中国石油集团经济技术研究院

Research Institute of Economics and Technology CNPC

The 7th China-Japan Joint Symposium on Asian Oil & Gas

China's Natural Gas Market Outlook & the Impact of Price Reform

December 12th, 2013

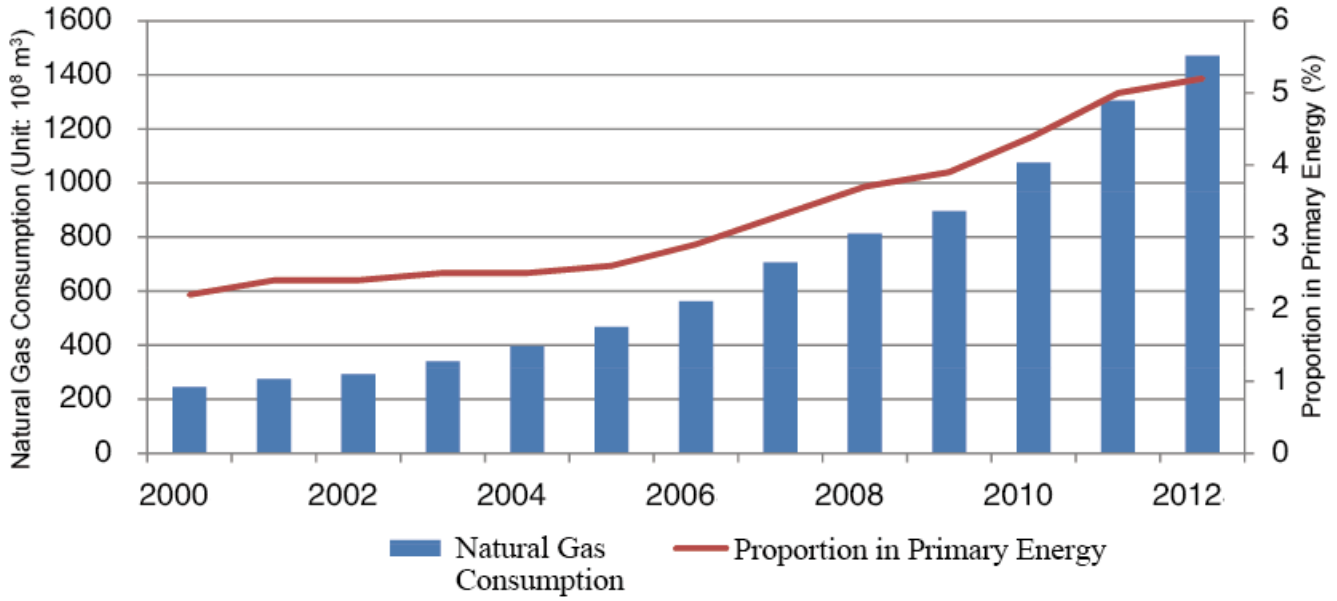
Beijing, China

Outline

1. Rapid Growth of Natural Gas Consumption

1-1. Average annual growth rate of natural gas consumption outstripped those of the total GDP and primary energy consumption

- During 2000-2012, China's apparent consumption of natural gas grew from 24.5 bcm to 147.1 bcm, with an average annual increase of 16.1%, which significantly outnumbered those of the GDP (10.1%) and total energy consumption (7.9%).
- In the same period, the proportion of natural gas in total primary energy consumption rose from 2.2% to 5.2%, but still below the world average of 23.9% and the Asian regional average of 11.3%.



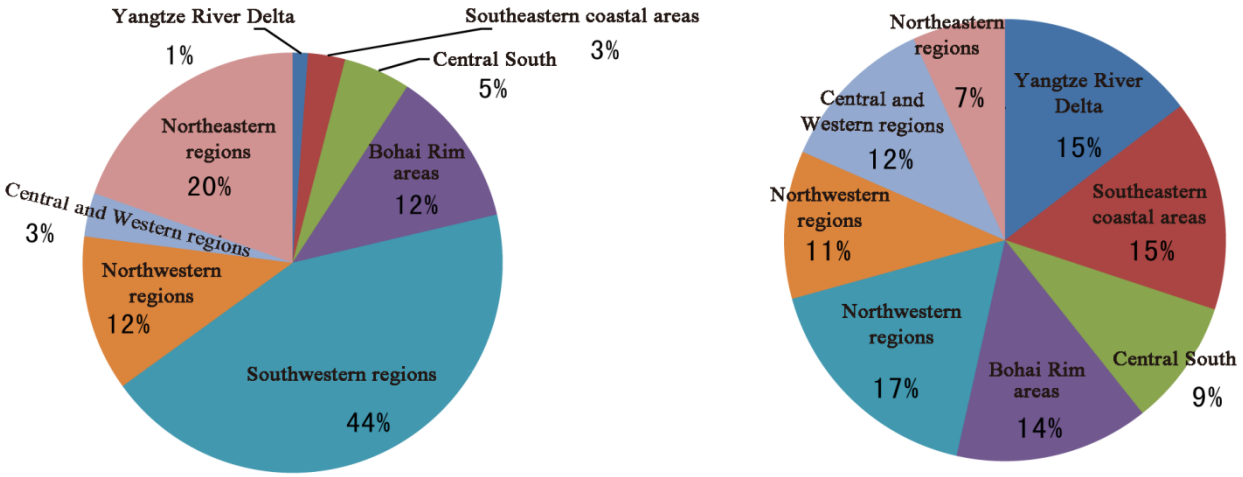
2000-2012 China's Natural Gas Consumption and the Proportion in Primary Energy

1. Rapid Growth of Natural Gas Consumption

1-2 Market focus shifts from Western resource-abundant areas to Eastern coastal developed areas

- Natural gas consumption areas have been expanding. In 2011, natural gas delivery was extended to Tibet, marking the natural gas coverage had spread to all provinces of mainland China.

- The proportion of natural gas consumption in developed areas such as Yangtze River Delta, Bohai Rim and Southeastern coastal areas in the country's total natural gas consumption rose from 16% in 2000 to more than 40%.



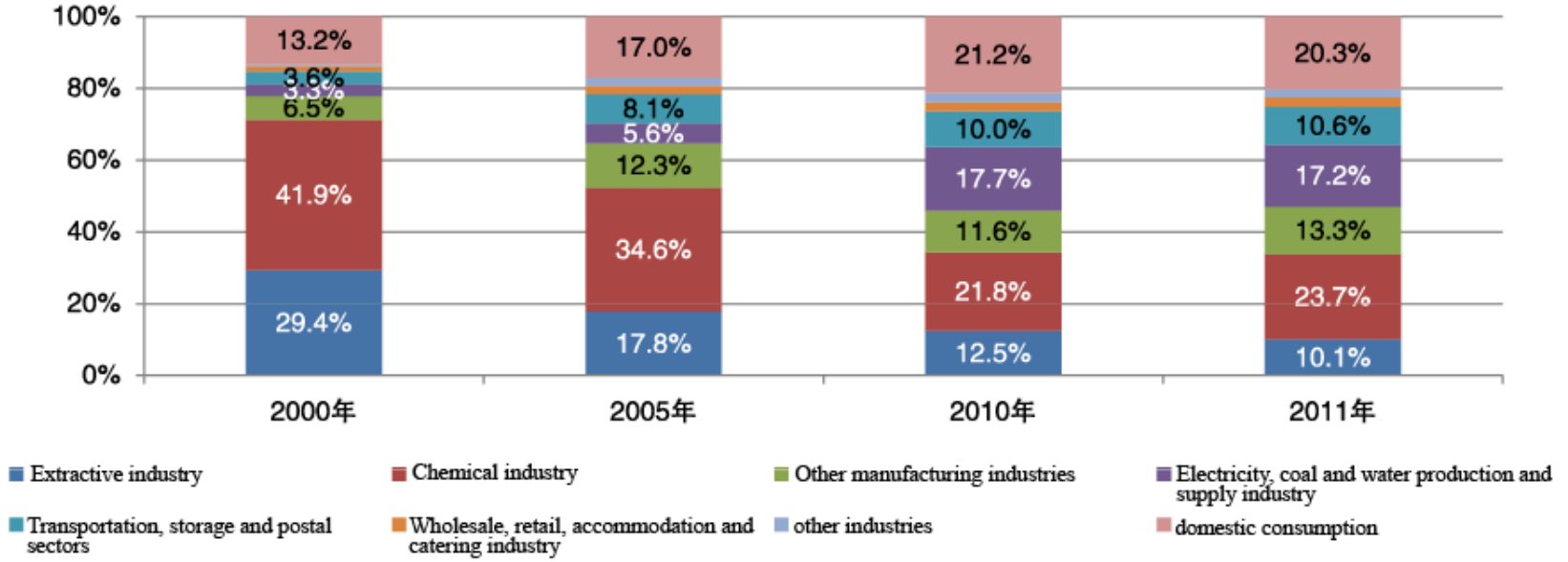
China's Natural Gas Consumption by Area in 2000 and 2011 Respectively

1. Rapid Growth of Natural Gas Consumption

1-3 Structure of natural gas consumption is optimizing

- Since 2000, despite the volume of natural gas consumption in various industries have grown substantially, the consumption structure has changed a lot. The proportion of gas consumption dropped considerably in mining and chemical industries, but increased significantly in sectors like power generation, transportation and for domestic use.

- Taking the gas for chemical industry for example, the consumption increased to 30.93 bcm from 10.27 bcm in the period 2000-2011, but the proportion fell to 23.7% from 41.9%. Overall, the proportion of industrial gas is still more than 60%.

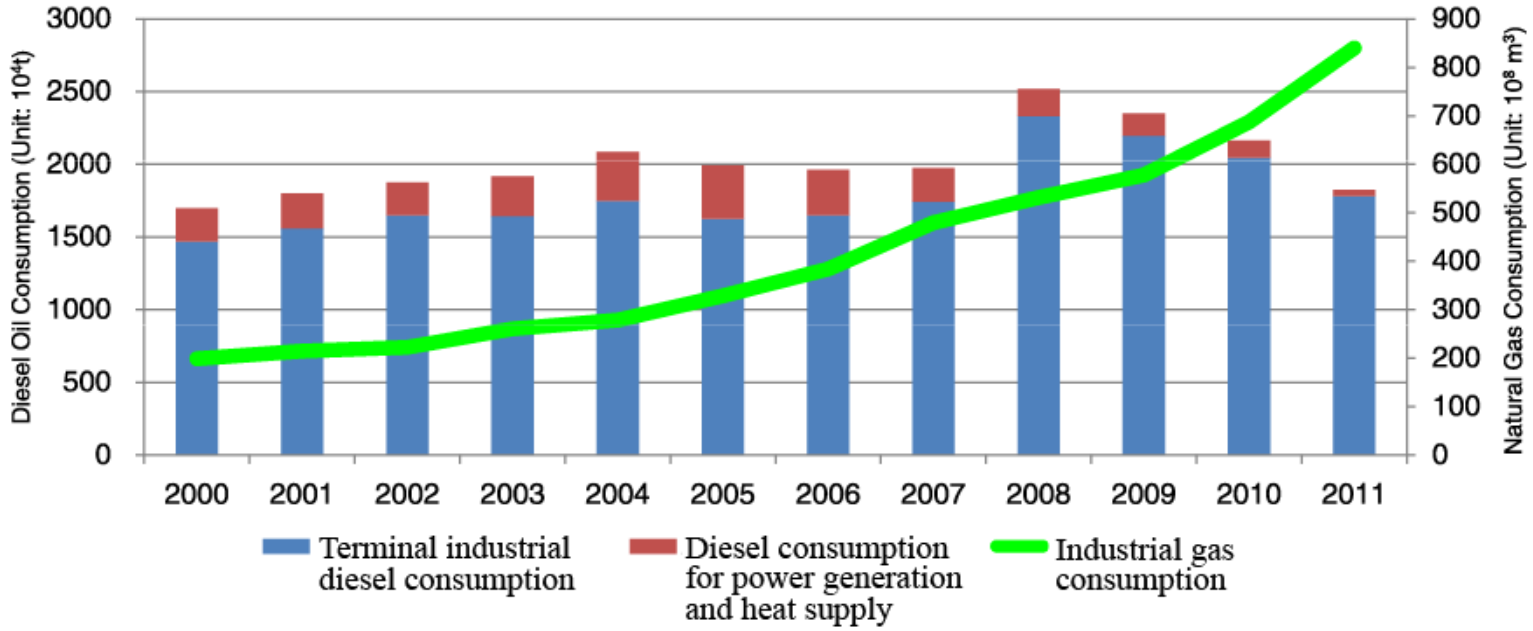


1. Rapid Growth of Natural Gas Consumption

1-4 Extensive replacement of energies used in different sectors - industry

- After the global financial crisis, China's industrial diesel oil consumption decreased rapidly and fell to 18.24 MMt in 2011, less than that in 2002. Industrial demand is still weak in recent two years.

- In the same period, China's industrial gas consumption grew from 19.9 bcm to 84 bcm, with an average annual increase of 14.0%, higher than the 8.2% of industrial final energy consumption and even higher than the 12.0% of industrial electricity consumption.

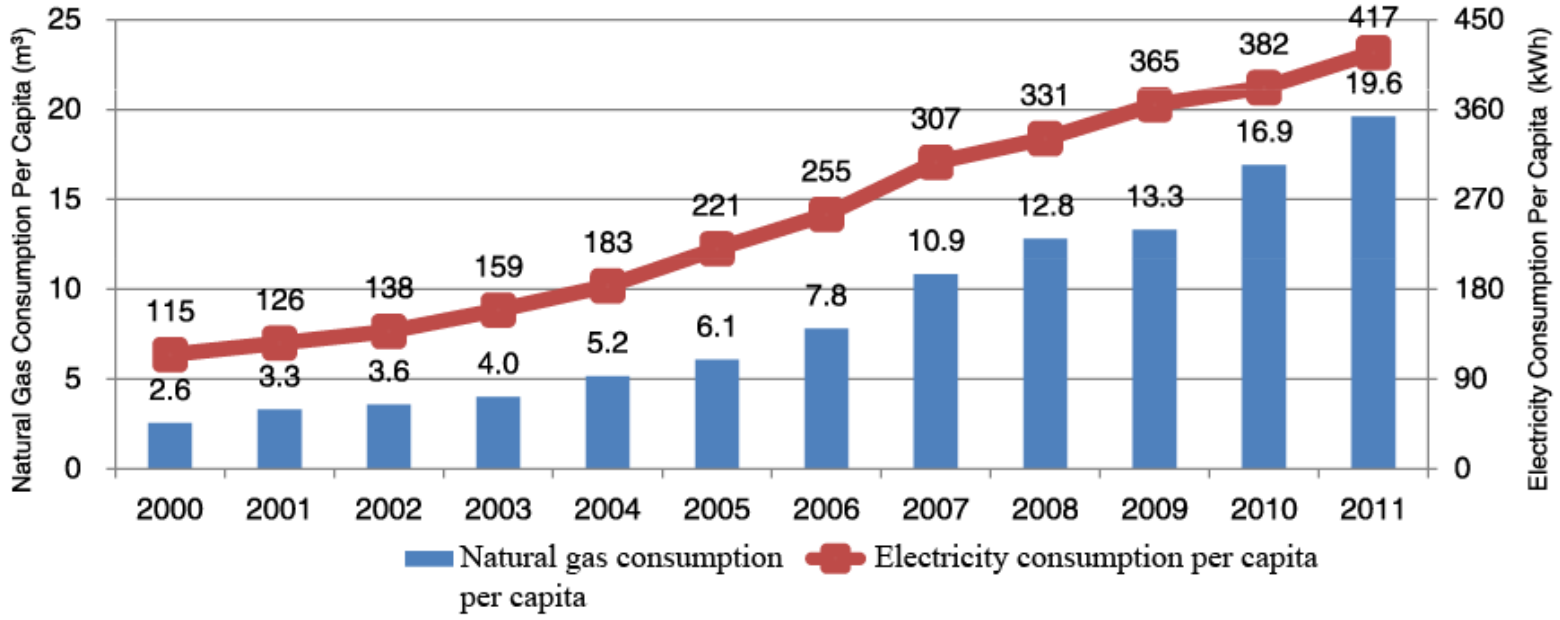


2000-2011 China's Industrial Oil & Gas Consumption

1. Rapid Growth of Natural Gas Consumption

1-4 Extensive replacement of energies used in different sectors – residential use

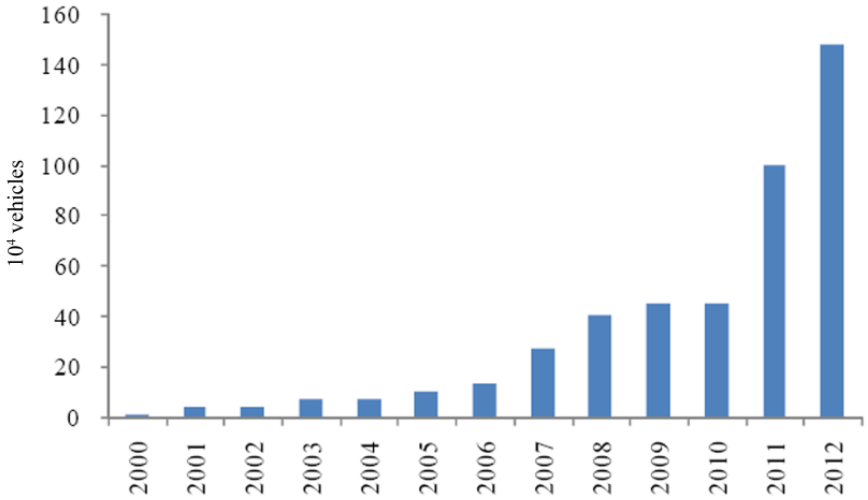
- In 2000-2011, China's consumption of natural gas for residential use rose to 3.23 bcm from 26.44 bcm, with the per capita consumption increased from 2.6 m^3 rose to 19.6 m^3, registering an average annual growth of 20.4%.
- In the same period, the electricity consumption for residential use rose from 145.2 billion kwh to 562 billion kwh, with the per capita consumption increased from 115 kwh to 417 kwh, registering an average annual growth of 12.5%.
- However, the coal consumption for residential use dropped from the peak volume of 100 MMt in 2005 down to the current level of 92 MMt.



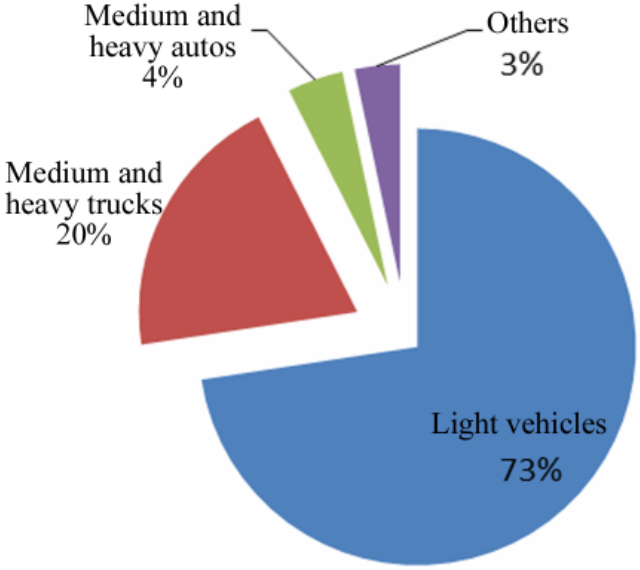
1. Rapid Growth of Natural Gas Consumption

1-4 Extensive replacement of energies used in different sectors – transportation

- In 2000, there were less than 10 thousand natural gas vehicles in China, but the number was already close to 1.5 million in 2012. And the proportion of natural gas vehicles in the country's total number of vehicles rose from less than 1 ‰ to more than 1%. At a conservative estimate, natural gas consumption in transportation, storage and postal industries had already hit more than 15 bcm in 2012.
- At present, China has already outstripped India as it accounts for approximately 10% of the world's total natural gas vehicles, and become the world's fifth largest country using natural gas vehicles, just behind Iran, Pakistan, Argentina and Brazil.



2000-2012 China's Natural Gas Vehicle Retention



China's Natural Gas Vehicle Structure

2. Maturing Storage & Transportation Network

2-1 Rapid advancement of pipeline construction

- In 1997, Shaanxi-Beijing 1st Gas Pipeline went into production, unveiling China's construction of long-distance natural gas pipelines. Since then, Shibuya ninglam Pipeline, West-East Gas Pipelines, Sichuan-East China Gas Pipeline, Shaanxi-Beijing 2nd Gas Pipeline, Shaanxi-Beijing 3rd Gas Pipeline, and the Central Asia–China Gas Pipeline have been put into production successively.

- By the end of 2012, China's total mileage of long-distance gas transmission pipelines had hit more than 55 thousand km, with a total transmission capacity of more than 160 bcm per year. Currently, China's natural gas backbone network has covered all the provinces and regions except Tibet.

2. Maturing Storage & Transportation Network

2-2 Substantial growth in gas storage capacity

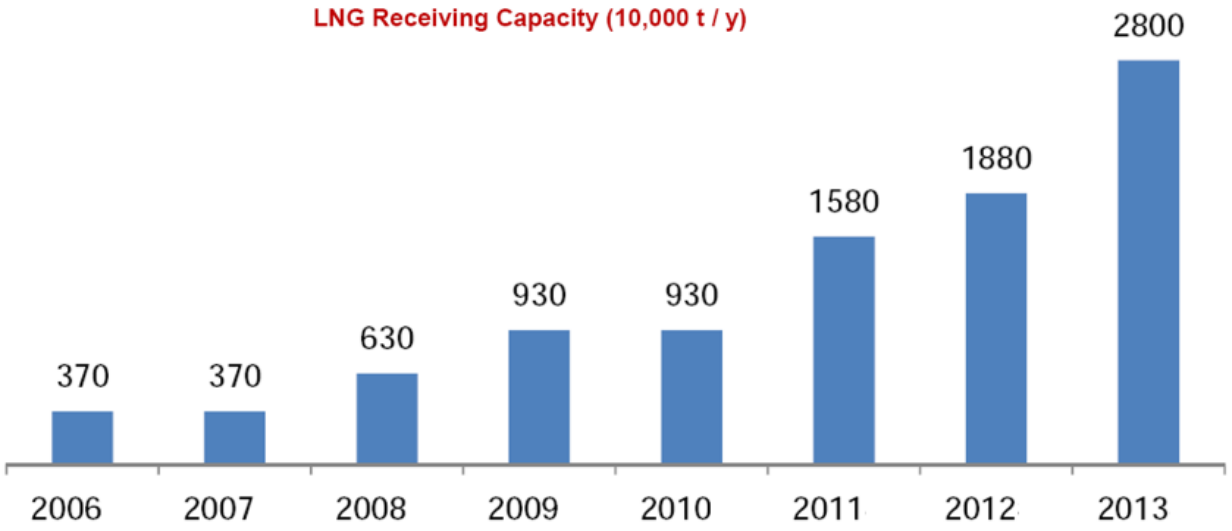
- In 2013, with 9 gas storages put into operation, including Xiangguo Temple Underground Gas Storage and Hutubi Gas Storage, China's total working gas storage capacity has reached 15.9 bcm, representing a five-fold increase compared with 2012, or equal to 8% of the total national consumption of natural gas.

2. Maturing Storage & Transportation Network

2-3 Successive commencement of operations of LNG terminals

- Dapeng LNG Terminal (Shenzhen) started operation in 2006, Putian LNG Terminal (Fujian) in May 2008, Yangshan LNG Terminal (Shanghai) in 2009, Rudong LNG Terminal (Jiangsu) and Dalian LNG Terminal (Liaoning) in 2011, Ningbo LNG Terminal (Zhejiang) in 2012, Gaolangang LNG Terminal (Zhuhai) in October 2013, and Tianjin Floating LNG Terminal and Caofeidian LNG Terminal were also put into operation before the end of this year.

- Up to now, China has nine LNG terminals with a total capacity of 28 MMt in operation; five projects with a capacity of 14 MMt under construction; phase-II of Dalian LNG project with a capacity of 3 MMt has been approved; and four other projects with a capacity of 12 MMt have been granted the pass.

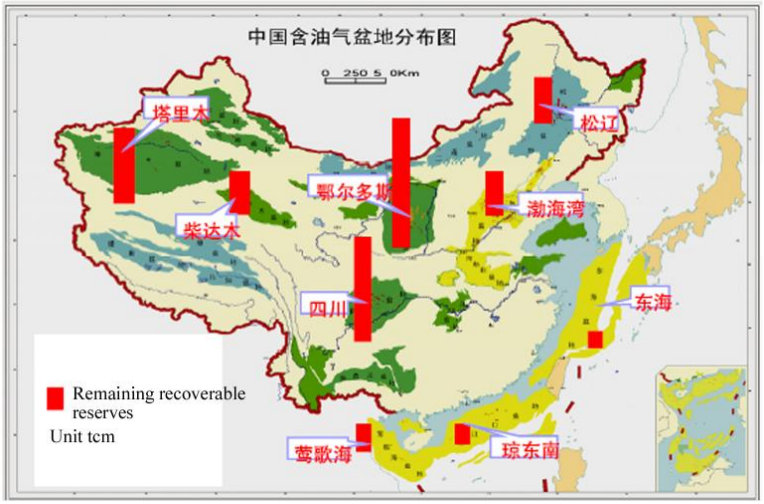


3. A Pattern of Multi-Source Gas Supply Basically Formed

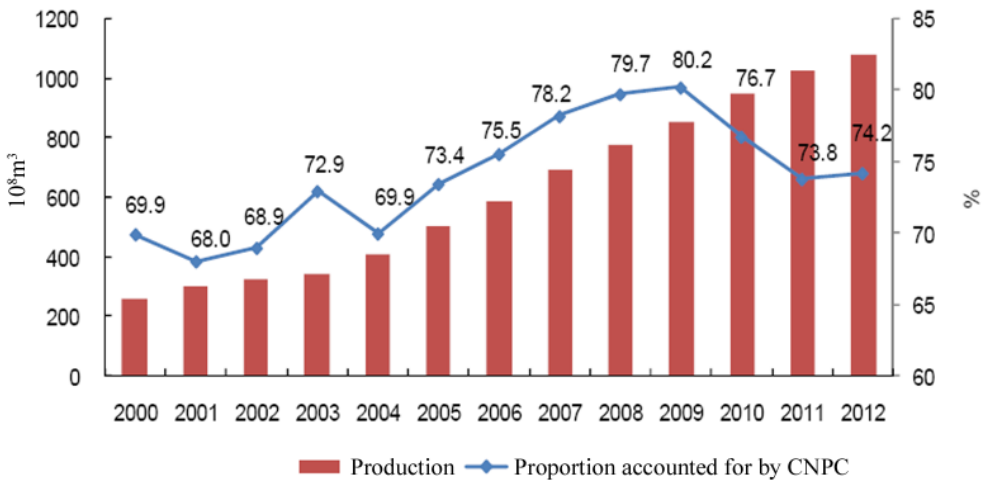
3-1 Growth in both domestic production and reserves

- Since 2000, China has entered a peak period of reserves growth, with proved reserves increasing at an average annual rate of 13%. By the end of 2012, its remaining proved technically recoverable reserves registered 4.52 tcm, with the R/P ratio of 42 years.

- Natural gas production has grown from 27.2 bcm to 107.7 bcm, with an average annual increase of 12.1%. But the recent growth rate dropped significantly and fell to 6.5% in 2012.



Geographical Distribution of China's Natural Gas Reserves



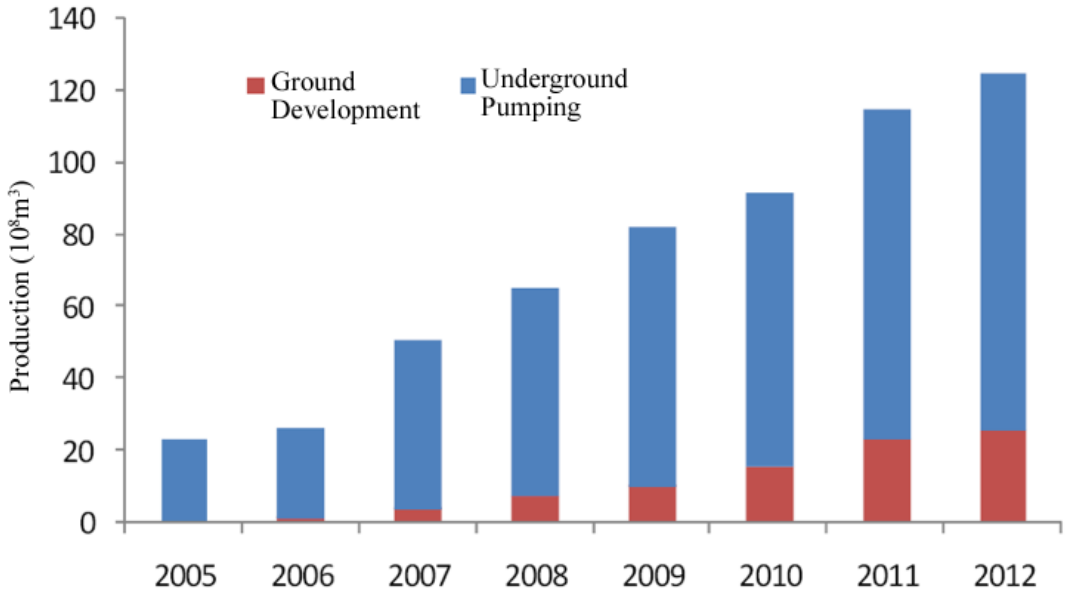
2000-2012 Trends of China's Natural Gas Production

3. A Pattern of Multi-Source Gas Supply Basically Formed

3-2 CBM production capacity building accelerated

- China's total recoverable CBM resources with burial depth of shallower than 2000m amount to 10.9 tcm, which are mainly distributed in the southern Qinshui Basin and southeastern Ordos Basin.

- In 2012, China reported CBM production of 12.5 bcm, of which 2.57 bcm was obtained through ground pumping and 9.94 bcm through underground pumping, but a total of 5.2 bcm or 41.5% was utilized.

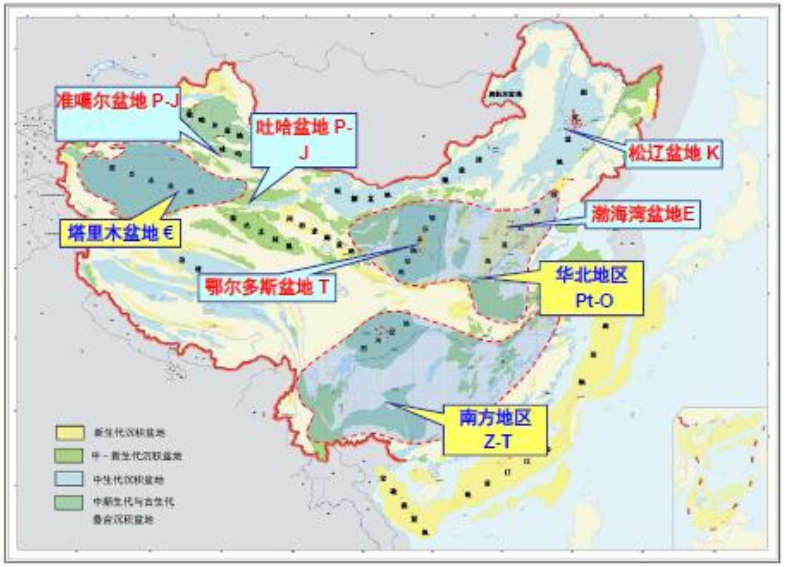


2005-2012 CBM Development and Utilization in China

3. A Pattern of Multi-Source Gas Supply Basically Formed

3-3 Significant progress made in shale gas exploration and development

- China's potentially recoverable shale gas resources amount to 25 tcm, which are mainly distributed in three marine basins and five continental basins. To actively promote shale gas exploration and development, the Ministry of Land and Resources has completed tenders for two shale gas blocks.
- As of September this year, China had implemented the drilling of 142 shale gas wells, mainly in Sichuan, Chongqing and Shaanxi provinces, and CNPC, Sinopec and Yanchang Petroleum participated in the exploration and development. Sinopec had drilled 27 shale gas wells in Chongqing Fuling National Demonstration Zone, of which 21 completed and 10 put into trial production, with the average single well production of 150,000 m^3/d.

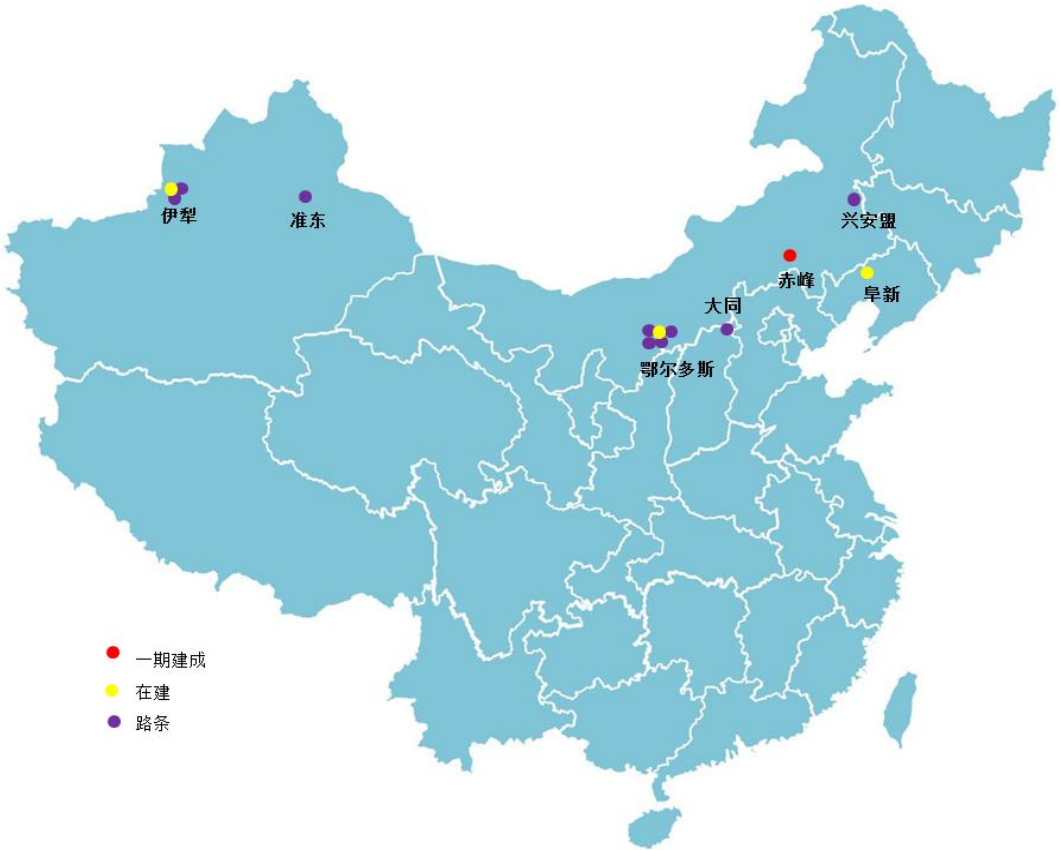


Distribution of Shale Gas Resources in China

3. A Pattern of Multi-Source Gas Supply Basically Formed

3-4 Coal-to-gas projects on schedule

- Currently, China's National Development and Reform Commission (NDRC) has approved four coal-to-gas projects, including two of Datang Power in Keqi, Chifeng City, Inner Mongolia and Fuxin city of Liaoning province, one of Inner Mongolia Huineng and one of Xinjiang-based Kingho Group, with a total production capacity of 15.1 bcm. Thereamong, Xinjiang Kingho Project and Datang Keqi Project have been completed and put into production, and will supply gas to Beijing before the end of this year.

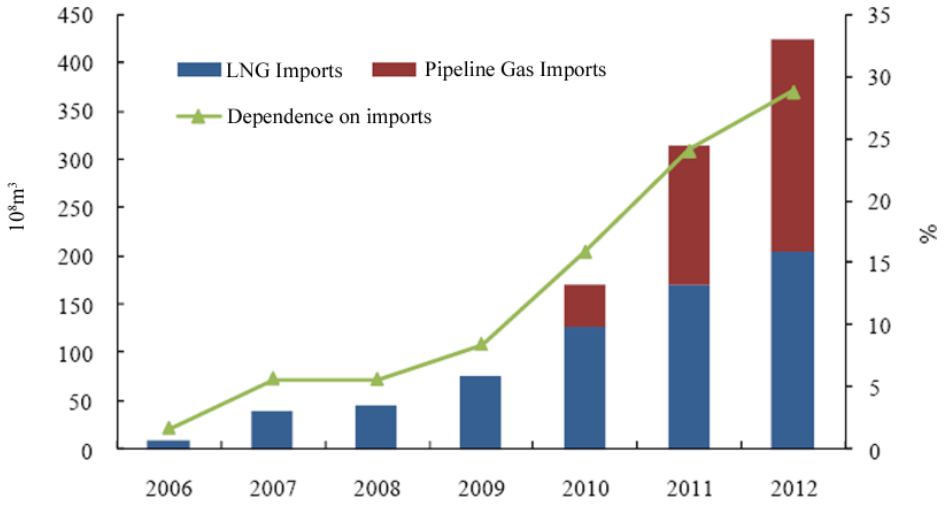


- In addition, 9 projects have been granted the pass by NDRC.
- Except Zhundong Xinjiang coal gas demonstration project (which is set to support Xinjiang-Guangdong-Zhejiang coal gas pipeline, with a planned capacity of 30 bcm/y) launched by Sinopec, the production capacity of 8 other projects totaled 34 bcm/y.

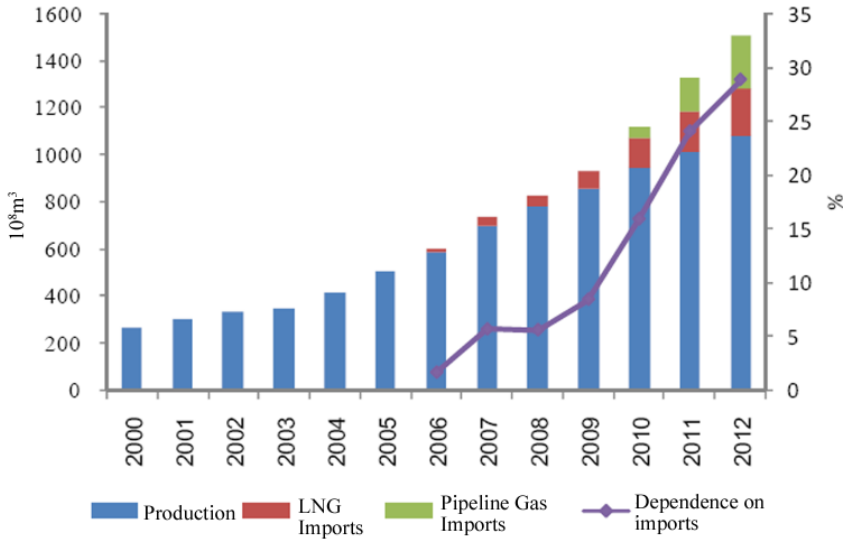
3. A Pattern of Multi-Source Gas Supply Basically Formed

3-5 Rapidly rising dependence on foreign supply

- In 2006, China began to import LNG; at the end of 2009, it started to import Central Asian pipeline gas. Later in July 2013, Myanmar-China Gas Pipeline was completed and put into operation, indicating the initial formation of the Northwest, Southwest and offshore gas inlet channels.
- In 2012, China imported 42.4 bcm natural gas (a year-on-year increase of 34.9%), including 22 bcm pipeline gas and 14.68 MMt (20.4 bcm) LNG. The import of pipeline gas outnumbered LNG for the first time. Dependence on foreign supply rose to 28.8%.



2006-2012 China's Imports of Natural Gas



Constitution of Natural Gas Sources in China

Outline

I. Current Status of China's Natural Gas Market

II. China's Natural Gas Price Reform and Its Impact

III. Medium and Long-term Prospects of Natural Gas Market

IV. Conclusions

1. Imported Gas Prices Far Higher than Domestic Prices

- Domestic natural gas prices are strictly controlled by the government. At present, except the CNOOC long-term trading gas, imported pipeline gas and LNG prices are significantly higher than the local gate prices. Plus import VAT, gasification and pipeline transportation costs, gas imports face serious losses, which will affect the enthusiasm and supply reliability of natural gas suppliers.

Natural Gas Import Prices vs. Latest Gate Prices in Main Import Areas 2012

	Import Area	Imports (MMt)	Amount of Imports (US$ million)	Import Price (RMB/m^3)	Gate Price (RMB/m^3)	
					Existing Gas Volume	Incremental Gas Volume
LNG	Liaoning	1.50	1401	4.19	2.24	3.12
	Shanghai	2.02	852	1.89	2.44	3.32
	Jiangsu	2.35	2176	4.16	2.42	3.30
	Zhejiang	1.87	1781	4.28	2.43	3.31
	Fujian	2.83	867	1.38	—	—
	Guangdong	5.79	2758	2.14	2.74	3.32
	Sub-total	**14.68**	**8232**	**2.52**	—	—
Pipeline Gas	Xinjiang	15.80	8565	2.44	1.41	2.29
TOTAL		30.49	16797	2.48	—	—

2. Huge Enterprise Losses, Big Government Subsidies

- In this context, private and foreign-funded enterprises choose to stay away from the already opened gas imports and pipeline business, leaving the responsibility of supplying gas entirely to state-owned enterprises. And the Central and local governments have to give big subsidies while suffering losses in tax revenue. In 2012, CNPC suffered losses of about RMB41.9 billion in the sale of imported gases, equal to 36% of the company's net profit.

Circular on Relevant Issues Concerning Import VAT being Returned Proportionally for Imported Natural Gas during the Period 2011-2020 and Imported Natural Gas of the Central Asia-China Pipeline Project by the end of 2010 (MOF Customs [2011] No. 39)

- According to the Circular, from 1 January 2011 to 31 December 2020, in cases where the price of natural gas imported for imported natural gas projects approved by the state is higher than national natural gas sales prices, import VAT will be returned according to the inverse proportion between the price of imported natural gas and the state natural gas sales price for imported natural gas of relevant projects (including LNG).
- The import VAT on the natural gas imported under the Central Asia-China Gas Pipeline Project before the end of 2010 shall also be returned according to the aforesaid policy.

Circular on Issues Concerning the Adjustment of Preferential Tax Policies for Imported Natural Gas (MOF Customs [2013] No. 74)

- According to the Circular, the selling price of LNG shall be adjusted to RMB31.45/GJ and that of pipeline natural gas shall be adjusted to RMB1.11/m3 since July 1, 2013.
- More projects enjoying preferential tax policies: Myanmar-China Gas Pipeline Project, Zhejiang LNG Project and Zhuhai LNG Project (Guangdong)

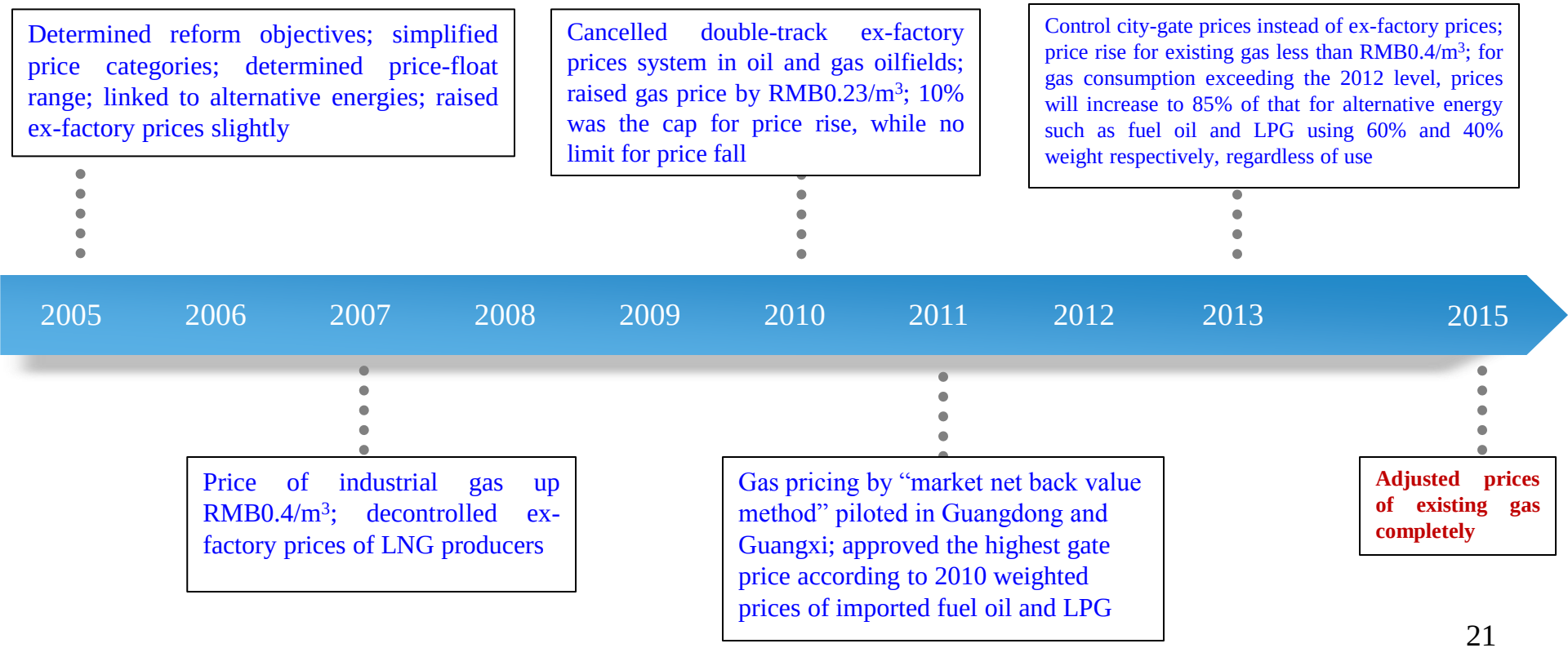
3. Price Mechanism Reform: A Matter of Great Urgency

On June 28, 2013, the Natural Development and Reform Commission (NDRC) issued a notice regarding adjustments to the natural gas price (NDRC Price [2013] No. 1246), saying that the price adjustment scheme shall be implemented from July 10, 2013.

- Basic principle: to establish a dynamic adjustment mechanism to peg to the alternative energy prices to reflect the market demand/supply and resources scarcity degree, and to lay foundations for finally achieving market-oriented pricing.
- Ideas: The government divides the gas consumption into two parts, namely the 2012 consumption part "the existing part" and the increases in 2013 part "the incremental part". The prices of the incremental part will be adjusted to a reasonable level as compared with those of alternative energies such as fuel oil and LPG (weights are 60% and 40% respectively); the price adjustment of the existing part will be proceeded step by step and set to be completed in the end of "12th Five-Year Plan".
- Application: The government will control city-gate prices instead of ex-factory prices. City-gate prices are government guidance prices with price ceilings. Ex-factory prices of shale gas, CBM and coal gas, and prices of LNG sources will become market-oriented.
- Arrangements: For gas consumption exceeding the 2012 level, prices will increase to 85% of that for alternative energies; the government will also increase the prices for the 2012 consumption part; prices of gas for residential users (excluding gas for central heating) will not change.

4. Price Mechanism Reform: Move Forward in Darkness

- Since 2005, the Chinese government has issued documents five times to adjust the price of natural gas throughout the country or in some regions. With the establishment of a competitive market structure, the government's guiding gas price will be gradually transited to market-oriented price, and domestic gas price will also gradually rise.



5. Several Issues to Be Addressed Concerning Deepening Price Reform

- Double-track prices system for existing gas and incremental gas. Dividing gas consumption into "the existing part" and "the incremental part" helped ease the pressure of losses from natural gas imports and control the impact on downstream users within a limited range, but also created new contradictions. For different users of the same industry, price spread between existing gas and incremental gas will cause significant injustice to new enterprises, violate market fair principle and also bring some problems to the market development.

- Whether natural gas pricing linked to alternative energies is reasonable or not. At present, China's natural gas pricing is linked to those of alternative energies such as fuel oil and LPG (weighted 60% and 40% respectively). Prices of fuel oil and LPG are not quite related to natural gas price, and domestic alternative energies also include coal (of bigger size and lower price) and refined oil used in transportation industry. If natural gas pricing is linked to coal price, then how to reflect the environmental costs in the price should also be considered.

- How to timely and accurately transmit market supply and demand signals. The role of price in guiding the market has not yet been reflected, and obvious problems lie in advanced market development and underdeveloped infrastructure. In particular, for peak-shaving facilities, since there is no peak price, supply companies lack enthusiasm to build and operate peak-shaving facilities. Thus it will be more difficult to attract private capital broadly. At present, seasonal peak shaving is still done by cutting supply in a rude way.

Outline

I. Current Status of China's Natural Gas Market

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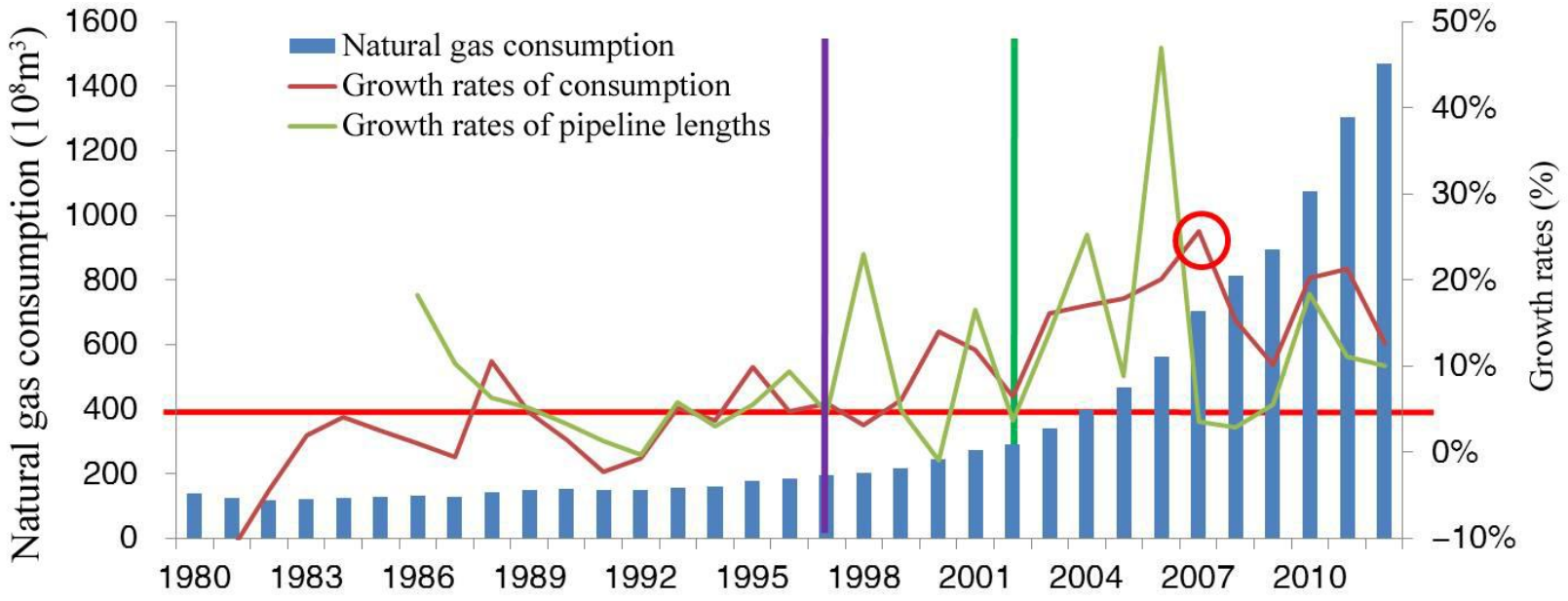
1. Changes in Driving Factors Behind Demand Growth

- Rapid economic development, higher environmental protection requirements, continuous improvements in storage & transportation network, prolonged price advantages and other factors jointly contributed to rapid growth in natural gas consumption in China over the past 10-odd years.
- Under the background of economic growth slow-down and weakening of price advantages, environmental protection may become the main driving force for growth of natural gas demand.

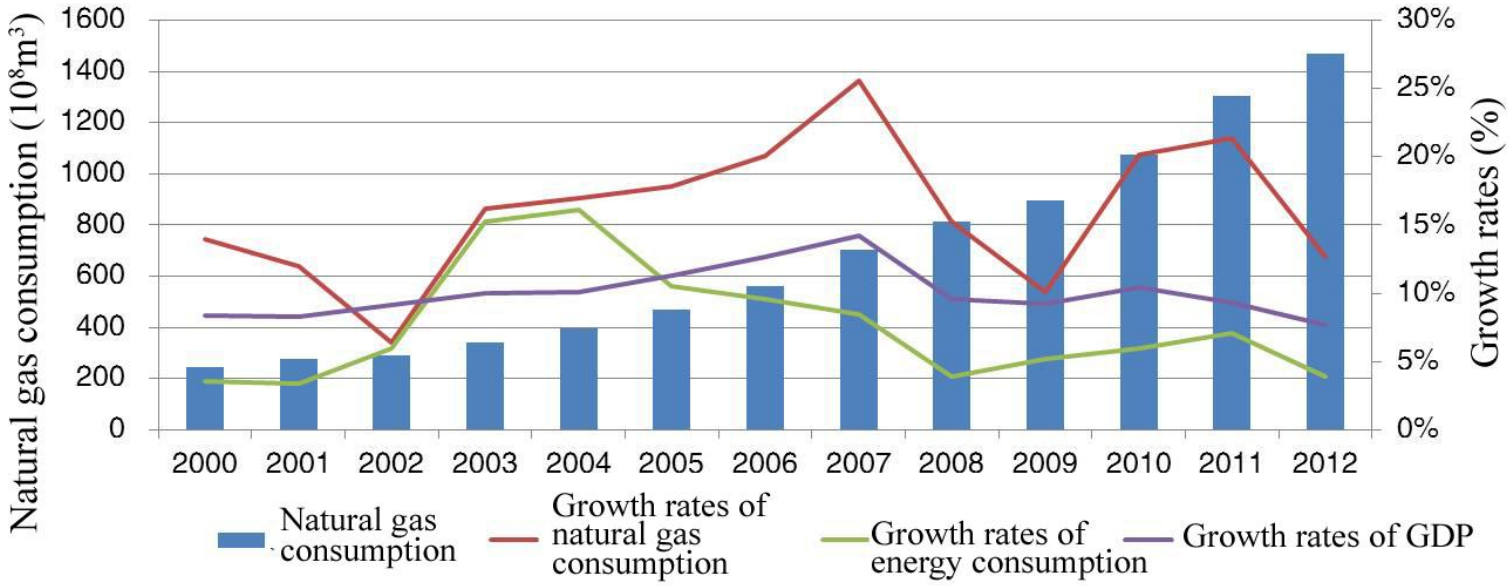


1. Changes in Driving Factors Behind Demand Growth

1-1 Rapid increase in price affordability and consumption level with economic growth

- In the year 2012, China's Gross Domestic Product (GDP) reached RMB51 trillion, with GDP per capita up to RMB37, 000 (approximately US$5,680). In accordance with standards of World Bank, China has became a middle-income country.

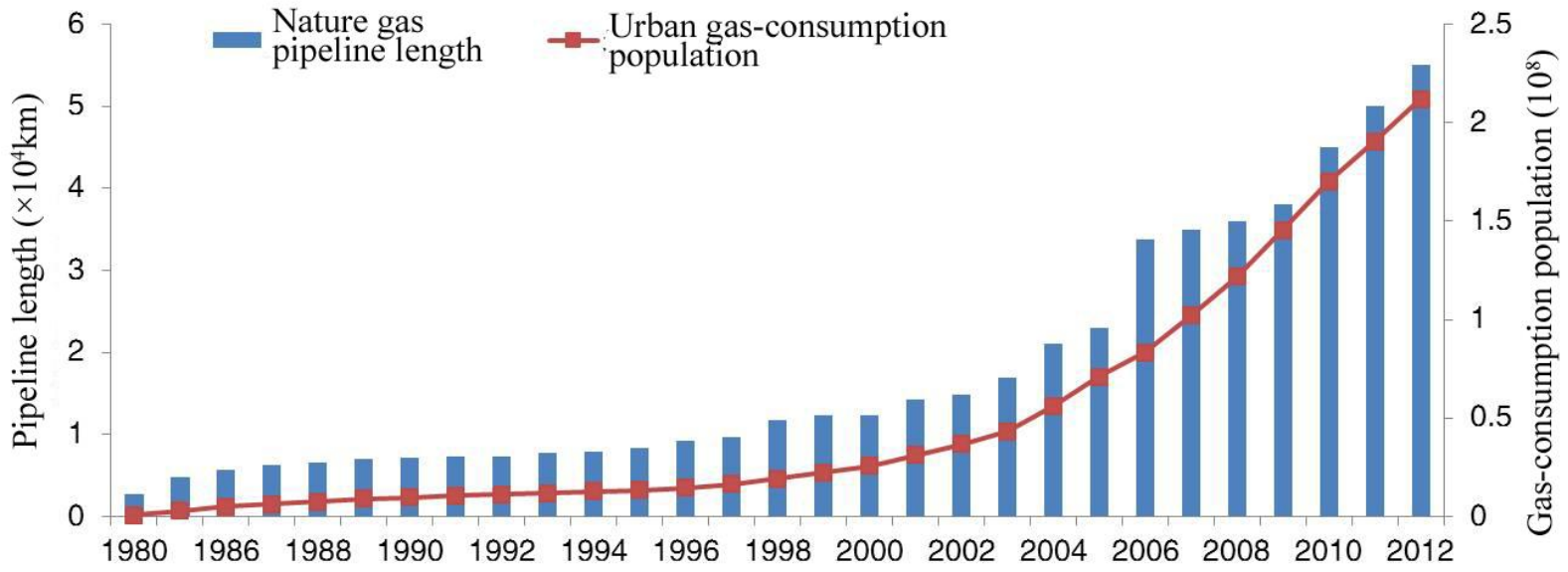
- With the rapid economic and social development, gas price affordability and consumption levels have increased steadily. Natural gas demand growth is significantly higher than the growth rate of GDP.



1. Changes in Driving Factors Behind Demand Growth

1-2 With steady promotion of pipeline network construction, market coverage expanded rapidly

- China's natural gas pipeline network has maintained an average annual growth rate of around 10% for a long time. In 2012, total mileage of natural gas pipelines hit 55 thousand km, representing a nearly four-fold increase compared with 2000. In 2012, urban population with access to gas reached 210 million, equal to 8 times that of 2000.



1. Changes in Driving Factors Behind Demand Growth

1-3 Price advantage is the key

- Compared with refined oil, electricity, LPG and other high-quality energies, natural gas has significant price advantage due to strict government control. Taking gas for domestic use for example, gas price per unit of calorific value is only half of electricity or LPG in Beijing, Shanghai and Chengdu. Gas price per unit of calorific value is slightly higher than electricity in Guangzhou, but still less than half of the price of LPG.

Calorific Value Prices of Energies for Residential Use in Major Cities

Area	Natural gas		LPG		Electricity		Coal gas	
	Market Price	Calorific-value Price	Market Price	Calorific-value Price	Market Price	calorific-value Price	Market Price	Calorific-value Price
	(RMB/m³)	(RMB/MJ)	(RMB/kg)	(RMB/MJ)	(RMB/kWh)	(RMB/MJ)	(RMB/m³)	(RMB/MJ)
Beijing	2.28	0.064	6.67	0.133	0.49	0.136	-	-
Shanghai	2.50	0.070	7.00	0.139	0.62	0.172	1.25	0.071
Guangzhou	5.00	0.141	16.50	0.329	0.61	0.169	2.50	0.14
Chengdu	1.89	0.053	8.00	0.159	0.52	0.144	-	-

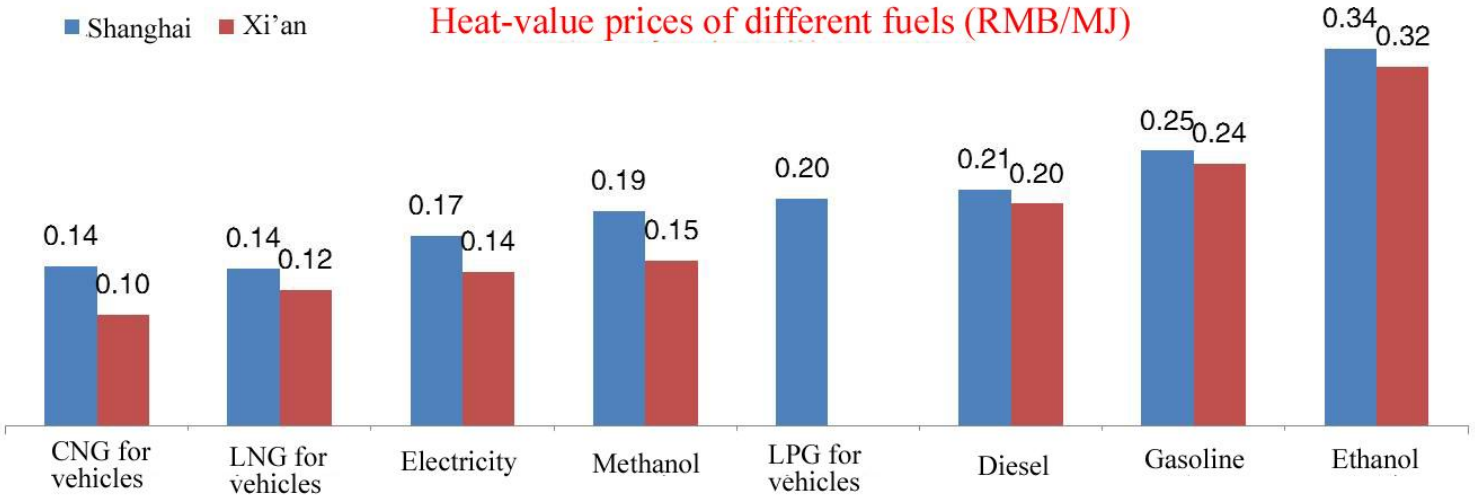
Note: See "General Principles for Calculation of Total Production Energy Consumption (GB/T2589—2008)" for conversion factor of standard coal. Natural gas: 35.5MJ/m3; LPG: 50.2MJ/m³; Electricity: 3.6MJ/kwh; Coal gas: 17.6MJ/m3.

1. Changes in Driving Factors Behind Demand Growth

1-3 Price advantage is the key

As for highway transportation is concerned, Shanghai with high market opening degree and Xi'an with abundance resources may be taken as examples:

- As far as unit calorific value is concerned, natural gas has the highest price advantage in all vehicle fuels;
- Unit calorific value of electricity is slightly higher than natural gas . Since electric motors have efficiencies much higher than those of internal combustion engines, electric cars have the lowest cost for fuel; but high prices of batteries make use-cost much higher than that of natural gas cars.



1. Changes in Driving Factors Behind Demand Growth

1-4 Ecological pressures will become the main force driving growth in gas demand

- China's coal-dominate energy consumption structure caused severe environmental pollution. A wide range of fog and haze in Beijing, Tianjin, Hebei and surrounding areas since the beginning of this year have significantly affected public health and life, which has become one of the most concerned about social issues.

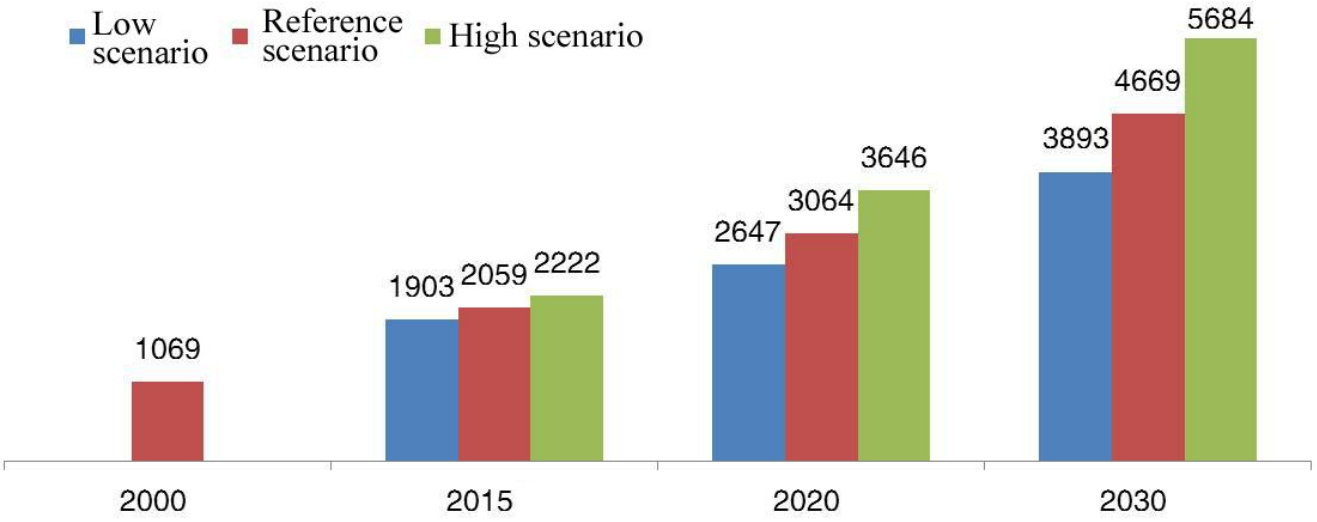
- On September 10, the State Council issued the most stringent Action Plan on Prevention and Control of Air Pollution ("Action Plan"). The Action Plan clarified a series of specific measures, especially to accelerate replacement of coal and oil by natural gas.

2. Natural Gas Demand Will Continue to Grow

2-1 Proportion in primary energy consumption continues to rise

- China's natural gas demand will maintain rapid growth by 2030 with the continuous development of economy and society, particularly driven by many factors such as overall energy supply and demand situation, resources and the environment, national policies and infrastructure.

- In the baseline scenario, natural gas demand in 2015, 2020 and 2030 will be 206 bcm, 306 bcm and 467 bcm respectively, representing 6.4%, 8.5% and 11.9% in the total primary energy consumption respectively.



Natural Gas Demand Prospects in China by 2030 (100 million cubic meters)

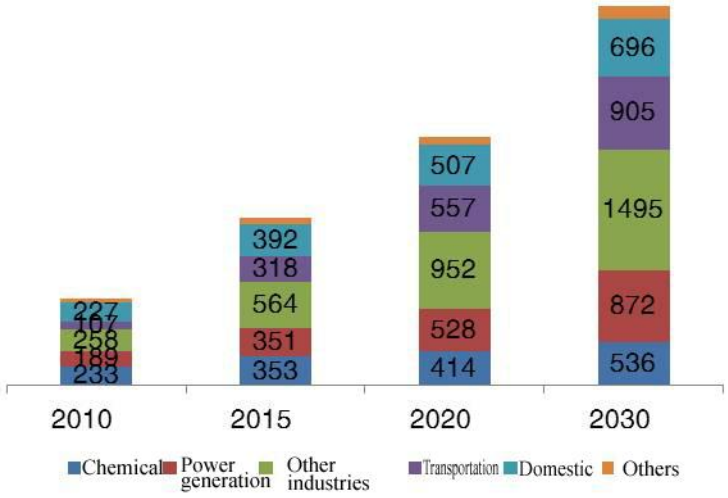
2. Natural Gas Demand Will Continue to Grow

2-2 Demand growth predominantly in industry and transportation sectors

- In the baseline scenario, average annual gas demand growth from 2010 to 2030: chemical use 4.3%, power-generation & heat-supply 7.9%, industrial fuel 9.2%, transportation 11.3%, and domestic use 5.8%.

- Industrial demand will remain the major driving force behind growth in natural gas demand. Industrial demand for natural gas in total natural gas demand will be maintained above 60% for a long time. As to city gas sector, gas demand in transportation sector will be huge and a proportion of nearly 20% in total natural gas demand is anticipated.

	Major driving forces	Average annual growth rate	Demand in 2030	Percentage
Industrial fuel	Environmental protection requirements, replace coal by natural gas	9.2%	1495	32%↑
Transportation fuel	Price advantage, replace coil by natural gas	11.3%	905	19%↑
Power-generation & heat-supply	Distributive energy, heat-electricity joint production	7.9%	872	19%↑
Chemical industry	Chemical fertilizer, hydrogen generation, seasonal regulating	4.2%	536	11%↓
Domestic consumption	Promotion in levels of consumption, cities with natural gas consumption	5.8%	696	15%↓



Natural Gas Demand Mix by 2030 in China in Baseline Scenario (100 million cubic meters)

2. Natural Gas Demand Will Continue to Grow

2-3 Prices and environmental policies will be the biggest uncertainty

- Gas purchasing prices higher than the selling prices will restrain the growth of gas consumption for power generation. Natural gas is used in power generation and heat-supply industries predominantly to replace coal. But under current policies, natural gas price is linked to prices of fuel oil and LPG. Accordingly, natural gas has poor economic efficiency compared with coal. As calculated according to gate prices, most gas-fired power generation enterprises operated at a loss. So before the construction of proper pricing mechanism for natural gas and electricity in China, prospects of power generation by using natural gas will increasingly depend on supports related to pricing, taxation, environmental protection and other policies.

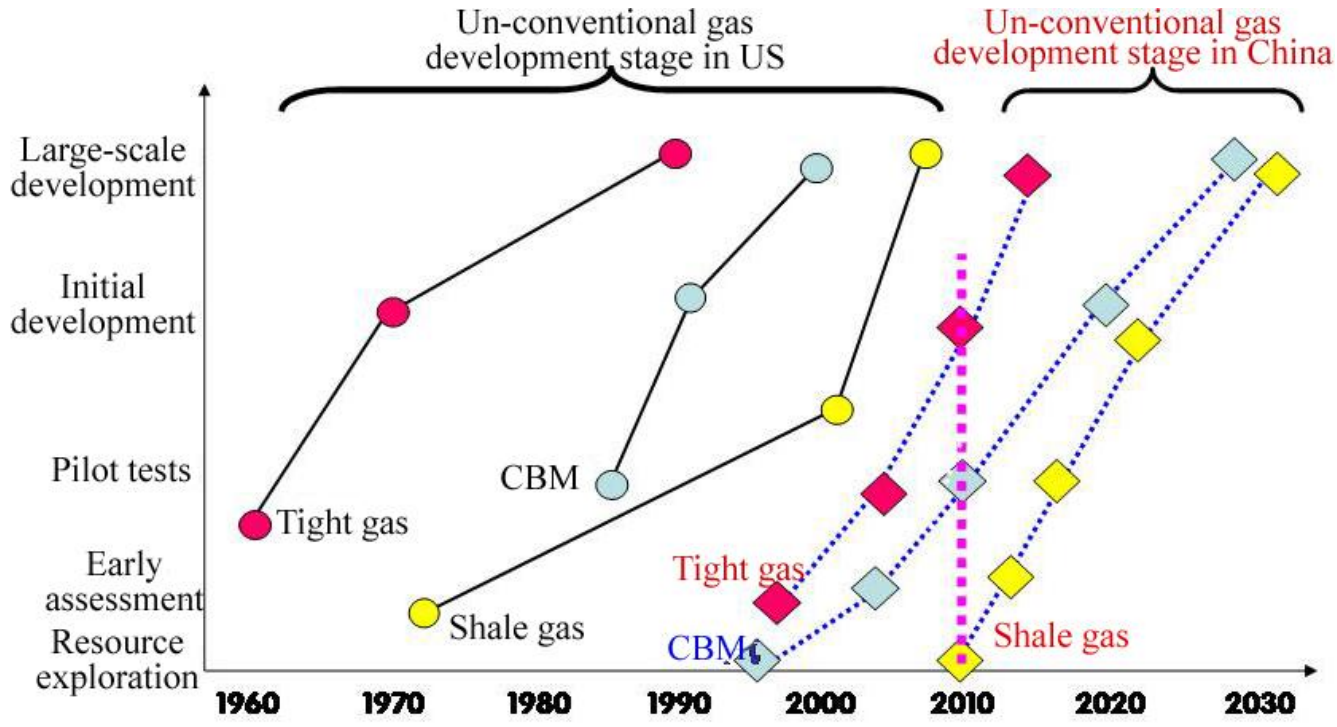
- Maintenance of price advantages of natural gas in transportation. With continuous enhancement in exhaust standards and oil quality standards, use and fuel costs of fuel vehicles will increase gradually. Such increases may basically counteract increases in prices of natural gas. Since prices of LNG are not subject to government control, both consumers and marketing enterprises showed high interests in developing LNG for vehicles. Currently, the government has not levied consumption tax on gases used in transportation sector, but possible taxation will definitely reduce the price advantage of natural gas.

- Upcoming environmental policies and their implementation after Action Plan on Prevention and Control of Air Pollution. According to plans of various provinces and cities to upgrade and phase out fuel gas power plants and energy-intensive industries, objectives specified in the Action Plan on Prevention and Control of Air Pollution can be achieved in 2017. But currently the government is faced with the choice between increasing social costs and strengthening financial subsidies. In the long run, it is necessary to accelerate reforms related to pricing mechanisms of natural gas. In addition, it is necessary to strengthen environment supervision and execution to ensure open and fair markets.

3. Gas Supply Can Be Guaranteed

3-1 Abundant natural gas resources

- China has recoverable conventional natural gas resources of 32 tcm, but the proved ratio is only 17%.
- Unconventional gas resources are also abundant. Recoverable CBM resources are 10.9 tcm and shale gas resources are 25 tcm. Development of unconventional gas on industrial scale is expected in the year 2030.



3. Gas Supply Can Be Guaranteed

3-2 Import capacity increased year by year

- Central Asia-China Gas Pipeline started operation in 2009 and Myanmar-China Gas Pipeline in 2013. Line C of Central Asia-China Gas Pipeline is expected to be put into production by the end of this year, whereas China-Russia Gas Pipeline is scheduled to be put into production in 2018. By the year 2020, China's pipeline gas import capacity will hit 135 bcm.

- With 9 LNG terminals built up and 6 LNG terminals under construction, China's annual LNG receiving capacity in 2015 may exceed 40 million tons. In the year 2020, annual LNG receiving capacity may reach 50 million tons.

Pipelines for Natural Gas Import in China

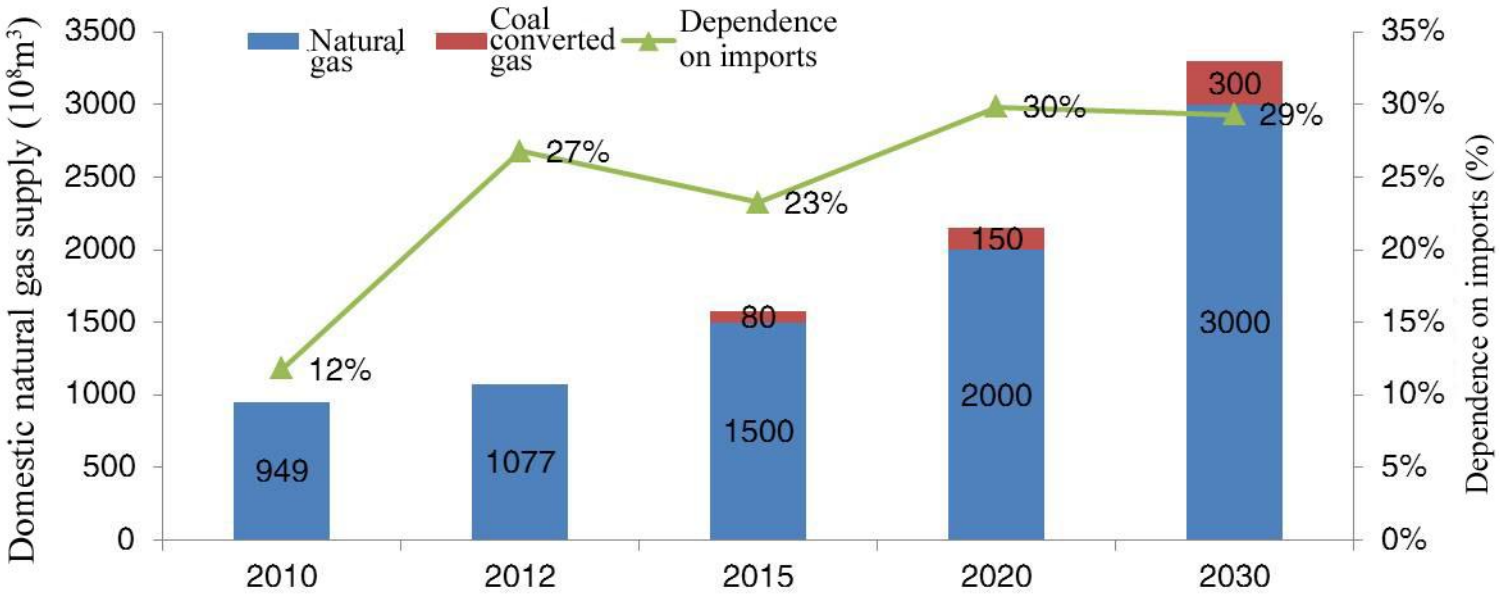
Natural gas pipelines	Capacity (0.1 billion m^3/Year)	Year of production
Central Asia Pipelines A&B	300	2009
Central Asia Pipeline C	250	2013
Central Asia Pipeline D	300	2016
Myanmar-China Pipeline	120	2013
China-Russian Gas Pipeline	380	2018

3. Gas Supply Can Be Guaranteed

3-3 Gas supply based on domestic resources

- In the future, China's natural gas supply will be based on domestic resources. With annual growth of 10 bcm in domestic natural gas production, plus the approved production capacity of 15 bcm coal gas, China's total gas supply capacity by the year 2020 may exceed 200 bcm. In addition, dependence on foreign supply can be controlled at around 30%.

- Once breakthroughs in development of shale gas and CBM are made, dependence on natural gas imports may be reduced.



Outline

I. Current Status of China's Natural Gas Market

II. China's Natural Gas Price Reform and Its Impact

III. Medium and Long-term Prospects of Natural Gas Market

IV. Conclusions

Conclusions

- **China's natural gas demand will maintain rapid growth for a long time.** In the baseline scenario, China's natural gas demand will be approximately 205.9 bcm by 2015, increased to 306.4 bcm by 2020 and hit 469.9 bcm by 2030; average annual growth rate from 2012 to 2030 will be 6.6%, which is still higher than growth rate of GDP during the same time period.
- **Environmental protection will replace price as the most important driving force.** In the future, price advantage of natural gas will diminish gradually. Under general trend of environmental protection and emission reduction, more and more major industries will replace oil or coal by natural gas. These factors will eventually become the major driving forces behind natural gas demand growth.
- **Supply based predominantly on reliable domestic resources.** With advances in Central Asia Pipelines, China-Russia Gas Pipelines and with mobilization of coastal LNG terminals in succession, natural gas supply can be secured in future in China. With consideration to current annual growth rate of domestic natural gas production, dependence on imports can be controlled at around 30%.
- **Reform of natural gas pricing mechanism is imminent.** Because of distorted pricing mechanism, domestic natural gas market is characterized by tight supplies and improper utilization. It is necessary to improve domestic natural gas pricing mechanism to eliminate contradictions between gas purchasing prices and selling prices, underdeveloped peak shaving facilities, inefficient utilization, and other problems once for all.

Thank you!