**The New Power Map**

World Politics After the Boom in Unconventional Energy

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The energy map of the world is being redrawn -- and the global geopolitical order is adrift in consequence. We are moving away from a world dominated by a few energy mega-suppliers, such as Russia, Saudi Arabia, and Venezuela, and toward one in which most countries have some domestic resources to meet their energy needs and can import the balance from suppliers in their own neighborhood. This new world will feature considerably lower energy prices, and in turn, geopolitics will hinge less on oil and gas. Within the next five to ten years, regimes that are dependent on energy exports will see their power diminished. No longer able to raise massive sums from energy sales to distribute patronage and project power abroad, they will have to tax their citizens.

The revolution in unconventional energy production results from technologies that make drilling and extraction from underground shale formations increasingly easy and cheap. One cutting-edge procedure, hydraulic fracturing, involves injecting a mixture of sand, chemicals, and either water, gel, or liquefied greenhouse gases into shale rock formations to extract hydrocarbons. Although the technique was first conceptualized in 1948, only recently have other technologies arrived to make it commercially viable. (One such procedure, horizontal drilling, allows operators to tap into shallow but broad deposits with remarkable precision.)

Hydraulic fracturing has been used widely for only about the past five years. But the result -- a staggering glut of natural gas in the United States -- is already clear. The price of natural gas in the country has plunged to a quarter of what it was in 2008. The low price has prompted changes throughout the U.S. economy, including the projected retirement of one-sixth of U.S. coal power generation capacity by 2020, the conversion of hundreds of thousands of vehicles from gasoline to compressed gas, and the construction and repatriation from China of chemical, plastic, and fertilizer factories that use natural gas as both raw material and fuel. By 2025, the professional services firm PricewaterhouseCoopers predicts, energy-intensive industries will create a million new U.S. jobs.

Meanwhile, the United States is using innovative energy technologies ever more frequently to extract shale oil, tight oil, and methane from coal beds. Accordingly, the share of U.S. oil consumption that is imported from abroad has fallen sharply, from about 60 percent in 2005 to less than 45 percent this year. It will likely continue to decrease until the country, or at least North America, is energy self-sufficient.

The economic and geopolitical shockwaves will be felt worldwide. Decreasing demand in the United States for liquid natural gas, oil imports, and domestic coal is already reducing global prices for these commodities. As a result, European countries have a stronger position in negotiations over natural gas imports with Russia, from which they receive a quarter of their supply. The newfound leverage might have emboldened the European Union to open an investigation in September into a possible price-fixing scheme by Gazprom, the Russian energy giant. In addition, European countries have been negotiating fewer long-term gas contracts with Russia in which the agreed-upon price for the gas is pegged to that of oil -- the kind that Gazprom favors. Instead, they are opting for spot purchases -- short-term acquisitions based on market prices -- in the expectation of rising supplies and falling prices. Russia has already granted some countries roughly ten percent discounts on existing contracts.

Until recently, Gazprom was in denial about the shale gas revolution, claiming that unconventional gas technology was not commercially viable, and that it posed severe risks to the environment. Given that Russia raises most of its federal revenue from energy exports -- about 60 percent, according to most estimates -- a reduction in natural gas sales would be politically catastrophic. Both the collapse of the Soviet Union and the downfall of former Russian President Boris Yeltsin in the late 1990s coincided with periods of low energy prices; Vladimir Putin, the current president, knows this history all too well.

The problem is that all of his options in a world awash with cheap energy are bad. His regime could try to maintain Russia's market share in Europe by continuing to reduce prices, but that would mean accepting drastically smaller revenues. To make matters worse, Gazprom's profit margins are low. [Given that it sells 60 percent of its gas domestically at a loss](http://www.euractiv.com/energy/russias-natural-gas-dilemma-analysis-512092), Gazprom must obtain wide profit margins from its European exports to stay afloat. (Currently, it sells gas in Europe at about a 66 percent profit margin.)

On its exports to Europe, Gazprom needs to earn $12 per thousand cubic feet of natural gas just to break even. (The price of natural gas in the United States today is below $3 per thousand cubic feet.) Part of the reason for this is that the state and the elite siphon billions from the politicized, inefficient, and opaque monopoly. Such plain corruption coincides with geopolitical maneuvering in large pipeline projects: just as neighboring Alaska has its infamous bridge, Russia has pipelines to nowhere.

Consider, for example, Nord Stream, the undersea natural gas pipeline that connects Russia directly to Germany, bypassing both Ukraine and Poland. The project had no economic rationale; it would have been far cheaper for Moscow to come to terms with Kiev over transit fees. But Russia was unwilling to do so. As usual, corruption played a role, too: Arkady Rotenberg, the owner of the company that laid the pipelines, is Putin's childhood friend, and the Russian government paid him an exorbitant fee -- amounting to a profit margin of 30 percent -- for his work. Now, Gazprom is planning another pipeline folly, South Stream, which will again bypass Ukraine by traveling under the Black Sea to southern Europe.

Such outrageous infrastructure projects might become even more routine [if Gazprom attempts to recoup its falling revenues in Europe by upping its sales to China](http://www.gazprom.com/press/news/2012/december/article150629/). To do that, it would have to build long pipelines across unforgiving Siberian terrain. That task would pale in comparison to the challenge of convincing China to pay anything close to what Russia currently charges European countries -- not only because the Chinese are tough negotiators but also because China possesses the largest deposits of shale gas of any country in the world (886 trillion cubic feet compared with the United States' 750 trillion, the world's second-largest deposits). Although China is just beginning to tap its gas deposits, by the time any Sino-Russian pipeline project could be completed, it might be churning out enough unconventional gas to be energy self-sufficient. According to Chinese government estimates, the country has enough natural gas to provide for its domestic needs for up to two centuries. The only hope for Gazprom is that Chinese shale rock formations will not respond well to the new technologies -- but there is no reason to believe that this will be the case.

For now, Russia has been attempting to protect its market share by simply preventing unconventional energy technologies from spreading. For its part, the United States, through its 2010 Unconventional Gas Technical Engagement Program, transfers technologies to nations that it would like to see become more energy independent, such as India, Jordan, Poland, and Ukraine. Countries that achieve greater energy independence, Washington assumes, will be less susceptible to bullying from unfriendly petro-states.

Russia, meanwhile, is attempting to block or at least slow the process. One of Moscow's favorite tactics involves pressuring companies that want to do business in Russia not to explore for shale gas elsewhere. For example, [Moscow might have pressed ExxonMobil to pull out of Poland](http://www.forbes.com/sites/matthewhulbert/2012/07/12/why-european-shale-is-totally-fracked/), which could have the largest shale gas deposits in all of Europe, in exchange for a cooperation agreement with Rosneft. As always in the free market, however, when one company exits, another rushes to fill the void. The U.S. company Chevron has commenced shale gas and oil exploration throughout the region between the Baltic and Black Seas. The financier George Soros, moreover, has already invested $500 million in unconventional energy projects in Poland.

A more effective Russian tactic involves financing environmentalist groups to lobby against shale gas. So far, there is no credible scientific evidence that hydraulic fracturing has adverse effects on either air or water. Several studies, including ones conducted by the Royal Society, the U.S. Secretary of Energy Advisory Board, and the International Energy Agency, have concluded that hydraulic fracturing is reasonably safe when properly regulated. Yet, following a swell of environmentalist protests, both Bulgaria and the Czech Republic recently imposed moratoria on the use of the technology. The mark of outside influence is clear: In Bulgaria, there are rarely demonstrations of any kind, and in the Czech Republic, environmentalist groups have remained mum on other major issues, namely, the planned expansions of the nuclear power station in Temelín.

The former members of the Soviet bloc -- such as Bulgaria, the Czech Republic, Poland, and Ukraine -- still purchase all or most of their natural gas from Gazprom. Poland and Ukraine have enough potential shale deposits to free themselves entirely from this dependency. Although Bulgaria and the Czech Republic are not so blessed, even modest domestic production can challenge Gazprom's monopoly power and reduce the price of imported natural gas.

Some analysts have predicted that Asian demand for energy is virtually endless, and thus that energy prices are unlikely to fall substantially. [But as the Morgan Stanley analyst Ruchir Sharma has argued](http://www.foreignaffairs.com/articles/138219/ruchir-sharma/broken-brics), Asian economic growth is slowing and might soon flatten. Meanwhile, with ever-growing energy supplies from unconventional sources, newly discovered undersea gas fields off the coast of East Africa and Israel, and increased drilling in the Arctic, the world may soon enjoy an energy glut. At the very least, an era of lower global energy prices appears inevitable.

For Russia, the best scenario is that the energy glut will force structural reforms akin to those that Estonia and Poland underwent in the 1990s and that Russia started but never completed. Such changes could eventually lead to the establishment of real democracy and the rule of law there. In the coming years, sheer economic necessity and looming bankruptcy will force Russia to reform. But throughout Russian history, modernization has not normally resulted in liberalization; and there is little evidence that this time will be any different.

Nevertheless, unconventional energy technology has not only arrived -- it is here to stay. As new lines are drawn on the energy map of the world, many of the oldest and most stable geopolitical truths will be turned on their heads. It would be prudent for the tyrants who depend on revenues from energy exports to start planning for retirement.