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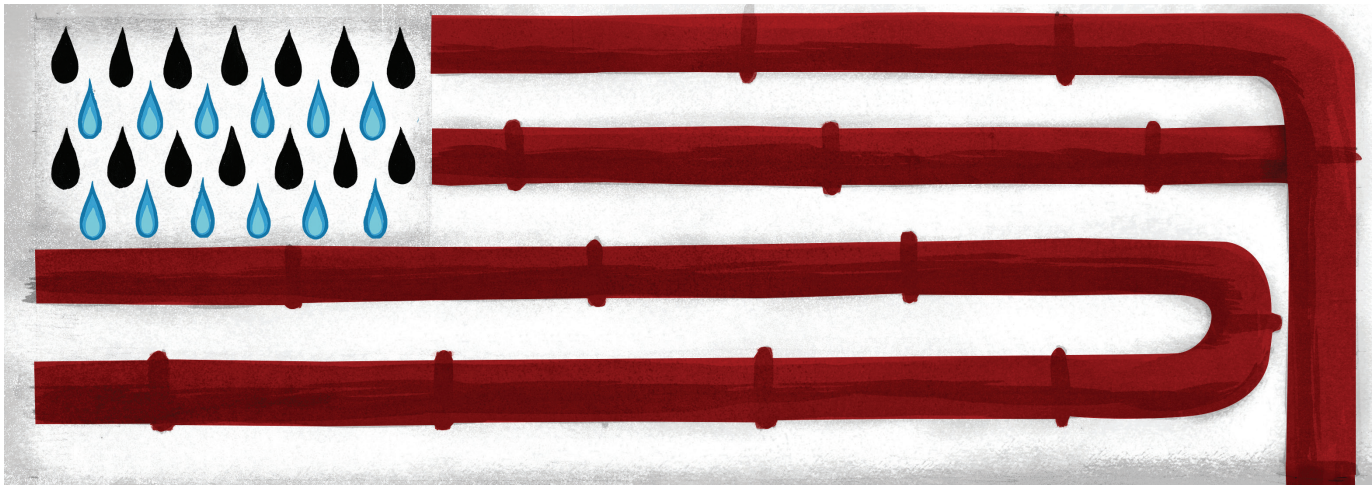
SIGNALS for strategists



A renaissance in the domestic oil and gas industry

THE US oil and gas (O&G) sector has experienced a renaissance thanks to two innovations—horizontal drilling and hydraulic fracturing—that have led to a boom in domestic production of natural gas and oil. O&G leaders have been navigating this reality for years. Strategists in other sectors, though, have not fully understood the trend and what it may mean for their companies and their sectors.

Major oil producers have invested billions to gain access to shale gas in Pennsylvania and neighboring states and are evaluating and investing in foreign shale gas assets, while foreign buyers, including national oil companies, are investing billions in US and Canadian assets.[1] In Ohio, natural gas processing facilities and pipelines worth over $7 billion are under construction, with additional pipelines worth billions expected.[2]

The US O&G sector is experiencing a sustained wave of innovation, investment, and change, which has extended to a range of downstream industries from petrochemicals to steel and other energy-intensive

manufacturing sectors. This is due to two primary factors:

1. The dramatic expansion of domestic O&G production and the accompanying downward pressure on natural gas prices nationally and oil prices regionally

2. The new geography of domestic oil and gas production, which has created a need for entirely new or greatly expanded supply chains and distribution networks

The facts and projections about US oil and natural gas production are striking:

- US oil production recently hit a 20-year high and could surpass Saudi Arabia's output by 2019.[3]

- The United States, with a 100-year supply of natural gas, will be the world's largest natural gas producer by 2015.[4]

- Natural gas prices in the United States are one-half to one-fourth the gas prices in most international markets.[5]

- Seeing a lucrative export opportunity, developers have submitted more than 15 liquefied natural gas (LNG) export projects to the Department of Energy for approval,[6] each of which would cost billions of dollars to build. Only a few years ago, the United States was preparing to become a major importer of natural gas.

This turnaround in the US energy situation is largely due to the combination of hydraulic fracturing and horizontal drilling—a technological innovation that has enabled the efficient production of oil, gas, and natural gas liquids from low-permeability oil and gas geologic structures. O&G companies have continued to improve their use of this technology, resulting in a dramatic increase in production. (Domestic crude oil production jumped 14 percent between 2008 and 2011; natural gas production increased 10 percent during that period.[7]) This has sent natural gas prices to lows not seen in 10 years. In fact, the United States has transitioned from one of the highest-cost natural gas markets to one of the lowest in only five years.

The abundant, low-cost supplies of domestic gas and natural gas liquids that shale production has made available are already having major impacts across the US economy—in the power and utilities sector; among big users of hydrocarbon feedstock, such as the petrochemical subsector; and in energy-intensive manufacturing subsectors such as food, bulk chemicals, refining, glass, cement, steel, and aluminum.

The changes within the O&G sector span the entire value chain from upstream to downstream, creating both opportunities and challenges.

Upstream (exploration and production)

- Oil and gas producers need to consider **optimizing procurement, logistics, and supply chain management**. New oil, gas, and gas liquids production is happening across the United States, far from traditional producing areas. Energy producers thus need to create new supply chains that draw on local suppliers for many of the products and services used in drilling wells and producing oil and natural gas. A mastery of logistics and lean operations is critical to profitability in this era of low natural gas prices.

- Operating in new geographies means that producers need to **comply with unfamiliar regulations**, including local codes governing fees as well as sales and use taxes. They also need to understand and comply with local environmental and other regulations.

- **Information management** is a challenge for producers, given the large volume of

transactions required for unconventional onshore operation. Companies have to manage royalty payments to mineral rights holders, who may number in the hundreds, and validate and pay hundreds or thousands of invoices to a supplier base that may consist of numerous small businesses.

- Producers need to carefully **evaluate and manage capital projects**. KKR estimates that $2 trillion in upstream investments for natural gas production will be required by 2035.[8]

- Producers will also likely engage in a range of **pre- and post-merger activities** such as valuation, due diligence, and post-merger integration. According to PLS, the North American O&G sector witnessed over 400 M&A transactions worth nearly $200 billion in 2012,[9] including the acquisition of upstream assets worth over $16 billion by foreign O&G companies.[10]

- Foreign companies looking to invest in US and Canadian shale plays through joint ventures must **navigate cross-border accounting and tax** issues and implement new operating models.

Midstream (transport, storage, marketing) and downstream

- Vast new infrastructures are being constructed to transport gas and oil from new or newly productive regions to markets across the country. A widely cited estimate for midstream infrastructure investment alone through 2035 exceeds $200 billion.[11]

  Midstream companies must address the related **contracting and regulatory issues**.

- Private equity firms, which are channeling capital into the sector and rolling up midstream companies, need to conduct effective **commercial and environmental due diligence**.

- Firms developing port and dock facilities for exporting refined petroleum products, gas processing plants, and LNG export terminals must find ways to **manage major capital projects**.

Energy-intensive industries

- A range of industries for which oil and gas are strategically important inputs, from petrochemicals to utilities to steel, are facing new choices and need to make **strategic plans**. These include thinking through issues such as how to secure supplies of natural gas, oil, or refined products at predictable prices, as well as making decisions about whether to invest in new facilities to take advantage of new sources of supply.

The dramatic expansion of oil and gas production from shale formations is precipitating an epochal transformation of the O&G sector that heralds decades of continued investment, innovation, and economic benefits for the US and global economies. The energy renaissance is not without risk, however. Companies seeking to take advantage of expanded US supplies of oil and natural gas face execution risks as they undertake major capital expansion projects. And those dependent on coal or pricier non-US sources of natural gas are challenged by uncompetitive costs.

Endnotes

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9. The total number of North American deals (including all subsectors) given by PLS is 404 (261 US, 143 Canada) with a total deal value of $187 billion. Total deal value for North America in 2011 was $207.2 billion.
10. Analysis of data from PLS.
11. The INGAA Foundation, Inc., *North American midstream infrastructure through 2035—A secure energy future report*, June 27, 2011, http://www.ingaa.org/Foundation/Studies/14904/14889.aspx.

Contacts

John England
+1 713 982 2556
jengland@deloitte.com

John England is Vice Chairman and US Oil & Gas leader for Deloitte LLP.

Vikram Mahidhar
+1 617 437 2928
vmahidhar@deloitte.com

Vikram Mahidhar is a director in Deloitte LLP's innovation group. He focuses on identifying emerging business ideas and driving development and commercialization of emerging products and services.

David Schatsky
+1 646 582 5209
dschatsky@deloitte.com

David Schatsky is a senior manager with Deloitte LLP. His focus is analyzing emerging business and technology trends.

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