KIEP

WORLD ECONOMY UPDATE

May 20, 2013 | Vol. 3 No. 23

The Rise of Shale Gas and Russia's Countermeasures

ISSN 2233-9140

Kwon Hyung Lee Research Fellow, The Middle East Team, Center for Emerging Economies Research (khlee@kiep.go.kr)
Sung Hoon Jeh Research Fellow, Russia-CIS Team, Center for Emerging Economies Research (shjeh@kiep.go.kr)
Boogyun Kang Researcher, Russia-CIS Team, Center for Emerging Economies Research (bgkang@kiep.go.kr)

1. Introduction

The recent expansion of shale gas development in the US has been greatly contributing to the drop in natural gas prices in the country, and to job growth and enhanced competitiveness in relevant manufacturing areas such as the petrochemical industry. Since the first half of 2009, the US natural gas spot price (Henry Hub), unlike the crude oil (WTI) spot price (Cushing Hub), has been showing a steady downward trend. Lowered gas prices have been serving as cause for cost cuts in gas production, the petrochemical industry, the primary metal industry and so forth, and this is helping improve price competitiveness in the US manufacturing sector. Spot price decoupling between crude oil and natural gas has led to a change in the energy mix, with natural gas enjoying higher consumption.

Other countries with shale gas reserves, aside from the US and Canada, are benchmarking the "shale gas revolution" in the US by pushing ahead with national exploration and development projects. China, which is known to have the world's largest shale gas reserves, plans to begin full-fledged shale gas production in 2015, not only through energy cooperation with the US, but also through capital and technology cooperation with major global energy companies. Argentina and Mexico, the largest shale gas reserve holders in Central and South America, have already succeeded in trial production, and plan to start full production in the late 2010s.

In Europe, Poland and Ukraine are strongly pushing for the initiation of shale gas projects as a means to reduce dependency on Russian gas.

Meanwhile Russia, which has the world's largest natural gas reserves, is being threatened by the shifts in the energy market to be brought about by the shale gas boom in the US and by production efforts in other countries holding shale gas reserves. Shale gas production has led to increased supplies of LNG from Qatar to Europe, and the economic recession has caused Europe's gas consumption to fall. As a consequence, gas prices in Europe have been on the descent, and European energy companies are in turn demanding price reduction on supplies from Russia's Gazprom. While Russia is in growing need of a new market to sell on, the task is proving to be rather challenging, as seen in the delay of the gas supply contract signing with China, Asia's largest gas consumer. This paper takes a look at threats to Russia's natural gas industry and the corresponding countermeasures, as well as policy implications for Korea.

2. Threats Posed by Shale Gas Development

With the growth of shale gas production in North America, LNG and coal supply to Europe increased, resulting in a drop in natural gas spot prices. As the US made the transition from a natural gas net import country to a potential net export country, LNG supplies from Middle Eastern countries like Qatar shifted direction from the US market to Europe. Meanwhile, as demand for gas in the US replaced demand for coal, the US started exporting more coal to Europe, contributing to increased coal supplies in European countries. Gas spot prices are forming at levels lower than Gazprom's oil-linked indexation, and consequently European energy companies are demanding renegotiations on contracts with Gazprom based on spot prices.

Gazprom, which produces 80 percent of Russian natural gas and monopolizes exports, is struggling with worsening profitability in its largest export target, Europe. It is also facing the inevitable task of having to reconsider its long-term supply contract model based on oil indexation. On top of this, in September 2012, the EU launched an investigation into the company's involvement in violating antitrust laws. Amid these developments, the company is seeking measures to deal with the transforming gas market.

To make things worse for Gazprom, Europe is witnessing a slowdown in demand for gas. According to the IEA, in the EU, Gazprom's largest export market, there was an 11 percent drop in natural gas consumption in 2011 compared to the year before, marking the largest decrement ever. The IEA points out the key cause behind this phenomenon as the shale gas development in the US leading to cheap gas supplies, thus cutting coal consumption in the US, the world's second largest coal consumer, and this in turn prompting US coal producers to export the remainder to Europe, which consequently led to Europe's gas-coal switch. Although the EU has been at the forefront of greenhouse gas reduction efforts, the combination of the shale gas boom and the economic recession has caused coal imports from the US to triple in the first half of 2012 compared to the same period a year ago. Such swelling coal consumption has brought about the 'golden age of coal.' Europe's policy efforts to diversify gas import sources are also weakening Gazprom's position in Europe. Ever since the 2009 Russia-Ukraine gas dispute temporarily cut off Russian gas supplies, countries in Europe have

been continuing to seek diversification of sources as a means to secure energy security. Gazprom's forecast for 2013 remains bleak, as oversupplies of LNG in Europe are expected to shrink the company's market share.

To make up for falling gas consumption in Europe, in November 2009 the Russian government announced the "Energy Strategy to 2030" as a blueprint for diversifying energy exports to Northeast Asian countries like China, shifting away from its focus on Europe. China is expected to become the world's fastest-growing gas consumer, currently ranking fourth in terms of market size behind the US, Russia and Iran, with an annual average growth forecast of 6.6 percent from 2010 to 2035.[1] However, the signing of the gas supply contract between the two countries is being delayed due to differences in opinion. In October 2004 Gazprom and the CNPC signed the "Agreement of Strategic Cooperation," and in March 2006 signed the "Protocol on Natural Gas Supplies" that agreed on basic principles concerning the duration, volume, route and pricing of gas supplies. In June 2009 the governments of China and Russia concluded an MOU on natural gas cooperation, and in October of the same year Gazprom and CNPC inked the "Framework Agreement on Major Terms and Conditions for Natural Gas Supply from Russia to China." Plans were to wrap up the contract signing by 2011, but a dispute over pricing is continuing to delay the process.

Some of the key reasons behind this delay are the increase of gas imports from Turkmenistan along with the expansion of shale gas development in China. A gas pipeline linking Turkmenistan and China (8,700km in length, USD 22 billion in construction costs) was completed in November 2011, and Turkmenistan plans to use this to increase gas exports up to 65 bcm by 2015. Meanwhile, China is aiming to complete the exploration of its shale gas reserves and produce 6.5 bcm from 19 shale gas blocks by 2015, when its 12th Five-Year Plan comes to a close, and also take a major jump in commercial production by 2020.

3. Russia in Response

As of recent, there has been growing crisis awareness among the Russian government and Gazprom management concerning the impact of shale gas development on Russia's gas industry. The State Duma Committee for Energy did suggest, in March 2010, the necessity for studies on the impact of shale gas development in the US and China, but then energy minister Sergey Shmatko contended that such changes would not be able to affect the balance of the global energy landscape. However in August 2012 Deputy Minister of Economic Development Andrei Klepach pointed out that heightened shale gas production and less gas demand in Europe fundamentally adjusted export volumes and price forecasts for Russian gas, and stressed that shale gas may have a much stronger impact than expected.

At the Meeting of the Commission for Strategic Development of the Fuel and Energy Sector and Environmental Security held in October 2012, President Putin mentioned the development trends of US shale gas and requested that Russian companies actively respond with appropriate measures. To address the issue, Putin instructed Gazprom to analyze and report on the basic principles of gas export policies, and the Ministry of Energy to make adjustments to the "Master Plan for Gas Industry Development to 2030" and the

[1] IEA(2012), *World Energy Outlook 2012*, p. 128.

"Eastern Gas Program." Since then, government ministries and companies relevant to the sector have been pushing ahead with research and studies on shale gas.

As part of efforts to maintain market share in the European gas market, Gazprom is modifying the long-term gas supply contracts that it holds to provide discounts on gas prices. From 2011, under the condition that purchasing volumes are kept at a level on par with 2007, Gazprom has been giving Estonia and Latvia a 15 percent discount on gas prices. Gazprom Eksport, a Gazprom subsidiary, announced in January 2012 that it agreed to reduce gas prices for five European energy companies based in Germany, France, Italy, etc. In March 2012 Gazprom CEO Alexey Miller and Italy's Eni CEO Paolo Scaroni made an additional agreement to cut gas prices by 6 percent, or USD 24 per 1,000 cubic meters. In November 2012 Poland's PGNiG and Gazprom settled on cutting gas prices by 16 percent, or USD 460 per 1,000 cubic meters.

Russia is also coping with European countries trying to reduce energy dependency on Russia by aggressively expanding infrastructure as a means to increase gas supply. The second line of the Nord Stream gas pipeline (linking Russia and Germany through the Baltic Sea, 1,224 km long) started operation in October 2012, boosting its annual feeding performance to 55 bcm, up from 27.5 bcm. The South Stream (linking Russia and Central and Southern Europe through the Black Sea), initiated with the aim of diversifying natural gas export channels, started construction in December 2012 with the goal of beginning operation by late 2015.

With the US planning to ramp up gas exports to Northeast Asia, Russia is hastening to establish infrastructure that would help expand the market for Russian gas. At the Meeting of the Commission for Strategic Development of the Fuel and Energy Sector and Environmental Security held in October 2012, Putin pinpointed increasing shale gas production and subsequent growth in LNG trade as threats to Russia's standing in the global energy market, and underlined that new opportunities are to be found in Northeast Asia, where energy consumption is on the rise. On October 30, 2012, Gazprom made the final decision to invest in developing the Chayanda field, in the gas pipeline connecting Yakutia and Vladivostok via Khabarovsk and in the Vladivostok LNG plant construction project.

4. Implications for Korea

As the expansion of US shale gas production will boost gas supplies, prices in general are expected to face downward pressure. The steady downward trend in gas prices has already been displayed through the spot price decoupling between natural gas and crude oil in the US. With the production of unconventional gas resources hitting stride since late 2010 in China and Australia, among other countries, it is becoming clearer that there will be increased liquidity and downward price trends in the future natural gas market. This will lead to expansion in the LNG market, as well as a relaxation of strict conditions in existing long-term supply contracts that involve oil indexation, take-or-pay requirements and destination restrictions. Therefore, deterioration in export conditions will be inevitable for conventional gas exporters like Russia or Qatar.

Aside from bringing changes to the global gas market, shale gas development in the US also incurs changes in the supply and demand or prices of other energy resources, and serves

as cause for geopolitical conflict. The drop in gas prices has led to changes in the relative price structure among key energy resources, which can ultimately result in large differences between supply and demand volumes or price levels per energy resource depending on the specific time or place. In addition, while looming as a major threat to countries with abundant conventional gas resources like Russia, Qatar and Iran, the expansion of shale gas development in the US is also affecting the EU's new and renewable energy policies and gas trade between EU and Russia.

Downward price trends caused by shale gas development, rather than directly affecting gas import prices for Korea, will have an indirect impact following changes in the energy market structure caused by increased LNG supplies and the corresponding measures taken by conventional gas exporters and major energy companies. Since the Asian market, including Korea and Japan, has higher demand for gas than supply, prices will inevitably be higher than in the US or Europe, and tacit price-fixing among gas production companies may lead to the formation of monopoly pricing. If gas prices maintain a steady downward trend, gas consumption will rise across the globe, and this will absorb the increase in gas supplies, which means that prices may not drop by such a sharp degree.

Therefore, Korea should take a comprehensive view of how the US shale gas development trend will affect the energy market as well as geopolitical relations, and build an energy import system that can improve stability in energy supply and better conditions for energy consumers. Through accurate analyses of scenarios on supply and demand or price changes in key energy resources, as well as analyses by region, it is necessary to establish a system that can determine the resources, timing, volume and import country appropriate for the energy consumption environment in Korea. Also, the profit margin incurred by price drops in key energy resources like oil or gas should be used not to the benefit of the importing entity, but to make energy consumption more convenient for the Korean people.

Russia is working to expand gas exports to Northeast Asia by expediting infrastructure construction, and Korea should put this opportunity to full use by reinforcing energy cooperation with Russia. The gas pipeline project between Russia and North and South Korea should continue ahead, since it can diversify gas import channels and help lower import prices. The Vladivostok LNG plant, set to enter construction in 2013, will become a key export base to Northeast Asian countries including Korea, which means it would be best to actively participate in the project, for instance through investment shares. Russia is also planning to build gas chemical facilities in Belogorsk, in connection to the "Yakutia-Khabarovsk-Vladivostok" gas pipeline construction, and it may be a viable option for Korean companies to join this project.

The biggest problem in the Northeast Asian gas market is the "Asia premium" that results from higher demand compared to supply. It has been forecast, however, that supplies will increase considerably from late 2010. As a way to solve the oversupply of gas in the North American market, the US and Canada are planning to export LNG to Northeast Asia. Australia is also increasing production of unconventional gas resources like coalbed gas, and a portion of this will be supplied to Northeast Asia starting in late 2010. Large gas fields were recently discovered in Mozambique and Tanzania of East Africa, and if gas production moves ahead as planned, part of this will also be exported to Northeast Asia. Russia, to make up for falling gas de-

mand in Europe, is moving to increase PNG and LNG exports to the Northeast Asian market. Meanwhile, China plans to fully engage in shale gas production from late 2010 and use this to feed the country's own gas demand. With such elevated liquidity levels in the Northeast Asian gas market, regional gas trading centers are expected to play an important role, and by seizing this opportunity ahead of others, Korea can implement strategies to generate added value through gas-trading services such as storage, processing and futures trading. In order to establish a trading center, however, Korea must first secure the necessary infrastructure such as storage facilities, and reinforce bilateral and multilateral cooperation with neighboring countries. KIEP