



Continue to Prioritize Energy Conservation and Strengthen China- Russia Energy Efficiency Cooperation

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Overview

- Energy conservation in China
- China maintains policy of giving priority to energy conservation
- Strengthening bilateral cooperation in energy development and saving between China and Russia



China is doing well in energy conservation

- China's basic national policy is to conserve natural resources and speed up in the building of a resources saving-minded, environment-friendly country, promoting an economy that is in harmony with population, resources and environment.
- With energy conservation taking precedence in its energy policy, China has been striving to improve energy efficiency, accelerate restructuring, promote technology advance, and make efficient use and reuse of resources.



China is doing well in energy conservation

- China has for the first time published its medium- and long-term energy conservation plan specifying guidelines to follow, principles to hold to, objectives to achieve, key projects to complete, and implementation measures to take.
- China has for the first time set a goal to reduce energy consumption per 10,000 Yuan GDP generated by 20% by 2010. This is a constrained goal.



China is doing well in energy conservation

- A nationwide consensus on energy conservation is being built in China. More and more individuals and firms have begun to attach great importance to energy saving and make efforts to construct a cyclic economy.



China faces challenges in energy conservation

- China is poor in natural resources per capita, especially in oil and natural gas.
- China has rich natural resources. Proven reserves of water and coal resources rank 1st and 3rd in the world, respectively. However, the per capita reserves of coal in 2002 are only about 55.9%, oil 8.4%, and natural gas 5%, of the world average.



China faces challenges in energy conservation

- Primary energy production reached 2.06 billion tce in 2005, the 2nd largest in the world.
- Primary energy consumption totaled 2.22 billion tce in 2005, also the 2nd largest in the world.



China faces challenges in energy conservation

- **Energy security:** China became net oil importer in 1993 and import volume of petroleum in 2005 rose to 120 million tons representing a dependence on foreign resources of over 40%.
- **Environmental pollution:** Coal is the main energy source in China and coal combustion has made the country the 1st emitter of SO₄ and the 2nd emitter of CO₂ in the world. Released SO₄ and CO₂ most from coal combustion.



China faces challenges in energy conservation

- Energy use per unit of GDP output value increases as economy expands.
- Though we didn't see increase in energy consumption per 10,000 yuan GDP last year, in the 1st half of this year, it rose 0.8% compared to the same period of last year, surpassing the pace of economic growth. It is difficult to achieve the goal of reducing energy consumption per 10,000 Yuan GDP by 4% this year.



China faces challenges in energy conservation

- Energy consumption rises rapidly as industrialization and urbanization continue in China.
- In recent years, energy consumption coefficient of elasticity has exceeded 1 consecutively. Primary energy consumption increased by 46.6% in three years, from 1.514 tce in 2002 to 2.22 billion tce in 2005.
- Energy efficiency is 10 percentage points lower compared to world advanced level. In 2000, energy consumption per unit of eight major products, i.e. electric power, iron & steel etc. was on average 40% higher than that of the most advanced world level.



China faces challenges in energy conservation

- The Chinese economy is still following an expansion mode of economic growth featuring high investment, high consumption, and high pollution experienced by some developed countries in the past.
- If the economy continues to grow with this pattern without switching to an intensive growth mode, domestic energy resources and solutions alone will no longer be able to support it. Even with the use of some foreign energy resources, it will still be difficult to sustain.



China faces challenges in energy conservation

- How much energy is needed to achieve China's goals of socio-economic development? Chinese analysts have designed three energy demand scenarios for 2020: a business-as-usual (BAU) case and two major alternative scenarios. These scenarios are defined by sets of policies that reflect increased levels of national commitment to energy and environmental goals.



China faces challenges in energy conservation

- In the BAU case, the government basically maintains its current policy through 2020 and thus China's primary energy needs are expected to total 3.3 billion tce.
- The first alternative, termed the "moderate case," is a scenario composed of relatively low-cost, moderate policy adjustments, cutting down energy demand to 2.9 billion tce. The second alternative, called the "advanced case," requires more vigorous policies and adjustments, further reducing energy consumption to 2.5 billion tce.



China faces challenges in energy conservation

- In any case, China's energy needs are likely to more than double in two decades from the 2000 level. By 2020, coal will remain the leading source of energy, accounting for 60-63%, while petroleum takes 25.9-26.7%, and natural gas 6.7-8.9%, in China's primary energy consumption.



China sticks to policy of giving priority to energy conservation

- China began in the 1980s to adopt a policy of developing and saving energy at the same time with priority given to conservation. By 2000, it had basically achieved its goal of powering growth with energy generated half through development and half through saving.
- Current energy strategy is to give priority to energy saving, depend on domestic resources with coal as the main energy source, improve structure of production and consumption, diversify energy sources, strengthen environmental protection, promote international cooperation, and establish a stable, economic, clean and secure energy supply system.



China sticks to policy of giving priority to energy conservation

- Conserve energy through
 1. Restructuring
 2. Developing technology
 3. Improving management
 4. Deepening reforms
 5. Strengthen rule of law
 6. National participation



China sticks to policy of giving priority to energy conservation

- In July, State Council approved in principle the following energy conservation tasks to be carried out:
 1. Speed up construction of energy conservation-oriented industrial system.
 2. Focus on energy saving in key sectors.
 3. Promote technological innovation and advance.
 4. Reinforce management.
 5. Establish energy-saving implementation mechanism.
 6. Build national consensus on energy conservation through mass media.



China sticks to policy of giving priority to energy conservation

- On July 26, the State Development and Reform Commission laid out 10 energy conservation tasks and made 30 provincial and municipal governments and 14 corporations responsible for meeting energy saving goals.



Enhancing China-Russia cooperation in energy development and conservation

- Russia is rich in oil and natural gas and is an exporter of these natural resources.
- Russia's oil reserves are estimated to account for 13% of total oil reserves in the world. Proven oil reserves in east Siberia alone are reported to stand at 17.5 billion tons.
- Russia's crude oil output accounts for 10% of global oil production.



Enhancing China-Russia cooperation in energy development and conservation

- China has been more dependent on oil imports since it became a net importer in 1993.
- By the end of 2010, China's crude oil consumption will reach 330-350 million tons, of which over 1.5 million tons will come from imports. By the end of 2020, oil imports will jump to 250-270 million tons.
- By the end of 2010, China will have to import 20 billion cubic meters of natural gas.



Enhancing China-Russia cooperation in energy development and conservation

- Russian crude oil is mainly transported to China by railway. Manchuria is the largest transfer station that transports 8.8 million tons of crude oil from Russia each year.
- Bilateral trade grew at an average of more than 30% each year over the past five years. Last year's trade almost reached around US\$ 30 billion.
- Bilateral investment cooperation has been booming and key joint projects have been underway smoothly.
- The petroleum and gas companies between China and Russia have signed energy cooperation agreements in March this year.



Enhancing China-Russia cooperation in energy development and conservation

- On April 28, Russia started the construction of the US\$16 billion, 4,000-kilometer "Far East-Pacific Ocean oil pipeline", designed to ship 80 million tons of oil a year. The first stage of the project is to build an oil pipeline from the town of Taishet in Siberia's Irkutsk region to Skovorodino in the Amur region, which is about 63 kilometers from the border of China.



Enhancing China-Russia cooperation in energy development and conservation

- The first phase of the pipeline will be completed by the end of 2008 with a capacity of pumping up 30 million tons of crude oil a year.
- Its construction brings opportunities to local economies as well as for deepened bilateral economic ties, and creates jobs in the Siberian region.



Enhancing China-Russia cooperation in energy development and conservation

- According to the Russian Ministry of Industry and Energy, Russia's crude oil exports to Asia-Pacific will increase from 3% to 30% out of its total oil exports by 2020.



Enhancing China-Russia cooperation in energy development and conservation

Russian Natural Gas Industry Company will build two pipelines to China, through which 68 billion cubic meters of gas will be transmitted from Russia to China every year.

The pipeline in the western part will go through West Siberia in Russia to Altay, and then connect to the pipeline of the west-to-east natural gas transmission project that stretches all the way to the coastal areas in China.



Enhancing China-Russia cooperation in energy development and conservation

- According to a bilateral electricity transmission agreement signed last year, China plans to purchase 600,000-700,000 kilowatts of electricity from Russia by 2008, 3 million kilowatts by 2010, and another 2.4 million kilowatts by 2015.
- In the 2006-2010 period, China will strengthen its cooperation with Russia to complete a project enabling Russia to provide direct current electricity to China from Russian Far East.



Enhancing China-Russia cooperation in energy development and conservation

- Prospects for bilateral cooperation in energy saving are great, though it has not begun yet. Oil fields, power plants, pipelines, etc. all need energy-saving technologies and products to bring down energy consumption.
- China's northeastern region and many regions in Russia are very cold so the two countries can work together in developing energy-conserving technologies on district cogeneration of electricity and heat.



Enhancing China-Russia cooperation in energy development and conservation

- Cooperate over EMCo and promoting Energy Performance Contracting mechanism.
- With the support from World Bank and GEF, China has created three pilot EMCos.
- China's EMCA aims to promote Energy Performance Contracting concept and build energy conservation service industry.
- EMCA members expanded from 59 in 2004 to 158 in 2005.



Enhancing China-Russia cooperation in energy development and conservation

- EMCA members implemented a total of 327 energy conservation projects under EPC in 2005 with an investment of 2 billion yuan (US\$250 million), saving energy in 2.46 million tce, and reducing CO₂ in 1.58 million tons.
- 10 key projects listed in China's medium- and long-term energy conservation plan began to be implemented last year and will help conserve energy in 240 million tce in the 2006-2010 period.



Enhancing China-Russia cooperation in energy development and conservation

- 10 key energy conservation projects:
 1. Coal-fired industrial boiler (kiln) retrofit;
 2. District cogeneration;
 3. Residual heat and pressure utilization;
 4. Petroleum saving and substituting;
 5. Motor system energy saving;
 6. Energy system optimization;
 7. Building energy conservation;
 8. Green lighting;
 9. Government agency energy conservation; and
 10. Energy saving monitoring and testing, and technology service system building.



Enhancing China-Russia cooperation in energy development and conservation

- China is currently carrying out its plan to conserve energy at 1,008 companies in these nine sectors: electric power, iron and steel, nonferrous metals, oil and petrochemicals, building material, coal, machinery building, textile, and papermaking. Their energy use in 2004 reached 670 million tce, 33% of nation's total energy consumption, and 47% of total industrial energy consumption.
- The goal is to save energy by 100 million tce in the 2006-2010 period. It will be measured by energy consumption indicators per unit of major products, or amount of output. Some companies are expected to reach or approach the international advanced level.



Enhancing China-Russia cooperation in energy development and conservation

- China will persist in its policy of placing priority on energy conservation, adopt new measures to strengthen and facilitate the work in this sphere, and bring more opportunities for international cooperation.
- In particular, China's above-mentioned efforts create opportunities for China-Russia cooperation, and regional cooperation in Northeast Asia and in the world as a whole.
- China is willing to work together with Russia as well as other countries to make greater contributions to the China and world in energy development and conservation.