



China National Petroleum Corporation

The Development of China's Natural Gas Market

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Contents



- I. The status quo of the development of China's natural gas industry.
- II. The major utilization fields of China's natural gas.
- III. The suggestions for the development of China's natural gas industry.



The Status quo of the Development of China's Natural Gas Industry

- 1、 General Introduction
- 2、 Status quo of Resources Exploitation
- 3、 Status quo of Pipeline Network Construction
- 4、 Status quo of Natural Gas Consumption



1、General Introduction

- Exploitation and utilization of natural gas is of great significance for ameliorating China's energy structure and protecting the environment.
- In recent years, China's natural gas supply, consumption and pipeline network construction have entered a booming period.





1、General Introduction

- **Resources:** formation of four major onshore gas fields and two offshore gas fields.
- **Pipelines:** preliminary formation of the national backbone pipeline network with the West-East Pipeline as the trunk line.
- **Market:** rapid increase of natural gas demand, and emergence of a huge market.



2、 Status quo of Resources Exploitation



China's natural gas reserves are mainly in the onshore Tarim Basin, Ordos Basin, Sichuan Basin and Zaidam Basin, and offshore Yingqiong Basin and East Sea Basin.



2. China's Abundant Natural Gas Resources

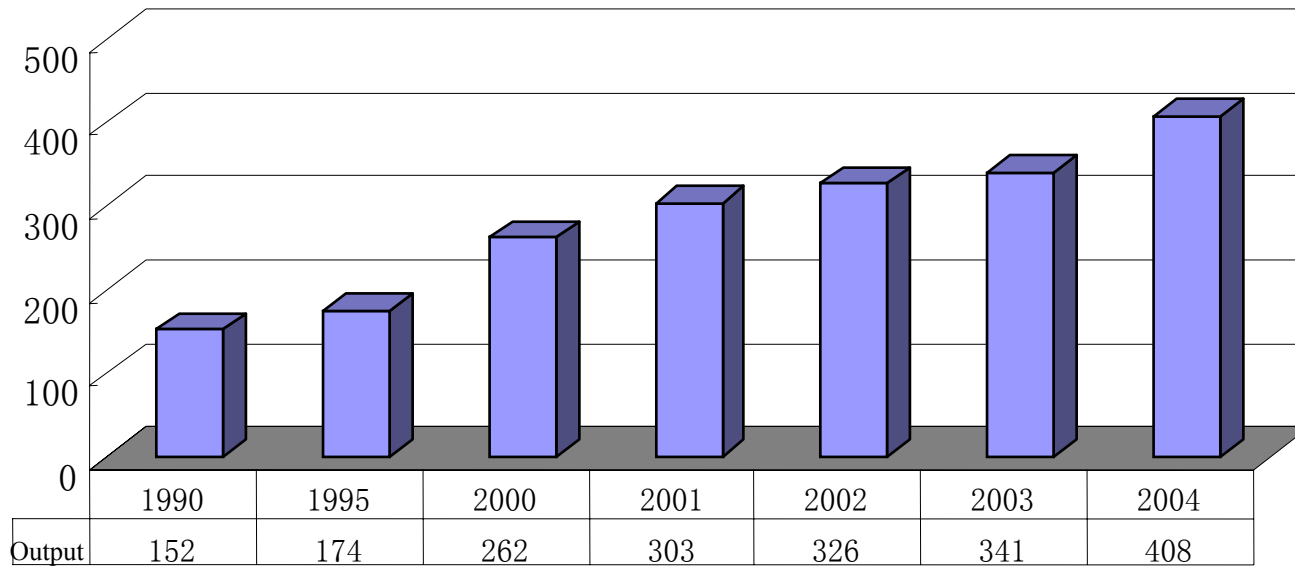
(as of the end of 2004)

Projects	National Total
Resources (trillion cubic meters)	47
Proven reserves (100 million cubic meters)	49000
Remaining recoverable reserves (100 million cubic meters)	22289



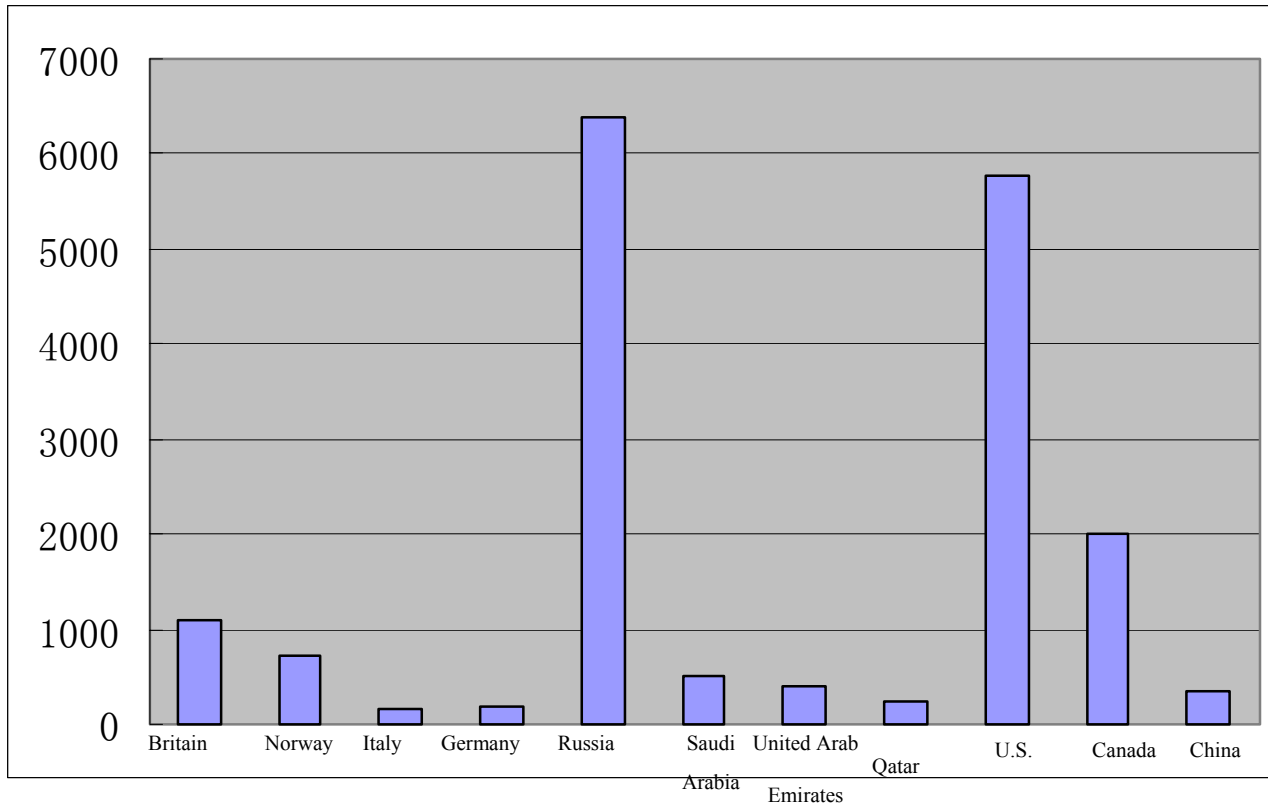
2、 Steady Increase of China's Natural Gas Production

(Unit: 100 million cubic meters/ year)





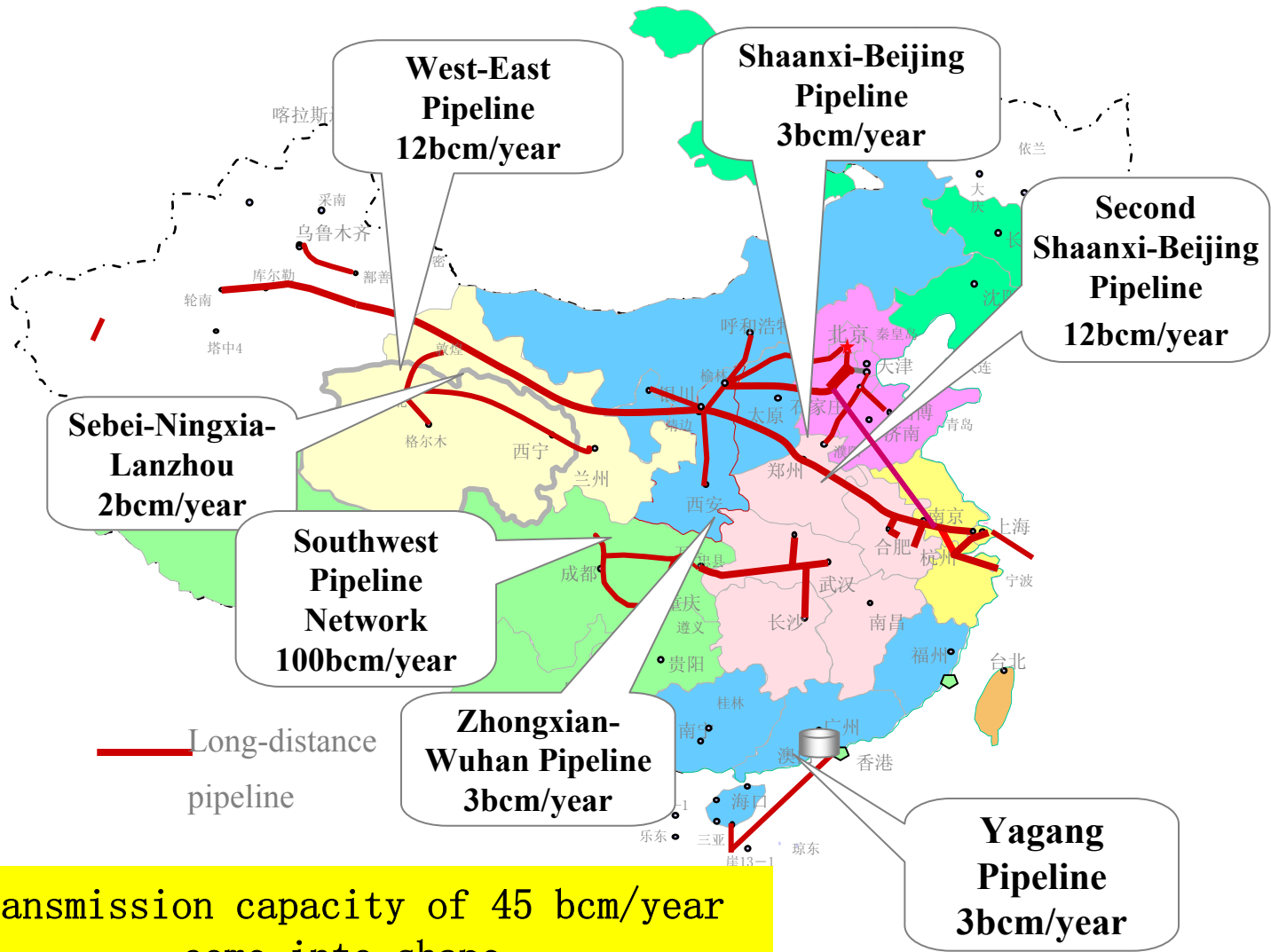
Comparison between China's Natural Gas Production and some Other Countries (100 million cubic meters)



China's natural gas production ranks 17th in the world



3、 Status quo of Pipeline Network Construction

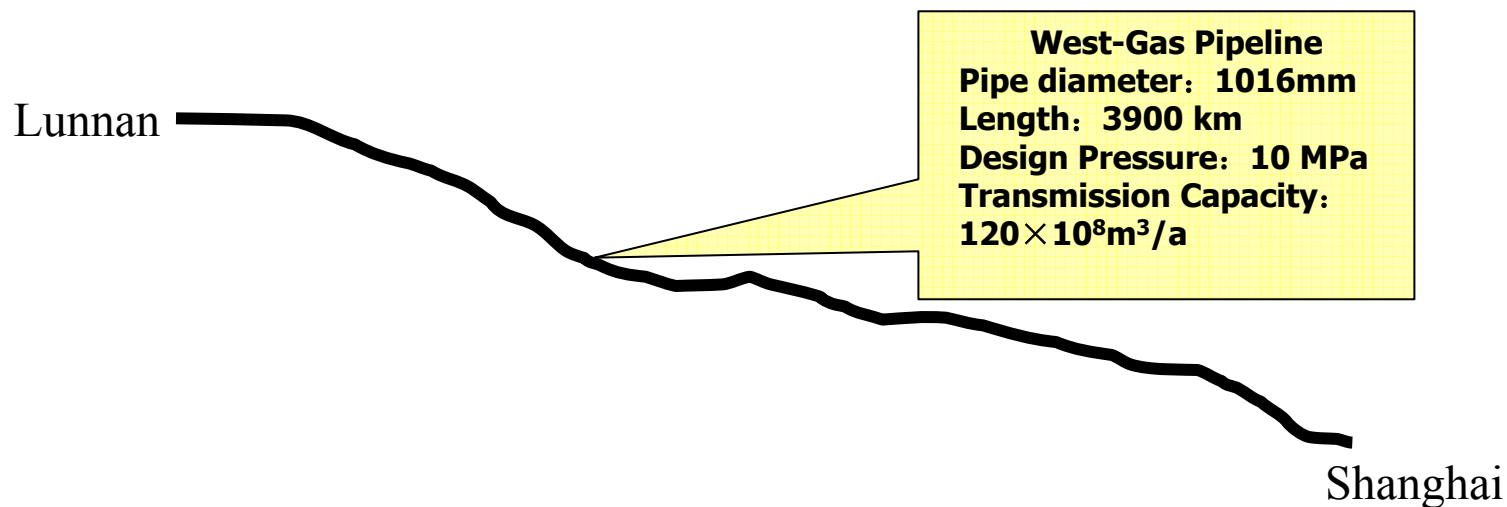


Transmission capacity of 45 bcm/year come into shape



Among the six national backbone pipelines already built, the West-East Gas Pipeline has the greatest significance for the development of China's natural gas industry.

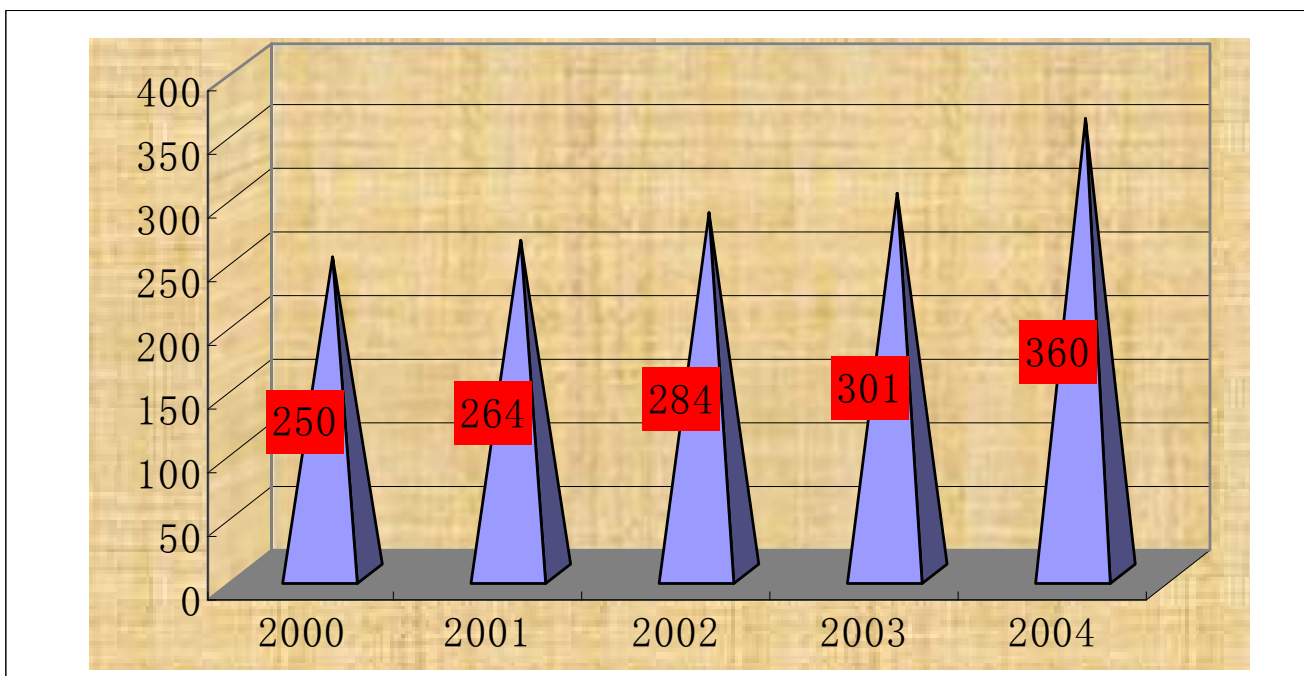
- The West-East Gas Pipeline is the milestone project symbolizing China's natural gas industry entering a new era of rapid development from start-up.





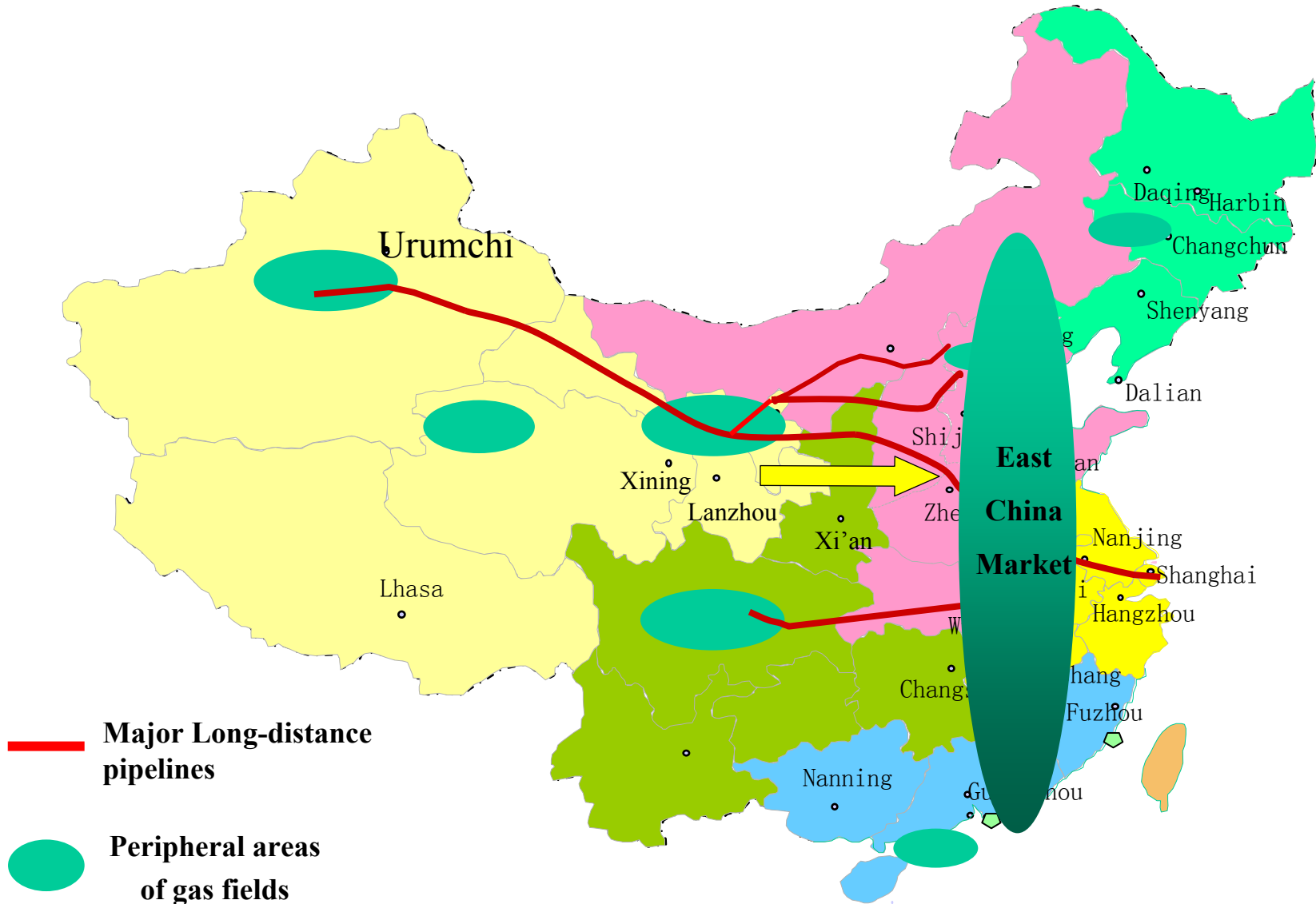
4、 Status quo of Natural Gas Consumption

**Increase of China's Natural Gas Consumption from 2000 to 2004
(100 million cubic meters)**



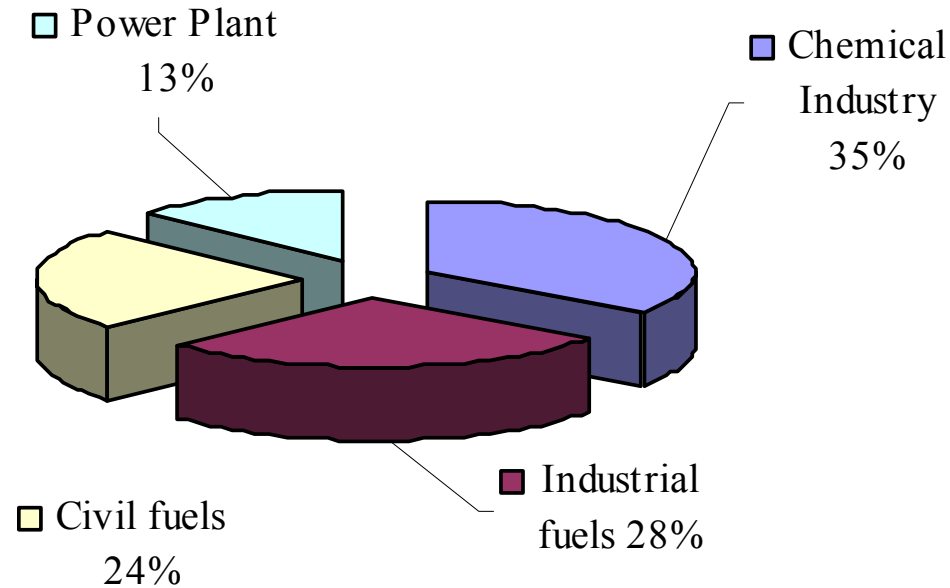


China's Natural Gas are mainly consumed in peripheral areas of gas fields and East China





Chemical industry as the major consumer of China's natural gas

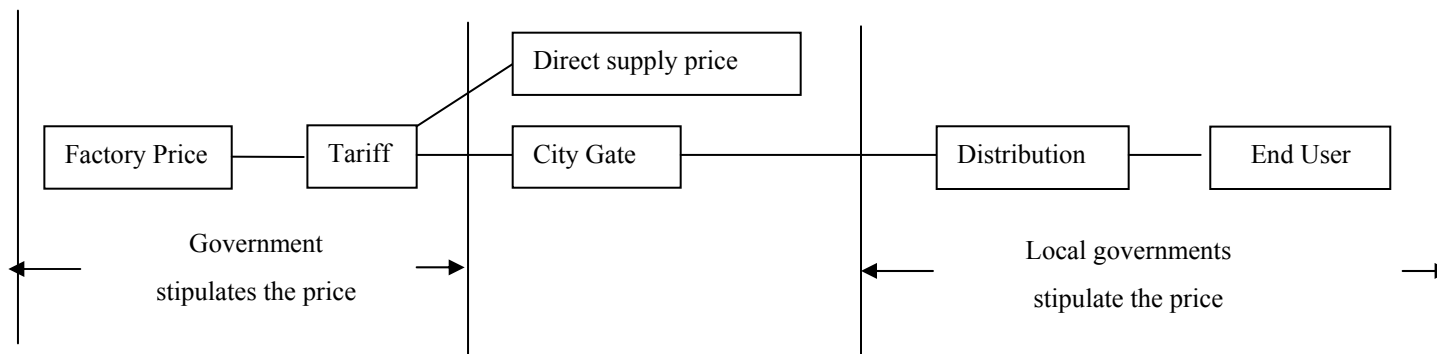


China's Natural Gas Consumption Structure (2003)



China's Natural Gas Pricing Mechanism

Pricing Mechanism



- $\text{Factory price} + \text{tariff} = \text{City gate price}$
- $\text{City gate price} + \text{distribution price} = \text{End user price}$



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II. The major utilization fields of China's natural gas

- 1、 Various factors contributing to the rapid development of China's natural gas market.
- 2、 Development trends of China's natural gas market.
- 3、 Civil fuels plays the leading role in natural gas utilization.



1、 Various factors contributing to the rapid development of China's natural gas market.

(1) Government policies support the utilization of natural gas

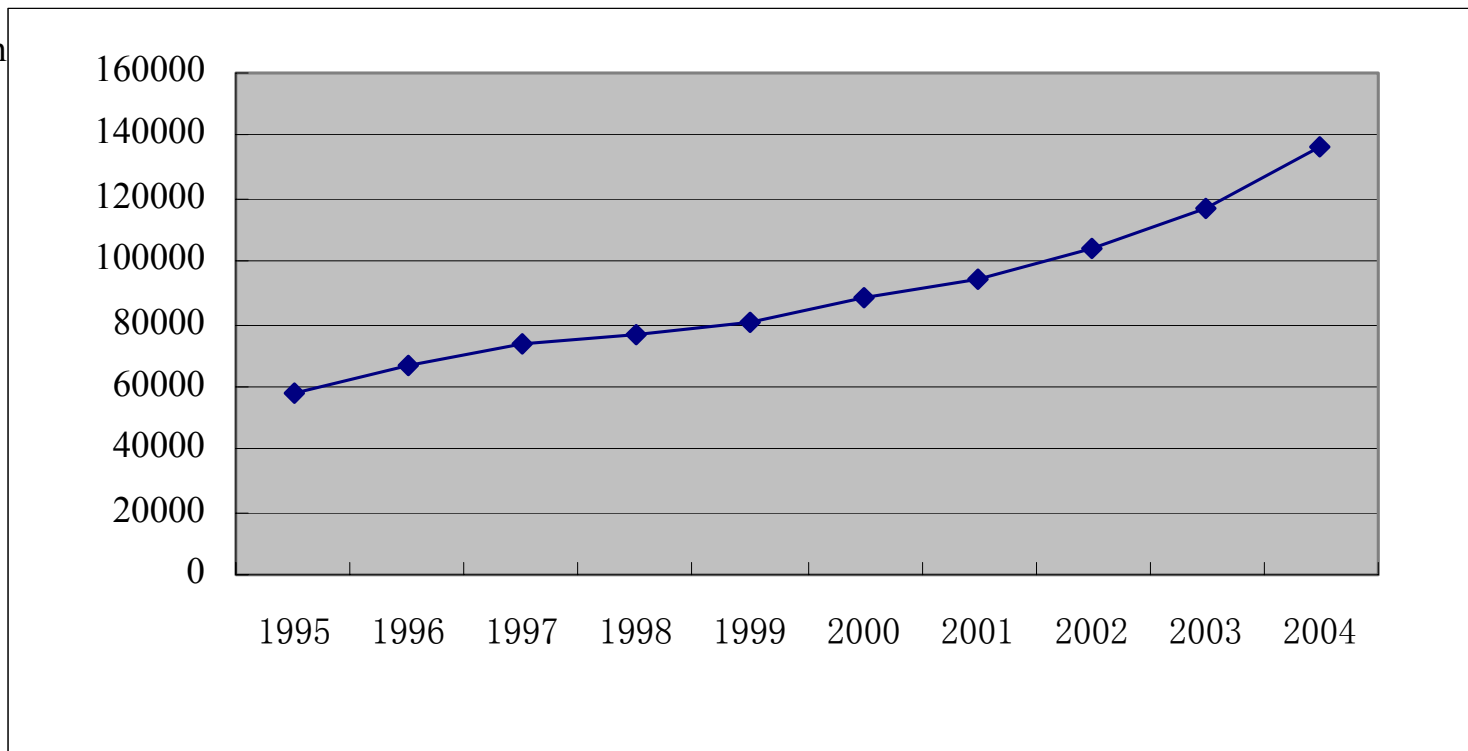
- **Scientific development concept of “People-first, all-around coordinated sustainable development”.**
- **Sustainable energy development strategy of “prioritizing energy saving, diversified structure, benign environment and market-oriented”.**
- **Governments at various levels support the development of natural gas industry.**



(2) Rapid economic growth drives the fast development of natural gas market

Economic drive: China's GDP has been increasing rapidly. China's GDP in 2004 was 13.65 trillion RMB yuan (around 1.6 trillion U.S. dollars), representing a **9.5%** increase over the previous year.

Unit: trillion yuan



China's GDP Growth (1995-2004)



(3) Environment Protection Drives the fast development of China's Natural Gas Market

Environment protection drive: higher requirement on environment protection leads to more emphasis upon the utilization of clean energy like natural gas.

- **Government and people from all walks of life attaches great importance to environment protection.**
- **Vigorously popularizing the utilization of such clean energies as natural gas has become one of the effective measures of protecting the environment and improving air quality.**



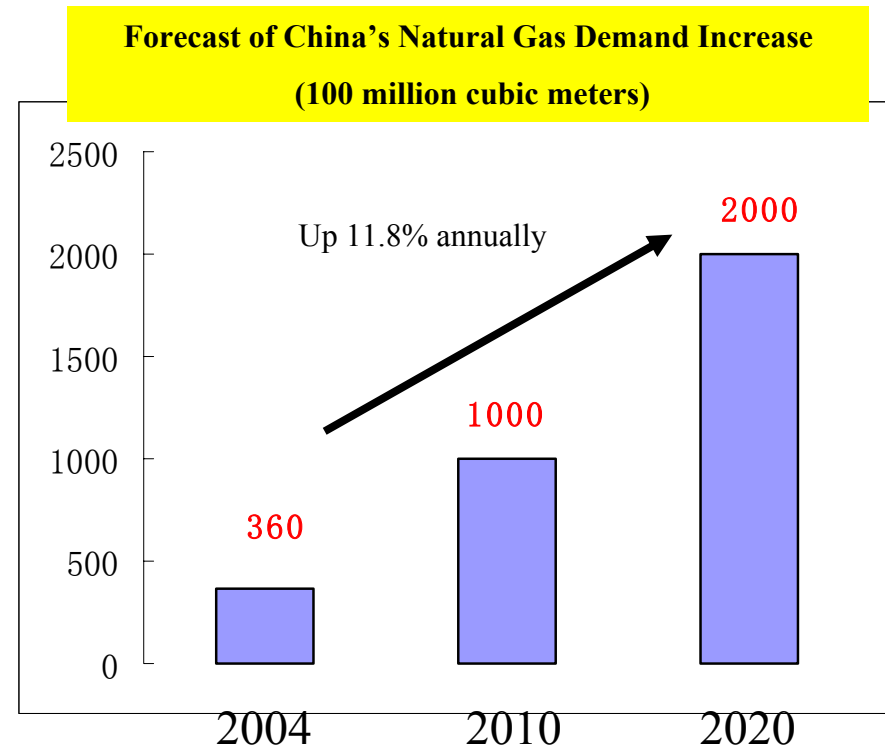
(4) Urbanization Drives the fast development of China's Natural Gas Market

- **China's total number of cities is about 660, with 109 million households and a urban population of 352 million.**
- **In 2020, China's urbanization level is to reach 55% from the current 35%.**
- **Urbanization and improvement of people's living standard are to promote natural gas utilization in civil gas field.**
- **Infrastructure construction lays a foundation for China's mass utilization of natural gas.**



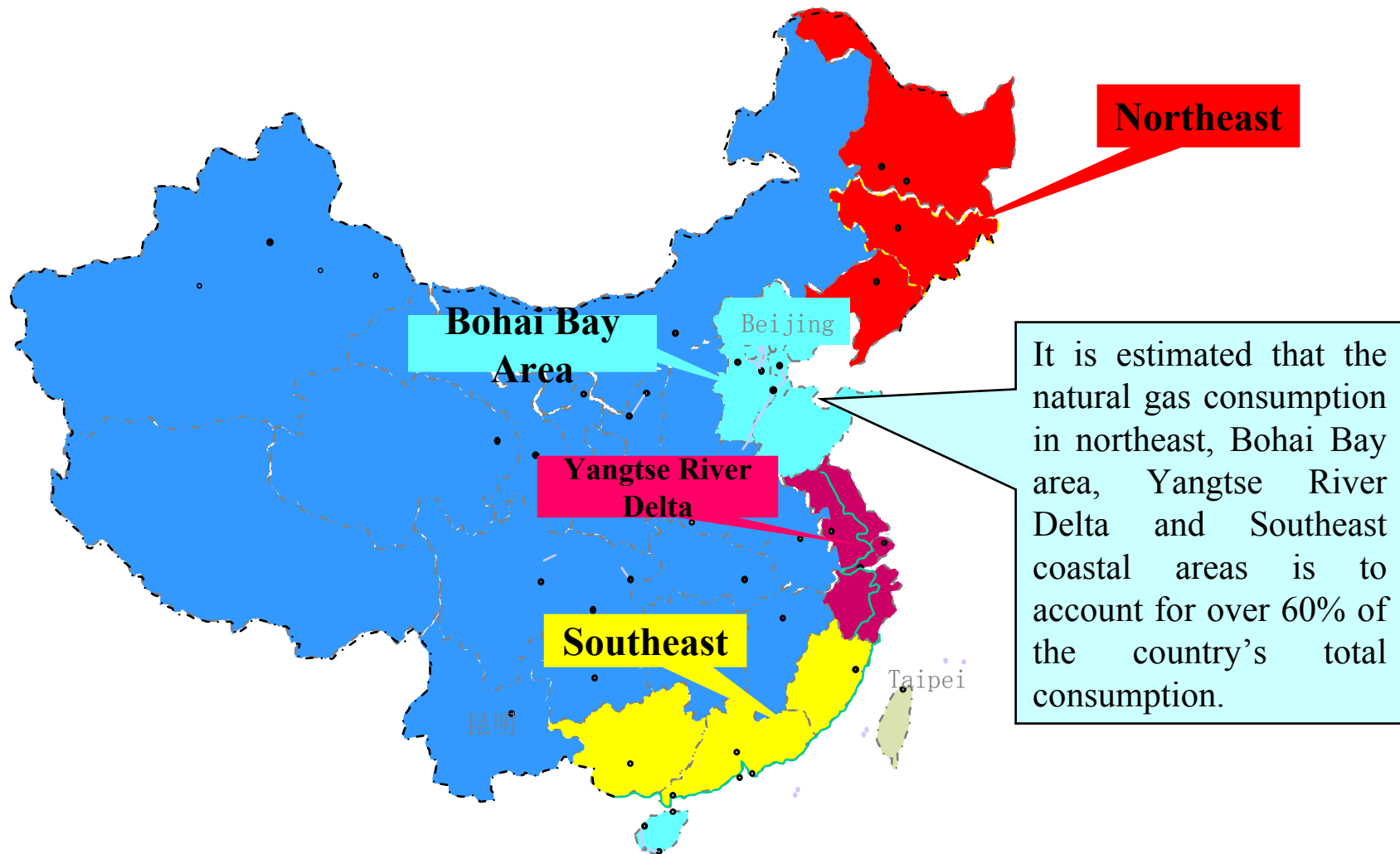
2、 Development trends of China's natural gas market.

(1) Forecast of natural gas demand : China's natural gas market is to develop rapidly due to the requirement of macro policies, scientific development concept, and driven by economic development, environment protection, and urbanization. It is estimated that China's demand for natural gas is to reach **200** bcm in 2020, with an annual growth rate of 11.8%.





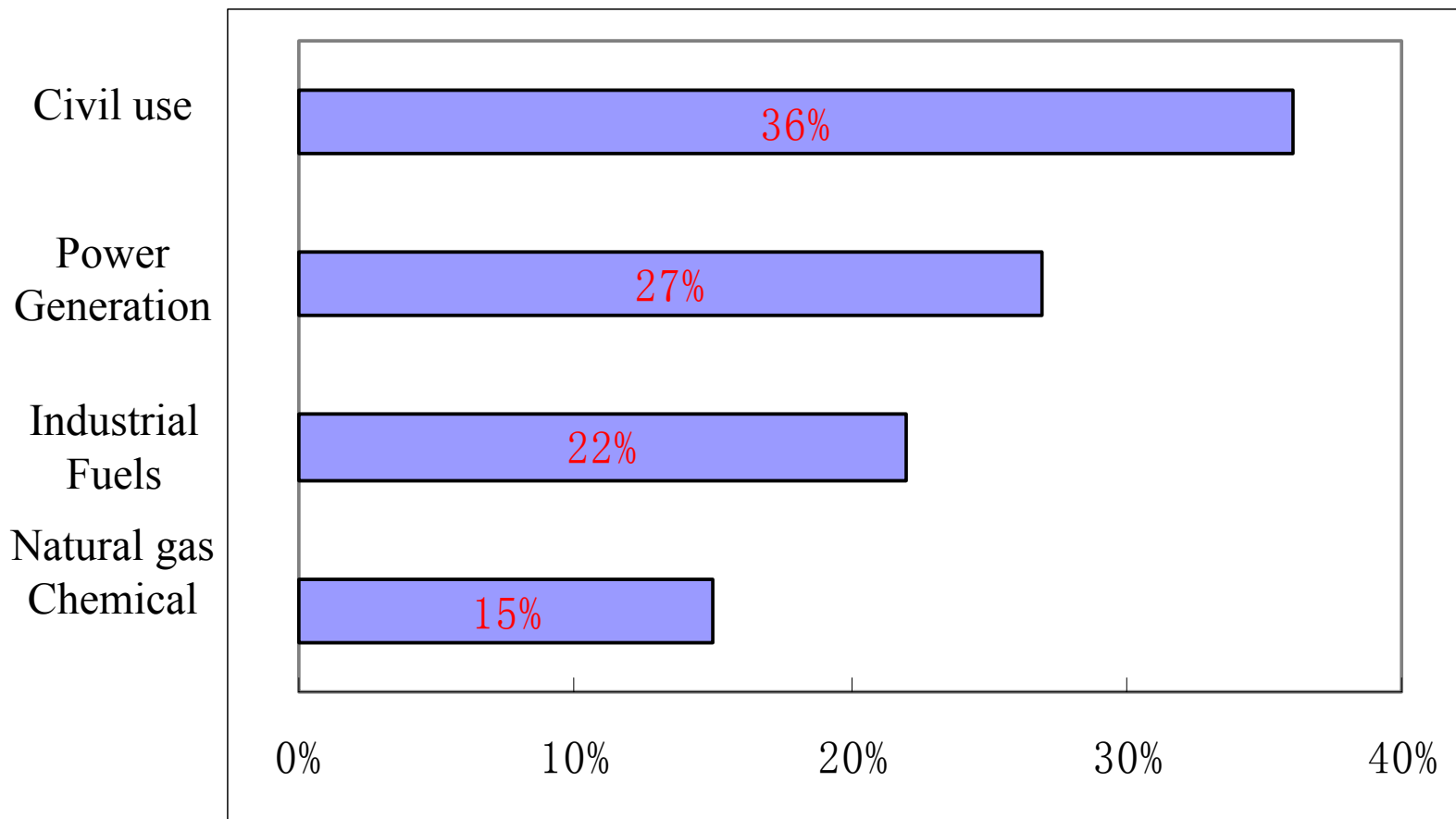
(2) Natural Gas Demand Allocation





(3) Natural Gas Consumption Structure

Forecast of China's Natural Gas Consumption Structure in 2020

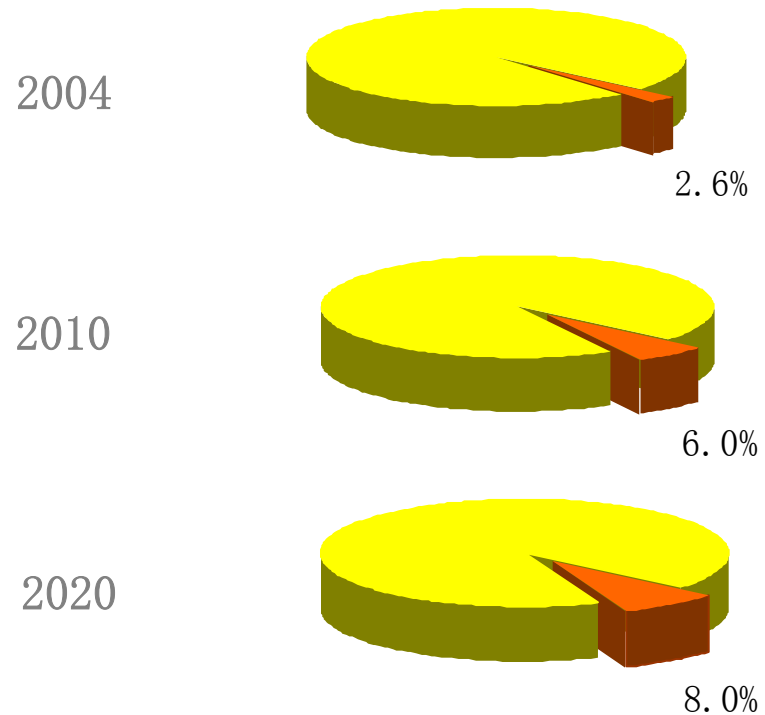


Natural gas consumption structure is to be optimized, civil use and power generation constitute major utilization of natural gas.



(4) Natural Gas Proportion in Primary Energy

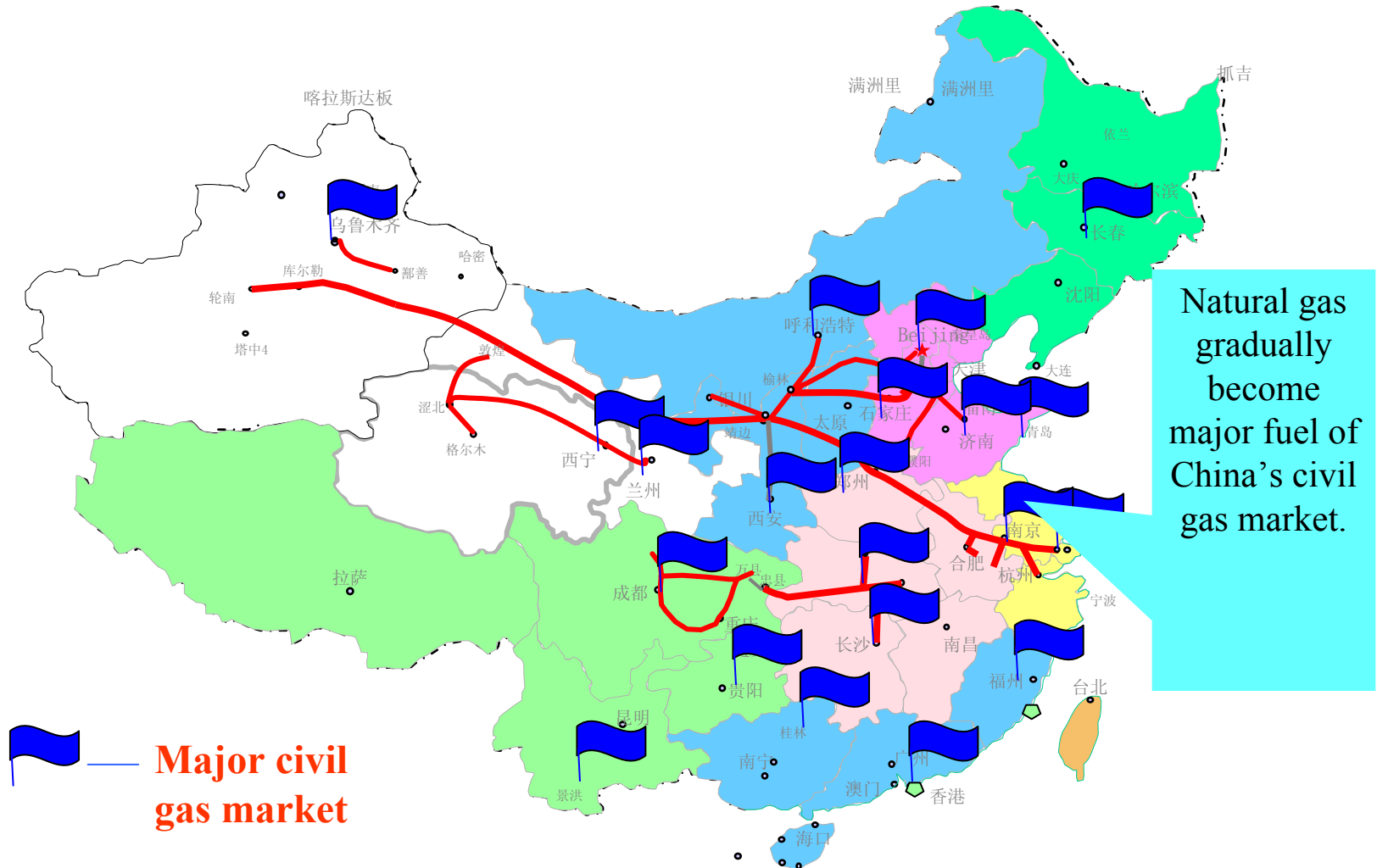
•Currently, natural gas's proportion in primary energy is less than 3%, which is expected to increase steadily, and reach 8-10% in 2020.





3、 Civil fuels plays the leading role in natural gas utilization.

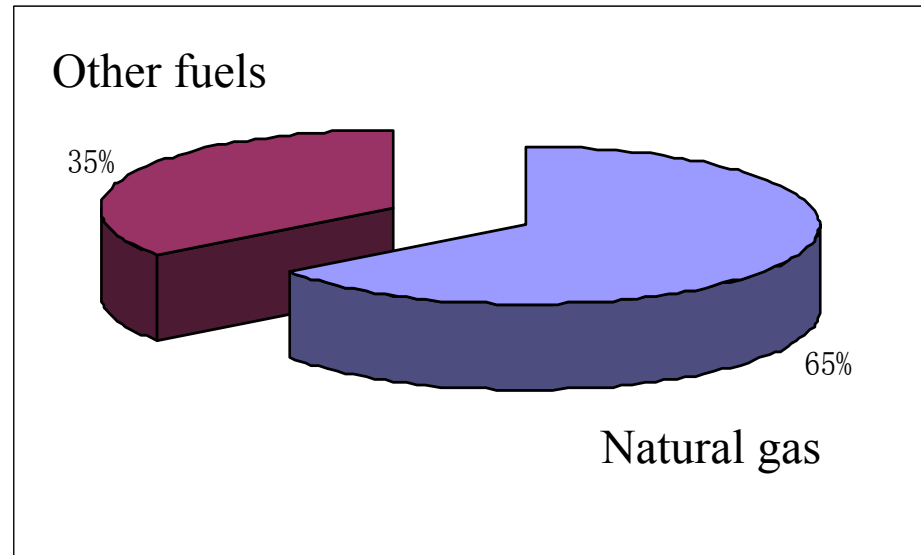
(1) Distribution of China's Civil Gas Market





(2) Natural gas becomes major source of China's civil gas supply

- It is estimated that in 2020, natural gas's popularization rate is to reach 60-70%, and becomes major source of China's civil gas supply.



Forecast of natural gas proportion in civil gas in 2020



(3) Development Trend of Civil Utilization of Natural Gas

- The scale of civil gas supply system is getting larger
- Civil gas supply is to expand the utilization into other industrial fields such as natural gas cars, heating and freezing together with the enhancement of popularization rate of natural gas.
- Distributed natural gas freezing, heating, power combined supply system has broad room for development.

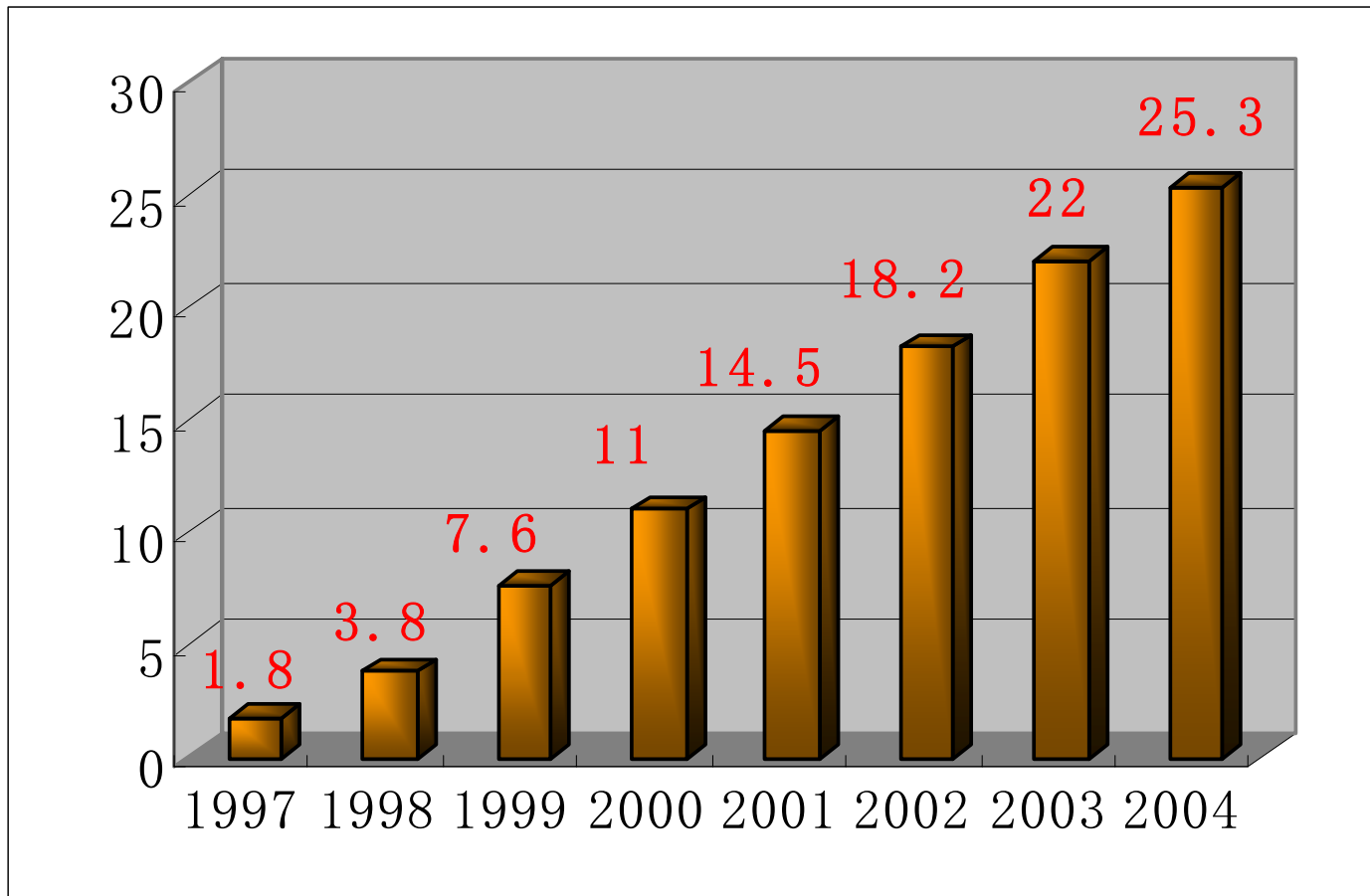


(4) Civil Gas Use Typical Case: Beijing

- Beijing used to be one of China's seriously polluted cities.
- Statistics shows that the annual amount of sulfur dioxide, nitrogen oxides and atmosphere suspended particulates are 0.080、 0.140 and 0.364 mg respectively.
- In order to improve Beijing's air quality, the municipal government decided to utilize natural gas to replace fuels like coals.



Rapid growth of Beijing's natural gas consumption (Unit:100 million cubic meters)



- In 1997, Beijing's natural gas consumption was merely 0.18 bcm.
- In 2004, Beijing's natural gas consumption reached 2.53 bcm.



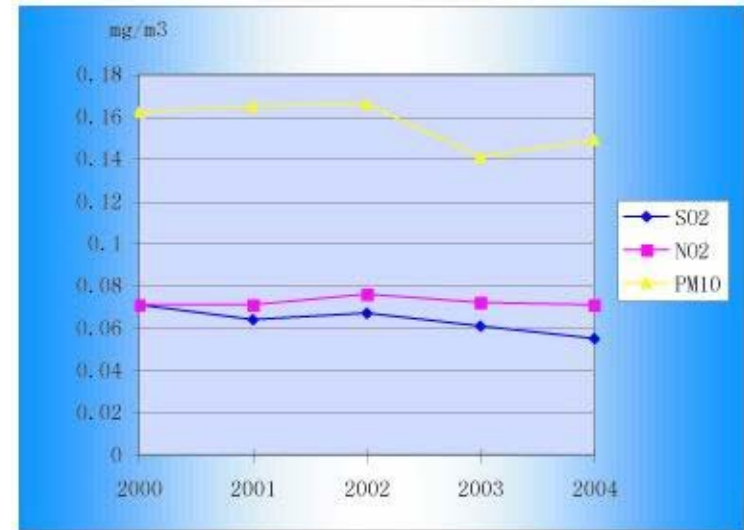
Marked Improvement of Beijing's Atmosphere Quality

Days when Air quality was and

天数 days above Grade II




Pollutant emission



- In 229 days of 2004, the city's urban air quality was and above Grade II.



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III. The market development strategies of China's natural gas industry

- 1、 Intensifying Resources Exploration and Exploitation**
- 2、 Accelerating the Construction of Natural Gas Pipeline Network**
- 3、 Strengthening International Cooperation**



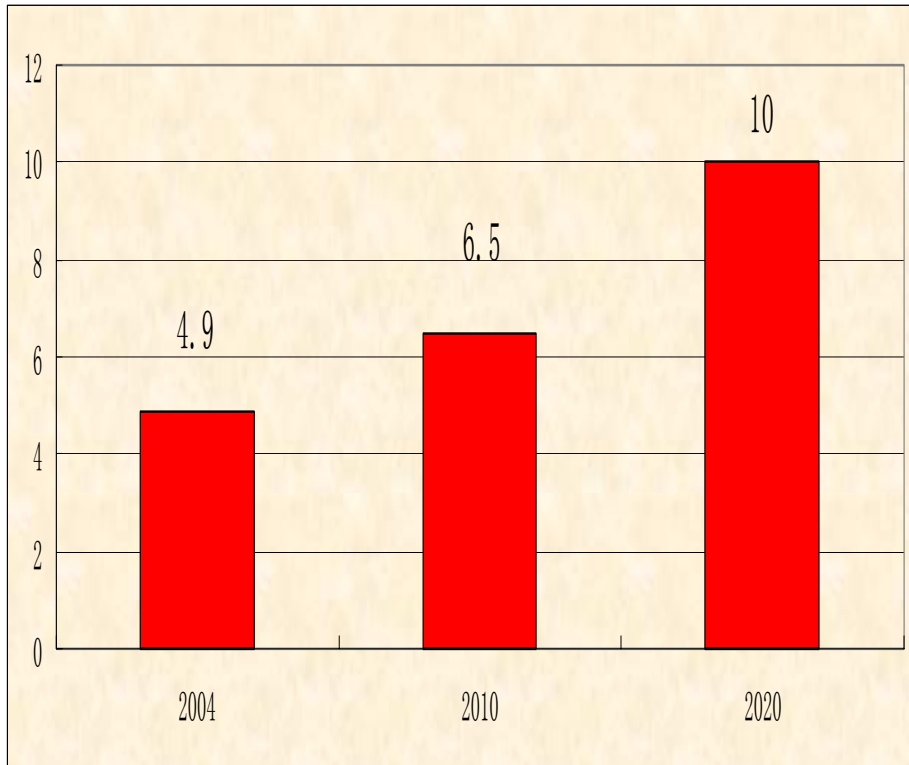
1、Intensifying Resources Exploration and Exploitation

- **China's natural gas exploration and development has a bright future.**
- **To ensure the rapid growth of domestic natural gas production through intensified exploration.**
- **Strengthening the exploration and development of coal-bed methane and promote the utilization of it. 。**

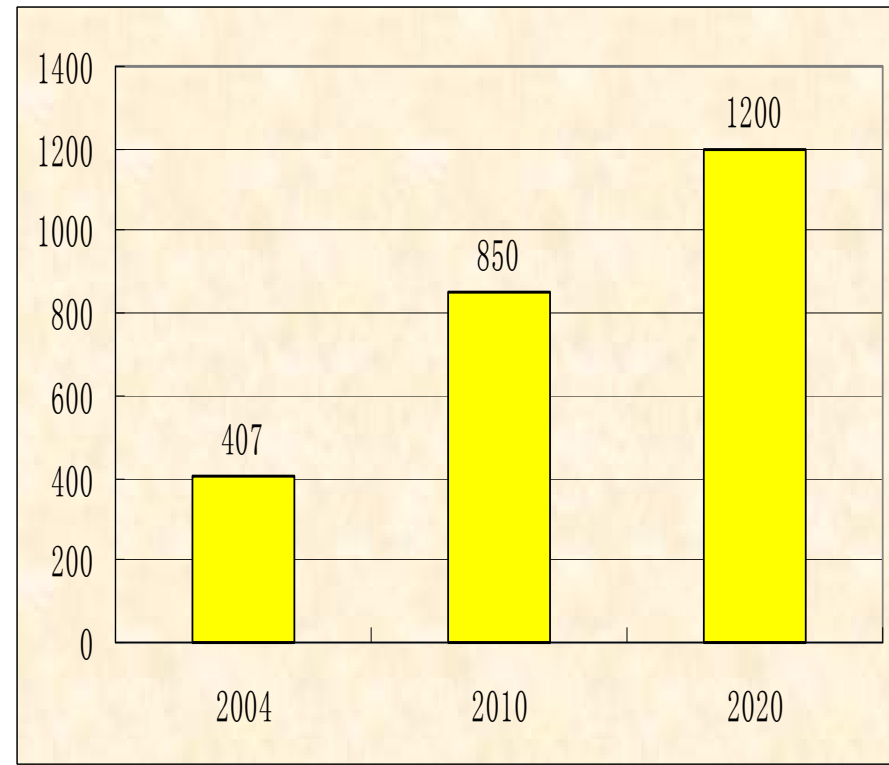


China's Natural Gas Industry Development Owns Good Resources Support

Steady Increase of China's Domestic Natural Gas Proven Reserves (trillion cubic meters)



Steady Increase of China's Domestic Natural Gas Production (100 million cubic meters)





2、Accelerating the Construction of Natural Gas Pipeline Network

- **Construction of nationwide backbone pipeline network.**
- **Establishment of liaison and distribution system with liaison line as the bridge.**
- **Building storage facilities with underground gas storage as the core.**
- **Diversified gas supply via onshore pipeline and offshore LNG.**
- **Stipulating emergency and peak shaving schemes.**



3、 Strengthening International Cooperation

- **Personnel training: collaborate in technology, management and commerce training**
- **Technology transfer: actively import and absorb advanced technologies from developed countries**
- **Strengthening cooperation: actively participating in domestic and international cooperation of natural gas projects. Importing oversea natural gas, China's guideline in natural gas utilization is “ Domestic production playing dominant role and importation as supplement.”**

Thank you!

