



20 Years of Natural Gas Development in Beijing

QIAO Jia

Director of Energy Technology Research Department

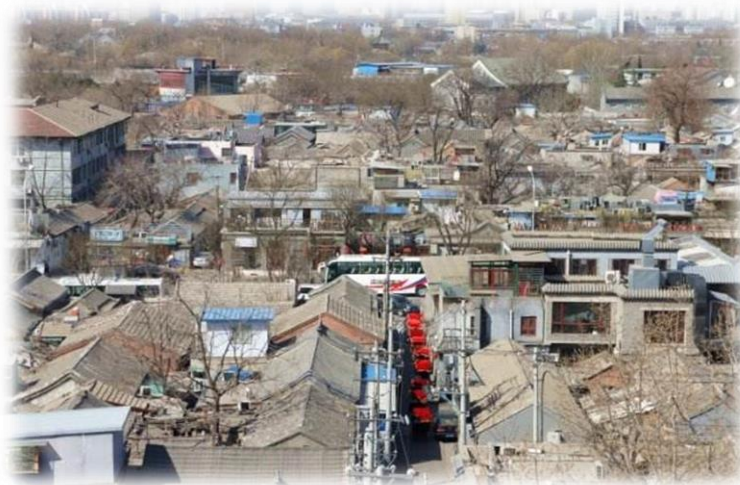
Beijing Gas Group Research Institute

#WGC2018
FUELING THE FUTURE



Energy Revolution pushed by Beijing Development

Beijing, the historical city becomes an international metropolis as it is today through 20 years.

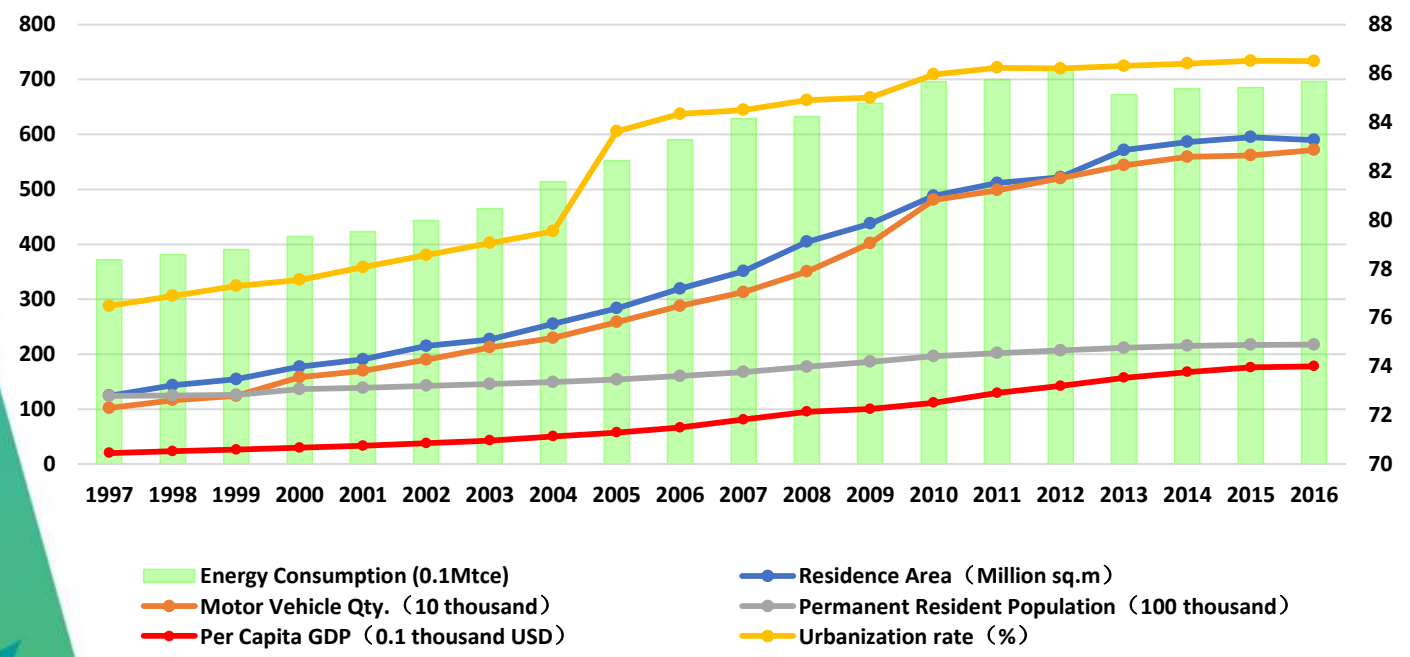


Energy Revolution pushed by Beijing Development

1. Fast development of city results in continuous growth of energy demand.



Main Economic Data of Beijing



Energy Revolution pushed by Beijing Development

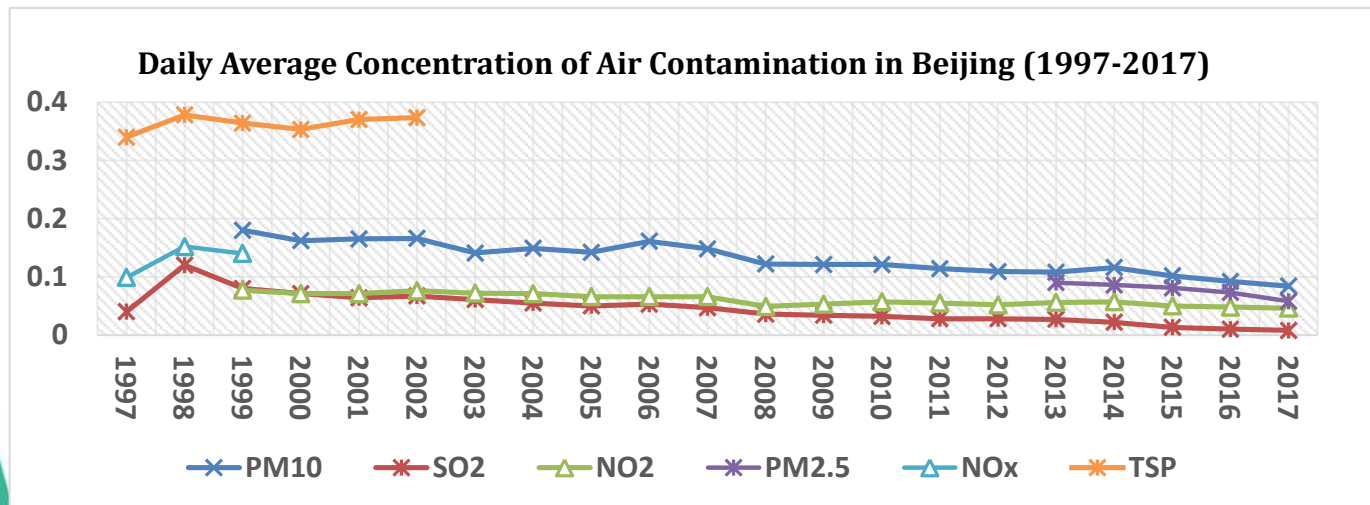
2. Coal-burning pollutes the environment.



- ❑ Mishandled coal during transportation, storage
- ❑ Untreated cinders after burning
- imposed secondary pollution to environment
- brought potential safety hazard to human

Energy Revolution pushed by Beijing Development

3. Fast development of city leads to severe air pollution.

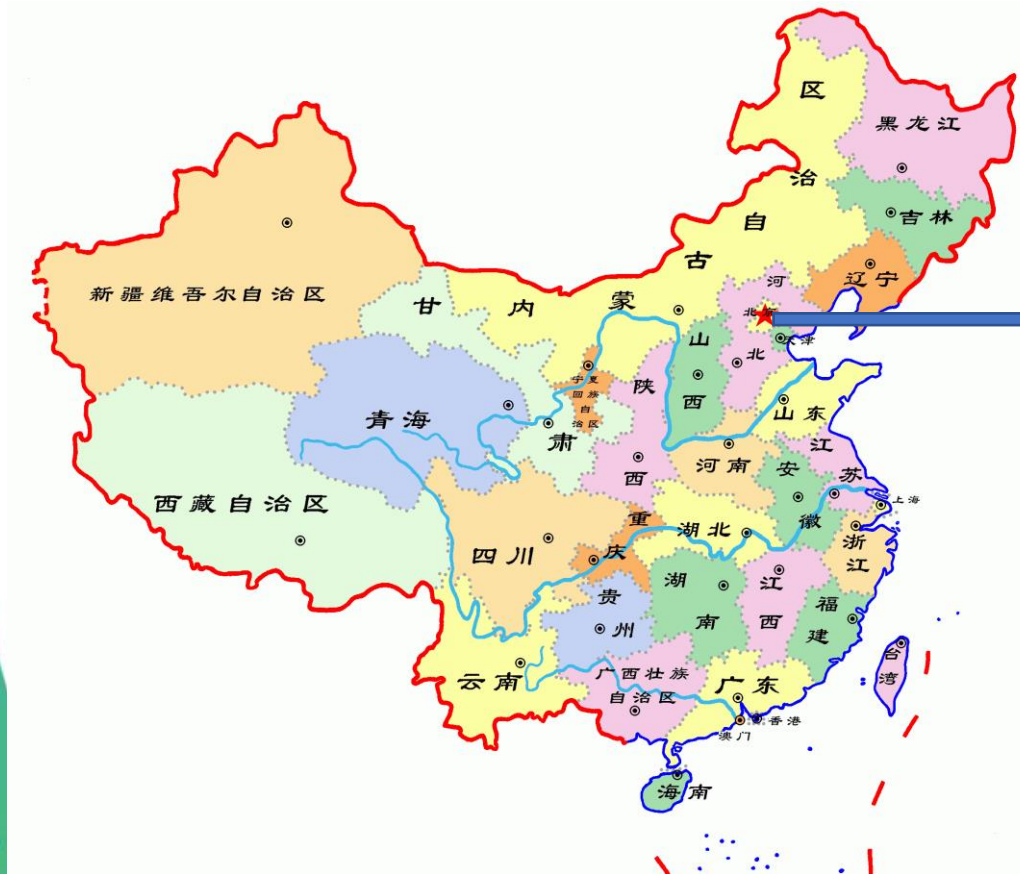


Emission of main pollutants severely exceeded National air quality standard level in 1997.

TSP: ↑ 85.5%; SO₂ : ↑ 108% ; No_x: ↑ 166%.

Energy Revolution pushed by Beijing Development

4. the Energy Consumption Characteristics of Northern China



The geographic position determines the huge energy demand.

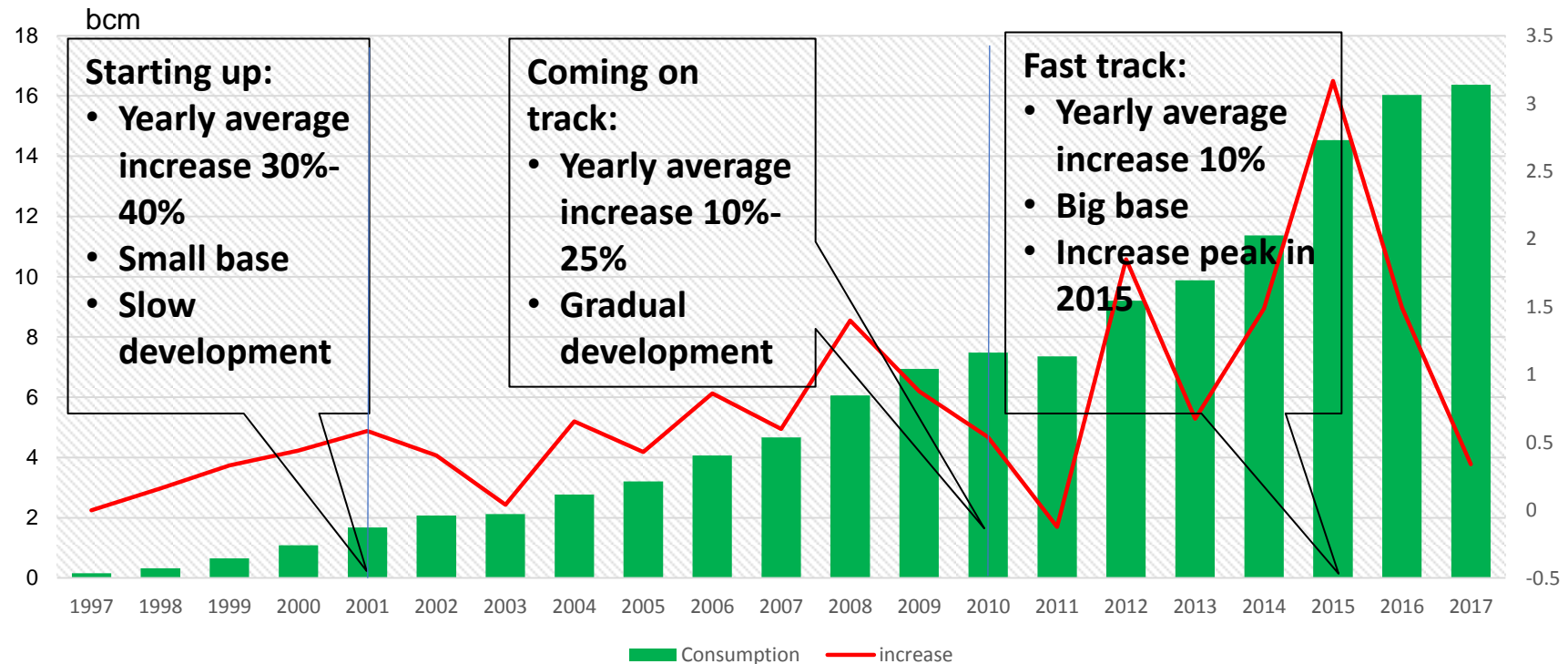
- 1/3 of a year, heating
- 1/3 of a year, cooling

	Winter	Summer
Duration	Dec-Feb	Jun-Aug
Max. Temp	---	38.5°C
Min. Temp	-10.1°C	---
Avg.	-1.4°C	25.1°C

Beijing's Natural Gas Development Analysis

The development stages are divided by using wavelet analysis.

Consumption & Stages Division of Natural Gas development in Beijing



The stages definition helps to review and analyze the development history of the natural gas.

Beijing's Natural Gas Development Analysis

Coal to gas policy could be found from beginning to end.



Starting up:

1997-2001

Area: central zone

Object: stoves, coal-burning boilers

Coming on track:

2002-2010

Area: central zone expanding outside

Object: coal-burning boilers ,electricity generation region

Fast track:

2011 to now

Area: expand to outer suburb gradually

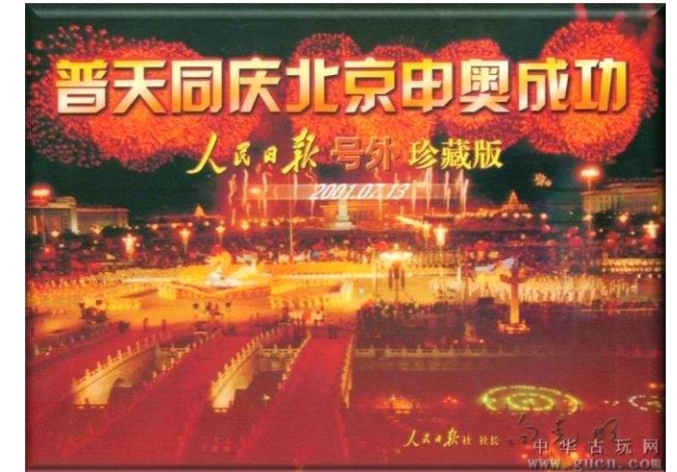
Object: coal-burning boilers (above 14MW), power plant

Beijing's Natural Gas Development Analysis

Starting up Stage

Economy Development, Environment Protection Pressure, Natural Gas Resource

Coal to gas Project for Boilers



Government

- Formulating Policies
- Setting Targets
- Supporting Enterprises

Enterprise

- Setting up Enterprises
- Pipeline Construction
- Upgrading facilities for users

★ At the starting up stage, government policy support & gas source guarantee are the major impulse for the development.

Beijing's Natural Gas Development Analysis

Coming on Track Stage

Background: Beijing Olympics, Urbanization speed acceleration, Mainly coal in energy mix, Severe air pollution

Coal to gas Project for Boilers

Manufactured Gas to Natural Gas Project



Challenges:

- Users: cost increase, not active in coal-to-gas project
- Enterprises: no more subsidy policy for gas pipeline construction, operating cost investment increase
- Load difference increase, imbalance between supply and demand
- Gas shortage in 2004



Beijing's Natural Gas Development Analysis

**Coming on
Track Stage**

Government

- Abolition subsidy for pipeline construction, establishing marketization
- Enabling the management of franchise rights

Gas Source

- New source from Shaanxi-Beijing second pipeline

Policy

- Requirement of treatment program for Beijing's air pollution

Market

- Manufactured gas fade away from history
- Coal to gas project for middle-size boilers (below 14MW)
- Coal to gas project for thermal power plants

Beijing's Natural Gas Development Analysis



Fast Track Stage

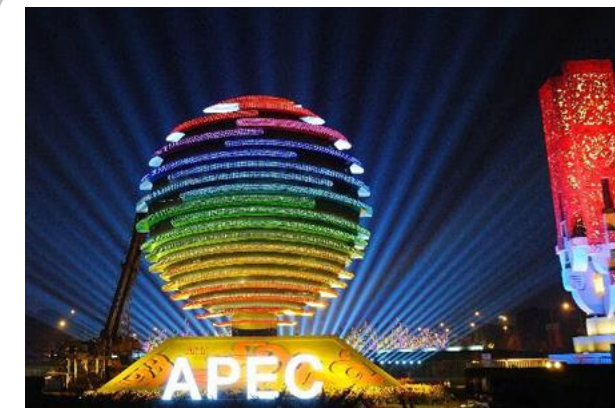
Background: Fight against fog and haze, Treatment of air pollution, Green development, Energy conservation and emission reduction

Deep Coal to gas Project

diversification development of Natural Gas

Challenges:

- **Gas source and supply: problems of emergency reserve and peak shaving**
- **Users: construction scale, investment and engineering difficulty**
- **Development: saturation of traditional market**



Beijing's Natural Gas Development Analysis

Fast Track Stage

Government

- Support enterprises to participate in international activities

Policy

- “Clean Air Action Plan”
- “Green Beijing Action Plan”

Gas Source

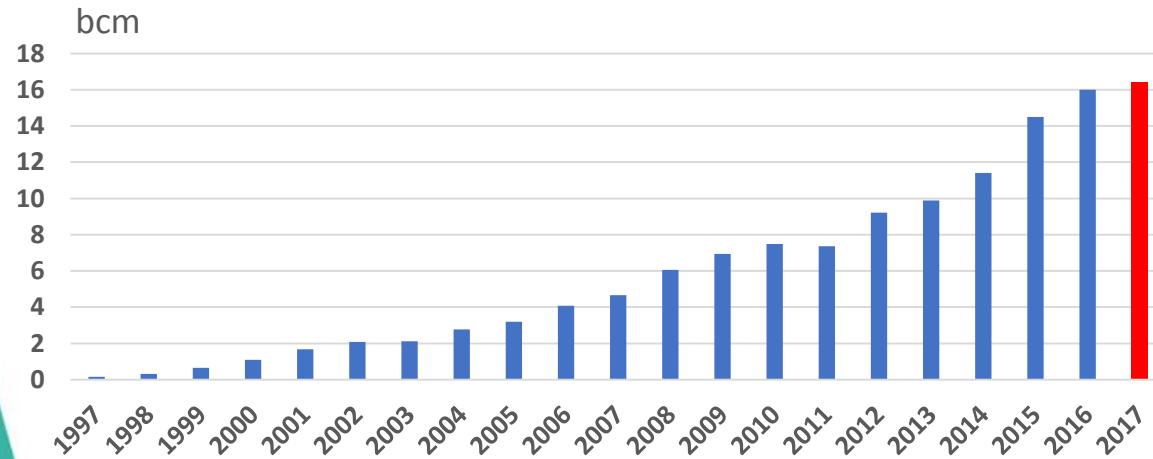
- Datang SNG
- LNG
- Shaanxi-Beijing Fourth Pipeline

Market

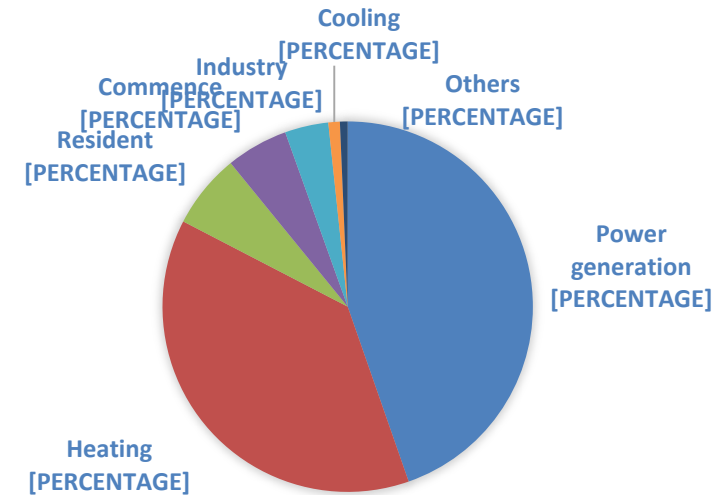
- big-size boilers (more than 14MW)
- the four thermal power plants
- gas markets in suburban districts and rural areas
- natural gas vehicles and distributed energy projects

Current Situation of Beijing Natural Gas Industry

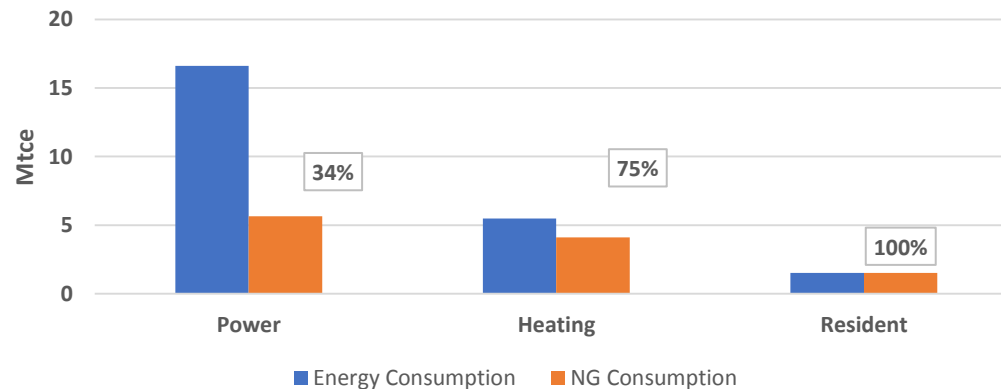
Yearly Consumption of Natural Gas in Beijing (1997-2017)



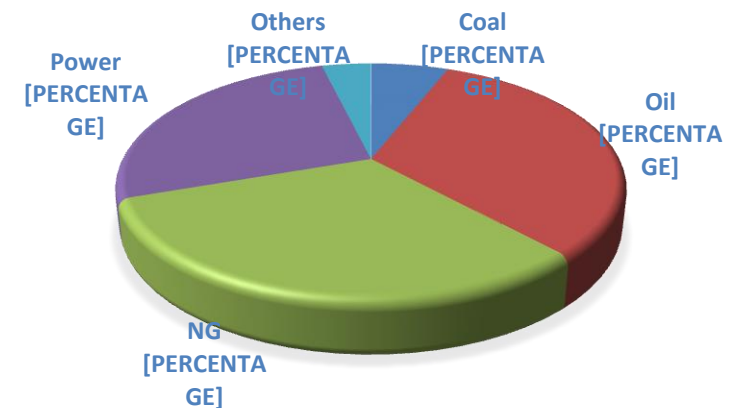
NG Consumption Mix in Beijing (2017)



Natural Gas Contribution to Energy Consumption



Energy Mix in Beijing (2017)



Features and Experience of Beijing's NG Development

- **Policy incentives**
- **Government support**
- **Reliable supply**
- **Company internal motive**



Conclusion

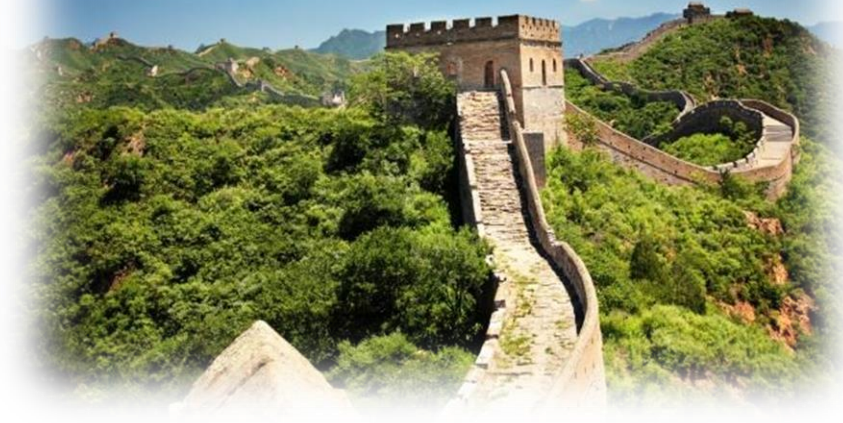
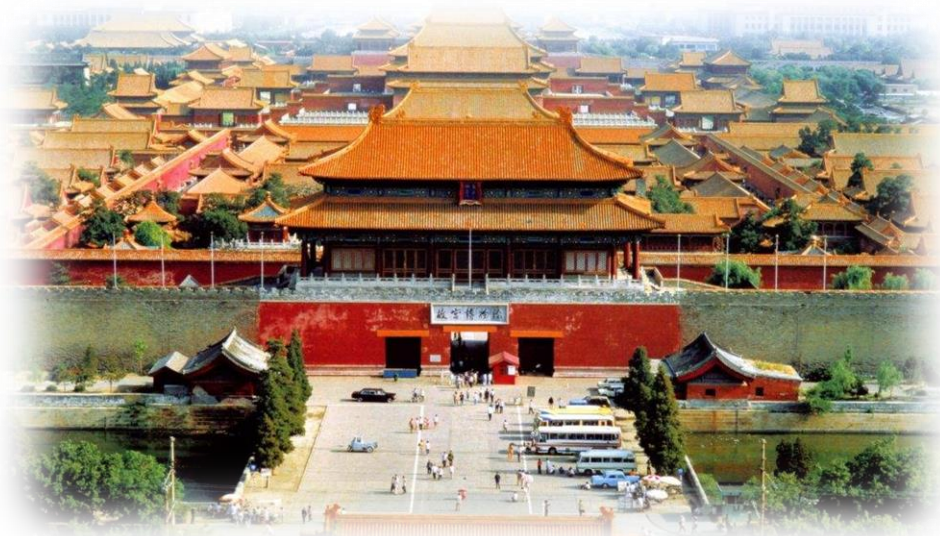


**Natural gas is building green energy system.
Natural gas is building green China.**



27th WORLD GAS
CONFERENCE
WASHINGTON DC

JUNE 25-29
2018



#WGC2018
FUELING THE FUTURE

Welcome to Beijing for 29thWGC in 2024!



20 Years of Natural Gas Development in Beijing

QIAO Jia

Director of Energy Technology Research Department

Beijing Gas Group Research Institute

#WGC2018
FUELING THE FUTURE

