中国天然气市场发展新阶段：

机遇与挑战

The New Phase for Chinese Natural Gas Market:

Opportunities and Challenges

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1、中国天然气消费重回两位数增长
Growth of Gas Consumption in CHINA Back to Double Figures

- 2000-2013年，**中国天然气消**费年均增速曾高达16%。

  From 2000 to 2013，the average consumption growth of gas once hit 16%.

- 虽然消费量于**2016年突破**2,000亿方，但是过去**3年中国天然气需求增速放**缓。2014年**以来**，**受**经济下滑、暖冬连续、油价煤价下跌而国内气价上调等因素影响，2014-2016年**三年需求增速分**别下降至7.3%、4.8%**和**6.4%。

  Although the total quantity of gas consumption in 2016 made a breakthrough of 200Bcm, but the speed of growth upon demand edged down since 2014. The growth YOY from 2014 to 2016 are 7.3%, 4.8% and 6.4% respectively, shrinking from prior years' level due to the adjustment of economy, continuous mild winters and the descend of oil and coal price.

1、中国天然气消费重回两位数增长

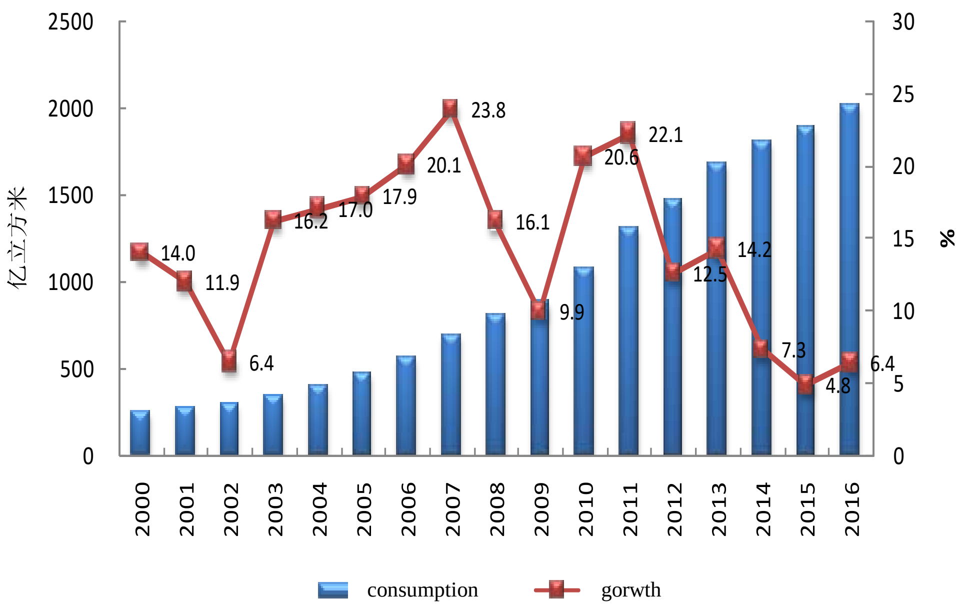
Growth of Gas Consumption in CHINA Back to Double Figures

- **2017年1-9月，** 受经济、环保政策、天然气相对替代能源经济性等因素驱动，全国天然气消费量同比增长*16.6%*。预计全年天然气消费增速将达*15%*。

  During the first three quarters of 2017, domestic natural gas consumption increased by 16.6% YOY, driven by economic factors, environmental policies and the competitiveness of gas relative to substitute resources as primary energy.

2000~2016年中国天然气消费及增长率

Consumption and Growth of Natural Gas, 2000-2016



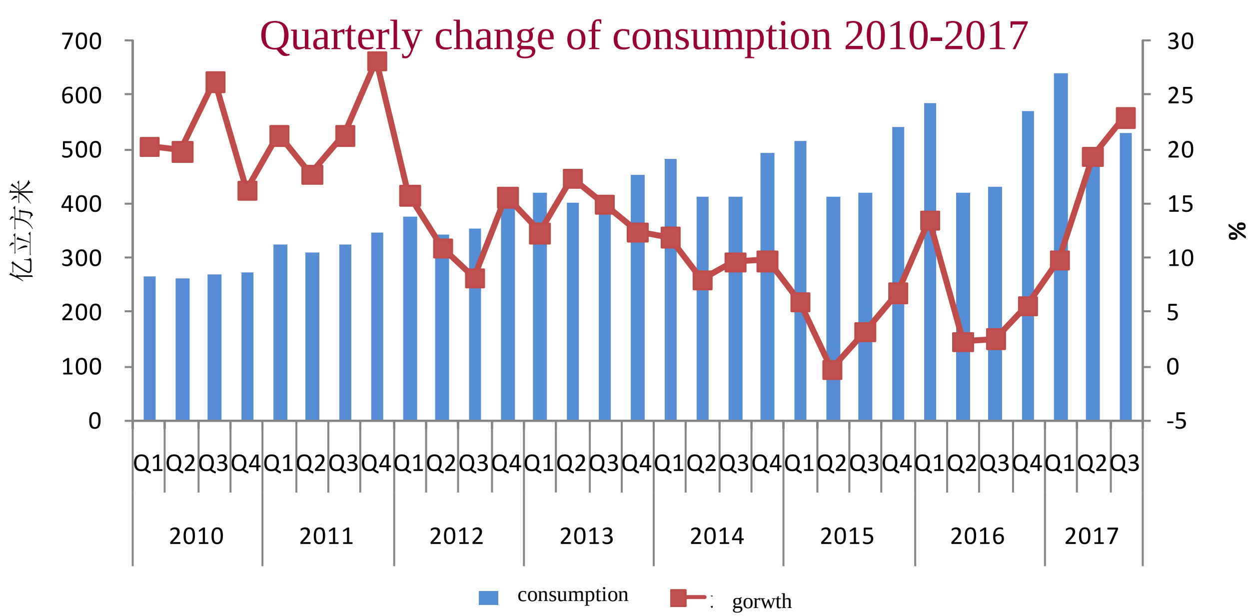
2、中国天然气“淡季不淡”特点突出

Market Features: Booming Demand in off-season

- 二季度和三季度为中国天然气消费的传统淡季，而今年有所不同，同比增速超过20%，与过去三年淡季的零增长或负增长形成鲜明对比。上半年消费增量已经超过120亿方，超过去年全年的增量。

  Q2 and Q3 are identified as off-season for gas traditionally. Nevertheless, it’s thoroughly different this year compared to the past, in the prior three years the growth rate sometimes fell down to zero or even negative. Based upon the data YTD, this year’s YOY growth can be predicted beyond 20%. The increase of consumption in H1 of 2017 has already exceeded 12Bcm, even higher than the total increase of the whole year of 2016.

2010-2017年我国天然气季度消费变化



2、中国天然气“淡季不淡”特点突出
Market Features: Booming Demand in off-season

➢ **主要因素**：

Main Incentives:

- 经济因素：宏观经济稳中向好（**一二季度增速均**为6.9%，**三季度**6.8%）
  主要用气行业行情改善（经济向好拉动钢铁、**玻璃、化工需求增加，价格回升**）
  Economy: Fundamentals maintained a smooth running (GDP: Q1/2 both 6.9%, Q3 6.8%).
- **政策因素**：环保政策助推煤改气项目完成投运（**采暖和工**业煤改气）
  Policies: Environmental policies stimulated the switch of Coal to Gas mainly in heating and industrial sectors.
- **价格因素**：**替代燃料价格上**涨，**天然气价格**竞争力回升（**煤价居近三年高位，油价相**对气价较高）
  Price: With the rising of the substitute energy, the competitiveness of gas was improved (coal price hit 3-years' peak, oil price ran relatively higher than gas).
- 长三角地区外来供电设施检修、**水**电发电量下降等
  The declines upon the power generation caused by maintenance of power plants and grid facilities and decrease of hydropower in Yangtze River Delta.

3、 国产气增速箭头开始向上，供应**保障能力不断增**强

Domestic Production Growth Picked Up, Supply Capacity Secured

- 2000-2015年，**国内天然气**产量从270亿方增长至1320亿方，年均增速11%。**但是,近年来增速不断下滑。**

  From 2000 to 2015, domestic production increased at the speed of 11% YOY, and from 27Bcm to 132Bcm. However the momentum has been decelerated recently.

- 2016年，**受需求**总体不振和LNG进口量大幅增长影响，国内天然气产量（含煤制气）受到压减，国内天然**气供**应量1344亿方，同比增长1.6%。

  In 2016, domestic production was constrained owing to the weak demand and sharp growth in LNG imports. Domestic supply contributed 134.4Bcm, increased by 1.6% YOY.

  - ✓ 页岩气：产量约79亿立方米，增长34亿方，较上年增长76.3%，**主要来自中石化和中石油。**

    Shale gas: around 7.9Bcm, increased by 76.3% YOY, mainly from Sinopec and CNPC.
  - ✓ **煤**层气：地面抽采量近45亿立方米，同比增长13%。

    Coalbed methane : around 4.5Bcm, increased by 13% YOY.
  - ✓ **煤制气**：产量约16亿立方米，同比增长14.5%。

    Coal gas: around 1.6Bcm, increased by 14.5% YOY.

3、 国产气增速箭头开始向上，供应**保障能力不断增**强

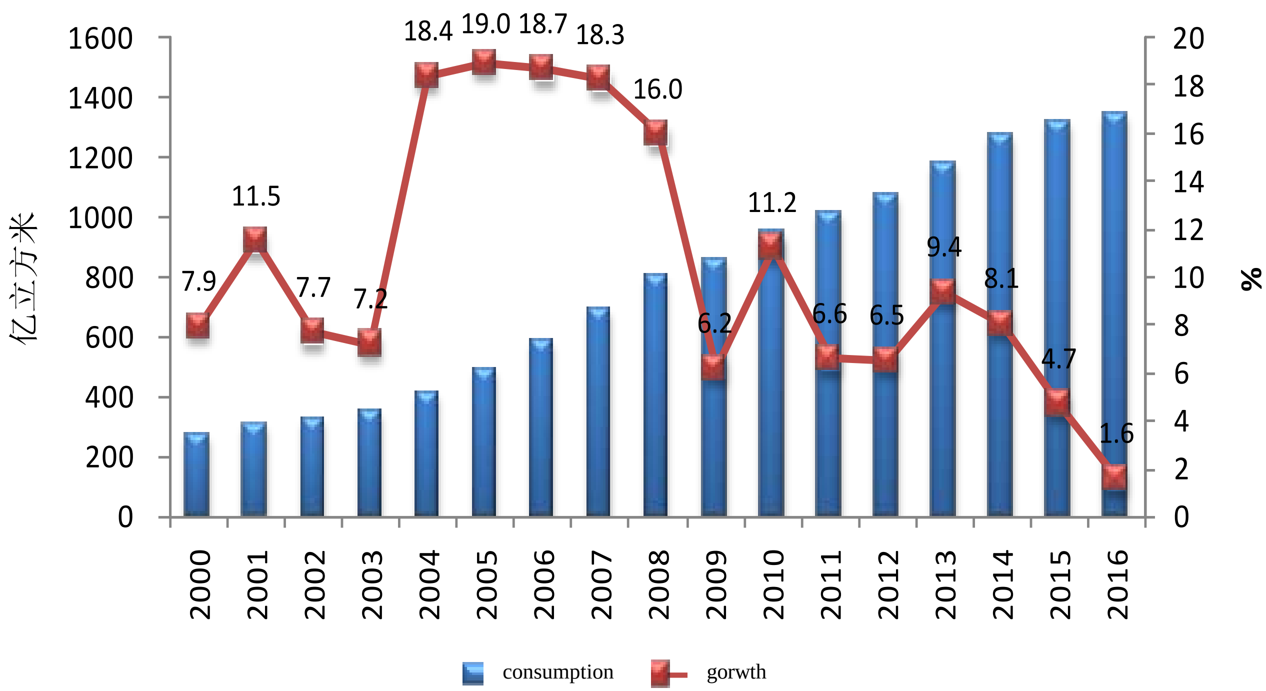
Domestic Production Growth Picked Up, Supply Capacity Secured

➢ 2017**年**1-9**月国内天然气累**计产量1073亿立方米，同比增长10.9%；**加上煤制气**16.3亿**立方米**，**国内**总供应量1088亿方，同比增长10.8%。

Statistics demonstrates, in the first three quarters， domestic gas field production accumulated to 107.3Bcm , increased by 10.9% YOY. and total gas production up to 108.8Bcm, increased by 10.8%,including coal gas which amount to around 1.6Bcm.

2000~2016**年中国天然气**产量

Chinese Gas Production from 2000 to 2016



4、进口气加速增长，LNG进口超过管道气

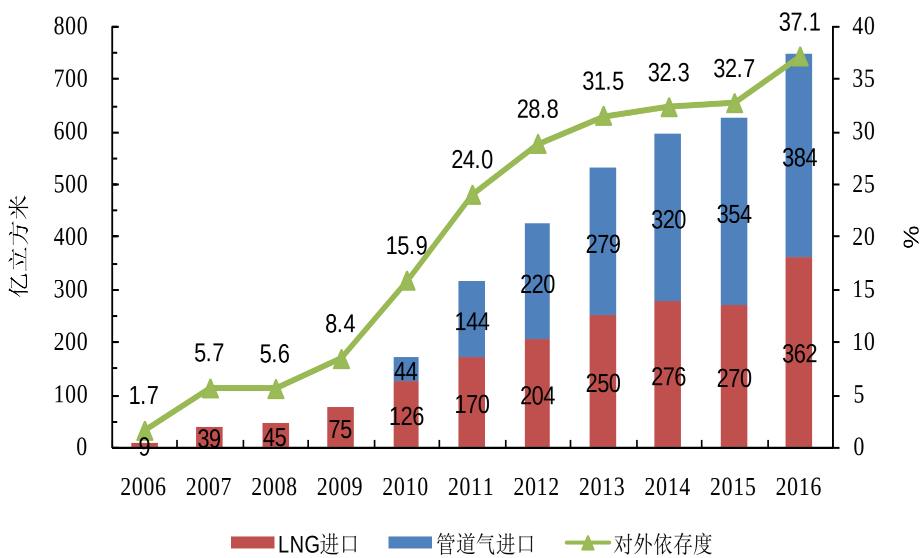
Import Surged, and LNG surpassed PNG

- 2017年1-9月， 国内累计进口天然气648亿立方米，同比增长21%， 高于去年同期的18%。
In Jan-Sep 2017, the total import was 64.8Bcm, increased by 21% YOY , whereas the growth rate of last year was 18%.
  - ✓ 管道气315亿立方米，同比增长7.7%
  The imported PNG was around 31.5Bcm, increased by 7.7% YOY
  - ✓ LNG333亿立方米，同比增长35%
  The imported LNG was around 33.3Bcm, increased by 35% YOY

- 中国天然气对外依存度今年已升至40%以上。
China's dependence on imported natural gas rose over 40%.

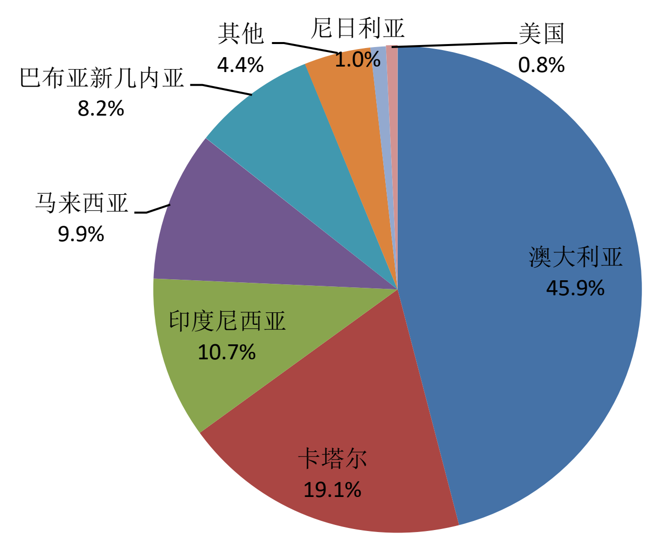
2009~2016年中国天然气对外依存度

China's dependence on imported gas, 2009-2016



2016年我国LNG进口来源

The import resource in 2016



5、中国天然气市场面临的挑战——一是冬夏季峰谷差加大
Challenges to Chinese Gas Market: Expanding Peak-Valley Gap

- **随着采暖煤改气的推**进，中国冬夏季用气峰谷差进一步加大。储气调峰和应急能力不足是**当前制**约天然气市场发展的突出问题。

  With the implementation of the switch of coal to gas in heating sector, the peak-valley gap of gas consumption further widened. Insufficient peak shaving capacity and emergency responding capability restricted the development of the gas market.

- **截至2016年底，中国建成18座地下**储气库，工作气量**61**亿方**/年，占全国消**费量的比重为**3%,**远远低于天然气消费大国的**15%-30%水平。**

  Up to 2016, China has built 18 underground gas storages with working gas capacity of 6.1Bcm per year, which accounts for 3% of domestic consumption, far lower than those mature markets(around 15%-30%).

- **市**场化的价格机制尚未最终形成，对市场供应能力形成制约。

  The market pricing mechanism is not established yet, which restricts the supply capacity.

5、中国天然气市场面临的挑战——一是冬夏季峰谷差加大
Challenges to Chinese Gas Market: Expanding Peak-Valley Gap

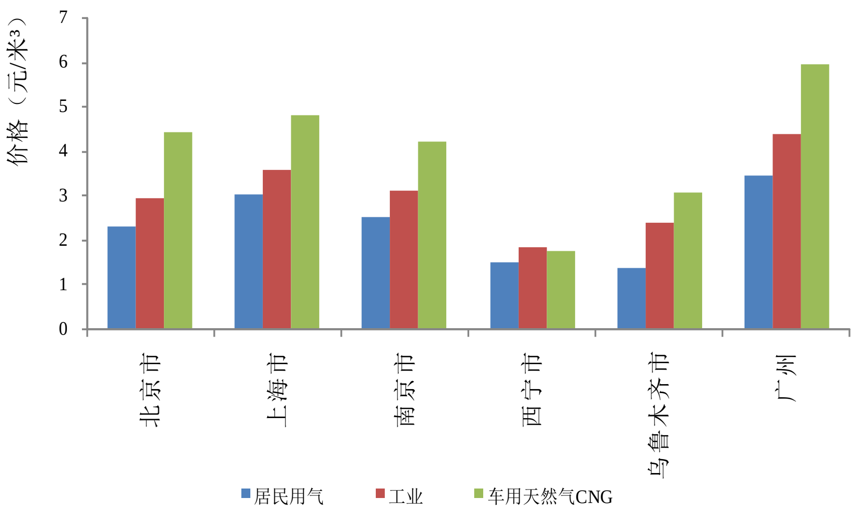
国外典型国家地下储气库工作气量

The working capacity of foreign underground gas storages

国家	储气库数量 个	工作气量 亿方	最高采气量 亿方/日	天然气消费量 亿方	占消费量比重 %
美国	400	1337	33.36	7594	**17.6**
俄罗斯	24	696	7.37	4092	**17.0**
乌克兰	13	322	2.87	384	**83.9**
德国	53	246	6.37	709	**34.7**
加拿大	61	232	3.60	1042	**22.3**
意大利	12	170	3.33	568	**29.9**
法国	13	122	2.70	359	**34.0**
荷兰	5	102	2.17	321	**31.8**
奥地利	9	82	0.94	78	**105.1**
澳大利亚	7	64	0.21	292	**21.9**

不同地区终端用户天然气价格

End Users' Gas Prices of different regions



6、中国天然气市场面临的挑战——二是进口天然气价格回升

Challenges to Chinese Gas Market：Import Price rebounded

- 进口天然气价格回升加大国内供气成本。

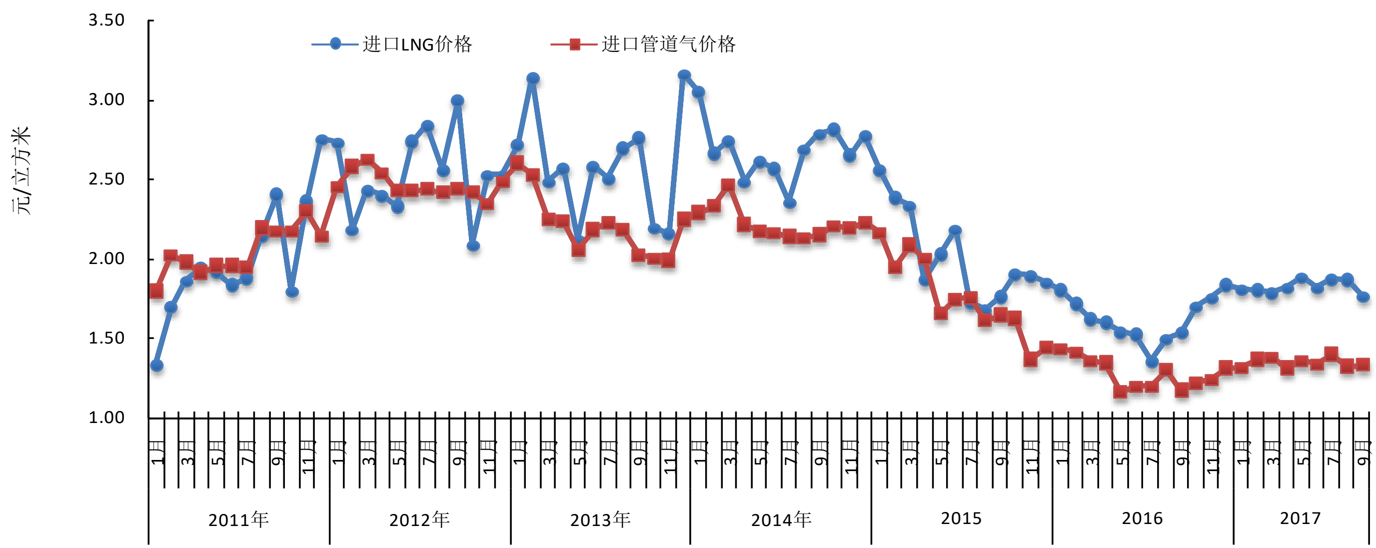
  Domestic supply cost is driven higher by rebounding import price.

- 9月，**我国**进口**LNG到岸均价1.77元/立方米**，**同比上涨**15%。

  The average DES LNG price is 1.77CNY/cm in Sep, increased by 15% YOY.

- 9月，进口管道气到岸价**1.33元/立方米**，**同比上**涨14%。

  The average DAP PNG price is 1.33CNY/cm in Sep, increased by 14% YOY.



7、中国天然气市场面临的机遇——政策频出，推动天然气行业发展

Opportunities to Chinese Gas Market : Policies Promoting Development

➢ 围绕天然气规划、利用、价格和机制等方面，今年以来国家部委发布《天然气发展“十三五”规划》、《关于加强配气价格监管的指导意见》、《加快推荐天然气利用的意见》、《中长期油气管网规划》、《京津冀及周边地区2017-2018年秋冬季大气污染综合治理攻坚行动方案》等12项规划、政策。地方政府积极出台相关规划和政策。

Concentrating on planning, utilization and price mechanism of gas industry, China National authorities have released a set of policies to push forward the development of market. Local governments have also actively introduced relevant blueprints and measures to respond to the new reform.

1月

- 《2017年能源工作指导意见》，国家能源局
- 《加快推进天然气利用发展的指导意见》，山东发改委
- 《河北省天然气发展“十三五”规划》，河北发改委

2月

- 《能源生产和消费革命战略（2016-2030）》，国家发改委和能源局
- 《能源发展“十三五”规划》，国家发改委
- 《天然气发展“十三五”规划》，国家发改委
- 《关于推进天然气市场化改革加强地方配气价格监管的通知》，山西省

3月

- 《京津冀及周边地区2017年大气污染防治工作方案》，国家多部委和地方政府
- 《油气产业“十三五”发展规划指导意见》，海南省

4月

- 《江西省“十三五”天然气发展规划》，江西省
- 《关于优化天然气价格机制等有关问题的通知》，福建省

5月

- 《加快推进天然气利用的意见》，13部委联合发布
- 《关于加强配气价格监管的指导意见》，国家发改委
- 《北京市城镇居民“煤改电”、“煤改气”相关政策的意见》，北京市
- 《能源发展“十三五”规划》，贵州省

6月

- 《关于深化石油天然气体制改革的若干意见》，中共中央和国务院
- 《关于开展中央财政支持北方地区冬季清洁取暖试点工作的通知》，财政部
- 《上海市能源发展“十三五”规划》，上海市
- 《“十三五”能源发展规划》，江苏省
- 《湖北省天然气发展“十三五”规划》，湖北省

7月

- 《石油天然气规划管理办法》，国家能源局
- 《长江干线京杭运河西江航运干线液化天然气加注码头布局方案（2017—2025年）》，国家交通部
- 《京津冀及周边地区2017-2018年秋冬季大气污染综合治理攻坚行动方案》，环保部等
- 《关于加快推动“气化辽宁”工作方案》，辽宁省
- 《关于降低企业用气成本的通知》安徽省，江苏省

8月

- 《中长期油气管网规划》，国家发改委和能源局
- 《关于强力推进大气污染综合治理的意见》，河北省
- 《关于加强天然气分布式能源项目管理的指导意见》,四川省
- 《北京市“十三五”时期能源发展规划》，北京市
- 《新疆能源综合改革试点方案》，新疆省

7、中国天然气市场面临的机遇——政策频出，推动天然气行业发展
Opportunities to Chinese Gas Market : Policies Promoting Development

一是前不久结束的中国共产党第十九届代表大会，将生态文明建设、绿色发展理念以及建设美丽中国提**到了全新高度。中国将**认真履行《**巴黎**协定》， **北方“2+26”城市清**洁采暖全面铺开，环境保护税即将自2018**年开征**。

In the 19th CPC National Congress, the concept of ecological civilization construction, green development and construction of beautiful China was highly addressed and brought up to great importance. China will implement Paris Agreement seriously, promote northern "2 + 26" cities clear heating plan and levy environmental duty in 2018.

二是“利用政策”明确天然气清洁能源地位，提出推动天然气利用四项重点任务（城镇燃气、天然气发电、**工**业燃料升级、交通燃料升级工程），明确了未来市场利用的主推方向在北方地区清洁取暖、城镇及农村居**民用气、天然气分布式能源、天然气**调峰电站、天然气热电联产、工业领域“**煤改气**”、**天然气**车船等，这为**公司**发挥一体化产业优势、进一步延伸产业链指明了方向。

The new policy clearly classifies Gas as a clean energy, and requires four areas of efforts to promote gas utilization, i.e., Urban Gas Engineering, Gas-fired Power Generation, Industrial Fuel Upgrading, and Transportation Fuel Upgrading. The policy also makes clear the main realms of natural gas future utilization, which are heating in northern cities, urban and rural residential demand, distributed energy etc., benefiting CNPC from integrated industry and extended industry chains.

7、中国天然气市场面临的机遇——政策频出，推动天然气行业发展

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三是非居民天然气销售价格将加速市场化，终端消费者用气成本必然降低。 **2017年9月1日起**，**国家**发改委将非居民用气门站价格下调**0.1元/立方米。**

The speed of marketization of non-residential gas price will be accelerated, which will lower end-users' costs. NDRC cut non-residential city gate price by 0.1CNY/cm since Sep 2017.

四是管网改革加快落地，**准入范**围全面扩大。可以预计，我国配气与销售业务分离将加快推进，用户自主选择气源将最终得以实现，下游市场的竞争性将日益激烈。

The step of reform of pipeline network is being fostered, adopting more players into the market. Predictably, the separation of gas distribution and sales will be promoted, and end-users will be free to choose the supplier, making the downstream market more competitive.

凡此改革的最终目的在于让利于消费者，意味着天然气终端价格下降空间加大并刺激终端用户的需求进一步增长。

The ultimate goal is to benefit consumers, to lower gas price and to stimulate demand.

8、未来天然气市场潜力仍然巨大
Potential Market Growth Predictable

- 《能源发展战略行动计划（2014-2020年）》、《能源十三五规划》、《天然气十三五规划》提出，2020年天然气占一次能源的比例将达到10%；到2030年将达到15%。

  According to the state's strategy , the proportion of Gas among the primary energy consumption should accounts for 10% in 2020, and will be further expanded to 15% in 2030.

- 今年7月份，中国政府出台了《加快推进天然气利用的意见》，明确中国天然气市场的发展目标是将天然气逐步培育为能源消费结构的主体之一，按照2020年能源消费总量48亿吨标煤、2030年60亿吨标煤计算，2020年我国天然气消费量将达到4000亿立方米，2030年超过6000亿立方米。

  Chinese government published Natural Gas Promotion Plan in Jul 2017, and clarified that natural gas would constitute one of the main primary energies consumed. Assuming that the total energy consumption would increase to 4.8 billion ton standard coal in 2020 and 6 billion ton standard coal in 2030, gas consumption would hit 400Bcm in 2020 and over 600Bcm in 2030 accordingly.

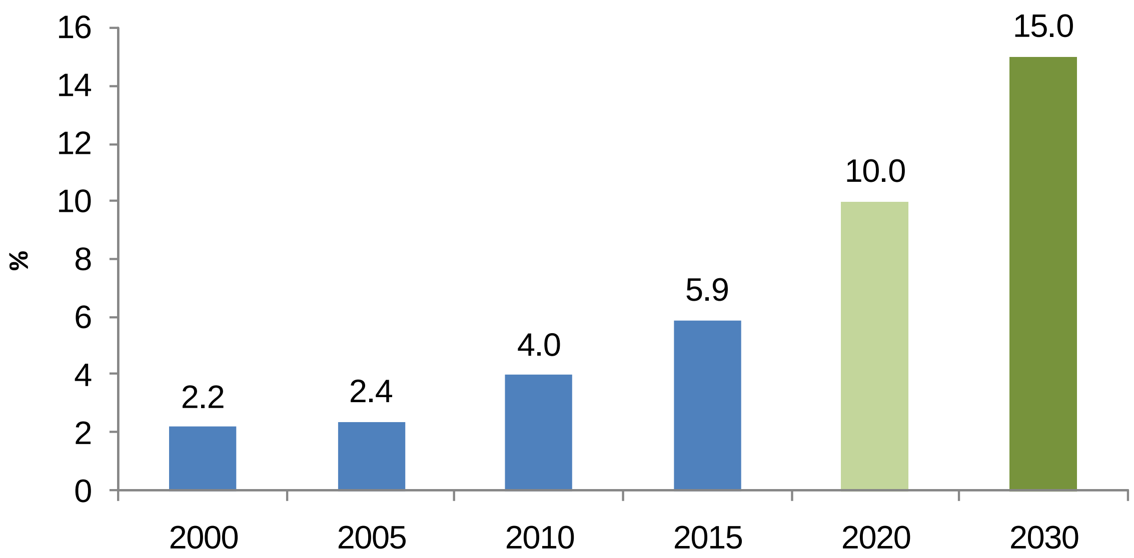
8、未来天然气市场潜力仍然巨大

Potential Market Growth Predictable

2020和2030年天然气占一次能源比重规划目标

Proportion of Natural Gas in Primary Energy Consumption

2020,2030



9、进口天然气资源考量因素

Sensitive Factors Affecting Import

- **天然气是清**洁低碳能源，使用便利，与可再生能源具有较好的互补性，未来中国天然**气需求仍将逐步增**长，同时随着对外依存度的不断提高，进口天然气数量也将不断增加。
As clean and low-carbon energy, gas is ideally complementary with renewable energy. Chinese gas demand will keep growing in the future, and the amount of imported gas will ascend at the same pace.

- **当前国内市**场存在着资源供应能力、设施建设等与天然气需求之间的矛盾，以及国内**可承受的气价水平与天然气成本之**间的矛盾。
Currently, there are two main conflicts: the conflict between the increasing gas demand and the insufficient supply and infrastructure; the conflict between the demand affordability and costs of supply.

- **目前美国**LNG项目在稳定性、经济性、灵活性方面都有独特之处，双方有合作潜力。
The current US LNG projects are unique in terms of stability, economy and flexibility ,which may help potential bilateral cooperation.

9、进口天然气资源考量因素

Sensitive Factors Affecting Import

- 结合中国天然气实际情况，进口天然气资源有以下的比选考量因素：
  Factors Affecting Natural Gas Import:

		稳定性 Stability	经济性 Affordability	灵活性 Flexibility
供应环节 Supply-side	生产商环节 Suppliers	1、是否充足气源; Sufficient resource 2、是否有设施、资金、技术保证平稳生产 The availability of infrastructure, capital and technology to secure production	1、气价高低； Gas price level 2、气价未来波动性; Volatility of price in the future	是否能够按照买方要求根据需求安排供应 supply in accordance with buyers' requirement and demand,destination flexibility
	运输环节 Transportation	1、是否有稳定的运输能力 Stability of freight capability 2、运输是否安全可靠 Reliability of transportation capability	运输价格高低 Freight level	是否能够按照买方要求根据需求安排运输 Delivery in accordance with buyers' requirements and demand
需求环节 Demand	消费设施环节 Infrastructure	需求环节管道、接收站、储气库等储运设施是否与天然气资源匹配，是否需要新增投资。 Pipeline, terminals and storages should match gas resources; whether need new investment or not		

- ✓ 经济性方面需综合考虑气价、运输费、新增消费设施投资等综合成本，国内市场销售价与国产常规气和非常规气（煤制气、煤层气、页岩气等）新增产能成本、替代能源价格、现有进口项目价格、潜在进口项目价格相比。
- ✓ Price, shipping cost and new infrastructure investment should be taken into consideration. Also, marginal costs of domestic conventional and non-conventional gas supply, price of substitute energy, gas price of existing and potential importing projects should be compared with domestic sales price.

谢　谢！

Thank you!