

## COVID-19 and Nuclear Energy

BY JEFF COMBS

The COVID-19 pandemic has impacted nuclear power and the nuclear fuel industry on both the supply and demand side. In the short term, the impact is greatest on the supply side for uranium, as various mines and nuclear fuel cycle facilities are suspending operations due to health concerns. As a result, as of this writing, the uranium price has increased 33 % from its lowest point registered in mid-March this year and has broken the \$30 level for the first time since 2016.

Production cutbacks in uranium have a positive impact on price since demand for uranium has not suffered to nearly the extent as the demand for oil. These cutbacks have occurred in several major uranium mining countries – Kazakhstan, Canada, and Namibia – which account for about two-thirds of world uranium production. How long these cutbacks will last is unknown, but they are likely to continue into the summer and result in a drawdown of available inventories.

Demand for nuclear power and the resulting demand for nuclear fuel has also been impacted, but not nearly to the same extent as oil due to the nature of underlying demand for electricity versus oil. The Energy Information Administration estimates that the demand for electricity in the United States will decline by 3% this year. In France, where nearly 75% of electrical generation comes from nuclear energy, electricity demand is projected to be down 15-20%. As a result, France's EDF has already downgraded its nuclear power generation outlook for both 2020 and 2021 by 8-12% less than its pre-pandemic forecasts.

In addition, the supply of nuclear power, which also impacts the demand for nuclear fuel, has been affected by COVID-19. In this regard, nuclear plants are experiencing extended outages related to the health of workers. A number of nuclear utilities around the world have announced some sort of impact from COVID-19. However, this supply-side impact is expected to be minor over the short term.

Reactor construction schedules have also been impacted due to COVID-19 issues. In China, which accounts for much of the world's new reactor build, some new reactor projects have been halted temporarily but have now restarted. Reactor construction in the United States, France, the United Arab Emirates, Bangladesh, and the United Kingdom have also been negatively impacted. These delays are a function of the reduction of staff at the construction

sites and disruptions in the supply chain.

The delay in reactor construction along with the drop in electricity demand will likely negatively affect nuclear power output in the 2021-2025 period, but the extent of the impact is uncertain at present. In China, which has the largest new reactor construction program, economic growth has suffered as a result of the COVID-19 pandemic (due to developments both inside and outside of China) and thus the need for new electricity generation has slowed. It should not be surprising if the decline in economic growth and associated electricity demand in China extends into 2021, as is projected in France, or perhaps beyond.

A key question is the extent to which COVID-19 will influence how policymakers and others look at nuclear power in the future. One lesson of the pandemic is the downside of waiting to implement changes that can address existential problems in the future. In this regard, if climate change is seen as a huge problem on the horizon, there might be an acceleration of nuclear power plant construction to reduce carbon output. Also, the calculus of risk will likely change; one might be willing to tolerate more risk now to avoid having to confront a far greater risk in the future. This could impact how quickly new reactor designs, which are slated to be more economical and safer, are licensed.

Another fallout from COVID-19 will be a desire to diversify supply chains. This will require accelerated economic development in different regions of the world. Access to adequate electricity will be necessary to accommodate this development, and here small and micro nuclear reactors could play an important role as they would be a better fit for many existing grid systems in less developed regions. This potential need could accelerate the development of smaller, advanced reactors, some of which can be built in factories and transported to their final location.

While the results of any accelerated new reactor build would not be seen in the 2021-2025 period, this period will likely be pivotal for the future of nuclear power as the world adapts to a post-COVID-19 environment. If this environment results in the desire for a much-reduced carbon economy, the expansion of nuclear energy could be notable, as it has the potential to play a major role in this transformation.

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