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West-East Gas Pipeline Project (2002-2013)

Special Report on Social Responsibility

China National Petroleum Corporation

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Contents

Message from the Chairman

As we are confronted with pressing challenges stemming from the growing contradiction between energy demand and environmental protection, we are in need of the transformation to green energies now more than ever. Natural gas, as a high-quality and high-efficiency clean energy, is playing an increasingly important role. Since coal may remain dominant in China's energy mix in the short term, large-scale development of natural gas has become the most realistic way to achieve sustainable development. Since the start of the 21st century, backed by the national energy strategy, China's gas industry has been going through rapid development. With annual gas consumption rising at a more than double-digit growth rate, and the percentage of gas in primary energy consumption increasing from 2.5% in 2004 to 5.9% in 2013, we've seen rapid progress in domestic gas exploration & development and gas pipeline construction, as well as in imports and utilization of natural gas from overseas.

As the largest gas supplier in China, CNPC accelerates the development of natural gas as a strategic, growth-oriented and value-added project. We introduce overseas resources while developing domestic gas fields in a scientific and efficient manner, and boost the construction of gas pipelines and relevant facilities. We also put emphasis on the development and utilization of coal-bed methane, shale gas and other unconventional gases, and continue to secure safe and reliable gas supply with flexible scheduling and peak shaving capacities. In China, we have built four gas provinces in Xinjiang, Changqing, Sichuan and Qinghai. Our gas production in 2013 reached 88.8 billion cubic meters, accounting for 75% of China's total. With a nationwide gas pipeline network including the West-East Gas Pipelines, Shaan-Jing Gas Pipelines, Zhongxian-Wuhan Pipeline and Sebei-Xining-Lanzhou Pipeline in place, we ensure steady gas delivery from the producing areas to the target markets, meeting demand for clean energy across the country, promoting local economic growth, and improving the environment and people's quality of life.

The West-East Gas Pipeline Project ushered in the era of natural gas in China. On July 4, 2002, construction of the First West-East Gas Pipeline was kicked off. Over the decade, we have completed and put into operation the First & Second West-East Gas Pipelines, and the Central Asia-China Gas Pipeline. The Third West-East Gas Pipeline under construction will be put into operation in 2016. By that time, a huge gas pipeline network dominated by the First, Second and Third West-East Gas Pipelines will take shape, with a total length of more than 20,000 meters, and annual gas delivery capacity of 77 billion cubic meters. In the Third West-East Gas Pipeline project, we cooperated with public and private capital for mutual benefits and common development. During the construction of the pipelines, we strictly controlled project quality, minimized the impact on the environment and communities, and protected the ecological environment and cultural relics along the lines.

The 21st century is the golden age of natural gas. We are on a journey toward the "Chinese Dream" through developing clean energy. Upholding the mission of "Caring for Energy, Caring for You", we will strive to provide abundant energy to build a "beautiful China", and make new and greater contributions to the country's socioeconomic development.

Zhou Jiping, Chairman

West-East Gas Pipelines and Natural Gas Utilization in China

The West-East Gas Pipeline Project has opened up the era of natural gas in China, established a new development pattern for the nation's gas industry, and promoted the strategic restructuring of the nation's energy consumption mix.

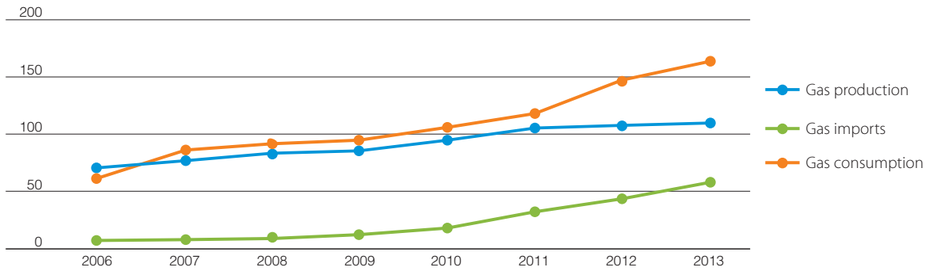
Historically, China was one of the first countries in the world to develop and utilize natural gas. However, given its coal-dominated energy mix, economic development level and remote distance between gas sources and markets, China had not developed and utilized natural gas on a large scale. Statistics show that from 1980 to 2000, the average annual growth rate of gas consumption in China was only 2.8%, while the growth rate of primary energy consumption was 4.2%.

Since the late 1990s, CNPC has made numerous breakthroughs in domestic gas exploration and development, achieving steady increases in both proven reserves and production. We discovered and developed a number of gas fields including Kela-2, Dina-2, Sulige, and Longgang successively in the Tarim, Qaidam, Ordos, and Sichuan basins. In particular, the Kela-2 giant uncompartmentalized gas field identified in the Tarim Basin in 1997 has directly driven the implementation of the West-East Gas Pipeline Project, a landmark project for China's Western Development. China's gas industry started to develop rapidly as the First West-East Gas Pipeline was put into commercial operation, with expanding gas consumption markets, and a growing proportion of natural gas in primary energy consumption.

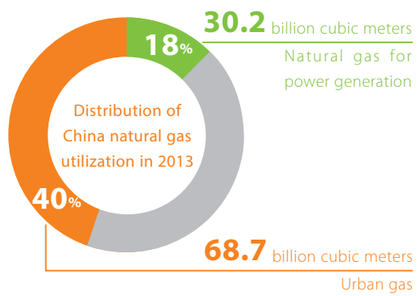
From 2004 to 2013, China's natural gas consumption rose from 41.5 billion cubic meters to 167.6 billion cubic meters, with an average annual growth of over 15%. The proportion of natural gas in primary energy consumption rose from 2.5% to 5.9%, up 3.4%. Domestic gas production rose from 40.8 billion cubic meters to 118.3 billion cubic meters, with an average annual growth of 13.3%. Natural gas imports also increased greatly, amounting to 53 billion cubic meters in 2013, among which pipeline gas imports were 28 billion cubic meters, and LNG imports were about 25 billion cubic meters. Natural gas imports reached 31.6%.

With higher levels of urbanization and stricter environmental requirements, China's natural gas consumption mix has become more diversified, shifting from chemical feedstock and fuel for oil & gas production to urban gas and fuel for power generation. At present, urban gas takes the largest share in gas utilization. In 2013, China's urban gas reached 68.7 billion cubic meters, and natural gas for power generation was 30.2 billion cubic meters, accounting for 40% and 18% of country's total gas consumption, respectively.

Gas production, gas imports and gas consumption from 2002 to 2013 (unit: billion cubic meters)



As China's gas demand, reserves and production are experiencing rapid growth, the construction of gas pipelines and facilities has advanced dramatically. We have completed a number of long-distance natural gas pipelines, including the First and Second West-East Gas Pipelines, Shaanxi-Beijing Gas Pipelines, Zhongxian-Wuhan Pipeline, Sebei-Xining-Lanzhou Pipeline, and Myanmar-China Gas Pipeline, and started the construction of the Third West-East Gas Pipeline. We have thereby basically established a nationwide gas pipeline network, which also make foreign pipeline gases accessible, with the trunks and branches stretching a total length of over 45,000 kilometers. A national gas supply guarantee system featuring diversified sources and flexible dispatch has taken shape, linking four domestic gas provinces, including the Xinjiang, Qinghai, Shanxi-Gansu-Ningxia and Sichuan-Chongqing areas, and the cross-border Central Asia-China Gas Pipeline and Myanmar-China Gas Pipeline, as well as marine LNG import channels. This system covers 29 provinces, municipalities and autonomous regions and Hong Kong SAR in China.



At the core of the national gas pipeline networks, the West-East Gas Pipelines play an irreplaceable role in guaranteeing the country's gas supply. The project has pioneered the construction of high-pressure, large-diameter and long-distance gas pipelines in China. By giving full play to the complementary advantages in Eastern China and Western China for collaborative development, the project has brought good economic, social and ecological benefits.

Overview of the West-East Gas Pipeline Project

Originally know as the First West-East Gas Pipeline which became operational in 2004, the West-East Gas Pipeline Project is now a natural gas supply system stretching from across China from east to west, including the completed First and Second West-East Gas Pipelines as well as the ongoing Third West-East Gas Pipeline. Consisting of trunk and branch pipelines and gas storages, the project delivers natural gas from Western China and Central Asia to the major target consumer markets in Southeast China, as well as users along the lines. Once the whole project is completed, it will have a total length of more than 20,000km, with an annual delivery capacity of 77 billion cubic meters.

The First West-East Gas Pipeline is mainly supplied by the Tarim gas province in Xinjiang. It runs from Lunnan Oil and Gas Field in the Tarim Basin to Baihe Town in Shanghai, with a total length of 4,380km. Consisting of one trunk, three branches and other support pipelines, it can transmit 17 billion cubic meters of natural gas each year. The pipeline passes through 10 provinces (municipalities and autonomous regions), i.e., Xinjiang, Gansu, Ningxia, Shaanxi, Shanxi, Henan, Anhui, Jiangsu, Shanghai, and Zhejiang. The pipeline was kicked off on July 4, 2002, completed and put into trial operation on October 1, 2004, and became commercial operational on December 30, 2004.

The Second West-East Gas Pipeline is mainly supplied by gas from Central Asia. The 8,819km-long pipeline, consisting of one trunk and eight branches, runs from Horgos in Xinjiang, where it is connected with the Central Asia-China Gas Pipeline, to Shanghai and Hong Kong. This pipeline is capable of delivering 30 billion cubic meters annually for over 30 years. It passes through 14 provinces (municipalities and autonomous regions) including Xinjiang, Gansu, Ningxia, Shaanxi, Henan, Hubei, Jiangxi, Guangdong, Guangxi, Zhejiang, Shanghai, Jiangsu, Hunan, and Shandong, as well as Hong Kong SAR. Construction of the second pipeline was started in February 2008, and it was completed and put into operation in December 2012.

The Third West-East Gas Pipeline is mainly supplied by gas from Central Asia, with SNG in Xinjiang as the supplementary. It will run from Horgos in Xinjiang to Fuzhou in Fujian, crossing Xinjiang, Gansu, Ningxia, Shaanxi, Henan, Hubei, Hunan, Jiangxi, Fujian, and Guangdong. Consisting of one trunk and five branches, it stretches a total length of 6,840km with a designed annual delivery capacity of 30 billion cubic meters. Construction of the third pipeline was started on October 16, 2012, and it will be completed and put into operation in 2016.

The First, Second and Third West-East Gas Pipelines are interconnected and can be controlled in an integrated manner through the hubs in Zhongwei, Jingbian, Zaoyang and Ji'an. The four major gas provinces including Tarim, Changqing, Sichuan-Chongqing and Qinghai are connected through the Ji-Ning, Zhongwei-Jingbian, Huai-Wu cross-link lines, and Zhongxian-Wuhan and Sebei-Xining-Lanzhou pipelines, laying a solid foundation for the forming of a nationwide gas pipeline network.

Road-map of the West-East Gas Pipelines

↑ Source of the First West-East Gas Pipeline——Kola-2 plant

↑ Pipeline laying site

Improving Energy Pattern

China has maintained rapid economic development since the launch of reform and opening up. However, it has become pressing for us to optimize and adjust the energy structure due to increasing energy demand and environmental issues. The West-East Gas Pipeline Project is of great significance in promoting the optimization and upgrading of China's energy consumption structure, and improving the ecological environment and people's standard of living.

1. Guaranteeing Energy Security

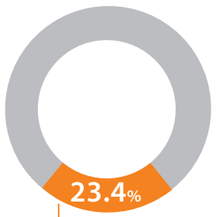
The project has given Chinese markets access to gas from Central Asian, imported LNG and other gas sources, thereby enhancing national energy security, and promoting domestic gas exploration, development and utilization. From 2002 to 2013, China's annual gas production increased by 6.2 billion cubic meters, and the proportion of natural gas in China's oil and gas production in terms of oil equivalent rose from 9.3% in 2002 to 23.4% in 2013. A total of more than 73 billion cubic meters of natural gas has been imported from Central Asia through the pipelines. In 2013, natural gas imported from Central Asia accounted for 16.5% of the total gas consumption in China.

more than **120** cities

Thanks to the West-East Gas Pipelines, natural gas is accessible in more than 120 cities

More than **200** million people

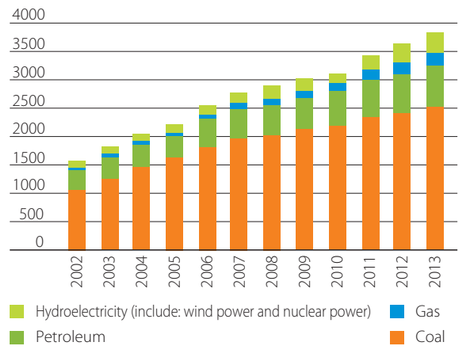
Enjoy the convenience brought by natural gas, bidding farewell to gas tanks



In 2013, about 23.4% of natural gas consumed in China was supplied by the West-East Gas Pipelines

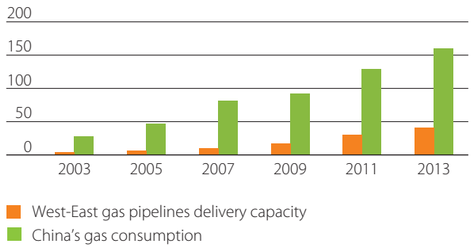
Consumption and structure of China's primary energy from 2002 to 2013

(unit: million tons of standard coal)



West-East Gas Pipeline is playing an increasingly important role in China's natural gas supply system

(unit: billion cubic meters)



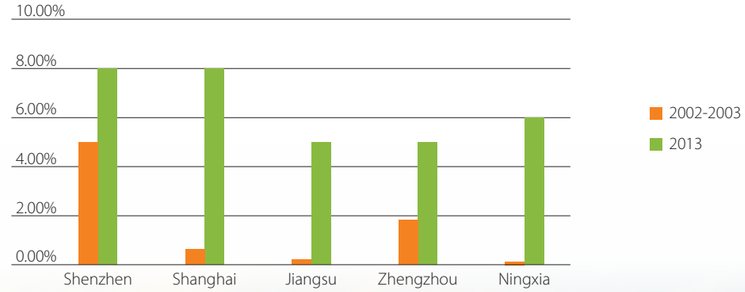
↑ The LNG accepting station in Jiangsu Province

2. Optimizing Energy Mix

Coal accounts for over 70% of China's total energy supply, and this has led to high air pollutant emissions. To maintain sound and sustainable economic development, China must increase the proportion of clean energy in the energy mix. From 2004 to 2013, the First and Second West-East Gas Pipelines transmitted a total of 180 billion cubic meters of natural gas, accounting for 50% of China's newly added gas consumption. As a result, the proportion of natural gas in primary energy consumption has increased by 3.4%. After the completion of the Third West-East Gas Pipeline, the proportion of natural gas in national primary energy consumption will further increase by 1%.

Cities along the pipelines have witnessed a significant improvement in energy structure due to the project. In Shanghai, the project started supplying gas on January 1, 2004, with whole-year delivery accounting for over 50% of gas supply to the city. By the end of 2013, a total of 22 billion cubic meters of natural gas was delivered to Shanghai, with the proportion of natural gas in Shanghai's primary energy consumption rising by nearly 8% over the decade. The good and excellent air quality rates in Shanghai rose from about 84% in 2004 to 93.7% in 2012.

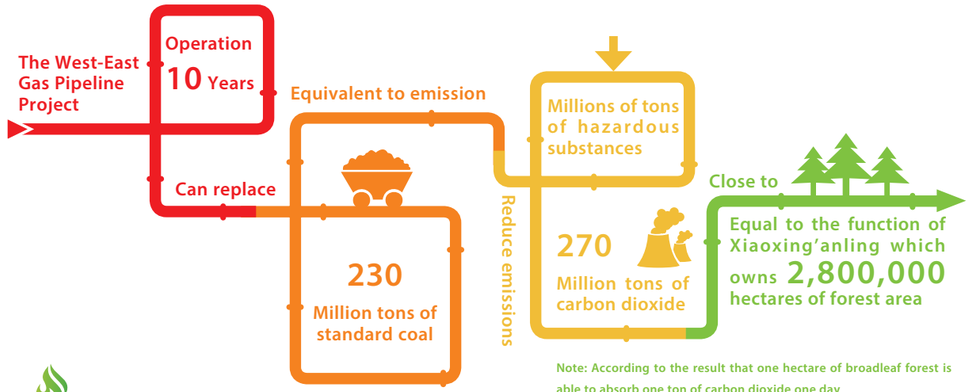
The proportion of natural gas consumption West-East Gas Pipeline increases in the cities along the pipelines



3. Improving the Environment

The West-East Gas Pipeline Project has not only helped increase energy efficiency, but also played an important role in pollution mitigation and treatment. The natural gas transmitted through the First and Second West-East Gas Pipelines can replace 230 million tons of standard coal, equivalent to an emission reduction of millions of tons of hazardous substances and 270 million tons of carbon dioxide.

The environmental impact caused by production and people's living activities is gradually reduced due to the increasing gas utilization such as household gas, gas-fired power generation, and replacement of oil with natural gas for vehicles and vessels, and direct gas supply and distributed energy in the chemical industry and other manufacturing industries. In Jiangsu Province, the largest gas user of the project, natural gas has been supplied to 13 cities and districts and 70% of its counties. In Nanjing in particular, PM2.5 emissions have been cut immensely as there are 3.46 million gas users, including more than 3,000 industrial users, and 80% of city taxies are fueled by gas.

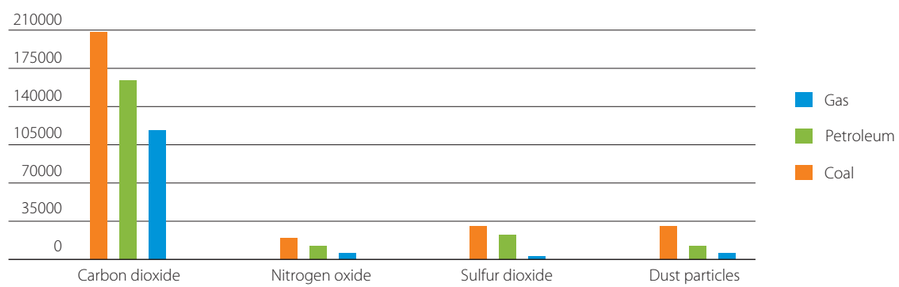


Note: According to the result that one hectare of broadleaf forest is able to absorb one ton of carbon dioxide one day

Tips

For the same amount of energy produced, natural gas emits 56% and 71% of carbon dioxide as coal and oil respectively, and 20% of nitrogen oxides as coal and oil, with emissions of sulfur dioxide and dust particles almost negligible.

Comparison of emissions from natural gas, petroleum and coal (unit: pound/10^{12} Btu)



Note: Data sources from EIA, 1998; 1 pound = 0.4536kg; 1 Btu = 1055.056J

Case Study

Bringing benefits to enterprises

Enterprises along the West-East Gas Pipelines use natural gas instead of coal gas and coal as fuel and chemical feedstock. This has helped increase their economic efficiency and reduce emissions.

Baosteel Special Steel: Producing high-end products with great emission reduction

Baosteel Special Steel used to be under heavy pressure to cut emissions when it made steel with coke oven gas, which generated 2,585 tons of sulfur dioxide, 340 tons of dust and carbon dioxide annually. After the introduction of natural gas, the company removed 149 gas furnaces, reducing 59.5% of sulfur dioxide emissions and 26.8% of soot emissions, with the dust fall index falling by 24.7%. After the closure of coal gas plants, discharge of wastewater was reduced by 480,000 tons, and the emission concentration of pollution factors dropped substantially. As natural gas has a high calorific value and leaves no residual liquid, it is much easier to control the temperature in the steelmaking furnaces. Therefore, the quality of steel produced is more stable. The company has thereby started to produce and process high-end products, such as silicon steel and cold-rolled plates.

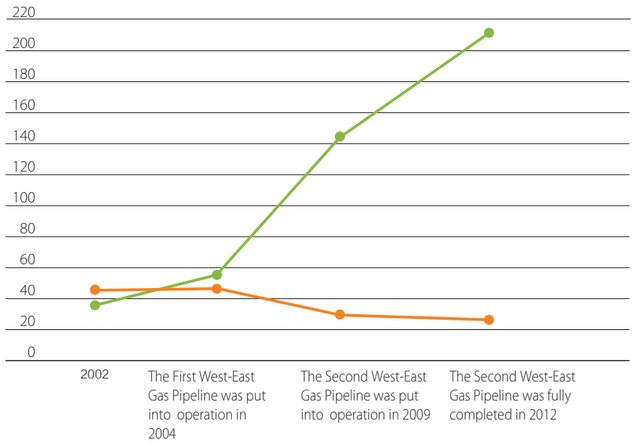
Jiangsu Huadian Qishuyan Power Generation Co., Ltd.: Economical and environmentally-friendly gas-fired power generation

About 7% of the total installed capacity in Jiangsu Province comes from gas-fired power generation, in which, 93% is fueled by gas from the West-East Gas Pipelines. Jiangsu Qishuyan Power Plant is one of the first power plants fueled by natural gas in China. Over the past 7 years, it has generated over 20.8 billion kWh of electric power, cutting coal consumption by 2.3 million tons, and reducing emissions of carbon dioxide by 6.36 million tons, sulfur dioxide by 64,000 tons and nitrogen oxide by 64,000 tons. "Gas-fired power generation plays an important role in increasing energy efficiency. The low NOx emissions have helped us alleviate a lot of environmental pressure", said General Manager Lu Zhiqing.

4. Enhancing Quality of Life

With the continuous extension of the West-East Gas Pipelines, among the 600 large and medium-sized cities in China, over 200 have been equipped with a gas pipeline network. Thanks to the project, tens of thousands of families lead a safer and better life, as over 200 million people said farewell to firewood, briquettes, and gas tanks, and now use natural gas for cooking, bathing, and heating.

The West-East Gas Pipeline Project boosts city resident's consumption of natural gas



Data Sources: National Bureau of Statistics of China

People living in the cities and towns along the pipelines have benefitted from the convenience brought by natural gas.

Resident in Linhu Residential Quarter in Yinchuan, Ningxia:

Now with natural gas, we do not need to move the gas tank upstairs and downstairs. Natural gas is very convenient, sanitary and affordable.

Resident in the residential quarter of fertilizer plant in Shangshui County, Zhoukou City, Henan:

In the past when we used briquettes, it was very hard to clean the dirty ground in the narrow kitchen. Nowadays, it is very clean and tidy, because we use natural gas. In addition, it is very convenient. I don't need to carry briquettes upstairs any more, which was really hard and dirty.

Resident in Donghuan New Village, Suzhou, Jiangsu:

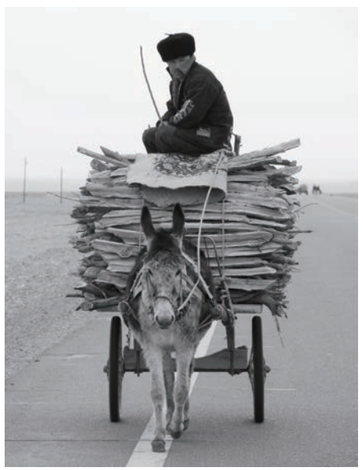
Natural gas burns well and heats fast. When we used coal gas in the past, the pot would become dark instantly, and a pot can be used for only one or two years. Now, with natural gas, a pot can be used for 5-6 years, and it does not become as dark as black charcoal.

Owner of a restaurant in Datian County, Fujian:

We used to use bottled gas, it was very expensive and unsafe. Now, we have natural gas! As we have many customers, we used to spend thousands of yuan for fuel every month. Now, with natural gas, we have greatly cut down the costs. For the same amount of energy produced, natural gas is nearly 50% cheaper.

Zhouya, former deputy director of Shanghai Municipal Development & Reform Commission:

Coal gas mainly contains toxic carbon monoxide, while natural gas mainly contains non-toxic methane. Ten years ago, coal gas was widely used in over 6 million households in Shanghai, resulting in more than 30 gas poisoning incidents every year due to its insecurity. In 2013, the accidents are reduced by two-thirds.



Pipeline Construction and Operation

The West-East Gas Pipeline Project plays an important role in China's energy strategy development and the improvement of people's livelihoods. We carry out project planning, design, construction and operation in a manner which is responsible to our society and future generations. Giving priority to people, the environment, safety and quality, we constantly improve our management level, make great efforts to build a quality project, and provide downstream users with safe and stable supplies of clean energy.

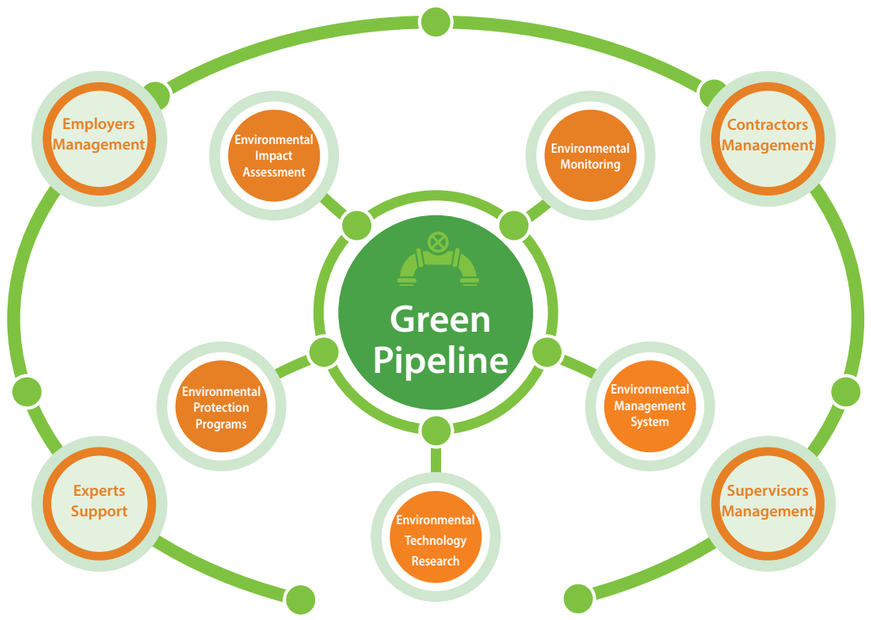
1. Safe and Environmentally Friendly Engineering

We adopted a construction and management separation mode in project construction, with responsibilities shared between the employers, general contractors and supervisors. We implemented whole-process quality control, an all-staff safe production responsibility system and life-long project quality responsibility system, and accepted quality supervision from the government. This has effectively ensured our project quality and ecological protection.

Ecological Protection and Restoration

Great emphasis was put on soil conservation and vegetation restoration during construction as we avoided environmentally sensitive areas to minimize the impact of our construction on the ecological environment. In order to control water loss and soil erosion, we planted vegetation and grass as protective screens in the windy desert areas, removed and restored turf before and after construction in the grasslands, took engineering and biological measures for integrated control on the loess plateau and in mountainous and hilly areas; and took measures such as topsoil stripping and layered backfill to protect the environment in the oasis region. To ensure ecological restoration, we adopted the management model of "restoration for one year and maintenance for three years", ensuring a high survival rate of plants. Thanks to these efforts, during construction of the First and Second West-East Gas Pipelines, there was no ecological damage, major public complaint or environmental pollution incident. Therefore, the First West-East Gas Pipeline and the Second West-East Gas Pipeline (Western Section) were named the "National Environmental Friendly Project" and "Soil and Water Conservation Demonstration Project" successively.

↑ The ecological restoration after operation

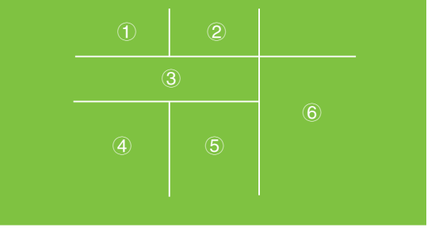


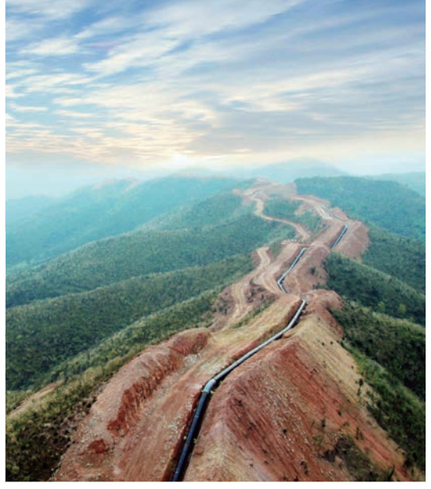
Avoidance Measures during Construction of West-East Gas Pipeline Project

Environmentally sensitive areas / cultural relics	Avoidance measures
Gansu Anxi National Nature Reserve in Hyper-Arid Desert	The pipeline bypassed the experimental area 20km from the reserve, instead of going through the buffer zone of the reserve as originally planned. Sand control measures were undertaken such as gravel laying and vegetation restoration.
Shapotou National Nature Reserve, Zhongwei, Ningxia	Straw checkerboard barriers were established in the operating belts to control sand, grass seeds were sown on an area of 483,000 square meters and 322,000 trees were planted.
Xinjiang Lop Nur Wild Camel National Nature Reserve	The pipeline was moved 200km northward.
Ancient Great Wall	Pipe jacking was conducted for all pipelines for deep burial underground, resulting in investment at each location of nearly RMB 200,000.
Shaanxi Zhongshan Grottoes Cultural Relics	Cutting into the mountain, slope cutting, and trench excavation for 3km-long pipelines were carried out in the most rudimentary form in three weeks, which otherwise would be completed within a week.

↑ Green grassland construction

① The control of Guozigou Tunne
② Shield Tunnel crossing Yangtze River
③ Set straw checkerboard barriers to control sand
④ Pasture assignment
⑤ Crossing Taihang mountain
⑥ Across farmland

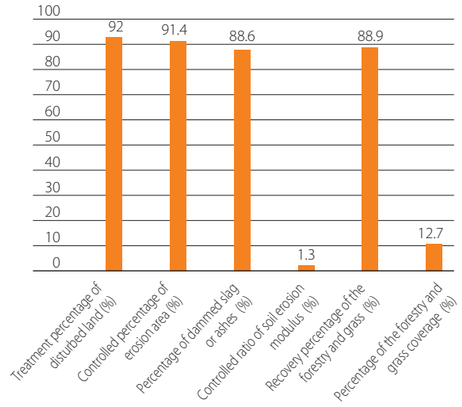




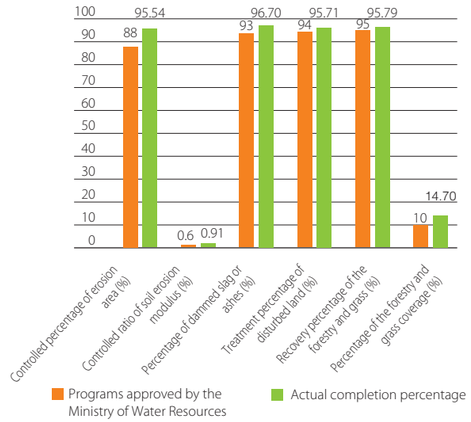
Social evaluation

Comments upon acceptance for national environmental protection projects: The First West-East Gas Pipeline was built strictly in accordance with national environmental protection regulations, under an excellent environmental management organization and system with sound rules and regulations. Pollutant discharge has met the specified standards and the land has been well restored. No ecological damage or environmental pollution incident occurred during construction. The project has reached the advanced level internationally among its counterparts.

Monitoring results from the Ministry of Water Resources show that the 6 indicators of soil and water conservation of the First West-East Gas Pipelines project construction are all higher than the national standard



Monitoring results from the Ministry of Water Resources show that the 6 indicators of soil and water conservation of the Second West-East Gas Pipelines (west) project construction are all higher than the national standard



Case Study

Laying pipelines underground without disturbing the pasture land

During pipeline crossing in the Sayram Lake Scenic Area in Xinjiang, we invited experts from the Ministry of Environmental Protection, the Ministry of Water Resources and China Agricultural University to form an expert team. After several onsite inspections, the team developed a design program for ecological restoration, in order to minimize the impact on the environment.

During construction, we limited the construction area and removed turf for restoration to protect the ecological environment in Sayram Lake. Welding was conducted below the trench, and the originally 28-meter-wide operating belt was narrowed down to 20 meters, with space just enough for a construction vehicle to pass through. We used the existing three herding roads for construction machinery without opening up new roads. The turf was stripped in areas of thick soil to be covered by thickened sunscreen nets and sprayed with clean water, and it was restored after construction. In areas where the turf cannot be stripped due to thin soil, grass seeds were sown after backfilling.

Social evaluation

Comments upon acceptance for national soil conservation facilities: The soil conservation facilities of the First West-East Gas Pipeline meet required quality standards with reasonable designing and appropriate selection of plant species. The project has brought valuable experience in the prevention and control of soil erosion for large development projects in China.

Protection of Cultural Relics

The western section of the West-East Gas Pipeline runs a longside with the ancient Silk Road and the Yellow River Cultural Belt. Its midstream and downstream are located at areas where the Central Plain Culture and the Wuyue Culture were developed and promoted. Therefore, protection of cultural relics along the pipelines is a top priority in project construction.

CNPC established a leading group for cultural heritage protection in oil and gas pipeline projects, jointly with the State Administration of Cultural Heritage. They established the principle of putting heritage conservation before pipeline construction, issued administrative measures on heritage conservation for the West-East Gas Pipeline Project, and followed the policy of avoiding cultural relics and stopping construction at accidentally discovered cultural relics. With the assistance of the local cultural relics departments, we conducted field surveys along the pipelines, and drew special maps for the construction unit for reference. For accidentally discovered cultural relics, we excavated them to avoid any loss.

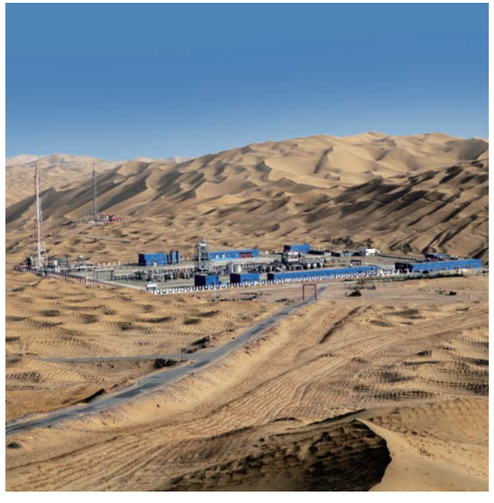
2. Securing Gas Supply

The First and Second West-East Gas Pipelines deliver natural gas to over 300 sub-transmission users, 3,000 large and medium enterprises and 60 million residents in over 100 cities along the pipelines. In 2013, the gas delivery accounted for 23.4% of China's total gas consumption.

Gas Source Guarantee

We have built four gas provinces in Xinjiang, Changqing, Sichuan and Qinghai, with annual production in 2013 accounting for 75% of the national total. Gas produced in these areas was delivered to Eastern China through the West-East Gas Pipelines and their cross-link lines. In addition, CNPC also imported pipeline gas and LNG by land and by sea as an important supplement to domestic gas sources, in order to meet domestic gas demand.

↑ LNG storage tank



↑ The natural gas plant in the hinterland of the Taklimakan Desert

External Evaluation

Archaeologist **Chen Wei**: CNPC's heritage conservation practices in pipeline construction serve as a role model for other projects. Such practices should be promoted, especially in a period when the country is experiencing nationwide large-scale construction.

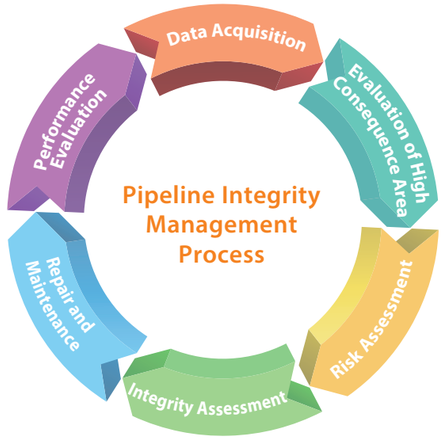
Peak Shaving

Gas consumption in China exhibits great seasonal variation, and gas storage facilities are in short supply. In order to guarantee stable gas supply for downstream users by seasonal peak shaving, we used the supervisory control and data acquisition (SCADA) system for 24-hour centralized control over the operations and scheduling management of pipelines. This has improved inter-regional and inter-network scheduling efficiency, as any valve on the pipelines could be opened or closed by pressing a button. In addition, we kept improving construction of gas storages and other infrastructure to enhance our peak shaving capacity. By the end of 2013, we had built dozen gas storage units in North China, Dagang, Hutubi, Xiangguosi and other areas in China. It is expected that the storing of these gas storages units-will reach 17 billion cubic meters by the end of China's 12th Five-year Plan.

↑ Integrated controlled center

3. Ensuring Operational Safety

As the West-East Gas Pipelines cover a long distance and a wide area, it is extremely difficult to control risks caused by geological disasters, pipeline corrosion and third-party damage. We developed a pipeline integrity management system, and carried out routine onsite inspection and joint prevention, in order to guarantee security in the use of gas for production and living.



↑ Routine onsite inspection

↑ Night inspection in Shanghai Baihe station

Routine Onsite Inspection

We established pipeline onsite inspection measures, and improved our management through modern technology. Using the state-of-the-art global positioning system (GPS), geographic information system (GIS) and computer network communications and data processing technology, we acquired accurate information of the longitude, latitude and time through GPS to record the routes and time of onsite inspection. This has helped us achieve graphical patrol information and realize unified management of onsite inspection in different regions and provinces.

Case Study

Routine onsite inspection of gas pipelines

In order to ensure stable gas supply to millions of households, we carry out routine inspection at 77 stations, 250 valve chambers, and numerous sets of equipment along the over 20,000 kilometers of pipelines, for 24 hours a day, 365 days a year.

Horgos Station: "There can be no negligence, for this is the first stop in the country"

Located in Yili Kazakh Autonomous Prefecture, Xinjiang, Horgos Station is the first stop of the Second West-East Gas Pipeline in China. The transmission volume and quality of natural gas from abroad are measured here, with 16 types of real-time data including the temperature and pressure being recorded every four hours. Meanwhile, impurities are removed from natural gas through filtration and separation, pressurization, cooling and other processes, before being delivered to downstream pipelines.

The Horgos station is responsible for 76 kilometers of pipelines. In winter, the road condition would worsen as the mountainous region is covered with heavy snow, with the possible occurrence of an avalanche. It usually takes just more than 10 minutes to reach a mile post, and in winter it would take nearly an hour. To finish the whole inspection, it would take two or three days. "There can be no negligence, for this is the first stop in the country. We have more than 200 million users waiting for the gas delivered from this station downstream", said a pipeline inspector.

Dachandao Station: "Uninterrupted operation and gas supply must be guaranteed"

Located in Qianhaiwan, Shenzhen, the Dachandao Station is the southernmost station of the project. It connects the Qiuyuling-Dachan Island Section of Guangdong-Shenzhen Branch and Hong Kong Branch of the Second West-East Gas Pipeline, playing an important role in guaranteeing stable gas supply in Hong Kong.

Routine inspection is carried out around the clock throughout the year, on the pressure, temperature, oil level, and water level as well as the equipment signs and labels in the process area and compressor plants. By doing so, we could identify and address hazards in a timely manner, with minor problems being fixed within 24 hours and major problems handled within a prescribed period of time.

Joint Prevention

As the West-East Gas Pipelines enter into more densely populated cities in China, risks due to surface load increased. Any explosion will cause immeasurable losses to the lives and property of the surrounding residents. Therefore, we have established a mechanism for "joint prevention, treatment and control" together with governments at all levels along the pipelines, increased public awareness of such hazards, and jointly prevented and controlled pipeline risks.

Tips

Protection of gas pipelines – our shared responsibility

(1) Why should the gas pipelines and relevant facilities be protected?

Natural gas is flammable and explosive. In a highly compressed state, it will leak and diffuse in a short time once the pipeline bursts or is broken, and is likely to cause severe explosions and large-scale fires. Therefore, pipeline safety is also public safety, bearing on the safety of everyone's life and property. In 2010, China promulgated the *Oil and Natural Gas Pipeline Protection Law of the People's Republic of China*, putting oil and gas pipeline safety under the protection of the law. Therefore, everyone shares the responsibility. Any unit or individual acting against pipeline safety will be punished. If the offence is serious and constitutes a crime, they will be given criminal sanctions.

(2) How can I identify natural gas pipeline facilities?

Pipeline markers are set for identification and warning purposes, especially for people to identify pipeline types and properties, and to determine their location. Pipeline markers include: mile posts, test piles, marking piles, communications marks, warning signs and logo belts.

(3) What behavior may endanger natural gas pipelines?

Surface load and illegal construction: Deep-rooted plants, earth borrowing and quarrying, stacking of heavy objects, excavation, and construction of buildings and structures within 5m from the pipeline centerlines; dropping or dragging anchors, dredging, quarrying, and underwater blasting in areas within 500m from pipeline centerlines at river crossings; quarrying, mining, and blasting in areas within 1,000m from the center lines of pipeline tunnels.

Gas theft: Damaging pipelines or stealing the natural gas transmitted, leaked or discharged by the pipelines by moving, cutting, punching, smashing, and dismantling the pipelines.

(4) What can I do to protect natural gas pipelines?

First, never do any of the aforementioned actions; second, promptly report such actions by dialing our toll-free hotline 8008200375.

Promoting Industrial Development

The West-East Gas Pipeline Project is a platform for innovation and cooperation. While supplying clean energy for areas along the pipelines, the project has also promoted the upgrading of relevant industries and regional economic restructuring and development.

5 types of key equipment

have been produced domestically, driving the industrial upgrading of metallurgy and machinery manufacturing to reach the world advanced levels

RMB **1** billion

The First West-East Gas Pipeline alone has contributed RMB 1 billion of financial revenue to Xinjiang each year

1. Boosting Industrial Upgrading

Direct investment in the project has exceeded RMB 300 billion, and the indirect investment was over RMB 50 billion, driven by upgrading auxiliary works such as branch lines, city gas pipelines, CNG stations, and gas plants. This has boosted the development of relevant industries including machinery, electronics, metallurgy, building materials, steel, pipes, equipment, material production, construction, and natural gas utilization. With the support of the National Development and Reform Commission and the National Energy Administration, CNPC strives to build the project into a platform for the development of the nation's manufacturing industry. Relying on our technology resources and partnering with competitive domestic enterprises, we realized domestic production of key oil and gas pipeline materials and major equipment, cutting construction costs and enhancing the technological independence and international competitiveness of China's manufacturing industry in the high-end market.

Through years of technical research in partnership with more than 20 institutes and enterprises such as steel companies, pipe plants, machinery and electrical manufacturing companies, we have successfully developed X70 and X80 linepipe steel, 20 MW high-speed direct-connected motor driven compressor unit, 30 MW gas turbines driven compressor unit, high-pressure large-diameter welded ball valves and other major key equipment. Fifteen steel companies including Baosteel, Wuhan Iron and Steel (Group) Corp, and Ansteel are capable of producing X70 and X80 linepipe steel, and 13 production lines have been set up at CNPC Baoji Petroleum Steel Pipe Co., Ltd., CNPC Bohai Equipment Manufacturing Co., Ltd. and other pipeline manufacturing enterprises. Compared to imported products, domestically produced equipment helped lower procurement costs by over 20%, lead time by over 2 months, and operating costs by over 30%.

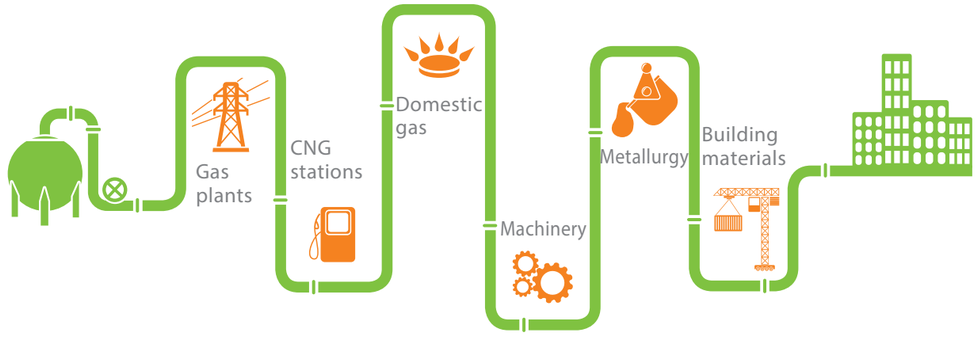
According to incomplete statistics, since the commencement of the West-East Gas Pipeline Project, more than 700 technical research studies have been conducted on the application of domestic production of high-grade pipeline steel, domestic production of key equipment, and project design and construction. The research results have helped enhance the technological competitiveness of the national gas industry, by filling 30 industrial gaps, with 60 confidential technologies were developed, 350 patents applied, and over 110 standards established.

↑ Wuhan Iron and Steel Plant

Domestically produced key equipment in the project

Equipment	Researched by	Technical Value
Compressor for long-distance gas pipeline	Shenyang Blower Works Group Corporation	A major breakthrough in design and manufacturing of domestic large centrifugal compressors, ending long-term dependence on import over the years.
20 MW ultrahigh-speed, explosion-proof and frequency-converting synchronous motor	Shanghai Electric Power Generation Group Shanghai Electric Motor Factory, etc	At the industrially advanced level, with a speed of 5040 rpm, and with special features such as being explosion-proof.
30MW gas turbine for gas compression	CSIC 703 Research Institute, etc	Boosting the development of industry gas turbine technology in China, laying a solid technical and experimental foundation for the serial development of compressed gas turbines, enhancing the national technology level and international competitiveness in gas turbine development.

The West-East Gas Pipeline Project promoting industrial development



↑ Humen power plant in Guangdong using clean natural gas

Figures

2.67 million tons

2.67 million tons of X80 steel was used for the Second West-East Gas Pipeline, equivalent to the total amount of X80 steel used globally for 20 years before 2008.

4.2 billion

Compared to X70 steel pipes, X80 steel pipes used for the Second West-East Gas Pipeline saved 420,000 tons of steel, reducing the investment by RMB 4.2 billion.

8.4 billion

Domestically produced 1,219mm X80 steel pipes were used for the first time, reducing the investment by RMB 8.4 billion, with their price being about 30% less than imported products.

15 billion

In 2013, China's annual production capacity of X80 steel pipes reached 1.5 million tons, and the annual output value of steel companies and tube plants was about RMB 15 billion.

Tips

Pipeline transmission capacity and steel materials

Gas transmission through pipelines resembles traffic on the expressway, the larger the pipe diameter, the higher its transmission capacity. However, larger diameter means the use of more steel, a greater ecological impact, and a greater requirement for matching ancillary valves, compressors and other equipment. Therefore, it is impossible to infinitely expand the pipe diameter. What we can do is enhance the bearing capacity of steel pipes to supply compressed natural gas to the gas market. World-class pipeline steel has been used for the long-distance West-East Gas Pipelines with such a huge transmission capacity. The X80 pipeline steel used for the Second West-East Gas Pipeline is only 1,219mm in diameter and 18.4mm in wall thickness, capable of withstanding pressure of 12 MPa.

The successful development of the compressors for long-distance gas pipelines helped Shenyang Blower Works Group Corporation establish its dominant position among the world's large centrifugal compressor manufacturers. When reviewing the development of the first motor-driven compressor unit, the company's President Su Yongqiang said: "We owe our technological advances to the support of the National Energy Administration and China Machinery Industry Federation, and also to CNPC for its commitment to revitalizing China's equipment manufacturing industry through sincere cooperation."

Social evaluation

Qiu Zhongjian from Chinese Academy of Engineering: the independent intellectual property developed by CNPC has helped enhance the technological competitiveness of China's pipeline industry.

2. Driving Local Development

The West-East Gas Pipeline Project connects resource-rich western China with resource-poor eastern China. While transforming the resource advantages in the west into economic advantages, it provides strong energy support for development in eastern China.

Local Economic Development

People of all ethnic groups in Xinjiang were the first to benefit from the project. A 67% of project investment is in the central and western areas. The First West-East Gas Pipeline alone can bring more than RMB 1 billion of additional financial revenue to Xinjiang each year. The financial revenue of Baicheng County, where Kela-2 Gas Field (the main gas source of the project) is located, has increased almost 20-fold in 10 years. The completed Yining-Horgos Branch Line of the Third West-East Gas Pipeline is China's first large-diameter SNG pipeline. Capable of delivering 30 billion cubic meters of SNG from Yili Prefecture each year, it has boosted the development of the SNG industry in Xinjiang. The gas-related petrochemical industry has grown vigorously to become the pillar industry of Xinjiang, accounting for nearly 60% of local industrial added value and creating a great number of jobs for local residents. In recent years, the average annual growth rate of new employees is over 18% in Bayingol Mongolian Autonomous Prefecture.

The project has also driven the development of local transportation. As of December, 2013, the highways and pipeline roads built by CNPC in the deserts exceeded 2,000 kilometers. Among them, the 522km-long desert highway across the Taklimakan Desert has cut the road distance from Hotan to Urumqi by 500 kilometers on average, and is hailed by the local people as a "road to happiness".

↑ Petroleum development promoting the development of Korla

Case Study

South Xinjiang Gasification Project

With the large-scale gas development in the Tarim Basin, CNPC has implemented the South Xinjiang Gasification projects since 1999, and accelerated the development of medium and small gas fields and the construction of long-distance pipelines in the Tarim Oilfield. A gas supply network covering 26 counties and cities in 5 prefectures, and 20 regiments of the Xinjiang Production and Construction Corps has been established, making clean and efficient natural gas accessible to the people of all ethnic groups living around the Tarim Basin, who have bid farewell to coal and tamarisk for fuels. Based on annual gas consumption of 2 billion cubic meters, the project can reduce 5.2 million tons of carbon dioxide emissions every year, further improving the fragile ecological environment in South Xinjiang.

> We now live in gas-heated buildings, and use natural gas for cooking every day. Formerly, we used stoves, coal, and firewood, which made our hands very dirty. Now, we cook very quickly with natural gas, and our houses are clean and warm, and we lead a good life.
>
> Bulabiya Aihemaiti
> villager in Xiamalebage Town,
> Kashi City in Xinjiang

Industrial Upgrading in Receiving Cities

The Yangtze River Delta and the Pearl River Delta, major gas markets of the project, have witnessed faster industrial development driven by the extensive use of gas in gas-fired power generation, gas chemicals and industrial gas fuels. Gas-fired power plants and combined heat and power (CHP) plants are gradually replacing coal-fired and thermal power plants, greatly easing the power shortages in these regions in the summer and winter peak periods. Enterprises have also turned to natural gas to produce glass, ceramics and glass fibers instead of coal, heavy oil and other fuels, accelerating industrial restructuring and improving product quality.

Thanks to the West-East Gas Pipeline Project, Nanjing experienced deeper industrial restructuring, with faster development in power generation and the chemical industries. HuanengJinling Power Plant started to use gas instead of coal since 2004 when the West-East Gas Pipeline Project started to supply natural gas directly to Nanjing. In addition, a number of petrochemical companies experienced prosperous development, making Nanjing a city renowned for its petrochemical industry. The number of people directly employed in the petrochemical industry is over 100,000, whereas the number in indirect employment has exceeded 300,000.

In 2004 when the First West-East Gas Pipeline became operational, gas utilization was promoted in Yixing City, Jiangsu Province, which is famous for its ceramic industry. Many ceramic producing companies started to use gas as it has stable calorific value with almost no impurities. This has not only cut their production costs, but also helped enhance the product quality with better surface finish and color effects.

↑ CNPC Jinchang Gas Corporation has created a large number of jobs for undergraduates

3. Opening up and Cooperation for Common Development

Promoting Cooperation

Striving to build the project into a platform for innovation and cooperation, we invite enterprises and research institutes in relevant industries for cooperation, and transform achievements into industrial knowledge and experience for overall improvement.

Cooperation in the Project

1. We invited relevant research institutes and 14 steel companies and pipeline enterprises to establish a research team for the development of X80 steel.

2. We established a leading group with the State Administration of Cultural Heritage for cultural heritage protection in oil and gas pipeline projects, to carry out cooperation in oil and gas pipeline construction, cultural heritage protection, industrial heritage protection, and overseas project construction consultation. We also established a communication and coordination mechanism with the administrative departments for heritage protection at the provincial level.

3. We invited experts from the Ministry of Environmental Protection, the Ministry of Water Resources and China Agricultural University to form an expert team. After several onsite inspections, the team developed a design program for ecological restoration in Sayram Lake and Guozigou.

4. We completed the "Risk Assessment of Environmental and Geological Disasters for West-East Gas Pipelines", "Research on Risk Assessment Technology of Third Party Damage in West-East Gas Pipelines" and "Research on Risk Assessment Technology of Defects in West-East Gas Pipelines", in cooperation with Southwest Petroleum University and other research institutes.

5. We established a research team in partnership with the China Machinery Industry Federation for the domestic production of relevant equipment for long-distance pipelines.

6. We invited the National Council for the Social Security Fund and Baosteel Group to invest in the Third West-East Gas Pipeline Project.

7. We established PetroChina United Pipelines Company Limited in partnership with Taikang Assets Management Co., Ltd. and GTJA Allianz Funds to operate the western sections of both the first and the second West-East Gas Pipelines.

Introducing Private Capital

As a clean and efficient energy, natural gas enjoys broad prospects for development. The participation of private capital in the construction and operation of the project will bring long-term gains and diversify financing channels.

Therefore, CNPC invited private capital for the Third West-East Gas Pipeline. By the end of 2013, the National Council for the Social Security Fund and Baosteel Group have participated in project construction; Taikang Assets Management Co., Ltd. and GTJA Allianz Funds have participated in the operation of part of the pipelines.

Outlook

After the Third West-East Gas Pipeline is put into operation in 2016, the total mileage of the project will be more than 20,000km, delivering 77 billion cubic meters of natural gas annually to 30 provinces and cities and Hong Kong SAR, benefitting 250 million users. The percentage of natural gas in the national primary energy consumption mix will increase by nearly 1%. By that time, a nationwide gas pipeline network connected with the world will be formed including the West-East Gas Pipelines, Shaan-Jing Gas Pipelines, and Myanmar-China Gas Pipeline.

In the future, the West-East Gas Pipeline network will be further extended to supply sufficient natural gas to more areas and residents in China, in order to ensure national gas security. Taking China into the "network era" of natural gas, we will supply more clean energy for the realization of the "Chinese Dream".

Appendix

Milestones

2002

On February 5, 2002, the press conference for the West-East Gas Pipeline Project was held in the Media Center in Beijing. At the conference, it was announced that the feasibility study report of the West-East Gas Pipeline Project had been officially approved by the State Council, and that CNPC could start river-crossing work with long construction periods and pilot work in the water network in regions south of the Yangtze River.

On July 4, 2002, the groundbreaking ceremony of the First West-East Gas Pipeline was held in the Great Hall of the People. Starting from Lunnan, Xinjiang, and passing through 10 provinces (municipalities and autonomous regions), it was China's longest gas pipeline with the largest investment, the largest delivery capacity, and the most complex construction conditions at the time.

2003

On June 10, 2003, the 518 m-long tunnel across the Yellow River in Yanshuiguan, one of the three major control works of the First Line, was completed. Located at the Shaanxi-Shanxi Grand Canyon between Yanchuan, Shaanxi Province and Yonghe, Shanxi Province, it was the first tunnel for the gas pipeline across the Yellow River.

On July 26, 2003, the 1,992 m-long Shield Tunnel in Sanjiangkou of the Yangtze River was fully completed. It was one of the three major control works of the First Line.

On August 27, 2003, the development project of Kela-2 Gas Field was started.

On September 15, 2003, pipe jacking across the Yellow River in Zhengzhou, the last major control work of the First Line, was completed. It was the first project to apply long-distance pipe jacking technology to underwater pipeline-crossing in China.

On November 20, 2003, the main pipeline for the western section of the First Line was fully completed.

2004

In January 2004, the eastern section of the First Line was completed and put into operation.

On March 1, 2004, the toll-free number (8008200375) was set to report emergencies related to the project.

On July 1, 2004, two sets of high-power compressor units were installed at Jingbian Compressor Station. It was the first time for China to successfully install high-power compressor units in long-distance, large-diameter natural gas pipelines.

On August 3, 2004, the last welding joint for the First Line was welded in Yumen, Gansu Province, marking the completion of welding, pressure testing, and drying for the trunk line in the west section of the First Line.

On September 6, 2004, natural gas delivered from Tarim reached Jingbian Station in Shaanxi Province, connecting gas sources in Tarim Gas Field and Changqing Gas Field.

On October 1, 2004, the western section of the First Line was fully completed and put into operation, indicating the overall operation of the First Line, as gas from Tarim and Changqing gas fields was delivered to the eastern section.

On October 24, 2004, the fuel-driven compressor unit at Jingbian Station, the first compressor unit of the project, was ignited.

On October 28, 2004, high-yield gas flow was obtained from Well 2-7 in Kela-2 Gas Field, with daily gas production of 500 cubic meters. It is the first development well completed at the gas source of the project.

On December 1, 2004, Kela-2 Gas Field was put into production, and started to supply natural gas to the project.

On December 30, 2004, a conference was held in the Great Hall of the People in Beijing to celebrate the operation of the First Line, indicating the official commercial operation of the project.

2005

On January 13, 2005, the news on the *First West-East Gas Pipeline's commercial operation* was selected as one of the "top 10 sci-tech news events of 2004" by the Chinese Academy of Sciences and the Chinese Academy of Engineering.

On March 12, 2005, Ji-Ning Cross-link Line, connecting the First West-East Gas Pipeline and the Second Shaan-Jing Gas Pipeline, successfully crossed the Weiyun River, with a crossing length of 1,434 meters. It was the longest directional drilling crossing project with the largest pipeline diameter in China at the time, and also the longest river crossing project with a diameter of 1,016mm in Asia.

On July 7, 2005, Jingbian Compressor Station was connected with the Second Shaan-Jing Gas Pipeline.

On August 3, 2005, the trunk line of the First Line was completed.

2006

On May 23, 2006, at the National Soil & Water Conservation Working Conference held by the Ministry of Water Resources, the project was ranked the first among the third group of 34 soil and water conservation demonstration projects for development and construction.

On June 9, 2006, the project was granted the first award of the National Environmental Friendly Project.

On December 16, 2006, Huai-Wu Branch Line, a cross-link line connecting the First West-East Gas Pipeline and Zhongxian-Wuhan Gas Pipeline, was put into trial operation.

2007

On March 1, 2007, the feasibility study for the Second West-East Gas Pipeline Project was launched.

On April 25, 2007, Yingmaili Gas Field, the second largest major gas field of the project, was completed and put into production. 1.475 billion cubic meters of natural gas and 647,700 tons of condensate were produced in 2007.

On June 21, 2007, Ji-Ning Cross-link Line, connecting the First West-East Gas Pipeline and the Second Shaan-Jing Gas Pipeline, was fully completed. As Lan-Yin, Huai-Wu and Ji-Ning cross-link lines were completed and put into operation, the first and second Shaan-Jing Gas Pipelines, Sebei-Xining-Lanzhou Gas Pipeline, First West-East Gas Pipeline and Zhongxian-Wuhan Pipeline were connected, and Xinjiang, Changqing, Sichuan and Qinghai gas provinces were connected.

2008

On January 30, 2008, the feasibility study report of the Second West-East Gas Pipeline was approved.

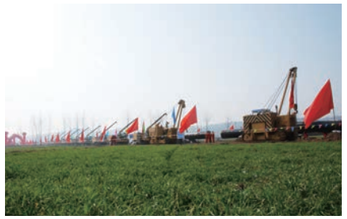
On February 22, 2008, the groundbreaking ceremony of the Second West-East Gas Pipeline was held in the Great Hall of the People. The project passes through 14 provinces (municipalities and autonomous regions). The trunk line and 8 branch lines extend a distance of 8,819km. With designed annual delivery capacity of 30 billion cubic meters of gas and a total investment of RMB 142.2 billion, it is China's first large pipeline to introduce foreign natural gas.

2009

On January 6, 2009, the eastern section of the Second Line was approved by the Chinese government.

On February 7, 2009, construction of the eastern section of the Second Line was started.

On August 25, 2009, the West-East Gas Pipeline Project was listed among the national top 100 projects to mark the 60th anniversary of the founding of the People's Republic of China.



On September 4, 2009, the main pipeline at the Guozigou Tunnel Group, the key control work of the western section of the Second Line, was fully welded, one month ahead of schedule.

On September 15, 2009, Shanxi coal bed methane pipeline of the project was completed and put into operation in Qinshui, Shanxi Province. Coal bed methane from Shanxi Province was delivered to the trunk line and mixed with natural gas from West China for the first time.

In September 2009, six oil and gas pipeline projects, including the gas supply project from the Second West-East Gas Pipeline to North Xinjiang, Hui'anpu-Yinchuan Oil Pipeline, Shikong-Lanzhou Oil Pipeline and Shandong Gas Pipeline, were successively started.

On October 30, 2009, the project won the Gold Medal of the National Outstanding Engineering Design.

On November 24, 2009, the directional crossing for the Second West-East Gas Pipeline across the Pi River in Sheqi County, Henan Province was completed. With a crossing distance of 711m and a diameter of 1,219mm, it has set a record in large-diameter pipeline directional crossing.

On December 5, 2009, natural gas from Turkmenistan was delivered to the Horgos Metering Station at 23:58 (Beijing Time) through Uzbekistan and Kazakhstan. The Central Asia-China Gas Pipeline was ready for pressure boosting after displacement operation.

On December 10, 2009, PetroChina Tarim Oilfield Company had supplied a total of 60 billion cubic meters of natural gas to the West-East Gas Pipelines.

On December 14, 2009, Line A of the Central Asia-China Gas Pipeline was completed and put into operation.

On December 14, 2009, capacity boosting work of the West-East Gas Pipeline Project was completed. Including 12 new compressor stations and 8 modified compressor stations, the annual gas transmission capacity was increased from 12 billion cubic meters to 17 billion cubic meters.

On December 31, 2009, the western section of the Second Line was completed and put into operation.

2010

On October 11, 2010, the research on digital pipeline technology and its application in major projects was granted the Second Prize of Geo Information Science and Technology Progress for 2010 by the National Administration of Surveying, Mapping and Geo Information.

On October 15, 2010, the research on the technology for optimized operation of CNPC's Trunk Gas Pipelines was granted the second prize by China Petrol and Chemical Industry Association (CPCIA).

On October 26, 2010, Line B of the Central Asia-China Gas Pipeline was completed and put into operation.

On November 18, 2010, the Zhongwei-Huangpi Line of the eastern section of the Second Line was completed and put into operation.

On December 8, 2010, the Zaoyang-Shiyan Branch Line (Zaoyang-Xiangfan Section) of the Second Line (East Section) was completed and put into operation.

On December 8, 2010, the 3D fine geological modeling and integrated geological research on salt strata of gas storage (Jintan) for the West-East Gas Pipeline Project and the research and application of geological hazard assessment and emergency protection technology for oil and gas pipelines won the second prizes of the CNPC Science and Technology Advancement Award.

On January 14, 2011, the Second West-East Gas Pipeline Project passed construction acceptance, winning the first prize of the National Science and Technology Advancement Award.

On June 30, 2011, the trunk pipeline of the Second Line was completed and put into operation, transmitting natural gas from Turkmenistan to Guangzhou.

In July 2013, the Horgos-Urumqi Section of the Third Line was put into operation.

In December 2013, the Urumqi-Lianmuqin Section of the Third West-East Gas Pipeline was put into operation.

2011 **2012** **2013**

On May 31, 2012, an investment partnership framework agreement was signed for the Third West-East Gas Pipeline Project. Under the agreement, CNPC, together with the National Council for the Social Security Fund and Baosteel Group, will jointly invest in and build the Third West-East Gas Pipeline.

On October 16, 2012, construction of the Third Line was started. The 6,840 km-long pipeline will run through 10 provinces (municipalities and autonomous regions) including Xinjiang and Gansu. Consisting of one trunk line and five branch lines, its designed annual delivery capacity is 30 billion cubic meters.

In December 2012, the Second West-East Gas Pipeline, consisting of one trunk line and eight branch lines, was completed and put into operation.

Terminology

- Pipe jacking: a method for pipeline laying and installation with no or minimal excavation.
- Treatment percentage of disturbed land: the ratio of treated area to the total disturbed land within the targeted area for soil erosion control.
- Controlled percentage of erosion area: the ratio of the controlled area to the total soil erosion area within the targeted area for soil erosion control.
- Controlled ratio of soil erosion modulus: the ratio of the permitted soil erosion amount to the actual soil erosion amount after control within the targeted area of soil erosion control.
- Percentage of dammed slag or ashes: the ratio of actual spoil (slag or ashes) dammed to the total amount of spoil (slag or ashes) within the targeted area for soil erosion control.
- Recovery percentage of forestry and grass: the ratio of the area of restored forestry and grass to the area of vegetation restorable (under the current technical and economic conditions) within the targeted area for soil erosion control.
- Percentage of forestry and grass coverage: the ratio of forestry and grass area to the total land area within the targeted area for soil erosion control.

2006
Established the policy for issuing corporate social responsibility reports

Set up the CSR mailbox: csr@cnpc.com.cn

2007
Issued the company's first *Corporate Social Responsibility Report*

Published the company's quantitative index of CSR performance for the first time

2008
Held a CSR Forum

Launched a website on Environment and Society

2009
Issued *CNPC in Kazakhstan Sustainability Report*

Introduced the stakeholder participation mechanism

2010
Issued *CNPC in Sudan*

Promoted the sharing of CSR best practices at CNPC

Established the Social Responsibility Management Committee and External Expert Panel

2011
Issued *CNPC in Indonesia*

Compiled *2010 Corporate Social Responsibility: Best Practices from CNPC*

2012
2012 Studied CSR Indexes and guidance

Compiled *2011 Corporate Social Responsibility: Best Practices from CNPC*

2013
Issued *CNPC in Latin America*

Compiled the *2012 Corporate Social Responsibility: Best Practices from CNPC*

2014
2014 Compiled and released the *Guideline of CNPC on Fulfilling Corporate Social Responsibility*

Compiled the *Special Report on Social Responsibility for the West-East Gas Pipeline (2002-2013)*

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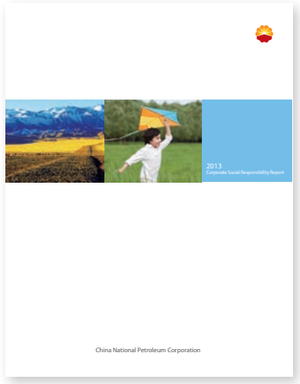

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