THE RISING POWER OF CHINA

The People's Republic of China is the second largest electricity producer in the world after the United States. In 2002, the per capita electricity consumption in China exceeded 1,000 kilowatt hours for the first time, reaching 1,096. Yet it's still behind the world average of 2,433 kilowatt hours per person—and lower than the Asian average of 1,207. For a growing economy like China's, investing in and dealing with energy efficiency and control is an important issue.

BY LIN BO QIANG

GUEST OPINION

Today, 88 percent of power consumption in China is for industrial production. In 2002, there were only 12 provincial power grids experiencing minor power shortages and limited or interrupted power supply in summer peaking time and the winter low water period. Yet recently, nearly all of the provinces in China experienced power shortages—mostly due to the rapid growth of power intensive industries.

It is difficult to predict how much the current power shortage affects China's economy. This depends on how the economy will continue to react, and how the power shortage affects the business environment. The estimated power shortage in 2004 was about 7 percent or 31 gigawatts, which is estimated to have reduced gross domestic product (GDP) growth by 1 percent to 1.5 percent or about $180 billion. This does not include the adverse impact on social stability and the investment environment. In 2005, only 10 percent of electricity in China was for residential consumption. To minimize the social impact of power shortages, the government has ensured residential power consumption by enforcing a residential first, production second principle.

To guard against future power shortages, an "early warning system" must be established. China is greatly affected by few larger power consumers.

Accurate projection of electricity demand is a precondition for successful power system planning. Given the size of China, an effective system planning at the national level is important to improve sector efficiency. Resources for power generation in

Workers fix electricity wires in Hangzhou, preparing to receive electricity from the Three Gorges Power Station on the Yangtze River in central China's Hubei Province.

Photo by, Wang Xiaochuan

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ALLIANT SALE IN CHINA

Alliant Energy said it has agreed to sell its interest in four power facilities in China to Banpu of Thailand for $84 million. Alliant sold its interest in four other facilities in China for approximately $39 million.

WORLD BANK ASSIST

The World Bank will lend $86 million to China to build up renewable energy, reports *Asia in Focus.* The funding will be used for a large wind farm in Inner Mongolia and to improve hydroelectric facilities in Zhejiang Province.

GERMANY INVESTS

Germany will join with China to invest $60 million in a wind power complex in eastern China, reports the *Associated Press.* The project involves construction of five turbines, each 5 megawatts, off the coast of Qingdao, which is part of the 2008 Beijing Olympics. Germany will invest an additional $60 million in solar, bio-diesel and environmental projects in the city.

The rotor of a generator unit at the Three Gorges project power plant.

Photo by Xinhua, Du Huaju

China are located far from major load centers. Coal mines are mainly in the north and northwest and hydropower resources in the west. The major load centers are in the eastern and coastal areas. However, power network development in China has not kept pace with the generation growth due to the low level of investment and barriers for interconnection.

In all developed markets, electricity prices charged to residents are more than 1.5 times the prices charged to large industrial consumers. On average, China's residential tariff is about 20 percent lower than the industrial tariff. Based on the economic costs of power supply calculated for many provinces, the residential tariff should be about 50 percent higher than the industrial tariff. However, the current residential tariff is lower and the residential consumers are the main recipients of major subsidies through lower power charges.

Tariff reform is necessary to support the power market development and provide the right market signal for power investment. Unless the power utilities or private investors are allowed to make a reasonable rate of return and have the expectation of continuing to earn a reasonable one, they will not be able or willing to make investments. Power utilities must be able to adjust the tariffs on a regular and predictable basis and avoid making wasteful investments. On the demand side, tariff should provide the right signals to consumers regarding consumption levels and patterns and, therefore, promote energy conservation. Tariff-setting methodology must be clearly defined so it is transparent to investors and consumers. However, because of its complexity and sensitivity, tariff reform in China will be a gradual and long process.

Raising capital is also a long process for China and for the multilateral and bilateral financing institutions. So far, "build, operate, and transfer" and "build, operate, and own" schemes have only played a small role in China's power development. Because of the capital intensive nature of power investment, the government is still the dominant investor. Some estimates indicate that the share of state-owned enterprises in the power sector could be more than 95 percent. The dominant role of the state creates uncertainties for foreign investors interested in putting capital into the power sector.

A competitive power market would introduce competition, improve efficiency in power supply and provide better market signals for power investment. Power surpluses and shortages impose a big cost on the economy. Power investments should be based on the long-run relationship between GDP growth and power demand. It might not be possible to completely eliminate going through periods of surplus power and periods of shortages. But if China can reduce the wide fluctuations in power supply, it can minimize the cost of such turmoil and make the sector more attractive to investors.

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