

China's Natural Gas Industrial Development, Energy Saving and Reduction of Emission

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ABSTRACT:

China has seen a rapid economic development since the country opened itself to the outside world 30 years ago. China's GDP climbed to 24.95 trillion yuan in 2007 from 364.5 billion yuan from 1978 an annual increase of 9.8 percent on average, enabling the country to rank fourth in the world in terms of the total economic value. Meanwhile, China's energy consumption grew sharply to 2.66 billion tons of standard coal in 2007, 4.7 times as high as that in 1978. China's energy consumption is concentrated on coal because the nation is rich in coal resources but inadequate in oil and natural gas resources. The proportion of coal to China's primary energy consumption accounted for 69.5 percent in 2007 while the proportions of oil and natural gas made up for 19.7 percent and 3.5 percent respectively.

The coal-concentrated energy structure seriously damages the environment. Of the total atmospheric pollutants nationwide, 90 percent of sulfur dioxide and 70 percent of dust come from combustion of coal. In addition, consumption of coal in large quantities affects improvement of energy efficiency in China. As compared to developed countries, China's energy efficiency rate is only 33 percent, about 10 percentages lower. The efficiency for each ton of coal is only 29 percent as compared to the United States, 17 percent European Union and 10 percent to Japan.

The Chinese government has attached great importance to the economic and social development in harmony with the resources and environment and formulated the policies to "accelerate establishment of the energy-saving and environmental-friendly society." The efforts will be focused on energy saving and reduction of emission in the near future and strive to cut the energy consumption per unit of GDP by 20 percent and emission of pollutants by 10 percent by 2010. Those targets require large-scale use of clean energy and strong efforts for improvement of energy efficiency.

Natural gas is clean energy. Combustion of natural gas is nearly free from emission of dust, mercury and sulfur dioxide. Emission of carbon dioxide is only two thirds of the amount discharged from oil and a half of the amount from coal. Emission of oxides of nitrogen is only 20 percent of the amount discharged from coal. Therefore, the environmental pollution caused by natural gas is far less than that caused by oil and coal.

China came up with the principle to "place the same emphasis on oil and natural gas" as early as the 1980s. The country has accelerated its natural gas industrial development in the 21st century because the government worked out a clear

development plan and released a series of concrete measures to support the natural gas industrial development. The oil and gas enterprises, such as PetroChina, were accelerating their oil and gas exploration and development at the same time.

As of the end of 2007, China's proven geological natural gas reserves were accumulated to 7.39 trillion cubic meters while the proven recoverable reserves reached 4.13 trillion cubic meters. With the annual gas production amounting to 69.4 billion cubic meters, the natural gas production had been accumulated to 860 billion cubic meters. The remaining recoverable reserves were 3.27 trillion cubic meters. China's natural gas production was 69.405 billion cubic meters in 2007, 2.65 times as high as that in 2000, a 15 percent year-by-year growth rate.

To expand natural gas application scope, China has formulated the ambitious plans to import natural gas from Central Asia, Russia and Myanmar and bring in LNG from Southeast Asia and the Middle East. The China-Central Asia natural gas pipeline is currently under construction while the China-Myanmar gas pipeline is also brought under way. The State has actually approved six LNG construction projects. The LNG project in Shenzhen, Guangdong Province, has been already put into operation. There are four other projects to be approved.

It is predicted that China's natural gas reserves will grow rapidly before 2030. However, China's total energy demand will also see a rapid growth during this period of time. The natural gas industrial development will make great contribution to energy saving and reduction of emission. The proportion of natural gas to the primary energy consumption will be raised to 12 percent by 2030 from 3.5 percent at the present time. Meanwhile, using natural gas to replace coal by the related departments on a large scale will also optimize China's energy structure and help fulfill the energy saving objectives in the efforts to improve energy efficiency.

In general, China's energetic efforts for natural gas industrial development will favor establishment of the energy-saving and environmental-friendly society. The Chinese governmental-owned oil companies are increasing their investment for natural gas exploration and development and accelerating their operation to introduce overseas resources. Expansion of natural gas consumption in China will be not only favorable for its own environmental improvement but also sustainable development of the international community.