



# Gas 2019 and Global Gas Security Review 2019

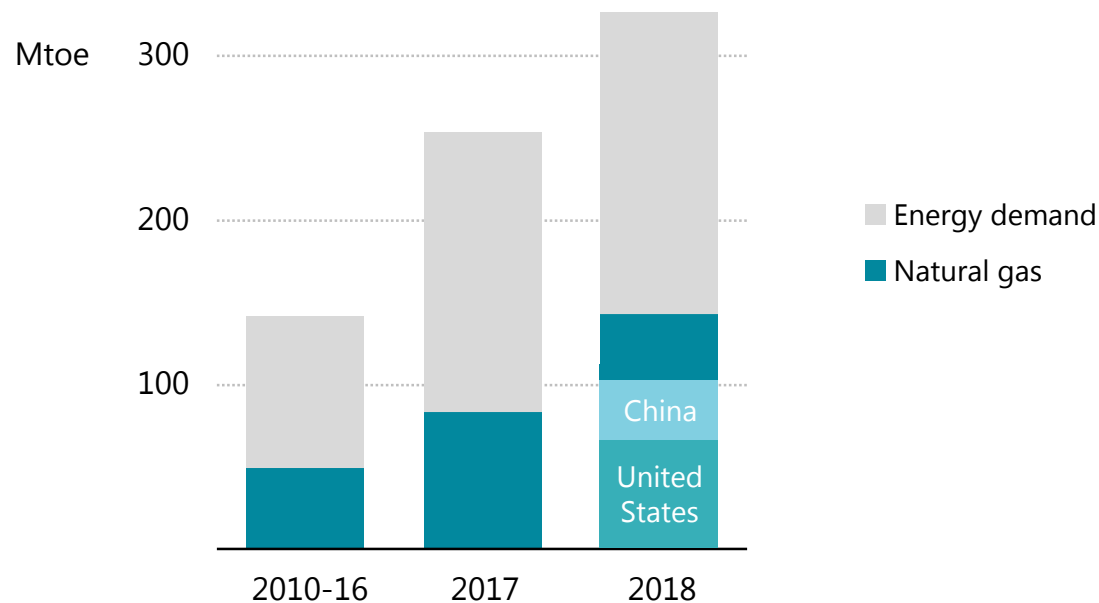
## 2019天然气发展和全球天然气安全回顾

Peter FRASER, Head of Gas, Coal and Power Markets Division

Beijing – CNPC ETRI 12 December 2019

# 2018 was another golden year for natural gas 2018年又是天然气发展的黄金时期

Average annual change in global primary energy demand, 2010-18  
2010年至2018年 全球一次能源需求平均年变化量



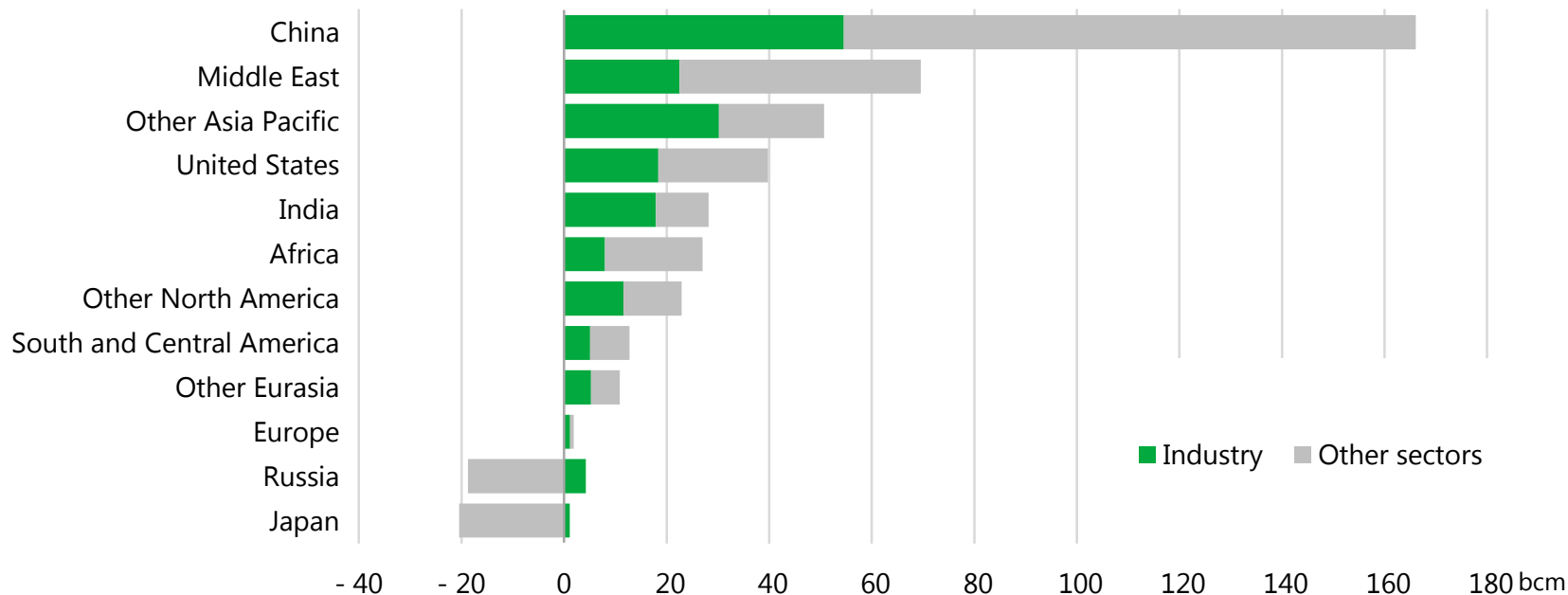
Gas demand jumped by 4.6% in 2018, accounting for nearly half of overall demand growth. The United States and China led the growth.

2018年，天然气需求量攀升了4.6%，占总能源需求量的近一半，其中美国和中国引领该增长

# Fast growing Asian markets drive future gas demand

## 快速发展的亚洲市场引领未来天然气需求

World natural gas consumption growth for selected countries and regions, 2018-24  
2018年至2024年 全球部分国家和地区的天然气的消费增长水平



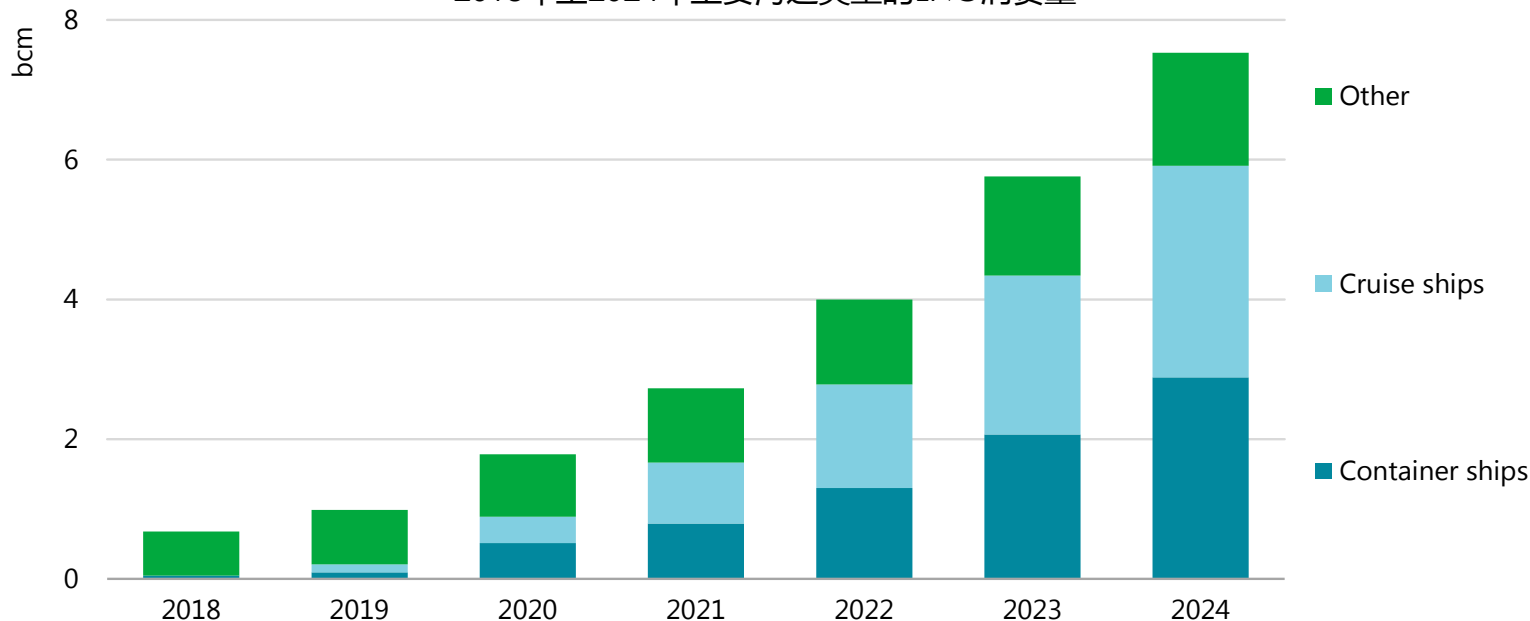
China accounts for over 40% of global gas consumption growth. All sectors contribute to growth, with industry taking the lead in most markets.

中国占全球天然气消费增长的40%，各部门都助力于该增长，尤其是工业部门发挥引领作用

# LNG emerges as an alternative marine fuel

## LNG 逐渐成为船用燃料的代替方案

LNG consumption for maritime shipping by main segment, 2018-24  
2018年至2024年主要海运类型的LNG消费量

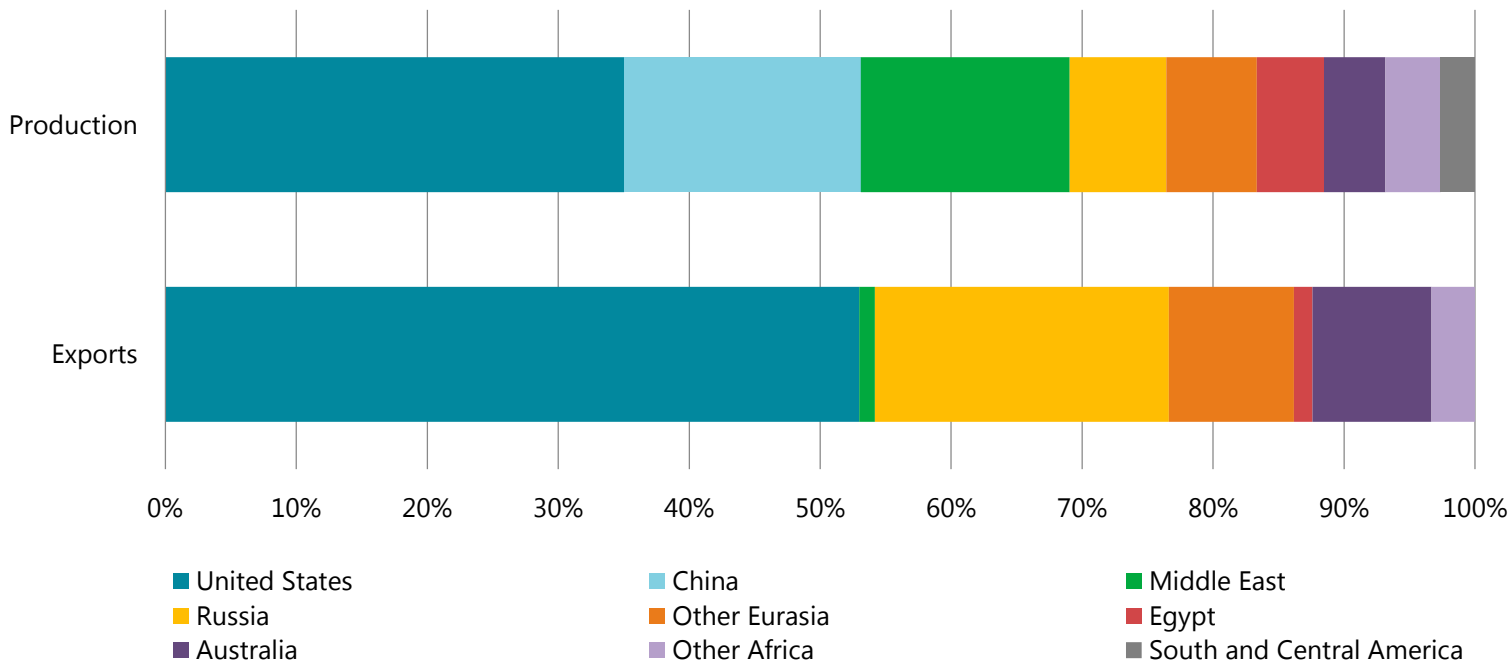


The growth in LNG as a marine fuel is supported by two main segments – cruise and container ships – which account for 80% of expected consumption by 2024.

LNG作为船用燃料的增长主要由于邮轮和集装箱船，至2040年，这两个部门将占预期消费量的80%

# The United States leads production and exports growth 美国引领全球天然气生产和出口的增长

Contributors to natural gas production and export growth, 2018-24



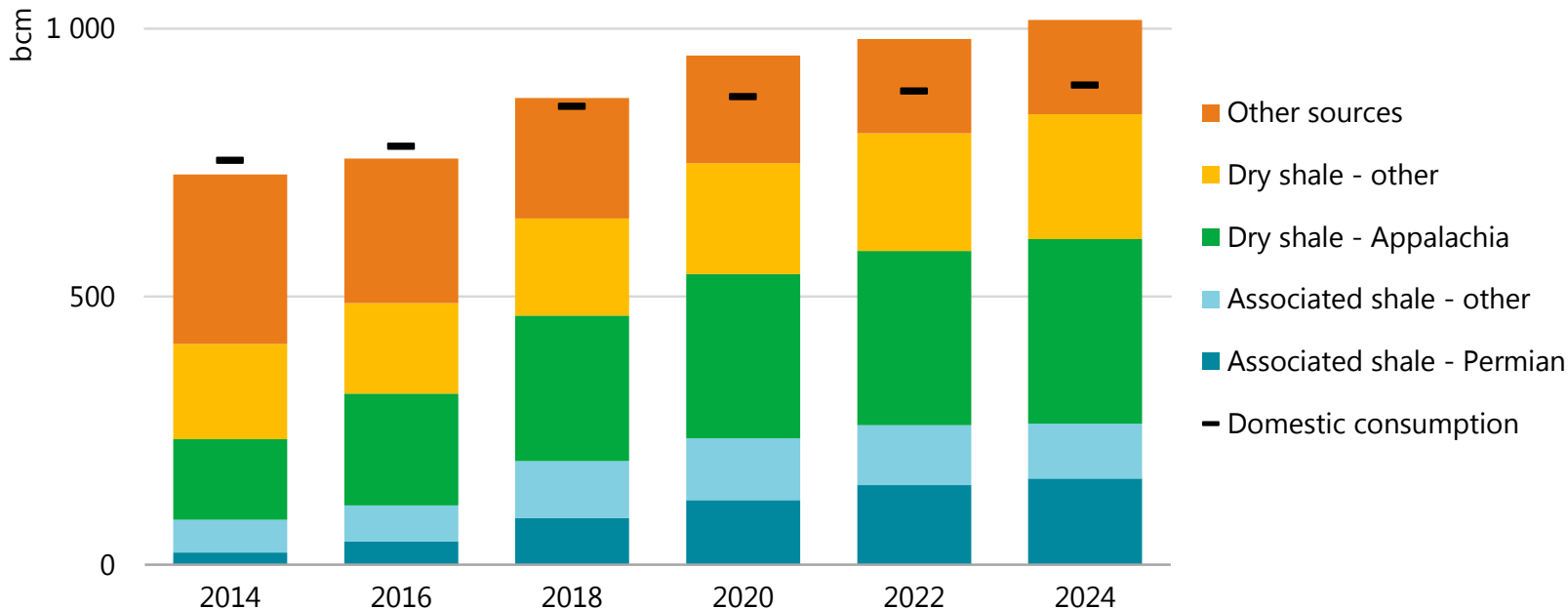
The United States and China account for over half of total production increment to 2024. US and Eurasian exports dominate LNG and pipeline trade growth.

到2024年，美国和中国占总生产增量的一半以上。美国和中亚的出口量将主导LNG和管道贸易的增长

# US natural gas production reaches 1 tcm mark by 2024

## 至2024年 美国天然气产量将高达1万亿立方米

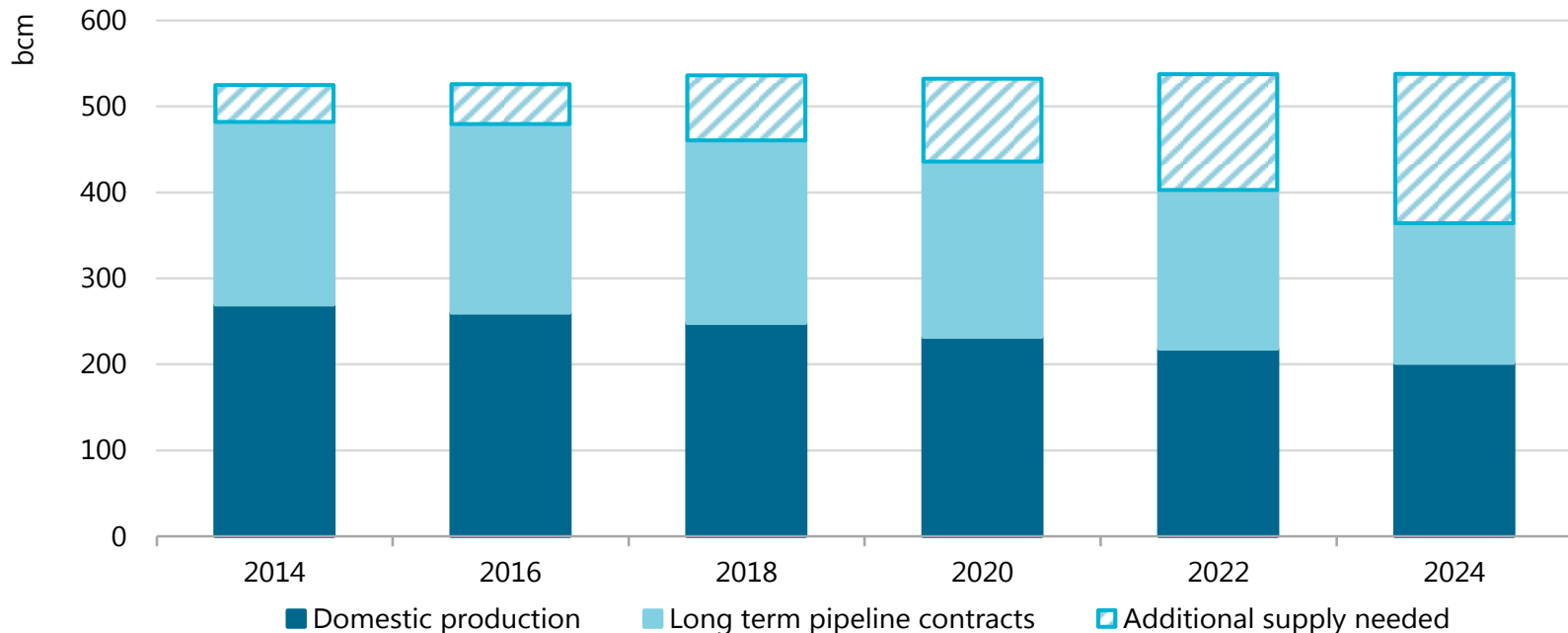
Natural gas production, United States, 2014-24



Associated shale strongly contributes to short-term production growth up to takeaway infrastructure limits and then slows with lesser LTO growth. 伴生页岩气将在短期内极大的推动天然气产量的增长，直至达到基础设施的产量限制之后伴随着LTO的增长而下降

# Europe's supply gap increases 欧洲天然气供应缺口增加

Domestic production and contracted pipeline vs import needs, Europe, 2014-24  
2014年至2024年，欧洲天然气产量和管道气与额外进口需求的对比

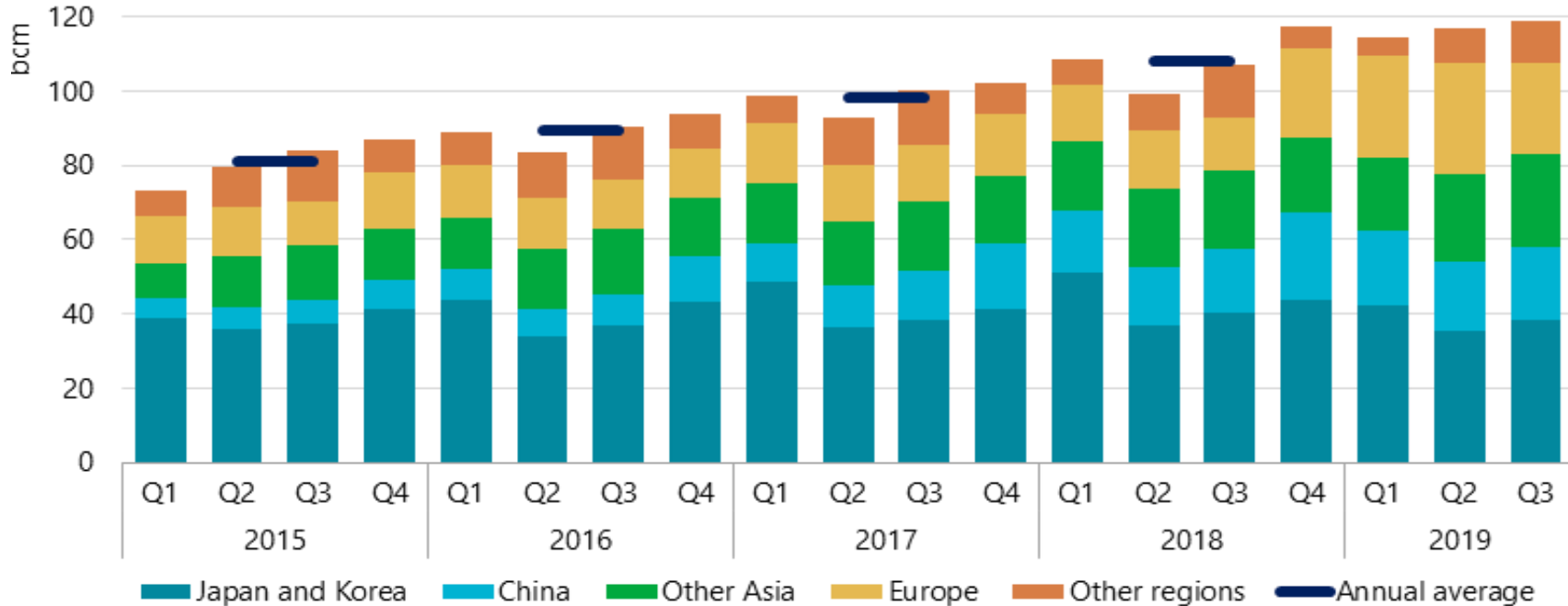


Europe needs to source imports to cover one-third of its demand by 2024, due to sharp declines in its own production & the expiry of pipeline long-term gas import contracts.

至2024年，由于自身产量的快速下降和长约管道气进口合同到期，欧洲需要通过进口以满足其三分之一的需求量

# Global gas trade is rising rapidly, driven by Asian demand 在亚洲市场的带动下，全球天然气交易快速增长

LNG imports, quarterly (2015-19) 2015年至2019年各季度LNG进口量



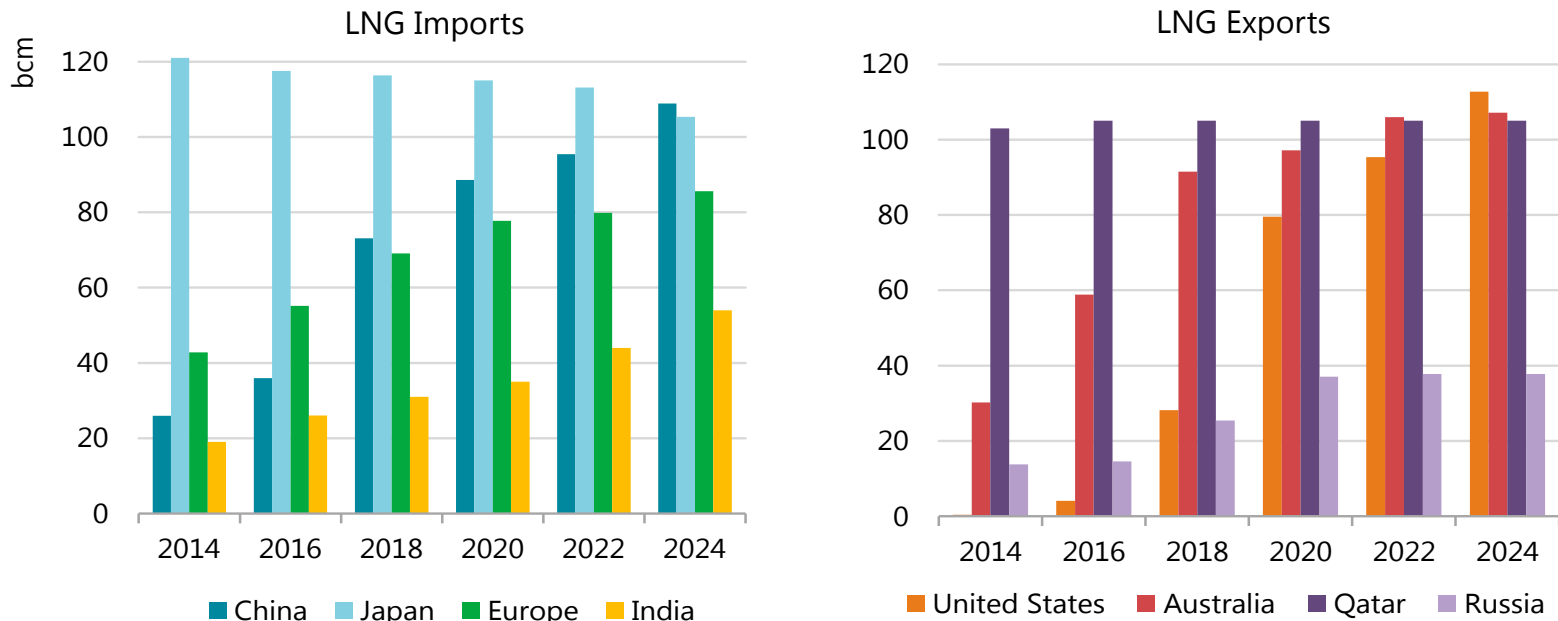
European imports have increased attracted by low prices.  
受到较低价格的影响，欧洲天然气进口量大幅增加



# The United States and China become #1 LNG seller & buyer in 2024

## 2024年 美国和中国将分别成为全球LNG第一大卖方和买方

World LNG trade for a selection of importers and exporters, 2014-24  
2014年至2024年全球LNG交易的进出口对比

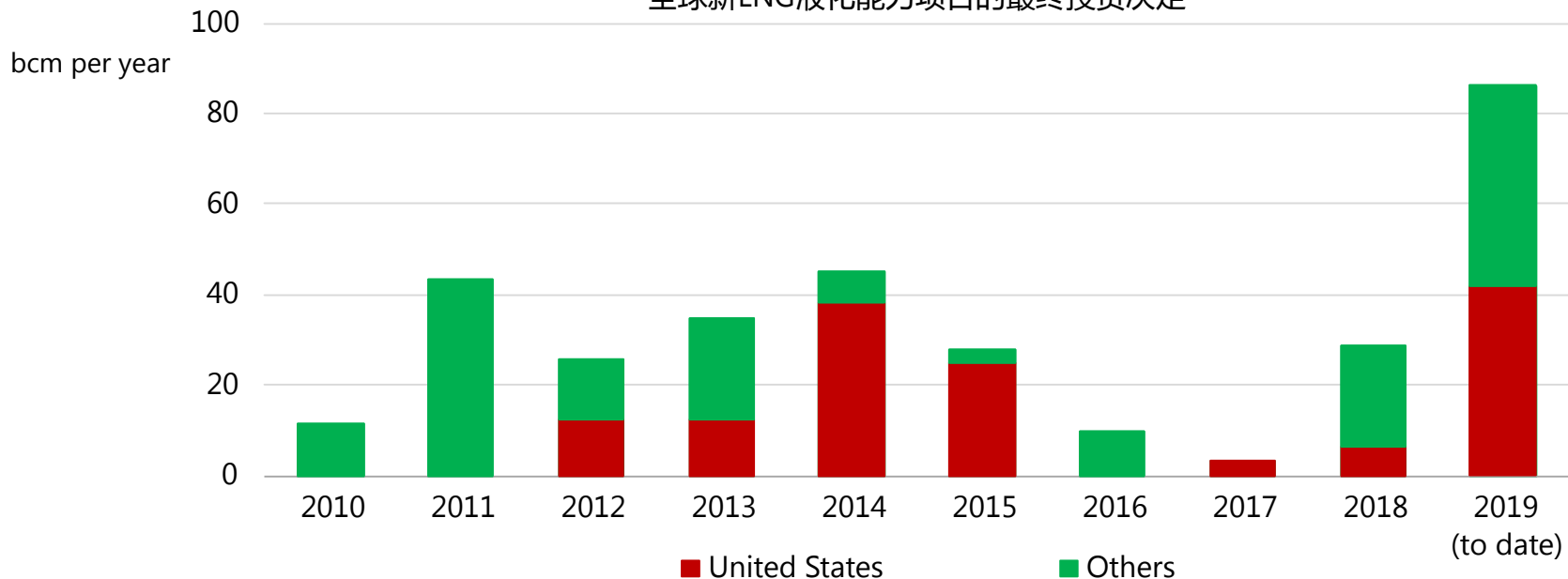


Fast growing Asian economies and Europe account for over 95% of the increase in LNG imports. US exports surge while Australia reaches a plateau and Qatar prepares for expansion\*.

快速发展的亚洲经济体和欧洲将占LNG进口增长的95%以上。美国将继续保持较高的出口势头，而澳大利亚出口量将进入平台期，同时卡塔尔准备进一步扩张市场

# Leading the new wave of LNG investment 引领新一轮LNG投资

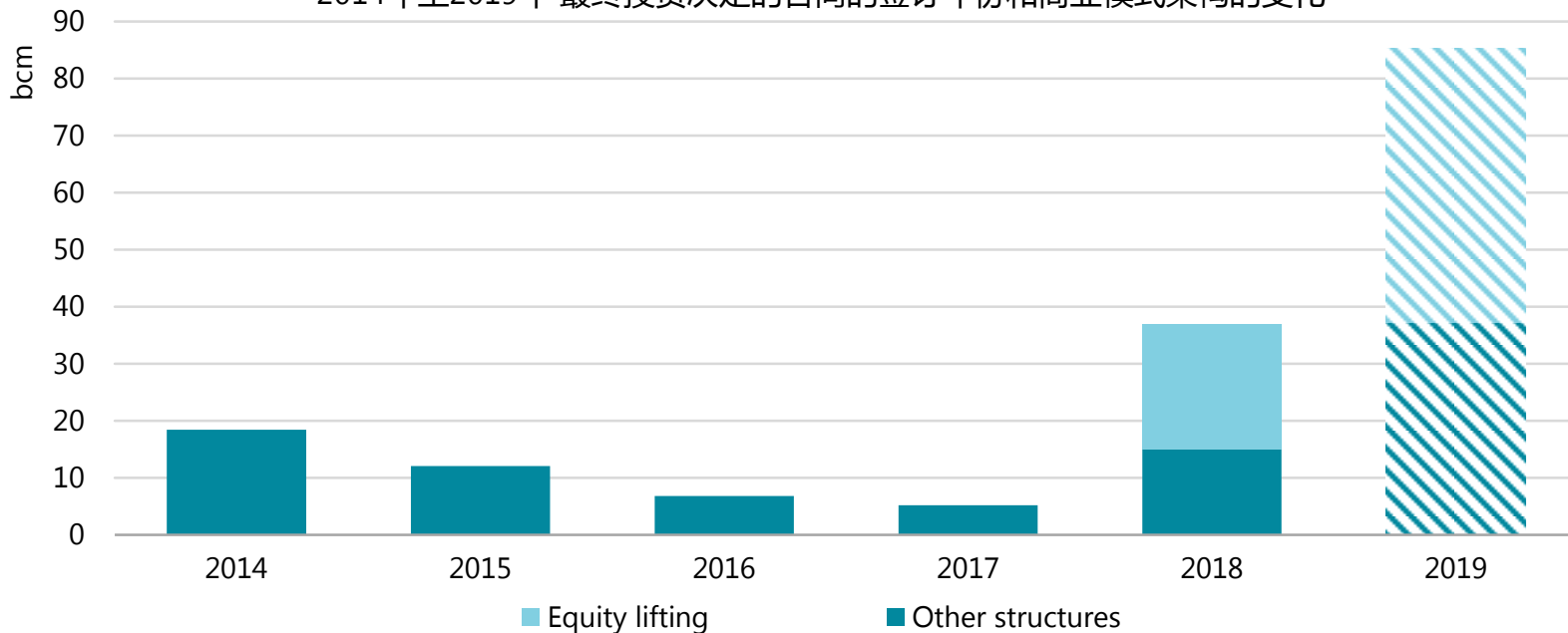
Final investment decisions in new LNG liquefaction capacity (worldwide)  
全球新LNG液化能力项目的最终投资决定



2019 is already a record year for new LNG investment decisions, as North America is leading a wave of investments in LNG supply, supporting a more flexible, resilient & interconnected global gas market. 2019年对新的LNG投资决定来说已经是富有成绩的一年，正如北美正在引领新一轮LNG供应投资，以建设更加灵活，富有弹性和互联互通的全球天然气市场。

# Equity-lifting model gaining popularity 股权提升的商业模式受到欢迎

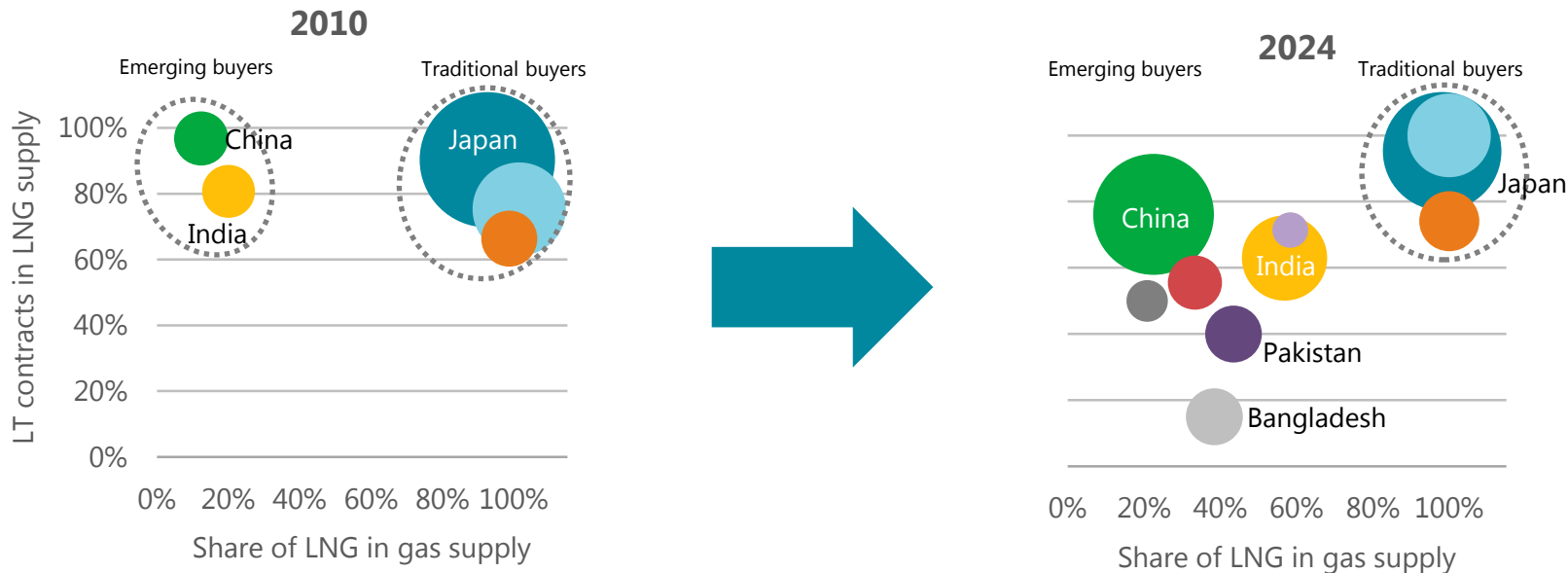
FID-enabling contracts by signing year and structuring model (2014-19)  
2014年至2019年 最终投资决定的合同的签订年份和商业模式架构的变化



Equity-lifting has recently facilitated the FID taken on projects such as LNG Canada, Greater Tortue FLNG, Golden Pass LNG, and Arctic LNG 2.  
近期，股权提升的商业模式促成了多个项目的最终投资决定

# ...in context of a rapidly transforming Asian market 在亚洲市场

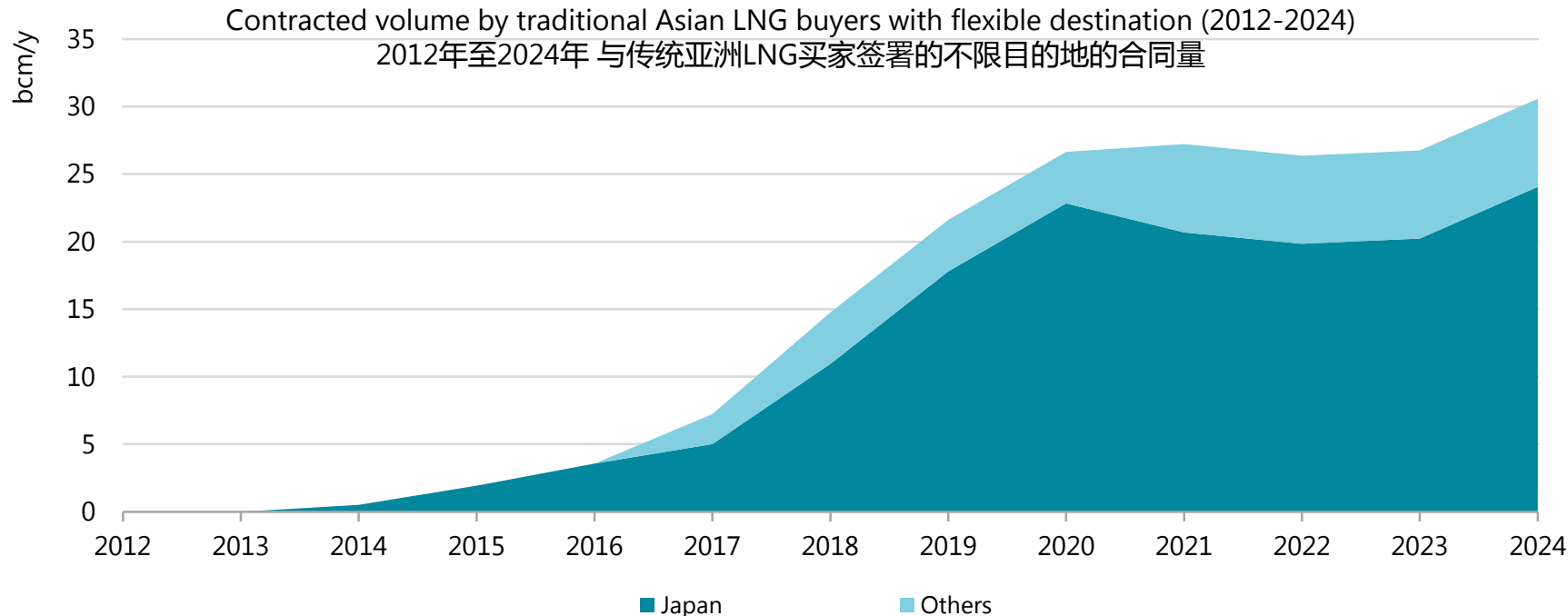
Evolution of Asian LNG buyers types (2010, 2024)  
2010年和2024年亚洲LNG买家类型的演变



\*size of the bubbles indicates annual LNG imports

Emerging Asian buyers driving future LNG demand growth see LNG as a component of their gas supply portfolio. 新兴的亚洲买家正在引领未来LNG需求的增长并将LNG看作是其天然气资源池的供应来源之一

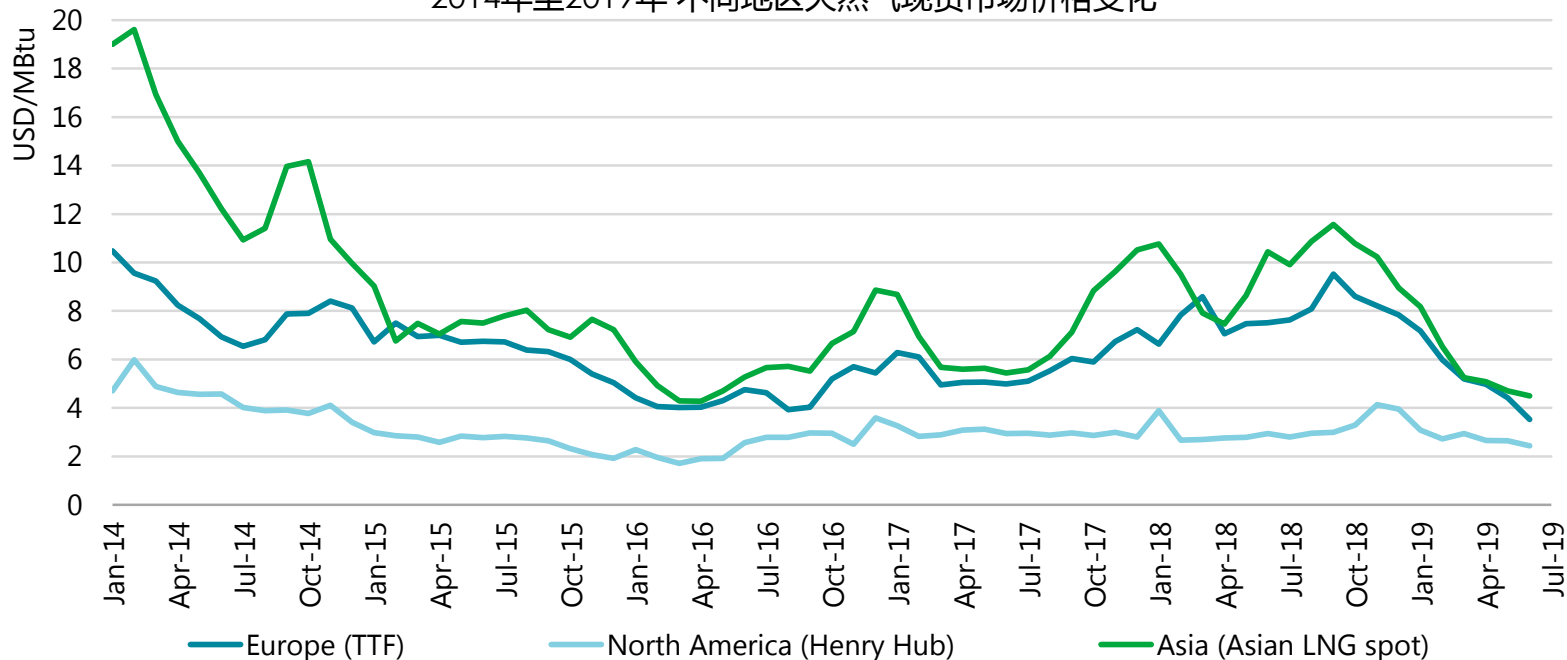
# ...creating new marketing opportunities for traditional Asian buyers 为传统的亚洲卖家创造新的市场机遇



Flexible LNG from traditional Asian LNG buyers is set to cover up to 15% of LNG demand from emerging Asian buyers, expected to provide extra security of supply to the region.  
来自传统亚洲LNG买家更灵活的交易将满足新型卖家需求的15%，并将有望为该地区提供更多的供应保障

# Towards a global convergence of natural gas prices? 全球天然气价格趋同

Evolution of natural gas spot market prices, 2014-19  
2014年至2019年不同地区天然气现货市场价格变化

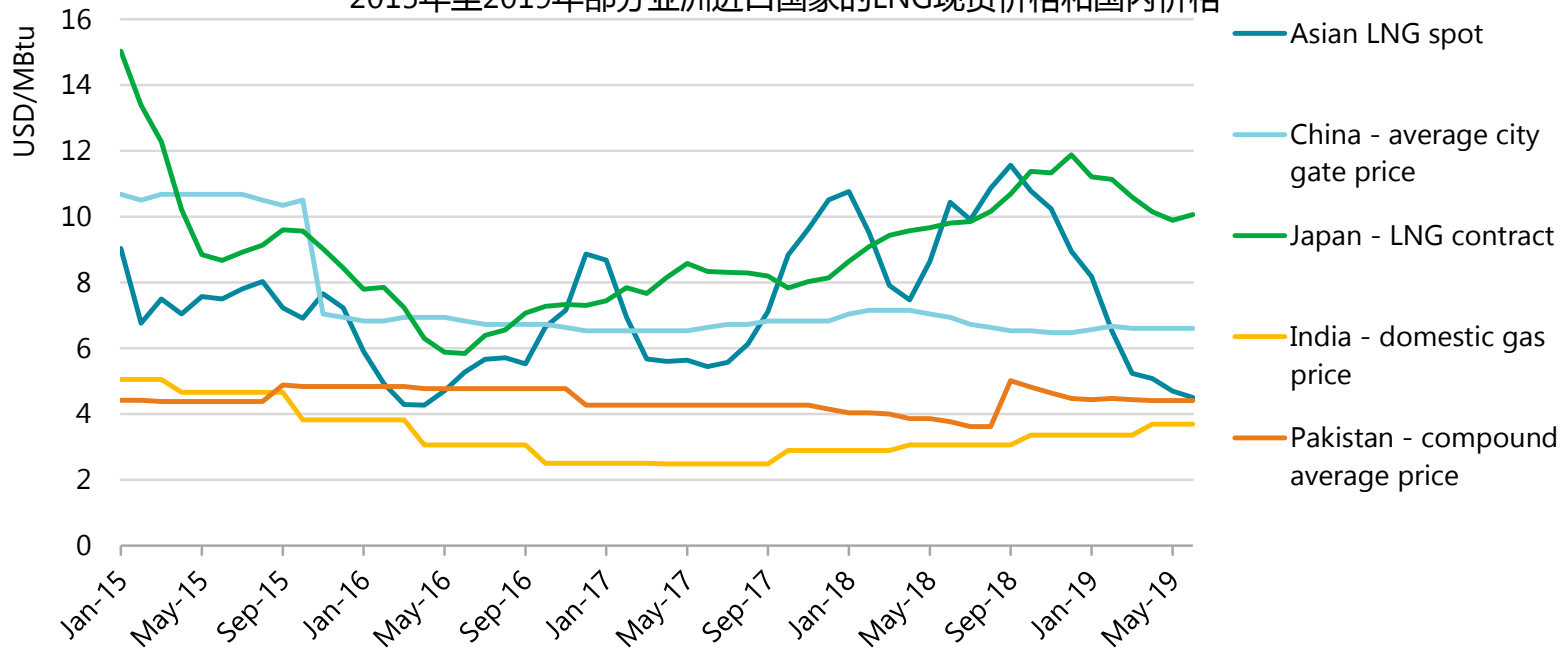


Gas markets in major regions are closing the price gap thanks to the development of global LNG trade. The Asian spot market still faces a higher degree of price volatility.

由于全球LNG贸易的发展，主要地区的天然气市场价格差正在缩小，但是现货市场仍然面临较大幅度的价格波动

# All markets are not (yet) equal when it comes to end users 但是当涉及终端用户时，各个市场之间仍然存在较大的差距

Asian spot LNG price and domestic prices for a selection of Asian importing countries (2015-19)  
2015年至2019年部分亚洲进口国家的LNG现货价格和国内价格

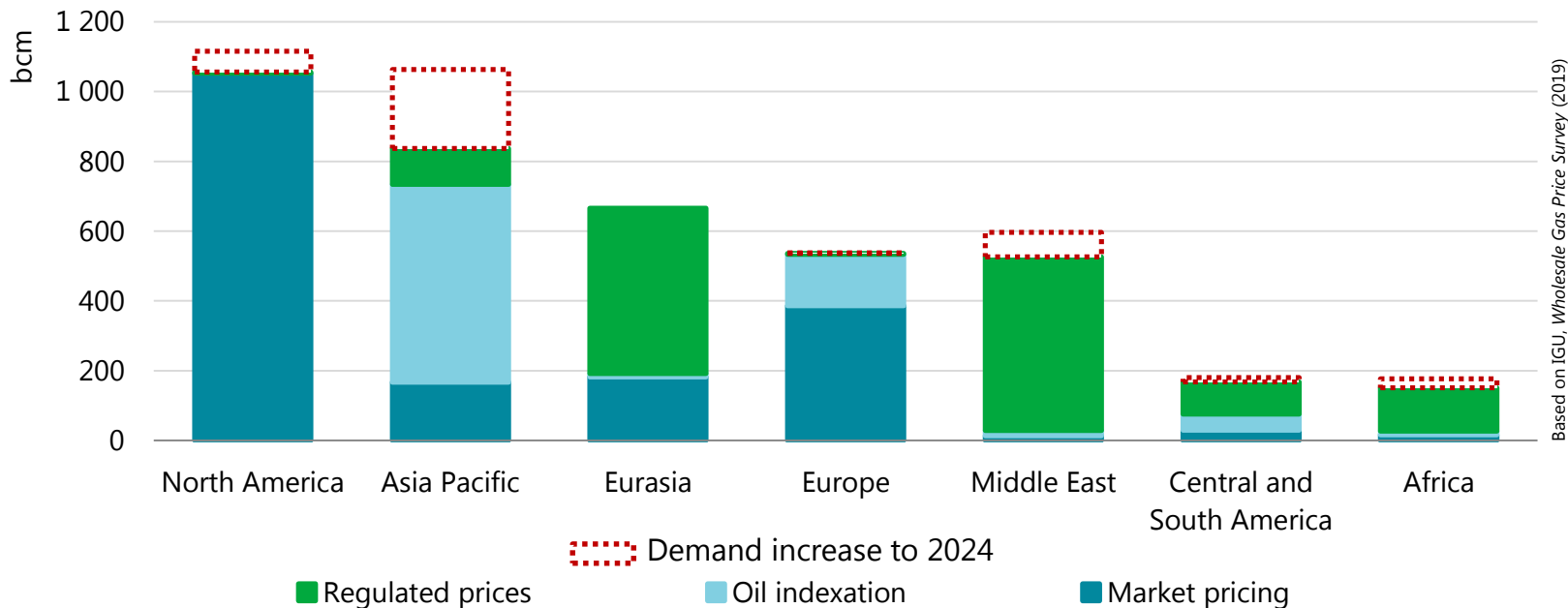


The influence of market pricing on end users' prices remains currently limited for most Asian markets.  
对于多数亚洲市场来说，终端用户的市场定价的影响依然限制其发展

# Pricing remains a challenge in developing markets

## 发展中国家的市场仍面临着定价的挑战

Natural gas consumption and price mechanisms per region, 2018, and growth to 2024  
2018年不同地区天然气消费和定价机制以及至2024年的增长情况



Market pricing dominates in North America and Europe – but 85% of growth takes place in other regions. Reforms are underway in major emerging economies to foster gas growth.

市场定价主要发生在北美和欧洲，但是85%的增长来自其他地区。主要的新兴经济体正在对其进行改革以促进天然气的发展



# Conclusions 结论

- Natural gas demand will continue to grow in the medium-term, driven by emerging Asian economies and led by China. 在新兴亚洲经济体和中国的引领下，天然气在中期内将继续保持增长的态势
- Although production increases in many regions, most of additional exports will come from US LNG and Eurasian pipeline. 尽管在诸多地区天然气产量在增加，但是大多数的进口仍然来自美国LNG和中亚的管道气
- LNG trade remains the main driver of gas market globalisation, and a major source of incremental supply for Asia and Europe. LNG贸易将继续带领天然气市场国际化，同时也是亚洲和欧洲供应增量的主要来源
- This growth is supported by a rebound in investment. 天然气的发展受到新一轮投资的推动
- Market prices are converging as global LNG trade expands, and the share of market-driven pricing is increasing in all regions. 全球LNG贸易的扩大带来了市场价格的趋同，同时市场驱动的定价机制也在各个地区进一步发展
- Current gas reforms in major emerging economies are a prerequisite to ensure competitive pricing and sustainable growth in the longer term. 目前主要新兴经济体的天然气改革是保证长期内竞争性价格和可持续发展的前提条件

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