

The impact of unconventional gas

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ALEXANDER MEDVEDEV graduated from the Moscow Institute of Physics and Technology and holds a PhD in Economics from the USSR Academy of Sciences. From 1989-91, he was Director of Donau Bank in Vienna and subsequently Director of IMAG until 1996. He joined OAO Eastern Oil Company as Vice-President in 1997 and served as Director from 1998-2002, at which time he joined Gazprom in his current role.

No one could say that the natural gas industry lacks challenges. The deep global recession with its sharp and unexpected fall in demand, the increasing pressures to move to low-carbon economies and the potential to exploit massive reserves of shale gas are just three challenges testing our industry's efforts at strategic planning. So, as the world slowly emerges from the economic crisis, where do we stand and what, more importantly, does the future hold for Gazprom and the industry as a whole?

I believe the picture is very positive. Indeed, I am confident that our industry faces a unique opportunity to fuel economic growth and spread prosperity.

Despite the doom-mongers – and thanks to coordinated action across the world – the global economy did not sink into depression. Economic growth is picking up across most parts of the world.

So, too, is demand for natural gas. In fact, demand was already back at 2007 levels last year when the financial crisis began seriously to feed into the real economy. As countries recover, it will reach new heights.

Nor has our industry any reason to fear the increased pressures to cut carbon emissions which, despite the failure of the Copenhagen summit, are rightly bound to re-emerge. Indeed, this is a tremendous opportunity if we have the confidence to lead rather than battle actions to reduce emissions and to argue strongly against those who persist in lumping natural gas with other fossil fuels.

Natural gas is not coal or oil. It produces much less carbon for each unit of energy. This makes it the best near- and long-term solution to meet the inter-linked goals of combating climate change and reliably powering economic growth and spreading prosperity.

There is, of course, a huge role for renewable energy



to play as we move towards a low-carbon world. Also, we are likely to see a new age of nuclear power.

But both renewable and nuclear energy are only part of the solution. They cannot fix the problems on their own. There are question marks about the reliability of wind or solar power since it is not in our gift when the wind blows and the sun shines. Some technologies, although promising, are a long way from development on even a fraction of the scale needed. Nuclear power is still more expensive and comes with its own environmental and security concerns.

In contrast, natural gas has proven reserves, is competitive in price and has a modern infrastructure already in place. Burning natural gas instead of coal reduces CO₂ emissions by 50-60 per cent. What is more, new gas-fired power stations can be built quickly, are highly reliable and provide value for money.

We have to have the confidence not to fight against carbon management but to sell natural gas as part of the solution. Without a greater reliance on natural gas, there is little prospect of meeting targets within Europe for a 20 per cent reduction in carbon emissions by 2020. For example, replacing every second coal-based power plant with modern gas-turbine units would be enough to see Europe achieve nearly half of its 2020 emissions reduction target. Reaching this target requires a change

of mind-set from governments. It requires government to come up with a specific policy for natural gas.

The rise of shale gas in the US has created expectations of an era of cheap gas and a new global energy balance. It could be, of course, that shale gas will also begin to play a bigger role in meeting energy needs in Europe as has already happened in the US. With seemingly inexhaustible reserves and low transportation costs, shale gas already has a solid share of the US gas market. It is expected soon to make up as much as 14 per cent of the country's gas production.

This has had a knock-on impact across the world, with less demand for LNG exports in the US. Coupled with the fall in demand due to the global recession, this has exacerbated the imbalance between supply and demand in the spot markets. With large reserves also being found in Europe, some have argued that shale gas poses a major threat to conventional gas producers such as Gazprom. I don't share these concerns. I believe shale gas reserves will be progressively developed, but only if this can be done in a way which is both environmentally responsible and cost-effective.

Here we are already seeing potential brakes appear on the shale gas revolution. Extracting shale gas requires more complex and expensive production technologies than conventional gas. Total well costs can easily be

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Pumping up the volume: demand for natural gas has already returned to 2007 levels and is expected to rise further as the economic recovery gathers pace

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three or four times the cost of a conventional well.

According to industry observers, few, if any producers, are making profits when the need to repay interest on the money borrowed to develop fields is taken into account. The result could as well be a price increase of shale gas in the US market.

These price constraints go along with increased pressure on the environmental record of the shale gas industry. The pressures will only increase following the disastrous oil spill in the Gulf of Mexico and heightened public awareness about the environmental consequences of energy exploration.

The US Environmental Protection Agency is already conducting a two-year study into the environmental and human health impact of shale gas drilling. The technology used to release the gas from shale beds uses huge amounts of water, along with potentially harmful chemicals that risk affecting underground aquifers supplying drinking water. While unlikely to halt development altogether, environmental concerns could well slow the growth in development and production. These same concerns are likely to have a bigger impact in Europe which is much more densely populated and which has, in general, stricter safeguards for the environment. There are also even bigger hurdles to overcome towards profitability.

Without the need to transport gas across the continent by pipeline, shale gas produced in Europe is potentially less costly than natural gas. The reserves are very large. According to the IEA, the recoverable shale gas reserves in Europe equal 16 trillion cubic metres or just a little bit less than half of Gazprom's



A Gazprom engineer directs construction on a new infrastructure project

known reserves. But preliminary exploration results suggest that different geology may prevent the simple transfer of American technologies across the Atlantic. ExxonMobil, for example, stopped working in the Mako Trough field in Hungary following two hydraulic fractures and disappointing results.

Even where these problems can be overcome, production costs seem likely to remain significantly higher than in the US. ConocoPhillips believes that, with geological characteristics similar to those of the Barnett field in the US, project profitability in Northern Poland can be achieved at the gas price level of US\$318 per mcm compared to US\$140-180 per million cubic metres in the richest sections of shale basins in the US.

There is the added complication that European land owners are likely to be less enthusiastic about the development of shale gas reserves. Unlike in the US, they do not own the mineral rights of their land and cannot claim a portion of the revenue from any future gas sales. For all these reasons, it is unlikely that we will see serious production of shale gas before 2015 with little chance of it providing direct competition to imported pipeline gas until 2020 at the very earliest.

And let's not forget there are abundant conventional gas fields in Russia which are linked through long distance pipelines to European consumers. So why should Europe switch to more expensive and ecologically questionable unconventional gas production? At Gazprom we are not against shale gas. We believe shale gas could be a useful partner to meet growing energy needs. The development of large shale gas fields is likely to see more countries place much more importance on gas in meeting future energy needs, as is already happening in China. The result is likely to be a major boost for gas as a clean fuel in the global energy mix.

Last year, the US Potential Gas Committee increased US gas reserves by almost 50 per cent, almost entirely on the basis of shale gas. If we see a similar reassessment in other countries, natural gas will increasingly be recognised as the plentiful and widely accessible resource. This will lead to much greater emphasis – and investment – to ensure gas is used as the primary fuel for power plants and for transport.

So, we should be enthusiastic partners in the drive to reduce carbon emissions. Natural gas fits the low carbon bill. We should, too, welcome rather than fear technological advances enabling us to harness new reserves of gas in new ways. If we do, I believe the long-term future for natural gas is bright. It is why Gazprom will continue to make the investment needed to help meet the needs of consumers, industry and economies for clean, affordable and reliable supplies of energy for many decades to come. **F**