



Forecasts from Our Coronavirus Study

This week we published a study on "A Virus to Kill Energy Demand: Coronavirus' Impact" where we discussed how the virus effected the energy markets and what would happen in the future. The document is available in our website. Here we share the forecasts section.

One of the most important questions is "when the virus could peak?". According to leading Chinese epidemiologist Zhong Nanshan, the virus may peak in the last half of February. [43] He also says, "I hope this outbreak or this event may be over in something like April." The most important line from the interview is perhaps his assessment about the unknowns of the epidemic: "We don't know why it's so contagious, so that's a big problem." In terms of oil price forecasts, Oxford Economics has revised its number downwards by \$6/b for the first half of 2020, but for the rest of the year, and they expect a normal trend.

The biggest short term question is how this epidemic will affect regional countries and Asian growth. Already there are signs of its impact on Japan, South Korea, Indonesia, and others. So the slowdown is contagious, just like the virus itself.

However, the story may not be that simple. The impact of the epidemic is complicated and not fully understood as of now. In the very general terms, we may summarize the impacts as follows:

- The world economy will slow for the Q12020 for sure, and 2020 growth will be most probably lower than expected,
- Import and export-oriented economies will be impacted differently. South Korea and Japan's economic growth will be hit, but countries like Turkey may see an increase in economic growth.
- Oil, jet fuel, gasoline, and diesel demand will be down for Q12020 and



most probably H12020. This fully depends on when the epidemic will peak. However, the airline industry problems should be watched carefully.

- Passenger car sales are down 20% year-on-year in China. This will impact the whole supply chain in automotive production. German auto manufacturers are quite active in the Chinese market, and the slowdown may reduce the earnings and sales of German carmakers.

- Transportation bottlenecks and logistic problems are a major part of the problem that is not easy to quantify, but Chinese import and exports as well as retail sales will be lower.

- Coal prices have been quite different than other commodity prices, since China closed its mines due to work restrictions and increased imports. The prices between China and Europe diverged and Chinese coal prices have risen. For the rest of the year, coal stocks will be impacted and coal may remain higher than expected if economic activity rebounds.

- LNG oversupply will persist. Prices may not rebound until Q3.

- Solar panel manufacturers will have difficulty for the first half of 2020, and this will be reflected in the prices. The important question is whether regional targets in China will be revised downward or not. If not, solar costs will increase.

- The wind manufacturers' position is mixed. Their Chinese operations and sales will disrupt their balance sheets and deliveries.

- Electric cars may not be having a good year. As Chinese producers face tough times, the slump in the automotive market will impact everyone.

As the last point, I believe there is one final graph to be considered, and that is wholesale food prices. Wholesale food prices are important because unemployment and high food prices do not mix well. The Chinese epidemic is already increasing wholesale food prices. This will have an effect on middle-class budgets.

The lower Chinese economic activity may mean lower energy and commodity prices for the global economy. This may increase economic activity in other countries. But US elections and US oil&gas producers are important. The further slipping of oil prices may have negative effects.

In summary, the evidence so far shows us that this epidemic is much bigger than the previous ones. The impacts are not limited to fossil fuel industry like 2003 but also impacting the on going energy transition. Interestingly enough, while oil and gas prices drop, coal and solar panel prices may go up. Still we need to see the peaking of virus to make better assessments.

A Future Scenario for Lithium

The rise in demand for Electric Vehicles (EV's) combined with the boom in demand for Lithium-Ion batteries in the usage of overall electrical equipment in early-to-mid 2010s created the first near supply shortage of Lithium in the global markets. The price of Lithium hit 156\$ in January of 2018 and worried many about the potential reliability of Lithium suppliers. However, the markets were quick in responding, and the number/size of production facilities being brought into operational status increased incrementally in a short time. The prices fell back to low 100\$'s by 2019.

The world's estimated Lithium resources are thought to be around 39 Mio Tons, with only 1/3rd of that number being economically feasible to recover. 87% of the recoverable amount is located within salty/brine lakes, and 13% is believed to be in hard rock mineral deposits. The cost of recovering Lithium from salt lakes is around half that of hard rock operations. The boost in the production from these lakes helped the first response to the Lithium shortage in 2018.

The expansion of production facilities (gigafactories) of EV producers should keep the expansion plans of suppliers going, and the market price of Lithium can potentially decrease by mid-2020s and create a sizeable spare production capacity. If the case of peak oil occurring within this decade holds, the improvements in EV production methods can cause the producers to ramp up the production significantly by 2030 based on their competitive edge in the market against fossil fuel-powered vehicle producers.

These developments, however, as good as they are for the environment, can bring along new problems. According to Bloomberg NEF Electric Vehicle Outlook, the EV annual sales that were 1.1 Mio in 2017 can grow to 11 Mio by 2025 and from there with a substantial increase to 30 Mio by 2030. The global suppliers have an immense problem of making up for the new demand from the producers. The global Lithium demand can increase triple-fold by 2030 from the 2017 numbers. How would the world react to this recurring, but on a grander scale, crisis?



The believers of markets might want to let the price demand mechanism sort out this issue. The problem with this approach is that EV's, as much of commercial activity as they are, also serve the grand purpose of lowering the overall GHG Emissions and contributing to the less towards climate change when compared to fossil fuel-powered vehicles. In a runaway price scenario, the cost of producing an EV would reach such high levels that production facilities would seize operations and potentially leave the stage back to internal combustion powered vehicles until prices fall back to reasonable levels again. That is not a favorable and likely scenario.

The technocrat decision-makers, on the other hand, can offer a solution as to start researching new and alternative energy sources for powering the EV's and potentially reverting the past 15-20 years of development in the field. A leading candidate for this proposal would be to build on the already advancing technology of hydrogen. The implications of this plan are not viable in real-world terms as the time to come up with these new methods and switch over would be too long and too costly. The idea could be scrapped from the real-world application, but the theoretical practice of the methods can be developed to serve as an academic reference for future developments.

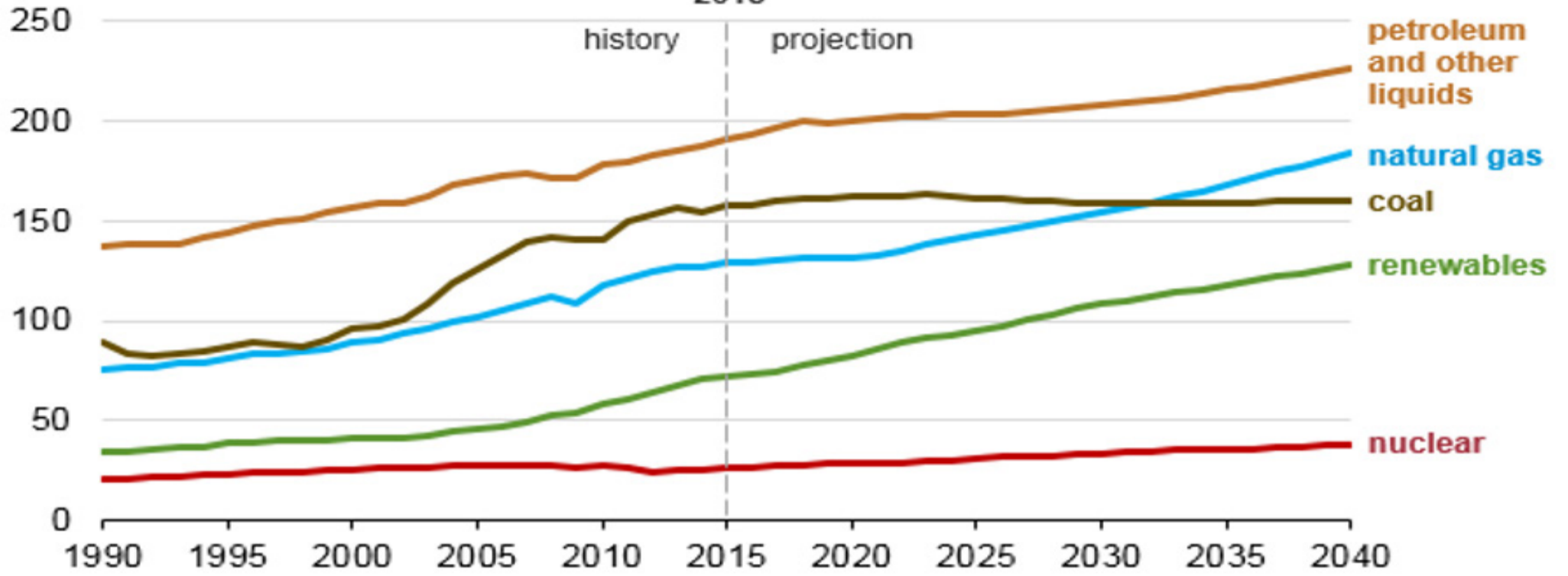
The corporations' viewpoint on the subject can be to focus on the demand and supply dynamics. Following 2025, %50 of global EV demand is forecasted to be situated in China. China also houses 1/14 of the worldwide Lithium reserves. The development of these deposits and the construction of EV factories in China can bring significant supply chain benefits to the companies and lower the overall cost of Lithium by bringing closer the producers and consumers. The effects of this plan can have tangible outcomes but are unlikely to solve the whole problem of global supply.

That is not the first time a commodity has been scarce in human history. The hefty increase in oil prices in mid-to-late 2000's encouraged drilling many companies to explore and experiment with new technological developments in their field. The result? With the application of hydraulic fracking, the shale gas and oil deposits that were previously named as economically unfeasible became viable again, and the global oil and gas prices decreased within months following the supply abundance of the shale boom. If we look back at the statistics mentioned above given in the paper, 2/3s of the global Lithium reserves are still deemed economically unfeasible as well. Given a possible spike in lithium prices and the shortcomings of the supply side in response to booming demand, miners and producers will likely spend remarkably large sums on developing new methods to extract the 2/3s of unfeasible lithium deposits. The outcome of the application of these non-conventional methods will probably bring the supply upward and the prices downward.

The process will likely begin as soon as reports or material signs about shortcomings emerge within the industry. As is usual, the most reasonable and practical solution was within the roots of the problem itself. There is enough Lithium for long years of Lithium-Ion battery production but is only a matter of the market, technology, and academia coming together to solve the problem. As the EV sector didn't develop over internal combustion engines overnight, so won't the lithium production industry as they will experiment with new production methods throughout this cycle of market and bring the supply and demand balance of the market to once again manageable levels, maybe even with considerable spare capacity to offset against possible demand booms and supply shocks. However, as it is with everything, time will tell how it will all play out.

Is Oil Going To Become History? Future Of Oil

World energy consumption by energy source (1990-2040)
quadrillion British thermal units



For 80 years, oil has been the most significant percentage among other energy sources in the world. Even today, nearly 34% of energy production has been manufacturing from oil. Every year, the energy need of the world has been growing, especially in developing countries like Turkey. In Turkey, energy demand has been jumped from 55 million tons of oil to 155 million. Every year, the world's energy demand has been increasing by nearly 2%. With this increase, countries have been trying to find alternatives for milestone sources like coal and oil. Also, green energy policy, which most of the world had agreed on, pushes countries for less carbon emission sources like natural gas, renewable energy, and hydro-power. Under these circumstances, some experts say that oil will reach its end soon.

Oil has been using in almost every sector, especially for producing fuel oil for energy and gasoline for transportation. Because environmentally-friendly energy sources can replace fuel oil and electric vehicles can be alternative for gasoline and diesel, some experts say that oil's future is not bright in 30-40 years. Accord-

ing to Electric Vehicle Outlook (EVO) reports, oil consumption is expected to decrease 8 million barrels per day, even today's daily use is nearly 100 million barrels. As a supportive argument, worldwide automobile companies like Fiat Chrysler Automobiles, Volvo, Toyota, Porsche, and Nissan emphasized that they will not manufacture diesel vehicles anymore. Most of the investments in the vehicle sector have been locating at hybrid and electric cars recently. From this approach, it can be said that oil is not a must source while supplying energy and transportation demand of the world.

On the other hand, as opposition, some experts say that it is too early to sound the death knell for oil even though electric vehicles are widespread and popularity of oil is decreasing among world since truck and plane fuels, and also petro-chemistry industry are mostly based on oil and their percentage in total production is too much to ignore. Especially revolution in shale oil production led by the US has well increased the total reserves of oil. As a milestone among energy and raw material sources, oil might not be easily replaced by any

other source in the following century. In recent decades, the most prominent opponents and alternatives to oil are natural gas and solar energy. It is expected that in the 2030s, natural gas will get the most significant percentage of energy production in the world. Also, in the 2100s, solar energy will become popular among countries and hold the highest rate as 38. However, even in the 2100s, oil's percentage in energy production is determined as 10%.

As the world's energy need increases every day, oil is not a candidate for extinction. While considering that coal still exists and retain its popularity and substantial percentage, extinction of oil may not be possible in the near future. For six years, the oil price has a decreasing trend since renewable, less costly, and detrimental sources have been popular and available for industrial countries. However, as a result, product range, reserve, and consumption amounts of oil in today's world demonstrate that it will survive for a long time as captain of industry.

Kaan Demirci

BRENT OIL	57.38 \$/BL	GASOLINE	6.79 ₺/LT
USD/TRY	6.04	DIESEL	6.40 ₺/LT
EUR/TRY	6.55	FUEL OIL	3.90 ₺

Spread of Coronavirus and Its Effect on Energy Market



Since middle of December 2019, Coronavirus (COVID-19) and its spread over sphere is one of the main concerns of global community. More than 25 countries reported that they possess patients with Coronavirus (COVID-19) and hereby halted their trade and travel relations with China. There has been 70000 confirmed cases of the epidemic and 10000 of them were recovered. In the meantime, death toll is sharply increasing day by day, as it reached 1669 in little over a month. Past week, Europe gave its first loss to the virus in Paris, as an elderly Chinese tourist had died of a lung infection due to the coronavirus.

Nevertheless, Chinese authorities does not seem worried about the effects, as they claim the epidemic will be over soon. Yet, the quarantines over Wuhan and many other cities (especially commercial towns with ports) of China affect more than 60 million people in the country. Further, having a lockdown on travel and cities, puts trade tankers, flights, industrial and economic growth on hold not only in China, but in the world due to the fact that China is the 2nd largest economy in the world (after USA) and has a population of 1.5 bn. Thus, in the past few months, Coronavirus (COVID-19) proved to have a severe impact over trade, but espe-

cially over the energy market. Cargo ships are piling up outside ports full of undelivered commodities; oil and petrochemical refineries are scaling back operations due to declining demand for their products; Chinese consumer spending is experiencing a record low level in the last decade; and supply chains worldwide are entrapped. A quarterly contraction in demand for the fuel, which would be the first since the 2008-09 global financial crisis, is expected to lead to weaker annual growth — down by 30 per cent from previous estimates.

China's industrial energy demand in 2020 may decline by as much as 73 billion kilowatt-hours (kWh), as the outbreak of the virus has sharply reduced the factory output and caused a power vacuum in the work force due to workers being quarantined and isolated. The cut represents about 1.5 percent of industrial power consumption in China. But, as the country is the world's biggest electricity consumer, the loss is equal to the power used in the whole of Chile and it illustrates the scope of the disruption caused by the outbreak.

Just a few weeks after the outbreak of the virus, daily Chinese oil demand is already down 20 percent because of dwindling air travel, road transportation and manufacturing. Additionally,

China being the biggest oil importer in the world and consuming 13 of every 100 barrels of oil the world produces; oil companies all around the world are staggered. Crude oil prices dropped 12 per cent over the last month. This kind of a drop is dangerous, especially for US oil companies, as some producers could lose as much as 60 percent of their profits due to higher costs of shale fields. Furthermore, newly signed 300 bn. USD trade deal, which was criticized even before the virus for having unrealistic goals about energy trade between USA and China, is in jeopardy. As the situation with virus continues, China will be probably withdrawing from this deal, leaving oil and natural gas production in uncertainty.

As it stands, Coronavirus (COVID-19) seems to will be hitting a harsh blow to energy market during 2020. Already being in economic recession, having a discrepancy or volatility in the energy market as well might cause world to witness drastic changes in geopolitics. Because experiencing variety on changes in a short amount of time simplifies turning status quo upside down.

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