

# Time for Project Financing Again?

## China opens its power sector

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### Introduction

Project financing for power projects in China has been quiet since 1996/1997 when a number of landmark deals were closed, including the 2x350 MW Laibin B (EdF), the 2x700 MW Zhuhai Power (Cheung Kong Infrastructure), the 100 MW Tangshan (Sithe China), the 700 MW Meizhouwan (InterGen), and the 1000-MW Shandong Zhonghua(EdF). The Asian financial crisis reduced electricity consumptions and caused some excess capacity in the power market. With massive government efforts to prop up the economy, the Chinese economy has managed to grow, albeit at a slower rate, in the past five years. With the recovery of the U.S. and world economies and strong domestic demand in 2003, China witnessed both a strong growth of the economy and a surge in power demand in the first 11 months of the year. This has created an outcry in the local press for solutions to a “crisis” of electricity shortage. This shortage, which is expected to last for the next three years, and probably beyond, will have to be met by billions of dollars of new investments in the sector. This will generate both opportunities and threats for project

developers, sponsors, investors, EPC contractors, equipment suppliers and project financing lenders who are interested in the power sector of China.

### Surging Demand

As indicated in Exhibit 1, after the Asian financial crisis in 1997, the growth rate of electricity demand in China slowed down to 2.8% in 1998, the lowest growth rate since the economic restructuring began in the early 1980s. Reduced demand resulted in some excess capacity from 1998 to 2000, causing certain regions to offer promotional rates to induce consumption. To counter the impact of the Asian financial crisis, the Chinese government unleashed a stimulus package including a pro-active fiscal policy and a stable monetary policy. The Ministry of Finance issued RMB510 billion yuan (US\$61 billion) Treasury bonds from 1998 to 2001 to fund infrastructure construction such as the Three Gorges Dam Project and the Qinhai-Tibet Railway while the central bank kept the interest rate at a record low. The economy managed to grow at more than 7.0% from 1997 to 2000. China’s entry into the WTO in late 2001 and the influx of foreign FDI further

boosted the economy, leading to an increase in electricity demand of 10.3% in 2002. Despite the SARS epidemic in April and May of 2003, which battered the travel and service industry, power demand in the first 8 months of 2003 witnessed double-digit growth, causing blackouts and power rationing in 21 out of 31 provinces and regions of the country. The main drivers of electricity consumption are the jump in electricity use in the industrial and commercial sectors which posted an increase of over 16% and in the increase in electricity use by residential consumers which burgeoned by over 12%.

The China Electricity Regulatory Commission (CERC), the government watchdog for the electricity industry created in early 2003, believes that power shortages will continue for the next three years. The National Electricity Grid Corporation predicts that electricity demand will increase at an annual compound rate of 7.0% from 2003 to 2020.

### Supply is Lagging behind Demand

Although the total generation capacity in China increased by more than 10 GW per year since 1991, reaching 353 GW at the

Figure 1 - GDP Growth, Electricity Generation and Consumption Growth in China

	1997	1998	1999	2000	2001	2002	2003*
GDP Growth (%)	8.8	7.8	7.1	8.0	7.3	8.0	8.5
Generation Growth (%)	5.1	2.1	6.5	11.0	8.0	10.5	16.0
Demand Growth (%)	4.8	2.8	6.1	9.4	8.0	10.3	15.4

\* Including 8 months of data from Jan 1 to Aug 31.

Sources: China National Statistics Bureau and State Power Information Network

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end of 2002, capacity growth still lagged behind the growth of electricity demand in the past five years. Slower growth in electricity demand following the Asian financial crisis led to reduced growth in

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investments in the electricity sector. For instance, the total investments in power generation assets decreased by 11% in 2001, and then only picked up by 6.7% in 2002. In absolute monetary terms, the total investments in power sector in 2002 were less than that in 2000. In addition, approval for new coal-fired power plants almost came to a halt from 1998 to 2001.

The burgeoning demand and current inadequate supply mean that severe electricity shortages will continue for the next three years. To mitigate future electricity shortage crises, vast investments will be needed in the power generation sector.

### Abundant Potential Opportunities

It is expected that the Chinese electricity sector will remain a growth market for the next 20 years. In spite of the impressive performance of the Chinese economy in the past two decades and the per capita electricity generation, consumption was,

respectively, only 1,163 kWh, and 995 kWh in 2001, and the average residential electricity consumption per person was only 144 kWh in 2001. These levels of consumption are significantly below those of the OECD countries.

According to the National Electricity Grid Corporation, over 30 GW of new capacity per year will be required from 2003 to 2020, costing over US\$14.5 billion per annum. According to IEA, total investments in the Chinese energy sector over the next 30 years will be US\$2,300 billion, approximately 80% of which, or US\$1,840 billion, will be in the electricity sector. This equals approximately US\$61 billion per year. Domestic resources alone will not be able to meet the amount of investment requirements. International investors will play a role in providing the much needed electricity for the growing Chinese market.

According to the China Association of Electricity Enterprises, the average unlevered return in the power generation sector is currently estimated at 10% to 12%, which can be significantly leveraged upward given the high debt ratio obtainable in the industry.

From 1996 to 2001, the majority of power sector investments went to upgrading and expanding the electricity grid. For instance, investments in the power grid increased by 9.6% per year over the five-year period. By comparison, investment in electricity generation only increased by 0.2% over the same period. Given the current electricity shortages, it is anticipated that more investments will go to power generation in the next few years.

Coal-fired power plants will continue to dominate the landscape before 2020. Due to the abundance of coal in China, coal will continue to be the major fuel for thermal power plants. However, as environmental laws become more and more stringent, more advanced technologies such as FBC, PFBC, and IGCC will be required. Pollution control devices will also be

required for the existing units. By 2020, 70% of the capacity is still expected to be powered by coal.

Hydro power plants will be the priority of development of the government. Due to the vast upfront construction costs and long term payback period, it is anticipated that most hydro projects will be undertaken by state-owned generators.

Gas-fired plants will probably become the favorite choice of private capital due to the short construction period and relatively low construction costs. The completion of the West-East pipeline in early 2005 will provide sufficient natural gas to a number of gas-fired combined cycles projects in the Changjiang River delta. Guangdong Province will import LNG from Australia in 2007, which will be used to feed a number of gas-fired power plants there. Fujian Province across the Taiwan Strait will also import LNG from

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Indonesia around 2008 for power generation. It is expected that combined cycle gas-fired units will become popular in the near future, and this will create unprecedented opportunities for gas turbine equipment manufactures, EPC

contractors, developers and project finance lenders.

Nuclear plants will also be developed in Guangdong and other provinces where other forms of energy are not sufficient.

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### Who are the current Players?

The electricity sector was monopolized by the government until 1985 when serious power shortages forced the government to restructure the power sector and open electricity generation to private capital. Since then, IPPs have captured 40% of the market share.

After more than a decade of piecemeal reform, an historical step was taken in 2002 when the government decided to break up the State Power Corporation and introduce competition into the electricity sector. The goal of the new restructure is to separate power generation from transmission and distribution, and establish a wholesale electricity market with open access for all entrants which will determine electricity prices through the interaction of supply and demand, instead of through

government regulation. However, transmission of electricity and the operation of the national grid will still remain in the hands of the government.

Based on this restructuring blueprint, the State Power Corporation was split into 11 entities at the end of 2002, including five generating enterprises, two grid companies, and four auxiliary entities such as power engineering and construction companies.

Currently the players in the generation market fall into two broad categories: the state-owned generators and IPPs. The state-owned generators include both central government-owned utilities and local government-owned utilities. The IPPs can be further divided into four groups including mixed-ownership IPPs, co-operative IPPs, foreign-invested IPPs, and private IPPs. The mixed-ownership IPPs are joint stock companies with both state shares and private shares. The cooperative IPPs are collectively owned by a group of investors. The foreign-invested IPPs are limited liability companies with more than 20% of foreign ownership. The private IPPs are limited liability companies owned by domestic private capital. Currently the state-owned utilities own approximately 60% of the generation capacity and the IPPs own 40% of the generation capacity (mixed-ownership IPPs, cooperative IPPs and private IPPs own 31% while foreign-invested IPPs own approximately 9% of the capacity).

The two grid companies will be owned by the government, and will not be open to private investment in the near future. They will control the transmission systems and will provide transmission and wheeling services to all the participants in the wholesale electricity market including generators, marketers, distributors, and qualified end-users.

China Electricity Regulatory Commission believes that the downstream electricity distribution market will be open

to private investors at the appropriate time in the future.

Qualified users with capacity above certain levels will be allowed to purchase electricity directly from generators.

### Biggest Unknown

The outcome of the current power industry restructuring is the biggest unknown for all the stakeholders in the power industry including the government, private businesses, project finance lenders, and end users.

The goal of the restructuring is to reform the wholesale electricity market and let market forces determine electricity prices. The wholesale market will be open to all the participants including generators,

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marketers, distribution companies and qualified users. The current end-user price will be un-bundled into generator prices, transmission prices, and distribution prices,

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with each price reflecting the marginal cost of offering that service. The electricity price paid to the generators will be made up of two parts: the capacity charges and the energy charges. The capacity charges will

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## The Chinese government has realized the importance of environmental protection: new laws enacted in the middle of 2003 will raise emission fees

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be based on fixed costs incurred to construct and maintain the available capacity while the energy charges will be determined by the competitive bidding of the power exchange. The most efficient generator will be dispatched first and the energy price will be determined by the marginal generator.

The transmission prices will reflect the cost of providing and maintaining the power grid and the distribution prices will reflect the cost of providing the electricity distribution service.

The key to the success of the wholesale electricity market is the pricing mechanism. The China Electricity Regulatory Commission, the independent government body established to monitor the power industry, decided to form six regional power markets based on the existing power grid. It is expected that the Northeast Power Market will be in trial operation from the beginning of 2004.

The biggest unknown is how the

pricing mechanism will be formed in the wholesale electricity market, and how the “invisible hand” will direct the generators, transmission companies and distribution companies to provide adequate services to the customers and how the pricing mechanism will work to attract sufficient capital into the industry to ensure adequate future supplies.

### Changing Risk Profile

Along with the restructuring of the power industry, the risk profile of the sector is evolving and changing. Some key risk factors are summarized below:

#### Market Risk

Market risk will become the major risk to be reckoned with. Although the current sale of electricity is still governed by long term PPAs, the power purchasers will become less and less willing to sign long term PPAs. Even if long-term PPAs are signed as take-or-pay contracts, the buyers will not be willing to commit to a fixed price escalated by certain indexes. Therefore, the sellers, and hence the lenders to sellers, will have to gradually bear market risks.

The fundamental way to mitigate long term market risk is to undertake careful market research before making the final investment decision. Market research will focus on both the demand and supply of electricity and fuel. The liberalization of the fuel market including coal and gas will have major impact on the power generation market.

Another important way to survive in a competitive environment is to improve efficiency and lower costs. This will place tremendous pressure on developers and investors to select the most appropriate technology and operating methods to cut costs.

It may be too early to talk about a merchant power market in China at this moment as most power plants are still base-load facilities. However, a few developers are already talking about constructing peak plants in Guangdong Province, one of the most developed areas of China. It is

expected a merchant power market will eventually develop in some form in the future as demonstrated by experience in other countries.

### Environmental Risk

With the deterioration of the environment brought about by more than two decades of rapid economic development, the Chinese government has realized the importance of environmental protection. Investors who intend to invest or buy coal-fired power plants must keep a close eye on environmental issues and factor them into the final investment decision. New laws enacted in the middle of 2003 will raise the emission fees and will impact the bottom line of certain coal-fired thermal power plants.

### Regulatory and Legal Risks

Chinese society, the Chinese economy and the Chinese power sector are still in transition. Old rules are being abolished

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and new rules are being formulated. Keeping track of the new changes and following the latest rules are the mitigants to any regulatory and legal risks. The current restructuring will give grandfather status to the deals signed before 1994, some

of which include guaranteed returns to foreign investors. Deals signed after 1994 including guaranteed returns to foreign investors by local governments will not receive such treatment. The Project Finance Guideline for Power Projects issued in 1997 specifically forbids guaranteed return for foreign investors because it is against the risk-sharing nature of project finance transactions.

Time to Project Finance Power Projects again in China?

Given the surge in electricity demand in 2003 and the huge investments required for the next 20 years, there is no doubt that

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As the Chinese project financing market matures, more innovative financing instruments will be needed to complete transactions within the risk tolerance levels, and schedules, of project sponsors and lenders

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foreign investments and project financing lenders will play a role in the power sector. However, just how project financing should be conducted under the new and changing environment to achieve success is not easy to discern. Nevertheless, understanding the following trends will be helpful to the international project financing lenders planning to expand their business in the power sector of China:

First, project financing has turned

from “the” option to one of many options available to international project developers and sponsors. Private participation in power generation projects in China started in 1986 when the Shajiao B Power Plant was financed on a BOT basis to supply power to the booming capitalist experiment ground of Shenzhen. Major foreign investments in the power generation sector did not come until the mid 1990s when the power sector was opened to foreign investments in 1992. A number of major deals were closed in 1996 and 1997 based on long-term PPAs. There were no major project financing deals involving foreign investors from 1999 to 2002 following the Asian financial crisis. However, new options such as IPO of IPPs in domestic and international capital markets and merger and acquisition activities by foreign investors were developed. Although the bank market is still the dominant source of funding for power projects in China, the capital market has become an increasingly important channel for financing.

Second, the local banks have become increasingly both competitors and partners to international project finance lenders in the Chinese project finance market. Local banks have played a major role in several large project financings in the petrochemical sector (the US\$4 billion Shell-CNOOC Nanhai Petrochemical Complex, the US\$2.9 billion BASF-Sinopec Nanjing Ethylene Project, and the US\$2.7 billion BP-SPC Shanghai Ethylene Cracker) in the past several years. Their ability to offer competitive pricing and to lend long term in both domestic and local currencies gave them a competitive edge in those project financing transactions.

Third, financing of a portfolio of generation assets may be less risky than financing a single power plant. Some successful IPPs, such as Beijing Datang, own generation assets in many parts of the country. They may combine their assets to finance them on a portfolio basis.

Fourth, the project financing lenders

may bundle their project financing expertise with other products such as portfolio financing, merger and acquisition financing, subordinated debt and mezzanine capital in collaboration with institutional investors, private equity, and other capital providers. As the Chinese

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project financing market matures, more innovative financing instruments will be needed to complete transactions within the risk tolerance level and schedule of project sponsors and lenders alike.

### Conclusions

The power sector in China is undergoing tremendous restructuring and growth and has great growth potential in the next 20 years, creating both huge opportunities and threats to investors and project finance lenders. The risks and rewards need to be carefully analyzed in order to achieve success in this rapidly developing market. **ij** *Terry Newendorp is Chairman & CEO of Taylor-DeJongh*  
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