





# China

The strong economic growth displayed by the country in 2005 contributed to the growth of the power industry. The developments in the industry have reduced China's power shortages that were prevalent in the past. Though there are still power shortages, the situation is expected to be resolved in the near future.

## Rapid Increase of Electricity Consumption

### In General

The total electricity consumption in China in 2005 amounted to 2468.9TWH, increased by 13.45 percent compared to the number of the year 2004. But that rate of increase dropped by 1.73 percent.

Electricity consumption of primary industries and households showed a 6.35 percent and 6 percent increase in demand respectively. While those of secondary and tertiary industries dropped by 3.2 percent and 2.3 percent respectively.

## Electricity Consumption of Industry

The 2005 electricity consumption of industries

in China increased to 1805.6TWH. But that rate of increase fell from 16.75 percent in 2004 to 12.48 percent in 2005. The consumption of heavy industries reached 368.9TWH and the consumption of light industries reached 1436.8TWH, increasing by 7.93 percent and 13.85 percent respectively.

Although the proportion of industrial power consumption in the total consumption decreased to 73.13 percent from 73.85 percent of the year 2004, electric power for industrial use still remains as the backbone of the total consumption of China power.

## High speed increase of household electricity consumption

The electricity consumption of households in 2005 is 283.8TWH, showing an increase of 16.19 percent. This number went up by 6.07 percent compared with that of 2004. The reasons for the increased demand include:

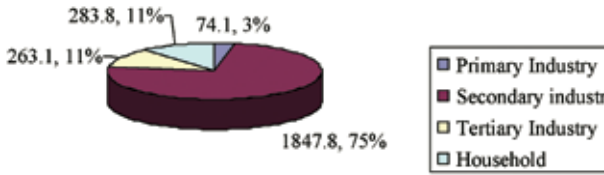
- A sharp increase in the working population's income.

## Industry Configuration of Electricity Consumption in China

Industry Type	Primary Industry	Secondary industry	Tertiary Industry	Household
Consumption	74.1 TWH	1847.8 TWH	263.1TWH	283.8TWH
Increased by	7.64%	13.37%	12.90%	16.19%
Increasing speed	+6.35%	-3.21%	-2.28%	+6.07%

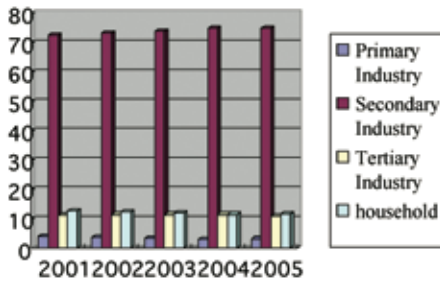
## PROFILE

Capital Area	Beijing	Installed Capacity	422,390MW
Population	9.6 million km	Population Electrified	97.9%
GDP	1.3 billion	Main Voltages (kV)	500, 330, 220, 110, 66
Currency	US\$7.262 trillion	Natural Resources	coal, petroleum, natural gas, uranium, hydropower potential (world's largest)
	Yuan		



power tariff attracts more houses use more electricity at the normal price.  
 Rural electrification projects improved power supply and reliability in rural areas, thereby increasing demand

Electricity Consumption of China during the 10th Five Year Plan



Peak load increase even higher  
 The 2005 peak load of the main grid in China amounted to 332,200MW, showing an increase of 16.97%. The increase in peak load exceeded the increase in power consumption for the first time since 2003. The restrained power demands were partly set free, and severe power shortages were avoided.

- With increased living areas, people began to pursue high quality and comfort life, which requires more electricity supply.
- The difference between peak and normal

Electricity Production  
 The installed capacity remained high speed increase and made a breakthrough of 500 GW.  
 On 26 December, 2005, the power industry in China reached a milestone. On this day, the total installed capacity of China reached 500GW. It took only 19 months for the increase from 400GW to 500GW for the total installed capacity of China's power industry. This was

Peak Load 2005 by Regions

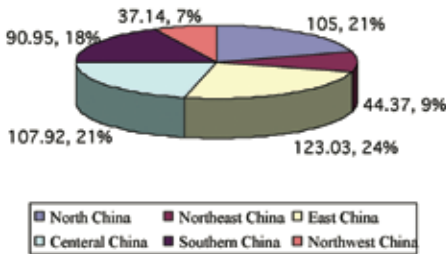
	Peak load	Increased by	Electricity Dispatched by main power grid (consumption)	Increased by
Year sum	332,200MW	16.97%	2068.6TWH	14.04%
North China power grid	80,350MW	21.95%	502.6TWH	16.69%
Northeast China power grid	31,410MW	4.87%	201.4TWH	6.57%
East China power grid	85,810MW	23.95%	541.1TWH	16.07%
Central China power grid	59,590MW	15.17%	344.2TWH	13.97%
Southern China power grid	52,200MW	13.31%	326.4TWH	13.72%
Northwest China power grid	19,930MW	7.76%	135.7TWH	9.26%



the fastest developing period on record of power sources since the founding of the Peoples' Republic of China. By the end of the year 2005, the total installed capacity in China had reached 508.41GW, an increase of 14.9% compared with that of the year 2004. The installed capacities of hydropower, thermal power and nuclear power were 116.52GW, 384.13GW and 6.85GW respectively at the end of 2005, accounting for 22.9%, 75.6% and 1.35% of the total capacity.

The total capacity of 66.02GW was newly installed in 2005, among which, the capacity of thermal power and hydropower increased by 54.65GW and 11.28GW. These newly installed capacities are located power shortage-prone regions, specifically East China, North China and Southern China.

The capacities in East China, Central China and North China reached 123.03GW, 107.92GW and 105.00GW respectively. In East China, the rate of increase in installed capacity (26.9%) is far higher than the average national rate of increase (14.9%) of installed capacity, which served as the most important factor to partly solve the severe conflict between power supply and demand in this region in recent years.



Installed capacity by regions in China

The increase of electricity generation output slowed down in 2005

The total electricity generation output reached 2474.7TWh, increasing by 280.4TWh with a rate of increase at 12.8 percent, less than the rate of increase in 2004. In 2005, hydropower generation increased and reached its peak output of 395.2TWh since foundation



of the People's Republic of. China, accounting for 16.0 percent of the total generation output in 2005. The generation of thermal power in 2005 was 2018.0TWh, 81.5 percent of the total output, and increasing by 11.5 percent over the previous year. The 2005 nuclear generation output was 52.3TWh, accountable for 2.1 percent of the total output and increasing by 3.7 percent over the previous year.

### Strengthening of the power grid transmission capacity

#### ·Large-scale power grid construction

2005 was a big year for Chinese power grid investment. According to preliminary statistics, the length of transmission lines of 220KV and above put into operation was 23,372km with the substations have a capacity of 128,070MVA. By the end of 2005, the total length of transmission lines of 220KV and above reached 251,900km, increasing by 9.6 percent compared with the previous year. The substation capacity of 220KV and above reached 866,800MVA, increasing by 15.9 percent. Key project constructions also went smoothly in 2005. The demonstration project of 750KV transmission lines on the northwest China power grid showed that the highest voltage level of transmission lines in China increased.

#### ·Trans-regional and trans-provincial power transmission capacity strengthened

The capacity of trans-regional power transmission was strengthened with the operation of 14 power generators on the left bank of Three Gorges. The total amount of electricity transmission among

regions in 2005 reached 65.1TWH, increased by 13.71 percent.

The power transmissions between provinces are more frequent. The total output to other provinces and input from others amounted to 335.478TWH and 318.765TWH. The main output provinces are those with rich coal and hydropower reserves, such as Hubei, Guangxi, Shanxi etc. While the main input provinces are those with high speed economic increase and relatively in short of power supply, such as Guangdong, Beijing, Shanghai etc.

#### •Export and Import of Electricity in 2005

The total amount of electricity imported and exported in 2005 by China was 16.687TWH, showing an increase of 24.19 percent, including 4.98TWh imported and 11.707TWH exported, increasing by 45.24 and 16.98 percent respectively. The main power trading partner countries and regions of China include Russia, DPRK, Hong Kong, Macau and Vietnam etc.

#### Power demand and supply

The power shortages in 2005 were regional, seasonal, or periodical instead of the continuous and large-scale power shortages of 2004. The number of provinces that suffered power shortages decreased from 26 in early 2005 to 11 in November. The largest gap between power demand and supply is around 25,000MW.

Taking a look at the monthly power shortages,

there was severe in many provinces due to the high capacity load of industry and house warming from January to March. Another reason is that the newly planned installed capacity hadn't been put into operation yet during this period. From April to June, the situation looked better. But there were still altogether 18 provinces that had to cut off lines at their peak load. The period from July to September was another summit of power consumption. But due to the increase of installed capacity and rich rainfall, the power shortage range didn't expand. During the last three months of 2005, more provinces were released from power shortage.

Power demand and supply situation also varied from region to region. The conflict between power demand and supply remained prominent in North China. The total capacity of cut off lines in this region amounted to 8,790MW in 2005. For other regions, the situation was better and expected to look up further in 2006.

#### ENVIRONMENT

The long-term threat to China's growth is the deterioration of its environment, especially air pollution, acid rain pollution caused by sulphur dioxide emissions from thermal power plants, soil erosion, and the fall of the water table especially in the north.

Since implementing the reform policy and opening up to the world, environmental protection in China has progressed significantly along with a rapid development of the electric power industry.

An industrial experiment of Pressurized Fluidized Bed Combustion (PFBC) technology is also under way. In addition, 300MW to 400MW demonstration Integrated Gasification Combined Cycle (IGCC) power plants are planned for construction. A batch of gas and steam turbine combined cycle power projects has also been initiated. Chinese-made desulphurization equipment for 200MW units have been built.

