

PARLIAMENTARY BRIEF

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A photograph of David Cameron, the Prime Minister of the United Kingdom at the time, wearing a dark suit, white shirt, and purple tie. He is holding a red, textured briefcase with both hands. The background is dark and out of focus.

Wedding a tax break to a broken society

A HEALTH CHECK ON CAMERON'S BIG IDEA
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ENERGY: THE SHALE GAS REVOLUTION

EUTHANASIA: THE REPORT WE NEED TO BURY

FORGET the gloom about fossil fuels'. True, oil is scarce; granted, coal is dirty — but natural gas is clean and plentiful. In terms of local air pollution, gas burns very cleanly indeed. In terms of greenhouse gases it emits half what coal does, per kWh generated. Unlike oil, or even coal, the world's gas reserves are expanding dramatically.

The coming decades could be a golden age for natural gas, as the International Energy Agency explored in a recent report by this title. However, it is doubtful that Europe will share in this new gas era. Gas consumption stopped growing several years before the start of the economic crisis and has been declining since. If the current policies and market conditions are sustained, this decline will continue.

In the United States, where conventional (including offshore) gas production had peaked in 2001, the industry developed new technologies to access a resource base most experts thought could never be produced economically: shale gas. The decline was reversed in 2005 and since then US gas production has grown by about 45 per cent. The annual production rate has grown by 220 billion cubic meters (bcm), the equivalent of total consumption rate by the UK, Germany and France together, or 45 per cent of total EU gas consumption.

This 'shale gas revolution' has spread to Canada and the industry is scrambling to access prospective territories all over the world where it could apply the same technologies to similar geological structures. There are many such structures, from South America to China, from Europe to Africa. We are perhaps on the eve of a global methane revolution driven by 'unconventional gas'.

The shale gas boom combines with another major development of the last few years: the expansion of an international market for ship-borne, liquefied natural gas (LNG). LNG trade started in the late 1960s and has grown regularly since, but it is only in the late 1990s and 2000s that it became the default way to commercialising natural gas. A step-change has been achieved with the entry of Qatar into this market.

In less than a decade, the tiny Middle East country added about 100 bcm (equivalent) of supply to the global LNG market. The new emerging giant supplier is Australia, which should overtake Qatar as the largest LNG exporter by 2018. Some of Australia's LNG export projects are fed with 'coal-bed methane', another form of unconventional gas.

The main change brought about by the growth in LNG trade is the possibility of 'arbitrage' between regional markets, hence the tendency towards price convergence through gas-to-gas competition. Convergence first came to the Atlantic market (the USA and the spot markets of Western Europe). Prices suddenly diverged again with rapid shale gas production growth in North America, which sent prices way below the spot price for LNG, leaving

1 This article is based on a presentation to the Gas-to-Power Forum Europe, Berlin, 24th January 2012.

A GOLDEN AGE FOR GAS – BUT NOT IN EUROPE

Pierre Noël

import terminals idle. LNG trading will also make spot prices converge between Asia and Europe.

The fortuitous timing of the recession and production ramp-up in Qatar had delayed this process, with Europe (and especially the UK) being hit by a wave of Qatari LNG that had nowhere else to go apart from price-depressed America. Rapid growth in Asian LNG demand, driven by economic fundamentals supplemented by Japan's exit from nuclear power after Fukushima, are now wiping out this 'LNG glut' and Western Europe will increasingly have to pay Asian prices for its cargoes. Eventually, LNG exports from North America will allow the market to arbitrage the large price difference between the US and Europe or Asia, bringing about a global gas market where price differences will more or less reflect transport costs.

This double revolution on the supply side — vast expansion of gas reserves and emergence of a global gas market — could allow for rapid growth in gas consumption. Asia is home to large industrialising economies that drive the growth in global energy demand but have until recently consumed relatively little gas. Abundant natural gas widens the range of energy sources they can tap into to fuel their economic growth.

Furthermore, they are very coal-intensive and therefore suffer from heavy local pollution that gas

could help alleviate. North America is enjoying the beginning of a gas-fed re-industrialisation and the Obama administration is using old-fashioned regulatory intervention to retire older coal-fired power stations, most of which will be replaced by gas.

Europe, we are told, will join the party. According to the IEA 'golden age of gas' projection, as well as the *BP Energy Outlook 2012*, European annual gas consumption could grow by about 100 bcm by 2030, or 20 per cent. These figures look very optimistic to say the least.

Aggregate gas consumption growth in Europe sharply decelerated after 2000 and peaked in 2005. Beyond weather and GDP some real demand destruction seems to be happening. Data from Europe's pipeline operators recently published by Deutsche Bank shows that in the seven largest markets accounting for 85 per cent of EU consumption, weather-adjusted demand declined by 44 bcm in 2011, including more than 10 bcm in the UK and nearly 6 bcm in Germany.

Weather-adjusted residential gas demand has declined by more than 20 bcm since 2008, suggesting energy efficiency investments and behavioural change driven by higher prices. Industrial and power generation demand was lower in 2011 than even in 2009, at the height of the financial crisis.

The IEA and BP project that gas demand growth in Europe will be driven by fuel switching in the electricity sector (gas displacing coal).

The case looks strong indeed. Using IEA data for 2007, I calculated that CO₂ emissions from coal-fired power plants in the EU amounted to 931 million tons (Mt). With gas half as carbon-intensive as coal, replacing 25 per cent of coal-fired generation by gas would save 1/8th of 931 or 116 Mt per annum.

If gas displaced half the coal the emissions cut would reach 232 Mt. These two numbers are equivalent, respectively, to 34 per cent and 68 per cent of total EU27 CO₂ emissions reduction achieved between 1990 and 2010. As the only place in the world where carbon emissions are not free, Europe should lead in coal-gas substitution.

The trouble is that Europe has quietly abandoned its carbon dioxide policy, based on emission pricing, in favour of a renewable energy policy based on direct (and very high) subsidies. This shift has dire implications for gas. Because emissions from the power sector are capped under the Emissions Trading Scheme, aggressive renewable deployment depresses the carbon price, allowing coal to remain

competitive against gas. Emissions are displaced, not reduced.

In Spain, one of the leaders in renewables deployment, gas-fired power generation has declined by 4 TWh since September 2009 while wind and coal have grown by 2 TWh each — it all adds up.

In Germany, the economics of power generation are being transformed — or destroyed? — by wind and solar output. Zero or negative prices are no longer exceptional and the most lucrative hours for thermal generation have been creamed out. In the current market no-one can build a non-subsidised gas-fired plant. Coal-fired stations, including lignite, have become swing producers.

In the UK, large-scale deployment of renewables is still ahead of us and 9 GW of coal will be removed from the system by EU environmental regulations in the second part of this decade. The latter development is leading to investment in new gas-fired capacity with companies expecting to cash in on a few years of high prices.

Beyond that, the system should be dominated by subsidised generation with very low marginal cost. Companies may be paid to keep their gas plants available to make up for the unreliability of wind, and even build new ones for the same reason, but aggregate gas consumption should decline, unless renewables are not delivered.

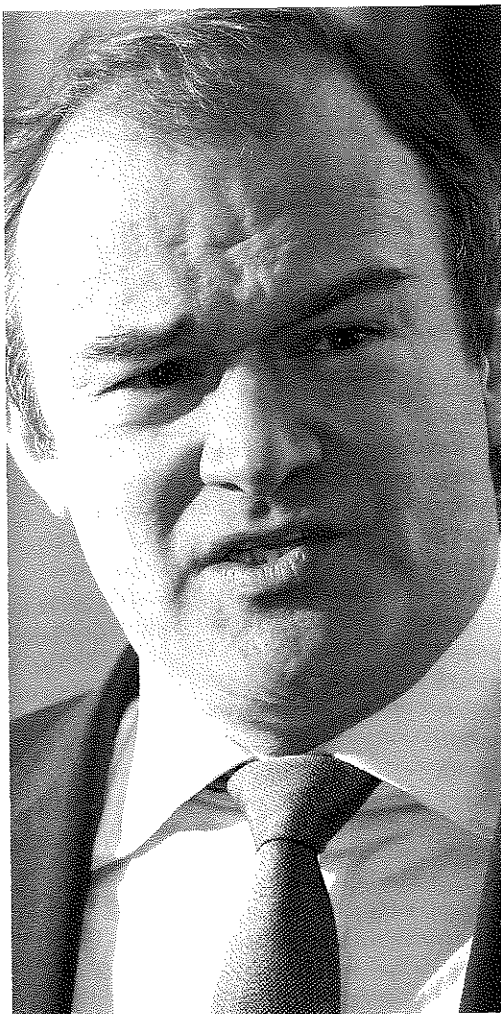
A serious climate change policy, one that would target CO₂ as opposed to creating green jobs in China and preserving coal jobs in Europe, would result in massive substitution of gas for coal in the short to medium term, and a longer-term contest between nuclear, fossil-fuel with CCS and renewables.

If their (rightful) lobbying for moving back to carbon pricing and away from subsidies is not successful, the best the gas industry can hope for is that Europe's (and the UK's) renewable energy policy proves so costly and problematic that it collapses under growing political pressure.

Between 1965 and 2005 the share of natural gas in total EU 27 energy consumption rose from 5 per cent to 25 per cent. Truly, that was a golden age. Emerging Asia's love affair with gas may be just starting, thanks to shale gas and global LNG trade; ours is behind us.

Two unlikely developments could change the outlook for gas in Europe: a move away from renewable subsidies and towards sensible carbon pricing; and a collapse in gas prices. If Gazprom can flood Europe with gas, now is the time to do it.

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Ed Davey, the new Secretary of State at DECC: will he be able to rethink UK policy to account for the shift in the energy markets?