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Drilling Boom Revives Hopes For Natural Gas

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American natural gas production is rising at a clip not seen in half a century, pushing down prices of the fuel and reversing conventional wisdom that domestic gas fields were in irreversible decline.

The new drilling boom uses advanced technology to release gas trapped in huge shale beds found throughout North America -- gas long believed to be out of reach.Natural gas is the cleanest fossil fuel, releasing less of the emissions that cause global warming than coal or oil.

Rising production of natural gas has significant long-range implications for American consumers and businesses.A sustained increase in gas supplies over the next decade could slow the rise of utility bills, obviate the need to import gas and make energy-intensive industries more competitive.

While the recent production increase is indisputable, not everyone is convinced the additional supplies can last for decades. ''The jury is still out how big shale is going to be,'' said Robert Ineson, a natural gas analyst at Cambridge Energy Research Associates, a consulting firm.

Still, many people in the natural-gas industry believe a new era is at hand, and a rising chorus of Wall Street analysts and Congressional lawmakers supports that notion.Competition among companies for rights to the new gas has set off a frenzy of leasing and drilling.

''It's almost divine intervention,'' said Aubrey K. McClendon, chairman and chief executive of the Chesapeake Energy Corporation, one of the nation's largest natural gas producers. ''Right at the time oil prices are skyrocketing, we're struggling with the economy, we're concerned about global warming, and national security threats remain intense, we wake up and we've got this abundance of natural gas around us.''

Senior Democrats in Congress are getting behind natural gas, portraying it as an alternative fuel for transportation that can serve as a stopgap until renewable sources of energy, like solar and wind power, become economical on a broad scale.

''You can have a transition with natural gas that is cheap, abundant and clean,'' the House speaker, Nancy Pelosi of California, said Sunday on ''Meet the Press'' on NBC.

She also said that an investment she and her husband had made in a company that produces natural gas for use in automobiles, revealed last week by The Wall Street Journal, was not a conflict of interest because "I'm investing in something I believe in."

Representative Rahm Emanuel of Illinois, the chairman of the House Democratic caucus, has introduced legislation to offer more tax credits to producers and consumers of natural gas and mandate the installation of natural gas pumps in some service stations.

Domestic gas production was up 8.8 percent in the first five months of this year compared with the period a year earlier, a rate of increase last seen in 1959, during the great drilling boom that followed World War II.

Most of the gain is coming from shale, particularly the Barnett Shale region around Fort Worth, which has been under development for several years.The increase in gas production stands in sharp contrast to the trend in domestic oil production, which has been declining steadily since 1970 and dropped 21 percent in the last decade alone.

The Barnett region proved that, using new technology, **shale gas** could be extracted on a large scale.But lately, companies have set their sights on shale formations that could produce far more gas than the Barnett.

Testing to determine the productivity of fields has been completed on just a tiny fraction of the potential acreage.According to a new report by Navigant Consulting, paid for by a foundation allied with the gas industry, there could be as much as 842 trillion cubic feet of retrievable gas in shales around the country, enough to supply about 40 years' worth of natural gas, at today's consumption rate.But thousands of wells need to be drilled before the exact reserves will be known.

Domestic natural gas prices have already plunged 42 percent since early July, an even faster drop in price than oil or most other commodities, in part because the rapid supply growth has begun to influence the market.Price spikes remain possible, of course, but throughout the industry the shale discoveries are causing a shift in thinking about the long-term outlook.

Black or brown shales are a type of sedimentary rock, high in organic matter, found beneath millions of acres in at least 23 states, including New York.The rock has been known for more than a century to contain gas, but it was considered virtually worthless until a decade ago because typical wells on such sites would produce gas briefly and then die.

Now, companies are drilling long, horizontal wells and pumping in water to fracture the rock, releasing vastly more gas than could the vertical wells of old.

The Barnett was the first shale field to undergo major development, and gas production has gone up tenfold since 2001, so that it now produces 7 percent of the nation's supply of natural gas.At least two other shale formations, the Haynesville in Louisiana and Texas and the **Marcellus** in Appalachia, are believed to be even larger, though substantial production in those will take another two to five years.

Prospectors have identified at least two dozen shale beds in North America that could contain large amounts of gas.

"Production is clearly growing, and the growth is sustainable," said Michael Zenker, a natural gas analyst at Barclays Capital.

A Deutsche Bank report, by the analyst Shannon Nome, recently estimated that production from the eight largest shale fields was likely to hit 6.6 billion cubic feet a day this year, or 11.8 percent of national gas production, and then rise to 14.5 billion cubic feet a day by 2011 -- almost a quarter of domestic production.

"Shale is the most significant domestic natural gas find in 50 years," said Chris Ruppel, an analyst at the institutional brokerage firm Execution, "which means the United States will become gas independent, and more industrially competitive versus Europe for gas-intensive industries such as chemicals, fertilizer, smelting iron and aluminum."

Shale gas could ultimately be important beyond North America.The rest of the world has shale formations on an immense scale.Many of them are known to contain gas, but exploration and assessment of those fields with the new production techniques have barely started.

Several large shale fields are being explored in Canada.In the United States, real estate speculators are becoming overnight millionaires in Pennsylvania, Louisiana and Texas by buying up parcels of land and flipping them to companies that drill for natural gas.Wildcatters are ordering every rig they can get their hands on, and paying signing bonuses of $25,000 an acre to drill below houses, schools and churches.Pipeline companies are building as fast as they can to get the new gas to market.

As the frenzy unfolds, some energy experts urge caution in projecting how big the new supplies will be and whether they will alleviate the loss in productivity of conventional wells, particularly those in the Gulf of Mexico.

''It's hard for me to believe we will have more domestic gas production in six years than we have now,'' said Chip Johnson, president and chief executive of Carrizo Oil and Gas, a Houston company involved in several of the shale fields.

The Energy Department's 2008 estimates for **shale gas** reserves that may one day be economically produced stand at 125 trillion cubic feet, about a seventh of the most optimistic industry estimates.Jeffrey Little, a department gas analyst, said the government estimate was based on 2006 data and could increase after further testing.

''The larger reserves could very well be out there, but their magnitude is uncertain,'' he said.

Some industry experts warn that shortages of engineers and rigs, scarcity of pipelines near some shale fields and fights over land and water use could slow development in some states.

In the **Marcellus** field, drilling and pipeline work must be done over woody and hilly terrain, and enormous amounts of water are needed to fracture the shale.Drilling has been halted in places after local regulators caught companies drawing water from streams without permits.

''We see natural gas as potentially a very important transitional fuel, but we can't use it at the expense of our natural resources,'' said Kate Sinding, a senior lawyer for the Natural Resources Defense Council, who warned that water-intensive drilling in shale could threaten local water supplies and aquifers.

Domestic gas production was in decline from the early 1990s to 2005, before production from shale beds and some lesser unconventional fields led to increases beginning in 2006.In the meantime, consumption increased by more than 15 percent, satisfied largely by rising imports.

Prices in recent years soared from less than $2 per thousand cubic feet in 1999 to more than $13 as recently as last month, before a precipitous decline in recent weeks.Natural gas closed Friday on the New York Mercantile Exchange at $7.84 per thousand cubic feet, the lowest price since Feb. 1.

With the growth of power generation from natural gas, the Energy Department estimates that gas consumption will increase 3 percent this year and an additional 1.7 percent in 2009.But that is well below expected supply increases.

Such increases carry risks.Some in the gas industry fear that if prices fall too much, producers will pull back on their investments in drilling and development. ''If prices drop much more,'' said Mr. Johnson of Carrizo Oil and Gas, ''producers will slow down or at least not be as aggressive.''

CHART: TAPPING INTO SHALE: High prices for natural gas and new technology have allowed companies to tap **shale gas**, making it the fastest-rising source of new production.(Source: Navigant Consulting, via Cleanskies.org) (pg.A16)

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