



# China LNG Opportunities and Challenges

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**June 2005**



- ❑ **China LNG Development and Status**
- ❑ **CNOOC LNG Business and Project Status**
- ❑ **China LNG Opportunities & Challenges**



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**Clean Energy Supply is Fundamental to the  
Establishment of China's All-Around Well-Being  
Society in 2020**



# Background of LNG Business Development in China

## 1. Rapidly increasing China's economy and global economic integration



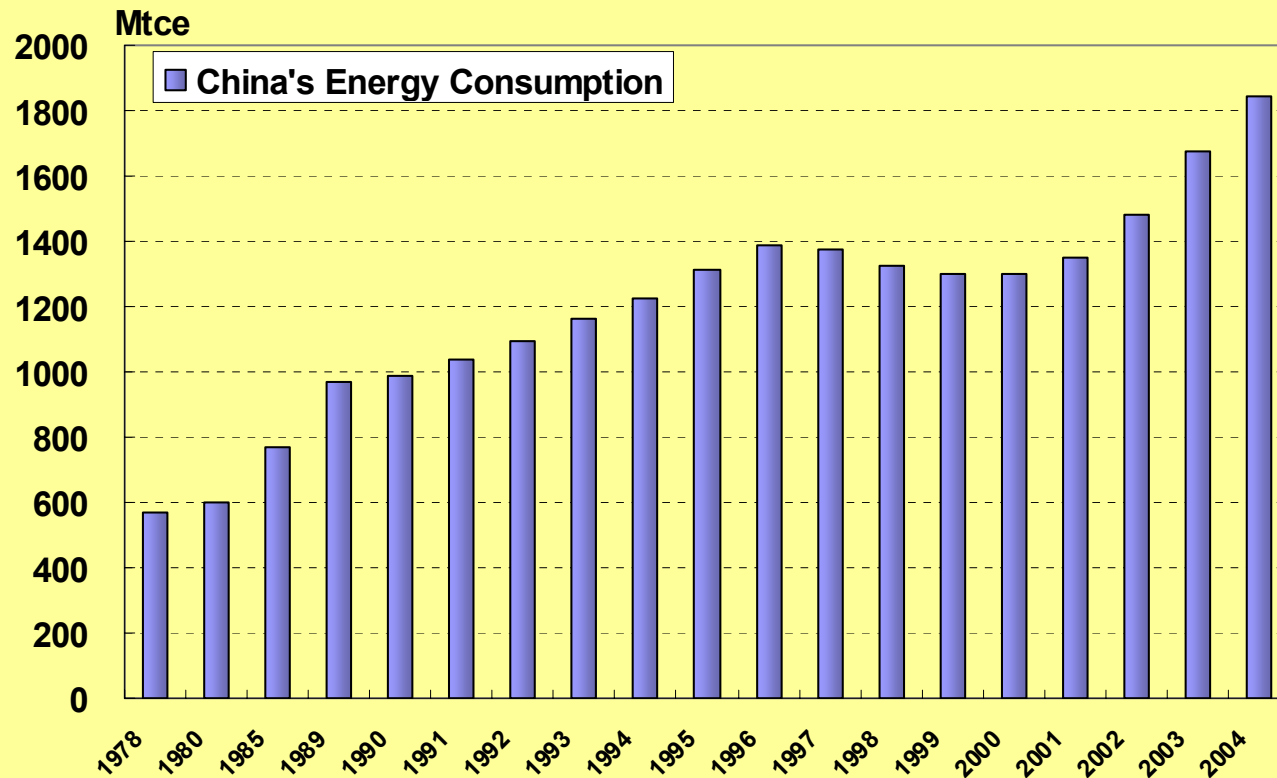
Source: China Statistical Yearbook 2004



# Background of LNG Business Development in China

## 2. Large energy demand and long-term adjustment of energy mix

Trends of China's Energy Consumption



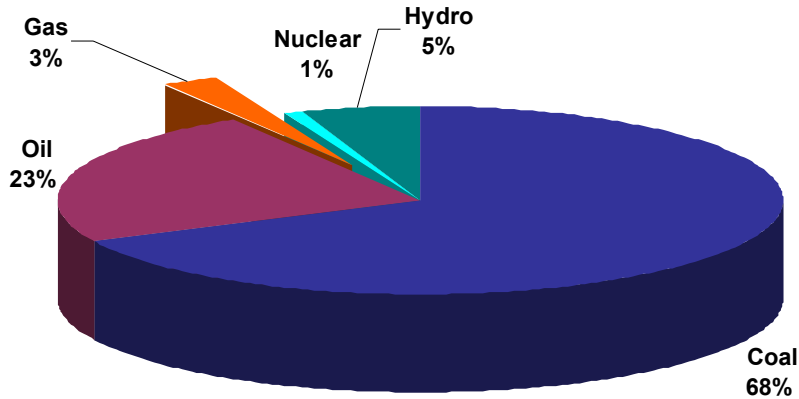
Source: China Statistical Yearbook 2004



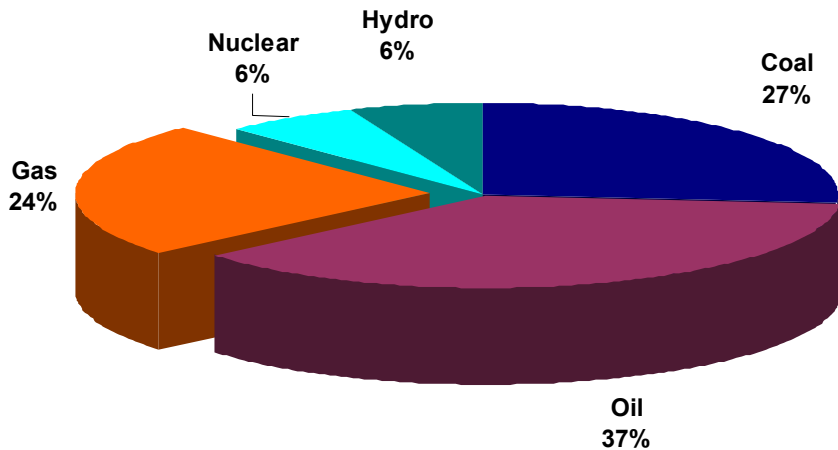
# Background of LNG Business Development in China

## 2. Large energy demand and long-term adjustment of energy mix

Primary Energy Mix of China in 2003



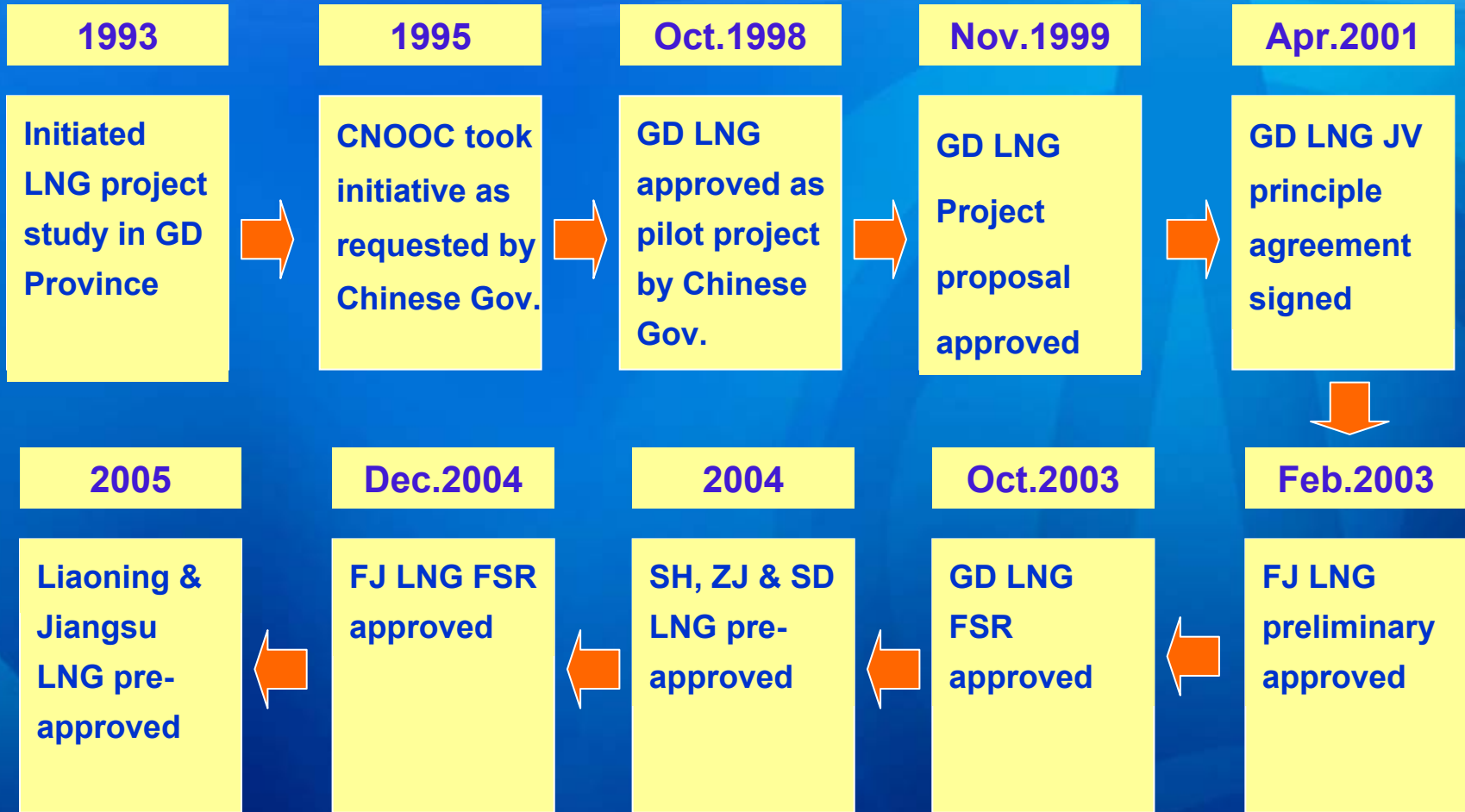
Primary Energy Mix of the World in 2003



**One pillar of China's energy strategy:  
Making full use of domestic and international resources and markets, active participation in cooperation and development of international resources .**



# Milestones of China's LNG Business





# Summary

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- Rapidly increasing economy, well-being society and heavy environmental pressure bring great opportunities to natural gas in China.
- Natural gas industry is an infant, but rapidly developing industry. LNG will play an important role in natural gas supply.
- China's central government has approved seven LNG terminal projects, and CNOOC Gas & Power Ltd. is an important owner of four projects.



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# CNOOC Gas & Power Limited



- A fully owned subsidiary of China National Offshore Oil Corp.
- The division of CNOOC that operates in gas and power industries.
- Leading Chinese company in LNG Regas terminal, truckline and power business.
- Vision: “Providing clean and reliable energy, creating a better life and a harmonious society”



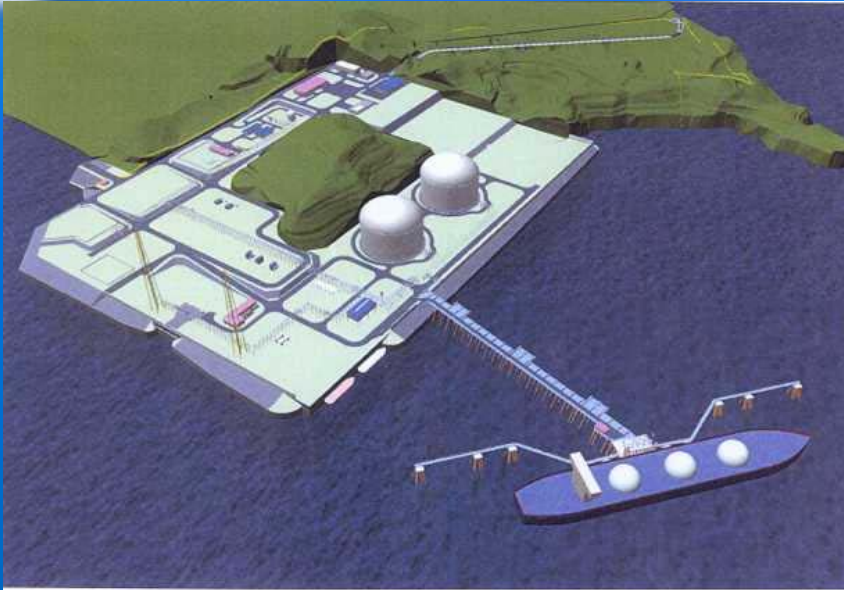
# Approved LNG Projects of CNOOC Gas & Power



- 2 projects are under construction:**
- Guangdong Dapeng LNG (CNOOC, Phase I, Apr. 2006; Phase II, Sep. 2007)
  - Fujian LNG (CNOOC, Dec. 2007)
- 2 projects have been preliminary approved by NDRC:**
- Shanghai LNG (CNOOC, Dec. 2008)
  - Zhejiang LNG (CNOOC, Dec. 2008)



# Guangdong Dapeng LNG Project



**Phase I**  
**Volume: 3.85mtpa**  
**Start up:Jun.2006**

投资方 /sponsors	股比/Equity
中海天然气及发电 /CNOOC GP	33%
深圳燃气/Shenzhen Gas	10%
广东粤电集团 /Yuedian	6%
广州煤气/Guangzhou Gas	6%
深圳能源 /Shenzhen Energy	4%
东莞燃气/Dongguan Gas	2.5%
佛山燃气 /Foshan Gas	2.5%
香港电灯 /HK Electric	3%
港华投资/HKG	3%
珠江三角洲/BP	15%
广东投资/BP	15%

**LNG from NWS,  
Dec. 2004, SPA  
became effective**



# Guangdong Dapeng LNG Project





# Guangdong Dapeng LNG Project

**NO.1 Tank**



**NO. 2 Tank**



**Jetty**



**Vaporizer**





# Fujian LNG Project



Phase I Volume: 2.6MTPA;  
Planned to start up by Dec, 2007.

LNG from Tangguh

Customers: 5 LDCs and 3 power plants  
with total installed capacity of 3600MW.

投资方/Sponsors	股比 Equity
中海天然气及发电 CNOOC Gas & Power	60%
福建投资 FIDC	40%

FEED completed in Apr.2005 by Sofregaz

Tank EPC awarded to CBI in March 2005







# Fujian LNG Project





# Shanghai LNG Project



Phase 1  
 Volume: 3.0 MTPA  
 Start up: 2008  
 Submarine Pipeline: 35 KM  
 Total trunkline : 400Kms  
 Offtake Stations: 3

投资方/Sponsors	股比 /Equity
申能Shenergy	55%
中海天然气及发电 CNOOC Gas & Power	45%





# Zhejiang LNG Project



**Phase I**  
**Volume: 3.0 MTPA**  
**Startup: Dec. 2008**

投资方/Sponsors	股比/Equity
中海天然气及发电 CNOOC Gas & Power	51%
浙能 Zhejiang Energy	29%
宁波电力 Ningbo Power	20%





# Summary

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- Under the leadership of center government, CNOOC Gas & Power is constructing Guangdong Dapeng, Fujian, Shanghai and Zhejiang LNG terminal project safely and in high quality, by taking the advantage of its resources, experiences, financing, credit, and management.
- China's first LNG terminal, Guangdong Dapeng LNG terminal will be online in Jun. 2006.

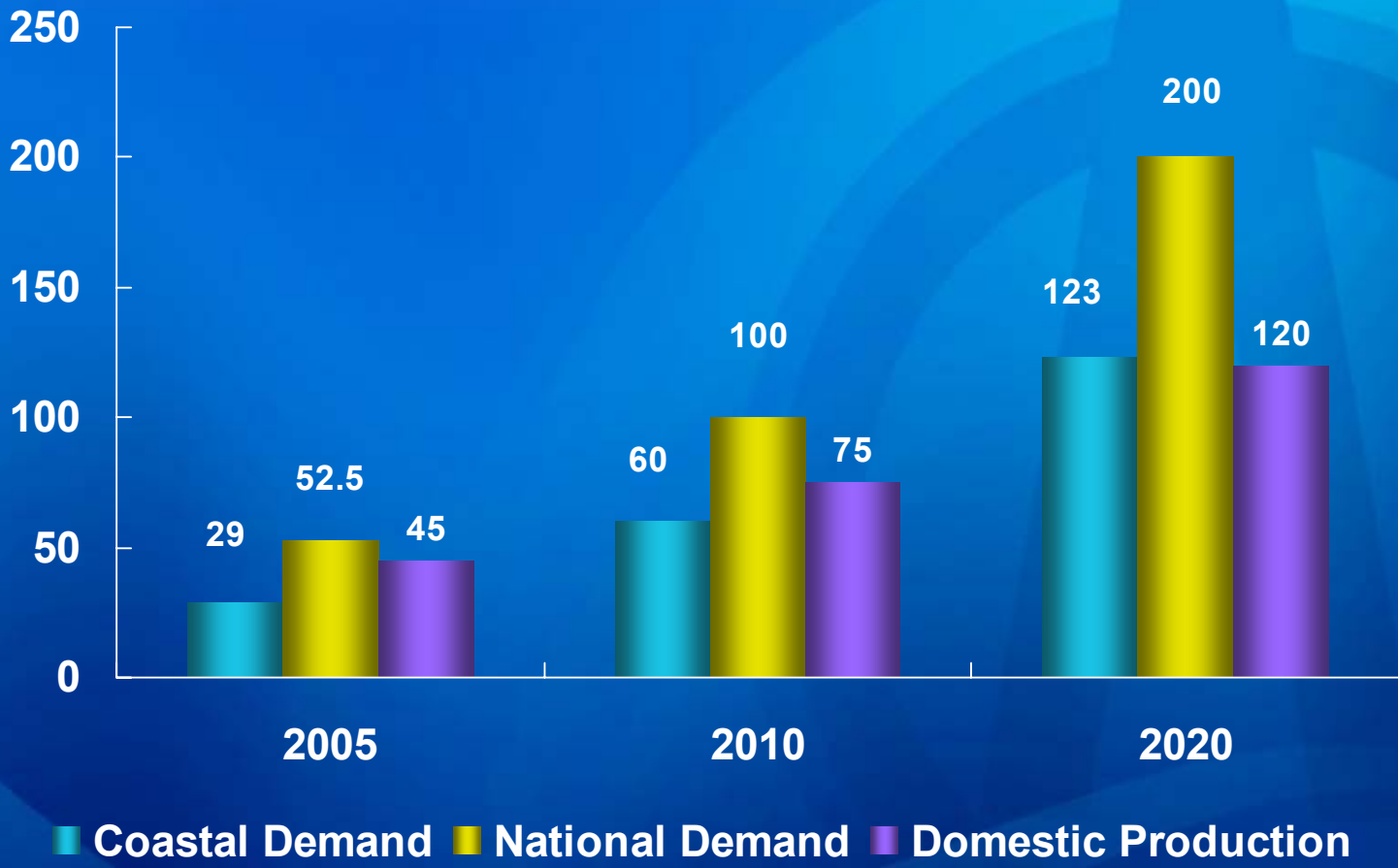


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# LNG Plays an Important Role in Gas Supply of China

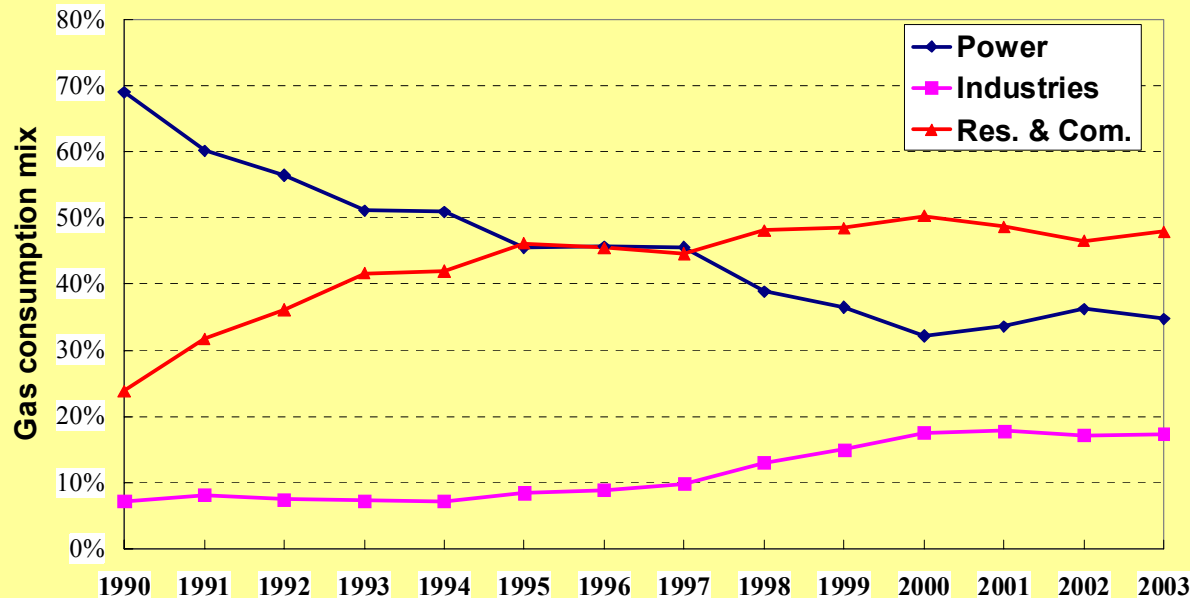
billion cubic meters





# Gas-fired power plants providing anchor for a large LNG project

### Trends of Gas Consumption in South Korea

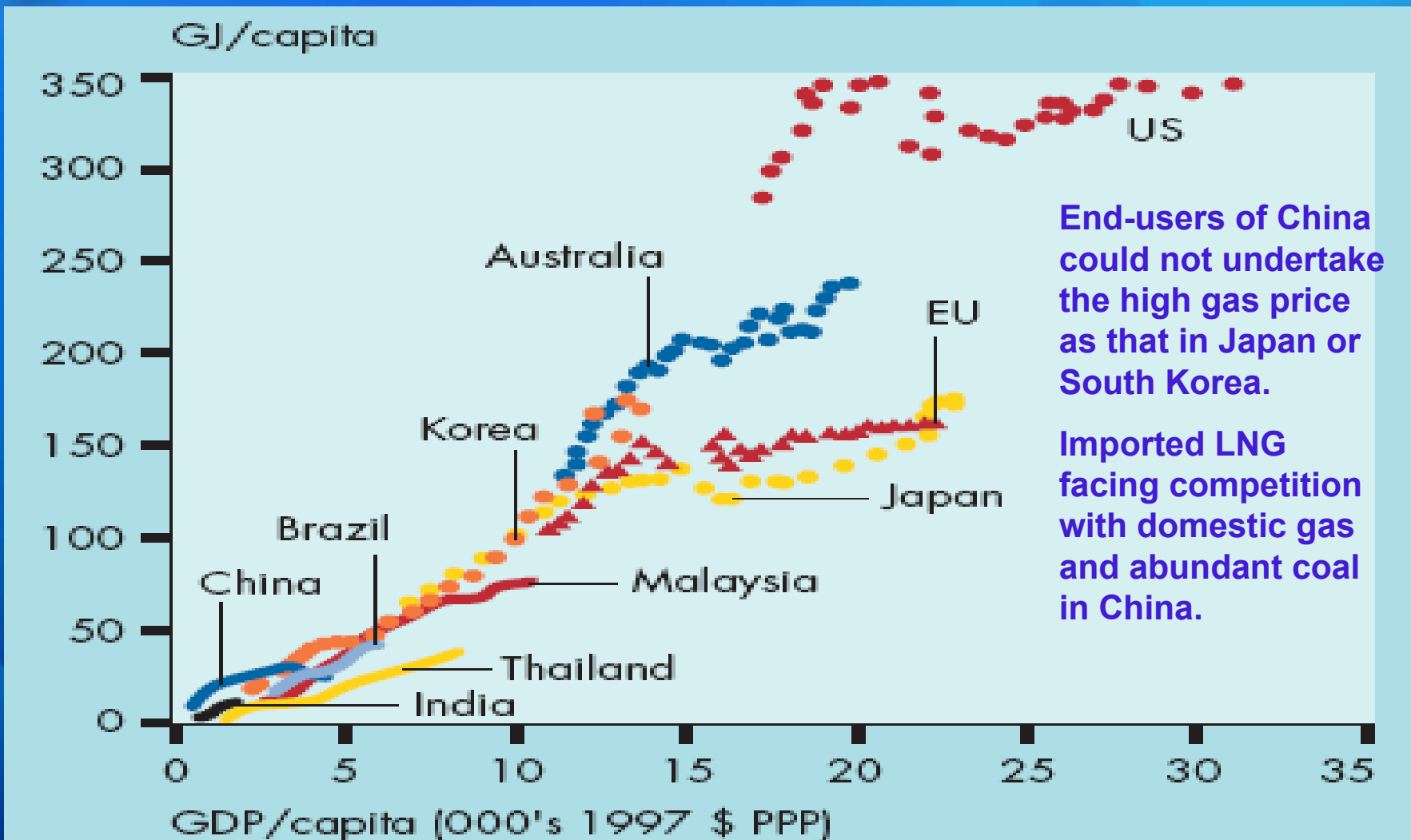


Similar to the early stage of South Korea gas market, gas-fired power plants are taking large quantity of gas to provide anchor for a large LNG project in China (55% of GD LNG, and 74% of FJ LNG)

Strong competition from abundant coal reserves, at low prices. China has strong domestic capability to manufacture coal-fired industrial boilers and power plants;



# China's Gas Market has its own feature



End-users of China could not undertake the high gas price as that in Japan or South Korea.

Imported LNG facing competition with domestic gas and abundant coal in China.



# Challenges Ahead

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- **Uncertainties caused by reform and transition, e.g. participation in price competition when gas-fired power plants connect to the grid;**
- **Gas is facing strong competition from abundant coal reserves, at low prices. Gas-fired power plants are taking large quantity of gas to provide anchor for a large LNG project, but they are not competitive to coal-fired power without policy support;**



# Summary

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- Clean energy supply is fundamental to the establishment of China's All-Around Well-Being Society in 2020.
- Meeting China's growing energy needs poses significant opportunities and challenges for natural gas. LNG Plays an Important Role in Gas Supply in China.
- The huge expanding market is inviting for each link of LNG supply chain. China LNG market development has its own characters. New challenges require government support and regulatory framework.
- Bolstering energy cooperation is necessary to the development of LNG business in China, which is also to the mutual advantages.



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Thank You!