

The Impact of COVID-19 on Oil Supply in the Short Term

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ABSTRACT

The global oil industry is experiencing a major crisis as the COVID-19 pandemic endures. According to Standard and Poor's (S&P) Global Plats, the energy analytics firm, the coronavirus has reduced global oil demand by as much as 4 percent or 4.1 million barrels a day in February 2020. For the full-year, to one million barrels. As of early April, Brent crude oil was trading at 30\$/b. The disruption of the entire sector and the consequent loss of export earnings, a threat to livelihoods, and an end to the potentially progressive development trajectories is a major concern for many developing countries. The survival economy of oil-dependent countries are heavily reliant on oil production and losing this market is a huge shock, simultaneously, in 178 the extraordinary meeting of the Organization of the Petroleum Exporting Countries (OPEC) commended all OPEC and non-OPEC countries meeting a further adjustment of 1.5 Mb/d until 30 June 2020 to be applied pro-rate between OPEC (1.0 Mb/d) and non-OPEC producing countries (0.5 Mb/d) participating in the declaration of cooperation in order to achieve a sustainable balance and stability in the market. Energy Information Administration (EIA) expects Brent crude oil prices will rise to an average of 41.69\$/b during the second half of 2020 and 65.19\$/b on average in 2022, reaching 60\$/b by the end of the year.

KEYWORDS Closed-loop system Oil Supply, Oil price war, Drop oil price, Crude oil, Pandemic, COVID-19, Oil-dependent Countries, OPEC.

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INTRODUCTION

The COVID-19 outbreak started in December 2019 in Wuhan city in China. It continues to spread across the world. At the time of the first draft of this report, almost 200,000 cases of the virus had been recorded worldwide. As of this current version, the total has risen to above one million. And more than 100,000 have died.¹ Since the virus was first diagnosed in Wuhan, China, it has been detected in over 190 countries and all U.S. states.¹ In early March, the focal point of infections shifted from China to Europe, especially Italy, but by April 2020, the focus shifted to the United States, where the number of infections was accelerating. The infection has sickened more than 3.2 million people, about one-third in the United States, with thousands of fatalities. More than 80 countries have closed their borders to arrivals from countries with infections, ordered businesses to close, instructed their populations to self-quarantine, and closed schools to an estimated 1.5 billion children.^{2,3}

In a strongly connected and integrated world, the impacts of the disease go way beyond mortality. As such, governments around the world have been preparing contingency plans, and aid packages to sustain their economies. In China, we have seen severe lockdowns. This has led to a decrease in consumption, and interruptions to production. Overall, the functioning of global supply chains has been disrupted, affecting companies across the globe. Global

financial markets have registered sharp falls, and volatility is at levels similar, or above, the financial crisis of 2008/9.¹ Unfortunately, the coronavirus has, speedily, emerged as an alarming contagious disease increasing dramatically the number of death that requires a rigorous containment measure around the world. On 11 March 2020, the epidemic was qualified as a pandemic by the WHO (2020). The COVID-19 pandemic has spread rapidly to many other countries and territories, causing border closures, a sudden slowdown in the global economy and a stock market crash on March 12, 2020, due to the failure of negotiations of OPEC to reach a production quotas agreement.⁴

Comparisons with other global crises, like the 2008 financial crisis, are not possible. The ECB's Lagarde justified actions by the Bank during the week to provide liquidity by arguing that the "coronavirus pandemic is a public health emergency unprecedented in recent history." Market indexes fell again on March 23 as the Senate continued to debate the parameters of a new spending bill to support the economy. This time we are facing a number of new challenges, which prevent simple comparisons with the past which are:

- Global pandemic
- No focused on low-middle income countries
- The lowest historical Interest rates
- Integration between nations
- The generating spillover effect throughout supply chains
- The simultaneous destruction of demand and supply^{1,2}

For a long time, oil has been considered the engine of the world's economy. Crude oil so-called "black gold" is considered one of the world's most precious commodities that affect the global economy as well as world trade. Indeed, sudden price drops or unexpected events can send the global world into uncertainty and fears. Crude oil prices are subject to booms and busts and it depends on the economic conjuncture, business cycle, and crisis. Previously, supply shortages triggered by political events have caused change dramatically in oil prices, such as the Iranian revolution, Iran-Iraq war, Arab oil embargo, and Gulf wars. Besides, the Asian financial crisis and the global economic crisis of 2008 have been generating also price fluctuations.⁴ In 2014, after reaching monthly peaks of \$112, crude oil prices fell sharply following a production that exceeded demand. Currently, we are facing the biggest oil price drop since the Gulf War in 1991.⁴ This is illustrated by the dramatically falling since March 12, 2020, in reaction to the coronavirus pandemic that led to an unexpectedly sharp drop in demand for oil. The current drop in oil demand is essentially caused by the quarantine of countries particularly restriction and containment measure that causes a drop in consumption.⁴ There is still time for global policymakers to have a coordinated policy response to the virus and its economic impacts. However, time is running out. Post-World War II, the average recession has increased the unemployment rate by about 2 percentage points.¹ We live now in a very different world compared with those that faced previous crises. Therefore, comparisons are dangerous and prone to errors. This time, we are facing a combined demand and supply shock, and economic tools are limited. Overall, the potential impacts of this crisis are larger than any previously seen in history.¹

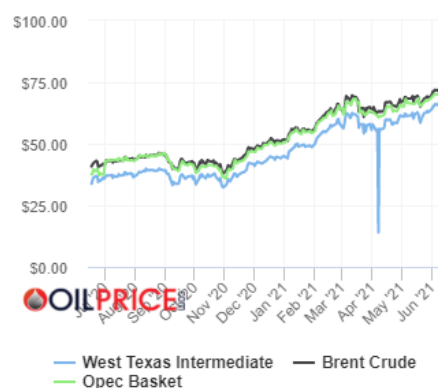


Fig. 1: Monthly Brent, OPEC basket, and WTI crude oil prices from July, 2020, to June, 2021 (in U.S dollars per barrel).⁷

The biggest issue for the oil industry came earlier in March when the Organization of the Petroleum Exporting Countries (OPEC) and ten other oil-producing countries failed to come to an agreement on stable production levels (Fig. 1). With Russia unwilling to accept a production cut of more than 1 million barrels per day (BPD) to offset falling

demand, oil prices plunged to a multiyear low. By mid-March, crude prices were down to 30%, sparking a selloff in crude oil.⁵ At the same time, the dollar continued to gain in value against other major currencies and the price of oil dropped close to \$20 per barrel on March 20. The Federal Reserve announced that it would expand a facility to support the municipal bond market. Britain's Finance Minister announced an "unprecedented" fiscal package to pay up to 80% of an employee's wages and deferring value-added taxes by businesses.^{2,6}

With the oil industry in shock, the prices were a fairly run-of-the-mill crash — but then prices suddenly sunk below zero, with May futures for WTI oil closing at -\$37.63 on April 20th. For the first time in history, producers were willing to pay traders to take oil off their hands. This oddity is partially a function of the particularities of futures contracts. Futures contracts normally roll over to the next month without much happening, but in this case, traders saw the May contract as a "hot potato". No one wanted to be stuck taking delivery of oil when the world is awash in it and the country is in lockdown. Oil futures contracts specify a time and place for delivery. For WTI oil, that specific place is Cushing, Oklahoma. With most storage capacity booked already, taking physical delivery wasn't even an option for many players. In other words, sellers outnumbered buyers by a high-shifted margin and because oil is a physical commodity, someone has to ultimately take the contract. The May contract and spot prices have "rebounded" to about \$10. The June contract is slightly higher, at \$13.⁸ As such, the implications for developing economies will be much more pronounced in the near term, as a weaker currency and higher interest payments will compound budget constraints. As the virus has spread across continents, oil prices will likely remain under pressure as OPEC and Russia are locked in a price war. This will cause prices to rise at a more gradual pace in the future, and lower oil demand and staling investment will have more lasting economic consequences for commodity exporters, which will cause the economy to grow at a slower pace. Furthermore, inflation will rise in developing and emerging economies due to a weaker currency, and a deterioration in external positions will slow the impact of economic reforms agreed in the current extended credit facility with the IMF the impact of the COVID-19 will also be contingent on the portion of economic growth generated from domestic demand and services, as opposed to imports and oil prices in most developing economies that present downside risks.⁹ COVID-19 has also a wide effect on many different environmental issues. As positive and negative impacts we can name decreased concentration of NO₂ and PM 2.5, reduction of CO₂ emission, reduction of environmental noise level, increased plastic use, and waste amount and reduction in waste recycling. Furthermore, there are notable effects on other oil-related like transportation and energy sectors which will be discussed.

COVID-19 AND OIL TRANSPORTATION AND LOGISTICS

By now, it is clear that COVID-19 will change the way that institutions, companies, and individuals physically connect. The World has strongly reacted to the virus. Overall, nearly 90% of the World's population is subject to some form of international travel restrictions.¹⁰ Due to the restriction by the pandemic, travel demand, with significant implications for airlines, and carriers such as Air Mauritius¹¹ and Virgin Australia¹² has been halted for the concerns over the vast spread of this disease. Such restrictions based on oil shock will have a big impact on the World's economies. The US is expected to experience a USD 400 billion reduction in travel spending for 2020, representing a loss of USD 900 billion in economic output.¹³ But some of the most impacted countries will be those small economies dependent on trade and tourism. Mauritius, for example, is estimated to experience a 59% decrease in passengers in 2020 in comparison to 2019, losing USD 2 billion in GDP and over 73,000 jobs due to the reduction in tourism alone.¹⁴ The former Minister of Finance of Mauritius, Dr. Rama Sithanen, spoke of an L shaped curve, rather than the often spoken of 'V' shaped curves of recovery, for many of Mauritius's leading industries.¹⁵ On the one hand, e-retail logistics, on-demand, and last-mile delivery sectors are amongst the biggest beneficiaries of the Coronavirus crisis. On the other, the automotive, oil and petroleum distribution, construction, and steel production sectors have seen a drastic fall in demand.¹⁶ These heavyweight industries have been afflicted with both supply and demand shocks that make recovery slow and painful. Companies in land-locked and small island states are also facing severe disruptions to production, being unable to receive the necessary inputs and raw material to continue producing. The transport and logistics sector is particularly vulnerable to economic shocks.¹⁷ With around 80% of global trade volume being transported by commercial shipping, companies are doing their best to meet the demand and rebalance their portfolio.¹⁸ Countries, especially those that are road-connected, are adopting measures to ensure that trade continues and goods reach their destinations, minimizing the impacts on all supply chains. The EU, for example, recommends its Member States to facilitate the use

of passenger aircraft for cargo-only operations and to temporarily remove, or apply flexibly, night curfews or slot restrictions at airports for essential air cargo operations.¹⁹

COVID-19 AND OIL PRICE FLUCTUATION

The fundamental driver of oil's price is supply and demand in the market. So, oil supply is controlled by a cartel of oil-producing countries called OPEC and Oil demand is driven by production and transport activity such as electricity, gasoline, and kerosene. A large literature on the economic determinants of oil price fluctuations has emerged. Initially, oil price fluctuations were explained by the disruptions of global oil production associated with political events such as wars and revolutions in OPEC countries. As a result of the COVID-19 pandemic, global industrial production is reduced causing lower oil consumption that decreases the barrel price. As announced, on February 15, 2020, by the International Energy Agency (IEA (2020)), global demand could decrease by 425,000 barrels per day following a dramatic drop in Chinese consumption. Global oil demand drop compared to 2019: China, which consumes about 14% of world oil production and air carriers, which consume 8% of world demand, have greatly reduced their activities. As a consequence, OPEC decides to regulate the supply of oil to set the price on the world market while other oil-producing countries, such as Russia, have braked OPEC's ability to control supply. The OPEC decision consists of reducing their production by 1.5 million barrels per day during the second quarter of the year by negotiating with Russia as well as other producer countries. On March 6, 2020, Russia refused to collaborate causing the fall by 10% of the price of oil. Hence, Saudi Arabia cuts the price of its oil and decides to increase its production, to force Russia to return to negotiating with them. They found that the key decision variables are the OPEC production quota and the OPEC ability to add production capacity; it results in a sharp drop in the crude oil price, as the competition among OPEC countries leads to supply quantities that surpass demand which will be stored. As a component of derivative markets, futures markets are hedging markets allowing economic agents to protect themselves against price risk. In recent years, traders have significantly increased their investment in the commodities futures market that has led to a significant development of speculation in these markets.⁴

COVID-19 AND CRITICAL ELEMENTS OF OIL AND GAS SUPPLY CHAIN

The oil & gas supply chain can be broadly divided into 3 major parts – Upstream (refers to anything having to do with the exploration of the oil and gas), Midstream (refers to anything required to transport and restore crude oil and natural gas before they are refined and processed), and Downstream (refers to anything involved in turning crude oil and natural gas into the finished product) (Fig. 2).

Upstream Impact

As several major oil producers, mostly in Saudi Arabia and Russia, are not reducing their oil production due to the breakdown of talks in the OPEC summit, the major downstream supply chain impact is the availability of resources and workforce to keep the production operations and related maintenance going amid the lockdowns and other containment initiatives.

Midstream Impact

Like the oil production situation, the major oil refineries have not stopped buying oil from the exploration companies. However due to the huge shortfall in demand in the downstream areas of the oil and gas supply chain, transport carriers such as transcontinental tankers, rail tank cars, tank trucks, etc. are getting queued up. Keeping track of the logistics, controlling the oil spillage and pilferage from the containers are exacerbating the problem in this pandemic. There could be several solutions, based on emerging technologies, which could be deployed for near-term and long-term benefits to mitigate the situation. Remote container tracking and health monitoring can provide ready alerts for oil spillage and pilferage, and robust fleet management can control the already over-utilized transportation modes.

Downstream Impact

Initiatives that could be useful to mitigate the situation are to plan for maximizing the transport utilization, smart demand-supply match, etc. Digital solutions can be designed to use advanced machine learning models to isolate end customers based on the probable demand surge, e.g. even with lifting of COVID-19 lockdown, the travel and hospitality

sectors are likely to recover slowly and thereby would have less energy consumption. Such initiatives will lead to the optimization of transportation focusing only on high demand or high relevant priorities.²⁰

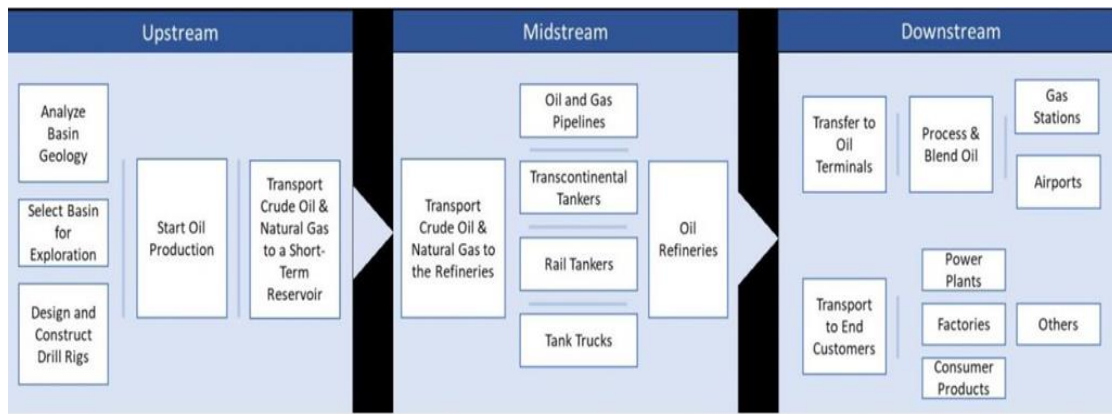


Fig. 2: Upstream, Midstream and downstream specification.²⁰

COVID-19 AND PRICE WAR

On 5 March 2020, OPEC proposed a 1.5 MBD production cut for the second quarter of 2020, of which 1 MBD would come from OPEC countries and 0.5 MBD from non-OPEC but aligned producers (most prominently Russia) (Fig. 3). The following day, Russia rejected the proposal, prompting Saudi Arabia – the world’s largest oil exporter – to boost production to 12.3 MBD, reaching its full capacity. Saudi Arabia also announced unprecedented discounts of almost 20% in key markets. The result was a more than 30% plunge in prices, to as low as \$31.1 per barrel on 8 March. The upward-pointing futures curve suggests the market still expects oil prices to slowly recover – and to reach \$50 per barrel by the end of 2024. That said, as we assess the stance of the different protagonists in this month’s oil war and the response of shale production, it seems clear the futures curve will likely shift.²¹⁻²³ As the world struggles with the fear of recession, the Middle East and North Africa (MENA) could be the hardest hit by what is arguably a perfect storm: the coronavirus spreading to the region and oil prices collapsing. This is a region already raked by social discontent and massive street protests.

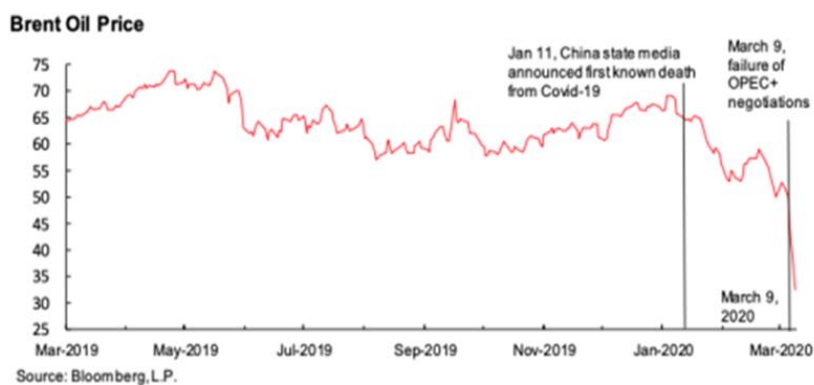


Fig. 3: Brent oil price based on Bloomberg L.P.⁷

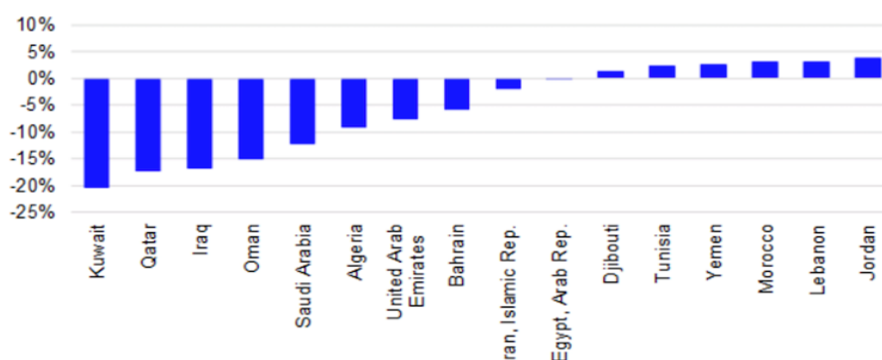


Fig. 4: Back-of-the-envelope effect from the oil collapse.²¹

As a rule, lower prices are good for oil-importing countries and bad for oil exporters. A simple way to get a sense of the size of the real income effect is to multiply the difference between production and consumption (net oil export) as a share of GDP by the percentage point increase in the oil price. For instance, based on the hypothetical assumption that oil prices were to stay 48% below the 2019 level, Kuwait – where net oil exports account for 43% of GDP – would experience a decline in real income of about 20% of GDP. For the same increase in price, Morocco would experience an increase in real income equivalent to 3% of GDP (Fig. 4).²¹

CRUDE OIL PROCES

Brent crude oil spot prices averaged \$18 per barrel (b) in April, down \$13/b from March as global oil demand continued to fall and global oil inventories rose strongly. In particular, crude oil prices fell as concerns regarding the capacity of global oil storage to handle expected inventory build increased. EIA expects that the rate of inventory builds peaked in April, and as oil demand begins to return and oil supply decreases, upward price pressures will begin to emerge. With global oil demand expected to exceed supply beginning in the second half of 2020 and continuing through the forecast period, prices could rise steadily beginning in the second half of this year. Although EIA forecasts significant inventory draws beginning in July, high existing inventory levels, high OPEC spare production capacity, and uncertainty about the trajectory of oil demand will likely limit, but not completely contain, upward crude oil price movements (Fig. 5).²⁴

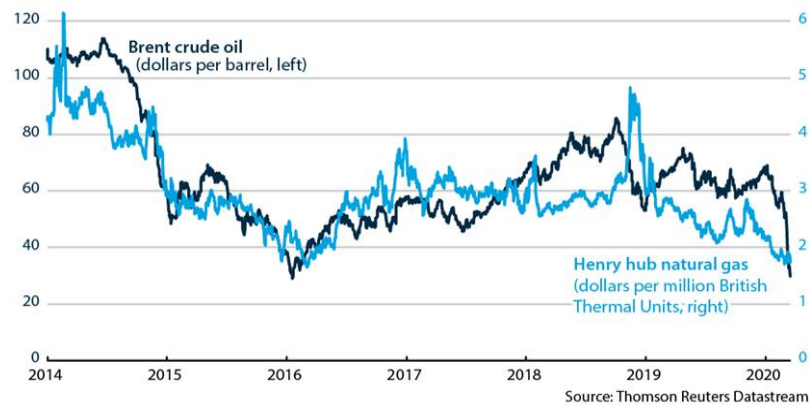


Fig. 5: Brent crude oil and Henry hub natural gas.

The front-month futures price for Brent crude oil settled at \$29.46 per barrel (b) on May 7, 2020, an increase of \$4.72/b from April 1, 2020. The front-month futures price for West Texas Intermediate (WTI) crude oil for delivery at Cushing, Oklahoma, increased by \$3.24/b during the same period, settling at \$23.55/b on May 7.²⁴ The oil futures market continued to exhibit significant volatility in April, marked in particular by the WTI front-month futures price closing at -\$37.63/b on April 20, 2020. Although negative pricing has occurred in other commodity markets, it has never occurred in a highly visible and widely traded benchmark crude oil price. Since April 21, crude oil prices have steadily increased and could indicate downside price pressure is easing. Many countries have begun to reopen their economies. In addition, the Organization of the Petroleum Exporting Countries (OPEC), along with Russia and a number of other non-OPEC producers (OPEC+), agreed to significant production reductions from May 2020 through April 2022, which should slow the pace of petroleum inventory builds. Although the outlook for global oil markets remains highly uncertain, April 2020 could mark the low-point for oil prices. Voluntary production reductions from OPEC+ countries will not be sufficient to prevent significant inventory builds in May and June, however, as EIA expects global demand is forecast to remain subdued, albeit increasing from the lows of March and April. In the May STEO, EIA forecasts global liquid fuel inventories will increase at a pace of 10.1 million barrels per day (b/d) in May and build an additional 1.6 million b/d in June.²⁴ The major shock of the pandemic was on major oil productions (west Texas intermediate and Brent) which eventually affected the oil prices by their fluctuation. Therefore, the major collapse occurred on their change in prices.

WTI: In 2020, the price of West Texas Intermediate (WTI) crude oil is expected to reach 30.1 U.S. dollars per barrel, a notable decrease from the year before. This came as a result of the decline in consumer demand following fears of a continued spread of the corona virus pandemic and its impact on the economy, which in turn led to a disagreement between two of the largest oil producers, Russia and Saudi Arabia in early March.

Brent: Brent crude oil is forecast to have a price of 47.81 U.S. dollars per barrel in 2021 (forecast as of May 2020), which is a major reduction from the previous 2021 forecast price of 67.53 U.S. dollars per barrel that was presented in January 2020. That was before international oil prices collapsed due to dramatic reductions in demand as a result of the COVID-19 crisis and a production dispute between Saudi Arabia and Russia.^{26, 27}

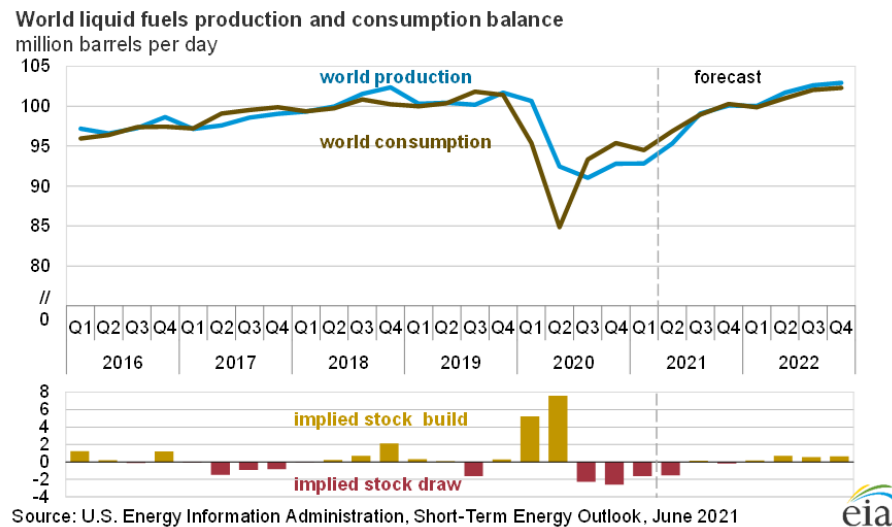


Fig. 6: World liquid fuels production and consumption(2016-2022).²⁵

DUAL SHOCK

The two shocks of COVID-19 and oil price collapse are intertwined, yet distinct. On the one hand, the demand component of the oil shock is linked to the sharp reduction in oil consumption stemming from precautionary measures to stop the spread of the virus. This includes lockdowns, which have brought economies around the world to a standstill. The estimated 10% reduction in oil consumption from 2019 (about 10mb/d) is the result of reduced air and road travel, according to Rystad Energy. While the depth and duration of the pandemic shock are uncertain, it is expected to be short-lived. Indeed, the severity of the shock has triggered unprecedented domestic measures in advanced and developing countries, and the imperative of global coordination to eradicate the virus will hopefully prevail. The international financial institutions are critical to the effort of developing countries fighting COVID-19 (which have an acute balance of payments or fiscal problems). These institutions (which can offer zero- to low-interest financing and long maturities) are best-equipped to help MENA and other developing countries deal with the dual shock. The cost of inaction, both economic and social, would be large. The payoff for action is large. Previous experience in fighting smallpox suggests the benefit-cost ratio for assisting its eradication exceeded 400-1 (Barrett 2007). Once the spread of the virus is stopped, the preventive measures at the root of the economic recession will be rolled back. The speed of that recovery will depend on how swiftly and decisively governments take measures to mitigate the economic and financial dislocations from the health crisis. But the supply component of the oil shock is likely to be persistent and drive oil prices lower for longer. The two shocks differ in their duration, but also their likely potential consequences and associated risks of inaction. The battle against the spread of the novel coronavirus and its economic and social consequences will be made more difficult by empty government coffers. Many MENA countries are facing large balance of payments and fiscal gaps. Many also carry high sovereign-risk premiums. For those countries, additional foreign borrowing in private markets will be difficult. Moreover, countries with fixed exchange rates will find it difficult to use helicopter money because of the tension between money printing and maintenance of the peg. The region will need much international support to help it navigate an extremely rough patch.²⁴

CRUDE OIL SUPPLY

EIA's model for crude oil production in the Lower 48 states includes structural parameters that reduce the forecast for rigs and wells when the West Texas Intermediate crude oil price falls below \$45/b or the Henry Hub natural gas price falls below \$2 per million British thermal units, based on historical trends in each region. In addition to this model-based drop, EIA assumes a further 30% reduction in drilling activity on average in the second quarter of 2020 and a 6% reduction in the third quarter of 2020 as a result of low oil prices related to the unprecedented effects of restrictions

as a result of COVID-19; many producers have already announced plans to reduce capital spending and drilling levels. EIA expects that steepest declines in U.S. crude oil production will be in the second quarter of 2020, with forecast month-over-month declines averaging 0.5 million b/d during those three months. EIA expects production to continue declining, albeit at a slower rate, through March 2021, when production bottoms out at 10.7 million b/d, which would be a 2.1 million b/d decline from the record monthly production reached in November 2019. EIA expects production to rise modestly through the end of 2021 in response to rising crude oil prices. EIA forecasts annual U.S. Energy Information Administration | Short-Term Energy Outlook May 2020 10 average crude oil production to be 11.7 million b/d in 2020 and 10.9 million b/d in 2021, both of which are about 0.1 million b/d lower than forecast in the April STEO. The decline in U.S. crude oil production in 2020 and 2021, combined with rising U.S. liquid fuels consumption, results in the United States returning to being a net importer of crude oil and petroleum products in the third quarter of 2020 and remaining a net importer in most months through the end of the forecast period.²⁴ EIA expects that restrictions related to COVID-19 will drive sharp reductions in crude oil prices and U.S. liquid fuel demand during the second quarter of 2020, which will significantly reduce prices for gasoline and diesel fuel during the same period. EIA forecasts that U.S. average retail prices for regular-grade gasoline will average \$1.91 per gallon (gal) and diesel retail prices will average \$2.22/gal in the second quarter of 2020. The gasoline and diesel price declines largely reflect a drop in crude oil prices. Refinery margins, after falling significantly as gasoline and diesel demand fell quickly in March and April, have increased recently as refiners have reduced runs. EIA expects petroleum product prices will rise as crude oil prices rise in the coming quarters. However, EIA generally expects U.S. average gasoline prices to remain lower than \$2/gal until March 2021.²⁴

COVID-19 AND OIL RESERVE AND STORAGE

Strategic Reserve Storage Space for Lease

The US said in early April it was looking to lease out space for companies to store oil in the SPR after its plans to buy millions of crude oil barrels fell through. The Department of Energy (DOE) later suspended its plans to buy 77 million BBL of US crude, after the requested \$3 billion in funding for the project was not included in a \$2-trillion stimulus package that was approved by the US Congress. At the time of this writing, EIA data showed SPR inventory at 636.1 million BBL for the week ending 24 April. This was up by 1.2 million (0.2%) from 635 million BBL a week earlier. It was also the first increase seen in the SPR since early December 2019. The increase comes after the US entered into negotiations with nine companies on an agreement to rent space in the US SPR to store 23 million BBL of crude. Although the list was not made available to the public, Reuters said the nine companies were as follows: Chevron, ExxonMobil, Alon USA, Atlantic Trading, Energy Transfer, Equinor, Mercuria Energy America, MVP Holdings, and Vitol. Even with the increase, capacity was still 90 million BBL below the highest capacity held by the SPR, 727 million BBL in December 2009. When Nymex WTI went negative on 20 April, however, President Trump reiterated the plan and said the US would look at putting as much as 75 million BBL into the reserves. One country has also locked in its position with the US SPR. Australia said on 21 April it would spend \$59 million to build an emergency oil stockpile that will be stored in the US SPR. The deal is for an initial period of 10 years and comes as the country says its own domestic storage tanks are full. The deal is also part of Australia's effort to meet its International Energy Agency (IEA) requirements. In accordance with the agreement on an International Energy Programme, each IEA country has an obligation to hold emergency oil stocks equivalent to at least 90 days of net oil imports. In case of a severe oil supply disruption, IEA members may decide to release these stocks to the market as part of a collective action. India, another major oil consumer, said its SPR will be full by the third week of May. The country's total combined capacity is 5.33 million metric tons, spread out in three locations in southern India—Visakhapatnam, Mangalore, and Padur. As of mid-April, India said this was just over half full. An S&P Global Platts Analytics Insight said while India fills its SPR, the lack of space also means an opportunity lost. Platts added that India's reluctance stems from the high costs involved, not only in building out the tanks and necessary infrastructure, but also in maintaining and holding the oil. With tank space limited inland, it left the market looking to offshore alternatives, which are also filling up quickly.

Storage on the Water in High Demand

Key ports around the world are becoming packed with ships, being used for floating storage until there is enough space in onshore storage tanks to allow for the discharge of their petroleum cargo. The US Coast Guard said on 24 April it

was monitoring 27 tankers off the coast of Southern California, which analyst groups estimate are holding about 20 million BBL of crude. A similar situation has developed in Singapore, where about 60 clean-fuel tankers are at a standstill. More ships are expected to arrive in the US. A Rystad Energy analysis showed 28 tankers with Saudi oil, including 14 very large crude carriers, will arrive on the US Gulf and West coasts between 24 April and 24 May carrying a total of 43 million BBL of crude oil. Rystad said the fleet, with oil loaded at Ras Tanura, will join an existing congestion of 76 tankers that are currently waiting to unload in US ports. Most of these tankers are on the West Coast, where 34 are waiting in line to offload about 25 million BBL of crude. Rystad added about 31 tankers, carrying a similar load, are waiting for a slot to unload on the US Gulf Coast, though this number of tankers is not unusual for the Gulf (Fig. 7).

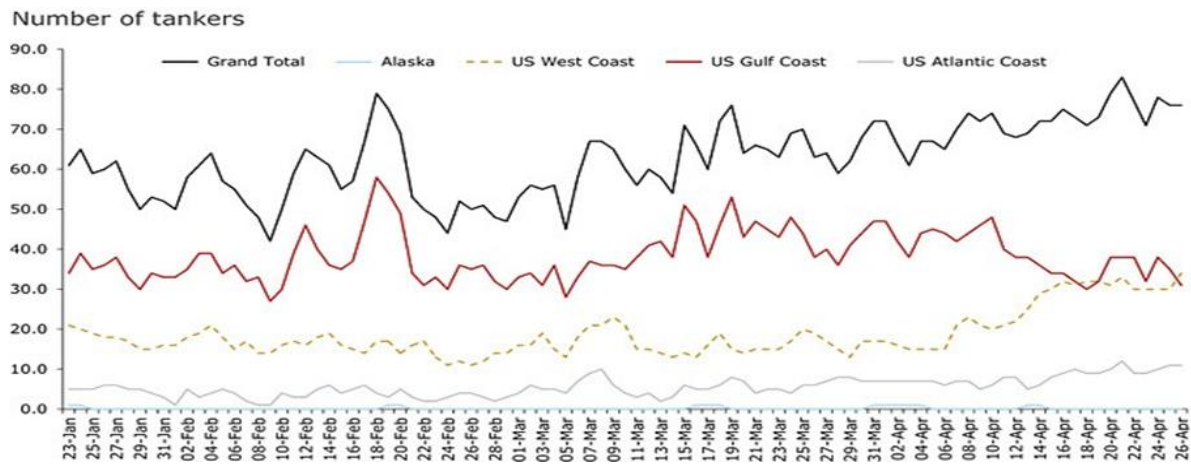


Fig. 7: Tankers accumulating on US coastal areas.²⁸

Outside the US, key regions such as Asia, which currently accounts for around 45% of total global floating storage, has seen a swift build in offshore stocks in recent weeks, notably off India and Southeast Asia. Market intelligence group Vortexa said the growing clusters of floating storage outside refining centers in Asia reflect onshore storage capacity nearing limits, prompting refiners and other players to move incremental barrels onto offshore tankers and float them near consumers to shorten delivery time (Fig. 8). Vortexa added the rise in recent tanker bookings for floating storage—many of which have yet to commence their storage period—should see additional strong builds in Asia in coming weeks. On a global basis, Vortexa said the rise in floating storage in Asia has helped to lift overall crude in floating storage to above 120 million BBL in mid-April, surpassing the highs of 2016. The group added that the flotilla of floating storage bookings that will come on line in subsequent weeks is expected to lift volumes higher, and of these, many are expected to exercise their storage options in Asia. “If global crude surplus continues rising, storing crude on tankers, even at a loss for operational purposes, could become more entrenched,” the company said.



Fig. 8: Asia's floating crude inventory, April 2019-2020 (million BBL).²⁹

When marine vessels are used for storage—a status given once a ship is stationary for a minimum of seven days—fewer vessels are available to ship petroleum. The effects reverberate and can lead to increased costs for crude oil and

refined product shipping and delayed voyages, Grissom said. "Refineries plan crude supplies well in advance, often 8 to 12 weeks before the crude oil will be needed at a facility," Grissom explained. "When there is a sudden and dramatic drop in demand, as has been the case because of COVID-19, refineries take steps to reduce crude receipts." Crude supplied from onshore storage terminals may be able to remain stored at the terminal. But when crude oil is supplied from a marine vessel, the options are more limited. "Using the marine vessel to store the crude is often the most reasonable option," Grissom added. Shipping journal Lloyd's List Maritime Intelligence has stated that floating storage of refined products such as gasoline and jet fuel is forecast to hit fresh highs over the next 6 weeks, adding that tank capacity is not expected to recede until the end of June. Lloyd's List added between 30 and 114 Aframax-size tankers will be needed to accommodate the accelerating floating storage demand. Its estimates of current clean floating storage levels range from 40 million to 65 million BBL, substantially less than crude oil volumes. The group said about 163 million BBL of crude and condensate have been measured on 114 tankers over the past 20 days or more. In addition to using marine vessels for storage, the market is also looking at ways to utilize pipelines and rail cars to store oil. Other options include converting storage used for other products, such as natural gas liquids.²⁹

COVID-19 AND THE WORLD'S BIGGEST OIL PRODUCERS

Iraq

Iraq will be harder hit than almost any other oil-dependent state, according to the International Energy Agency. About 90 percent of the government's revenue comes from oil, and it relies on that money to support a payroll of more than four million workers as well as payments to pensions and welfare for the poor. The government could just meet its costs when oil was trading at about \$61 a barrel, as it was in December, but now it cannot meet. The May payroll let alone pay for pensions, subsidies, and other operations. "The problem starts in May," said Mudher Mohammed Saleh, an economist, and adviser to Iraq's prime minister. "We'll have a \$4.5 billion gap monthly.

Mexico

Even before the pandemic and the plunge in oil prices, Mexico's economic outlook was poor, with some forecasters predicting its economy would remain sluggish, after entering a mild recession in 2019. The federal budget relies heavily on oil production and exports, which means government income will now be sharply diminished. President Andrés Manuel López Obrador has laid out an ambitious development plan predicated on reviving Pemex, the state oil company, which has been suffering declining output, suffocating debt, corruption, and mismanagement. But in recent weeks, raising money for Pemex in financial markets became much harder as major rating agencies have downgraded the company's credit. Daniel Lansberg-Rodríguez, the Latin America director at Greenmantle, a risk advisory firm, said that President López Obrador has long viewed Pemex as "the silver bullet" that will rescue the economy. "Come hell or high water, the strategy won't change," he said. KIRK SEMPLE, Mexico City.

Venezuela and Ecuador

The oil market route has reverberated across South America but will be felt the most by the region's weakest economy, Venezuela, which relies on its shrinking crude sales to import food and fuel. Even before the price collapse, the country struggled to find buyers because of tightening American sanctions. The International Monetary Fund forecasts Venezuela's economy will shrink 15 percent this year, the biggest decline in the region. In oil-dependent Ecuador, President Lenin Moreno has called the energy market collapse the country's "most critical moment in its history." As in Venezuela, the price collapse has caught Ecuador in one of the worst economic moments, as the country struggles to contain Latin America's most aggressive outbreak of coronavirus and deal with a rupture of its two main oil pipelines. ANATOLY KURMANAEV, Caracas.

Nigeria

Even before the price collapse, the World Bank predicted that the pandemic would push sub-Saharan Africa into its first recession in 25 years. But in the region's leading oil-producing nations, Nigeria and Angola, the compounding impact of drastically reduced income could be devastating. Both derive 90 percent of export earnings and more than two-thirds of government revenue from oil sales. For decades Nigeria, which has requested \$6.9 billion in emergency funding from international lenders, spent billions of dollars to keep the price of gasoline in the country artificially low.

This policy was scrapped in early April. Successive Nigerian governments have pledged but failed to end the country's reliance on oil. "My country is a classic poster country for poor governance of natural resources," said Oby Ezekwesili, a former World Bank vice president, who also served as Nigeria's education minister. "Oil prices rise and our expectations blow up, and then they fall and our expectations collapse." Nigeria has only just recovered from its last recession and is dealing with multiple crises, most notably the battle against Boko Haram militants. It has cracked down on minority uprisings, like Shiite protesters and activists who want a Biafran state, but it would take much more to suppress the millions of its citizens affected by the coronavirus lockdowns. RUTH MACLEAN, Dakar, Senegal.

Saudi Arabia

In 2016, Crown Prince Mohammed bin Salman of Saudi Arabia said that by this year, the kingdom would be able to survive without oil. That prediction was woefully optimistic. Saudi Arabia, the world's largest crude oil exporter, is as dependent on oil as ever. During his rise to become Saudi Arabia's de facto ruler, Prince Mohammed began a range of initiatives, from diversifying the economy by expanding tourism and entertainment, to vanquishing foes in Yemen, to confronting Iran and other enemies. Now, the price crash has jeopardized the finances needed for those projects — meaning that instead of investing in a new solar-powered city on the Red Sea, Prince Mohammed's immediate focus will be balancing the kingdom's budget. The Saudi government was struggling to do so before the kingdom started an oil-price war with Russia last month, which only compounded the price drop caused by the pandemic. To balance its budget, the kingdom needs \$80 a barrel oil, four times the current price. Steffen Hertog, a professor of comparative politics at the London School of Economics, said the kingdom has about \$500 billion in foreign currency reserves, which could help cover a budget shortfall for about two years. But he said that if they have to tap those assets.

Russia

Russia has in many ways shrugged off the price tumble. Despite the drama on oil markets, the national currency, the ruble, dropped just 2 percent on Tuesday. The historically high oil prices of the past two decades had lifted the country economically and powered President Vladimir V. Putin's ambitions. But Russia entered the crisis well prepared, with hard currency reserves and a tight budget put in place as protection against the Western sanctions of the past six years. President Putin and his economic policy team can tap gold and hard currency reserves that total \$565 billion. How long Russia can hold out, however, is unclear. Renaissance Capital, a Moscow investment bank, has estimated Russian reserves can support current spending at oil prices of \$35 per barrel for six years. Signs have emerged that Russia is overwrought. Cushioning the price collapse is not the only demand on Russia's reserves: The country has not announced major bailouts for businesses harmed by coronavirus lockdowns, but they are likely. Russian president negotiated oil production cuts with other producers after walking away from talks with Saudi Arabia weeks ago. Low energy prices also have defanged Russia's oil and gas policies in Europe, which were partly intended to sow political divisions by giving favorable terms to Germany, Italy, Hungary, and others. Now Russia has no leverage. Still, Cliff Kupchan, chairman of the Eurasia Group, a political risk consultancy, said he did not foresee a significant weakening of Russia despite the price collapse. "All boats will sink because of low oil and the coronavirus crisis," said Mr. Kupchan. "Russia's won't sink more than others and may not sink as much." ANDREW E. KRAMER, Moscow

Iran

Based on the analysis which was provided by EIA, IEA, and oil analyzer and economy author "Henri Kouam", due to Iran's pressurized sanctions which were imposed By US, Iran's oil export has decreased tremendously that has been estimated about 460,000 barrels per day which is far ahead of 3 million barrel per day back in 2018. In addition to sanctions and reduction of oil export, Covid-19 has affected Iran's oil market, But not as much as other countries like US, Russia, and Saudi Arabia who are the biggest oil producers in the world, which oil shock occurred when the oil price dropped below zero dollars and oil storage facilities couldn't handle oil production during overload and the only solution was to sell the over-capacitated storage without charging the customers(even paying them to receive the oil), but Iran did not have these matter to take care of, which was due to impose sanctions that decreased the oil production and as it is mentioned in this sector, Iran sells its oil production to specific countries who have bought the oil before the US withdrawing from the nuclear deal and after imposing sanctions, whom they are now under US sanctions too. Therefore, Iran hasn't seen much of an additional burden on selling its oil during the pandemic.³⁰

OPEC AND PARTNER COUNTRIES (OPEC+)

EIA assumes OPEC countries will mostly adhere to announced cuts during the first two months of the agreement (May and June). This forecast assumes OPEC's production compliance relaxes later in the forecast period, as stated production cuts are reduced and global oil demand begins growing again. EIA forecasts OPEC crude oil production will fall below 24.1 million b/d in June, a 6.3 million b/d decline from April when OPEC production increased following an inconclusive meeting in March. The forecast for June OPEC production does not account for additional voluntary cuts announced by the Saudi Energy Ministry on May 11. If OPEC production declines to less than 24.1 million b/d, it would be the group's lowest level of production since March 1995. EIA expects OPEC production will begin increasing in July 2020 in response to rising global oil demand and prices. From that point, EIA expects a gradual increase in OPEC crude oil production through the remainder of the forecast, with production rising to an average of 28.5 million b/d during the second half of 2021.²⁴

GEMAC MEMBER COUNTRIES

Five of the six CEMAC countries are oil producers; oil accounts for about 40% of regional GDP and 85% of total exports. Oil revenue, channeled through government spending, is the main driver of economic activity, but volatile oil prices and procyclical fiscal policy have caused boom and bust cycles, hence the need to reduce reliance on commodity exports. Furthermore, oil accounts for about 20% of GDP and covers roughly 75% of the region's exports of goods while tax and nontax revenues related to oil contribute to more than 40% of total revenues. Furthermore, an analysis of the CEMAC balance of payments data suggests a strong correlation between recorded oil export and recorded capital outflows. In other words, the higher is the total value of recorded oil export, the higher is the estimated capital outflows. As exports fall due to the COVID-19 and prices fall further due to Saudi Arabia and Russia price war, capital will likely flow out of the economy, the currency will depreciate and prices for basic food products will rise.³¹

2020 PROJECTIONS OF SUPPLY AND DEMAND OF OIL

Five First-Quarter of 2020 - Compared with the First Quarter of 2019

As a consequence of global lockdown measures, mobility – 57% of global oil demand – has declined at an unprecedented scale. Road transport in regions with lockdowns in place has dropped between 50% and 75%, with global average road transport activity almost falling to 50% of the 2019 level by the end of March 2020. Air travel in certain regions has almost come to a halt, with aviation activity in some European countries declining more than 90%. Aviation activity in China has rebounded slightly from the low at the end of February, as lockdown measures have eased slightly. Nonetheless, as lockdowns spread, global aviation activity declined a staggering 60% by the end of Q1 2020. As a result of declines in mobility, in March alone world oil demand plummeted by a record 10.8 MB/d year-on-year.²¹

Full-Year 2020 Projections

Global oil demand is expected to be a record 9.3 MB/d lower in 2020 than in 2019. The impact of containment measures in 187 countries and territories has almost brought global mobility to a halt. Demand in April is estimated to be 29 MB/d lower than a year ago, falling to a level last seen in 1995. For Q2 2020, demand is expected to be 23.1 MB/d below 2019 levels. The recovery in the second half of 2020 is projected to be gradual, as economies come out of containment and activity levels rise. Nonetheless, demand is not expected to reach pre-crisis levels before the end of the year, with December demand projected to be down 2.7 MB/d from December 2019 levels.²¹

STEO REPORTS ON THE PROJECTIONS

Similar to the March and April STEOs, EIA analyzed reductions in oil demand by evaluating three main drivers: lower economic growth, less air travel, and other declines in demand not captured by these two categories, largely related to reductions in travel because of stay-at-home orders. Based on incoming data and updated assessments of lockdowns and stay-at-home orders across dozens of countries globally, EIA has lowered its forecasts for global oil demand in 2020. The precise effect of lockdowns on petroleum consumption remains highly uncertain because the severity and enforcement of the shutdowns vary by country. The May STEO's forecast for non-U.S. economic growth is based on forecasts from Oxford Economics, which have been revised down since the April STEO. In 2020, EIA

forecasts global oil consumption-weighted gross domestic product (GDP) to decline by 4.1%, compared with a decline of 0.1% in the April STEO. The sharpest declines occur in the second quarter of 2020 when Oxford Economics forecasts that global GDP will decrease 7.1% compared with 2019. EIA forecasts global liquid fuels consumption will average 92.6 million barrels per day (b/d) in 2020, down 8.1 million b/d from 2019. Following the pattern of the GDP forecast, the sharpest consumption declines are in the second quarter, when EIA forecasts a year-over-year decline in liquid fuel consumption of 18.8 million b/d. EIA forecasts both economic growth and global liquid fuels consumption to increase in 2021. However, any lasting changes to transportation and other oil consumption patterns once COVID-19 mitigation efforts end present considerable uncertainty to the increase in liquid fuel consumption, even if GDP growth increases significantly (Fig. 9).²⁴

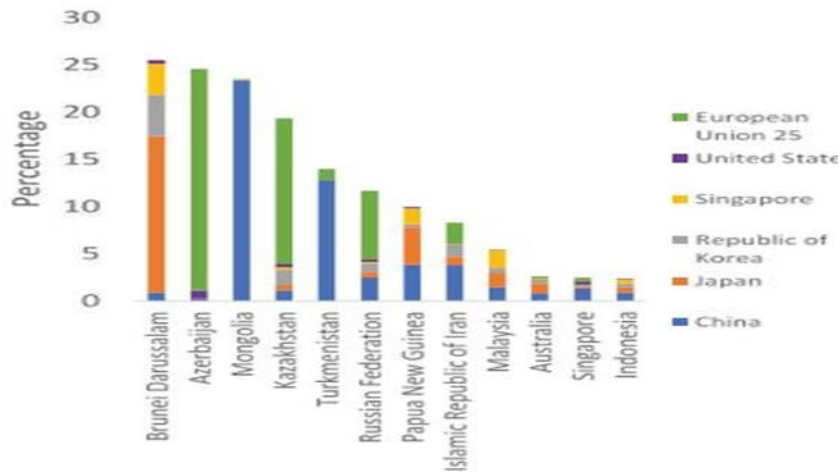
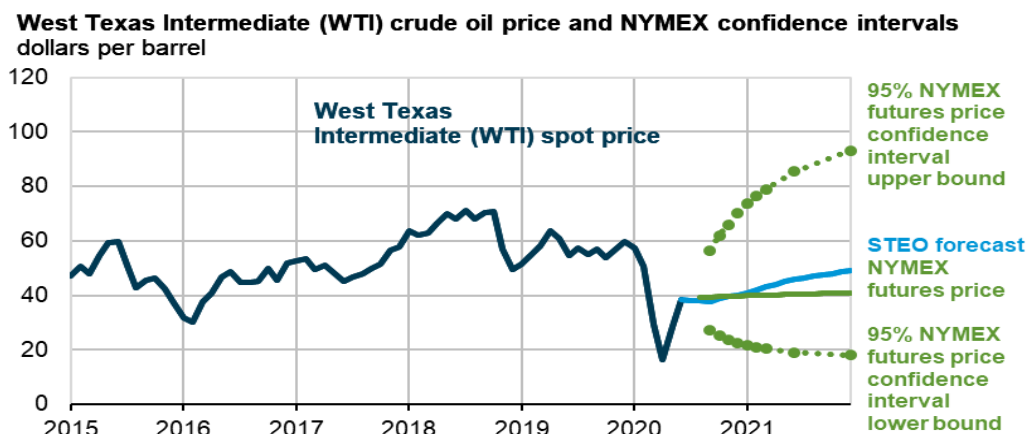


Fig. 9: Fuel export to major trading partners, as a share of GDP.²⁴

OIL PRICE FORECASTING

EIA expects that the rate of inventory builds peaked in April, and as oil demand begins to return and oil supply decreases, upward price pressures will begin to emerge. With global oil demand expected to exceed supply beginning in the second half of 2020 and continuing through the forecast period, prices could rise steadily beginning in the second half of this year. Although EIA forecasts significant inventory draws beginning in July, high existing inventory levels, high OPEC spare production capacity, and uncertainty about the trajectory of oil demand will likely limit, but not completely contain, upward crude oil price movements (Fig. 10). EIA expects Brent crude oil prices will rise to an average of \$32/b during the second half of 2020 and \$48/b on average in 2021, reaching \$54/b by the end of the year. However, this price path reflects an expected global oil consumption to 97.4 million b/d during the second half of 2020, along with relatively high compliance to announced OPEC+ production cuts, both of which are uncertain. Also, the degree to which the U.S. shale industry responds to the current low prices will affect the oil price path in the coming quarters.²⁴



Note: Confidence interval derived from options market information for the five trading days ending Jul 1, 2020. Intervals not calculated for months with sparse trading in near-the-money options contracts.

Sources: Short-Term Energy Outlook, July 2020, CME Group, and Bloomberg, L.P.



Fig. 10: West Texas intermediate (WTI) spot price.²⁴

COVID-19 AND OIL-BASED PRODUCTS AND ENERGY SECTORS

Gasoline and Diesel

EIA expects that restrictions related to COVID-19 will drive sharp reductions in crude oil prices and U.S. liquid fuel demand during the second quarter of 2020, which will significantly reduce prices for gasoline and diesel fuel during the same period. EIA forecasts that U.S. average retail prices for regular-grade gasoline will average \$1.91 per gallon (gal) and diesel retail prices will average \$2.22/gal in the second quarter of 2020.²⁴ The gasoline and diesel price (Figs. 11 and 12) declines largely reflect a drop in crude oil prices. Refinery margins, after falling significantly as gasoline and diesel demand fell quickly in March and April, have increased recently as refiners have reduced runs. EIA expects petroleum product prices will rise as crude oil prices rise in the coming quarters. However, EIA generally expects U.S. average gasoline prices to remain lower than \$2/gal until March 2021.²⁴

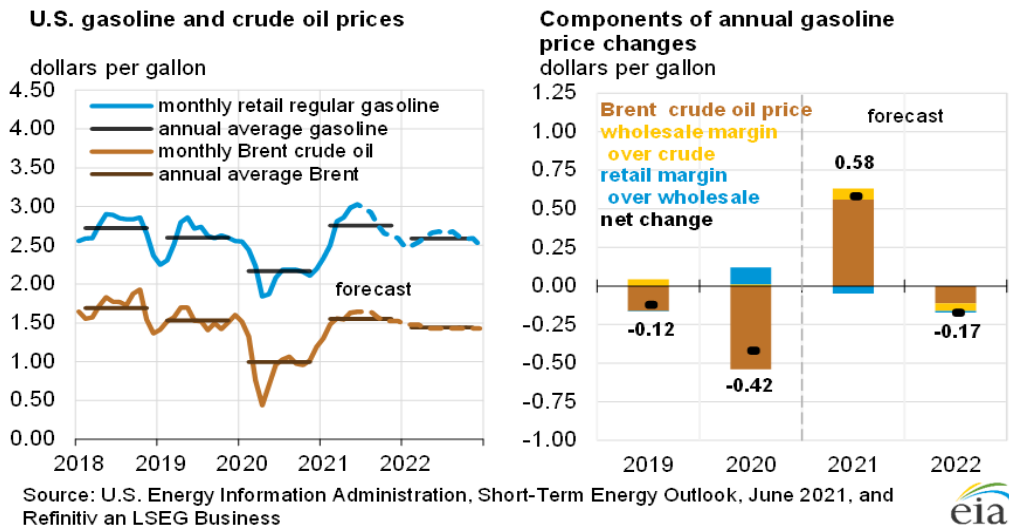


Fig. 11: WE gasoline and crude oil prices.²⁴

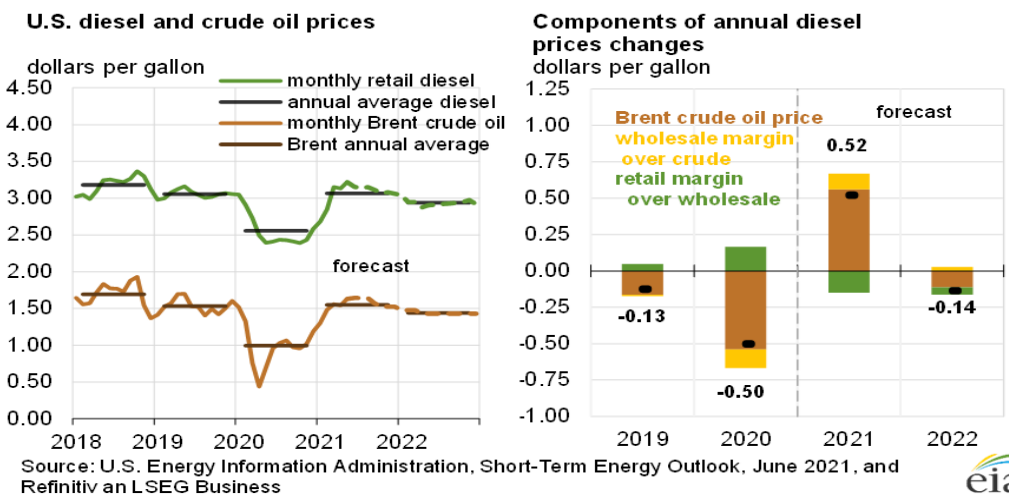


Fig. 12: WE diesel and crude oil prices.²⁴

Natural Gas

Global natural gas markets are facing the largest demand shock in recorded history. According to the International Energy Agency’s (IEA) new Gas 2020 report, consumption of natural gas is expected to drop by twice the amount it did after the 2008 financial crisis.³² As producers shut down oil wells, “associated” gas production will also decline. The decline in associated gas along with potential shut-ins of natural gas production for existing LNG and pipeline gas projects can work to reduce natural gas supply over time. COVID-19 outbreaks have also interrupted supply chains and caused workforce shortages, delaying construction of approved projects. A lack of investment for the foreseeable future could cause a rebalancing of the market over the longer term but is not expected to produce a shortage. Investment cuts in a well-supplied market will eventually rebalance and tighten the market in the medium-term for which large projects and expansions plans remain in position.³³

Power

Demand reductions have resulted in renewables such as solar and wind, which their information like radiation or wind speed also matter, and the use of smart materials in microsystems as energy harvesters or for other purposes make up a larger share of the electricity supply because their output is largely unaffected by demand, while demand for electricity generated from all other sources (coal, gas, and nuclear power) fell.^{34, 35} A slow and progressive recovery in 2020 would place electricity generated from low-carbon sources well ahead of coal-fired generation globally. The low-carbon share of generation is expected to expand to 40% in 2020, the highest level on record, partly because the total generation would fall by almost 5%. Low-carbon sources are expected to overtake coal by six percentage points, after having taken the lead in 2019.³⁶

CONCLUSION

The closure of industrial activities and manufacturing branches due to the COVID-19 pandemic caused oil demand to fall gradually, therefore oil prices dropped tremendously. There is two scenarios about after-COVID situation; either the vaccine will be found or living with the pandemic will be the replacement for our previous lifestyle. Furthermore, the countries will reopen their trade; global manufacture and industrial activities will be recovered and oil prices will see-saw from current levels in the near term, which will support oil demand in the medium term. Oil demand and supply will get back to their pre-pandemic levels at a speed based on the length and depth of the disruption over time. Governments must develop policies to eliminate the adverse consequences of the supply and demand shocks caused by COVID-19. On the other hand, the COVID-19 pandemic will cause different results in oil-importing and -exporting countries. For oil-importing countries, the persistence of oil prices is important for determining policies for targeting inflation. Under the pressure on the prices of precious metals like gold and palladium, they can encounter problems related to policies of targeting inflation. The expectations have adverse effect and can produce unexpected results. For oil-exporting countries, it is essential for Russia and OPEC countries to conduct policies to make the oil prices return to the levels before COVID-19, since oil revenues constitute a significant portion of the gross domestic products of these countries. Wind, solar, and renewable power-related projects may set to increase in any case because new projects built in the past year will raise their share of generation to nearly 9% in 2020 which will be a long-term energy solution beside oil; therefore, that economic shocks which are relevant to huge pandemics such as Covid-19 will have less impact than other non-renewable energy sources and the reliability of renewable sources are much greater than other resources such as oil and gas.

DISCLOSURE STATEMENT

The author(s) did not report any potential conflict of interest.

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