl per day, in 2022. As the IEA 2021 still assumes significant COVID-19 impact to air travel, the assumption of some remaining demand rebound potential into 2022 seems valid. Having set a new baseline in 2022, the annual percentage demand increase or decrease from the reference year in the original forecast was applied. This technique was used to adjust all the forecasts except for bp's and the IEA's 'Sustainable Development' scenario, for which the 2021 IEA demand estimate was used as the departure point. This is to reflect a future in which oil demand peaked in 2019. The demand forecasts are shown in Figure 1, below. This shows a range of projected oil demand, by 2050, of between 25 MMbbl/day and 130 MMbbl/day.

The second challenge in evaluating these forecasts is that the underlying assumptions that drive the forecast and the future that each envisages are not explained, consequently there is a fair amount of inference in each case. The third challenge is that each of the forecasts provide demand

at a given point in time – 2030, 2035 and so on – but not the years in between and so some interpolation is required. This makes medium term forecasting – from 2020 to 2025 for example, quite difficult.

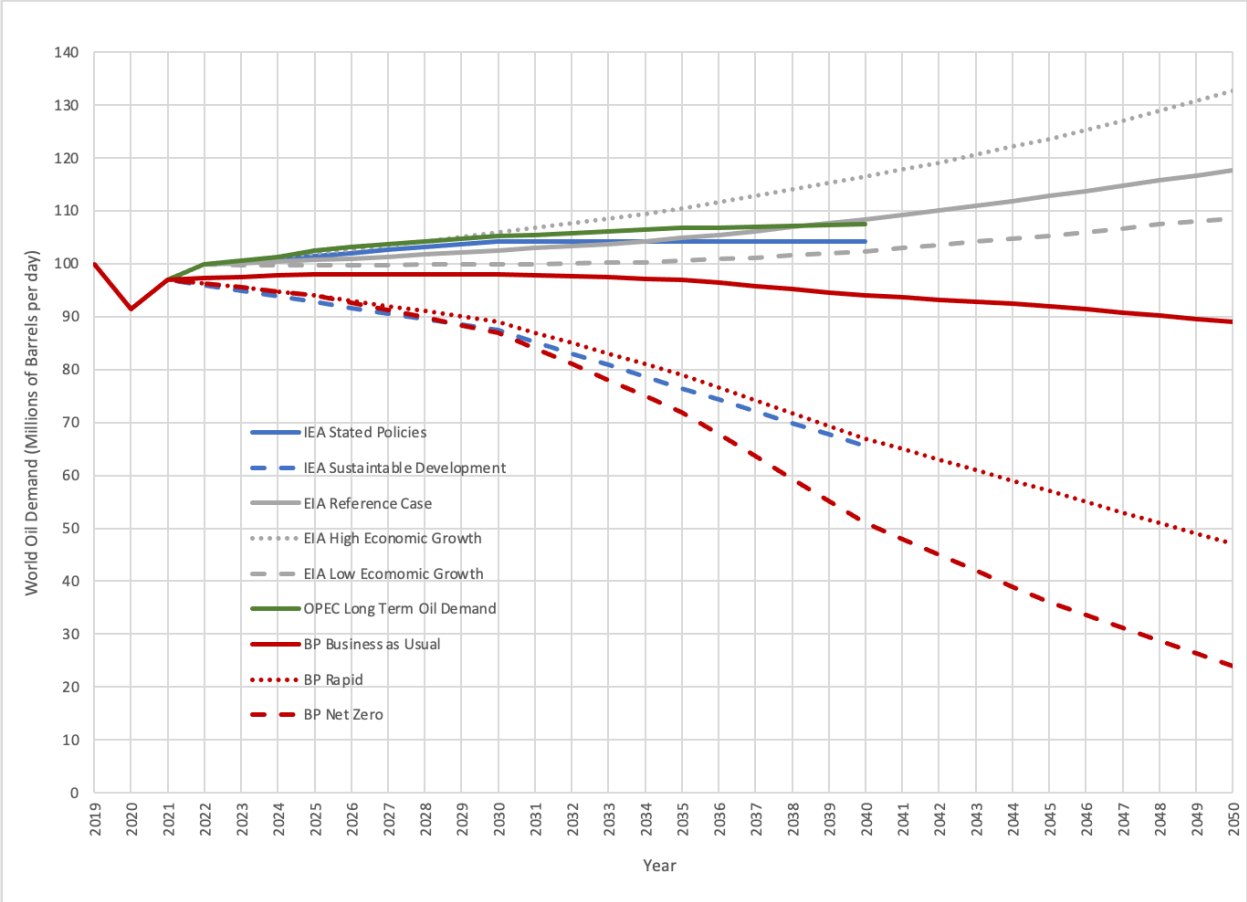

Figure 1 - Comparison of Long-Term Oil Demand Forecasts

If we start by looking at the outliers, the EIA has the higher long-term demand forecasts. They appear to be tied to projections of long-term economic growth, with demand growth accelerating towards the middle of the century. There has been a historic correlation between economic growth and oil demand but projecting that relationship into the future fails to acknowledge that emergent technologies like electric vehicles and videoconferencing and changes in societal attitudes to things like recycling will weaken that relationship. Consequently, the EIA forecasts have been discounted as they tend to overestimate the potential for demand growth.

Of the lower scenarios, bp's 'Rapid' and 'Net Zero' cases and the IEA's 'Sustainable Development' case stand out. All of these see oil demand falling by 10 MMbbl/day over the next decade and accelerating at different rates from there. bp's 'Rapid' and 'Net Zero' cases conform to the carbon budget required to limit global warming to less than 2 degrees centigrade and 1.5 degrees centigrade respectively. The basis of the IEA's 'Sustainable Development' scenario, which is very similar to the BP 'Rapid' scenario, is based on exactly that premise. These then can

be seen not so much as forecasts of what will happen, but as illustrations of what would have to happen, to meet a certain carbon budget.

A recent publication by McKinsey[vii] examined what would be required to accelerate peak oil demand to the mid 2020's. The dominant factor was accelerated electrical vehicle penetration, with reduced plastic demand and an increase in recycling also playing a role. This would see oil demand fall to 80 MMbbl/day by 2035, in line with IEA 'Sustainable Development' scenario or bp's 'Rapid' scenario. To realize this future, annual electric vehicle demand as a proportion of total car sales, would need to rise from less than 1% in 2018, to nearly 6% in 2020, to more than 30% by 2025. While this outcome may not be the most likely, it doesn't seem to be impossible as sales in 2019 reached 2.6% of the total, and so the IEA 'Sustainable Development' or bp 'Rapid' scenario could be a lower bound to demand.

One of the most difficult forecasts to form a view on is bp's 'Business as Usual' case because it is difficult to understand what it is based on. Where details of underlying assumptions were provided, some of them a looked questionable. The figure below is taken from one of bp's Energy Outlook slides and shows the projected adoption of Robotaxi's measured in vehicle kilometer miles (VKM) traveled. bp's 'Business as Usual' scenario shows this jumping from essentially 0% to 20% of all vehicle miles traveled over a 5-year period, which given the technology doesn't currently exist and the US vehicle fleet turns over every 10 – 15 years, doesn't seem very credible. For some reason 'Business as Usual' yields a higher Robotaxi penetration than the more aggressive transition scenarios, which doesn't seem internally consistent, and then penetration drops off in all scenarios, which again doesn't make sense if Robotaxis are the way of the future.

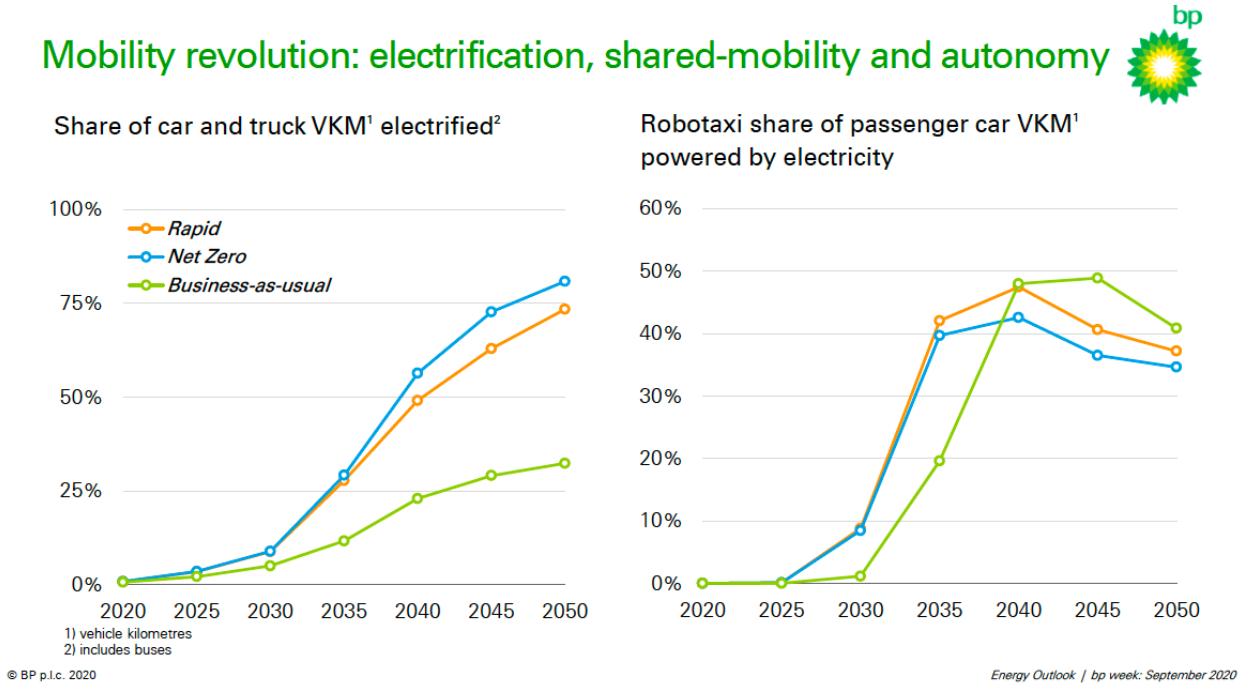

Figure 2 - Robotaxi Slide from bp Energy Outlook presentation

Spencer Dale, to his credit, introduced bp's new demand forecasts by pointing out they would all be wrong and that the purpose of these scenarios is to explore the full range of possible futures. He then went on to say that all the scenarios were premised on a sustained decline in an existing energy source, something that has never happened in the history of traded fuels, and transition to new energy sources at an unprecedented rate. This is 2020, we have all been recently reminded that unprecedented things happen, but to premise all your scenarios on two unprecedented things happening suggests that the scenarios are too narrowly drawn. At least one of them should conform to historical norms, to test what that future would look like. Given this, the IEA 'Stated Policies' and the OPEC forecast seem more credible.

The IEA 'Stated Policies' scenario predicts muted oil demand growth through to 2030, of the order of 0.5% per annum. The OPEC forecast predicts higher growth to 2025, matches the IEA 'Stated Policies' scenario growth rate to 2030 and then falls to 0.3% and then 0.1% annual growth from then on out. Oil demand growth over the last 20 years has averaged just over 1% per annum.

The OPEC forecast reflects close to historical growth rates through to 2025 and probably represents a good upper bound prediction, while the IEA 'Current Policies' is a good expectation case, as it adjusts historic demand growth to current national policy. With the IEA 'Sustainable Development' scenario as a lower bound, the gives a range of oil demand of between 65 MMbbl/day and 107 MMbbl/day by 2040, with a skew is towards the demand downside.

Oil Market Balance and Storage

Oil inventories began to draw down in June by an estimated 174 MMbbl. Draws are forecast to continue at an average of roughly 160 MMbbl per month through the rest of 2020, as the OPEC+ supply curbs restrict supply and demand recovers. The latest forecast shows a market that is essentially balanced through 2021 and 2022, before demand outstrips supply again in 2023 and beyond, as demand continues its recovery, but supply stagnates. A supply and demand and surplus forecast is shown in Figure 3, below.

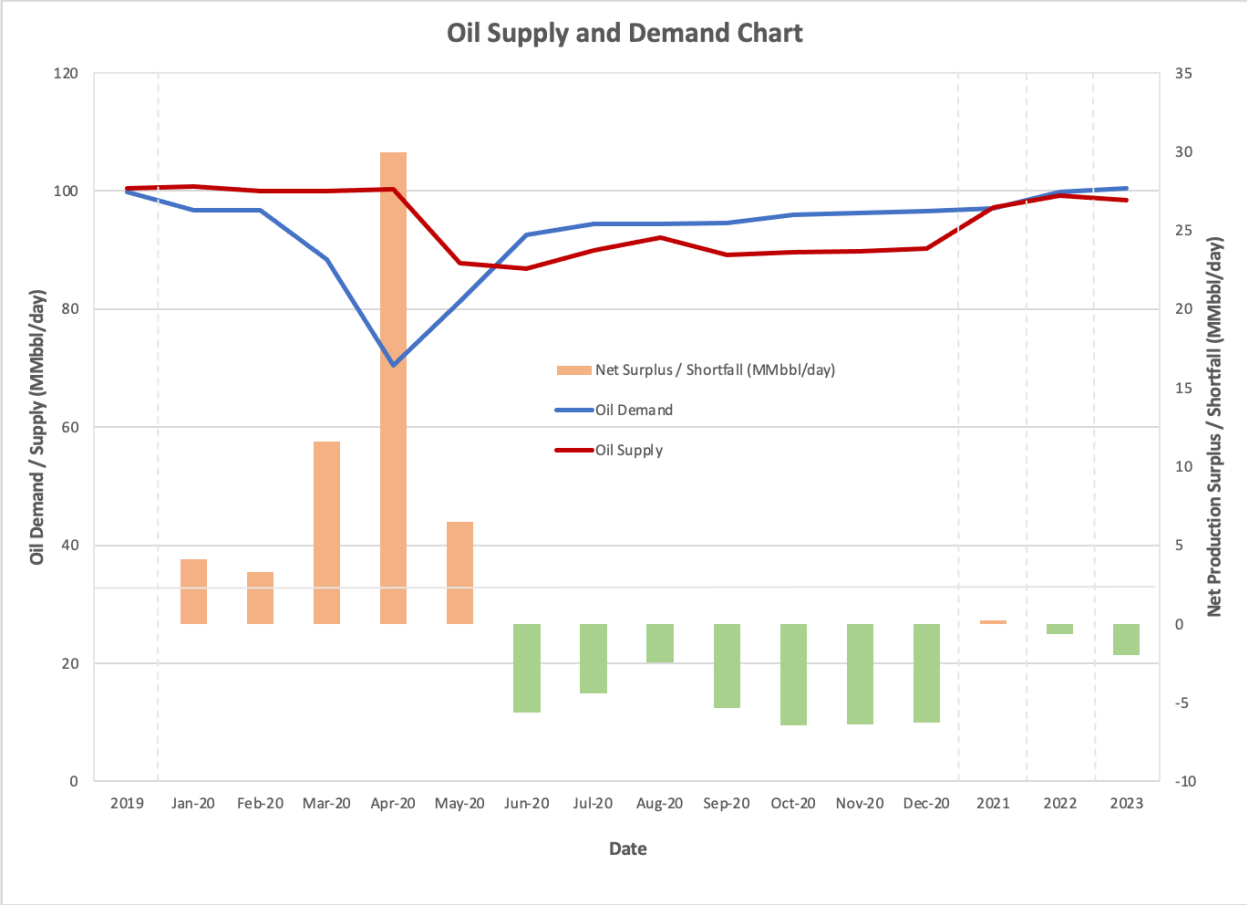

Figure 3 - Supply and Demand and Surplus Forecast

Figure 4 shows global storage capacity and inventories. the global inventories peaked in May at 4.8 billion barrels, a couple of hundred million barrels short of the operational limit on global storage.

The forecast shows inventories returning to 2019 levels by year end and stabilizing at that level for 2021 and 2022. Beyond that, the same structural supply deficit, driven by the decline in US shale production, that had been a feature of previous forecasts remains. As US shale has been the major source of production growth over recent years, lack of investment in the coming years, coupled with natural declines, creates a structural supply deficit.

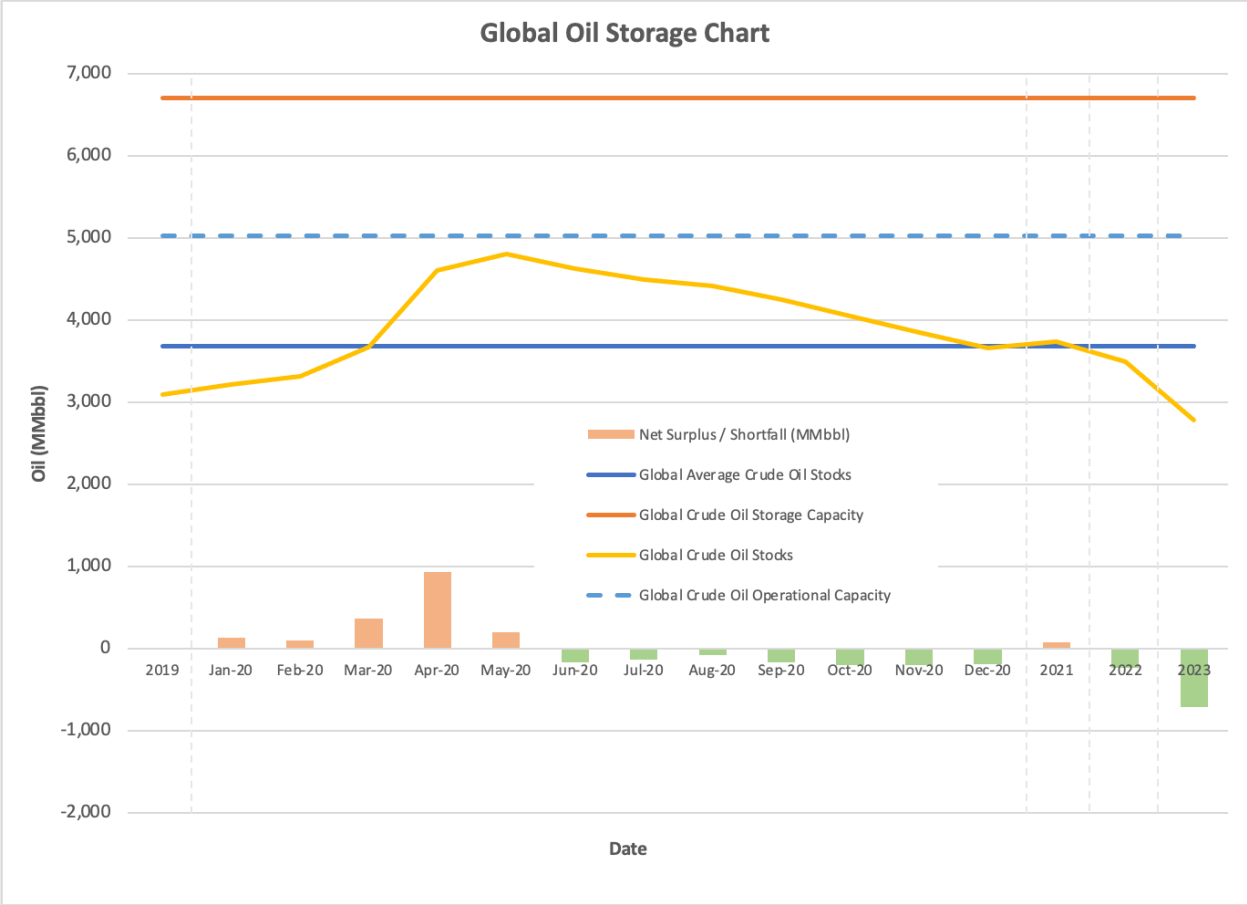

Figure 4 - Global Oil Storage Chart

The base case forecast already includes the return of Libyan production to the market; it would take the return on Iranian production to the market to upset this balance. Figure 5 shows this impact – the return of Libyan production would extend the supply and demand balance until 2023. The forecast assumes that the return of Iranian crude would depress price, which in turn would delay any recovery of investment in the US onshore. The return of Iranian crude would delay the emergence of a supply deficit.

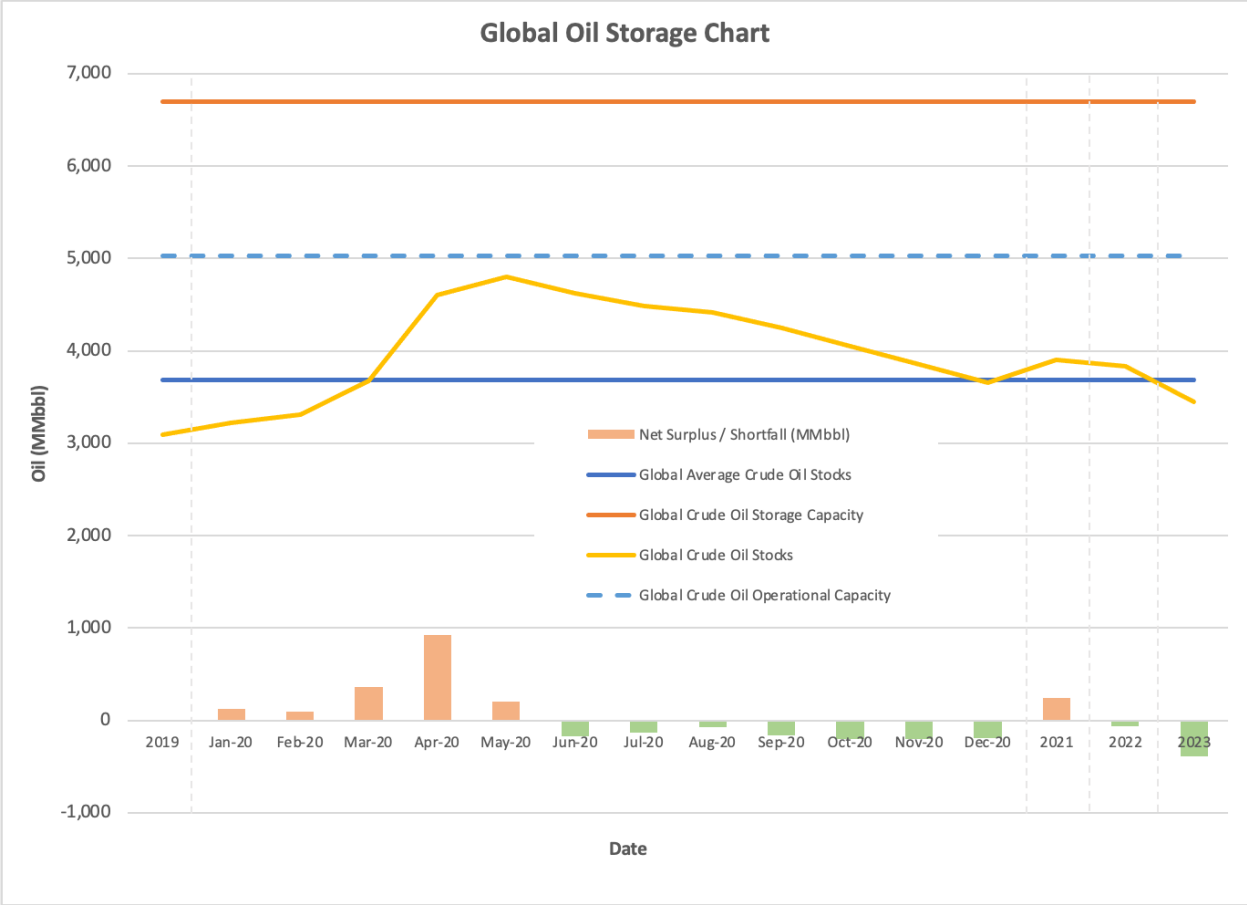

Figure 5 - Global Oil Storage Including Return of Libyan Production

Impact on US Investment and Oil Production

After a steep decline, the US land oil rig count appears to have stabilized at around 160. Assuming the count remains flat until the end of the year, the annual average will have been 320, as opposed to the 275 that was estimated previously. The original estimate was based on an estimate of the industries drilling and completion budget for the year; the revised figure would imply that budgets have increased or costs per well have fallen by about 15%, which is well within the error of the model. The impact of this is to raise the estimate of average US production to 16.2 MMbbl/day. Historic and forecast rig count for the year is shown in Figure 6.

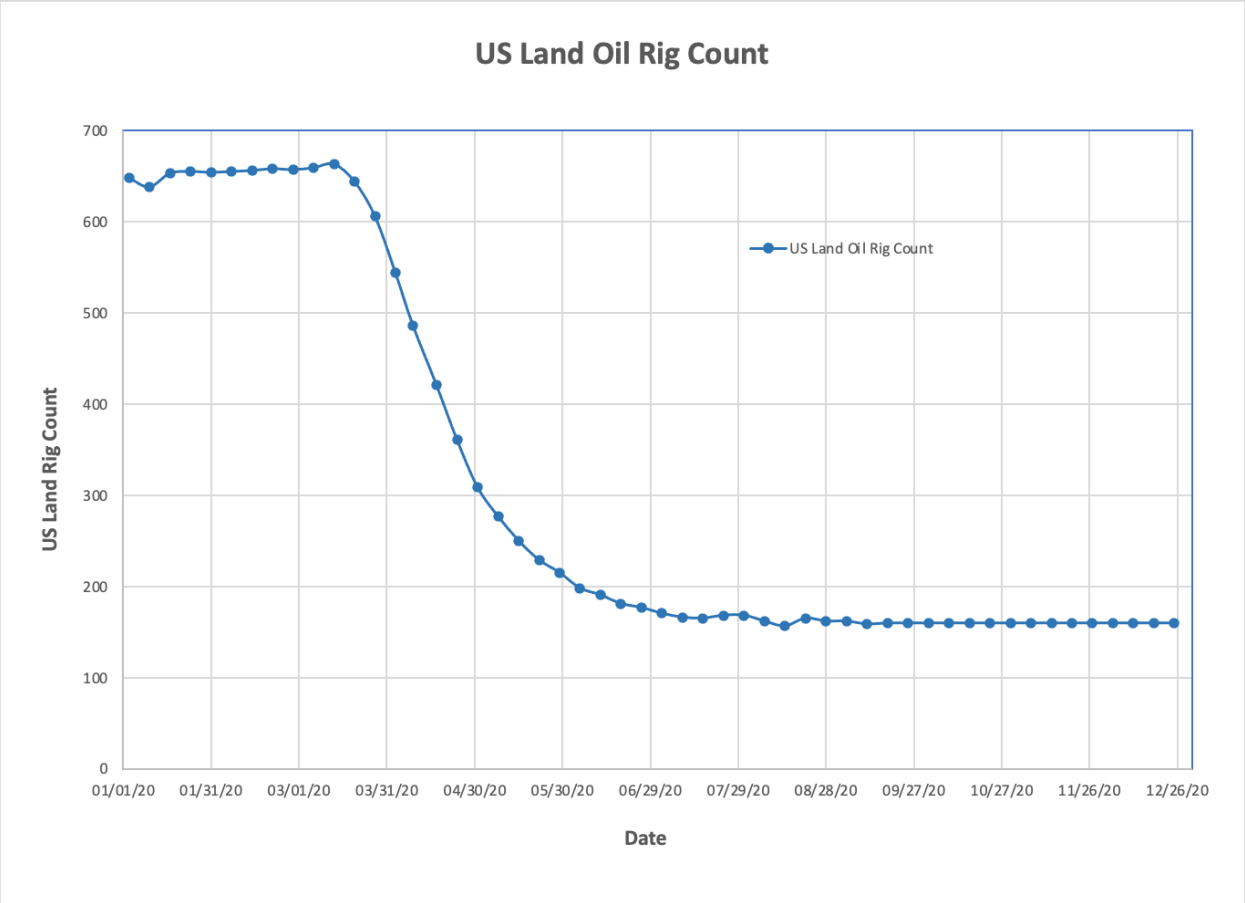

Figure 6 - US Land Oil Rig Count

[i] IEA (2020), Oil Market Report - September 2020, IEA, Paris
[ii] Short Term Energy Outlook (STEO), September 2020, U.S. Energy Information Administration.
[iii] Energy Outlook 2020 Edition, September 2020, bp
[iv] World Energy Outlook 2019, November 13th, 2019, IEA, Paris
[v] International Energy Outlook 2019, September 24th, 2019, Energy Information Administration.
[vi] World Oil Outlook 2040, November 2019, OPEC
[vii] Global Energy Perspective: Accelerated Transition, November 2018, Energy Insights by McKinsey