

Chapter 17

GAS IN CHINA

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- A significant reform to gas pricing began in 2005 when pricing was changed from cost-plus to a system based on links to world energy prices.
- The hooking mechanism did begin to correct a problem of pricing gas too low which, in 2009, led to gas shortages in some cities: prices remain low relative to world levels.
- Growing demand, environmental pressures and rising world or LNG prices are not likely to permit this situation to continue, and further pressure for price rises is expected. The mechanism for arranging those changes has been established.

17.1 INTRODUCTION

China is the second largest gas consumer in Asia and its consumption of gas is growing faster than production. The volume of its gas consumption is high in absolute terms: in 2008 it was 80.7 billion m³ while the production was only 70.08 billion m³, leading to imports of 10.62 billion m³ (Figure 17.1). However, the share of gas in total energy consumption in China remains low, at about 3% in 2006 and slightly higher at 3.5% in 2007 (Figure 17.2) as compared to a global average of 20%. The rising levels of urbanisation with its growing demand for energy and rising expectations of response to environmental pressures all lead to greater attention to the use of gas which, in turn, is driving policy reform.

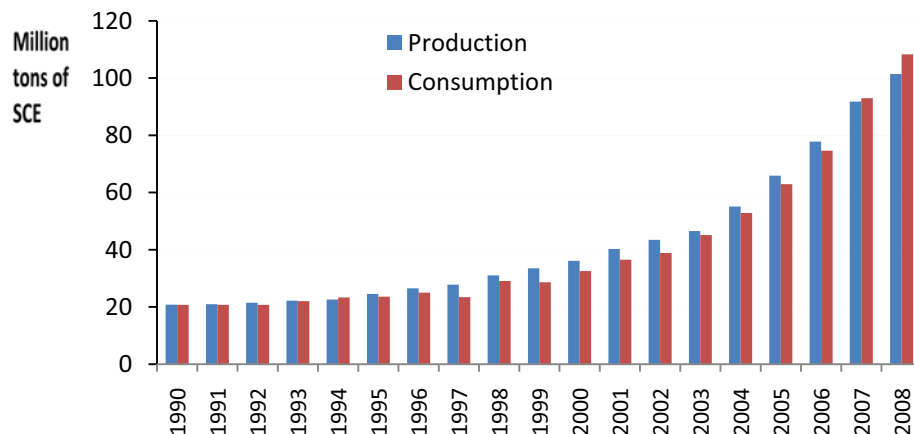


Figure 17.1: China's natural gas production and consumption, 1990–2008. (Source: National Bureau of Statistics of China 2010)

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Total Energy Consumption in China, by Type (2006)

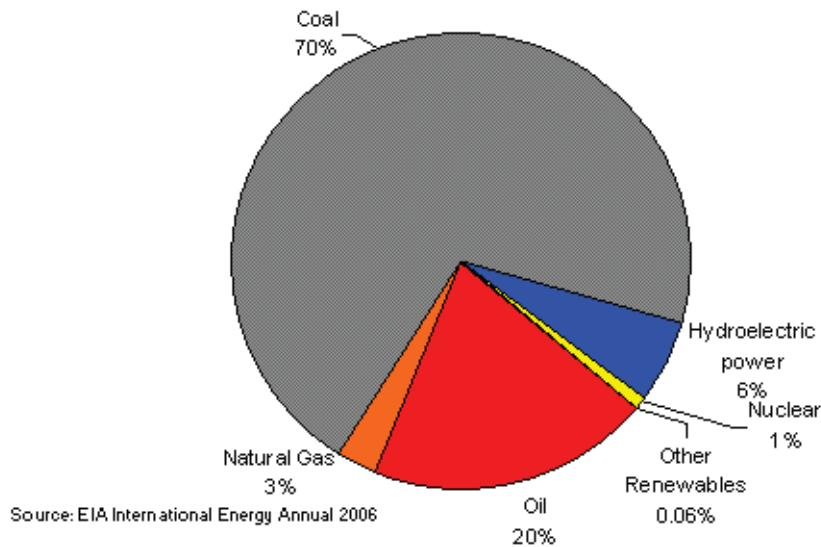


Figure 17.2: Energy consumption in China, by type, 2006. (Source: US Energy Information Administration 2008)

In 2008 gas for industrial fuels accounted for 30.5% of total use, gas for the chemical industry accounted for 31.5%, gas for electricity generation accounted for 10% and 28% was for civil natural gas. The share of gas used in electricity consumption is relatively low, and in some major coal production areas its use is restricted.

Since 1998 the Chinese government has sped up the pace of regulatory reform in the oil and gas industry and those changes are reviewed in this paper. One major issue has been the lack of an institution to guide policy. Following the abolition of the Department of Energy in 1998, there had been no single central government department responsible for energy policy and management matters. This situation has led to questioning whether the goals of regulation and the economic principles that are guiding prices are sufficiently clear and consistent (Liu 2004). In addition, no integrated natural gas legal system had been built, so government regulations could not seek effective legal support. More recent changes, including the establishment of the National Energy Administration in March 2008 and the State Energy Resources Commission in January 2010, are discussed below.

The time is now critical for regulatory reform in China. As explained by Wong (2010):

... without a suitable modern regulatory system, economic reform of China's city-gas industry will not overcome the pricing reform threshold necessary for future expansion and the creation of a level playing field for all stakeholders, including upstream gas producers, midstream long-haul pipeline operators, and downstream city-gas companies. In other words, market forces would better determine progress rather than reliance on central planning for investment, procurement and pricing decisions given the [economy] has to increasingly look to the international market to meet its (natural gas) needs.

This paper covers the scope of operations of the three main companies in the gas sector in China and other regional groups. It also provides details of the systems for pricing gas, including the recent changes, and reviews the restrictions on entry to various parts of the natural gas sector, including the trends in imports and the regulation of gas prices.

17.2 RESTRICTIONS ON ENTRY

Until recently, the China National Petroleum Corporation (CNPC), China Petrochemical Corporation (Sinopec group) and China National Offshore Oil Corporation (CNOOC), all state-owned enterprises (SOEs) which were active in the production and distribution stages of the industry, were the dominant firms in the gas market (Zhibin 2008). Table 17.1 shows the equity structure of these major SOEs.

Table 17.1: The equity distribution in three state-owned enterprises.

Corporations	Year of offering services	Government equity	Private equity	Foreign equity
China National Petroleum Corporation	1988	86.42%	11.38%	2.00%
China Petrochemical Corporation	1983	75.84%	19.24%	4.92%
China National Offshore Oil Corporation	1982	54.74%	34.06%	11.20%

Source: National Bureau of Statistics of China 2010

According to the Chinese Oil and Gas Industry Annual Report (2009), CNPC is still the biggest gas producer in China, accounting for almost 80% of total production. But the Sinopec group has found the Pu Guang oil field in Sichuan, and its output will increase.

Until now, the city gas companies have been the sole purchasers of natural gas from the three SOEs, which they then resold to consumers (Liu, D 2009). However, following city gas market-oriented reforms, foreign and private capital is also entering the city gas business (Liu, D 2009). City gas supply is now franchised: companies with franchise rights have the monopoly on all the business of purchasing and selling gas in their area.

Because the SOEs' businesses were separated by region, there was no intense competition among them. They were also highly integrated, and the driver for this was the need to provide security for the large investments that are required in each link of a gas chain as it develops. Contracts to buy and provide gas are valuable to secure gas field development and to ensure the financing of new transmission facilities and the construction of the large consuming units, such as power plants, that will 'anchor' the gas demand (IESM 2002).

Table 17.2 shows details of all major companies in China in this sector up to 1999, including those with foreign investment, particularly in transmission and distribution where the restrictions on foreign investment were lighter. Overall, the number of gas-related enterprises in China then amounted to 8560.²

17.2.1 Production

In exploration the three major SOEs operated according to their territorial allocations and had exclusive cooperation with overseas partners, which made it hard for other forms of capital to enter the market. According to The Mineral Resources Law of the People's Republic of China Implementation Rules, all mineral resources within a territory are owned by the state; any firm that wants to exploit a mineral resource must first apply to the relevant government department for registration in accordance with law to obtain a mining licence and consequent mining rights (State Council [SC] 1994).

² See <http://china.exactdw.com/zhongguotianranqi.html>.

Table 17.2: The characteristics of all major facilities-based operating companies providing gas services.

Company	Service provided: production/import transmission distribution (LNG noted)	Year services first offered	Market share	Owners of capital and their government, domestic, foreign shares
China National Petroleum Corporation	Production/import transmission distribution LNG	1988.9	c. 70% in production	Government 86.42% Foreign (H stock) 11.38% Domestic 2.00%
China Petrochemical Corporation	Production/import transmission distribution LNG	1983.7	c. 11.7% in production	Government 75.84% Foreign (H stock) 19.24% Domestic 4.92%
China National Offshore Oil Corporation	Production/import transmission distribution LNG	1982.2	NA	Government 54.74 % Foreign (H stock) 34.06% Domestic 11.2%
Beijing Gas Group Co. Ltd	Transmission distribution	1999.9	Monopoly in Beijing Market	Government 100% Not listed
Shaanxi Provincial Natural Gas Co. Ltd	Transmission distribution	1995.1	The only pipeline operator in Shan Xi Province	Government 62.19% Foreign and domestic 37.81%
Sichuan Datong Gas Development Co. Ltd	Production city pipeline distribution	1994	Operates in Chengdu Dalian ShangRao Mudanjiang	Domestic 100%
Changchun Gas Co. Ltd	Production and distribution	1993	Operates in Changchun and Yanji	Domestic 100%
Shenergy Company Ltd	Production city pipeline distribution LNG	1993	Operates in Shanghai	Government 50.56% Domestic 49.44%
Xinjiang Guanghui Industry Co. Ltd	LNG	1999	Operates in Xinjiang province	Domestic and foreign
XinAo Gas Holdings Ltd	City pipeline distribution LNG	1992	Operates gas distribution business in over 60 cities	Foreign and domestic (H stock) 100%
Wuxi China Resources Gas Co. Ltd	City pipeline distribution	2004	Operates gas distribution business in over 30 cities	Foreign and domestic (H stock) 100%
China Gas Holdings Ltd	City gas pipeline distribution LNG	1995	Doing business in c. 20 provinces	Government, foreign and domestic

Until recently only the three SOEs were authorised by the State Council to exploit oil and gas resources throughout the economy (NDRC 2007, SC 2001, SC 2007b). In 2009 CNPC accounted for 80% of the domestic market share in natural gas production and Sinopec about 13%. The state allowed foreign firms, other economic organisations and individuals to explore and exploit mineral resources in accordance with the relevant laws and administrative regulation. However, a foreign firm's involvement in natural gas exploration and development was limited to joint ventures (JVs) and cooperation with one of the SOEs. Then on 23 December 2009 the first private enterprise to invest in a natural gas production project obtained the permission of the National Development and Reform Commission (NDRC). From that time onwards, 100% private equity would be allowed in natural gas production.

In recent years the use of liquefied natural gas (LNG) has developed rapidly in China. The construction of LNG facilities requires sophisticated technology and high investment, so most LNG projects have been conducted in JVs between foreign firms and local stated-owned energy firms. In May 2007 the Ministry of Commerce cancelled the automatic import licence administration of natural gas and LNG, which means stricter supervision of gas imports. CNPC, Sinopec and CNOOC are also the three largest gas importers of China.

17.2.2 Transmission

Natural gas pipelines are listed in the 'encouraged' category, meaning that they need not be controlled by Chinese companies (NDRC 2007). However, the government has not established a corresponding access system and regulatory measures, so the implementation of investment projects continues to follow miscellaneous examination and approval systems. Transmission refers primarily to natural gas long-distance pipeline transportation, the intermediate link between manufacturing enterprises and the city gas companies. At present, China's natural gas transmission pipelines basically belong to CNPC and Sinopec, including the China Petroleum Pipeline Bureau that is owned by CNPC, and the Sinopec Pipeline Storage and Transportation Company, the gas pipeline agency that is owned by Sichuan Petroleum Bureau. There is no regime that provides access to these pipelines to third parties (Yang, J 2005). Most of CNOOC's gas supplies are imported from offshore oil and gas installations, transported either by offshore pipeline or by transport ship.

LNG is imported from abroad, then stored, re-gasified, compressed and distributed to special customers through long gas pipelines, and also sold through truck loading stations. LNG receiving terminals and short-distance pipelines have been constructed in coastal areas. There are no long-distance pipelines in mainland China.

Since February 2004 independent operators have been allowed to enter the LNG import market. Then the Guangdong Dapeng LNG Company Ltd, a Sino-foreign JV energy company that is the construction and operation entity of the Guangdong LNG Terminal Project, began its pilot operations for the importation of LNG into China. The project comprised fourteen separate but interrelated projects run by independent legal entities.

Each independent operator of an LNG project must undertake the purchase (import), transport, storage and re-gasification of the LNG. They sell and transport the natural gas and its by-products to the Pearl River Delta and other areas, construct and manage the LNG reception terminals, gas pipelines and other additional extended facilities, charter, lease and operate LNG carriers, and purchase and sell LNG and do other relevant business inside or outside the economy.

Legally, foreign gas companies are not required to establish in JVs. In the past gas companies had to seek the co-operation of local companies but an amendment to the Industrial Catalogue for Foreign Investment in 2007 ruled that foreign investment in the construction and operation of oil (gas) pipelines and oil (gas) storage is to be ‘encouraged’ (NDRC 2007).

17.2.3 Distribution

Because of limited pipeline route resources, cities cannot accommodate several natural gas pipeline networks belonging to different companies. Generally, to avoid duplicate construction and the waste of resources, local governments would monopolise the construction and the management of the local natural gas pipeline. On 27 December 2002 the Ministry of Construction issued ‘Opinions on Speeding up Marketization Process of Municipal and Public Sectors’. Article 1 of which ruled that private and foreign capital were to be encouraged to participate in the construction of municipal public facilities. This could occur in single proprietorship, JV, cooperation and other forms. Construction projects of water supply, gas supply, heat supply, sewage treatment, garbage treatment and other municipal public facilities should choose main investors by a system of competition through open tendering (MOC 2002). Bid-winning enterprises would be franchises authorised by the government.

Regionally, the natural gas distribution business is monopolised by several large state-owned companies, overseas-funded gas companies and JVs. Examples of two of these companies are presented below. Retail customers must deal with the local franchised provider.

- China Gas Holdings Limited is a Sino-foreign JV. It engages principally in the investment, operation and management of city gas pipeline infrastructure, the distribution of natural gas to residential, commercial and industrial users, the construction and operation of gas stations and the development and application of natural gas related technologies in China. Its business scope has already been involved in 20 provinces. Its main shareholders are The Centre of Strait Economy & Science-Technology Cooperation, China Petroleum & Chemical Corporation, Oman Oil Company, Gail (India) Ltd, SK Group and Asian Development Bank.
- Xinao Gas Holdings Ltd was the first private enterprise to operate a natural gas transmission and distribution business in China. Its main business portfolio consists of clean energy distribution, including city pipeline natural gas (LPG), vehicle refuelling gas (CNG and LPG) and DME (dimethyl ether), non-pipeline energy delivery and other value added services on the basis of energy distribution. Now Xinao has businesses in 60 cities in China (Xinao Gas Holdings Ltd 2008).

Wong (2010) refers to a current issue in distribution:

As the project owner of the second West–East Gas Pipeline project (WEGP2), which runs across thirteen provinces from Xinjiang in the west to the Yangtze River Delta in the east and Pearl River Delta in the south, CNPC will ... control the vast amounts of NG imported from Turkmenistan. Recently, CNPC is thought to have begun talks with the provincial governments of Hebei, Gansu and other provinces along WEGP 2 for an exclusive franchise to operate city-gas businesses in these regions. This is causing some disquiet as it would be easy for such a large organization as CNPC, with its upstream and midstream domination, to forward integrate into city NG projects to the detriment of the long-term development of China’s city-gas industry. An enhancement to the regulatory system contiguously covering downstream, midstream and upstream operators would avoid such a monopolistic situation from occurring.

The right to operate a city gas business can only be obtained through tendering, and of course CNPC has the opportunity to bid. There is, however, some advantage in establishing rules on separation between production/transmission and distribution, because it could bring in more competition and thus add to efficiency compared to the situation in which outside bidders were constrained.

17.3 IMPORTS OF GAS

China's imports of LNG and natural gas showed considerable changes in volume between 2003 and 2008. From 2003 to 2005 the annual imports of LNG were less than 500 tonnes. China began to import large quantities of LNG in 2006, more than 100 times as much as in the past. In 2008 the LNG import volume rose 14.5% and its import value rose 55% (Table 17.3).

Table 17.3: China's imports of LNG.

Year	Imports (tonnes)	Value (USD million)	Average unit price of imports (USD/tonne)
2003	0	1	
2004	400	14	350.00
2005	483	18	372.67
2006	687,543	11,543	167.89
2007	2,913,122	60,058	206.16
2008	3,336,000	93,084	279.02

Source: Liang 2009

Natural gas demand in 2010 is expected to reach 110 billion m³, while domestic natural gas production will be able to provide only 90 billion m³ and the gap will be 20 billion m³. China's natural gas demand for 2020 is expected to be 250 billion m³, and its natural gas consumption in 2030 is expected to reach 320 billion m³. Of that 320 billion m³ domestic output is expected to be 250 billion m³ with 70 billion m³ imported from abroad (which according to some estimates will be made up of 30 billion m³ from Turkmenistan, 10 billion m³ from Myanmar and 18 billion m³ from LNG, leaving more that 10 billion m³ to be determined).

The growth in China's gas demand will lead to a radical change in its energy policy, which up until now has been dominated by the search for self-sufficiency. From 2003 to February 2008 China had not imported any natural gas products through pipelines. But building a transmission pipeline network linked to neighbouring economies will soon be essential for the economy's energy security. The Central Asia Gas Pipeline (with a length of 1801km) will transport about 300 billion m³ of natural gas from Central Asia to China each year. The West–East Gas Second-line Project referred to above is linked to the Central Asian pipeline, on which construction began in 2008; this pipeline will transport natural gas to the Pearl River Delta and the Yangtze River Delta. China and Russia are negotiating gas contracts in which Russia may supply to China 68 billion m³ of natural gas a year from 2014 or 2015. The China–Myanmar pipeline will also be built to increase domestic gas supplies (Table 17.4).

Another option is to import gas in the form of LNG. In 2008 China imported 4.44 billion m³ of LNG, from Australia (81%), Egypt (5.6%), Nigeria (5.4%), Algeria (3.8%) and Equatorial Guinea (3.6%). Several major oil companies in China have further accelerated the pace of signing long-term LNG purchase contracts with international sellers. Purchase agreements

were signed with QATARGAS and Shell International Gas Ltd in 2008, and CNOOC also signed a framework agreement to buy LNG with QATARGAS and Total Petrochemicals of France. Table 17.5 summarises LNG projects under development. Higashi (2009) reports that ‘most’ LNG is used in electricity production with the rest going to city gas.

Table 17.4: The planned international gas pipeline.

Natural gas pipeline	Length (km)	Capacity	Remarks
Russia’s eastern line	n.a.	30–40 b m ³ /year	Expected to run through 2010
Russia’s western line (‘Altai’)	n.a.	30–40 b m ³ /year	Expected to run through 2010
Myanmar–China	2380	n.a.	March 2009 signed
Turkmenistan–China (Xinjiang)	1818	30–40 b m ³ /year	Expected to run through end of 2009

Source: Liang 2009

Table 17.5: China’s operating and under construction LNG projects.

LNG terminal	Province	Status	Start year	Capacity (million tonnes/year)
Dapeng	Guangdong	Production	2006	3.9
Xiuyu	Fujian	Production	2009	2.6
Zhongximentang	Zhejiang	Under construction	2009	4.0
Dalian	Liaoning	Under construction	2012	3.7
Rudong	Guangdong	Plan	2011	3.5
Hainan	Hainan	Feasibility study	2012	2.5
Qingdao	Shandong	Feasibility study	2010	3.7
Tianjian	Tianjin	Feasibility study	2013	2.0
Gaofeidian	Tangshan	Feasibility study	2013	4.3
Qinzhou	Guangxi	Feasibility study	2012	3.7
Macao	Guangdong	Feasibility study	2013	3.7
Rizhao	Shandong	Feasibility study	2012	1.8
Taizhou	Jiangsu	Feasibility study	2013	3.7
Weihai	Shandong	Feasibility study	2013	3.7
Ninpo	Zhejian	Feasibility study	2010	4.0

Source: Liang 2009

17.4 PRICE REGULATION

The NDRC decides price policy. It determines a ‘guiding price’ at the factory level (Zheng, Luo & Yang 2006). The consumer retail price is determined by the local price bureau and also by the big SOEs, based on the government-guided factory price plus the transmission and city distribution costs and a profit in each link of the industry chain, which differs across areas. The government’s pricing policy, which divides natural gas users into fertiliser, industrial, civil and commercial users according to the direction of natural gas, also provides for different prices.

The State Council has identified some problems in this process, since it does not reflect the degree of scarcity of gas, supply and demand or the price’s relationship to alternate resources (SC 2007a). The direction of reform of this price mechanism should be market-oriented. Higher consumption, the inequities between regions and the inability to pay for rising imports have all created pressure for change in the price of gas. Recent pricing reforms are discussed in more detail below.

As explained above, since the abolition of the Energy Industry Ministry in 1993 there has not been a unified energy regulatory administration. The National Energy Bureau established in 2008 did not unify China’s energy management functions. In March 2010 the State Energy

Resources Commission was established by the State Council with the Premier as director, the Vice Premier as deputy director and a committee consisting of the heads of 21 central and national ministries such as the NDRC, the Ministry of Commerce, the Ministry of Foreign Affairs and the Industry and Information Ministry. There had previously been a Department of Energy and an Energy Commission but these had not formed any effective management processes, in our view, because of a division of interests. As a result, the final authority had been redistributed to the various departments listed above. In 2008, during the super-ministry reform period, the failure to re-create the Department of Energy may also have been related to the difficulty of reconciling the different interests involved. Therefore, whether the new structure will be able to solve the existing problems in the energy sector remains to be seen.

17.5 UNIVERSAL SERVICE

‘Universal service’ is defined as having natural gas replace oil in status by becoming the major energy source for urban residents. The policy instruments used to pursue this objective include improvement of the relevant laws and regulations, consumer subsidies to encourage urban consumption and improved supply provided by the incumbent operator; expansion of the range of uses of natural gas, and lowering the tariff on gas imports in order to increase the volume of gas imported.

China’s natural gas consumption is at present mainly concentrated on the chemical industry. But it is expected that the direction of natural gas utilisation will change in the future to more urban consumption and gas-based power generation.

By the end of the ‘11th Five-year Plan’ period, China will have built the backbone of the economy’s natural gas pipeline network, which will inevitably bring about the development of the terminal sales market. The number of cities supplied with natural gas is expected to increase to 270 in 2010 (compared to 140 in 2005); 70% of Chinese cities are expected to have a supply of natural gas by the middle of this century. To achieve these objectives, the Chinese government plans to take the following measures:

- establish and improve the relevant laws and regulations relating to natural gas;
- encourage and develop new ways to use natural gas through the initiation of new gas projects, the reduction of appropriate income tax and the offer of preferential low-interest loans to gas users;
- expand the government’s own use of natural gas, such as by using it to generate electricity and smelt steel and by the development of gas-fired air-conditioning;
- reduce the expense of using natural gas for some low-income families by providing subsidies and by trying to reduce gas supplier’s charges.
- lower the import tariff on natural gas.

17.6 RECENT CHANGES IN POLICY

Major changes in policy since 2004 presented so far are summarised in Table 17.6. In this section we concentrate on the 2005 changes in pricing policy.

As noted earlier, the gas pricing policy is decided by the NDRC and there are two associated prices: the factory price and the consumer retail price. Before 2005 the factory price was determined by a cost-based fixed-price formula of production cost plus a reasonable profit. Higashi (2009) reported an internal rate of return of 12%. This pricing mechanism did not take into account the scarcity of gas, the imbalance of supply and demand, the fluctuation of

Table 17.6: Major changes in market access policies, ownership rules and regulations since 2004.

Area of policy change	Year of change	Description of change
Regulation	2005	Reformed the gas pricing mechanism and increased the factory price appropriately: (i) divided gas factory price into two levels; (ii) changed the form of price; and (iii) rationalised the price structure and set up the price hooking mechanism.
Regulation	2006	In 2006 applied universally acknowledged two-part pricing system (i.e., ‘pipe capacity fees’ and ‘pipe utilization fees’) to the Zhong Wu pipeline.
Regulation	2007	NDRC issued ‘The Policy of Gas Usage’ which would guide and regulate the downstream of gas usage. Wong (2010) says that: ‘[e]ffectively the Directive requires local governments to regulate growth of (natural gas) markets giving priority to residential cooking and water heating, with less encouragement to space heating and industrial applications, and positive discouragement to gas power and petrochemical production projects.’
Regulation market access and ownership	2007	‘The Energy Law of the People’s Republic of China’ (Exposure Draft) was issued. This is the basic law which would reflect China’s future overall energy strategy and involve much of the important and sensitive issues such as the framework of energy administration, pricing mechanism and strategic reserves. ‘The Gas Law of the People’s Republic of China’ was under preparation.
Regulation	2008	‘The Energy Conservation Law of the People’s Republic of China’ was issued. This law applied to all kinds of energy resources, including coal, oil, gas, biomass energy, electricity, heating power and other resources obtainable through processing and transformation.
Regulation	2010	The State Council declaration to set up the National Energy Commission was issued.

natural gas prices in the international market or comparisons with the market prices of competitive fuels.

Compared with prices of natural gas abroad and of alternative sources of energy, China’s natural gas prices were too low and far lower than the world gas price. This caused many problems. The low price of natural gas led to a rise in the quantity demanded and contributed to inefficient gas usage. This exacerbated supply-side challenges. In some cases, industrial prices were also lower than residential prices. Take the first West–East pipeline for example, where the city gas price was CNY1.16–1.46/m³ while the industrial gas price was lower, at CNY1.12–1.3/m³. This ‘dual-track’ pricing system led some gas-using companies to rely excessively on the low-price policies, which then also added to the difficulty of reform (Li & Wang 2006).

The process of reform began in 2005, when NDRC reformed the gas pricing mechanism and increased the gas factory price appropriately (NDRC 2005). The main content is as follows:

- *Use a benchmark to set prices*
In order to increase the flexibility of pricing and to reflect the market supply of and demand for gas, the gas factory price was changed to a government guiding price. Based on the benchmark price decided by the government, the gas factory price could either be negotiated between suppliers and buyers within a 10% range around the benchmark for some gas fields or at most be 10% above the benchmark but without limit below it for other gas fields.

- *Hook the benchmark to the prices of substitute forms of energy*

The hooking mechanism means that the benchmark gas factory price would link to the substitute forms of energy and it would be adjusted once a year. The adjustment coefficient is determined with regard to the recent 5-year moving average change of the crude oil price, the LPG price and the coal price. The weights are 40%, 20% and 40% respectively and the successive yearly adjustment cannot be more than 8%. The crude oil price is decided by the arithmetic mean of MOPS WTI, Brent and Minas FOB prices, the LPG price is the Singapore FOB price and the coal price is the arithmetic mean price of Datong quality mix, Shanxi quality mix and Shanxi large mix coal at the QinHuangdao station. Figure 17.3 shows this hooking mechanism. LNG prices are decided according to the imported gas price and are different from the factory price determination systems.

- *Increase the factory price appropriately*

The consequence was an increase of CNY50–150/1000 m³ for industrial and urban gas use and CNY50–100 for fertiliser gas use (the range reflects the different systems for level 1 and level 2 gas). NDRC argued that the effect of this price increase was limited. If measured by the maximum increase of CNY150/1000 m³ for a single family who consume 20 m³ gas/month, the monthly expense would only increase by CNY3 (which is less than USD0.50). If measured by the maximum increase of CNY100/1000 m³ and consumption of 800–900 m³/tonne of fertiliser production, the per tonne production cost would only increase CNY80–90 (or about USD12).

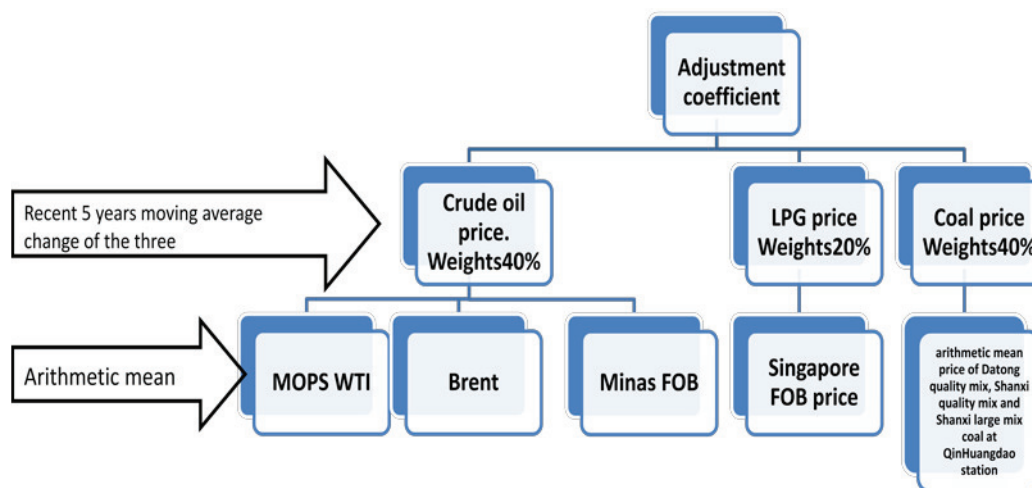


Figure 17.3: The price hooking mechanism.

The consumer retail price is then determined by the gas factory price plus the pipeline transport charge and the city distribution charge. The first two components are controlled by NDRC and the third is decided by local government. The consumer price differs at different cities because of the distances to gas fields and sources of gas (Table 17.7). The price of gas in cities such as Wulumuqi, Chengdu and Chongqing, which are close to a gas field, are relatively low. Gas prices in cities such as Beijing and Shanghai, which are in the downstream of a long-distance pipeline, are higher. The highest price is in cities whose gas is imported from abroad, either by pipeline or as LNG (e.g., Quanzhou).

Despite the initial round of reform, natural gas prices remained low relative to world prices. In November 2007 the average price for the industrial sector rose by 50% but remained less

Table 17.7: Urban gas prices, August 2008 (CNY/m³).

City	Price	City	Price	City	Price
Beijing	2.05	Nanjing	2.20	Taian	2.00
Tianjin	2.20	Suzhou	2.20	Heze	1.70
Shijiazhuang	2.20	Yangzhou	2.20	Zhengzhou	1.60
Tangshan	2.50	Hangzhou	2.40	Luoyang	2.60
Qinhuangdao	3.38	Taiyuan	2.10	Xinxiang	1.75
Xingtai	2.20	Wenzhou	3.50	Wuhan	2.30
Datong	2.00	Jiaxing	2.90	Huangshi	2.10
Changzhi	1.70	Shaoxing	2.80	Yichang	2.20
Huhehaote	1.57	Quzhou	2.90	Xiangfan	2.20
Baotou	1.57	Hefei	2.10	Jinmen	2.10
Shenyang	2.40	Huainan	2.10	Changsha	2.36
Anshan	2.20	Anqing	2.30	Changde	2.53
Jinzhou	2.40	Chuzhou	1.97	Shaoguan	3.95
Changchun	2.00	Quanzhou	3.80	Shantou	4.10
Jilin	2.20	Jiujiang	3.45	Jiangmen	3.80
Yanbian	2.70	Ganzhou	3.90	Ganjiang	3.50
Haerbin	2.00	Jinan	2.40	Nanning	4.35
Daqing	1.65	Qingdao	2.40	Liuzhou	5.93
Jiamusi	2.00	Zaozhuang	2.00	Beihai	3.65
Shanghai	2.10	Yantai	2.40	Guigang	3.65
Wulumuqi	1.37	Hami	2.00	Bayinguoleng	1.30
Haikou	2.60	Leshan	1.54	Yulin	1.35
Sanya	2.40	Dazhou	1.52	Lanzhou	1.45
Chongqing	1.40	Shaotong	3.60	Xining	1.25
Chengdu	1.43	Xian	1.75	Geermu	1.20
Zigong	1.38	Baoji	1.75	Yinchuan	1.40
Panzhihua	1.43	Weinan	1.75	Shizuishan	1.50
Mianyang	1.52	Yanan	1.50	Wuzhong	1.40

Source: <http://oil.chem99.com/channel/Naturalgas/>

than half world prices.³ Gas shortages re-emerged in 2009 in a number of cities. In Chong Qing taxis had to wait for a long time before filling with gas and passengers had to pay a CNY2 cover charge because of the increased price. In Hang Zhou the gas supply for 44 industrial enterprises was cut and a similar phenomenon appeared in other cities. The severely cold winter in China had caused a surge of heating gas usage. Supply-side factors were also important. CNPC said that it had already reached the maximum per day supply, which meant that the company did not have enough gas storage to meet the unexpected increase in gas demand. The separation of transmission pipelines among the giants also made it more difficult to allocate gas to areas that needed it. The relatively low gas price remains a key factor in the overall gas shortage, because it leads to the overuse of gas and reduced incentives for domestic suppliers to increase production.

17.7 CONCLUSION

China has undertaken substantial reform in the gas sector, including the participation of a wider range of investors, at least in transmission and distribution. A clear separation remains between production and transmission and its distribution. Major users are unable to 'buy direct' from producers but have to buy from local distributors who, since 2002, win a franchise through a bidding process. A major reform was also undertaken in pricing from 2005, with the introduction of the influence of world prices and substitute fuels.

³ Prices rose from CNY800/1000 m³ (USD3.04/MBtu) to CNY1200/1000 m³ (USD 4.57/MBtu) (Higashi 2009; CNY1 = USD0.14404). International prices peaked at around USD13/MBtu in 2008.

Despite this significant progress, differences remain between prices on average in China and world prices, between cities for the same types of users and between users in the same cities. The low gas price tends to bring about overuse and adds to the risk of gas shortages in China.

Declining self-sufficiency and the price gaps will likely force further price changes. Aligning the now low domestic price with the higher international price would no doubt be the trend of further gas reform, however, at present there is a lot of argument about the reform policy. Among the options, the use of a weighted average of domestic and international prices seems to be more acceptable in the short term.

A further reform policy document is likely be issued later in 2010.

17.8 REFERENCES

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