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Energy After COVID: The Beginning of the End of Oil?

MICHAEL T. KLARE

Like so many things, the global energy system has been profoundly shaken by the COVID-19 pandemic. In the spring of 2020, with much of the world in lockdown and widespread travel restrictions in place, people stopped driving to work and flying on business and recreational trips, factories closed, and malls were shuttered—sharply reducing the need for energy of all types. According to the International Energy Agency (IEA), an intergovernmental organization based in Paris, net world energy demand will decline by 6 percent in 2020 as compared with 2019—the largest such reduction in 70 years in percentage terms, and the largest ever in absolute terms. Some recovery is anticipated in 2021, assuming global economic activity resumes. But the damage inflicted on the energy industry by COVID-19 has been severe and is likely to last for years to come—and, in some cases, to prove irreversible.

The transportation sector, including road, rail, air, and sea travel, was particularly hard hit by the lockdowns, and its demand for gasoline, diesel, and aviation fuel dropped precipitously. In April, world oil consumption was down by an astounding 29 percent compared with the same month in 2019, the IEA reported; in May, it was down by 26 percent. Given that oil supplies were widely abundant at the beginning of the year, the collapse in demand knocked the bottom out of prices, with devastating consequences for the companies that extract, refine, and distribute petroleum products. The credit rating agency Fitch estimates that oil and gas exploration and production companies worldwide will lose \$1.8 trillion in revenue in 2020 due to the

pandemic, with extensive ripple effects including corporate bankruptcies, abandoned drilling projects, and large-scale job destruction.

While oil consumption has been especially depressed by the pandemic, it is hardly alone. Demand for almost every major source of energy—oil, coal, natural gas, nuclear power, and renewables—has been battered. But the extent of the decline has been unevenly distributed among them. Some, like oil and coal, have dropped precipitously, while others, notably nuclear and natural gas, have had a more moderate slide. The renewables category, encompassing hydropower, wind, and solar, might even post a modest gain by the end of 2020. The energy industry comprises giant oil companies as well as state-owned enterprises and small local cooperatives, so these variations can have far-reaching economic effects.

“The energy sector that emerges from the COVID-19 crisis may look significantly different from what came before,” the IEA stated in “Global Energy Review 2020,” a report published in April. “Low [fuel] prices and low demand in all subsectors will leave energy companies with weakened financial positions and often strained balance sheets.” Private sector firms with high exposure to market prices, such as oil, gas, and coal producers, will experience the most severe financial impacts. For them, “market concentration and consolidations are likely.”

Equally harsh outcomes can be expected for state-owned energy companies. In countries like Algeria, Nigeria, Russia, Saudi Arabia, and Venezuela, they play a major role in financing government operations. The leaders of these countries need oil prices to remain above a certain level to balance their budgets and pay for military expenditures and public services. When prices are high,

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they can retain public loyalty by financing subsidies for families and engage in foreign ventures such as military interventions and arms transfers. But when prices crash, as they did in the early stages of the pandemic, their governing capacity is greatly diminished. The coronavirus pandemic is thus likely to have a powerful impact not only on private companies, but also on the fates of governments, and perhaps even on the global balance of power.

CHANGING THE MIX

To understand the coronavirus pandemic's impact, it is useful to start by taking a quick look at the world's energy profile and how it was trending before 2020. From this perspective, it becomes easier to detect the important ways in which the energy landscape is being altered by the pandemic.

Before the coronavirus struck, the share of the total energy supply held by each of the major fuels had remained relatively stable for many decades, with oil the leading source, coal second, and natural gas third. In 2018, according to the IEA, oil accounted for one-third of global energy consumption; coal, the long-time runner-up, 28 percent; and natural gas, a rising star, 24 percent. Thus, despite all the talk of reducing global carbon emissions to slow the pace of climate change, the three fossil fuels together accounted for a full 85 percent of the global energy market—only one percentage point less than in 2000. The remaining 15 percent was divided between renewables, with 10 percent, and nuclear, with 5 percent. (These percentages exclude biomass, such as wood and charcoal, gathered and used by individuals.)

Before COVID-19, the IEA, like most energy analysts, assumed that this distribution would persist well into the future. Although it expected that policies to address climate change that have been adopted by many countries would continue to spur the growth of renewables and curb the use of fossil fuels, especially coal, it did not envision a significant challenge to the existing hierarchy of energy sources. In its "World Energy Outlook 2019," the agency predicted that even with strict adherence to governmental mandates to curb emissions—which could not be taken for granted—oil

would remain dominant in 2030, accounting for 31 percent of world energy demand. Coal and gas would be tied for second place, each supplying approximately 25 percent. Renewables were expected to get a huge boost, rising to 15 percent of world supply, but still trailing far behind fossil fuels.

In the wake of the pandemic, these projections appear highly questionable. Although it is too early for revised estimates, it is likely that there will be significant shifts in allocation of demand among the major fuels—especially oil, coal, natural gas, and renewables.

PEAKING DEMAND

At the beginning of this century, energy experts worried over what was seen as the near-term arrival of "peak oil"—the moment when global petroleum production would top out and begin an inexorable decline, sowing economic chaos around the world. Some analysts predicted that the moment would arrive as early as 2015 or 2020. But the introduction of new extractive technologies, notably hydraulic fracking and the deployment of drilling rigs in ever deeper ocean waters, has enabled the world's giant energy companies to vastly expand global reserves of recoverable oil. The specter of peak oil disappeared.

Now, in its place, a new specter has emerged: "peak oil demand," the moment at which the world's thirst for petroleum reaches a maximum and begins an inexorable decline of its own. Before the pandemic, this transformative moment was thought by the major oil firms to lie safely in the distant future. Now, thanks to the coronavirus, it is within sighting distance.

Oil's waning dominance was already evident in the projections released by the IEA in November 2019, before COVID-19 made its appearance. As a result of more stringent fuel-efficiency standards for automobiles in Europe, Japan, and North America, and the growing popularity of hybrid and all-electric vehicles (EVs), the IEA predicted that oil demand in those regions would decline between 2020 and 2040. However, it also projected that rising demand in the developing world—especially in Asia, Africa, and the Middle East—would more than compensate for declines elsewhere, leading to a net gain worldwide. Underlying this assumption was strong confidence in Asia's continuing economic

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expansion, which was expected to produce a burgeoning middle class with an insatiable appetite for gasoline-powered vehicles and frequent air travel.

All these assumptions now have been thrown into disarray. There can be no dispute about the pandemic's immediate impact: average world road transport fell by an astonishing 50 percent during the first three months of 2020 from the same period in 2019, while air travel in many areas plummeted 90 percent. These activities are slowly picking up again as economies reopen. But net oil consumption is still expected to fall by 8.1 million barrels per day in 2020, or about 8 percent below the 2019 record of 100 million barrels.

UPENDED ASSUMPTIONS

Clearly, there are many reasons to suspect that earlier assumptions of world oil demand continuing to grow well into the 2030s are no longer valid. The pandemic caused billions of people around the world to alter their daily routines, with many forced to work from home and refrain from business travel. No doubt, many pre-COVID routines will resume when a successful vaccine is deployed, but there is considerable evidence to suggest that some will not. Working from home, for example, has proved highly popular with many white-collar employees (and their employers), which could bring about a long-term decline in automobile commuting hours. Likewise, businesspeople have found ways to perform their vital tasks with much less air travel—through videoconferencing and other technologies—and they are liking it that way.

Policymakers in Europe and elsewhere are also using this time to accelerate the transition to EVs. Drawn by hefty subsidies available in many European countries, buyers have flocked to EVs at a time when sales of all types of cars have declined. Germany had an 8.4 percent increase in EV sales in the first half of this year (compared with a 3.4 percent increase a year ago) even as overall auto sales slumped by 35 percent. In France, EV market share has jumped to 9 percent so far this year, from 2.5 percent in 2019, while Sweden has seen a surge to 25 percent, from 10 percent last year. To accelerate this trend, European leaders have unveiled an assortment of new incentives for EV purchases. In May, French President Emmanuel Macron announced plans to provide an 8 billion euro subsidy to domestic auto companies, aiming to make France the leading manufacturer of EVs in Europe. In

China, meanwhile, generous government subsidies for EV automobile purchases have been extended through 2022 as part of a pandemic stimulus package, ensuring brisk sales now that economic activity there has picked up again.

Given such trends, it is likely that oil demand among the older industrial powers will decline faster than indicated by the projections released before COVID-19. But what about China and India, the two biggest consumers in Asia? Most analysts had assumed that both economies would continue to enjoy high growth rates in the years ahead, driving steady increases in their demand for oil. But the pandemic—and the increasingly anti-China policies being pursued by the Trump administration—throw this into question. The International Monetary Fund (IMF) projected in June that China will post a growth rate of just 1 percent in 2020—its lowest in decades—and that India's gross domestic product will contract by 4.5 percent. Both countries are expected to rebound as their economies open up, but there are doubts about their ability to sustain the strong growth rates they enjoyed in recent decades.

India's economy is still suffering from the ravages of the pandemic, while China's rebound is being fueled by debt-financed infrastructure construction, which is hardly sustainable. And under pressure from stiff US tariffs, China's exports are shrinking, further complicating its prospects for long-term growth. It is hard to imagine that the middle classes in China and India will engage in the free-spending habits previously envisioned, now that many have had their finances severely battered by the pandemic. The outlook for many other large developing economies is equally discouraging: according to the IMF, Brazil's economy will contract by 9.1 percent in 2020, Mexico's by 10.5 percent, and South Africa's by 8.0 percent.

Add all these factors together and it is not hard to conclude that the arrival of "peak oil demand" has moved much closer as a result of the coronavirus pandemic. This is the conclusion drawn by many major international oil firms, which have begun to abandon some of their costliest projects and write off billions of dollars' worth of assets now deemed unprofitable.

Royal Dutch Shell announced a \$22 billion write-down in the value of its undeveloped assets in June, saying lower oil prices made them too costly to develop; BP set a \$17.5 billion write-down for the same reason. Total, a somewhat smaller French company, said it would write off

\$8 billion of its assets, mainly bitumen fields, commonly known as tar sands, in Canada. “Beyond 2030,” the company noted, “given technological developments, particularly in the transportation sector, Total anticipates oil demand will have reached its peak.”

Some of the largest oil companies are shifting their investments into carbon-free sources of energy, both to comply with rising governmental and investor pressures and to ensure a corporate future beyond oil. BP announced in August that it will increase its investment in low-emissions technologies by tenfold over the coming decade, to \$5 billion per year, while reducing its oil and gas output by 40 percent. “What the world wants from energy is changing, and so we need to change, quite frankly, what we offer the world,” said Bernard Looney, BP’s chief executive officer.

COAL’S DEMISE

Even before the pandemic, global demand for coal was showing signs of irreversible decline. As the most carbon-dense of the fossil fuels (and thus responsible for the highest ratio of carbon dioxide emissions when consumed), coal has become a primary target of environmental activists and government policymakers seeking to reduce emissions of climate-altering greenhouse gases. One of the easiest ways to cut emissions, policymakers have discovered, is to substitute low-cost natural gas—the least carbon-intensive of the fossil fuels—for coal in electricity generation. In many areas, meanwhile, wind and solar power—which, unlike gas, produce no carbon emissions at all—have become even cheaper and more attractive sources of electricity. Still, as the IEA’s pre-pandemic projections indicated, coal was expected to remain a major source of the world’s energy well into the future. The coronavirus has likely made that forecast obsolete.

As the pandemic took hold in early 2020 and economic activity slumped, electricity use around the world declined substantially. To continue generating power while avoiding severe losses, electrical utilities largely eschewed coal, which for many had become their most expensive fuel source, and relied instead on more affordable supplies of gas, wind, and hydropower. As a result, global coal demand is expected to decline by 8 percent in 2020—the largest drop since

World War II. Renewed economic activity in 2021 will restore some of that lost demand, but many analysts predict that as policymakers accelerate their efforts to curb carbon emissions, and major investors turn away from new coal projects, coal will never fully recover from its 2020 decline.

The plunge in coal consumption has been particularly pronounced in the United States. According to the Energy Information Administration (EIA), an agency of the US Department of Energy, the use of coal to generate electricity will drop 25 percent in 2020, the largest decline since the Great Depression. At the same time, the demand for renewables—buoyed by steadily declining costs—is expected to rise by an estimated 11 percent this year. As major financial institutions and retirement funds shun investment in new coal projects and many unprofitable plants are decommissioned, the prospects for coal in the United States appear dim—despite President Donald Trump’s oft-repeated pledge to revive the industry. If the EIA’s projections prove accurate, America’s hydroelectric dams, wind farms, and solar panels combined will produce more electricity than coal in 2020, for the first time in the nation’s history.

China, which accounts for half of the world’s coal consumption, remains the big unknown. During the first quarter of this year, when Chinese authorities imposed strict lockdowns across the country and many factories were shuttered, coal consumption fell by 8 percent. As China has reopened its economy, its demand for coal has increased, and various regional governments have announced plans to build new coal-fired power plants—among the few such announcements made since the onset of the coronavirus. (Japan has also initiated efforts to build new coal plants, largely to replace older ones now facing retirement, though it is unclear whether these plans will be embraced by Yoshihide Suga, the successor to Prime Minister Shinzo Abe, who resigned abruptly in late August.)

But China has also undertaken a massive effort to decarbonize its economy through the widespread installation of wind farms and solar panels, so it is not clear whether the construction of new coal plants is intended more as an economic stimulus or as a future source of energy. If these are just make-work projects, China is unlikely to consume coal to the exorbitant extent that it has in the

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past—and demand is falling sharply elsewhere too, a trend accelerated by the pandemic.

RENEWABLES ASCENDANT

Just as the decline in coal consumption predated the pandemic, an upswing of renewable energy sources—primarily hydropower, wind, solar, and geothermal used to generate electricity, and biofuels used in transportation—was already underway. In the most recent edition of its “World Energy Outlook,” released in November 2019, the IEA projected that net renewable energy consumption would increase by 64 percent between 2018 and 2030, the fastest growth rate of any source. Given that renewables commanded such a small share of the market in 2018, however, they were still expected to be overshadowed by each of the fossil fuels in 2030. Now, in light of the coronavirus pandemic, it is likely that these projections will have to be substantially revised, as renewables grow even faster than previously estimated.

The pandemic has highlighted two important features of renewable energy systems—especially large wind farms and solar arrays—that carry particular weight with energy officials in a time of economic stress. In many markets, not only have they become cheaper than coal and natural gas, but they also can be installed and brought online more quickly than other large power facilities, and begin generating revenues that much faster. In the United States, installing wind power now costs 40 percent less than it did in 2010, and prices continue to fall as operators erect ever larger (and more efficient) turbines.

Renewables may also benefit from a distinctive feature of the pandemic experience: with many factories and coal-fired power plants shuttered as a result of mandatory lockdowns and drops in energy use, cities like Beijing and New Delhi that were once blanketed in noxious smog suddenly saw blue skies, to the delight of millions. This has put further pressure on government officials—especially in countries like India and China that burn a lot of coal and have smog-choked cities—to accelerate the switch to renewables.

Although it is too early to make any firm predictions about the post-COVID era, it appears as if the growing appeal of renewables is also being driven by lifestyle changes stemming from the pandemic. In many parts of the world, there are signs of a shared craving for a healthier, greener future—with less smog, less commuting, fewer malls and office towers, and cleaner skies and

waters. In the United States, bicycle sales have doubled since the onset of the pandemic; in Europe, many prominent cities, including Paris, London, and Milan, have closed large parts of their downtown areas to automobile traffic and added hundreds of miles of new bike paths.

GEOPOLITICAL JOLTS

The annual reports of the EIA, the IEA, and the major oil companies issued in years past conveyed the clear impression that few of the major variables in the global energy mix—the relative demand for oil, coal, gas, and so on—change from year to year. But the COVID-19 pandemic is one of those rare occurrences, akin to a world war or global depression, that causes a major realignment of trends. Energy of all types will continue to flow in the post-COVID era, of course, but the relative shares of different sources, and the corresponding prospects of the major producers, are likely to undergo a significant readjustment. Most importantly, oil consumption is likely to increase at a slower rate than previously assumed and to reach a peak in demand before 2030, rather than well after it; coal will come to a swifter-than-expected demise; and renewables will grow much faster than once anticipated.

Given the vast scale of the global energy enterprise, with trillions of dollars in annual revenues, any adjustment of this magnitude will have profound social and political effects along with the obvious economic consequences. The rapid decline in consumption of coal will trigger additional bankruptcies in the already stricken industry, putting even more miners out of work. Many of them are expressing their desperation through political means, pressuring policymakers to keep the industry afloat.

Trump tapped into this sentiment in his 2016 presidential campaign, often appearing with coal miners carrying signs with slogans like “Trump Digs Coal.” Poland’s ruling Law and Justice Party similarly has curried favor with unionized Polish miners by promising to retain coal as a major source of the nation’s energy supply, despite its commitments to the EU to lower its carbon emissions. Meanwhile, Australian Prime Minister Scott Morrison has repeatedly downplayed the role of climate change in causing the catastrophic wildfires that scorched his country in 2019—a stance many observers attributed to the support Morrison has long received from Australia’s powerful coal industry.

The impact of declining revenues in the oil industry is likely to produce even more far-reaching consequences. As with coal, oil tycoons and ordinary oil workers have sought to preserve their profits and jobs by engaging in the political process and rallying behind candidates, like Trump, who promise to reject environmental rules that discourage the extraction and use of petroleum.

Oil-exporting countries are likely to feel the most direct effects of the industry's decline. They rely on oil revenue to finance a large share of central government budgets—as much as 40 percent in the case of Russia, and 60 percent in Nigeria and Saudi Arabia. Any significant reduction in oil income will constrain political leaders' ability to carry out key functions and retain public support.

In the past, declines in the price of oil—such as the one during the 2008 global financial crisis—undermined the governing capacity of major oil-exporting states, including Algeria, Nigeria, Syria, and Venezuela, contributing to widespread civic disorder. There are some revealing early signs of how such trends may play out in the future as the global market for petroleum shrinks.

Just as COVID-19 was beginning to spread, Russia and Saudi Arabia engaged in a price war. The Saudis boosted production to lower prices, aiming to punish the Russians for refusing to agree on a joint production cut-

back. Only after an intervention by Trump, who feared the damage that falling prices would inflict on US oil producers, did Moscow and Riyadh agree to end their dispute and rein in production. With further contractions in the global oil market likely in the years ahead, other such disputes—potentially with more severe outcomes—can be expected.

A long-term decline in the oil market could lead to the unraveling of governments that have used oil revenues to finance foreign escapades and public subsidies. Signs of discontent can already be detected in many oil-exporting countries. In Russia, President Vladimir Putin's popularity rating has dropped to an all-time low—a downturn ascribed to his poor handling of the pandemic and a substantial reduction in public benefits resulting from dwindling oil and gas revenue. So far the Kremlin has succeeded in preventing this falling support from turning into public displays of opposition in the major cities like Moscow and

St. Petersburg. But sustained demonstrations arose in the far eastern city of Khabarovsk over the Kremlin's removal of a popular governor. Fears of more such demonstrations erupting—possibly in larger cities closer to Moscow—may have prompted Kremlin insiders to plot the near-lethal poisoning of leading Putin critic Alexei Navalny on August 20, reportedly with a military-type nerve agent.

In Saudi Arabia, the monarchy has managed to retain firm control despite a similar reduction in public subsidies. But signs of division within the royal family have emerged in the past few years, and many observers question the ability of the de facto ruler, Crown Prince Mohammed bin Salman, to deliver on his plans to oversee a transition from dependence on oil to a balanced, innovative economy. In 2016, Prince Mohammed unveiled an ambitious plan called “Saudi Vision 2030” to spur investment in non-petroleum sectors of the economy. As critics have noted, however, the plan envisions a continuing stream of revenue from high-priced oil exports to finance the new initiatives. With oil prices expected to remain low, it is

hard to imagine how this will succeed.

A change in leadership brought about by these trends in any of the major oil-exporting nations would have immense implications for the international political

order. It could lead to new alignments among the major powers or outbreaks of civil and regional conflicts.

COVID-19 is a game-changer for the energy markets, with far-reaching consequences both for those who work in the industry and for the rest of us. There will be hardship for many who are employed by oil, coal, and natural gas companies that are being downsized or bankrupted as a result of the pandemic and accompanying shifts in government and investor priorities. Many of these shifts were expected to occur in any case, but over a longer period of time; now they are accelerating. The good news is that the long-awaited global transition from reliance on fossil fuels to renewable energy sources that do not pose such a threat to the climate is likely to occur much faster than previously assumed. This is one outcome of the pandemic that surely deserves applause. ■

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