

An aerial photograph of a large industrial facility, likely a refinery or chemical plant, captured at night. The facility is illuminated by numerous lights, creating a warm orange glow against the dark blue twilight sky. Several large, cylindrical storage tanks are visible in the foreground and middle ground. A prominent white plume of smoke or steam rises from a central stack. The overall scene conveys a sense of industrial activity and energy production.

Climate change and fossil fuels: the growing urgency to divest

Global efforts to mitigate climate change must soon take a heavy toll on future fossil fuel demand, Jeff Rubin writes

After witnessing one of the steepest declines in prices in decades, can fossil fuel industries expect to ride a strong cyclical recovery in demand? If there has been one constant in energy markets over the past four decades it is that low prices, particularly in the case of the world's single most important fossil fuel, oil, can be relied upon to stimulate economic growth and in turn stoke global demand for the fuel.

If so, the over halving of oil, coal, and LNG prices over the past two years has set the stage for a powerful recovery in global demand and ultimately in the price for these fuels. But can investors still rely on this time-tested principle as the world commits to ever nearer and more stringent targets to reduce global emissions and mitigate the worst consequences of accelerating climate change?

A growing number of institutional investors around the world are not only questioning the cyclical upside for fossil fuels but more fundamentally their longer-term value and viability in a global economy that must rapidly and dramatically decarbonize. In 2014, institutional funds holding a combined \$24 trillion under management signed a Global Investor Statement, recognizing they have a fiduciary responsibility to their investors to manage climate change risks in their portfolios.

Some like California's Public Employee Retirement System (CalPERS), the largest public pension fund in North America, and the \$850 billion Norwegian sovereign wealth fund (Government Pension Fund-Global) have already begun to immunize themselves from those risks. They have chosen to divest from fossil fuel industries such as coal and oil sands that are most exposed to global efforts to mitigate climate change. And they are not alone.

Mounting concern over global climate change has quickly catapulted the movement to jettison fossil fuel securities from institutional portfolios into the fastest growing divestment campaign in history. Beginning with endowment funds at institutions like Stanford University and the University of California, the divestment movement from fos

oil fuels has spread across the global financial community. More than 500 institutions including over 170 pension plans, sovereign wealth funds, university endowment funds and private fund managers have already divested \$5.2 billion dollars from fossil fuel industries. Ironically even the \$850 million Rockefeller Fund, a historic oil money fund established by the Rockefeller family-owners of Standard Oil, the predecessor of Exxon, has announced its intention to rid their portfolio of fossil fuels.

In the process the divestment movement has quickly shifted its focus from social activism to portfolio management. Originally, the divestment campaign was motivated by moral concerns much like predecessor movements that had targeted tobacco companies and the former apartheid regime in South Africa. In this case, divestment was motivated by the concern that emission-driven climate change would have potentially catastrophic consequences from the increased frequency of extreme weather, threats to world food production, and widespread island and coastal flooding as sea levels rise.

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But with galvanizing global action, both at the individual country level as well as through international agreements, committed to aggressive emission cuts, the focus of divestment campaigns has shifted from moral concerns to economic ones. As toughening emission regulations around the world begin to take their toll on global demand for fossil fuels, there is a growing recognition among institutional investors that mitigating climate change will severely limit the future use of fossil fuels, rendering much of current production levels, and the bulk of proven reserves, economically unviable.

While the notion that climate change will ultimately compel the world economy to wean itself off fossil fuels is not new, the timeframe in which it must do so has suddenly become far more imminent than once believed. The urgency for action is underscored by the alarming rise in atmospheric carbon which is already above 400 parts per million (ppm) and well on track to breaching the 450 ppm threshold that the world's scientific consensus has steadfastly warned we dare not exceed.

The United Nations Intergovernmental Panel on Climate Change (IPCC) estimates that at the current rate of annual emissions (around 39 gigatonnes), the global economy has less than three decades left to burn hydrocarbons—a prospect that leaves over two-thirds of the world's proven reserves of coal, oil, and natural gas effectively unburnable.

Of course, the world economy's fossil fuel burning days can be extended beyond that timeframe but only through reducing the rate of annual emissions now and hence stretching out the remaining carbon budget (roughly between 500-1,000 gigatonnes depending on the climate change target chosen and the degree of confidence in achieving it) to mid-century or slightly beyond. Even so, to stabilize atmospheric carbon at 450 ppm, will require that annual global emissions by mid-century are less than half of what they are today.

With fossil fuel combustion accounting for more than 80 per cent of global carbon emissions, the onus for meeting those targets falls squarely on the energy sector. According to the International Energy Agency (IEA) as depicted in its Climate Change Scenario, meeting the 450 ppm target, and hence limiting the average increase in global temperatures to 2 degrees Celsius, requires both global oil and coal consumption to peak by as early as by the end of this decade and steadily decline thereafter. Global consumption of thermal coal, the single largest source of global carbon pollution, will need to be cut in half by 2040 with coal-fired power generation falling from more than 40 per cent of global electricity production to less than 10 per cent.

The outlook for oil demand isn't much brighter. To meet required global emission targets needed to stabilize atmospheric carbon at 450 ppm, world oil consumption will also need to peak by the end of this decade and fall to 80 million barrels per day (bpd) by 2030 and to 74 million bpd by 2040. That required reduction in future global oil demand would shut in roughly a quarter of today's nearly 97 million bpd of production.

Even holding atmospheric carbon to the 450 ppm threshold paints a bleak outlook for fossil fuel industries. That threshold is in turn benchmarked to limiting the rise in average global temperature to a two-degree Celsius increase. Once considered a prudent objective for climate change mitigation, today the two-degree target is seen as an outlier of what is now considered to be tolerable global climate change. Over 170 countries recently committed to a more stringent goal of limiting the average increase in global temperature to between 1.5 degrees – and less than 2 degree Celsius at the Conference of the Parties (COP 21) to the United Nations Framework Convention on Climate Change in Paris last year.

The new temperature target adopted at Paris requires larger emission reduction cuts and consequently even deeper reductions in global fuel consumption than modeled in the IEA's Climate Change Scenario. Coming into force by 2020, the commitments made at Paris mandates nothing less than huge and irreversible cuts in carbon emissions

that can only occur with significant reductions in the use of fossil fuels. Some estimates suggest that world oil consumption will have to fall by over half from current levels by mid century if we are to limit the increase in global temperature to only 1.5 degrees Celsius.

As measures to achieve emission targets take hold around the world, they threaten to stymie the business as usual recovery in fossil fuel demand without which much of today's fossil fuel industry is already no longer viable. According to Moody's, half of the world's coal reserves had already become uneconomic to exploit, as both thermal and metallurgical prices recently fell close to decade lows. As tightening emission regulations are enforced, particularly in China, which accounts for half of world coal consumption, once booming growth in world coal demand has ground to an abrupt halt.

Global coal consumption fell by an estimated 2.5 per cent in 2015, almost double the decline seen during the last recession, after registering no growth the previous year. With demand stagnating, coal prices have plunged, shaving off billions of dollars of market capitalization from coal stocks and triggering bankruptcies and mine closures around the world.

Peabody Energy, once the largest publicly listed coal stock in the world, lost more than 90 per cent of its share value over the last five years before declaring bankruptcy in April 2016. Similar fates have befallen other coal giants like Alpha Resources and Arch Coal, which joined over a dozen US coal firms which went bankrupt over the past couple of years.

However stressed the coal industry may be today, it faces the prospect that in an emissions constrained world, it will lose nearly half of its market over the next two and half decades. The IEA has warned that only low cost, small – scale, new coal projects would be viable in that world.

The outlook is not fundamentally different for oil producers. Just as low coal prices have stranded coal reserves around the world, low oil prices, have suddenly rendered huge reserves of high cost oil like the billions of barrels of bitumen found in Canada's oil sands uneconomic to produce. Already singled out in a number of divestment campaigns, the oil sands are not only one of the most emission intensive sources of oil supply but more critically, they are one of the most expensive supply sources anywhere in the world and hence the most vulnerable to any emissions-driven reduction in world oil demand.

Prior to the collapse in oil prices for their once triple digit perch, oil sands production was scheduled to more than double to over 5 million bpd over the next decade and half - an increase that would have catapulted Canada into the front ranks of oil producing nations. But whereas the rapid growth of high cost unconventional supply was once seen as crucial to meeting ever-growing global petroleum demand, oil sands production has become largely redundant in an oil market flooded by US shale production and record OPEC and Russian output.

With production costs of new oil sands projects almost double the current price of bitumen, over \$50 billion of planned investment in expanding oil sands production have been cancelled. But even today's roughly two and half million bpd production from the oil sands looks unsustainable without a huge recovery in oil prices.

Next to coal firms, the high cost oil sands sector has been the hardest hit by the collapse in fuel prices. While the oil sands industry continues to pin its hopes on new pipelines to tidewater, glutted overseas markets in Europe and Asia typically pay less for bitumen and other forms of heavy oil than oil sand produces currently receive from North American refineries.

A return to anywhere close to the triple digit oil prices that spurred their development of the oil sands, as well as shale and other high cost supply sources like deepwater and Arctic, seems less and less likely. The closer that inter

national agreements like COP 21 and their aftermath bring the world to reducing combustion of fossil fuels, either through pricing carbon emission or through promoting the rapid use of green energy, the bleaker the outlook for oil prices and high cost supply sources.

Institutional investors who have already divested from coal and oil sands stocks have avoided substantial loses in their portfolio. Both now trade at a fraction of their former values. Other investors, who might consider positioning themselves for a business as usual recovery in fuel demand and prices, have good reason to think twice. Global efforts to mitigate climate change must soon take a heavy toll on future fossil fuel demand. ■

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