

**CHINA ENERGY DEVELOPMENT STRATEGY: PRIORITY TO ENERGY CONSERVATION**

**Shen Longhai**

*Senior Advisor, Energy Research Institute  
National Development and Reform Commission*

Energy is a strategic resource and an important material basis for China to build a society that is well-off in every aspect by 2020. In recent years, a shortage of electricity has emerged as a problem in China and China has also felt the effects of rising oil prices in international markets. Therefore, issues of energy supply and security command more and more attention.

Since the years of reform and openness, the Chinese government has regulated and implemented a policy of paying equal attention to energy development and conservation and giving priority to conservation, thereby basically meeting the requirements of rapid economic growth and the social development.

By 2020, along with an increase in population and the acceleration of industrialization and urbanization, particularly the rapid development of heavy industry and transportation, the demand for energy will increase significantly, and environmental pollution brought about by energy utilization will become even more evident.

**By 2020, restrictions due to the contradiction of energy supply and demand and the problem of energy environmental pollution will stand out in China.**

1. By 2020 the demand for energy will continue in an upward trend.
  - Coal: 2.0-2.9 billion tons; crude oil: 450-610 million tons; and natural gas: 160-200 billion m<sup>3</sup>. Their proportion in primary energy will be over 50 %; 25.8-26%; and 7-9% respectively.
  - Hydropower: the installed hydro capacity will be 245-260 GW.
  - Nuclear Power: 32-40 GW
  
2. China's energy resources are characterized by "abundant coal, deficient oil and insufficient gas." China is a comparatively indigent country in energy resources with a comparatively enormous population. By the end of 2002, proved recoverable

energy resources per capita amounted to 161.4t coal; 23.39t crude oil; and 25.55toe natural gas. China has 55.9% of the world's coal, 8.4% of crude oil, 5% of natural gas.

3. In 2003, China already was the second largest energy consumer in the world. However, China's per capita energy consumption only accounts for half of the world average level and less than 1/12 of U.S. level. Power consumption per capita is below 15,000 KWH, and in the poor areas, 15 million people have no accessed to electricity.

4. Currently, the growth of China's economy is still characterized by high investment, high consumption and high pollution.

- In 2000, the energy consumption of per unit of products of eight industries was 40% higher than that of advanced international levels.
- Energy efficiency is ten percentage points lower than advanced international levels.
- The energy efficiency of major energy consumption equipment is low.

5. Using energy in this way results in severe damage to the environment

Emissions of SO<sub>2</sub> and soot caused by energy consumption exceed 80% of total SO<sub>2</sub> emissions. In 2002, SO<sub>2</sub> emissions caused by energy consumption amounted to 19.3 million tons; emission of soot caused by energy consumption reached 10.1 million tons. The area covered by acid rain is 30% of the total land area, which greatly exceeds the environment capacity.

**Adhering to the guideline of giving priority to Energy conservation is the first priority in China's energy development strategy.**

In order to realize the developmental objective of China's medium- and long-term economy and society, especially the comprehensive realization of a well-off society in 2020, China is studying the establishment of medium- and long-term energy development strategies and energy development plans, which aim to transform China's energy use from a coarse energy intensive mode into energy efficient mode as soon as possible. This will include modernizing industry, protecting the environment, and realizing the healthy and sustainable development of economy and society.

On 30 June of 2004, the Chinese government passed the Compendium of Medium- and Long-term Energy Development Plan (2004-2020)(draft version) in principle. The new compendium is more forward-looking and practical than the former plan. The plan consists mainly of the eight points below:

1. Putting energy conservation in first place, implementing energy conservation systems and measures comprehensively and strictly;
2. Adjusting and optimizing energy mix, carrying out a strategy giving priority to coal, electricity, comprehensively developing oil and gas and new energy.
3. The development of the energy industry should give attention to eastern, central and western areas, the economic and social development needs in urban and rural areas, and it should also address the reasonable allocation of energy production, transportation and consumption, and promote a harmonious development between energy and transportation.
4. Making full use of both domestic and foreign resources (both markets), encouraging domestic energy exploration, development and construction, and at the same time actively participating in the cooperation and development of world energy resources.
5. Quickening scientific and technical progress and innovation. Whether in energy development or in energy conservation: we have to emphasize technological innovation and widely adopt advanced technologies; eliminate the obsolete equipment, technology and processes, and intensify scientific management.
6. Enhancing environmental protection, sufficiently considering resource constraints and the capacity of the environment, working hard on mitigating environmental effects resulting from energy production and consumption;
7. Ensuring the safety of energy supply, diversifying energy supply, and establishing strategic oil reserves.
8. Establishing guaranteed measures of energy development, harmonizing energy resource and energy development policies, making use of market functions, and increasing investment in energy.

We can see that energy conservation is given first place in China's energy development strategy. Energy conservation is a realistic strategy for alleviating the problem of energy constraints, a fundamental measure to resolve energy related

energy environmental problems, an important approach to upgrade the quality and benefits of economic growth, and a necessity to enhance enterprises' competitiveness.

To resolve the problem of energy constraints, on the one hand we shall increase resources development by strengthening domestic exploration, speeding up project construction, and making full use of foreign resources. On the other hand, we shall adhere to giving priority to energy conservation, taking a path of step-by-step change in energy conservation. Without vigorous energy conservation, the sustainable, rapid, harmonious and healthy development of China's national economy cannot be well supported. Without a change in energy conservation, it is hard to realize the new approach to industrialization.

**The Chinese Government issued the first plan for energy conservation for the medium-and long-term.**

In order to push the whole society towards energy conservation and energy intensity reduction, improve energy efficiency, speed the creation of an energy saving society, and alleviate energy constraints and environmental pressures, the National Development and Reform Commission (NDRC) has formulated the "China Medium and Long Term Energy Conservation Plan" and the "Energy Development Program Outline for the Medium and Long Term." Through approval of the State Council, the "China Medium and Long Term Energy Conservation Plan" had already been publicized and distributed to different locales and different departments for implementation. The term of plan is divided into the Eleventh Five-Year Project Term (2006-2010) and the year of 2020. The plan is divided into five sections:

- China's current status of energy use
- The situation and task of energy conservation
- The guiding ideology, principle and objectives of energy conservation
- The key fields and key projects of energy conservation
- The guarantee measures

The objectives of energy conservation:

- By 2010, the energy consumption per RMB 10,000 GDP (invariable price of 1990) will be decreased from 2.68 tce of 2002 to 2.25 tce, and the annual

average energy conservation rate will be 2.2% from 2003 to 2010, and the accumulated energy saving capacity will be 0.4 billion tce.

- By 2020, the energy consumption per RMB 10,000 GDP will be decreased to 1.54 tce, and the annual average energy conservation rate will be 3% from 2003 to 2020. The accumulated energy saving capacity will be 1.4 billion tce, 111% as much as the total planned newly-increased energy production of 1.26 billion tce during the same period, and correspondingly a reduction of 21 million tons of sulfur dioxide.
- By 2020, the overall energy consumption per unit for major products will reach or approach the international advanced levels of early 1990's (large- and medium-size enterprises reach the international advanced level of early 21<sup>st</sup> century).

Ten key projects:

1. Coal-burning industrial boilers renovation project
2. Regional cogeneration project
3. Utilizing waste heat and pressure project
4. Saving and substituting oil project
5. Motor system energy conservation project
6. Optimizing energy system project
7. Building energy conservation project
8. Green light project
9. Government agency energy conservation project
10. Energy conservation monitoring and technology service system construction project

Key fields of energy conservation:

- Key industries: Electric Power; Iron and Steel; Non-ferrous Metals; Petrochemicals; Chemicals; Building Materials; Coal and Machinery, etc. (eight high energy consumption industries);
- Transportation;
- Architecture—Commercial and Residential.

Ten implementation Measures:

1. Adhere to and implement the guideline of giving priority to energy conservation;
2. Formulate and implement unified and harmonized energy and environment policies to promote energy conservation;
3. Formulate and implement industrial policies to facilitate structural adjustment;
4. Formulate and implement incentive policies for energy conservation;
5. Strengthen energy conservation management according to laws;
6. Accelerate development, demonstration and promotion of energy conservation technology;
7. Promote new market-based energy conservation mechanisms;
8. Reinforce energy conservation regulations on key energy consuming units;
9. Intensify promotion, education and training of energy conservation;
10. Enhance organization and leadership, and promote program implementation.

### **Enhance cooperation in energy conservation and technological transfer in Northeast Asia**

It is important for every Northeast Asian nation to further explore, develop and utilize energy resources to achieve their long-term growth goals. At the same time, it is more important for them to make efforts to build a society that practices thrift by saving energy, improving energy efficiency and changing energy consumption patterns. There exist many opportunities for countries in the region to work together on energy conservation.

China has great potentials for energy saving and is giving ample opportunities for bilateral or multilateral cooperation in the field.

There are no obstacles to regional cooperation, bilateral or multilateral, in energy conservation. Japan and South Korea are known for high energy efficiency, have many energy saving technologies and products and can play an important role in the area.

Since 1998, the Chinese government has engaged in a big energy conservation program in cooperation with the World Bank and Global Environment Facility:

Phase 1: To create three pilot Energy Management Companies (EMCo or ESCO) which have implemented 317 projects as of May of this year, invested 857 million RMB, and realized annual energy savings of 1.03 million tce and CO<sub>2</sub> emission reductions of 928,000 tons of carbon.

Phase 2: It was initiated in 2003 and a Loan Guarantee Special Fund was established to help EMCo secure loans from commercial banks to implement energy efficiency projects.

In April 2003, the Energy Management Company Association (EMCA) was created to facilitate the operation of a new energy saving mechanism—Energy Performance Contracting—in a bid to build and develop China's energy conservation service industry. This year, EMCA sent a delegation to Japan and South Korea and established a working relationship with its counterpart in the two countries. As Thailand and Japan are scheduled to host Asia's first ESCO conference in Bangkok in October, it is expected that China and other Asian countries will further push forward regional cooperation in energy conservation.