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Shale Gas: A Game-Changer with Global Implications

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Less than a decade ago, companies were planning large scale investments that would allow them to substantially increase shipments of liquefied natural gas (LNG) to the United States from Africa, the Middle East and Australia. This was spurred by the expectation that indigenous supplies would continue to dwindle and demand, particularly for power generation, would continue to grow. However, success in the development of domestic U.S. shale gas has turned this thinking on its head. In fact, growth from the production of shale gas in the United States has contributed to low capacity utilization of the LNG regasification terminals in North America, and modeling at the Baker Institute indicates that this trend is likely to continue into the early 2020s.

The recent and expected future expansion of North America shale gas production has an important implication for the global natural gas market and the geopolitics of natural gas in Europe and, to a lesser extent, Asia. Namely, it will lower the import requirement of the United States relative to what it would have been. A lower LNG import requirement for the United States effectively diversifies the global gas supply portfolio by increasing the available supply to the global market. Thus, supplies otherwise intended for North America can be redirected, even if still in the planning phases of development. To the extent that supplies are redirected, growth in shale in North America benefits European nations in their supply diversification efforts, as well as Asian countries seeking to expand their natural gas imports. In short, expanded supplies in North America, or in any major consuming region for that matter, weaken the leverage that Russia and other major gas-exporting countries, such as those involved in the Gas Exporting Countries Forum, might have on consuming nations moving forward.

Energy security benefits accrue to all natural gas importing countries as a result of new shale developments in the United States and Canada. To the extent that supply growth comes from countries and regions with a history of instability, greater reliance on those sources increases the likelihood of a major disruption in the global gas market. North American shale abates that reliance and reduces the risk of a major global disruption, thereby having significant geopolitical implications. For example, Baker Institute modeling indicates that supply from Iran tends to increase the most when factors inhibit the growth of North American shale supplies. This indicates that Iranian leverage is lessened as a result of expanded shale gas developments in North America. Similarly, as discussed above, expanded North American shale production strengthens the hand of European consumers in dealing with Russia. While shale gas is but one element of the global gas market, it is important to fully understand the broader implications of this new resource.

Timing of future developments is important. Many of the resources in play will have similar costs to the burner-tip, so first-mover advantage is crucial. Recent indications of a change in strategy by Russia with regard to international oil company (IOC) participation in the development of its potentially vast resources in the Yamal peninsula are a strong indicator that Russia understands the potential costs it may incur if it does not move forward quickly. While shale gas developments may reduce the share of the North American market that can be captured by Russian LNG, Gazprom runs the risk of losing significant market share in Europe if it fails to move decisively with plans to develop the Yamal resources. This point is made even more salient by recent interest in shale potential in Eastern Europe. If potential shale resources in countries like Germany, Hungary and Ukraine, as well as other Eastern European countries, prove to be commercially viable, Russia could have a real problem on its hands. On Oct. 1, 2009, Christian Wulff, prime minister of Lower Saxony, Germany, visited the Baker Institute and discussed his interest in developing shale gas in Lower Saxony. ExxonMobil Exploration Company executive Tim Cejka told the audience at the event that ExxonMobil hoped to identify shale gas resources in Germany and other large end-use markets. Moreover, he believed that the shale gas potential outside the United States was substantial. Click here to view a webcast of this event.

Gazprom's sudden renewal of interest in developing the Yamal in partnership with IOCs probably serves two purposes. First, Gazprom might be hoping that its offer will shift IOC focus (and their capital) back to Russia, in hopes of diverting efforts away from interest in shale resources in Europe. However, the IOCs do not have a great track record with investments in Russia, so this may be wishful thinking. Second, Gazprom must act quickly to defend its strong market position in Europe against an increasing number of competitors. Not only is maintaining a reliable flow important, but expansion is also crucial. Other suppliers are studying new ways to penetrate the European market, such as Qatar's recent interest in developing an LNG receiving terminal in Poland or the Caspian states' willingness to entertain discussions about developing pipeline routes to Europe that bypass Russia. Moreover, shale is a potential threat. If Russia can successfully expand Yamal production, it could quiet some of these potential competitors. Gazprom's visible expansion into the North American market via LNG trade, once tied to gaining access to a growing and premium market, might now be more to keep the option open to redirect LNG cargoes to the United States to prevent it from having to either temporarily shut in production or flood the European market.

As technologies applied to shale formations in the United States are applied to shale formations in Europe and Asia, it is possible that the nature of gas supplies will change substantially. Rather than expanded reliance on Russia and the Middle East, we could very easily see lower reliance on those countries, which dramatically changes the dynamics at the negotiating table and geopolitically. The mere threat of shale gas developments in Europe, if credible, could alter the behavior of Gazprom in supply negotiations. Not only might they be more open to foreign investment, but they could also be more willing to accept a move away from explicit oil-indexation, a move seen by many as inevitable. Time will tell if the shale potential plays out in Europe and even in Asia, where there has also been some recent interest. It has certainly changed the game in the North American natural gas market, so at the very least it should have everyone's attention.

- View graphs and slides that illustrate this blog.
- To view slide presentations used during the Baker Institute's Oct. 1, 2009, event with Christian Wulff, click here and scroll to the link above each panelist's name.