



中国城市燃气发展现状与发展

Overview of Gas Development in China

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Development Trends of City Gas

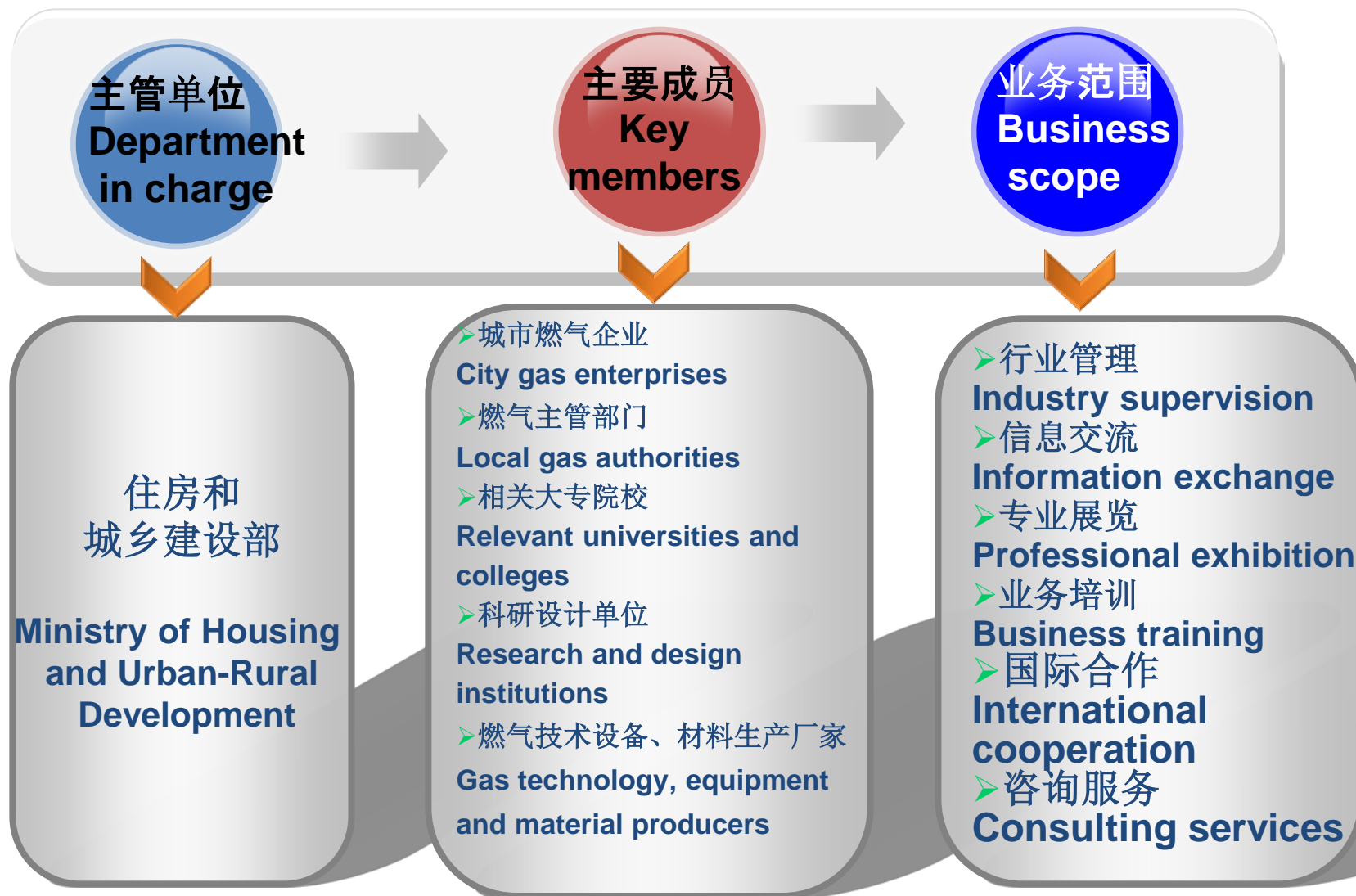
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油气体制改革将促进燃气行业快速发展

Oil and Gas Structure Reform to Improve the Gas Industry

一、中国城市燃气协会概况

Overview of China Gas Association



二、城市燃气种类及变化

Classification of City Gas



Fuel gas: Combustible gas

City gas: Fuel gases with reasonable process, which are easy to control, safe and convenient are selected as city gas



二、城市燃气种类及变化 Classification of City Gas



(城镇燃气分类及基本特性)

GB13611

人工煤气
Manufactured
gas

3R
4R
5R
6R
7R

$(H_2 + CH_4 + CO)$

液化石油气
LPG

19Y 丙烷 C_3H_8
20Y 丙、丁烷混合物
22Y 丁烷 C_4H_{10}

未来可能增加

12E 二

甲醚 (DME)

12YK 液化
气混空气

Dimethyl ether (DME)
possibly to be
included in future)

天然气
Natural Gas

12T

10T

常规天然气
Conventional natural gas

6T

4T

矿井气

3T

Mine gas

煤层气 (Coal bed
methane, CBM)、煤制天
然气 (coal to gas)、页
岩气、(shale gas) 致
密沙岩气、(dense
sandstone gas) 生物质
天然气、轻烃燃气
(light-hydrocarbon
gas)

增加6Z 沼气,



Three types of gas supply in 2016

The total supply of manufactured gas was about 5 billion cubic meters.

The total supply of natural gas was about 209 bcm, the length of pipeline is 650,000 km. (the world demand is 3550 bcm)

The total supply of LPG is approximately 44 million tons (3 million tons of dimethyl ether), the pipeline length is 10,600 km, the world supply is 290 million tons.

There are 578 million gas users, city gas penetration is 95.75%, country side 78.19%. Natural gas users share 56%, LPG 40%, manufactured gas 4% .

三、中国城市燃气发展现状

Current Status of China City Gas Development



Use

Civil use

Commercial energy

Transportation energy

Power generation

Industrial fuel

Industrial raw material





Current situation

The national gas infrastructure is for the most part complete, the national network pattern between provinces and cities has taken shape.

The city gas currently has four import channels, five gas supply hubs, six gas storages, eight consumption areas.

三、中国城市燃气发展现状

Current Status of China City Gas Development



International Gas Supply – Supply exceeds Demand

Spot market price is competitive

China will be the main driver of world gas development

三、中国城市燃气发展现状

Current Status of China City Gas Development



⇒ 陕京线

Shanxi-Beijing gas pipeline

⇒ 西气东输

West-East gas pipeline

⇒ 川气东送工程

Sichuan-to-East gas transmission project

⇒ 进口天然气干线工程

Imported natural gas pipelines

⇒ 进口LNG项目

Imported LNG



四、中国天然气行业总体情况

Overview of Chinese Natural Gas Industry



✓ 快速发展

- 既是天然气生产国又是消费国，具有全产业链特征，拥有世界第三大天然气市场
- 第六大天然气生产国，已实现国产气多元供气，进口气多渠道供应格局

✓ Rapid development

- China is today the world's 3rd largest gas consumer and 6th largest gas producer, with a highly sophisticated gas industry covering the complete industrial chain.
- China has established a diversified gas supply portfolio, composed of domestically produced gas and imported gas.

四、中国天然气行业总体情况

Overview of Chinese Natural Gas Industry

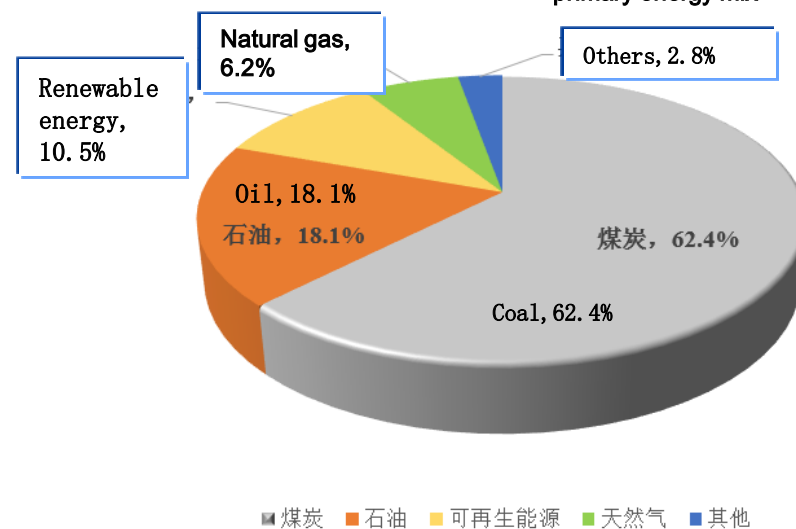
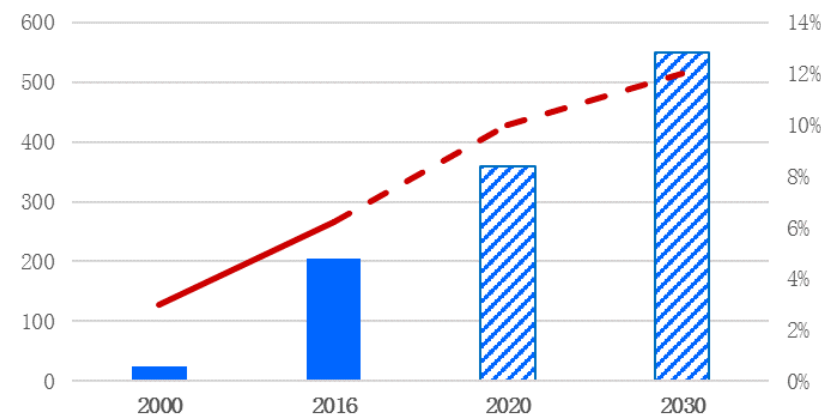


✓ 市场

- 从2000年到2016年，中国对天然气的需求从245亿立方米增长到2090亿立方米，增长了超过7倍，年均增长15%。
- 从2000年到2016年，天然气在中国能源消费结构中占比从3%增长到6.2%。

✓ Market

- From 2000 to 2016, China's demand for natural gas has grown over 7 times from 24.5bcm to 204bcm, or 15% growth per annum.
- In 2016, gas accounts for 6.2% of China's total energy mix, up from 3% in 2000.





- 天然气的使用对于中国实现减排目标举足轻重。减少煤炭消费是中国实现减排目标的关键，天然气是替代煤炭的主要清洁能源，大力发展天然气是中国加快建设清洁低碳、安全高效的现代能源体系的必由之路。
- China identifies natural gas as a key clean alternative energy to replace coal. Natural gas is an integral part of the solution to emission reduction and an unavoidable way towards building a clean, low-carbon modern energy system with a high level of supply security and efficiency.

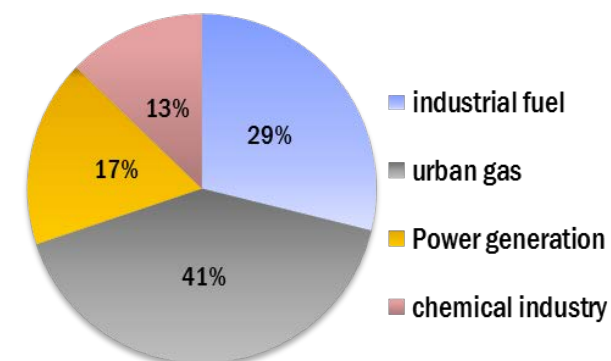
四、中国天然气行业总体情况

Overview of Chinese Natural Gas Industry



Consumption by sectors

- City gas: 81.9 bcm, accounting for 41%;
- Industrial fuel: 57.7 bcm, accounting for 28.9%;
- Power generation: 34.9 bcm, accounting for 17.4%;
- Chemical industry: 25.5 bcm, accounting for 12.8%



China's Natural gas Consumption Structure



✓ 供应

- 中国仅常规天然气的可采储量就达到**50万亿立方米**，页岩气的可采量为**22万亿立方米**，**12万5000亿立方米**可采煤层气
- 2016年中国国内天然气产量为**1460亿立方米**，其中**1324亿立方米**为常规气，**16亿立方米**煤制气，**50亿立方米**煤层气和**70亿立方米**页岩气

✓ Supply

- China has 50 trillion cubic meters of recoverable conventional gas, 22 tcm of recoverable shale gas, and 12.5 tcm of recoverable coal bed methane (CBM).
- In 2016, China's domestic gas production was 146bcm, including 132.4bcm of conventional gas, 1.6bcm coal-to-gas, 5bcm CBM and 7bcm shale gas.

四、中国天然气行业总体情况

Overview of Chinese Natural Gas Industry



- 中国从哈萨克斯坦、土库曼斯坦、乌兹别克斯坦和缅甸**进口386亿立方米管道气**，从卡塔尔、澳大利亚、印度尼西亚、马来西亚、俄罗斯和尼日利亚等地**进口347亿立方米LNG**
- 进口气占中国天然气供给量的**35%**
- China imported 38.6bcm pipeline gas from Kazakhstan, Turkmenistan, Uzbekistan and Myanmar, and 34.7bcm LNG from 13 countries including Qatar, Australia, Indonesia, Malaysia, Russia, Nigeria, etc.
- Imports accounted for 35% of the total amount of gas supply in China.

四、中国天然气行业总体情况

Overview of Chinese Natural Gas Industry



✓ 基础设施

- 国内管道：天然气管道总长度**6.4万**公里，已建成**陕京线、西气东输、川气东送**等国内主干线，输气能力**2800亿立方米/年**
- 跨国管道：已完成**中亚、中缅**两条进口管道建设，**中俄**进口管道正在建设当中
- LNG接收站：**12座**，输气能力为**4380万吨/年**
- 地下储气库：**18座**，储气容量为**60亿立方米**

✓ Infrastructure

- Domestic pipelines: The natural gas pipelines extend a total length of **64,000 km**. The pipelines that have been put into operation include **Shaanxi-Beijing line, West-East Gas Pipeline, Sichuan-East Gas Transmission pipeline** among other domestic trunk lines, with a capacity of **280 billion cubic meters / year**.
- Transnational pipelines: **Central Asia and Sino-Myanmar** pipeline projects have been completed while Sino-Russian import pipeline is under construction.
- 12 LNG receiving terminals: **a total capacity of 43.8mtpa**
- 18 Underground gas storages: **a total capacity of 6bcm**

四、中国天然气行业总体情况

Overview of Chinese Natural Gas Industry



✓ Future Scenario

- China is committed to making natural gas a main source of energy, to control air pollution and reduce CO2 emissions, in order to fulfill its commitment in Paris Agreement.
- By 2020, it is estimated that gas consumption will reach 360 bcm, accounting for 10% of the primary energy consumption.



✓ 未来供应（到2020年）

- 国产气：年产量达到**2470亿立方米**，其中常规天然气产量**2070亿立方米**，非常规天然气产量**400亿立方米**。非常规气中，页岩气产量**300亿立方米**，煤层气产量**100亿立方米**
- 进口气：天然气进口量达到**1100亿立方米**

✓ Supply Scenario

- Domestically produced gas: the annual output is expected to reach **247 bcm**, out of which **207 billion** is conventional natural gas and **40 bcm** is unconventional gas. The unconventional natural gas output is composed of **30 bcm** of shale gas and **10 bcm** of coal bed methane (CBM).
- Imported gas: The natural gas imports is expected to reach **110 bcm**.



✓ 未来基础设施

- 天然气管网：天然气管道干线长度达到**12万公里**，管输能力达到**4000亿立方米/年**。加强区域管网**联络线**建设，进一步提高管网**互联互通**程度
- 地下储气库：储气容量达到**148亿立方米**
- LNG接收站：接收能力达到**1亿吨/年**

✓ Infrastructure Scenario

- Natural gas pipeline network: The total length of natural gas pipeline trunk is expected to reach **120,000 km** with a capacity of **400 bcm / year**. Construction of linking-up lines in the regional pipeline network shall be enhanced to improve the pipelining **interconnection**.
- Underground gas storage: an expected storage capacity of **14.8 bcm**
- LNG receiving terminal: an estimated capacity of **100 million tons / year**



✓ Future downstream market

- Industrial fuels and chemical industry: Natural gas **effectively replaces coal** in high energy consumption industries with an annual gas consumption reaching **150 bcm**.
- Town gas: **470 million people will have access to natural gas**. 55% of urban residents have access to natural gas , accounting for **100 bcm** of gas consumption.
- Gas-fired power generation: An estimated installed capacity of more than **110 million KWH** with an annual gas consumption of **60 bcm**
- Transportation: **10 million** NGV and **60,000** LNG vessels in service, consuming **30bcm** gas per annum
- Heating: **2 billion square meters** of gas heated area with an annual gas consumption of **20 bcm**



五、油气体制改革将促进燃气行业快速发展

The structural reform of Oil and gas will accelerate development of gas industry

In the first half of the year of 2017, the Central Committee and the State Council published “suggestions on deepening oil and gas structural reform”. In following these suggestions, the National Development and Reform Commission (NDRC) and National Energy Administration updated their policies. The reformation trend list is below for reference.



五、油气体制改革将促进燃气行业快速发展

The structural reform of Oil and gas will accelerate development of gas industry

The industry should persist in the marketization of natural gas, facilitating deep-level reform. Furthermore, the industry should apply the Public-Private Partnership including system integration, benefiting government, social society, shareholders and employees.

In order to make the transition from spot contract to future contract, the industry should continue the price reform, building up the natural gas and LPG trending center and independent pipeline operation.

The industry should remove the restrictions on gas import and gas storage facilities, diversify the gas resources and develop both domestic and foreign gas resources.

With the new policies which have been introduced, the government encourages the investment on urban and rural gas with respect to transboundary gas utilization.



五、油气体制改革将促进燃气行业快速发展

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The 13th five year plan will introduce more policies that make markets define the resource allocation, improve the development of natural gas. Especially on gas standard specification, in order to solve the bottleneck problem during the gas industry development, CGA will develop more standards in time.



五、油气体制改革将促进燃气行业快速发展

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By the 22nd of June, based on the National Development and Reform Commission issued “Guidance on strengthening the price regulation of gas distribution”, which requires each province should authorize the gas price independently and also strengthen the price regulation. The natural gas industry of China now has built the gas price regulation system with respect to long gas pipelines between different provinces and short pipelines within each province.



五、油气体制改革将促进燃气行业快速发展

The structural reform of Oil and gas will accelerate development of gas industry

A coal to natural gas switch will facilitate the development of the natural gas industry.

Coal transfers to natural gas is the important segment of preventing and remedying air pollution, it is related to people's life safety, society's stability, social responsibilities, it's a task that must be implemented at the current stage.



五、油气体制改革将促进燃气行业快速发展

The structural reform of Oil and gas will accelerate development of gas industry

During the 13th five year plan, the tasks of coal to natural gas transition including are regulate Boiler Room, bulk coal. The governments jointly managing the gas industry and try to achieve the goal of 65 bcm natural gas usage in 2020.

In summary, we have the reasons to believe China will reach the goal of 13th five year plan under the oil and gas structural reformation.

中国赢得国际燃气联盟主席资格

The People's Republic of China wins bid for IGU Presidency

Madam LI Yalan, Chairperson of Beijing Gas and Executive Chairperson of China Gas Association announced as International Gas Union President from 2021-2024, with the City of Beijing set to host 2024 World Gas Conference.





谢谢大家！
Thank you