

# China's Dash for Gas: Local Challenges and Global Consequences

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## Overview

There is no doubting that China's past energy choices had a significant impact on global markets for coal and oil, and now it plans to increase the role of natural gas in its energy mix. The share of gas has increased from 2.4% in 2005 to 5.9% in 2015, with aims of reaching 8.3-10% by 2020 and 15% by 2030. This paper analyses the prospects for demand growth and then assesses the various ways in which that demand can be met. The critical problem of urban air pollution is the primary motivation for China's current 'dash for gas', but decarbonisation is a significant co-benefit. The analysis reveals considerable uncertainty surrounding future demand growth, with cost competitiveness being the determining factor. Equally, although China has significant natural gas reserves, they are largely unconventional and present significant geological and technical challenges; with domestic production growth failing to keep pace as demand import dependence increases. China's gas imports are met by pipeline gas from Central Asia and Myanmar and Liquefied Natural Gas (LNG) from a variety of countries, most prominently Australia and Qatar. A new Russian pipeline, the Power of Siberia, will start to deliver in 2019. However, plans to expand Central Asian imports have disappointed and China is likely to agree to develop a second pipeline from Russia or increase its reliance on LNG imports. A simple 'gas balance model' is used to organise the final discussion and conclusions, which explore possible future developments and their implications for global gas demand.

## Methods

It is in this global context that this paper focuses on two key questions: first, what will happen to gas consumption in China, and second, how will a future increase in gas demand be met? Then, by way of a concluding discussion, it considers the global impacts of this 'dash for gas.' The paper draws upon an in-depth sectoral analysis based on a combination of desk research—of the academic and industry literatures—as a source of statistical materials and secondary analysis, and interviews conducted in Beijing and Shanghai in June and July 2017. Interviews were held with representatives from a national oil company (NOC), two academic experts, and managers at two international oil companies (IOCs) operating in China.

## Results

Uncertainties within the key consumption sectors illustrate several inhibitors to gas demand growth. First and foremost, price: industrial and residential/commercial consumers in particular have demonstrated a high level of price sensitivity. Whilst pricing reforms have been positive in bolstering demand, price competitiveness against alternatives remains an area of concern; more so in industry (which has seen a worrying trend of 'reverse replacement'), although recent price increases for residential consumers also challenge the price competitiveness of gas. The power and transport sectors illustrate a further constraint: the perception of gas as 'transitional'. In power, investment in infrastructure is constrained by the notion that low carbon alternatives are a longer-term solution and therefore less likely to result in stranded assets. Similarly, the impressive increase in the uptake of NGVs in the transport sector is rivalled by that of NEVs; the two technologies also compete for government support. In the long-term, natural gas uptake will increasingly be challenged in these sectors by low carbon alternatives, as technologies continue to mature, price per unit comes down, and political priorities shift. Thus, there is still uncertainty over the pace of future demand growth in China, which is determined by the success or failure of state interventions that impact on the price competitiveness of natural gas.

On the supply side, a consensus has formed amongst industry commentators that Chinese natural gas demand will increasingly outstrip domestic production in the coming decades, with production likely to fall significantly short of the targets outlined in the 13th FYP. Nevertheless, the potential for the development of the country's unconventional resources is clear. Given the scale of the resources, the decision of the government to open the market is likely to result in both increased private investment and increased infrastructure utilisation in the coming years. At present, investment in the country's unconventional resources is constrained by concerns over cost and productivity. The involvement of IOCs in Chinese natural gas (along with the participation of Chinese oil companies in joint ventures in foreign plays) might see improvements to both cost and productivity over time. Nevertheless, two further constraints currently hamper investment. First, whilst market liberalisation is certainly regarded as a positive by the IOCs, they also require clear fiscal, regulatory and pricing frameworks to guide long-term investment decisions: China does not currently have this in place for unconventional plays. Secondly, oil price volatility and the prospect of oil potentially returning to 'lower for longer' in the face of climate change policy, will see IOCs continue to operate under capital constraints. This will both challenge the economic viability of developing high-cost unconventional plays and enhance the competition for investment between China and other global gas prospects. However, domestic industry is ramping up drilling activity and the development of a supply chain and we cannot rule out significant growth in domestic shale gas production but is likely to be a medium- to long-term prospect.

With regards to China's growing import dependence, there is significant uncertainty around the extent to which this will rely on pipeline gas or LNG. As China awaits the Power of Siberia pipeline coming online, significant year-on-year increases in LNG volumes might be expected in the coming years. However, recent problems with Central Asia pipeline and the postponement of Line-D, plus the trade dispute with the US, appear to have rejuvenated Chinese enthusiasm for the Altai pipeline from Russia or a pipeline from Sakhalin. Thus, the quantities of LNG required will be determined by the development of domestic production, the price competitiveness of pipeline gas, the political will to limit seaborne trading (and reliance on US LNG), and the progress made in bringing additional pipelines online, from either Central Asia or Russia. However, the spectre of this expansion, and the strategic relationships that underpin it, serve another purpose: strengthening China's bargaining power on both pipeline and seaborne trade in the 2020s and beyond as the country pursues an increasingly-diversified supply mix. The state of China gas infrastructure is a final critical consideration. The expansion of inter-seasonal storage and a better-connected pipeline system could dramatically improve the flexibility of China's gas market, enabling it to store significant amounts of gas to meet peak demand in winter and also to move gas around to promote competition between pipeline and LNG imports.

## **Conclusions**

The country is currently strategically repositioning its energy mix so as to focus on cleaner sources of energy, including natural gas but also non-fossil fuels. Western analyses of this political agenda can often focus on CO<sub>2</sub> emissions - particularly following the Paris Agreement - as the leading driver of this shift. In truth, a desire to improve domestic air quality is the primary driver, with the contribution to global CO<sub>2</sub> abatement a co-benefit. The transition marries easily with the repositioning of China to a more service-based economy in a move away from heavy industry and manufacturing that are dominated by coal.

The issue of Chinese gas demand is one of global significance. First, should a high dependence on gas imports, and particularly LNG, be established, the volumes involved would have a significant impact on global gas trade. In 2017, China's imports did move the LNG market, but there are concerns about the longevity of this demand growth. However, the LNG market's transition to greater flexibility and increased short-term trading favours China in this regard, and the country's continued investment in infrastructure could put it in a strong place to adapt to domestic demand fluctuations. A high LNG demand scenario for China could absorb a large part of the current LNG glut, impacting on price and availability for other global buyers. Secondly, China's push for gas, and broader clean energy transition, will generate momentum globally - particularly with regards to technology development and political priorities - that will accelerate the progress made in the same transition globally. In this regard, China has the resources to lead by example. Finally, and related to this, China can be expected to continue to invest outwardly in new energy ventures and export technologies in a manner that benefits many host countries around the world making the role of natural gas as a transition fuel a reality.