A Tragedy Worthy *of* Shakespeare

By Philip K. Verleger, Jr.

The looming financial crisis as a result of oil's collapse.

Developments in the world oil industry have taken on all the characteristics of a Shakespearean tragedy. We are now entering Act IV. *Hamlet* provides the road map. The play begins with the villain gaining power and then keeping it until the climax in Act III. From there on, it is all downhill.

Oil's tragedy began in January 2001 with the inauguration of U.S. President George W. Bush. The occasion likely brought enormous relief to executives of major oil companies, electric utilities, natural gas producers, and coal firms, for no industries had more at stake in the election's outcome than these did. The contest between Bush and his Democrat opponent Al Gore matched a committed environmentalist against a failed oil man and former Texas governor. Whether the Supreme Court knew it or not, it voted for big energy, a boost in emissions of global warming gases, and a pedal-to-the-metal energy policy when it sided with the Republicans in *Bush v. Gore,* and the energy industry thought it had won big.

President Bush ordered his vice president, Dick Cheney, to conduct an immediate review of the nation's energy situation. When Cheney's task force, the National Energy Policy Development Group, issued its report, the document fulfilled all the dreams of oil industry executives who had been frustrated during the prior eight years by the Clinton administration. A primary characteristic that permeated the report seemed to be a fear that the world would exhaust available oil supplies, sending prices to extraordinarily high levels. In the concluding chapter, the authors offer this warning:

Philip K. Verleger, Jr., is president of PKVerleger LLC.

THE INTERNATIONAL ECONOMY
THE MAGAZINE OF INTERNATIONAL ECONOMIC POLICY
220 I Street, N.E., Suite 200
Washington, D.C. 20002
Phone: 202-861-0791 • Fax: 202-861-0790
www.international-economy.com
editor@international-economy.com

Although U.S. energy security can be reinforced by domestic efforts to enhance supply and use energy more efficiently, growth in international oil demand will exert increasing pressure on global oil availability. Worldwide oil consumption is projected to grow by 2.1 percent a year over the next two decades. However, oil demand is projected to grow three times as fast in non-OECD countries as in OECD countries, which will increase worldwide competition for global oil supplies and put increased pressure on our shared environment.

The study gave the green light to those seeking to dig and drill in the nation. It also seemingly licensed U.S. companies to exploit all the world's resources, regardless of the consequences.

Seven years later, the industry's confidence reached its peak with the release of a National Petroleum Council study titled *Facing the Hard Truths about Energy: A Comprehensive View to 2030 of Global Oil and Natural Gas.* It might as well have been called "Drill, Baby, Drill," the line made famous in 2008 by John McCain's vice presidential running mate Sarah Palin. *Hard Truths* reiterated the recommendations made by the Bush energy task force in much greater detail and apparent certainty. The authors asserted several key "findings." They believed, for example, that coal, oil, and natural gas would remain "indispensable' to meeting projected demand growth. And, while the world was not "running out of energy resources," there were increasing risks to finding and developing sources from conventional reserves. The NPC report conclusions echoed those issued by other organizations, including companies such as ExxonMobil, government agencies such as the U.S. Energy Information Administration, and international entities such as the International Energy Agency. (This author was a member of the National Petroleum Council at the time *Hard Truths* was prepared. He did not endorse the report and has since resigned.)

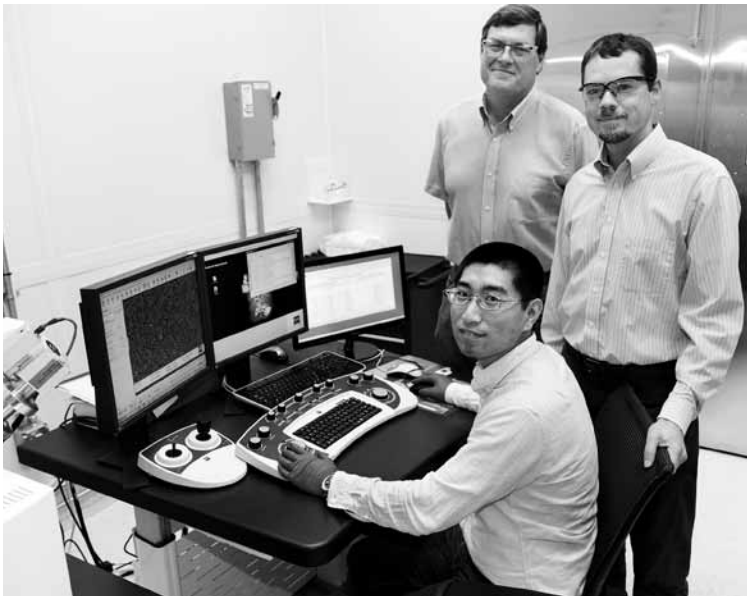
Within a year of the *Hard Truths* release, oil prices surged to over $130 per barrel, seemingly confirming the projections made by Vice President Cheney's taskforce and the NPC report. Except for a very short period associated with the Great Recession, oil prices remained above $100 per barrel for the next six years. Many came to believe that triple-digit oil prices were here to stay. One country, Venezuela, was so confident that its income would rise forever that it granted low-cost supplies to neighboring nations in its effort to undermine the United States' influence.

Act IV of the oil tragedy began on the U.S. Thanksgiving Day in 2014. On that date, Saudi Arabia told other OPEC members it would no longer support an artificially high price. As reported by Bloomberg, former Saudi oil minister Ali Al-Naimi describes the events of that day during a talk he gave in London:

"We tried hard to get everybody to cooperate," said Al-Naimi. "They didn't. Then, I remember asking every OPEC minister: 'Will you cut? will you cut? will you cut?' All the answers were "no,'" he said, explaining that then Saudi Arabia, the world's largest oil exporter, refused to go it alone. "I think that was and still is the right decision," he said.

OPEC needed to act in November 2014 because events had not developed as predicted seven or eight years earlier. Forecasts such as those published in *Hard Truths* had proven wrong. Global use had not increased at projected rates. The lower growth rate could be attributed in part to slower economic growth, in part to a shifting use pattern, and in part to the public's growing environmental awareness regarding fossil fuels.

The need for action became more urgent, though, with the unexpected rise in U.S. oil and gas production. The oil industry protagonists had assuredly expected the United States to import larger and larger volumes of oil and gas in 2001, when George W. Bush was inaugurated. Fourteen years later, it was becoming clear that the United States would be an exporter of both fuels. An unanticipated technological change,



GENEVIEVE MARTIN; OAK RIDGE NATIONAL LABORATORY

Oak Ridge National Laboratory's **Yang Song** *(seated),* **Dale Hensley** *(standing left), and* **Adam Rondinone** *examine a carbon nanospike sample with a scanning electron microscope.*

fracking, had upset the industry's expectation of profit and grandeur.

Things got worse for the industry and oil-exporting countries in December 2015 when nations settled on a program to slow global warming at the COP-21 meeting in Paris. The agreement's ratification has put the world on track to phase out fossil fuels.

Two years later, the play seems to be continuing inexorably in a direction that could force a dramatic downsizing on the industry by this decade's end. In October 2016, the U.S. Department of Energy announced that researchers at the Oak Ridge National Laboratory had "accidently" discovered a way to convert carbon dioxide, a major greenhouse gas, into ethanol. A DOE press release explains: "In a new twist for waste-to-fuel technology, scientists at the Department of Energy's Oak Ridge National Laboratory have developed an electrochemical process that uses tiny spikes of carbon and copper to turn carbon dioxide, a greenhouse gas, into ethanol." The press release also notes that the procedure is not very expensive.

The global oil industry—including large multinational companies and nations that depend highly on oil and natural gas sales—faces a looming financial crisis of significant magnitude.

The implications of the discovery are profound. The United States and China have large coal reserves that can be produced at low cost. Most of the coal is used to generate electricity. Environmentalists have been pushing to shut coal-fired power plants, while coal miners and electric utilities have been resisting. The ORNL discovery introduces a solution that all parties—except the oil industry—can embrace. If the research proves successful (and Oak Ridge is where the United States has for years put its best and brightest scientists), one can imagine a situation where electric utilities capture the carbon dioxide produced from generation, convert it to ethanol, and market the product in competition with oil. Brazil, readers may recall, relied heavily on ethanol for years. By 2020, China, the United States, and other countries may be making large use of ethanol produced in conjunction with electric power generation.

The benefits of this invention could be profound because it would make electricity generation essentially a zero-emission business. Production using the sun, wind, natural gas, coal, or oil would yield no emissions of carbon dioxide, sulfur dioxide, or other pollutants, and transportation fuels would be produced as a byproduct.

Today it is far too early to know whether the technology will prove practical. It is not too early, though, to understand that war has been declared on fossil fuels, oil in particular. Fossil-fuel opponents, for example, have seized on Volkswagen's deliberate deception regarding emissions and fuel economy rules to accelerate their efforts to displace gasoline and diesel-powered vehicles. As *Financial Times* columnist John Gapper explains,

> *The lasting significance of the VW scandal will be to bring forward a shift in engine technology and alter the balance of power among the world's biggest vehicle markets: the U.S., Europe and Asia. The lesson for carmakers is: go electric and go to China.*

Gapper adds that, to reduce pollution, China is banning or limiting large gasoline and diesel-powered cars from cities, while offering an open road to "new energy vehicles" or NEVs such as electric and hybrid cars, trucks, and buses.

Nick Butler, a professor at King's College in England and a *Financial Times* columnist, agrees that incentives will boost NEV use. However, he also suggests that regulations will do more:

> *The technology improvements will continue but I believe the next big step will be a regulatory drive to make EVs [electric vehicles] the default choice for motorists in cities. Measures such as lower vehicle taxation, lower congestion charges, and easier parking are being used as gentle incentives for behaviour change. But I can see cities in countries such as Germany or China going further and mandating their use—with the shift implemented over a relatively few years. In both countries local production will spur the adoption of new public policies.*

Oil-exporting nations have also realized that oil use may peak within ten years. OPEC's 2016 *World Oil Outlook* reports that global oil use in 2020 could fall 10 percent below current levels if signatories to the Paris climate change agreement achieve the goals established in December 2015. While unlikely, the scenario offers a stark warning of a bleak future from an organization that represents oil producers.

Not surprisingly, the oil industry has taken notice of these developments. On November 2, Shell Oil's Simon Henry suggested global oil use could peak within five years. Henry is not some academic but rather the firm's chief financial officer. His comments shocked many who believe oil use will continue to rise.

Pessimism regarding prospects for rising petroleum consumption leads directly to concerns about future oil prices. Until recently, many observers thought an oil price recovery was inevitable. In October, for example, Saudi Arabia's new oil minister Khalid Al-Falih warned that reductions in global investment would inevitably lead to higher prices. At the same time, though, ExxonMobil's outgoing CEO Rex Tillerson cast doubt on that projection. More recently, two major oil companies stated that they expect prices to remain around $50 per barrel. Such increased acceptance of peaking use and likely low prices makes the outlook for oil even more distressing. Act V, industry collapse, may come within ten years.

FINANCIAL IMPLICATIONS

The oil price decline has already devastated the private oil industry, as well as state companies in oil-exporting countries and even national economies such as that of Venezuela. The impacts are spreading to the financial sector as much of the debt issued during the period of high prices goes into default. The exposure may be of a magnitude that echoes the financial exposure during the 2008 financial crisis.

The collapse of oil, though, will not have the same effects as the housing bubble bursting because derivative use has been curtailed. Thus, few financial institutions appear threatened by the oil price decrease and borrower defaults. Bank regulators deserve immense credit if this is the case.

Still, today's low energy prices could lead to serious financial difficulties. These problems will include write-offs of bond debts issued by the many firms that rushed into oil and gas exploration, as well as write-offs of loans made to independent producers. The write-offs may amount to more than $1 trillion. In addition, portions of key sectors serving the oil and gas industry could be affected, especially pipeline firms.

More specifically, pipeline companies worth up to $500 billion may be at risk if more producers file for bankruptcy. These firms are protected by long-run contracts with producers, but some producers are seeking to escape these pacts as they attempt to emerge from bankruptcy. Other contracts are not being renewed. One pipeline company, TransCanada, has warned of lower earnings as contracts with producers expire. Kinder Morgan, another major pipeline firm, cut its dividend 75 percent to preserve cash.

The consulting firm Deloitte estimates that up to a third of U.S. oil and gas firms are at risk for bankruptcy in 2016.

The oil price decline has already devastated the private oil industry.

The company reviewed five hundred independent producers and concluded that 150 of them were in danger of failing. The companies have outstanding debt of $150 billion.

Bank for International Settlements general manager Jamie Caruana put the issue in a global context in a lecture to the London School of Economics on February 5, 2016, providing excellent quantitative detail. After discussing emerging market debt and financial market exposure in general, Caruana turned his attention to oil, emphasizing that the large debts accumulated by firms in emerging markets and the United States were tied together by the extent of "leverage" in the sector.

The greater willingness of investors to lend against oil reserves and revenue had enabled oil firms to borrow large amounts in a period when debt levels have increased more. Companies in the oil sector borrowed both from banks and in bond markets. Issuance of debt securities by oil and other energy companies far outpaced the substantial overall issuance by other sectors. Oil and gas companies' bonds outstanding increased from $455 billion in 2006 to $1.4 trillion in 2014, an annual growth rate of 15 percent. Energy companies also borrowed heavily from banks. Syndicated loans to the oil and gas sector in 2014 amounted to an estimated $1.6 trillion, an annual increase of 13 percent from $600 billion in 2006.

The BIS numbers cited by Caruana showed a very large increase in the debt of state-owned oil companies from emerging market economies. Total debt increased to over $400 billion by 2015, over half issued through offshore affiliates (such as debt sales by Citgo, the U.S. affiliate of Venezuela's PDVSA).

This fall, Venezuela's state-owned oil firm PDVSA scrambled to reschedule debt due for payment in October and November. It succeeded with a portion of it, but many bondholders insisted on getting paid. More debt comes due in 2017. At this writing, the amount exceeds the country's dwindling hard-currency reserves.

The combination of falling oil prices and higher leverage may cause financial strain for oil-related firms. First, the oil price underpins the value of assets that back their debts. In addition, lower prices tend to reduce profitability, increase default risk, and lead to higher financing costs.

Continued on page 81

Continued from page 57

Spreads on energy high-yield bonds have widened from a low of 330 basis points in June 2014 to over 1,600 basis points in the spring of 2016.

A lower oil price also reduces the cash flows associated with current production and increases the risk of liquidity shortfalls in which firms cannot meet interest payments. Such pressures may force firms to respond to lower oil prices in two main ways. The first is adjusting investment and production. In cases where a substantial portion of investment is debt-financed, higher costs and tighter lending conditions may accelerate reductions in capital spending. The second is selling assets such as rights, plants, and equipment.

The rise in corporate bonds issued by U.S. energy companies illustrates the debt trend. The increase in what the sector owes is staggering. At the end of 2009, it was $415 billion. Six years later, at the end of 2015, it reached $888 billion. Among other actions, the heavy obligations could prompt indebted companies to push output aggressively upward to cover debt payments as prices fall. As Caruana warned, "Highly leveraged producers may attempt to maintain, or even increase, output levels even as the oil price falls in order to remain liquid and to meet interest payments and tighter credit conditions." He added that leveraged companies will hedge with futures or puts to avoid insolvency as prices fall. The hedged production reduces the likelihood that production will decline as prices fall.

Oil-exporting nations have also realized that oil use may peak within ten years.

In sum, the global oil industry—including large multinational companies and nations that depend highly on oil and natural gas sales—faces a looming financial crisis of significant magnitude. Many of these countries and companies have mortgaged their future by expecting that high prices would make debt repayment easy. Changing consumer tastes, technological advances, and tightening environmental policies have made such a future very unlikely. As consequence, the probability of the oil sector repaying its billions if not trillions in debt is low. As noted at the start, what has happened and is happening to the oil industry and the global economic implications constitute a tragedy worthy of Shakespeare. ◆