China to invest billions in coal-to-gas projects

China has become increasingly reliant on imported fuels, but will a commitment to coal-to-gas be the solution to its rising energy needs, asks Damon Evans

CHINA plans to invest $14 billion in four pilot coal-to-gas (CTG) projects in the country as it continues to look for ways to reduce its reliance on imported fuels.

The country hopes the four plants, which will be located in the coal-rich regions of northwest Xinjiang, northern Inner Mongolia, and northeast Liaoning, will deliver 15 billion cubic metres (cm) of gas from 2015, the equivalent of roughly 10% of domestic gas demand.

To meet the output targets, the plants will need around 36 million tonnes of coal, or around 1% of coal production last year.

Two of the units are being built by the state-run power group Datang. The other two are being developed by coal miners China Kingko Group and China Huineng Group.

CTG development plans underway in the more remote corners of China will have a cost advantage relative to imported gas, Zhou Jiping, president of state-owned China National Petroleum Corporation (CNPC) told the World Gas Conference earlier this year.

Early estimates suggest gas from the new CTG pilots will cost around $6.40 per million British thermal units (Btu) to produce, making them economically competitive with imported gas. The country paid an average of $9.06/million Btu for liquefied natural gas (LNG) imports in 2011.

Rolling out reforms

Plants in Inner Mongolia could break even at under $8/million Btu while projects in Liaoning will need prices of nearly $10/million Btu, analysts at Wood Mackenzie estimate.

CTG projects would struggle to compete with domestically produced gas under the regulated domestic prices in place now. But as Beijing gradually rolls out gas price reforms to bring domestic gas prices in line with market-determined import prices, CTG produced gas should be price-competitive against domestic conventionally produced gas.

Significant expansion in domestic gas output – either from shale or CTG – would clearly improve China's negotiating position with its neighbours. The country would like to negotiate lower import prices from Central Asia. It pays around $12/million Btu today, say analysts. Higher domestic production could also strengthen China's hand in long-running negotiations with Russia over a potential gas supply deal.

China is heavily dependent on imports and without a major increase in domestic production it is set to become even more reliant on imports. The country's gas demand is expected to rise from just over 150 billion cm today to more than 600 billion cm by 2030, Wood Mackenzie forecasts.

Wood Mackenzie believes CTG and coal-bed methane (CBM) will play a more important role than shale gas in boosting domestic production over the next decade. The consultancy pegs CTG output at 27 billion cm by 2020, with CBM at 17 billion cm. It estimates China's shale industry will be producing 11 billion cm in the same time frame. But even with unconventional gas growth, China will still need more than 130 billion cm of imports by 2030, says Wood Mackenzie.

Beijing is fast-tracking CTG projects based on China's 2011-2015 economic plan. Strong state support has led to more than 30 CTG project proposals that would add 150 billion cm of production capacity.

Many of those projects, though, will likely never be built. The government has approved just four of the more than 30 proposed plants as it wrestles with concerns over the amount of coal needed to supply the plants, the strain on already scarce water resources and the large amounts of CO_2 the plants would emit without costly capturing and storage technology.

Beijing has identified four regions – Shanxi, Shaanxi, Inner Mongolia and Xinjiang – as the only potential areas for CTG plants.

Even with unconventional gas growth, China will still need more than 130 billion cm of imports by 2030

China, the world's biggest energy consumer, produced almost half the world's coal in 2010, three times more than the US – the second largest producer – and almost as much as the next 10 highest producing countries combined.

China is likely to continue to seek ways to exploit its vast coal reserves – pegged at 114.5 billion tonnes at the end of 2010 or 93.3% of its total energy reserves – to meet rising demand for natural gas and cut its ever increasing reliance on imported fuels. ●