



The Roving Scout



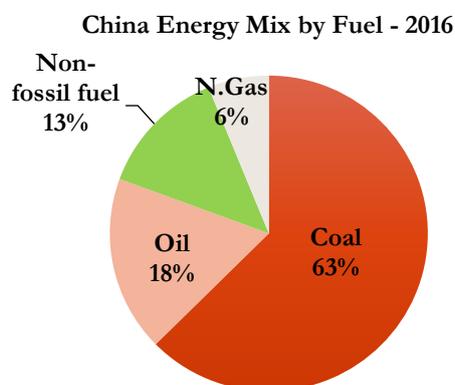
WILL CHINA BREATHE CLEAN

"When you want to fool the world, tell the truth" - Otto von Bismarck

China is today what US' was back in the 1950s, consuming enough coal to erode the quality of air. At the same time pressure of switching fuel from coal to natural gas in similar urgent fashion. China seems to be following US footsteps to overcome its infamously bad and unhealthy air pollution. Coal still accounts for about 2/3rd of China's energy consumption and it aims to bring the usage down to 50% by 2030. Natural Gas (N. Gas) which produces about half of carbon dioxide and just fraction of sulfur dioxide when burned has promising future in reshaping the energy mix of China. This note is sequel to our earlier note title 'Will China Gas out Coal' dated 26th Jul.16. We in this note try to update on China's energy policy initiatives to reduce coal consumption and increase usage of N. gas as part of China's energy mix to condense the rising pollution levels. The note also touches upon China's nuclear power ambition to further curtail the coal consumption.

THE HUNGER FOR GAS

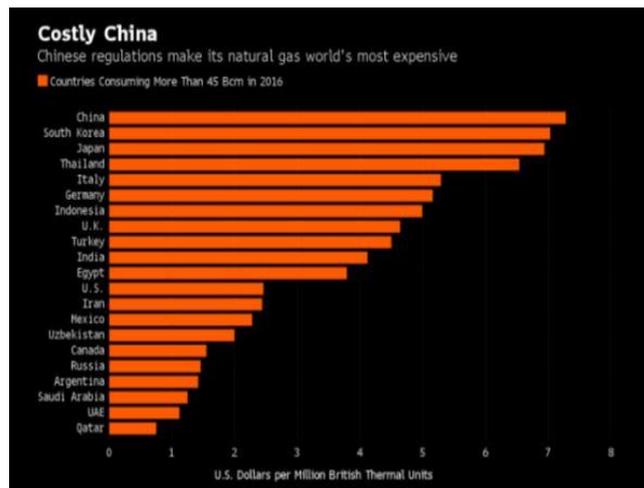
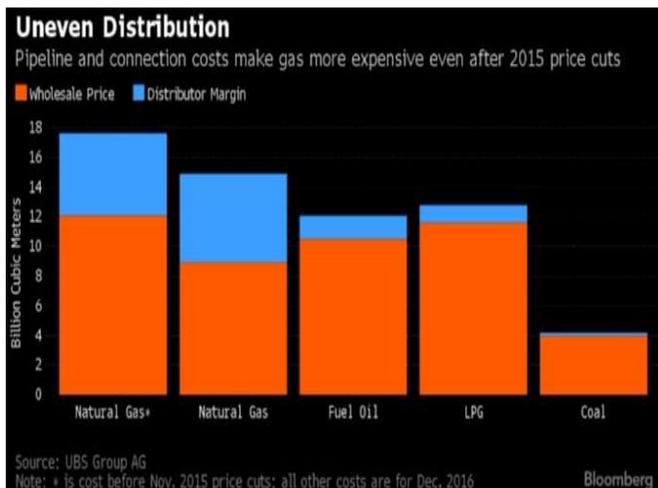
China is 3rd largest user of N. Gas in the world, behind the US and Russia. China has set a target of using N. gas as part of its energy mix as much as 10% by 2020 and 15% by 2030 up from 6% in 2016. While, China is world's 6th biggest producer of gas, it gets ~64% of its gas domestically and imports rest by pipelines from Central Asia and Myanmar, and rest via seaborne tankers in Liquefied Natural Gas (LNG). Even though the domestic production of gas has increased multi-fold, China is unable to keep its gas output pace with ballooning demand.



Recently China issued guidelines to use gas instead of coal in industrial boilers throughout four major urban areas: the greater Beijing region, northeast China, the Yangtze River Delta around Shanghai and the Pearl River Delta in Guangdong province. Local governments are supporting the efforts with measures including subsidized gas connections and boiler replacements, as well as price caps. It is also encouraging participation from private players to invest in overseas gas fields, expand LNG import terminals and increase underground storage capacity. Assuming China meet its govt. targets of 10%, the **demand for N. gas is likely to increase to about 360 billion cubic meters (BCM)** from current 206 BCM in 2016 i.e. annual growth of ~14%. While China has the ability to meet its ambitious targets, but the high prices of N. Gas is biggest risk in suppressing demand and imperil to country's target. Govt. has to perform a balancing act to stimulate gas demand to increase percentage of cleaner fuels on one hand and at the same time ensure reasonable returns for upstream players and transmission & distribution companies.

PRICE THE MAJOR BOTTLENECK

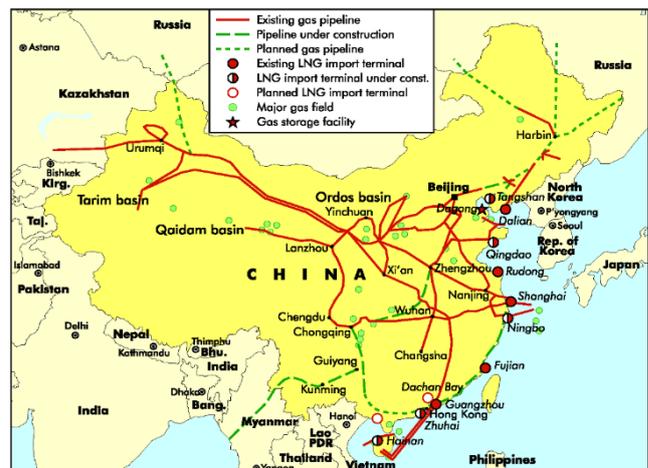
The producers, importers and distributors in China need govt. controlled prices to be high enough to make good margins. By cutting them too much, it risks their profit margins, threatens investment in future production and endangering country's energy security. In 2015, the government cut wholesale prices of N. gas and made it cheaper by Dec.16 on a wholesale basis than other fuel sources such as fuel oil or propane, a liquefied petroleum gas typically used for heating and cooking. However, the final cost to industrial users was still higher because of large margins for distribution companies. China's N. gas prices are most expensive among the world. Higher distribution margins make it more difficult to stimulate the demand.



- Initiatives taken by Chinese govt. to reduce the prices and improve the gas demand:**
- ✚ Cap the rate of return on assets for gas distributors to 7%
 - ✚ Subsidized gas connections
 - ✚ Boiler replacements in four major urban areas and
 - ✚ Price Caps

N. GAS INFRASTRUCTURE IN CHINA

China currently imports gas through pipelines from Turkmenistan, Kazakhstan and Uzbekistan to western china. And from Myanmar to keep up with booming demand. China's CNPC has signed \$400bn contract with Russia's Gazprom to deliver gas over next 30 years. China is expected to start receiving gas via Siberian pipeline in 2019. Given the sharp plunge in crude oil prices, landed price of gas via Siberian pipeline is expected to be around \$4.75 MMBTU (excluding internal pipeline distribution cost) - much lower than existing price paid to Turkmenistan at around \$9 MMBTU. Assuming Oil prices do not cross \$100/bbl, Siberian pipeline should provide economical supply security to meet N. gas demand in China.



The country also has 13 LNG terminals in operation along the southeast coast of china. 4 new terminals are under construction in addition to expansion of existing 3 terminals. By 2020 the total capacity is expected to increase to 70 MTA from current capacity of 40.8 MTA. China probably does have the world's largest shale gas potential with **1,115** trillion cubic feet (31 trillion cubic meter) of technically recoverable resources, but future production doesn't seem to be immediately promising constrained by geological complexity, shortages of water, land access, and the limitations of infrastructure. Shale development is 3 - 4 times more expensive in China than the US - making it import dependent.

THE POWER OF NUCLEAR

Increasing contribution from Nuclear power is also receiving enough boost from Chinese govt. to fight against rising pollution levels. Most of the China's electricity is produced from fossil fuel, predominantly coal. The impetus for increasing nuclear power share in China is increasingly due to air pollution from coal-fired plants. China has 36 nuclear power reactors in operation and 21 are under construction. China

