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Forecast: Shale Gales Blowing across Russia?

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This brief comment outlines the changes underway in the production of unconventional gas in North America and sketches the possible chain of consequences for Russia's role as a gas exporter. *If* the current trend in the production of unconventional gas continues, it may have a considerable impact on Russia's export strategies and economic prospects. In an extreme scenario it might even undermine the viability of the Nord Stream, Shtokman and Yamal projects. Although much uncertainty remains, such hypothetical, non-research based scenarios provide a possible agenda for future research, which is the main purpose of this note. Hopefully it can also generate some discussion.

Shale gas

There are several kinds of unconventional gas; here the focus is on shale gas. In recent years, two technologies have transformed natural gas production in North America: horizontal drilling and hydraulic fracturing. Horizontal drilling makes it possible to access larger areas within hydrocarbon fields. Hydraulic fracturing involves injecting mixtures of water and sand at high pressure to crack rock so that it releases gas once considered unreachable. As a result of new ways of combining these two techniques, shale gas fields previously deemed unprofitable to develop have now become highly attractive. In the two decades from 1990 to 2010, the use of shale gas expanded from covering 10% of US supplies, to 40% – and is still increasing rapidly.¹ As a result, gas prices in North America, where the new techniques were pioneered, have fallen sharply.

Four consequences

These developments on the other side of the Atlantic could potentially have several consequences for Russian gas exports. Let us look briefly at four of them.

(1) The first consequence can already be observed. With prices in the North American market falling, it has become less attractive to develop LNG projects which depend wholly or partially on that market. Import terminals for LNG in the USA are running at 10% of capacity.² The USA, which was until recently expected to become increasingly dependent on imports, might even become a net exporter of natural gas in the long term. In 2008, net imports accounted for 13% of natural gas consumed in the USA,³ so it would not take much to close the gap.

(2) Because the North American market is saturated, more LNG from other parts of the world will also find its way to Europe, creating further competition for Russian gas there. Europe has excellent infrastructure in terms of a large number of reception terminals for LNG. In the North Atlantic Basin, LNG is supplied by countries such as Algeria, Nigeria, Libya, Trinidad and Tobago, Egypt and Norway. Any LNG not sold on long-term contracts and any future increases in LNG production (for example, from Angola) yet to be contracted may go to Europe, where there are already many import terminals, with more under construction or planned.

¹ Yergin and Ineson, 'America's Natural Gas Revolution', *Wall Street Journal*, 2 Nov. 2009, <http://online.wsj.com/article/SB10001424052748703399204574507440795971268.html>, accessed 1 Feb. 2010.

² 'Shale Gas Blasts Open World Energy Market', *Sunday Times*, 1 Nov. 2009, http://business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article6898015.ece, accessed 1 Feb. 2010.

³ EIA, 'Natural Gas Imports and Exports: 2008', http://www.eia.doe.gov/pub/oil_gas/natural_gas/feature_articles/2009/ngimpexp2008/ngimpexp2008.htm, accessed 2 Feb. 2010.

3. Although the geological potential is still poorly mapped, shale gas is likely to be found and extracted in Europe itself on some scale. The question is how much, at what cost and whether environmental concerns related to the use of large amounts of water in hydrological fracturing will dampen these developments in Europe (perhaps also in North America). The International Energy Agency has estimated that unconventional gas reserves could be six times greater than conventional gas reserves in Europe.⁴ There are currently projects to examine the shale gas potential in France, Germany, Poland, Sweden and the UK, and more countries will probably be added to this list. If – and this is still a major ‘if’ – there are big plays in unconventional gas in the EU and Ukraine, that would put downward pressure on natural gas prices in Europe, Gazprom’s profits and the financial buoyancy of the Russian state. Such trends would be particularly salient if countries such as Poland and Ukraine, keen to lessen their current dependence on Russian gas, were found to have major reserves of shale gas. That could lead to a reshuffling of today’s geopolitical power relationships in the region.

4. Unconventional gas also exists in the Asia-Pacific region, including in China, although there is great uncertainty as to the magnitude of reserves and whether they are suited for extraction. If these resources are developed on a large scale, Russian gas exports could be squeezed from both the West and the East. Increasing Alaskan, South American and Middle Eastern LNG exports to the Far East due to the North American (and possible European) glut could reinforce the eastern part of such a squeeze. However, the consequences in the Far East may prove smaller, because the energy deficit there is growing faster than in the West.

Broader ramifications

If Russian gas exports should become partially displaced by unconventional gas and LNG from other countries, that would reduce the interdependence between Russia and its customer countries, lessening Russia’s clout in the post-Soviet republics and Western Europe. It would also dampen economic growth in Russia and increase the pressure for an industrial policy more genuinely oriented towards innovation and manufacturing. On the other hand, there would also be less pressure to raise domestic Russian gas prices – thus *removing* an incentive for industrial diversification.

In a scenario in which shale gas is found and developed on a large scale in Europe as well as North America – still entirely hypothetical at this point – projects such as Nord Stream, Shtokman and Yamal (as well as Nabucco) might be cancelled, at least for the time being. Such developments would also mean that Russia would become a different energy partner. Besides the consequences for Russia, these developments obviously also have direct implications for Norwegian interests. The main concern is obviously that there should not be any major finds of shale gas in Sweden (where Shell is currently doing exploratory drilling).

In the longer term (say 20 years), a shale-driven global gas glut could also have some rather different consequences. Readily available supplies of gas worldwide combined with the enforcement of a global climate regime and steadily expanding global LNG production could result in an evolution towards a world gas market, or at least tighter linkages between today’s regional markets. The possible combined eastern and western squeeze of Russian export markets mentioned above would be one such interlinkage. In such a situation, Russia might

⁴ Eric Watkins (2010) ‘Shell Begins Drilling for Shale Gas in Sweden’, *Oil and Gas Journal*, 15 Jan., http://www.ogj.com/index/article-display/3531908459/articles/oil-gas-journal/drilling-production-2/drilling-operations/2010/01/shell-begins_drilling.html, accessed 3 Feb. 2010.

reinvigorate its initiatives towards Iran and other countries with major gas reserves, aiming at greater coordination of gas export policy and possibly even cartelisation. The potential emergence of larger spot markets with free trade in gas, driven by oversupply of unconventional gas and LNG, could prove particularly conducive to cartel-like behaviour.

Doubts

All these hypothetical developments would depend on the criss-crossing interactions between developments in the natural gas sector, global economic growth, the international climate regime and technological innovation. For example, the future international climate regime might promote gas strongly, thereby reducing the oversupply. Future technological developments could make unconventional gas cheaper to extract, or could allay the currently growing concerns about environmental impacts.

Actors oriented towards peak oil perspectives hold that unconventional gas will prove to be a mere blip. They argue that production of unconventional gas surges rapidly, only to plummet after a very short time. In that case, the consequences of unconventional gas outlined above are likely to be non-events. Others argue that the long-term costs of extracting shale gas will undermine it as a major factor. In that case the market is over-evaluating shale gas plays at the moment. If such critical voices are right, the shale gas frenzy and the resulting discount on Russian or other conventional natural gas assets could be a temporary buying opportunity.

In contrast, organisations and commentators critical of peak oil perspectives, among them Cambridge Energy Research Associates (CERA), believe that the growth in unconventional gas will have a long-term impact. They argue that even if the decline rates for unconventional gas are relatively high, the cost of drilling is recouped so fast that it will still make economic sense, and that the reserves of unconventional gas are so great (at least in North America) that it is always possible to move on to new fields. If they are right, the possible consequences for Russia outlined above deserve more thorough analysis.