



# **China International Copper Conference 2009**

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## **China Power Development & Power Market Construction**

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**Market Regulation Dept.**

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**Nov. 8, 2009**



# China Power Development and Power Market Construction

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- n I. The healthy development of China's power industry
- n II. Optimization of industrial structure adjustment of China's power
- n III. China's power market construction and progress



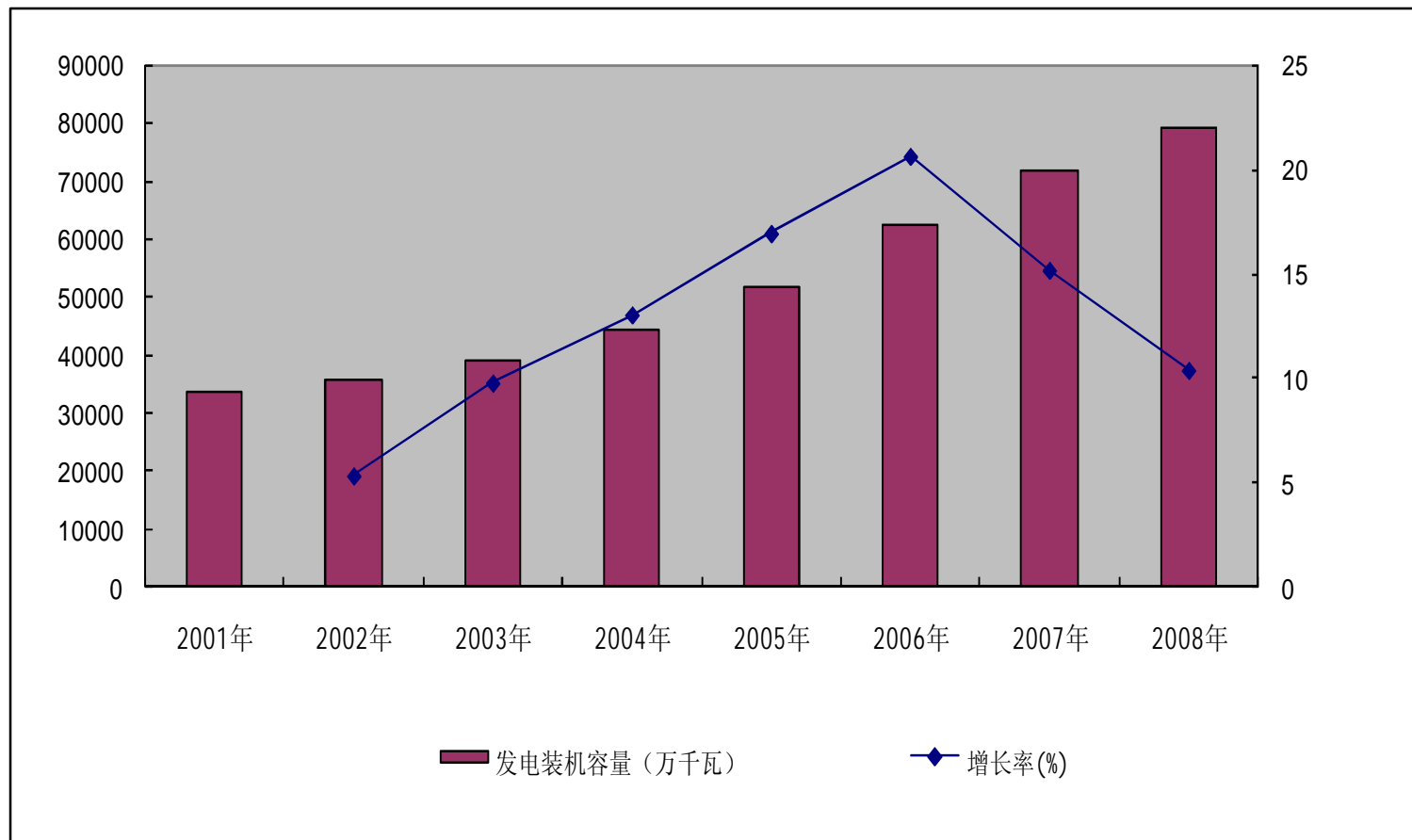
# I. The healthy development of China's power industry

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- n In 2008, the electric power industry experienced severe tests, including ice-snow disaster, earthquake, the Olympic Games security, etc., overcame coal supply intensity, price rising, and electricity demand falling, etc., and essentially created a safe, stable and reliable power supply, a better guarantee for of the national economy and civil living demand for electricity.
- n National power construction and investment structure continued to speed up the adjustment, and power's additional capacity is large.
- n Affected by the international financial crisis and domestic economic operation cycle, the power consumption demand slowed down.
- n Under the domination of the Government, electricity industry optimized the methods of production scheduling and management to strengthen energy-saving emission-reducing.

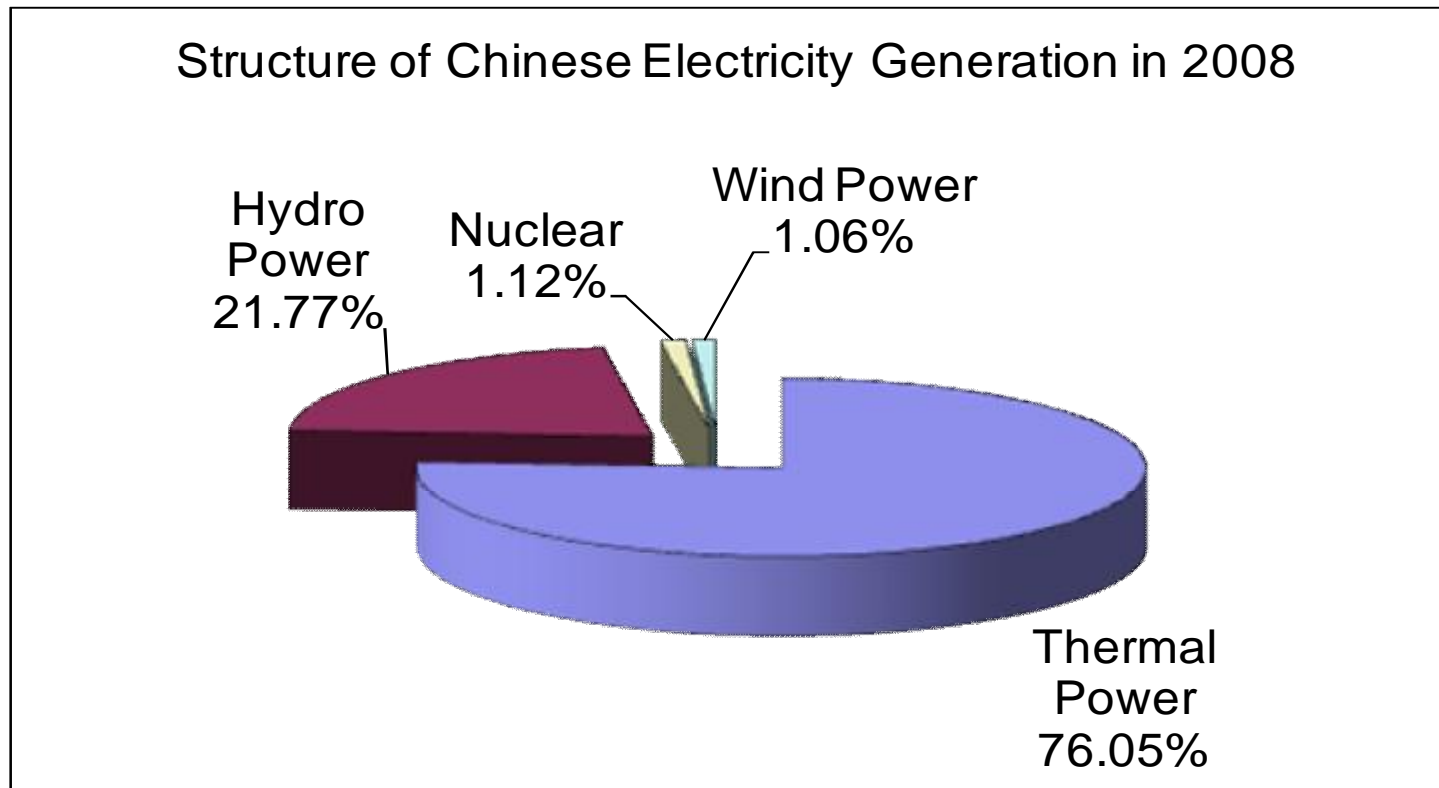
# I. The healthy development of China's power industry

## n 1. China's installed capacity of power generation



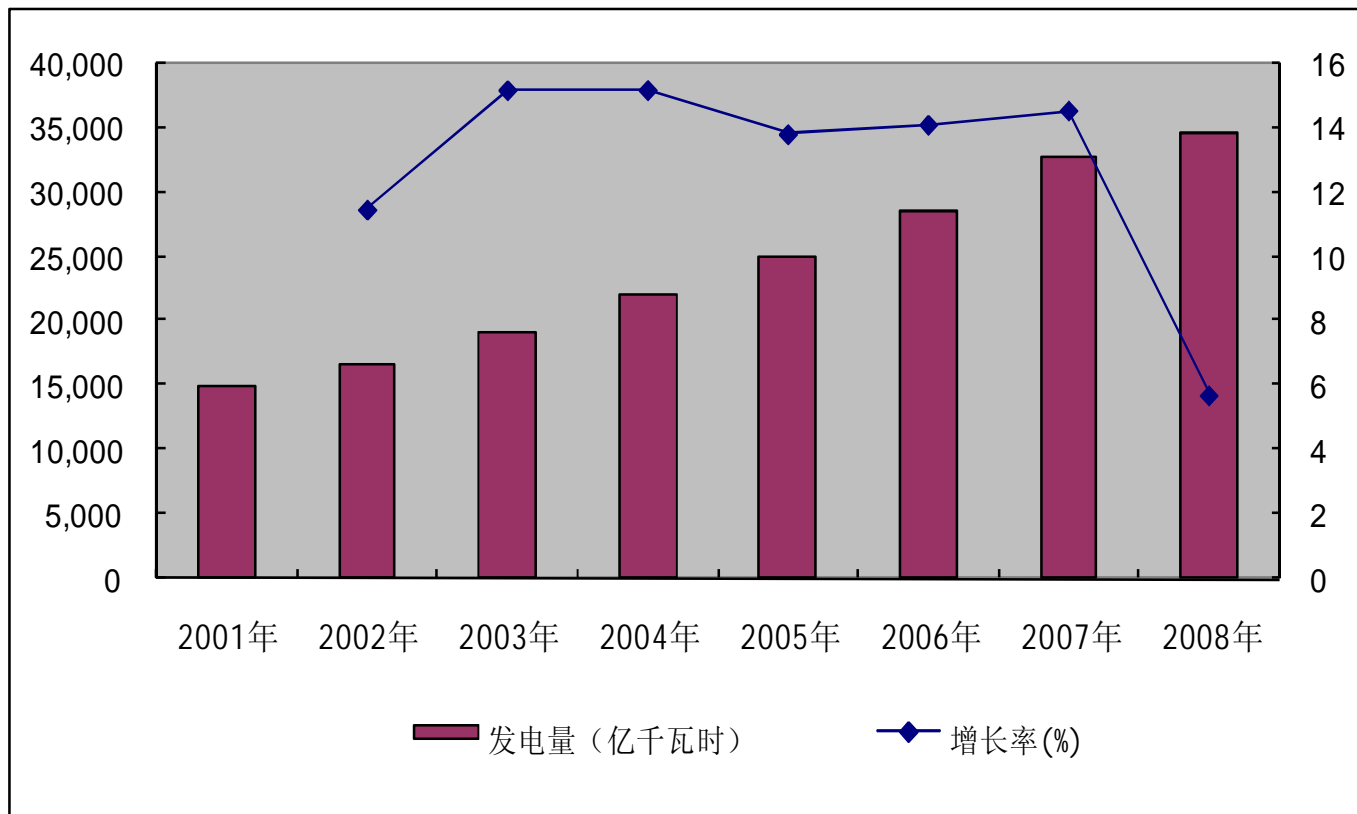
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## n1. China's installed capacity of power generation



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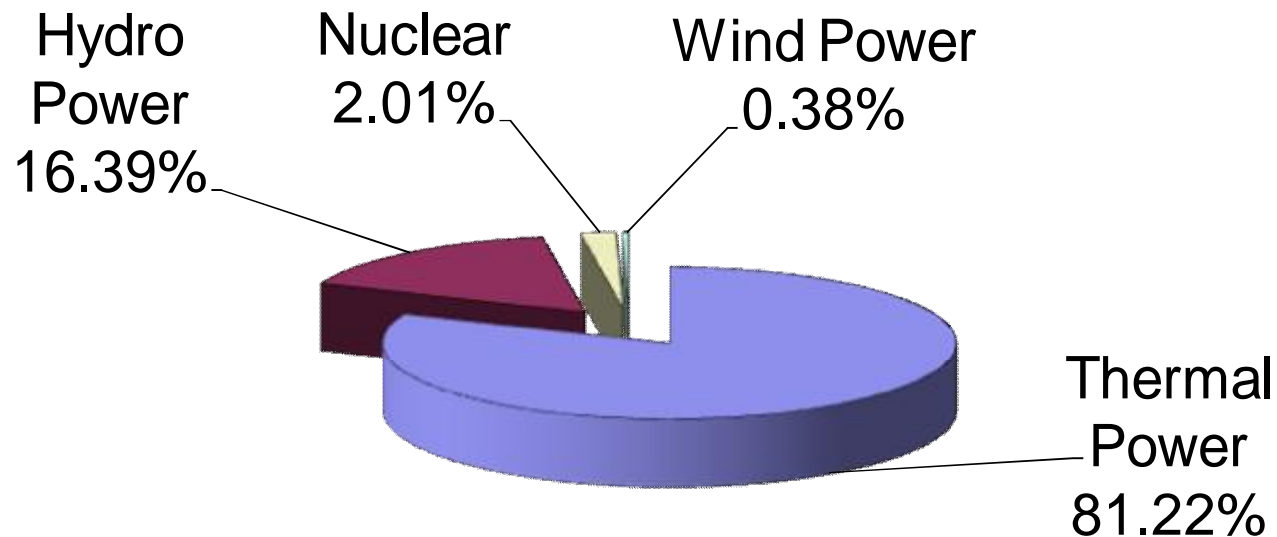
## n 2. China's generating capacity



# I. The healthy development of China's power industry

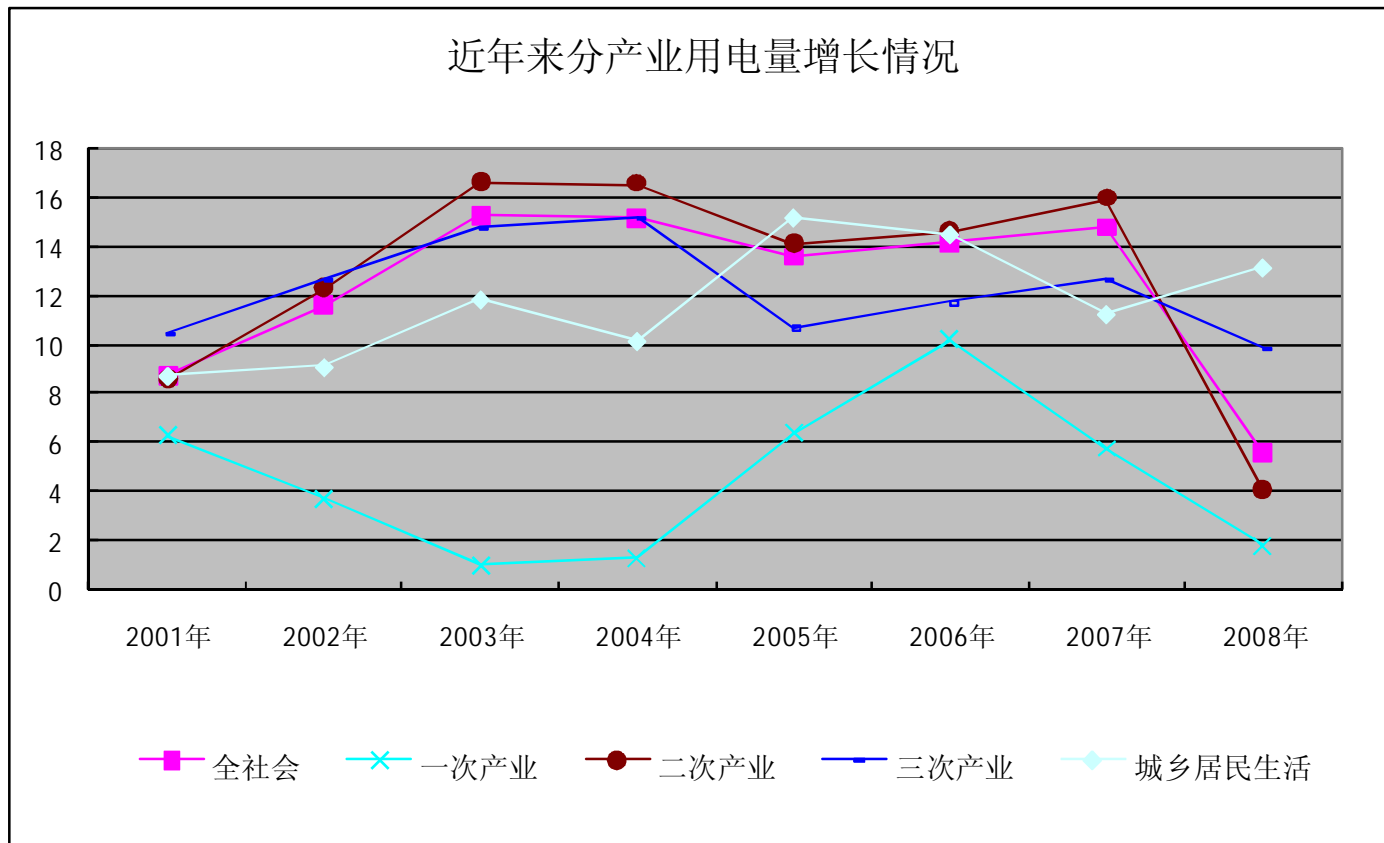
## n 2. China's generating capacity

Structure of Chinese Electricity Generation in 2008



# I. The healthy development of China's power industry

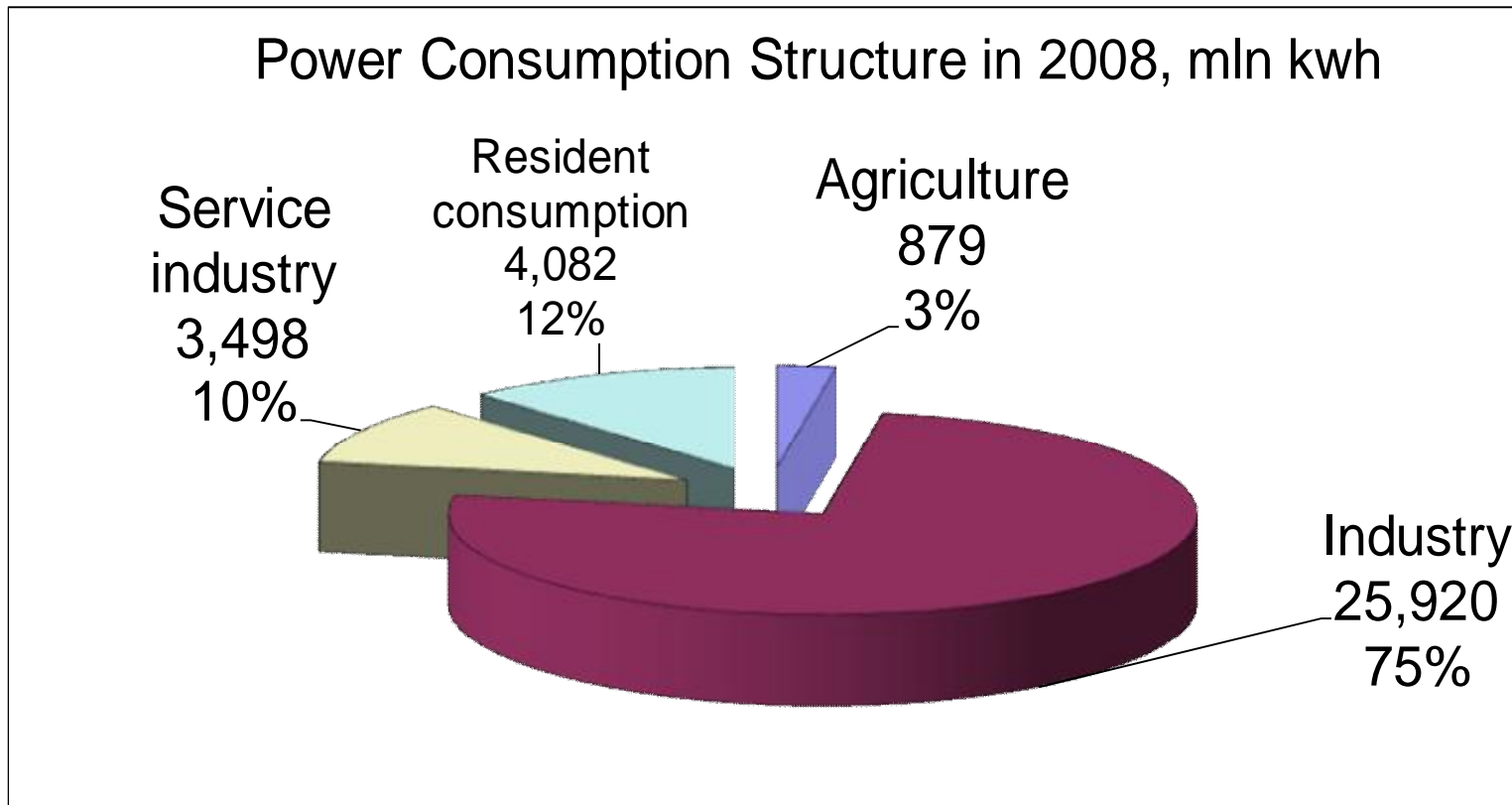
## n 3. China's power consumption





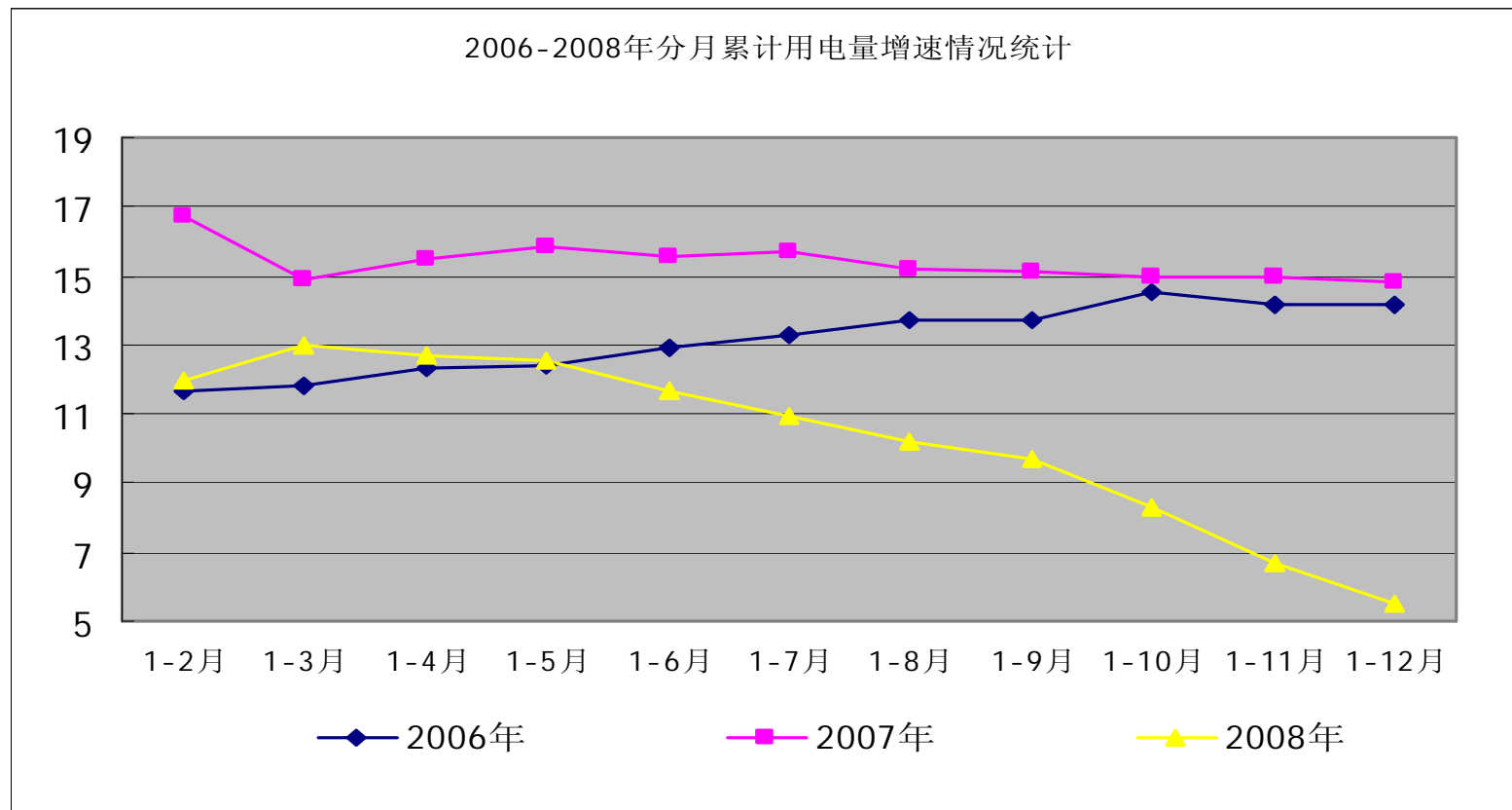
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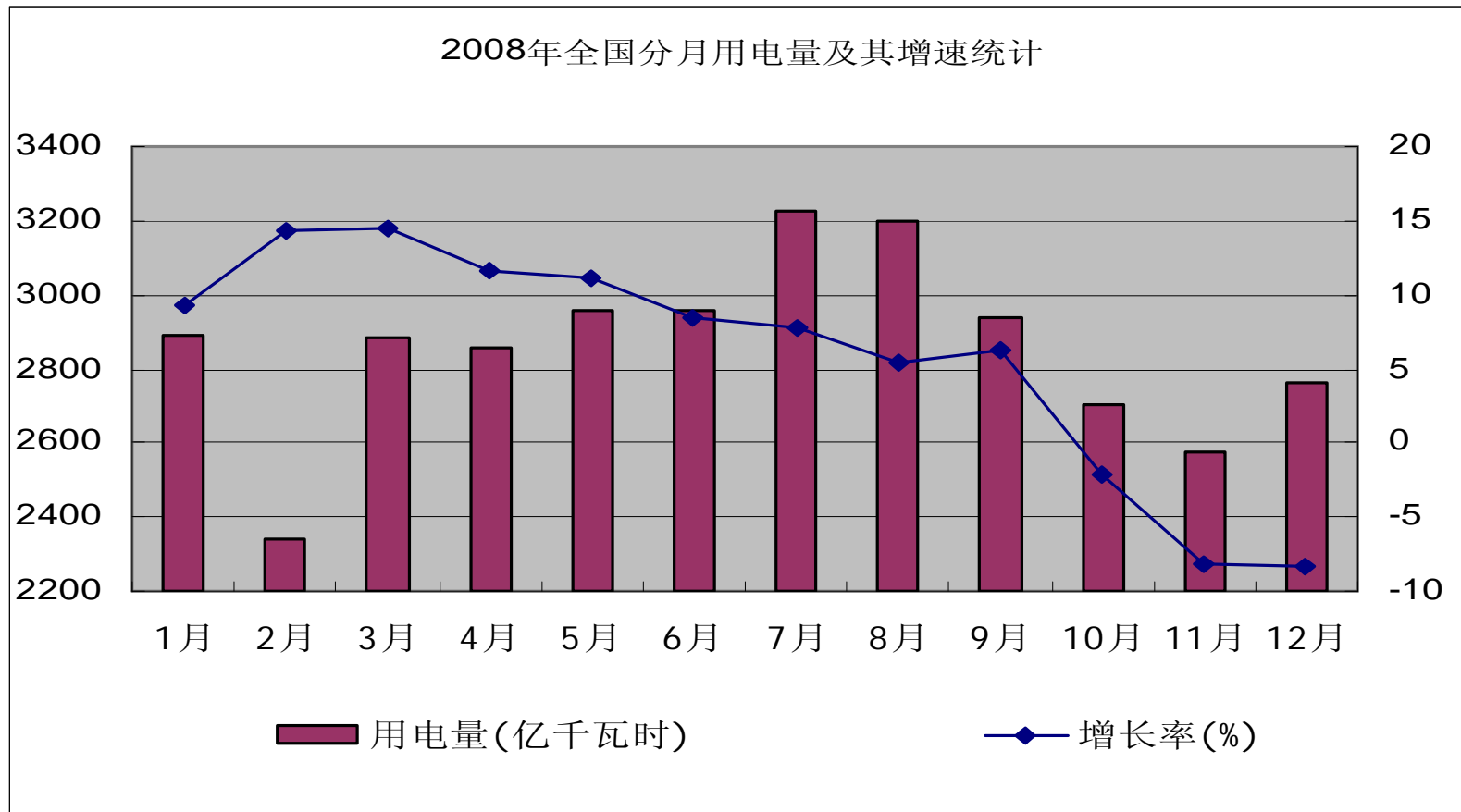
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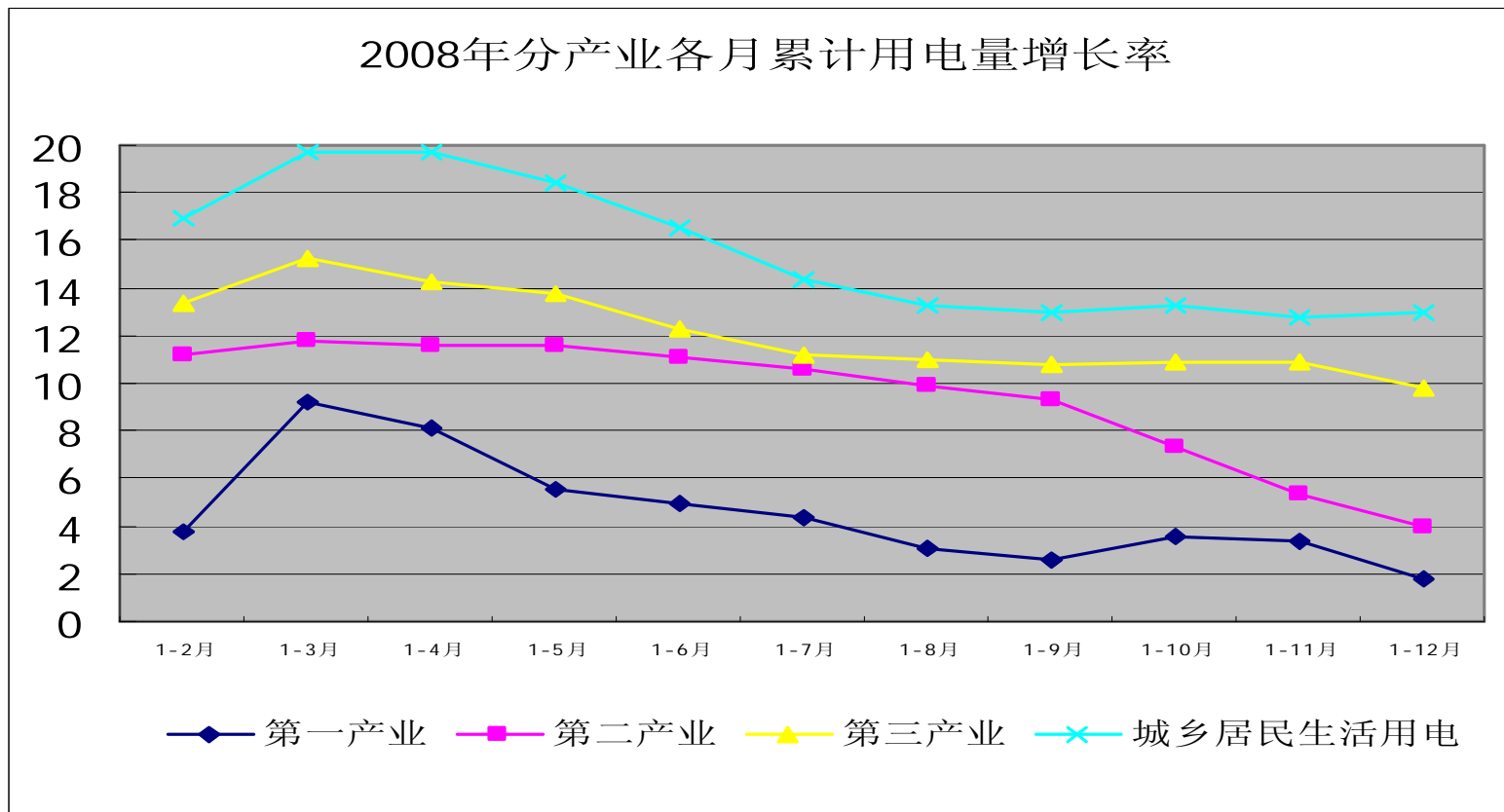
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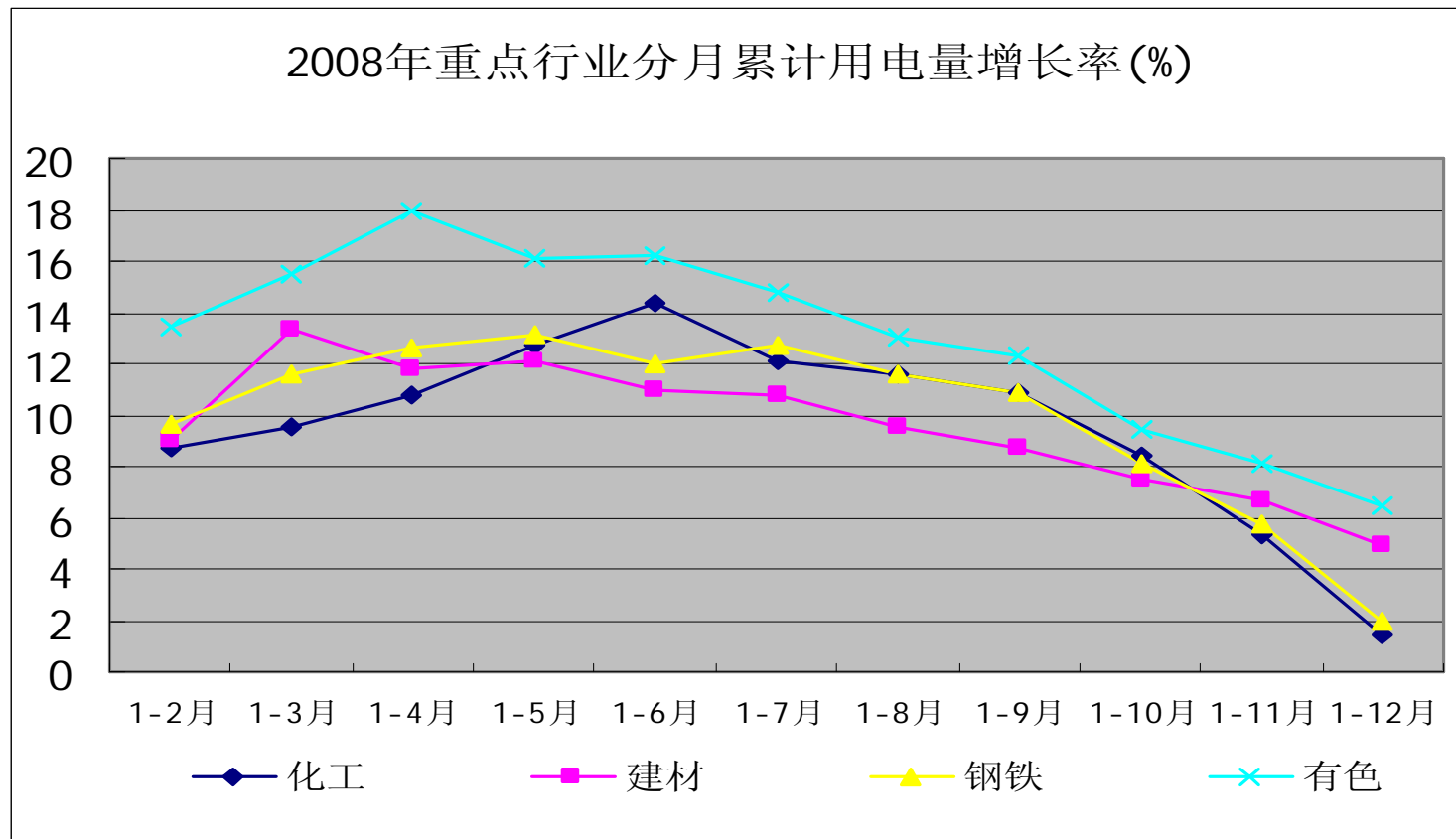
# I. The healthy development of China's power industry

## n 3. China's power consumption



# I. The healthy development of China's power industry

## n 3. China's power consumption





## II. Optimization of industrial structure adjustment of China's power

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- n The proportion of China's hydro power and thermal power has changed a lot in 2008. The thermal power generating units continue to transfer to high-capacity, high-parameter and water-economizing.
- n Large hydropower generating units came online; the construction of nuclear power plants speeded up; wind power doubled; 16.68mln kw of small thermal units were shut down.
- n The investment in national grip increased by 18.12% on a yearly basis, accounting for 45.94% of the total electricity infrastructure. The inconsistency problem has gradually improved.



## II. Optimization of industrial structure adjustment of China's power

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### 1. Power

- n China's generating equipment capacity in 2008 was 792.73mln kw, up by 10.37% Y-o-Y, including 172.6mln kw from hydropower, accounting for 21.77% of the total and 602.86mln kw from thermal power, accounting for 76.05% of the total.



## II. Optimization of industrial structure adjustment of China's power

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### 1. Power

- n Clear energy develops rapidly:
- n Nuclear construction speeds up.
- n In 2008, the central government approved four nuclear power plants with a construction scale of 15.12mln kw. By the end of 2008, capacity of 8.85mln kw are installed and nine projects are under construction with a capacity of 25.25mln kw.
- n Wind power doubled. By the end of 2008, China's wind power capacity was 8.39mln kw, up by 99.76% Y-o-Y.
- n China's PV power station capacity was 0.5 megawatts, additional biomass power station capacity was 299k kw, and the additional garbage power station capacity was 109k kw.





# II. Optimization of industrial structure adjustment of China's power

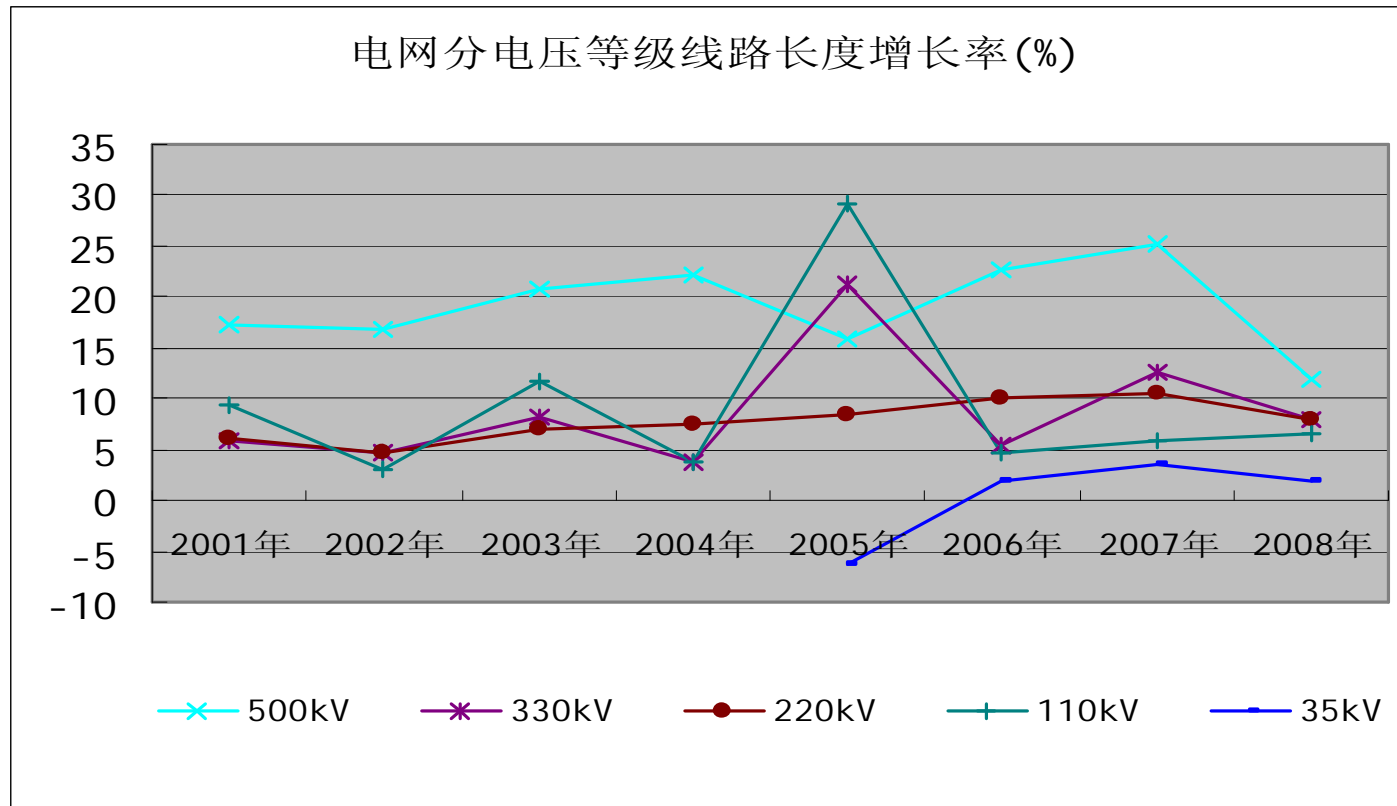
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## 2. Grid

- n In 2008, China's additional lines, over 110kv, were 67,592km, 5,562km more against the previous year. The additional substation equipment capacity was 318.78mln KVA , 68.84mln KVA more on a yearly basis.
- n By the end of 2008, China's over 220kv lines were 358,900km, up by 9.3% y-o-y; the substation equipment capacity was 1.48bln KVA, up by 20% y-o-y.

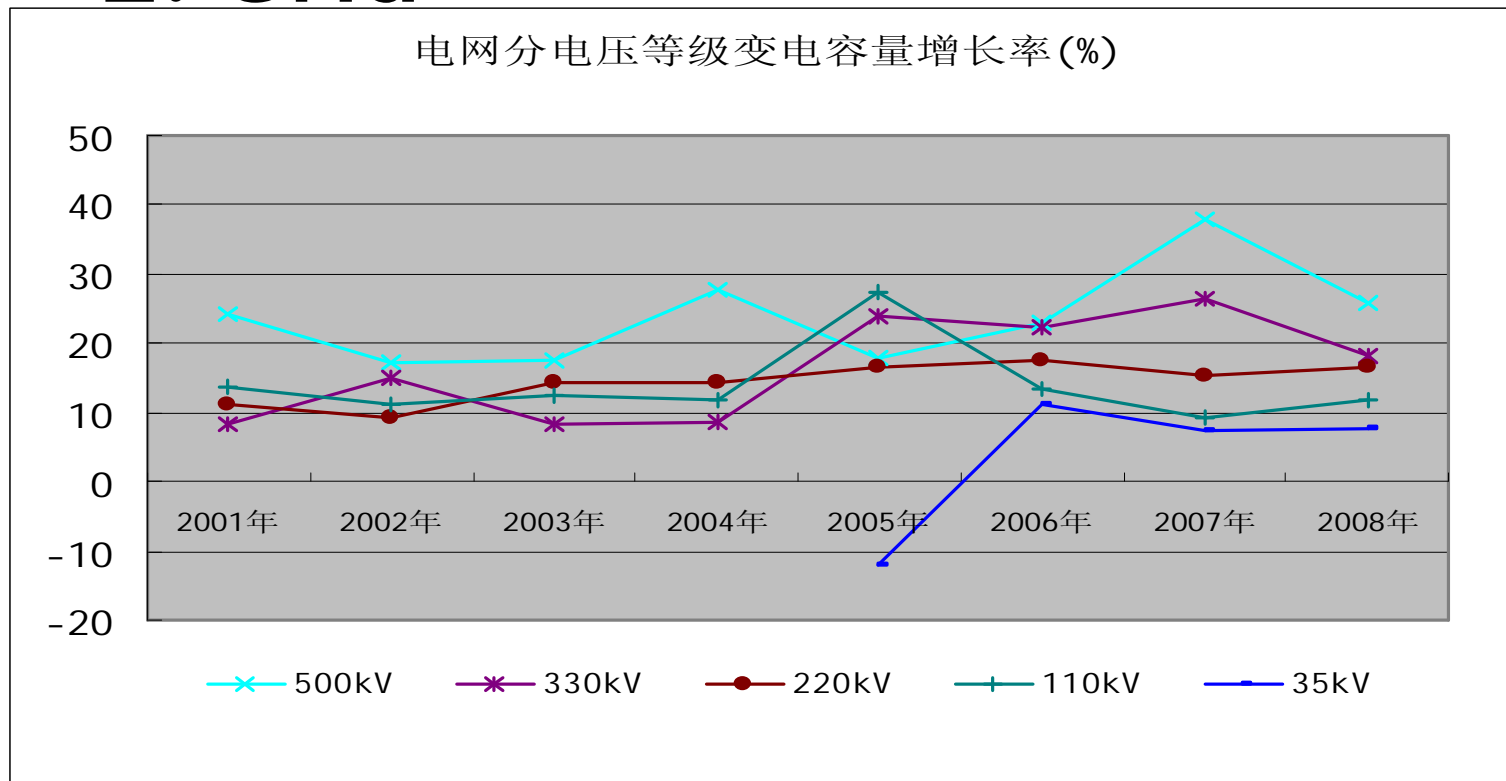
# II. Optimization of industrial structure adjustment of China's power

## 2. Grid



# II. Optimization of industrial structure adjustment of China's power

## 2. Grid





# II. Optimization of industrial structure adjustment of China's power

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## 2. Grid

- n The large-scale and cross-provincial project constructions went well in 2008. The 1,000kv project of Southeast Shanxi-Jinmen was put online in Jan. 2009; Xiangjiaba-Shanghai  $\pm 800$ kv HVDC project was kicked off; Lanzhou East-Baiyin-Ningdong and Qinghai Guanting-Xining 750kv substation projects came online in progression.



# II. Optimization of industrial structure adjustment of China's power

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## 2. Grid

- n By accelerating the power grid construction and improving transmission capacity, grid structure has been strengthened, and grid allocation was optimized.
- n However, for some un-development areas, power transmission capacity has not yet fully satisfy the demand, technical equipment can not fully meet the electricity needs, remains problematic.



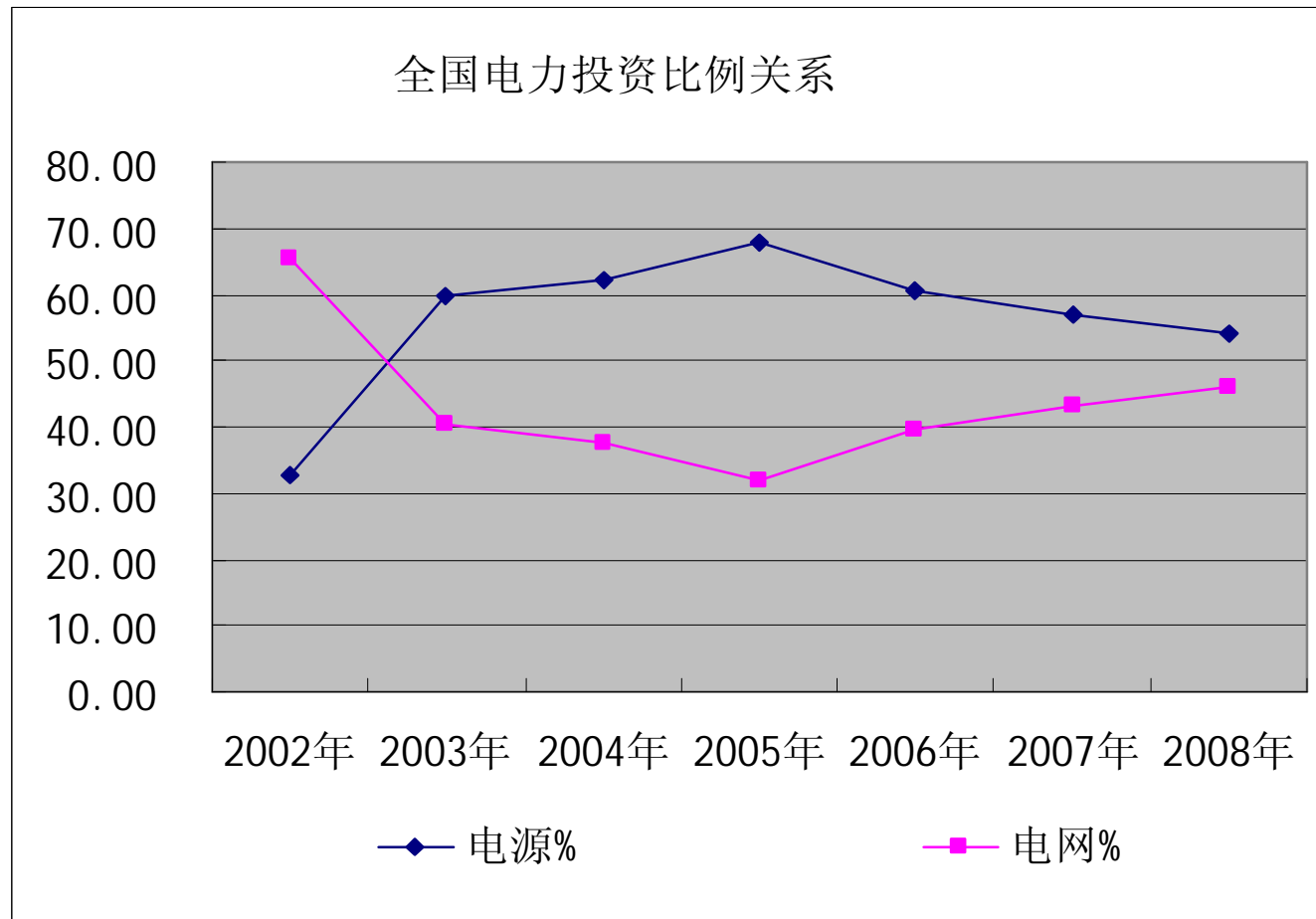
## II. Optimization of industrial structure adjustment of China's power

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### 2. Grid--cost

- n The transmission cost and substation cost in 2008 was 1%-4% and 2% higher than 2007.
- n The copper price dropped a lot in 2007-2008, reducing the substation equipment prices in turn. But supported by grid construction, the decline was much smaller.

## II. Optimization of industrial structure adjustment of China's power





## II. Optimization of industrial structure adjustment of China's power

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### 3. Energy saving and emission reduction achieve remarkable results

- n The standard coal cost of power plants which capacity over 6,000kw was 345g/kwh, 11g/kwh lower on a yearly basis.
- n The loss of transmission and distribution wire was 6.64% in 2008, 0.33 point lower than 2007.
- n By the end of 2008, China's Flue gas desulfurization capacity of power plants has reached 379mln kw. The SO<sub>2</sub> emissions reduced by 14.5% y-o-y.





## III. China's power market construction and progress

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### 1. Review on power marketization

- n The government carried out document No.146 in Dec. 1998 for power marketization and chose Zhejiang and the other five provinces for experiments.
- n The State Council adjusted the policy through document No.5 in 2002.
- n The State Council made a new reform ideas to improve and supplement by document No.19 in 2007.



# III. China's power market construction and progress

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## 2. Construction of power market

- n Preliminary plan on the government-led reform of power price has been formed, experiences on the power regulation haven been accumulated, and initial profile on the construction of power market has also been actively explored.
- n We have made great progress through accumulating experiences, studying and exploring markets in an active and all-round way.



# Construction and development of Chinese power market

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## 2. Construction of power market

- n **(1)Major trading circumstances:**
- n Cross region and province transactions are very active, and the volume rose by 25.13% year on year to 499.9bln kwh (including Hong Kong Special Administrative region), among which cross region volume was 211.7bln kwh, and cross province was 288.2bln kwh.
- n Initial results are seen in power trading, through which the government achieves its purpose of energy conservation, emission reduction and shutting down small thermal power plants and meanwhile ensures a smooth transition. Power trading are carried out in 24 provinces currently, and total volume reached 99.2bln kwh in 2008, an increase of 85% from the previous year, and coal saving and carbon dioxide emission were reduced by 9.08mln and 270,000 tonnes in 2008.



# Construction and development of Chinese power market

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## 2. Construction of power market

- n **(1)Major trading circumstances**
- n Direct trading among large consumers continues to explore. And SERC and NDRC also conduct a series of useful exploration and trial in promoting the direct trading between large consumer and power generation enterprises, and explore an independent price forming system, and also accumulate some experiences.
- n Construction of power market and regulation practice
- n System is the first priority in power regulation, and a series of regulations are drafted.



# Construction and development of Chinese power market

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## 2. Construction of power market

- n (2)Construction of power market and regulation practice
- n Build a new platform for regional power market. In accordance with the regulation plan issued in the Eleventh-Five-Year Plan period and current market situation, we adopt a bilateral market trading system between large consumers and power generation enterprises so as to guild investment and consumption in power industry.
- n We have further explored in Northeast and East markets and accumulated valuable experiences, while it still takes time for the South market to establish its own market regulation and management expertise, and central and North and Northwest regions are now drafting its construction plan.



# Construction and development of Chinese power market

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## 3. Outlook of the construction of Chinese power market

- n Regulate cross region and province power transaction, improve transparency and regulation of the transaction.
- n Open up the power users progressively and build bilateral transaction system, which are adopted by many developed countries.
- n Large consumers own more right to speak and consume more power, thus it will bear more fruits on this approach.



# Construction and development of Chinese power market

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## 3. Outlook of the construction of Chinese power market

- n Carefully analyze and summarize the problems in conducting the power trading and strive to perfect the transaction system.
- n Establish a market oriented transaction system in power ancillary service, which has a profound effect in improving the regulation level and market sense



# Construction and development of Chinese power market

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## 3. Outlook of the construction of Chinese power market

- n Set up a long term contract market and equity market for power transaction.
- n Promote the construction of a platform of a uniform regional power market. Based on the accumulated experiences and already formed structure, regional market is a rational and economic market that will help regulate supply and demand, guide investment and optimize resources allocation for enterprises signing long term contract, through providing real-time price of some competitors in the platform.





# Construction and development of Chinese power market

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## 3. Outlook of the construction of Chinese power market

- n Competition between groups is the core nature of market economy. Monopoly system will hinder technological development, distort resources allocation in any industry, which will result in price distortion, low efficiency, rising cost and bad service quality, and even do bad to public benefit. Thus it is crucial to set up a reasonable and effective competition system and meanwhile improve the supervision over the industry, so as to promote competition and minimum the disadvantages of monopoly system formed in natural monopoly sectors.



# Construction and development of Chinese power market

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## 3. Outlook of the construction of Chinese power market

- n Key factors in establishing power market are to diversify market players and set up scientific price system, through regulating transaction, enlarging transaction varieties, and activating the enthusiasm of market players, so as to cultivate qualified market players.
- n Reform of power price is key to the market oriented reform as well as market formation. From the perspective of internet power price, market should be the dominated force, and independent and rational power transmission and distribution system should be built as soon as possible, and the scarcity degree of power should also be reflected on different power prices so as to guild consumer to save and use power reasonably.



# Construction and development of Chinese power market

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## 3. Outlook of the construction of Chinese power market

- n Thus, the fundamental effect of market in allocating resources can be demonstrated fully, in an attempt to ensure a sound and sustainable development of power industry.
- n We should stick to the platform of power market, regard power price reform as the core and the direction transaction between large consumers as a breakthrough point to accelerate the transformation of power market



# Construction and development of Chinese power market

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Thank you !