

The Role Fossil Fuels Will Play in the Coming Energy Transition

February 3, 2022

By Mark Stoeckle

In January 2020, students protesting Oxford University's investments in oil companies such as Royal Dutch Shell and BP wrote a letter to bursar Andrew Parker demanding the school immediately divest. The bursar told the students he couldn't arrange divestment at short notice, but he could switch off the university's gas-powered heating system. The students balked, citing the winter cold, to which Parker responded: "The question is whether you and others are prepared to make personal sacrifices to achieve the goals of environmental improvement."



While we recognize that energy companies need to change and adapt, we also see them as part of the solution.

This anecdote, reported in the Times of London, reflects the challenges facing the push for clean energy and looks at what we, as consumers of energy, are willing to give up or change for our environment. The reality is, the shift to renewables, which world leaders recently discussed at COP26, will likely take significantly longer and be harder to pull off than the investment community assumes. Moreover, because there are no quick fixes, we believe oil companies will have to be part of the solution.

While the aspirations of socially minded groups are well intended, the transition to clean energy is likely to be much longer and more daunting than activists assume. Fossil fuels are found in 96% of the items we use each day, according to the International Association of Geophysical Contractor (IAGC). They are used as energy sources for everything from electricity to gas for cars to home heating. "The reality is the world runs on the energy system that we have today," said Chevron CEO Michael Wirth.

To be sure, many companies are committing to energy transition in response to growing calls for clean energy over the past year. And there has been increasing pressure on big oil companies to adopt climate-friendly policies sooner rather than later. The latest example: The activist investor group, Engine No. 1, succeeded in its bid to add three climate-friendly directors to Exxon Mobil's board. In addition, a Dutch court recently found that Shell is partially responsible for climate change and ordered the company to cut its carbon emissions by 45% by 2030. Chevron shareholders also voted

for a proposal that could lead to lower emissions. Like it or not, changes are coming for energy companies as growing pressure mounts from financial markets and politicians to accelerate the move away from hydrocarbons. While we recognize energy companies need to change and adapt, we also see them as part of the solution.

Why reducing energy dependence won't be so simple

There is no doubt the oil industry is in transition as we try to move away from the world's dependence on fossil fuels amid growing concerns about environmental damage. But the transition will not be easy or fast. According to the International Energy Agency (IEA), more than 80% of global energy demand is currently met by fossil fuels such as coal, oil, and natural gas.

The IEA studied what it would take to reduce carbon emission to net zero by 2050. To do this, the IEA believes that green hydrogen would be needed along with solar and wind energy for the world to reach its goal. Governments around the world have committed to shifting toward cleaner and renewable energy sources, which will require investments in the trillions. This has led to rapid growth in renewable energy, but it will take many years, if not decades, to scale to a point that we rely significantly less on oil. Another difficulty globally is that both China and India are much more impactful on the environment than the U.S. Both continue to build coal plants and do not look to be embracing climate change.

There are also many challenges with migrating from a fuel-intensive to a materials-intensive energy system. For example, offshore wind plants require roughly 12 times more mineral resources than gas plants of equivalent energy output, according to the IEA. A typical electric car uses six times the mineral inputs of a conventional car. Electric car makers would actually require at least 30 times more lithium, nickel, and other key minerals by 2040 than they currently use to meet global climate targets.



These efforts will require a massive increase in production of key minerals, which are likely to lead to an assortment of issues of their own. For instance, increased mining efforts for these raw materials will inevitably lead to questions about the negative environmental and social impact of such operations. Take copper. As mining operations have matured over the past 15 years, the average quality of copper ore mined in Chile has degraded by 30%, according to the IEA. This means mining operations in Chile now require more energy, produce more greenhouse gasses, and create higher mining waste to generate the same amount of high-quality copper. All of this leads to higher production costs as well as more damage to the environment.

This can lead to significant cost inflation and supply issues, reducing the returns on these projects and increasing energy transition risks. Over the past decade, for example, technological advances and higher production volume have reduced the cost of producing lithium-ion batteries by 90%. However, raw materials now account for 50-70% of total battery costs, according to the IEA. If lithium or nickel prices were to double, it would offset any further cost savings induced by higher volume.

Decarbonizing the economy will require two big steps. The first is to transition electricity generation from oil/gas/coal to renewables. Reducing our reliance on fossil fuels as a source of electricity has begun with the growth in solar and wind options. The second part is to decarbonize transportation, which includes cars, trucks, aviation, and shipping and accounts for over 80% of oil consumption. This is a much larger obstacle. While cars have begun to move away from combustion engines driven by advancements in technology for electric vehicles, the transition for other types of transportation, such as aviation and maritime, will require international cooperation, government support, and significant incentives as well as advances in technology.

While “big oil” can be blamed for climate change, today these companies are working to be part of the solution.

Difficulty scaling wind and solar

Solar and wind are the leading renewable options available today. One of the challenges with renewable energy is that it requires massive amounts of land to produce relatively small amounts of energy. According to the Nature Conservancy, it takes 30 times the land for windmills to generate as much electricity as a nuclear power plant.

Solar generation has grown to 4.5% of the nation's electricity supply, up from 0.1% in 2010. But solar power is running into its own issues. While everyone likes the idea of solar panels, no one wants them in their neighborhood or on public land. Activists, who support renewable energy, also argue that it threatens wildlife and recreational destinations. In addition to having difficulties acquiring land to build these projects on, finding places to transmit it to residential areas have also been challenging. Many people oppose having high voltage transmission lines running through residential areas.

There is also the issue of storage for solar and wind energy, the inability to ramp up capacity when demand rises, and the fact that solar and wind projects generate electricity only when the sun is shining, and the wind is blowing. This issue has been on display in the UK as the lack of wind has severely hampered the availability. Even with the projected growth of renewables, they are still expected to account for less than 15% of the nation's energy supplies by 2050, with fossil fuels making up 78%, according to the Energy Information Administration.

So where does that leave us?

European oil giants are well ahead of U.S.-based companies in terms of investing in renewable energy. BP and Shell have begun selling higher carbon-emitting fossil fuel assets and investing these dollars into renewable energy to help speed the transition. BP's CEO laid out plans to transform BP into a net-zero carbon-emissions company by 2050 or sooner. This plan will likely include investments in alternative fuel technology, as well as emissions-offsetting technology in the form of carbon capture and storage.

Exxon recently formed a new business unit to invest in lower-emission energy technologies. According to a recent article in the Wall Street Journal, “Exxon could achieve a net-zero target over the next 30 years without exiting oil and gas production if it deploys large-scale carbon capture and storage projects.” However, these projects would need government support and subsidies to be viable. Interestingly, the five largest oil companies in the world, Exxon, Chevron, BP, Shell, and Total will spend over \$120 billion on investments in energy transition over the next five years. This data point is not known to many people, which means the companies aren't doing a good job explaining the investments in clean energy they are making.

Big Oil can be part of the solution over the long-term.

There are reasons the world is so dependent on fossil fuels: they're cheap, efficient, and easily transportable. Unfortunately, there are no quick fixes or easy answers here. Reducing carbon emissions will be a gradual process that takes many years. There are renewable options, but they are expensive and will require government subsidies and incentives to bring down costs and encourage investment. We have already seen energy costs go up for consumers. Going forward this trend could accelerate seeing consumers also paying more either through taxes, or they will share the burden of higher costs passed on by energy companies.

There is also the risk that investments in renewable projects will have a negative impact on the profitability of oil companies. For example, wind energy today typically generates lower margins than oil and gas. As these businesses grow as a percentage of total revenue, overall margins could decline. Over time as wind and solar energy scale, profitability levels should improve, but it is unclear at this point whether they will achieve the same levels of profitability that oil generates. This is something energy investors will have to be keenly mindful of.

We believe fossil fuels will be part of the global energy system for decades. While big oil can be blamed for contributing to climate change, we, as consumers of oil, are also responsible. After all, we need oil to drive our cars, heat our homes, and create the products we use every day. Today's oil companies recognize the need to transition to cleaner energy sources and are working to be part of the solution. As an actively managed energy fund, we are focused on finding the best investments for today and for the future.

[Read more insights from Adams Funds.](#)

© Copyright 2022 Adams Funds. All rights reserved.

Adams Funds™, Adams Express™, and Trusted by investors for generations® are registered trademarks of Adams Diversified Equity Fund, Inc. and Adams Natural Resources Fund, Inc.