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The US growth opportunity in shale oil and gas

McKinsey partner Scott Nyquist discusses the role of shale oil and gas in boosting US oil production and examines the environmental concerns that must be addressed.

We think this shale-gas technology boom will continue to have significant consequences for our economy. It's going to continue with the gas area, but it's also expanding into the oil arena. The same technology of horizontal drilling and hydraulic fracturing is being used to extract what's called light tight oil from very difficult-to-access shale and tight rocks in the US as well. And the combination of this oil boom, along with the gas boom, is transforming the energy landscape.

Throughout my whole lifetime, we've considered that we're going to be net importers of energy and net importers of oil, in particular. And through these technologies, we've now had significant growth of light tight oil—50 percent growth per year. And we can even envision a world where the US could be net exporters of energy by 2020. It's a significant shift in the way we think about energy security, and the way we think about the impact of energy prices on our economy.

The US now has an abundant supply of natural gas, and this natural gas can be used in energy- and feedstock-intensive industries such as chemicals. We see ethylene production going up, we see polyvinyl chloride production going up, and we see fertilizer production going up. The steel industry should also benefit from cheap supplies of natural gas. These aspects of the economy will create much-needed manufacturing jobs to help that segment of the economy that is particularly hard hit by the economic recession.

Fully capturing this opportunity will require an enormous capital investment. Some \$1.4 trillion of capital investment will be required for infrastructure in order to put in place these new jobs. This capital investment, on its own, will create a temporary set of jobs—some 1.6 million jobs—just to build out the infrastructure required to put in place these new manufacturing plants. This, on its own, will be an enormous surge to the economy—again, particularly in this timeframe where we need these kinds of manufacturing-oriented construction jobs for our economy.

The International Energy Agency now projects that the US will become a larger producer of oil than Saudi Arabia. This is an enormous transformation for the United States in the global oil


markets. In 2013, the United States imported less oil than any time since 1987. This will have a significant impact on the overall global oil balances, given the reduced need of oil in the United States.

However, there are risks associated with the production of shale oil and gas. In particular, there are several environmental risks that are drawing lots of attention from both environmentalists and the industry. Many in the industry, along with environmentalists, are very worried about water contamination. There's the risk that, in the process of drilling so many wells, the water could be contaminated.

There are also risks that increased drilling could lead to increased quantities of methane leaking from the drilling, which could add to greenhouse gas emissions. Land use is also a big issue and concern for both environmentalists and the industry.

Large tracts of land will be needed just to house the trucks and other equipment required to drill all these wells. And these trucks create noise, they create smog, and the local communities will not always be excited by having all this equipment around, particularly when land is located in urban areas. This is a concern for both the industry and environmentalists.

The good news is that, with the environmentalists putting so much pressure on the industry, the industry is responding by exploring new techniques and new technologies that can enable them to reduce the overall environmental impact of horizontal drilling and hydraulic fracturing. If knowledge is shared across the industry, these new technologies could lead to a continuous improvement that would reduce the overall risk over time. And at the moment, this intense scrutiny on the industry is actually having a positive impact—improving the overall efficiency of the industry and reducing risk.

Bottom line: This is an exciting game changer for the US economy. It can create jobs through investment in the energy sector itself and through the ripple effects in other parts of the economy. It will increase the overall GDP of the country, which will increase the overall wealth and well-being of many of its citizens. And finally, it could help the mind-set shift in terms of the overall energy security for the nation, which will give people more confidence that they can operate without fear of being insecure when it comes to the country's overall energy needs. 

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