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The U.K. Becomes a Shale Gas Player

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Summary

The United Kingdom may have significantly more shale gas resources than previously thought. Early estimates indicated that the United Kingdom had less than 1 trillion cubic meters of shale gas, but a British



(Photo by Christopher Furlong/Getty Images)
A drilling rig stands above the Bowland shale formation near Blackpool, England, in 2011.

Geological Survey report published June 27 suggested the country could have as much as 64 trillion cubic meters, though this figure seems very optimistic. If these estimates prove accurate, the United Kingdom would be among the world's most promising shale gas producers outside North America. However, several obstacles stand in the way of the country's developing a robust natural gas sector.

Analysis

In 2004, the United Kingdom became a net natural gas importer partly because of declining reserves in the North Sea. Currently, the country is one of the world's top 10 natural gas importers. It receives much of its natural gas via pipeline from Norway, but Norway, too, is facing declining reserves in the North Sea.

London wants to reverse this trend so that it does not have to spend so much money buying and re-gasifying foreign natural gas, and it is taking the necessary steps to promote shale gas exploration. For example, the British government has already removed a ban on hydraulic fracturing, and the fact that it is more business-friendly than most other countries with large shale gas resources, such as Argentina, could ease development eventually. But since British shale gas exploration is still in its infancy, it is unclear how much the country will be able to produce.

Shale Gas Potential

According to the British Geological Survey, the shale gas potential is there. Specifically, the group looked at central England's Bowland Shale formation, which it believes contains between 23.3 trillion and 64.6 trillion cubic meters of natural gas in place. (Gas in place differs from technically recoverable reserves, which is the amount of gas in place that can be produced with current technology.) Most likely, the formation contains some 37.6 trillions cubic meters of shale gas.

Notably, the British Geological Survey did not specify how much shale gas is technically recoverable in Bowland. Geologists often use the porosity and thickness of the shale in question to calculate that number, and generally recoverable reserves are 20 to 30 percent of gas in place. So even if Bowland's reserves are on the lower end of estimates, it could contain 4.6 trillion to 13 trillion cubic meters of shale gas -- roughly the same amount as Poland, which along with the United Kingdom has been among Europe's strongest advocates of shale gas development.

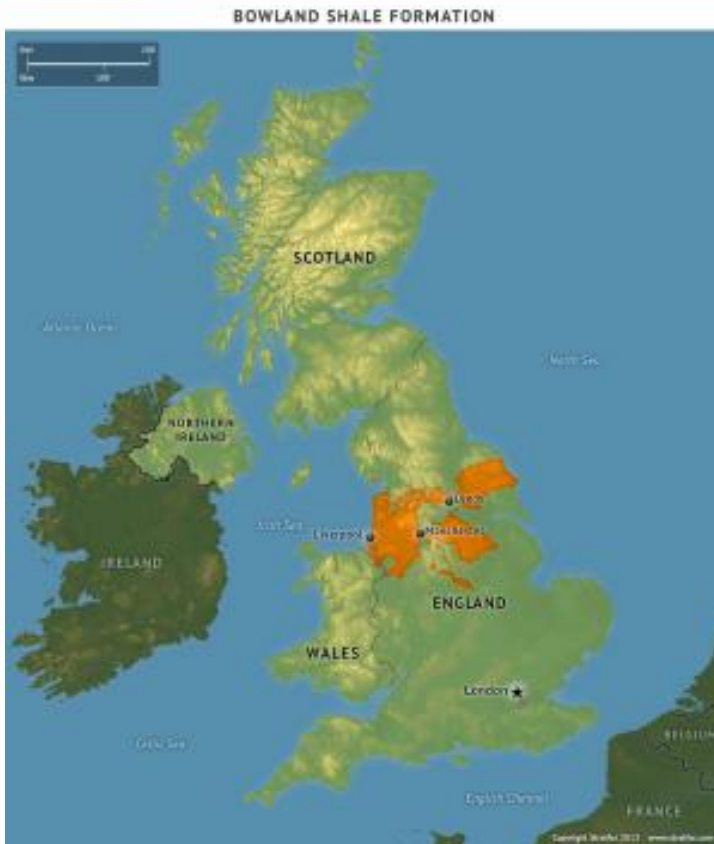


Image: [The United Kingdom's Bowland shale formation](#)
potential foreign policy tool.

Shale gas could indeed revolutionize British energy security. If shale gas were brought online, the United Kingdom would first address its domestic energy needs. Of course, this will worry some of the United Kingdom's liquefied natural gas suppliers, such as [Algeria](#) and [Qatar](#). It could then export to Continental Europe, which has long been one of Russia's most important export markets. In the longer term, larger reserves and greater energy independence will likely give London more leverage against countries that supply its energy and enable it to use energy as a

But the United Kingdom would have to develop its export infrastructure before it could ever compete with any other natural gas exporter. Currently, most of the projects in the country cater to liquefied natural gas. In November 2012, BP announced that it was contemplating [expanding the Nord Stream pipeline to the United Kingdom](#) -- an option that had been long considered but was originally blocked because of BP's involvement in other projects in Russia.

The United Kingdom's potential reserves likely will factor into any future price negotiations and infrastructure development. And since there is so much uncertainty surrounding its development, the Nord Stream expansion project likely will be scrapped, and the United Kingdom probably will continue to import liquefied natural gas for several years.

Obstacles to Development

Stratfor has identified five factors [that enable countries to develop their shale gas reserves rapidly](#): shale gas formations, small entrepreneurial energy companies, access to capital, pipeline infrastructure and water. While these factors do not constitute an ironclad development model, countries in which these factors are present are better positioned to develop their resources. The United Kingdom is the one of the few countries outside North America that possesses all these factors.

But drilling for shale gas did not start until 2010, when British energy company Cuadrilla Resources hydraulically fractured the country's first well. During the drilling process, Cuadrilla Resources triggered minor earthquakes at a nearby fault line. London responded by temporarily banning hydraulic fracturing so that its environmental impact could be studied. The ban was lifted in December 2012, but only a handful of wells have since been drilled, and none of them has been hydraulically fractured.

Bowland is going to be very difficult to develop. Every shale formation is different, and while the techniques used to extract natural gas -- hydraulic fracturing and horizontal drilling -- generally do not change, the techniques unique to Bowland's specific geology will take time to learn.

Moreover, the formation is geologically complex. The shale formation has several faults -- hence the risk of earthquake. Environmental reviews ruled that hydraulic fracturing should be permitted, but most of Bowland's development will take place near populated areas, where the damage from potential earthquakes could be particularly severe. It is possible that drilling would trigger another small earthquake. Were that to happen, London may be forced to ban hydraulic fracturing again.

Notably, the geology is not completely disadvantageous. Bowland shale is much thicker than shale found in the United States. This means that developers could drill multiple wells in one location, minimizing the amount of infrastructure on the ground and rendering more natural gas per acre.

Political Will

Although the geology is daunting, the United Kingdom has clearly demonstrated the political will to exploit it. In March 2013, London announced a plan to provide tax breaks to incentivize shale development. The government hopes to implement these incentives sometime in 2014. The government also is trying to rally popular support in communities sitting above shale formations. Landowners receive no royalties because the British monarchy controls all mineral rights. To offset this, there is a proposal to make natural gas companies pay 100,000 pounds (about \$152,000) for each well they fracture and contribute 1 percent of revenue from shale gas sales to the communities. Companies are also working with the United States on helping the United Kingdom develop better regulations for hydraulic fracturing and speed up the process by which contracts are approved.

Prime Minister David Cameron's Conservative Party, the biggest party in the government's ruling coalition, leads the pro-shale camp. This support had been a source of tension with the coalition's junior partner, the Liberal Democrats, who were worried about the ecological impact of hydraulic fracturing. The Liberal Democrats have recently softened their position under pressure from the Conservatives, but the issue will remain controversial. Despite concerns from environmental groups, the government is convinced of the strategic importance of developing new sources of energy to ensure self-sufficiency.

It is unclear how far shale gas exploration and production will progress in the United Kingdom. But the June 27 report is nonetheless significant because it has made the United Kingdom an important global shale gas player -- regardless of whether London can overcome the various challenges facing shale gas' development. Companies plan to drill an additional 20 to 40 wells over the next three years to further evaluate production potential. Once these are completed and analyzed, there will be a clearer picture of how big shale gas could be in the United Kingdom.

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