

Advanced Biofuels USA, a nonprofit educational organization, advocates for the adoption of advanced biofuels as an energy security, economic development, military flexibility and climate change solution.



After the Fall: Rebuilding US Liquid Fuel Production – Invest in Our Land or the Shale Oil Fields?

by Robert Kozak

Efforts to promote a sustainable use of natural resources are not a waste of money, but rather an investment capable of providing other economic benefits in the medium term. If we look at the larger picture, we can see that more diversified and innovative forms of production which impact less on the environment can prove very profitable.

On the other hand, to find ever new ways of despoiling nature, purely for the sake of new consumer items and quick profit, would be, in human terms, less worthy and creative, and more superficial.

Pope Francis, Encyclical Letter, “*Laudato Si*”
On Care For Our Common Home, 2015

Should the US Taxpayers Pay Off the Debt of the US Shale Oil Industry?

Every day that oil prices remain below the approximately \$55/barrel breakeven point to produce US shale oil, the probability of restarting the US shale oil industry with private capital decreases. Not only are oil service industry companies going out of business and laying off well-paid workers (oil well drilling is running at about 27% of the 2014 maximum, 439 versus 1609 rigs), but the industrial infrastructure is closing down as well. This includes an [oil pipe steel mill in Lorain, Ohio](#).⁽¹⁾ More important, the extreme indebted state of US oil exploration and production (E&P) companies, approximately \$235 billion at the end of 2015, weighs heavily on the banking and investment industry.

With the chances of most of this E&P debt not being repaid, Wall Street refinancing a turnaround without government subsidies is very unlikely.

When world oil prices return to levels that would make fracking oil drilling profitable, **should the US government pay Wall Street for their bad bets of over \$200 billion while also providing financing to the drillers to restore US liquid fuel production of 2-3 million barrels/day?**

Or, should the US invest a small portion of the past debt bailout in a US advanced renewable biofuel industry that would be more sustainable, significantly reduce GHG emissions, and create and retain more jobs than the boom-and-bust US oil industry?

There are three strong arguments for the US to invest in the biobased renewable fuel industry to produce these liquid fuels instead of restarting shale oil production with US taxpayer money.

One. The resource base for biofuels, arable land, can be easily repurposed between food, feed, fuel, fiber, or multiple-use crops, depending on demand. Oil and gas fields cannot be repurposed. A farmer can continue to run a profitable operation if he or she has to shift acreage from biofuel feedstock to animal feed, grains, or vegetables if biofuel prices drop.

And, if proper farming practices are followed, the resource base remains both renewable and a minimal producer (as compared to oil) of greenhouse gas emissions (GHGs). An oil or gas fracking driller cannot shift the petroleum field to other uses when petroleum prices drop below production and financing costs. Instead, the drilling site goes out of business, usually leaving behind debts, a hazardous waste site to be cleaned up, and scores of unemployed workers.

Two. The very nature of the high cost US shale-oil industry leaves it very vulnerable to low-cost producers who dominate the world market. To succeed in such a market where most of the cards are dealt against you requires the brilliance and shrewdness of Eisenhower at Normandy.

Three. The relative performance of the US shale oil and ethanol industries in 2015 showed that the shale oil industry did not have the smarts to save themselves when prices dropped nearly seventy percent while the ethanol industry remained profitable.

The argument for investing in an industry whose resource base can be easily repurposed in response to changing demand is self evident.

A quick review of the recent history of US shale oil and ethanol production might be helpful in understanding the other two arguments.

The US Shale Oil Industry: An Economic Disaster of Its Own Making

As [reported](#) by a variety of media outlets in late 2015, the indebtedness of the oil exploration and production (E&P) industry was estimated at about 235 billion. 29 of the 64 E&P firms listed on stock exchanges were considered distressed. It was also reported that approximately 99 billion dollars of the debt was at immediate risk (meaning that companies with loans or bonds that were due did not have sufficient capital to cover them).(2)

It is important to point out that some of these bad loans and bonds were not directly caused by Middle East wars and oil production but **were the result of recent bad decisions by US oil firms.**

Probably the worst decision by US shale oil producers was in the spring and summer of 2015 when for some reason they thought increasing the supply of high priced oil would drive down Saudi production of low cost oil and thus raise, or at least maintain the price of petroleum. As Dan Murtaugh [wrote in Bloomberg](#), these actions resulted in what one would more logically expect – Saudi production stayed constant meaning the additional shale oil simply drove oil prices lower.

Producers slashed spending, idling more than 60 percent of the rigs in the U.S. They drilled and fracked faster, meaning fewer rigs and workers could make the same number of wells. They focused on their best areas and used more sand and water in the fracking process so each well gushed with more crude. By April, when the rig count had fallen in half, output was still rising...

All that effort did was push prices lower and expectations for a price recovery further out into the future. Now shale companies face a grim future, having played most of their best card...

The problem? Oil's no longer at \$50. It now trades near \$35.

For an industry that already was pushing its cost-cutting efforts to the limits, the new declines are a devastating blow. These drillers are "not set up to survive oil in the \$30s," said R.T. Dukes, a senior upstream analyst for Wood Mackenzie Ltd. in Houston.

*The Energy Information Administration now predicts that companies operating in U.S. shale formations will [cut production](#) (3) by a record 570,000 barrels a day in 2016. That's precisely the kind of capitulation that OPEC is seeking as it floods the world with oil, depressing prices and pressuring the world's high-cost producers. **It's a high-risk strategy, one whose success will ultimately hinge on whether shale drillers drop out before the financial pain within OPEC nations themselves becomes too great** (emphasis added).*

"You are going to see a pickup in bankruptcy filings, a pickup in distressed asset sales and a pickup in distressed debt exchanges," said Jeff Jones, managing director at Blackhill Partners, a Dallas-based investment banking firm. "And \$35 oil will clearly accelerate the distress." (4)[READ MORE](#)

By late 2015 the effect of collapsing oil prices on oil industry debt spread beyond the small E&P companies. It expanded to the giants. BP reported a \$6 billion loss for 2015 and ExxonMobile reported that their 4th quarter 2015 profit of 2.7 billion was down 50 percent from 2014. Concurrent with the reporting of these losses, the giants also announced the stoppage of many large deep-water projects

including the Shell Oil Arctic project that the Obama Administration was counting heavily on for US "energy independence."

This very large amount of debt incurred by the E&P companies probably comes as a surprise to most people who assume that the shale oil industry is a conservative bootstrap operation that funds new drilling and exploration out of cash-flow. Instead, it is a high-risk, high cost industry that uses promises to Wall Street, not current revenue, to fund operations. Specifically, it used the promise of continual high oil prices to convince Wall Street investment houses to float low-yield bonds backed by \$100/barrel prices. Using this approach, the E&Ps were able to increase high-cost US oil production by nearly 3 million barrels/day over a few years to achieve 9 million barrels/day.

The Obama Administration did nothing to consider how this oil boom would affect world prices. Instead, they trumpeted how the US was awash in oil and fracked shale oil was going to change the geo-political balance of energy production while also keeping high cost shale oil profitable.

Unfortunately for the drillers, the bond sellers, and the US government, nobody bothered to look at falling oil demand in China, the US and Europe in 2014, while lower cost oil supplies were increasing because production disruptions in Libya were ending.

These same people and the "industry experts" that advised them also did not foresee ISIL selling petroleum at \$25/barrel from the oil facilities they had captured in Iraq.

Instead, the conventional wisdom, as exemplified by this [quote](#) by Mihaela Carstei, the deputy director of energy and environmental programs for the Atlantic

Council, on June 19, 2014, was that ISIL's capture of refineries meant oil production would decrease and prices would go up.

*"The size of the destruction vindicates the International Energy Association's [in Paris] downgrade last week of Iraqi oil production to half of its previous forecast. A lot of people did not think that downgrade was being very reasonable. The disruption that this seizure is causing the global oil markets confirmed that it was a good downgrading. Without a significant increase, let alone a decrease, in Iraqi oil production, **we were going to see prices spiking because of rising global demand. The immediate shock has already happened, but we will see major price impacts down the line.** If we do not address the insecurity, we will have major price problems in the future."* (emphasis added) (5) [READ MORE](#)

Saudi Arabia, however, understood the carelessness of the high cost US oil producers and US energy policy makers in 2014. Seeing the softness of the market and the low cost ISIL supply coming on-line, they stepped up oil production to lower international oil prices below US shale oil production costs (including financing) of about \$55/barrel. Saudi Arabian and other Gulf leaders were upfront about their objective – force high priced producers (US, Canada, and Russia) out of business.

Recovering from the Collapse of the US Shale Oil Industry

Ironically, the US shale oil industry now has the power to increase oil prices.

As the oil from all the wells drilled in 2013 and 2014 (over 1,500 drilling rigs in operation) is pumped out and replaced by the volume of oil possible from 500 wells (2016 drilling rig average is currently 501 rigs), [US oil production will have the potential to fall](#) at least 1.5 million

barrels/day. This reduction in supply would start the rise of oil prices.

The world will likely be oversupplied by about 1 million barrels a day through the first half of next year [2016] before balancing, Jefferies LLC analysts including Jason Gammel said in a Dec. 18 research note. (6)

This reduction in supply would be so large that Saudi Arabia and the other Persian Gulf states could not match it without causing extreme financial and probably social upheaval in their countries. But, by the time it happens, the Saudis and their allies will have no concern with US shale oil production coming back on line and will not have to increase production. The tipping point Murtaugh wrote about had been reached. **The US shale drillers capitulated before the OPEC financial pain was too great.**

The Saudis and their allies could declare victory and then decide which course of action they wished to pursue. Produce oil at 2015 levels at around \$80-90/barrel or cut back production to achieve \$125+/barrel prices.

Where would the US be when oil prices rise?

By the 2nd and 3rd quarter of 2016, the US oil industry situation would have reached a crisis. Most of the \$235 billion debt reported at the end of 2015 would be either at immediate risk or overdue. Additional debt would continue to be incurred by the industry as well. Finally, with revenue falling from decreased oil production, even payments to cover interest from the oil producers would not be possible. Widespread bankruptcies and people simply walking away from wells and companies would be the new normal. No oil company money would be available to drill new wells. Would there be money from Wall Street?

Even if oil prices were at \$100/barrel and Saudi oil production was reduced, do you think Wall Street would want to re-enter the shale oil fields? Do you think they **would want to own all the risk knowing Saudi Arabia could once again drop prices?** That seems a very doubtful course of action.

Instead, at a minimum, Wall Street investment houses would probably request: 1) a 100 percent US bailout of prior debt; 2) US guarantees of all future debt; and 3) a substantial equity interest (with US bailout provisions). And, as we're adding up costs, don't forget the state and local debts from oil field cleanups and oil worker housing which is now unoccupied.

For the US taxpayers is this the best deal we can get?

Is 2-3 million barrels/day of high GHG oil worth a \$5-7/barrel taxpayer financial subsidy? (\$260+ billion dollar bailout, high-risk loan guarantees on another \$200 billion/year to fund the industry, and no equity ownership.)

How Did the US Ethanol Industry Do in 2015?

If the US should invest in the R&D necessary to commercialize the production of 2-3 million gallons/day of non-food sourced renewable liquid fuels, is there any evidence that the US biofuel industry could handle a nearly seventy percent price cut better than the shale oil industry?

Let's look for a minute at the non-subsidized US corn ethanol industry in 2015. How was it doing as the selling price for ethanol fell just as much as it did for oil? Not bad actually.

[Exports, for octane](#) in European and Asian fuels, increased to over 800 million gallons while lower fuel prices in the US increased domestic

demand by 2.5 percent to about 905,000 barrels/day.(7) High corn production held feedstock costs steady which helped US producers remain profitable. For example, The Andersons, an Ohio agribusiness company with about 330 million gallon production capacity [reported 2015 pre-tax earnings](#) of \$20.8 million. And, this was even with lower than expected income from dried distillers grain (DDG) because of lower corn prices.(8)

Sustainable US Liquid Fuels: Our Land is the Way Forward

If the American biofuels industry can succeed while the US shale oil industry is collapsing, it seems that **the way forward to American liquid fuel independence and lower GHGs is through the land of America**— biofuels and not shale oil.

This is Part 2 of a series by Robert Kozak exploring the relationship of oil prices and the future of renewable liquid transportation fuels.

See also Part 1: [Why Oil Is Cheap in October 2015](#) (9)

Robert Kozak is the founder of Atlantic Biomass, LLC, and a co-founder of Advanced Biofuels USA. Having worked for about 40 years in the transportation, energy, environmental, and government relations industries and in enzyme development, he serves as a fuels/engines and policy expert for Advanced Biofuels USA. He can be reached at atlanticbiomass@aol.com

Related links:

(1) Republic Steel to lay off 200 employees from Lorain plant

<http://fox8.com/2016/01/07/republic-steel-to-lay-off-200-employees-from-lorain-plant/>

US Steel to close plant in Lorain, Ohio and lay off 756 workers

<https://www.wsws.org/en/articles/2015/01/07/stee-j07.html>

(2) Shale oil and gas: Fractured finances

<http://www.economist.com/news/business/21656671-americas-shale-energy-industry-has-future-many-shale-firms-do-not-fractured-finances>

(3) Short-Term Energy Outlook

http://www.eia.gov/forecasts/steo/report/us_oil.cfm

(4) Shale's Running Out of Survival Tricks as OPEC Ramps Up Pressure (includes video)

<http://www.bloomberg.com/news/articles/2015-12-28/shale-s-running-out-of-survival-tricks-as-pec-ramps-up-pressure>

(5) Will the Iraq crisis trickle down to the pump?

<http://america.aljazeera.com/watch/shows/inside-story/articles/2014/6/19/will-the-iraqi-crisistrickledowntoyouatthepump.html>

(6) Shale's Running Out of Survival Tricks as OPEC Ramps Up Pressure (includes video)

<http://www.bloomberg.com/news/articles/2015-12-28/shale-s-running-out-of-survival-tricks-as-pec-ramps-up-pressure>

(7) Export markets for 'liquid corn'

<http://www.ethanolproducer.com/articles/12942/export-markets-for-undefinedliquid-cornundefined>

(8) Ethanol performs well in disappointing year for The Andersons

<http://www.ethanolproducer.com/articles/13043/ethanol-performs-well-in-disappointing-year-for-the-andersons>

(9) Why Oil is Cheap in October 2015

<http://advancedbiofuelsusa.info/why-oil-is-cheap-in-october-2015-part-1-of-2/>

Advanced Biofuels USA, a nonprofit educational organization advocates for the adoption of advanced biofuels as an energy security, military flexibility, economic development and climate change mitigation/pollution control solution. Our key tool is our web site, <http://www.AdvancedBiofuelsUSA.org>, a resource for everyone from opinion-leaders, decision-makers and legislators to industry professionals, investors, feedstock growers and researchers; as well as journalists, teachers and students.

In addition, we prepare technology assessments, brief government staff, participate in conferences, lecture, and provide general assistance to those interested in advanced biofuels. Technology neutral and feedstock and product agnostic, Advanced Biofuels USA's work is respected around the world. We take seriously the importance of shaping public discussion, focusing on high-impact solutions.