

Gas Demand and Supply Outlook in China

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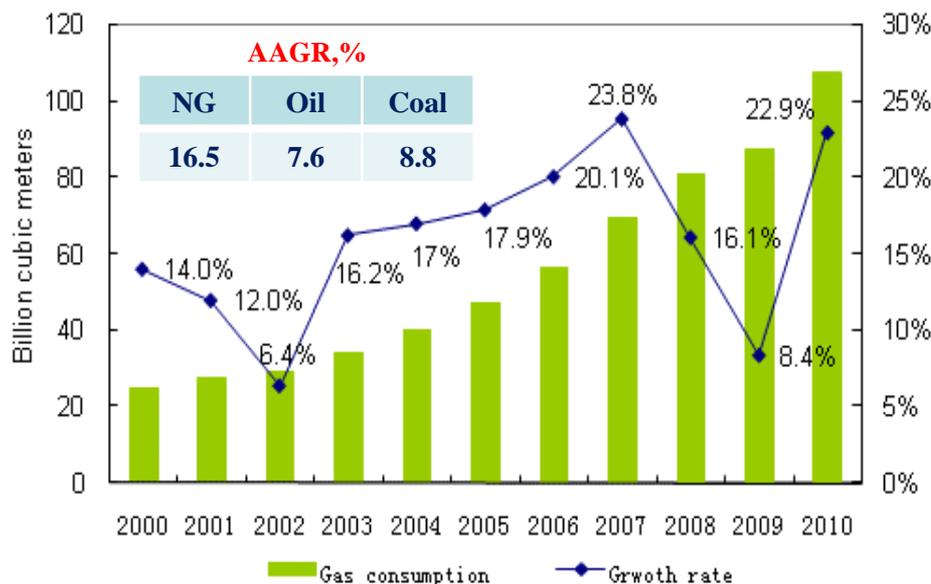


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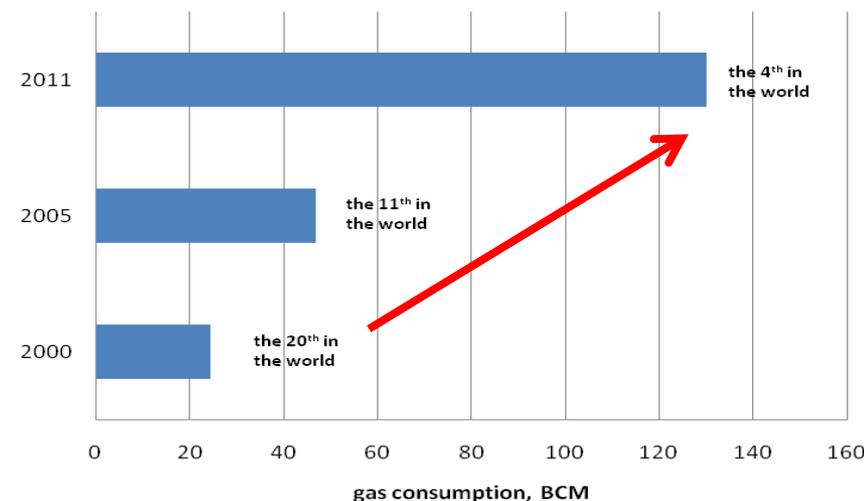
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Recent Gas Consumption Growth in China

Chinese gas consumption growth since 2000



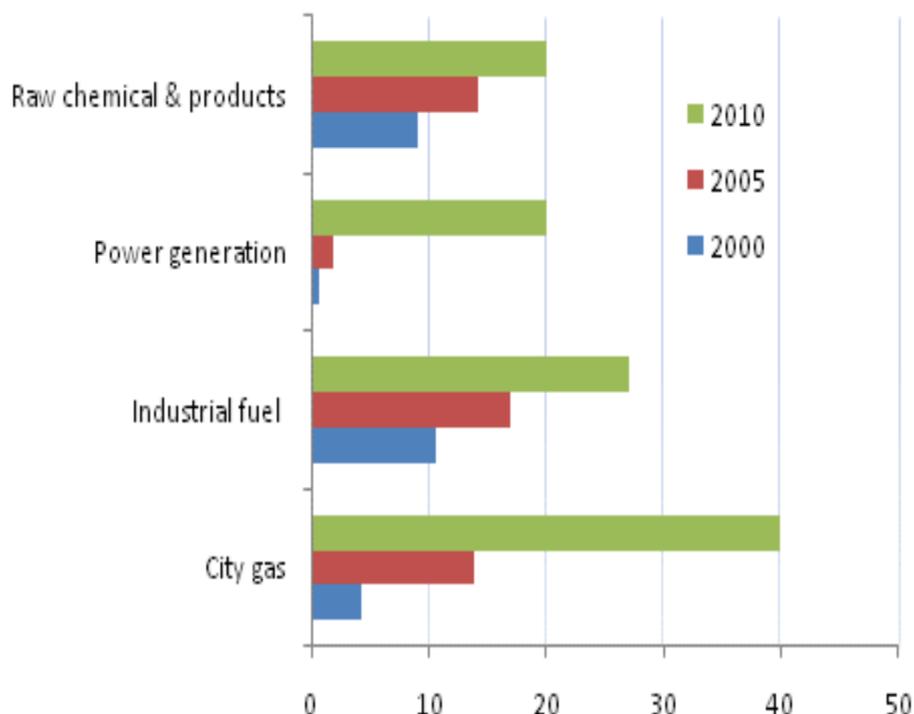
The rank of China's gas consumption in the world



- Natural gas has been the fastest growing fuel in China's primary energy consumption mix since 2000;
- China's gas consumption reached 130 BCM in 2011, 20.9% higher than that of 2010
- Incremental demand for gas accounted for 1/4 of the global incremental demand in 2011.
- China has become the fourth biggest gas consuming country in the world.

Recent Gas Consumption Growth in China

Gas consumption by sector (BCM)

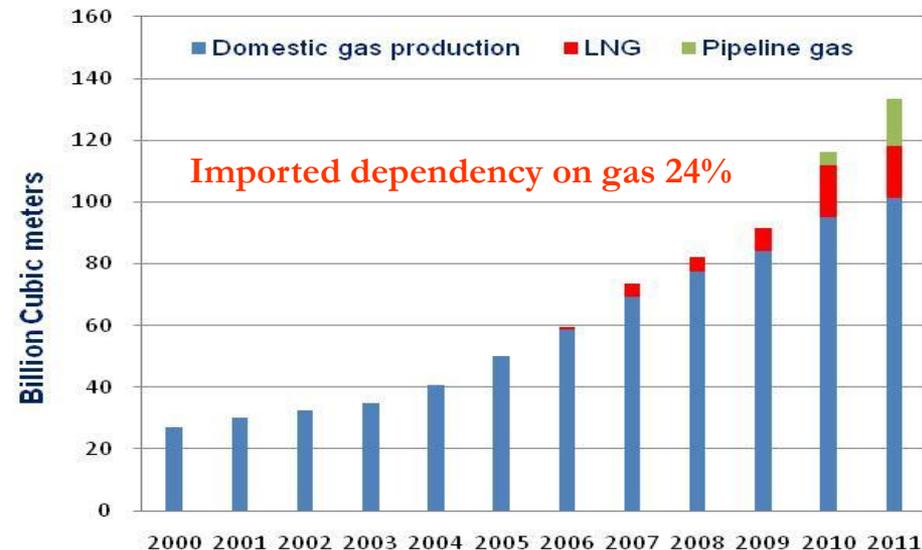


- Gas consumption by sector was further diversified. In relative proportional terms, city gas grows the fast together with power generation and industrial fuels. Gas consumption for chemical sectors continues to drop.
- With the pipeline build-up, Gas consumption market has been expanded to all the capital cities of the country and population consuming NG reached around 188 million people in 2010.

Recent Gas Supply Development in China

- Until the end of 2010, China's accumulated proved NG reserves reach 7.14 TCM and the ratio of reserves/production reaches 41 and demonstrates a very strong potential production.
- In 2011, China's total gas production was 101.1 BCM and dominated by CNPC(74.7%), followed by SINOPEC(14.2%), CNOOC(11%), and Shanxi Yanchang Oil Company 1%.
- China has built up 5 LNG receive terminals with the total capacity of 15.8 Mt/yr. and has 6 ongoing LNG projects with the total capacity of 18 Mt/yr.
- West to East second gas pipeline has been put operation with import gas of 15 BCM in 2011 .
- National pipeline trunk line network takes shape with the gas infrastructure build-up.

Natural gas supply increasing trend

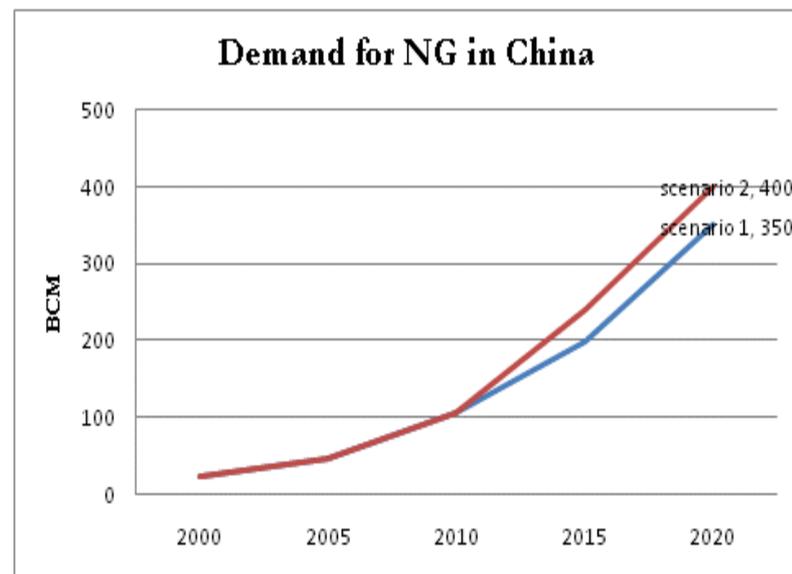


Gas supply mix of multiple for the first time took place in 2010.

China Natural Gas Demand Outlook

Key drivers of NG demand growth

- Continued economic growth in future
- Policy positive on gas demand growth.
 - China's 12th Five –Year Plan targets:
 - ✓ a 16% reduction in energy consumption per unit of GDP;
 - ✓ a 17% reduction in CO2 emission per unit of GDP; and
 - ✓ an increase of natural gas as a percentage of total primary energy from 4.3% in 2010 to 8.3% by 2015;
 - ✓ Key regional air pollution(PM2.5) control
- Energy Supply Security concerns
- Multiple source supply growth.
- Infrastructure build-up.



- In the next 10 years, China's demand for natural gas will increase rapidly.
- Coastal and central areas will become the centre of consumption driven by affordability, infrastructure build-up and enhanced supply. It is predicted that natural gas demand in the above regions will be around 70% by 2020.

Natural Gas Demand by Sector



- Rapid growth of the use of city gas together with gas-fueled vehicles.
- Relatively high speed development of natural gas use in industrial sectors, mainly serve as a substitute of fuel oil, diesel, LPG and supplement of the higher cost naphtha which is a dominant feedstock.
- Moderate development of gas-fired power
 - Gas-fired power plants as peak load;
 - Locally distributed power generation;
 - Mostly located in the eastern areas, southeastern areas and pan Bohai bay areas
- Gas demand growth pace for chemical sectors continues to drop



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Current Situation of China's Shale Gas Development

CNPC



SINOPEC



- The first/second shale gas bid round took place respectively in June of 2011 and in 2012;
- Shale gas: a new kind of mineral, No.172;
- The 12th Five-Year Plan (2011-20115) for shale gas development has been issued;
- In 2010 ~ 2011: some demonstration zones of shale gas were established;
- Drilled wells: over 60, including 15 horizontal ones
 - have shale gas production: 24 wells
- Subside policy to shale gas development:
 - shale gas producers ← RMB 0.4/m³
- Related researches on policy incentives to promote shale gas development are in progress.
- Since 2009, CNPC, Sinopec and other Chinese companies signed agreements for cooperative development of shale gas in China with Shell, ExxonMobil and other IOCs.

12th Five-Year Plan for Shale Gas Development of China

Targets by 2015:

- Complete adjustment and evaluation of nationwide shale gas resources potential
- 30~50 prospective zones and 50~80 favorable target zones are prioritized in the national investigation and evaluation for shale gas resources potential.
- prove recoverable shale gas reserves: 200 BCM
shale gas production: 6.5 BCM.
- Establish shale gas geological survey and resource evaluation technical methods and develop key technologies and accessory equipment for shale gas exploration and development.

To lay a solid foundation for the rapid Development of shale gas in the 13th Five-Year period.

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CBM Development of China

- China' CBM resources: 36.81 Tcm (no deeper than 2,000 meters underground in five major accumulated gas belts and forty coal basins)
- CBM production in 2010: over 1.5 Bcm
- Targets by 2015 (the 12th five-year plan for CBM development):
 - The incremental proven CBM reserves: 1 Tcm
 - CBM production(coal mine gas): 30 Bcm
 - Investment in exploration and development of CBM (2011-2015): 120 Billion yuan RMB



Domestic Gas Production Outlook

- According to the current proven reserves of natural gas, China will experience a fast development period of natural gas industry in the next 20 years.
- 4 large gas production bases with each gas production of 20 BCM will be built by 2015.
- It is predicted by domestic experts that the output of domestic natural gas will achieve 140—150 billion m³ by 2015 and over 250 billion m³ by 2020.

Conclusions

- Demand for gas in China will increase at a higher growth rate in a quite long period in order to cope with energy conservation and emission reduction, energy structure optimization, climate change and as well as energy supply security.
- China's gas industry has entered the stages of rapid development. China will form a domestic conventional gas, unconventional gas, coal to gas, imported pipeline gas and LNG diversified natural gas supply pattern.
- Unconventional gas will play an important role in China in terms of increasing domestic supply, alleviating dependence on international sources and ensuring energy supply security in the future.





Thank you for your kind attention!