

# Gathering Storm II

*Get ready for a potential Category 5 energy hurricane, political instability included.*

**BY PHILIP K. VERLEGER, JR.**

**E**leven years ago, I wrote “Energy: A Gathering Storm” for a volume edited by Fred Bergsten and published in early 2005 by the Peterson Institute for International Economics. The book highlighted the issues Bergsten and others at the Peterson Institute thought would be critical in the next decade. I was concerned that crude oil might rise from \$40 per barrel, the price at that time, to an unbelievable \$160. The key paragraph in my paper spelled out this warning:

*Crude prices could climb from the present average in the \$40s to perhaps \$55 by mid-2005 and as high as \$70 in 2006 should “shortage conditions” occur in those years. Even higher prices might be seen later in the decade. In theory, crude prices might reach \$160 per barrel if history follows the 1973 script precisely [emphasis added]. As already noted, conditions today are propitious for such an increase. This does not imply, though, that prices will go up in 2005 or 2006. Circumstances are favorable, but that is all that can be said.*

Looking back, only one of the potential problems identified by Bergsten materialized. To borrow a baseball phrase, the Peterson Institute went one for five. My analysis was correct. Oil prices did rise to almost \$160 for the very reasons I described: underinvestment in supply, environmental regulations that limited diesel fuel supplies, and growth in Asian demand.

*The International Economy* published a much shorter version of the 2004 paper in its Winter 2006 issue. There, I noted again that conditions were propitious for very high prices. I also cautioned that higher oil prices would depress global economic activity. In fact, the 2004 paper presented a formula for calculating the impact, one that proved remarkably accurate given the trend in oil prices, as can be seen from Figure 1. This graph shows the actual change in real U.S. GDP from the prior year for 2005 through 2014 as well as the impact of higher prices on GDP projected in the 2005 paper. With the exception of 2007, 2008, and 2009, the predictions were remarkably on track.

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Today, a new storm is on the horizon. It will form out of the collapse of investment in oil and gas production. A year ago, the International Energy Agency projected that the oil and gas industries must invest as much as \$800 billion per year in exploration activities to develop the capacity needed for future demand. Today, it is clear that such investment will fall 50 percent to 60 percent below this level in 2015 and 2016. Furthermore, investment in future years will probably not reach the necessary levels. Figure 2 shows the growing gap between the forecasted investment requirements and the exploration and production spending that can be expected.

This underinvestment will inevitably bring oil and gas production to levels that do not meet consumer demand. While the date of the tipping point is indefinite, I suggest a pinch could occur as early as 2018. When the squeeze happens, prices will rise, and the increase will be driven not by the world running out of oil, but rather by insufficient investment in the capacity needed to deliver adequate crude supplies to refineries.

The impact of the coming crude shortfall will be different from previous instances. The higher prices that follow will stimulate U.S. production but force our allies in Europe and Asia to be energy “beggars” as they deal with the few remaining global oil and gas suppliers in the Middle East and the former Soviet Union. The altered situation could drive a huge wedge between North America and Europe and Asia. The impending storm, in other words, has global political and economic implications.

The drop in supply will occur because large oil fields in the U.S. Gulf of Mexico, Mexico, Brazil, the North Sea, Africa, and the Middle East, as well as tar sands projects in Canada, will be left untouched or developed at a rate far

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slower than what would keep oil prices between \$40 and \$60 per barrel. Higher prices will be required to dampen demand and boost supply. Prices could rise significantly if a group of producing countries bands together to limit supply.

The next storm will also have an ending unlike the one foreseen in 2004, because the large publicly held oil

companies will move much less quickly to boost production and their investment in new developments will be limited. This divergence between the coming cycle and prior ones will occur for several reasons.

First, the success of fracking and the resulting change in the price environment increase the risk associated with long-

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term investments. The absence of certainty regarding prices raises the possibility of large losses and dictates that outlays going forward be much lower and completion times shorter.

Second, increased concerns regarding global warming boost the risk associated with investment in long-lived projects. The real possibility that reserves could be “stranded” by limits on hydrocarbon use or made unprofitable by rising fuel taxes will cause companies to defer or cancel projects they would have funded rapidly in the past.

Third, the explosive growth in new energy consuming and producing technologies that can and will displace traditional fuels will be seen as a harsh threat to the economics of large-scale fossil fuel projects. The widespread adoption of electric cars due to technical breakthroughs or mandates, for example, could jeopardize investments in crude production and refining.

Fourth, high prices will likely slow economic growth again. By 2019 or 2020, we may even see a global recession if the market swing is excessively violent. The recession will depress fossil fuel consumption. It will also accelerate the displacement of these fuels if oil-exporting countries conspire to keep crude prices high.

Fifth, the price rise will provide a renewed impetus to shale oil and gas development in the United States. As we have learned over the last decade, the U.S. independent producers who pioneered domestic oil and gas extraction have responded to falling prices by aggressively boosting productivity. In 2009, for example, many predicted that decreasing natural gas prices would collapse production in the Marcellus shale. Instead, firms boosted productivity there. Output rose more than 50 percent while many producers received less than \$1 per million cubic feet for their gas, the equivalent of \$6 per barrel for oil. This seemingly

## The VW Effect

More than sixty years ago, the German company Chemie Grünenthal (now Grünenthal GmbH) began the aggressive marketing of the drug Thalidomide as a particularly potent cure for morning sickness. Thousands of women took the medicine. The consequences were horrific.

Decades later, Volkswagen, another German company, began an aggressive effort to market small vehicles with diesel engines. The company claimed diesels could meet tightening environmental standards being introduced across the globe. We now know that the claims, like those of Chemie Grünenthal, were wrong. Cities across Europe are choking in pollution. NO<sub>2</sub> levels on Oxford Street in London are the worst in the world thanks to diesel-powered cars and trucks. Researchers at Kings College London estimate that almost ten thousand Londoners die each year prematurely due to pollution, primarily from diesel vehicles.

**The speed of technological change will astound even the greatest optimists.**

Thanks to diesel vehicles, London faces the risk of a repeat of the great 1952 smog which may have killed four thousand in a few days in December of that year.

The consequences for oil will be severe. Oil refiners have spent billions constructing hydrocrackers to produce more diesel fuel. These giant and expensive units costing more than \$1 billion each milk extra gallons of diesel from a barrel of crude. Refining companies embarked on a massive construction spree following the 2008 diesel supply squeeze (see “\$200 Oil,” *TIE*, Summer 2008). Many of these units will now be scrapped because bans or limits on the use of diesel will soon be imposed. Hydrocrackers will suffer the same consequence as coal-fired power plants which must also be prematurely abandoned if the rise in global temperatures is to be limited to less than two degrees Celsius.

Use of all types of oil, too, may be limited in cities as governments move aggressively to force the introduction of vehicles powered by electricity or non-polluting hydrogen through fuel cells. Toyota, Tesla, Honda, and Volvo will benefit. Manufacturers of petrol-powered vehicles will lose, as will fuel suppliers.

Ten years from now, the consequences of the diesel fraud will be obvious. Oil, which today seems essential for transportation, will play a far smaller role. Societies will adjust because the immediate environmental impacts of diesel fuels in urban areas will force action. The speed of technological change will astound even the greatest optimists. Oil refiners and oil producers will find their role in the global economy surprisingly diminished.

—P. Verleger

uncharacteristic response has been happening in oil as well. The added jump in U.S. shale activity brought on by higher prices will be instrumental in achieving the energy independence goal President Nixon established in 1973.

Sixth, the world hydrocarbon industry will see a new concentration of market power in Russia and the Middle East nations as the ongoing price war destroys traditional exporters such as Venezuela and possibly Nigeria and Libya. The reduced number of exporters will allow these nations to raise and sustain prices in a way not previously observed. The collapse of Venezuela’s oil production in particular will give them an opportunity to reestablish control over prices. Specifically, they will be able to raise and hold prices above \$100 per barrel.

Seventh, the price rise will cause a significant shift in global economic power. The United States, by virtue of its energy independence, will have a freedom to act that other consuming countries and regions will not enjoy. Western Europe, as well as China and Japan, will once again find themselves beholden to major oil- and gas-exporting nations in the Middle East and Russia. The energy divide will increase economic and political frictions between traditional allies.

The coming energy cycle will also be very different from previous episodes in which the interests of all

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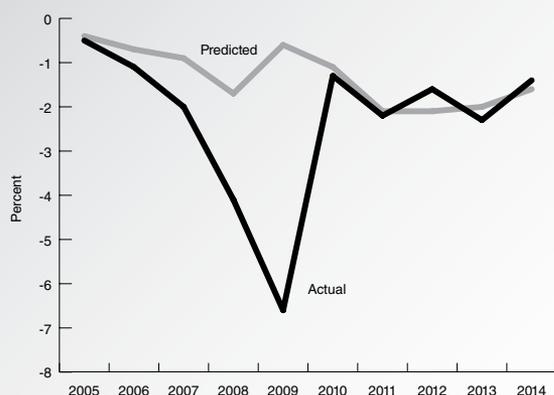
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major OECD nations coincided. Agreements regarding energy security will be difficult to negotiate going forward, whereas in the past consuming nations united to address this issue. The United States has led such efforts for four decades. In the next ten years, though, our energy independence will lessen interest in this issue among policymakers.

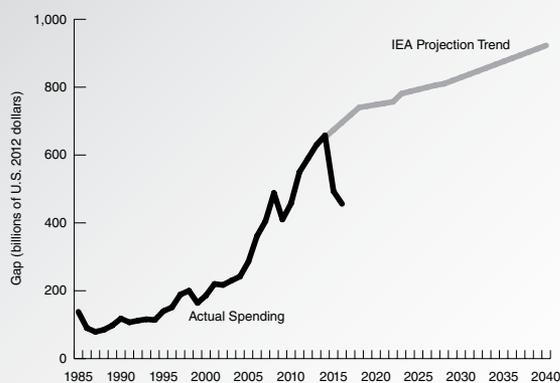
Indeed, the emergence of an energy-independent United States just as nations in Europe and Asia have to accept greater dependency on fossil fuel suppliers from the Middle East, Russia, and other former Soviet Union

**Fig. 1 Actual GDP Growth Shortfall from 2004 vs. Shortfall Predicted in “A Gathering Storm”**



Source: PKVerleger LLC

**Fig. 2 Growing Global Crude Oil E&P Investment Gap: Actual Spending vs. IEA Projections for Required Investment, 1985–2040**



Sources: U.S. Bureau of Economic Analysis, International Energy Agency, PKVerleger LLC

countries has enormous implications for international economic and political stability. Historically, the United States has had the greatest concerns regarding energy security. In the future, a “Tea Party”-led Congress with no knowledge of history will likely regard it as a waste of time and money. This explosive expansion of indifference will occur just as leaders of major European and Asian countries realize oil and gas exporters have gained the ability to drive prices to the sky thanks to the waning control of major international oil companies and the concentration of true economic power in the hands of Middle Eastern producers and Russia. As prices rise and economic activity slows, these nations will push to depress use.

The speed at which the world moves off carbon-based fuels will become the first battle. European countries, facing increasing reliance on emboldened oil suppliers (call them the new OPEC), will move to reduce global fossil fuel use rapidly. The three North American countries enjoying the bounty of shale oil and gas will take a more moderate path. Middle Eastern and Russian oil and gas producers will determine the level of antagonism between the two groups. By 2018 (or sooner if Venezuela’s oil production collapses altogether in 2016), the remaining producing nations will enjoy great market power in oil. Meanwhile, the energy-independent United States will have stepped to the sidelines.

The rift between the United States and Europe and Asia could degenerate into a situation similar to the one we faced in August 1941, four months before the United States entered World War II. At that time, President Franklin Delano

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Roosevelt won an extension of the military draft by just one vote in the House of Representatives. Members of Congress in that year wanted nothing to do with Europe’s war. The same isolationist sentiment could embolden U.S. legislators to reject efforts to help European and Asian energy consumers over the next ten years.

In short, the gathering storm could become a Category 5 hurricane. ◆