

## CHINA RACES FOR ENERGY SECURITY TO KEEP PACE WITH GDP GROWTH

### Beyond China's Coal Fields: Expanding Gas Resources

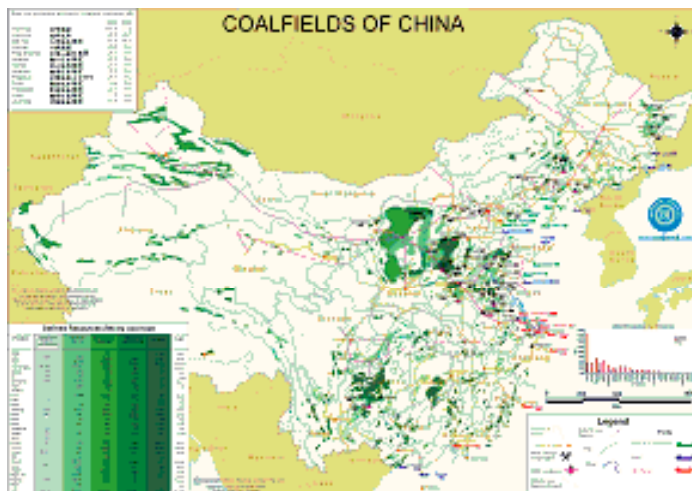
#### Part Two of a Two-Part Series

By James Finch

In the first half of 2006, China's total power consumption reached 1.3 trillion kilowatt-hours, an increase of 12.89 per cent over the same period a year ago. But the country only generated 1.23 trillion kilowatt-hours during the first six months of this year - a shortfall of 700 million kilowatt-hours. According to China Electricity Council Secretary-General Wang Yonggan, power shortages will continue to plague China, but he hopes they will somewhat ease. At the beginning of 2005, twenty-five Chinese provinces suffered power shortages. This had been reduced to nine provinces this past January, and recently the number of provinces suffering power shortages had fallen to four.

China relieved its widespread power shortages over the past six months because of its new power stations, but officials insist the power industry must try to reduce energy consumption per unit of GDP by 20 percent to comply with the latest five-year plan through 2010. Power deficits are still expected in East China, North China and part of South China during peak summer months even though China spent more than \$9 billion in the first half of 2006 to improve its power transport capacity.

But how will China continue to fuel its power stations so they can generate electricity? Nearly 84 percent of China's power is thermally fueled, mostly by coal. China's 30,000 coal mines produced more than two billion tons in 2005. This is not likely to be drastically reduced over the next two decades, but China is making an effort



China depends upon the country's vast coal fields to keep generating its electricity



China's electricity can keep flowing as long as it continues to obtain sufficient energy sources.

to exploit other resources. Drawing almost 14 percent of its energy from hydroelectricity, the country plans to dam up all five of Asia's major rivers in order to keep its generators going. China has helped drive up the price of uranium with its plans to dramatically increase its nuclear energy program.

#### Reducing the Coal Consumption Rate

Slowly, China is trying to wean itself off coal. Over the first six months of this year, China reduced its coal consumption rate, as measured by kilowatt-hour, by less than two percent compared to the first half of 2005. While China has stated it plans to expand its hydro, nuclear and renewable energy programs to increase their share of electrical power production, the country ambitiously hopes to more than double the amount of natural gas in its energy mix. Currently providing a little more than three percent of the energy mix, the Chinese have often announced they want natural gas to provide eight percent or more, by the time the Eleventh Five Year Plan ends in 2010.

"It's doable," Phil Flynn of Alaron Trading Corp told us. "It's going to be tough and very expensive, but I think they can reach that per-



*Husky Energy's deep water gas discovery could generate more aggressive exploration*

### Australian LNG Helping China's Energy Mix

#### Planned and Prospective Chinese LNG Import Terminals



Source: Poten & Partners

*Several new LNG import terminals illustrate China's ambitious plan to depend more upon gas than it has*

centage." However in February of this year, the *China Daily* newspaper reported the bulk of China's gas-fired power plants could be closed down because of a natural gas shortage. For example, four gigawatts of installed capacity were not used in Eastern China, in the latter part of 2005, because the country could not obtain sufficient gas supplies to power the plants. China's National Development and Reform Commission plans to increase the country's gas power capacity to 30 gigawatts, but the head of China's Electricity Council announced that gas shortfalls would probably make this target impossible to achieve.

### Husky Energy's Recent Gas Discovery Spurs More Exploration Activity

It is not for lack of trying. In June, Husky Energy announced a deep gas discovery beneath the South China Sea, about 155 miles south of Hong Kong. The area had been abandoned decades earlier when shallower wells had come up dry. Fu Chengyu, Chairman of Husky's Chinese partner China National Offshore Oil Corp (CNOOC) called the gas discovery "a tremendous breakthrough for us." The find may reportedly contain 3.5 trillion cubic feet of gas. Last week, Husky Energy and CNOOC signed three new production-sharing contracts to drill for oil and gas in deepwater blocks in the eastern and western South China Sea.

While Husky Energy may be Calgary-based, it remains controlled by Hong Kong billionaire Li Ka-shing. China's big announcement in mid July invited the more autonomous foreign oil companies to explore in as many as nine blocks in northwestern China. The target is the Xinjian's Tarim Basin, which has proven reserves of six billion tons of oil and eight trillion cubic meters of natural gas. Analysts heralded this as China's biggest step forward in cooperating with major foreign oil and gas companies since 1994. China is eager to move these projects further in order to keep its 2200-mile natural gas pipeline running at capacity to supply its major coastal cities in eastern China.

In late September, the city of Shenzhen, in China's southern province of Guangdong, will begin generating electricity powered by Australian gas. Northwest Shelf Australia LNG PTY plans to annually ship over three million tons of Liquefied Natural Gas (LNG) for the next 25 years. The LNG contract valued at \$25 billion is Australia's largest resource contract. It angered many Australians when CNOOC became the first foreign country to own a stake in Australia's gas reserves. The gas had been allocated for domestic use in Australia. The deal entitled the Chinese firm to own about 1.1 trillion cubic feet of gas and another 210 million barrels of liquids of Western Australia's gas project. Because of previous long-term contracts with Japan, China may not be able to sign new gas deals with Australia until after 2010.

"Right, we see in the LNG (liquefied natural gas) business a kind of unprecedented situation: unprecedented demand from not only new emerging buyers China and India, but also the U.S." China plans to build over a dozen more new LNG terminals along its southern coast similar to the one in Guangdong province, which will serve cities in the Pearl River Delta, Hong Kong and power plants in the Delta region. Several LNG projects, under construction or waiting for approval, would impact Shanghai, Beijing and other multi-million population centers. Despite the size of this and other deals, it is not enough. "The actual demand is so big that neither onshore nor offshore gas or LNG will be able to meet the demand on its own, said Azfar Shaukat, director of Mott MacDonald Group's oil and gas studies. "It has to be a combination of them."

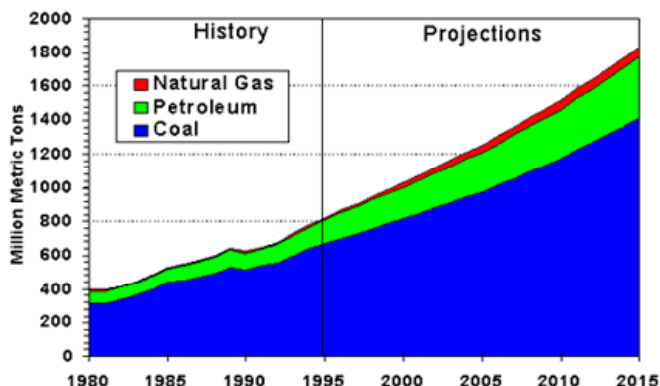
### China's Coalbed Methane Development

What can China do about its coal mines which drive the country's electrical production? Although official figures are lower, as many as 6000 Chinese die in the country's 30,000+ coal mines every year. More suffer from air pollution and black lung. By compari-

Co	City, Province	Status	Year of startup	Initial capacity (MM tpa)	Final capacity (MM tpa)
CNOOC	Guangdong	a	2006	3.7	
CNOOC	Putian Fujian	a	2007	2.6	5.0
CNOOC	Shanghai	b	2008	3.0	6.0
CNOOC	Hainan	c	2009	2.0	3.0
CNOOC	Qinhuangdao Hebei	c	2010	2.0	3.0
CNOOC	Shantou Guangdong	c		2.8	
CNOOC	Guangxi	c			
CNOOC	Binhai Jiangsu	c		2.8	
CNOOC	Yingkou Liaoning	c		2.8	
CNOOC	Tianjin	c			
CNOOC	Zhejiang	c			
CNPC	Tangshan Hebei	b	2009	3.0	6.0
CNPC	Rudong Jiangsu	b	2009	3.5	6.0
CNPC	Dalian Liaoning	b	2008	4.0	6.0
CNPC	Guangxi	c			
Sinopec	Qingdao Shandong	b	2008	3.0	5.0
Sinopec	Rudong Jiangsu	c			

Status: a = under construction, b = appr. by SDRC, c = announced

### China's Carbon Emissions by Fuel



son in the United States, the American Lung Association estimates about 24,000 premature deaths are caused every year by air pollution from coal-fired power plants. About 40 percent of the emissions of carbon dioxide, which contribute to greenhouse gases and global warming, come from coal burning. Imagine how much larger a problem this has become for the Chinese?

Nonetheless, coal mining will stay with China for at least the entire 21st century. More uses from China's coal mines could make these resources indispensable. Rising petroleum costs have forced China to move forward to convert coal to oil products. Thirty coal liquefaction projects are now in the detailed planning or feasibility study stage. The Chinese plan to spend more than \$15 billion in order to produce 50 million tons of oil from coal liquefaction by 2020.

Chinese Premier Wen Jiabao, a former mining engineer, has been sympathetic to the plight of coal miners. New restrictions and regulations have increased the safety for coal miners. One of those upon which there is greater emphasis is capturing the methane from coal seams before the mining process begins. Methane gas in coal seams is the culprit behind widespread pollution and coal mining deaths. Nearly a decade ago, China United Coalbed Methane (CUCBM) was formed to capitalize upon the wasted methane released into the atmosphere during the mining process. Following the developments in New Mexico's San Juan Basin and Wyoming's Powder River Basin, the Chinese are determined to utilize the 'unconventional gas,' also known as coalbed methane (CBM) as an important energy source.

In early July, Jimmy Rogers told us, "Longer term, natural gas production is declining in North America." A few weeks later, in our interview with Sprott Asset Management CBM research analyst Eric Nuttall echoed those remarks, saying, "North American natural gas production has been in decline for several years." Nuttall added, "Most incremental production is coming from smaller, more expensive-to-drill, thinner economic, higher decline pools and reservoirs." He pointed to CBM as where the action would be, "The growth areas have largely been unconventional." And that is where the Chinese may be headed in order to obtain additional gas reserves.

A researcher for China United Coalbed Methane (CUCBM) wrote, "By 2010 and 2020, the shortage for the natural gas supply in China will be 30 billion to 40 billion cubic meters and 90 billion

to 100 billion cubic meters respectively." Professor Sun Maoyuan wrote on behalf of the CUCBM, "It is estimated that the coalbed methane resource is between 30 trillion and 35 trillion cubic meters, which is equivalent to the resource of natural gas. In China's 13 major coal-bearing basins, 10 coal-bearing basins are located in North China with 22.27 trillion cubic meters of coalbed methane resource, accounting for 68% of the total coalbed methane resource in China." He explained China's goal was to reach 10 billion cubic meters by 2010 and double that goal five years later. He wrote, "It is estimated conservatively that coalbed methane will account for 20 - 25 percent of the gas energy."

Since 1998, when CUCBM signed its first production-sharing contract (PSCs) with Texaco, nearly thirty such CBM concessions have been awarded. Major oil companies, and those with the closest connections to Chinese government officials, were the earliest awarded, such as Arco, Phillips, Greka and Australia's Lowell oil. Smaller U.S. firms, such as Far Eastern Energy (OTC BB: FEEC), were later invited to participate.

#### One Example: Pacific Asia China Energy

By 2005, Canadian public companies were awarded CBM concessions - the first Canadian publicly traded firm to obtain not one, but two, production-sharing contracts was Pacific Asia China Energy (TSX: PCE). This has worked out well for this young company. An evaluation by leading CBM appraisal firm, Sproule International of Calgary, assessed the "most likely case" scenario for the company's Guizhou property in southern China at 5.2 trillion cubic feet. Since then, the company has been drilling to confirm this estimate, and recently announced recent drill results "strongly correlate" with the independent technical report.

We asked the company's vice president of exploration, Dr. David Marchioni about China's view on CBM as part of the energy mix away from coal. He told us, "The central government is pushing hard for CBM exploration and mine degasification, which will yield CBM. They have announced a new formal policy promoting CBM and starting studies for new gas pipelines."

Has CBM registered on the radar screen yet? “CUCBM themselves is actively exploring,” Marchioni said. “And CUCBM has production at present, but at fairly low volumes.” Pacific Asia China Energy (PACE) may become an important test case, with its massive 970 kilometer square concession in south-central China’s Guizhou province, in which the company would earn 60 percent by funding the exploration and pilot program. Would this help China’s energy mix? “What would have impact is if PACE or any other players could produce CBM at high volumes and that ‘it works’ in a big way,” Marchioni explained. “The technological learning from this and the news of success would encourage others.”

There are other reasons why a small company, such as PACE, would find enormous opportunity in China. “We would not be able to afford a sizeable concession (like this) in Canada or the western world,” Steve Khan, executive vice president of the company told us. Our investigation showed a comparable CBM concession, to what PACE holds in China, could cost more than \$100 million in one of Alberta’s prolific coalbed methane areas.

A concession this size is not something the Chinese government didn’t want. Nor is it far removed from a population center. Within a radius of 500 miles, there are in excess of 240 million people. “The growth is so significant that any source from energy, including CBM, is being secured by the Chinese government,” Khan said. “The uniqueness about PACE is that we’re not looking to produce and sell our gas into the world market. We would be selling it to the local market in which we are producing it. Industrial consumers there are short of gas to run their factories. Many of them are seeking out companies like us to contract for the secure delivery of gas.”

One of the problems, which companies developing energy relationships in China face, is convincing investors to focus on the positive aspects of the country’s dramatic GDP growth and its insatiable asset to obtain sufficient energy to maintain this rate. “North Americans are a little less attuned to what’s happening in China than the Europeans,” Khan explained. “When we visit the London fund managers, they look at this as a great opportunity, and they are investing more funds into that part of the world.”

Those who appear to be most eager in what PACE has are the Chinese. The company presented at a provincial coal symposium earlier this year. Because the national government has mandated the gasification of existing coal areas before they can be mined, and because PACE has a joint venture with Mitchell Drilling of Australia,



*Pacific Asia China Energy executive vice president Steven Khan*

and their proprietary Dymaxion® drilling technology, one major door could open later this year. “We hope to be able to put in a pilot project on one of those coal mines,” Khan said. “The Chinese coal mines are very actively pursuing us to push that agenda forward because they are in need of that gasification.”

### Conclusion

By 2010, it’s a good bet China will have invested tens of billions to build up its energy portfolio. Many warn of a slowdown in early 2007, and it might give a much-needed breather to China’s runaway growth. Or this might be a brief pause in China’s remarkable transformation from an agricultural economy into an industrial superpower. The United States had some fifteen depressions as the country entered and passed through its own Industrial Revolution. It would not be surprising if China experienced volatility during this critical five-year plan. Four years from now, China might very well avert its potential energy crisis. In the meanwhile, this might suck up a great deal of the world’s energy sources, or drive energy prices to record highs. Nonetheless, it will be an exciting and erratic period while the rest of the world watches China out-perform the rest of the world’s economies.

#### Editor’s Note:

Please visit StockInterview’s disclaimer page <http://www.stockinterview.com/disclaimer.html> for full disclosure, forward looking statements, important links and cautions.