

## Natural Gas and Pipelines

After separating its pipeline and sales units, the company's natural gas and pipeline business gained new momentum in 2017, with pipeline operation optimized, pipeline construction projects implemented smoothly and a double-digit increase in gas sales volume.

### Pipeline Network Operation

In 2017, we ensured safe, stable and efficient operation of our oil and gas pipeline network by improving resource allocation, optimizing centralized control and promoting an "Intelligent Pipeline" and "Smart Network" approach. A total of 22 compressor units were put into operation along the Third West-East Gas Pipeline, Zhongxian-Wuhan Pipeline and Shaanxi-Beijing Pipeline, etc., boosting gas delivery capacity significantly. In particular, the gas pipelining capacity in western China increased by 30% from the previous year. In 2017, the company's long-distance pipelines delivered more than 100 billion cubic meters of natural gas for the first time.

By the end of 2017, CNPC-operated oil and gas pipelines in China totaled 85,582 kilometers, including 20,359 kilometers for crude oil, 53,834 kilometers for natural gas and 11,389 kilometers for refined products, 68.9%, 76.2% and 43.2% of China's total respectively.

### New Storage and Transportation Facilities

The company's pipeline construction projects advanced steadily, adding 4,806 kilometers to the existing domestic network. The Zhongwei-Jingbian connecting line of the Third West-East Gas Pipeline, Fourth Shaanxi-Beijing Gas Pipeline, and Yunnan Refined Products Pipeline went on stream. The upgrading of the pipeline system in northeastern China was completed. The Jinzhou-Zhengzhou Refined Products Pipeline reached the final stage of construction.

#### Zhongwei-Jingbian Connecting Line of the Third West-East Gas Pipeline

The Zhongwei-Jingbian connecting line of the Third West-East Gas Pipeline runs from Zhongwei in Ningxia to Jingbian in Shaanxi, in parallel to the Zhongwei-Jingbian Line of the Second West-East Gas Pipeline, with a total length of 377 kilometers. Designed with a diameter of 1,219mm and operating pressure of 12 MPa, the pipeline has a capacity of 30 billion cubic meters per year.

The pipeline began to be constructed on May 21, 2016, and became operational on November 27, 2017, providing another important route linking the northwestern to the northern China and bolstering effectively the gas distribution capability in North China.



Crude pipeline mileage  
in the nation's total

68.9%



Natural gas pipeline mileage  
in the nation's total

76.2%

#### Fourth Shaanxi-Beijing Gas Pipeline

The Fourth Shaanxi-Beijing Gas Pipeline, comprising of one trunk and one branch, runs from Jingbian in Shaanxi through Inner Mongolia and Hebei to Beijing with a total length of 1,098 kilometers. Designed with a diameter of 1,219mm and operating pressure of 10-12 MPa, the pipeline has a capacity of 25 billion cubic meters per year.

The pipeline started to be constructed on July 30, 2016 and became operational on November 27, 2017 to meet the growing gas demand in North China, facilitate the transformation of the energy mix in the Beijing-Tianjin-Hebei Metropolitan Region and help improve air quality.

#### Yunnan Refined Products Pipeline

The pipeline, comprising of three trunks and one branch, has a total length of 950 kilometers and an annual delivery capacity of 7.21 million tons.

Construction of the pipeline started on May 18, 2012. The three trunks were put into operation on December 22, 2017 to facilitate the transportation of refined products in Yunnan and expand the company's refined products distribution network in southwestern China. The Kunming Branch has completed the construction for changing route and is expected to become operational in 2018.

## Natural Gas Sales

In 2017, the central government explicitly demanded an increase of natural gas share in the primary energy consumption and identified natural gas as one of the main sources of clean energy. As gas-fired power generation continued to gain traction, local governments promoted the coal to natural gas switch, and the "2+26 Cities" Clean Winter Heating Initiative was implemented actively in Beijing, Tianjin and Hebei etc., the demand for natural gas soared. The company seized the opportunity to work with our clients in optimizing sales planning and resources allocation and managed to increase the supply of pipeline gas and imported LNG in response to market demand and winter heating needs. Our gas sales rose significantly to 151.8 billion cubic meters in 2017, up 15.5% year-on-year.

We continued to develop the market and expand our marketing network. By the end of 2017, our gas distribution network covered 31 provinces, municipalities, autonomous regions, and special administrative regions, maintaining predominance in the northern, southwestern, western, central and northeastern parts of China and enlarged market size in the eastern and southern regions. We secured a total of 93 new clients adding gas sales of 2.46 billion cubic meters. In particular, we began to deliver natural gas to 12 gas-fired generators including Jiangsu CHD Yangzhou Power Plant and CDT Jiangyan Gas-Fired Cogeneration Project.

In 2017, our end-user markets of natural gas grew rapidly, registering gas sales of 23 billion cubic meters, up 5.26 billion cubic meters or 29.6% year-on-year. In particular, the sales of city gas, CNG and LNG reached 15.92 billion, 2.77 billion and 4.34 billion cubic meters respectively. By the end of 2017, we had 543 CNG stations and 615 LNG stations in operation, among the top in China.

## Liquefied Natural Gas (LNG)

In 2017, our three LNG terminals in Jiangsu, Dalian and Tangshan offloaded a total of 10.42 million tons of LNG, up 84.3% year-on-year, playing an increasingly important role in peak shaving. Our 24 LNG plants in Hubei, Sichuan, Shaanxi and other provinces are capable of liquefying 22.86 million cubic meters of natural gas per day, with annual LNG capacity accounting for about one-fifth of China's total.



The Fourth Shaanxi-Beijing Gas Pipeline under construction