第十五届中美油气工业论坛 (OGIF 2015)

中国天然气进口分析

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China’s 2014 gas consumption was estimated at 17.8 bcf/d, ranking the third in the world, trailing only the United States (73.5 bcf/d) and Russia (44.2 bcf/d).

China’s share in global gas consumption rose from 2.7% in 2008 to 4.3% in 2012. SIA Energy expects its share to reach 7.5% by 2020. China gas consumption remains low compare to other countries on per capita basis.
In the existing (2011-2015) and next Five Year Plan (2016-2020), Chinese government has committed to improve its energy mix by (1) Mitigating rapid total energy consumption growth through energy efficiency and shifting economic activity mix toward more service sector and more high-value added industry; (2) Tempering the use the coal and boosting cleaner alternative fuels to replace coal share in the fuel mix.
Natural gas in China’s energy mix is significantly lower than in OECD countries.
<table>
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<th>Priority</th>
<th>Permitted</th>
<th>Restricted</th>
<th>Prohibited</th>
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<td>City Gas</td>
<td>• Residential cooking and hot water</td>
<td>• Individual residential heating</td>
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<td></td>
<td>• Public service facilities</td>
<td>• Central heating to replace coal</td>
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<td></td>
<td>• Commercial</td>
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<td></td>
<td>• Central heating (existing + new)</td>
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<tr>
<td>Transport</td>
<td>• NGVs (dual-fuel and LNG-powered; truck, bus, taxi fleets)</td>
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<tr>
<td></td>
<td>• LNG-power ships for inland rivers, coastal trade</td>
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<tr>
<td>Industries*</td>
<td>• <strong>Interruptible</strong> supply to industries</td>
<td>• Replacing oil in industries</td>
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<td></td>
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<td>• New projects using natural gas</td>
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<td></td>
<td></td>
<td>• Replacing coal in industries</td>
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<tr>
<td>Storage, Others</td>
<td>• City gas storage facilities for peak shaving</td>
<td>• Mini LNG for peak shaving</td>
<td></td>
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<td></td>
<td>• Gas distributed energy with a utilization rate &gt;70%</td>
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<tr>
<td>Power</td>
<td>• CBM Power generation</td>
<td></td>
<td>• Baseload gas-fired power in major coal areas</td>
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<td></td>
<td>• Gas-fired Cogeneration</td>
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<td>(Anhui, Shanxi, Shaanxi, In. Mongolia)</td>
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<tr>
<td>Chemicals</td>
<td>• <strong>Interruptible</strong> gas to produce hydrogen</td>
<td>• Natural gas to hydrogen, except when interruptible</td>
<td>• Ammonia (green//brownfield)</td>
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<td>• As a raw material for other chemicals (acetylene)</td>
<td>• Methanol (green//brownfield)</td>
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<td>• Fertilizer (newbuild)</td>
<td>• Gas replacing coal for Methanol production</td>
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</tbody>
</table>

*Industries include: building materials, machinery, electronics, textile, petrochemical, metallurgy*
China Gas Imports by Source (2012-June 2015)

Source: SIA Energy created from China Customs data
China Gas Imports 1H 2015

- Turkmenistan: 47.5%
- Australia: 10.8%
- Indonesia: 6.5%
- Malaysia: 8.9%
- Myanmar: 5.5%
- Qatar: 9.3%
- Yemen: 1.2%
- Malaysia: 8.9%
- Uzbekistan: 2.6%
- Kazakhstan: 0.6%
- Other: 1.4%
- Papua New Guinea: 3.0%
- Egypt: 1.2%
- Trinidad and Tobago: 0.3%
- Nigeria: 1.4%
- Yemen: 1.2%

Source: SIA Energy created from China Customs data

Year-on-Year Growth of Gas Imports by Source 1H 2015

- Turkmenistan: 1.6 bcm
- Papua New Guinea: 1.0 bcm
- Malaysia: 0.6 bcm
- Myanmar: 0.5 bcm
- Indonesia: 0.3 bcm
- Yemen: (0.5) bcm
- Egypt: (1.5) bcm
- Qatar: (2.0) bcm

Source: SIA Energy created from China Customs data
China 2014: Gas Supply Cost Curve (@ average Brent $99/bbl)

Source: SIA Energy
过去十年保持量价齐增，2015年出现走势变化

Onshore Conventional Gas Realized Prices

Offshore Conventional Gas Realized Prices

Weighted Average Border Prices for Pipeline Gas Imports

Weighted Average CIF Prices for LNG Imports

Source: SIA Energy created from China Customs data
China’s economic restructuring lowered gas demand from high resource-intensive but low-value added industries. Power sector is experiencing its own over-supply cycle; gas power is facing competition from cheap coal and hydro power.

Market symptoms:

- Coastal LNG storages are currently full – NOCs have difficulty marketing their gas and try to delay their take-or-pay import deliveries, leaving the questions of “over supply”.
- Large-scale downstream users refuse to take more gas due to weakness in demand for their end-product and gas cost hike in relative to competing fuels.

SIA interpretation:

- The over supply challenge is real, but it is a temporary and localized issue. Reasons include:

  - The six-month lag in gas-on-oil pricing of Chinese imports makes retail gas too expensive in relative to oil in industrial and transport sectors.
  - China’s non-residential gas pricing reforms lifted prices for over half of China’s downstream users for three consecutive years, however, the oil-linked formula was not closely observed when oil prices fell.
  - Lack of TPA access to gas infrastructure: In an environment of falling international prices, NOCs are still hoping to market their old LNG imports linked with $100/bbl oil at cost plus, unwilling to sell at loss; lack of 3rd party access to LNG terminal and gas pipelines leaves buyers no alternative to source cheaper gas from international markets.
  - Provincial grids add cost: NOCs started to offer discount to direct supplied large industrial and power users, but they are reluctant to offer the same to the middle men – especially where provincial grids dominate local distribution.
  - City gas exclusive marketing rights defer rural pipeline development: City gas operators usually pick the more lucrative markets first and leave much rural areas uncovered. As China’s urbanization continues and trunk pipelines become more available, city gas sector still has room to expand, but this takes 2-3 years to develop.
  - Previously, due to limited gas supply, China’s gas utilization was constrained (certain gas-guzzling large industrial, chemical and power user were prohibited or restricted from gas access, even if they were willing and able to pay). With the newly available supply and infrastructure, gas utilization restriction is expected to be loosened, especially in the non-peak seasons.
Implications: Planned oil-to-gas conversion in the transport sector in 2H2014 had been delayed; some industrial users switched back to LPG or coal gas. Situation for gas is expected to improve in 2H2015.
下游：国内一半以上天然气消费量连续三年涨价

End User Pricing Mix in China’s Gas Consumption 2012-2015

55% of gas consumption
Price increased by $1.95/mcf from 2013 to 2015

17% Price drop by $1.95/mcf

28% No price change

Source: SIA Energy
天然气产业链结构导致价格传导不畅

- Onshore Conventional
- Pipeline Gas Imports
- LNG Imports
- Unconventional Gas
- Offshore Gas
- Inter-provincial Pipeline (direct supply)
- Inter-provincial Pipeline (non-direct supply)
- Regasification
- Liquefaction/Compression
- Terminal Associated Pipelines
- Trucked LNG / CNG
- Provincial Grid Distribution
- City Gas Distribution
- Power Generation
- Industries
- Commercial
- Transport
- Residential

Lack of supply competition and infrastructure access
Provincial grids add costs & undermine market potential
City gas exclusive marketing rights defer rural pipeline dev’t
They are market-pull (vs NOC’s supply-push approach): NOCs are historically upstream driven, and downstream gas was not their strategic focus in the past; on the contrary, most second-tier players want to import gas for self use or existing captive market, and can gain an upper hand in a buyer’s market.

The new LNG deals will have more competitive pricing structure and contract terms: with no historical baggage, their import deals can be more competitive vs NOC’s pipeline and LNG imports signed years ago in seller’s market. Supply and infrastructure competition will also enhance 2nd-tier players’ bargaining power in gas price negotiation with NOCs.

They can cut middle men and lower supply costs: some of them are provincial grids (Zhejiang Energy, Yudean), some are city-gas distributors (ENN, Shenzhen Gas, Guangzhou gas, Beijing gas) or LNG distributors. Cutting distribution layers can significantly improve cost competitiveness.

In a growing market with de-regulation trend, prime terminal sites with suitable port conditions along the coast line are scarce resources by themselves: companies with forward-looking visions have to position themselves early enough to occupy strategic sites in order to capture future market potentials.

They are more willing to offer TPA to other second-tier players: provincial or private players are more profit driven than NOCs and interested in improving utilization rate of their terminal investment.
China enjoyed double-digit gas demand growth until 2014. Demand slowdown was mainly due to supply/infrastructure monopoly, lag in price adjustment and incomplete cost pass-through along the value chain.
There will be additional LNG demand before 2020, mostly from second-tier LNG players for their under construction terminals. NOCs will take at least five years to digest their over contracted volumes before making new deals in the longer term.
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• Multi-Client Studies
  • China Reform Outlook (2014)
  • Chinese NOC Engagement Strategies (2014)
  • China Lubricants Market Report (2014)
  • Guangdong Gas Power Study (2015)
  • Yangtze River Transportation LNG Demand Outlook (2015)

• Maps
  • Printed wall maps and map books for China oil & gas infrastructure and markets
  • SIA oil and gas data terminal
  • Interactive mapping tool
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  • Includes Chinese national service companies (NSCs)
  • Characteristics and power mapping
  • Domestic and overseas investments and drivers

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  • Supply, demand, pricing, imports, infrastructure
  • National, regional provincial and sub-provincial
  • Service sector market outlook and demand drivers

• Market Entry, Growth Strategies and Partnership Strategies
  • Upstream (conventional, CBM, Shale, etc), midstream, downstream gas, downstream oil, service sector
  • Competitive landscapes
  • Partnering strategies with Chinese NOCs, Energy SOEs, NSCs and private companies

• Fiscal Terms and PSC Analysis
  • Model contracts and operational and fiscal term design for China-foreign shale gas PSC
  • Onshore conventional PSC model contracts
  • EOR PSC model contract

• Seminars and Trainings
  • Capacity-building for Chinese companies
  • Seminars on China’s market & policy environment for foreign companies

• Other
  • Due diligence
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<td>中国天然气市场数据库</td>
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