What's stopping 'the golden age of gas'?

Published on Climate Spectator, Friday 19 April 2013

For much of the last decade or so, gas has been expected to play an increasing role in the power sector in Australia and elsewhere. This expectation was driven primarily by its clean credentials. Today, however, the "dash for gas" is not happening and is unlikely to happen for a decade at least. What changed and why does it matter?

When gas is burned to generate electricity it produces between a quarter and half of the CO_2 produced by a coal-fired power station. For that reason, gas was seen to be heading for a golden age, as the International Energy Agency put it in 2011. Stable gas and coal prices combined with expectations of moderate carbon prices to make gas look like a winner.

Such numbers would have been behind the decisions of Energy Australia, Origin, Santos and other companies to begin major project development work on the construction of gas-fired power plants that would play a substantial role in electricity supply.

But in 2013 the golden age has not come to pass in Australia, and will not any time soon. There are many reasons why. Firstly, the export prices of black coal and gas – driven in the latter case by the linking of the eastern Australian gas market to international markets – are significantly higher than they were only a few years ago. Since export prices drive domestic prices, this has made cheaper brown coal highly desirable as a local fuel, and damaged the investment outlook for gas.

Origin, for example, responded by reconfiguring its gas plant in Mortlake, Victoria as an open-cycle gas turbine facility suited to meeting peak demand for relatively short periods of higher prices, rather than a plant for baseload and intermediate supply that would have had it running at far greater capacity.

Shifting commodity prices are just the first strike against gas. Since 2008, electricity demand has been falling in Australia, a consequence of reduced industrial activity, customers responding to higher prices and the adoption of distributed supply such as solar hot water and solar PV systems. There are no signs this trend is about to change.

Finally, the Renewable Energy Target is strongly pushing renewable energy – primarily wind – into a supply mix already heading towards oversupply.

These factors combine to rob gas of its anticipated role as a bridge to a low-emissions future, let alone as a clean saviour. But there's more. New developments are undermining the clean, green credentials of gas.

In recent years, the capacity of mining companies to develop and apply technologies to extract gas from sources previously considered uneconomic has led to enormous and unprecedented growth in gas production. The International Energy Agency recently estimated that the world now has gas reserves equal to more than of 250 years of demand at current levels.

But these new technologies bring fresh concerns. In particular, the use of fracture stimulation (or fracking) to produce gas from difficult geological structures has been identified as a possible source of earth tremors and groundwater contamination. As well, extracting gas from coal seams and shale rocks can release quantities of methane, or fugitive emissions. Gas may still be natural, but it may be far less clean than has been claimed.

Finally, many environmentalists have become increasingly concerned that the enormous growth in the role of gas may be holding back the growth of renewable energy sources. For all its advantages over

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coal, gas is a fossil fuel with emission levels that will ultimately be unacceptable in a world that avoids the worst aspects of climate change.

We live in an energy hungry world. Some of the hungriest countries are developing economies with aspirations to lift their populations to standards approaching the West. Many also have significant potential reserves of these unconventional gas sources. They will struggle to balance economic and environmental pressures, whilst claims and counterclaims are swirling around these issues in Australia and elsewhere.

As a result, the prospects of gas as a clean fuel for electricity generation are startlingly uncertain. The most recent relevant projections by the Australian Energy Market Operator show demand for gas for power generation remaining flat at around 175 petajoules a year or falling slowly through to 2025. But if the perfect storm of factors described in this article were to become even worse for gas – as it plausibly could – demand could fall to as low as around 40 petajoules a year in the same timeframe.

In a sense, the story of gas is simply the story of supply and demand in resource economics. Nevertheless, current policy settings are shaping events in ways that are likely to mean our targets for greenhouse gas emissions will not be achieved for as low a cost as should be the case.

A lack of clarity and credibility around central climate change policy, combined with the application of the RET in a market of falling demand, will not deliver a low-emissions future at lowest cost. If nothing changes, gas, once seen as the bridge to that future, may miss its moment.

So what should the federal government do? Australia must decarbonise its energy sector over the next four decades. The best way to do so is through a carbon price that is credibly seen as rising steadily and predictably over time, combined with targeted support for developing the low-emission technologies that will be lowest cost over the period. Grattan Institute's 2012 report, *Building the bridge: a practical plan to a low-cost, low-emissions energy future*, describes this approach in some detail.

If such policies are adopted, gas has a role to play in changing our energy mix until it is replaced by lower-carbon technologies. Investment decisions in gas and other low-emission technologies could still be made in a timely and sustainable way. But we need to change direction and soon.

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