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The Impact on OPEC of Rising North American Oil-and-GAS Production

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One of the most dramatic stories in the global oil-and-gas industry in the recent past has been the surge in the output of oil and gas from American and Canadian shale oil-and-gas reserves and from tar sands. For many commentators in the West, this presages the ultimate escape from the diktat of OPEC which, especially in the United States, they hold responsible for escalating oil prices in recent years. And within the United States itself, there is a growing belief that, as part of its economic and political recovery, America will free itself of its dependence on imported energy within a few years. Unfortunately, a more detailed look at the facts and figures behind this surge suggests that their optimism is only justified in part. It is certainly possible that the United States may well join Canada in becoming a net hydrocarbon energy exporter, but OPEC still has a number of options and prices are unlikely to fall too much just yet!

The new production dynamic in North America

There is no doubt about the production surge, as a result of the exploitation of oil-and-gas-containing shale. In the United States, for example, oil production has risen from a low of 6.739 million barrels per day (b/d) in 2008 to 7.8412 million b/d in 2011.ⁱ In last April alone it rose by 567,000 b/d over production in April 2011, coming mainly from shale oil from North Dakota and Texas – 1.2 million b/d output in April 2012.ⁱⁱ Tar sands in the United States remain to be fully exploited, with the largest deposits being in Utah which has an estimated 12-to-19 billion barrels of recoverable reserves.ⁱⁱⁱ

In fact, this oil production increase is the first significant and sustained rising trend that US producers have seen since 1980, hence the excitement. It has been the driver of a sustained growth in non-OPEC oil production in the first half of 2012, of 660,000 b/d.^{iv} Yet domestic production is still only one-third of domestic demand which has remained relatively steady, falling by under 1 million b/d between 2001 (19.649 million b/d) and 2011 (18.835 million b/d).

Canada is a minor player in this picture, with production at 3.522 million b/d in 2011, up 300,000 b/d on the 2009 figure, as part of a steadily rising trend, and domestic consumption at 2.293 million b/d in 2011. It is, therefore, a net oil exporter, mainly to the United States, and an increasing proportion of its production comes from tar sands and shale in Alberta. Its potential, however, is considerable and foreign companies are falling over each other to gain access to oil and gas acreage.

Petronas, the Malaysian state oil company, has just paid nearly \$6 billion to acquire Progress Energy, a Canadian company with a 331,000 hectare concession holding 500 billion cubic metres (bcm) of gas in the Montney Basin in British Columbia.^v Meanwhile, China's CNOOC has acquired Nexen Energy, another Canadian company with major concession holdings in the Horn River Basin in British Columbia.^{vi} That will, no doubt, compensate it for not acquiring Unacol for \$18 billion in 2005, as a result of Congressional intervention because of US fears of foreign (though particularly Chinese) control of a strategic energy asset.

The really dramatic key to the future, however, is shale gas. Ironically, its exploitation in the United States is not new; it began in New York state in 1825 but it has always been marginalised by dry gas fields, which have been far easier and cheaper to exploit. It was only when new techniques developed in the 1970s and when 'fracking' was perfected in 1998 by Mitchell Energy (with considerable federal help) that an economically efficient and viable industry began to develop. Production has risen rapidly – to 57 bcm in 2008 (71 per cent above the 2007 level) and 88 bcm in 2009. By 2010, shale gas was supplying 23 per cent of America's total natural gas production – already the world's largest – a percentage which is expected to rise to 49 per cent of the total by 2035.

The reserves figures are equally startling, for the Energy Information Administration (EIA) estimated in 2012 that the United States may have as much as 13.6 trillion cubic metres (tcm) of recoverable shale gas, whilst, up to 2011, total reserves of shale and dry gas were set at only 8.5 tcm, a figure which itself was almost double the 1991 figure!^{vii} Since 2005, American gas production overall has risen by 27 per cent to 651

bcm a year, against consumption levels of 690 bcm a year in 2011, leading to confident predictions that the United States will soon be a significant net natural gas exporter.

In fact, the Energy Information Administration has begun to codify its expectations for the future. In its Annual Report for 2012, it indicated detailed predictions of future American gas and oil production.^{viii} According to its baseline reference scenario, oil production from all sources will rise until 2021 and then begin a gentle decline, yielding an overall increase of 27 per cent by 2025. Gas production will grow by 22.5 per cent. Imports are expected to decline by 17.6 per cent for oil, 28.3 per cent for gas and by 25 per cent for refined products.

Until the advent of shale gas, Canada's natural gas reserves had been steadily dropping from 2.1 tcm in 1991 to 2tcm in 2011. Production had declined, too, from 187 bcm in 2001 to 160 bcm in 2010, against national consumption which had risen from 95 bcm in 2009 to 105 bcm in 2011. Canada's gas export industry thus seemed to be in terminal decline. However, the development of the fracking industry in Canada has transformed the picture.

With a potential reserve now estimated at 30 tcm and rapidly increasing estimates of recoverable reserves across the whole country, Canada seems set for a gas boom as big as that of the United States. Nova Scotia, Alberta (with the world's largest single discovery to date of 1 tcm by Apache Petroleum),^{ix} Saskatchewan (with reserves large enough to last for 100 years), New Brunswick and British Columbia all offer rich pickings. Only in Ontario, despite its copious reserves, is the picture gloomy because of popular rejection of the environmental consequences of oil-and-gas development.

There are good geological reasons for the apparent linkage in the fortunes of the gas-and-oil industry in the United States and Canada. The shale formations in which the oil-and-gas is contained stretch across the two countries' international boundary from America's southern states in two branches, one up through the Rocky Mountains into British Columbia and the other up through the Appalachian Mountains into New Brunswick and Nova Scotia. Given, too, the fact that the Canadian oil-and-gas industry services the United States as its major market, shared prosperity is hardly surprising either.

A threat to OPEC?

Nor is it surprising, therefore, that the good fortune of both is seen as a threat to OPEC and other non-OPEC producers alike. Certainly international oil-and-gas companies are concerned; the recent 52 per cent decline in American gas prices in 2011 to a Henry Hub price of \$3.07 per BThU (British Thermal Unit) as a result of increased production – just a quarter of the summer 2008 price – has caused losses for Shell of 13 per cent in its second quarter earnings for 2012 and of 27 per cent for ExxonMobil, whilst British Gas has written down the value of its natural gas assets in the United States by \$1.3 billion.^x Occidental has also given up on its holdings of oil and gas acreage in the United States because drilling costs have risen by 22.5 per cent since October 2009 and it fears that it will not be able to produce oil at a breakeven price of \$68 per barrel, as prices sink towards a ten year low of \$85-to-\$94 a barrel.^{xi}

China, on the other hand, has seen a strategic opportunity in the sudden growth in oil and gas production in North America. No doubt it is for this reason that 2012 has seen a spurt in Chinese energy merger-and-acquisition activities to an estimated \$60 billion in 2012, compared with an average of \$20 billion a year between 2008 and 2011 and virtually zero in 2007.^{xii} China now aims to produce 6.5 bcm of shale gas by 2015 and 60-100 bcm by 2020, from recoverable reserves estimated by the EIA at 36 tcm, but in the meantime will import what it needs. Similarly with oil, with imports of 5.6 million b/d in the first half of 2012, 11 per cent higher than in 2011 and expected to reach more than 12 million b/d by 2035, China's desperate need for imported energy will grow.^{xiii}

What, then, does all of this mean for OPEC? Is there a threat to its hegemonic role in world oil markets and, by extension, for gas prices – since world gas prices still tend to be influenced by oil prices, given the dominance of long-term contract arrangements over the spot market? First of all, one of the immediate consequences of the sudden surge in North American production of both oil and gas has been to put paid to the practical relevance of arguments based on the fallacious concept of peak oil. There may well be arguments based on profound environmental considerations and climate change which legitimately call for reductions in hydrocarbon energy usage, but natural constraints on energy availability no longer form part of them.

Secondly, although North America may well become much less dependent on OPEC in terms of energy supply in the next 10-to-20 years, it will not become decoupled from it. American import oil dependence will fall from 66 per cent of consumption in 2009 to 44 per cent in 2025 and import gas dependency will decline from 13 to 10 per cent, according to the EIA, but it will still need access to world supply. Nor is OPEC production declining, having risen by 2.25 million b/d in the first half of 2012, with prices buoyant at between \$80 and \$90 per barrel. In 2013, for instance, the EIA estimates that world oil demand will be 90.9 million b/d, with non-OPEC producers supplying 53.9 million b/d and OPEC production running at 31.8 million b/d.

Thirdly, shale oil production will decline drastically at price levels below \$70-to-\$80 per barrel, simply because the economics of production will no longer allow it to be viable. Fracking and pyrolysis are expensive techniques, especially when compared with the production costs within the OPEC domain. Gas production in North America is open to different price considerations, given its unregulated nature and the operations of the spot market but, given North American energy demand, perhaps the best that producers there can hope for is a regional market that they will control – and price continues to be a factor, as the multinationals in the United States have demonstrated this year by voting with their feet, as mentioned above. Production levels and the different nature of the gas markets in the Gulf suggest that, unless there were significant overflows of North American gas into the world market, little damage would be done.

Finally, OPEC states – the Gulf at least – send relatively little oil and even less gas to the United States. In September 2011, four Gulf states (Saudi Arabia – 1.465 million b/d; Iraq – 403,000 b/d; Kuwait – 145,000 b/d; and Oman – 72,000 b/d) supplied 22 per cent of American imports totaling 9.006 million b/d.^{xiv} During 2011 overall, the Middle East supplied 1.919 million b/d (17 per cent) of the 11.337 million b/d imported by the United States. In comparison, Asia took 16.258 million b/d – 82 per cent – of the Middle East's 19.750 million b/d. As far as gas is concerned, Qatar, Yemen and Egypt supply LNG to the United States, 53 per cent of its LNG demand but only 5.4 per cent of its total gas demand and 4.4 per cent of their total supply.^{xv} It is difficult to imagine that the loss of either oil or gas supply to the United States and Canada would seriously threaten the interests or markets of the Gulf states of OPEC, or that of the larger organisation, now or in the medium term future!

PROFESSOR GEORGE JOFFÉ TEACHES THE INTERNATIONAL RELATIONS OF THE MIDDLE EAST AND NORTH AFRICA AT THE UNIVERSITY OF CAMBRIDGE

Footnotes

ⁱ BP Statistical Review of World Energy 2012; www.bp.com

ⁱⁱ USEIA (2012), *Monthly Energy Report*, Washington DC (June 2012)

ⁱⁱⁱ <http://ostseis.ani.gov/guide/tarsands/index.cfm>

^{iv} Gue E. (2012), "The supply side of crude oil," (July 13, 2012) www.marketoracle.co.uk/Art35574.html

^v Van Loom J. and Penty R. (2012), "Petronas boosts price for Progress Energy," *Bloomberg* (July 27, 2012)

^{vi} Simpson S. (2012), "Plenty for Canada to ponder in China's bid for Nexen," *Calgary Herald* (July 27, 2012)

^{vii} BP Statistical Review of World Energy 2012; www.bp.com

^{viii} www.eia.gov/olaf/aeo/tablebrowser

^{ix} Reuters (June 15, 2012)

^x Chazan G. (2012), "Shale gas glut dents major oil earnings," *Financial Times* (July 26, 2012)

^{xi} Reuters (May 17, 2012)

^{xii} “Canucks, meet CNOOC,” *The Economist* (July 28, 2012)

^{xiii} Hall S. (2012), “Shale gas may hold promise for China,” *Wall Street Journal* (July 23, 2012)

^{xiv} ftp://ftp.eia.doe.gov/pub/oil_gas/petroleum/data_publications/company_level_imports/current/import.html

^{xv} BP Statistical Review of World Energy 2012; www.bp.com

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