Natural Gas and Pipelines

2015 saw steady momentum in our natural gas business. Gas production from major producing regions remained stable. Construction of pipelines and gas storages in key regions witnessed steady progress. Despite the weak market, we registered a slight increase in natural gas output and marketed 122.66 billion cubic meters, an increase of 2.7% year-on-year.

By the end of 2015, we operated 79,936 kilometers of pipelines in China, including 18,917 kilometers for crude oil, 50,928 kilometers for natural gas, and 10,091 kilometers for refined products, around 69.8%, 76.2%, and 46.3% of China's total respectively. These pipelines constitute a safe and reliable network with flexible dispatch capacity to deliver multiple sources of oil and gas.

Crude pipeline mileage in the nation's total

69.8%

Natural gas pipeline mileage in the nation's total

76.2%

Pipeline Operation and Control

In 2015, faced with ample gas supply in the market, we rationally arranged pipeline gas imports and LNG purchase on spot, made the best use of the storage capacity of pipelines, and increased gas injection into underground storages.

We operated pipelines more efficiently through optimized management. Stable gas supply in peak consumption periods was guaranteed by optimizing operation and eliminating transmission bottlenecks. Through improving management and coordination among gas production, transportation and marketing, pipeline network deliverability were further optimized and resources more effectively allocated. Self-produced and imported gas, peak-shaving gas from underground gas storages, and coastal LNG were made available to consuming regions to secure supply in key periods and regions.

Underground Gas Storages

We continued to expand our underground gas storage capacity. By the end of 2015, we had 10 storages including Dagang, Jintan, Liuzhuang, Suqiao and Hutubi. With a peak shaving capacity of up to 5.2 billion cubic meters, these storages further secured supply in case of emergency. Underground gas storage Shaan-224, the first one in Changqing Oilfield, became operational for gas injection. With a designed capacity of 1.04 billion cubic meters, the storage received a daily average of 2.5 million cubic meters of gas, helping to stabilize the supply of the Shaan-Jing Gas Pipelines.

Storage and Transportation Facilities

In 2015, several major oil and gas pipelines and their associated facilities were completed and put into operation. These included the upgraded Mohe-Daqing Crude Pipeline, the Harbin-Shenyang Gas Pipeline (Changchun-Shenyang Section) and the Shandong Gas Pipe Network (Qingdao-Weihai Section). Construction of the eastern section of the Third West-East Gas Pipeline and Jinzhou-Zhengzhou and Yunnan Refined Products Pipelines proceeded smoothly.

The Third West-East Gas Pipeline

The Third West-East Gas Pipeline, including one trunk and eight branches, runs from Horgos in the Xinjiang Uygur Autonomous Region to Fuzhou in Fujian Province, with a total length of 7,378 kilometers. The 5,220km-long trunk line has a designed pipe diameter of 1,016-1,219mm, transport pressure of 10-12MPa and an annual delivery capacity of 30 billion cubic meters. It was constructed and put into operation on a section-by-section basis.

The western section runs from Horgos to Zhongwei in the Ningxia Hui Autonomous Region, with a total length of 2,445 kilometers. Construction of this section began in October 2012, and was completed on August 25, 2014. The eastern section runs from Ji'an in Jiangxi Province to Fuzhou in Fujian Province, with a total length of 827 kilometers. It has a designed pipe diameter of 1,016-1,219mm, transport pressure of 10MPa, and an annual delivery capacity of 15 billion cubic meters. Construction of this section commenced in May 2013. By the end of 2015, 815 kilometers of the pipeline had been welded. The section is expected to become operational in 2016.

Jinzhou-Zhengzhou Products Pipeline

Jinzhou-Zhengzhou Products Pipeline starts at Jinzhou in Liaoning Province and ends at Zhengzhou in Henan Province. Consisting of one trunk, two input branches, and seven output branches, the pipeline has a total length of 1,636 kilometers, with a designed pipeline diameter of 219-660mm, transport pressure of 8-10MPa, and annual delivery capacity of 13 million tons. When completed, it will help establish a sophisticated supply network of refined products and optimize the allocation of refined products in Northeast China and the central and eastern regions of the country.

Construction of the pipeline commenced on August 18, 2012, and 57% of it had been completed by the end of 2015, including 1,290 kilometers pipeline welded, 1,118 kilometers backfilled, and 152 railway, road and river crossings.

Natural Gas Utilization and Marketing

In 2015, CNPC marketed 122.66 billion cubic meters of natural gas, 68% of China's total, through pipelines reaching 30 provinces, municipalities and autonomous regions.

Faced with slowing growth in gas demand, we launched promotion activities, and sold gas directly to industrial users and major customers at favorable prices. Moreover, we continued to develop the markets along major new pipelines, including the middle-section trunk and Fujian-Guangdong sub-trunk of the Third West-East Gas Pipeline, as well as economically-developed areas in eastern coastal region. Throughout the year, we signed 84 long-term sales contracts, with annual contract volume of nearly 10 billion cubic meters, in which urban and industrial users taking up 70%.

New breakthroughs were made in developing the city gas and CNG market. Projects in Chaozhou and Jieyang in Guangdong Province and the Wafangdian-Changxing Island Project in Dalian, Liaoning Province, saw smooth progress. Construction of the Hunan Branch and Yunnan Branch was implemented at a faster speed.

We actively promoted the market reform of the natural gas industry. In July 2015, Shanghai Petroleum & Natural Gas Exchange (SHPGX), a joint venture of ten parties including CNPC, Sinopec and CNOOC, started trial operation successfully. There have been over 100 downstream registered users on this trade and settlement platform, and a total amount of 3.5 billion cubic meters of pipeline gas was traded on line in 2015.

Liquefied Natural Gas (LNG)

In 2015, our LNG business witnessed smooth progress in market development and capacity building. By the end of 2015, we had 12 LNG plants in operation with total capacity of 7 million cubic meters per day and produced 560 million cubic meters in 2015. Five LNG plants were in pilot operation, including Huanggang in Hubei Province, Guangyuan in Sichuan Province, and Taian in Shandong Province. Three LNG plants were being built, including one at Wuhai in the Inner Mongolia Autonomous Region, one at Zhaoqing in Guangdong Province, and one at Weinan in Shaanxi Province, with a total capacity of 1.9 million cubic meters per day. We had 550 LNG refueling stations in operation and another 136 under construction. The year-round terminal sales were 1.54 billion cubic meters, accounting for 27.3% of the total sales by all LNG refueling stations in China.

Jiangsu, Dalian and Tangshan terminals kept playing their role in gas supply and peak shaving. In 2015, they received 5.8 billion cubic meters of LNG. The 10Mt/a gasification plant as part of Phase-II of Jiangsu Terminal was successfully put into operation upon its first startup. Mechanical works of Phase-II of the Dalian terminal was completed. The two projects will further secure the smooth supply of natural gas to the Yangtze River Delta and North China regions.

We also made progress in the development of LNG vehicles, LNG transportation, and the formulation of relevant standards. In 2015, we co-developed 105,000 LNG vehicles, accounting for 52.5% of LNG vehicles in China. We also set up demonstration stations for the refitting of LNG vehicles in Chongqing Municipality, Wuhai in the Inner Mongolia Autonomous Region, and Wuhan in Hubei Province, and worked out a series of refitting techniques and solutions. We built/renovated 33 LNG vessels, accounting for 30% of the LNG vessels in China. We also completed a number of tests for LNG transportation by container ships, small ships and railways in 2015.

Routing inspection at gas station