Economist.com OPINION

Energy for China

Jul 12th 2007
From The Economist Intelligence Unit ViewsWire

More diversity of supply, but demand is growing fast

China's energy challenges are monumental. The economy is in the midst of a highly energy-intensive stage of growth, but domestic reserves—especially of oil—are far from adequate to meet burgeoning demand. As a result, the government faces a series of policy challenges: to expand supply while increasing efficiency, to allow fuel prices to increase and risk more social unrest, and to acquire energy assets overseas while China's international conduct is under close scrutiny. If the government fails in any of these delicate tasks, in the medium to long term the resulting energy crunch could pose a serious threat to China's economic growth and political stability—and hence to the global economy as well.

The good news is that the government is focusing on energy issues and that progress is likely to be steady, if halting, on several fronts--from fuel-price liberalisation to diversifying energy sources and expanding imports. In the longer term, moreover, the maturation of the economy will help to enhance efficiency and ease the pressure to secure ever-greater supplies.

What is the issue?

Many countries are experiencing rapid economic growth, industrialisation and urbanisation. But China's sizzling pace of growth and its huge population make its energy needs particularly challenging. After two decades of rapid economic growth, China is now the world's second largest energy consumer (behind the US). Total energy consumption has risen by an annual average of more than 11% during the past five years, reaching 1.7bn tonnes of oil equivalent in 2006.

China is well on its way to becoming the world's biggest energy consumer. Its per-capita energy use remains relatively small—only around one-third that of Japan and one-seventh that of the US—and the potential market for cars, air-conditioners and other energy-guzzling machines is vast. The Economist Intelligence Unit estimates that China's energy consumption will continue to increase by at least 6% annually for the next several years—a more moderate rate than in some recent years, but one that will nevertheless require huge increases in supply as a consequence of China's massive size.

China's energy crunch is exacerbated by the country's high energy intensity (the ratio of energy use to economic output). This is partly due to the large share of industry in the economy, but it is also because many sectors—such as steel and cement—are plagued by over-production, waste and inefficiency. China's overwhelming reliance on coal for the bulk of its energy—around 70%—also poses problems. Coal is relatively dirty, inefficient and difficult to transport, but it is by far the most abundant energy resource in China.

China's energy needs are also having geopolitical repercussions, as the country's relative paucity of domestic oil reserves prompts efforts to expand imports and secure supplies abroad. For example, energy competition is a factor in China's territorial disputes with its neighbours, particularly in the East China Sea (with Japan) and the South China Sea (with eight South-east Asian countries). Large potential reserves of oil and natural gas are at stake in these disputes. China's energy security concerns also bolster its determination to develop its naval power, and to impose its rule on Taiwan, a de facto US ally that is adjacent to the shipping lanes to northern China.

Why is it critical?

Acute energy shortages in China would have serious economic and political consequences both at home and abroad. (This was illustrated clearly in 2004 when severe energy shortages at home resulted in a sharp increase in

China's demand for imported oil, causing international energy prices to soar to 20-year highs.) Access to adequate supplies of energy is necessary for China's continued economic expansion. This is especially the case with oil and natural gas, but it is also an issue for the electricity sector more broadly. Even though generating capacity has been successfully bolstered following the recent power shortages, keeping pace with demand remains a long-term challenge.

China's political stability, in turn, depends on sustained economic growth. The ruling Chinese Communist Party (CCP) has staked its legitimacy on its ability to deliver ever-wider prosperity. As a result, the government's focus on energy security is not merely an economic necessity--it is also a fight for political survival.

A Chinese economic slowdown, combined with potential political instability, would send shockwaves rippling through the global economy. The sheer size of China's economy, as well as its increasingly important role in the global economy, ensures that the effects of a serious energy-supply disruption or power shortage would be severe.

What the government is doing

To sustain rapid economic growth, the overarching priority of the government is to meet soaring demand for energy. Given China's limited domestic reserves of most fuels except coal, this will inevitably require a steady expansion of imports--imports of oil, in particular, are set to surge as industrial demand expands and sales of vehicles boom. China's widening dependence on imports, coupled with an awareness of the environmental challenges posed by soaring hydrocarbon consumption, is in turn motivating a drive to reduce energy intensity.

Reforming the pricing system is a top focus. Although domestic energy and electricity prices have started to converge with global prices, they are still distorted by subsidies, quotas and other forms of state control. For example, retail fuel subsidies have worsened energy shortages in the past by prompting refining firms to cut back domestic sales in favour of the more lucrative international market. Artificially low energy prices also encourage waste and weaken incentives for domestic exploration and production. Recognising this, the government is slowly but systematically removing price ceilings, eliminating subsidies and opening retail-fuel markets.

An ambitious programme of investment in domestic exploration and production is also under way. Some returns on the government's investments have already been forthcoming. In May 2007 state-owned China National Petroleum Corporation announced the discovery of a 1bn-tonne offshore oilfield in Bohai Bay. If the oil is entirely recoverable, this would boost China's reserves by around 50%. However, notwithstanding discoveries like these, China is unlikely to manage to expand its domestic production fast enough to meet demand. The country even became a net importer of coal in April 2007, and coal imports—especially from Australia and South America—are set to continue to expand. Furthermore, despite the abundance of China's coal reserves, the lack of adequate internal infrastructure makes it difficult to transport coal between northern and southern China—implying that parts of the country will remain highly dependent on imported coal.

Another policy priority is the expansion and diversification of the country's energy sources, with an emphasis on hydropower, nuclear power and natural gas. For example, the government aims to raise the use of natural gas from just 2.9% of primary energy consumption in 2005 to 10% in 2020. Since China has just 1.3% of the world's natural gas reserves, meeting this target will require a big increase in imports. China is building a series of terminals on its southern coast to handle the anticipated surge in shipments from abroad.

As China's dependence on foreign oil and gas rises, efforts to secure access to multiple sources of imports will continue. Already, China has actively sought to diversify its foreign supplies, focusing not only on the Middle East and Central Asia, but also increasingly on Africa, South-east Asia and Latin America. By 2025, according to the US Energy Information Administration, foreign supplies will account for a dizzying 77% of China's total oil consumption, compared to the current level of less than 50%. Still, given the controversy created by the failed bid by China National Offshore Oil Corporation for US-based Unocal in 2005, and the limited amount of oil that can be secured through acquisitions of foreign energy companies, the emphasis is likely to remain on securing long-term supply contracts. The government is also building up strategic oil reserves, but these will be small by international standards and filling them will be a very long process—especially if international oil prices remain high.

Meanwhile, China has embarked on a massive campaign to augment its domestic power-generation capacity. An estimated 81 gw of new capacity was added in 2006, and the government plans to invest a further Rmb600bn

(around US$79bn) in new power plants during 2007-12, with the goal of reaching 1,000 gw of generating capacity. The vast bulk of this—around 600 gw—will still be coal-based, but the contributions of nuclear, gas and alternative energy are targeted to rise sharply. In January 2006 a law was passed specifically to promote the solar, wind, geothermal, biofuel and hydropower sectors. Scores of dams are under construction on the upper reaches of the Yellow River in Qinghai and Ningxia, and on the Jinsha River spanning Sichuan and Yunnan. Eight nuclear power reactors are under construction in Zhejiang, Guangdong and Fujian, with another 22 on the drawing board. Large amounts of maize are also being converted into biofuels such as ethanol, although the government will remain wary of jeopardising food security.

The EIU view

China's energy policymakers face several policy dilemmas that will complicate their efforts to keep pace with demand over the next several years. For one thing, the need to maintain political stability limits the government's ability to improve efficiency. There is plenty of room for improvement—China uses around three times as much energy per unit of GDP as the US, and nine times as much as Japan—but the goal of engineering a "harmonious society" ensures that economic growth targets will almost always trump efforts to cut energy consumption. Efficiency gains are also limited by the inability of the central government fully to impose its will on local leaders.

Worries about political unrest also underscore the government's cautious approach to price liberalisation. Higher fuel prices could exacerbate rural poverty and accelerate the flood of migrants to the cities, while costing the CCP a measure of popular support among urban dwellers. In the past government efforts to increase resource prices have led to protests. These political concerns are one reason why China seems set to miss its energy-intensity targets by a long shot; the government aims to reduce energy intensity by 20% in 2005-10 but achieved a reduction of only 1.2% in 2006. Even this figure may be exaggerated, however, given the expansion of the metals and cement industries in 2006. Ultimately the key to reducing energy intensity will be a move away from investment-led economic growth—a long-term transition that is unlikely to have made much headway by 2010.

Policymakers must also juggle the aims of energy independence and energy efficiency. China's most abundant domestic energy resource (coal) is highly polluting and relatively inefficient, yet diversification into more efficient, less polluting sources of energy will require expanded imports. Price reforms could also increase import-dependence as domestic energy becomes more expensive. Plans to increase the use of natural gas will depend on reducing its current high cost.

China's import-dependence will in turn continue to undermine its efforts to be seen as a responsible stakeholder in the international system. As a relative latecomer to the global scramble to secure energy supplies, China's overseas investment options are limited. Its involvement in pariah states such as Sudan (where oil reserves are still relatively untapped) will expand, as the fear of the domestic political consequences of an economic slowdown—as well as the commercial interests of China's state-owned energy firms—will continue to trump the desire to avoid international opprobrium.

Given China's apprehensions about import-dependence and its colossal pollution problems, the prospects for China's fledgling alternative energy industry should be bright. In reality, however, the government's targets will be difficult to achieve, and the industry faces so many impediments that even its most ardent advocates are at best only cautiously optimistic about its future. The main hurdle continues to be cost. Although technologies needed to generate electricity from alternative energy sources are getting cheaper and more efficient in China, production remains relatively expensive, particularly when compared with coal-based energy.

The government's target for hydroelectricity—240 gw by 2020—looks particularly problematic, as it would require the construction of the equivalent of the huge Three Gorges dam project every two years. The target for nuclear-generated electricity looks similarly daunting, implying the need to invest more than US$3bn annually for the next 20 years. Meanwhile, the central government will continue to face difficulties preventing local authorities and township enterprises from building cheap, inefficient coal-fired power plants.

Despite these challenges, China is likely to make steady progress towards its energy goals. We expect energy consumption growth to slow to around 6% a year by 2010, down from 16% as recently as 2004. Meeting this lower level of demand growth will be no small feat, and a heavy dependence on energy imports seems inevitable. However, looking beyond the government's immediate policy dilemmas, China's energy crunch is set to ease as the

economy matures. In the long run, structural changes already under way—such as price liberalisation, the consolidation of inefficient industries, the expansion of the services sector and the transition from investment-driven to consumption-driven growth—should help to moderate the energy intensity of the economy.