

# Oil & Gas Spotlight 2014.Q1

## China LNG: Surfing the Mobility Wave

China has high expectations in liquefied natural gas (LNG) development, especially for automotive, mass transit, and truck applications. Petrochina recently announced plans to cooperate with several municipal governments in promoting LNG-fuelled buses. China's LNG industry is witnessing a gradual liberalization with downstream opportunities opening up for new entrants, particularly in gas retailing. LNG is certain to play an increasing role in powering mobility in China, but how important will it be?



Xinhua, the official News Agency of China, announced on December 2013 that the government will promote a mixed-ownership economy by diversifying the shareholding structure of state-owned enterprises (SOEs) to speed up their transformation. On March 2014, the three major National Oil Companies (NOC) including Sinopec, Petrochina and CNOOC, have announced willingness to open their oligopoly control of the retail gas station network, initially to Chinese private companies to invest in LNG stations. There was as well domestic investment in CNG stations, which has seen growing use in municipal bus and taxi systems.

**LNG as a catalyst to boost natural gas usage in China**

In 2013 natural gas (NG) played a small role in China's energy economy, less than 5 percent of the primary energy mix. But the growth prospects are tremendous with a target to reach 10 percent by 2020, driven by the combination of economic development and an urgent search for environmentally friendly energy.

China's domestic NG supply is severely limited by both low production, remote locations and rough terrain, an under-developed pipeline infrastructure, and structural issues in the State-owned sector itself. LNG has developed rapidly in the past years, with imported LNG providing 85 to 90 percent of China's NG supply. Current projections see China importing 60 billion cubic meters (bcm) of LNG by 2020, as compared to 25 bcm in 2013. Most imported LNG is re-gasified and injected into the existing NG distribution network.

China is making substantial investments in domestic LNG infrastructures with more than 20 LNG import terminals (mainly for major NOCs) in various phases of completion. A broader range of public and private players, for both equipment supply and operations is taking positions in LNG carriers, floating storage & regasification units, and filling stations.

**China automotive LNG as the biggest and fastest developing application**

Outside the systems for regasification and NG distribution, automotive is the largest consuming sector of LNG with 30 percent to 40 percent of China volumes in 2012. Other applications are mainly industrial such as glass and ceramics and power generation.

The automotive LNG growth has been driven by the development of commercial vehicles especially heavy duty truck segment (HDT) and pressure to reduce vehicle emissions, supported with financial subsidies from the government at the acquisition or conversion of the vehicle. In October 2012, NDRC published plans in a policy statement to push the automotive LNG sector. This incentivized both NOCs and municipalities such as Beijing to push the development of LNG usage in public transportation. Monitor Deloitte estimates that China's LNG powered vehicle park will reach 700,000 to 800,000 LNG vehicles by 2020, creating fuel demand of 30 to 34 bcm in LNG.

LNG is displaying a cost advantage as well as environmental advantage over diesel fuel, but LNG competes in the mobility market with CNG, which requires less capital investment for vehicle conversion. In a first approach to ensure the economic viability of LNG fuelled as compared to diesel fuelled cartage vehicles, the delta unit price between diesel and LNG must be of at least 0.3 RMB (the diesel price in liters minus vehicle LNG fuel price in kgs). This differential does not exist in all provinces across China. Because LNG enables longer range than CNG, it offers advantages for city busses, intercity busses, and heavy duty trucks.

The major constraint for the development of LNG fuelled vehicles is infrastructure, which is the typical challenge for alternative energy. LNG station development is the key for LNG vehicle promotion, but China had only 640 LNG fueling stations in 2012 while CNG had more than 3,000 stations (for reference China has more than 90,000 retail gas stations). Petrochina has been very active in automotive LNG with a framework agreement signed in 2012 with the Beijing municipality to provide filling capacity for more than 3,000 LNG-fuelled buses by end of 2013. Kunlun Energy, one of its subsidiaries, also entered into collaboration agreements with several cities including Hefei, Guangzhou and Changzhou to construct LNG refilling stations.

**Market access and LNG supply to be considered by new entrants**

To meet the growing demand from LNG-powered vehicles, China has promoted the building of LNG fueling station, from the 640 mentioned in 2012 to 2,500 by end of 2014 (source: ICIS).

Two NOCs (Petrochina and CNOOC) are dominating the automotive LNG retailing play in China, while private challengers such as ENN Energy and Xinjiang Guanghui have emerged with a combined market share of 20 to 25 percent in terms of number of retail gas stations. For reference ENN is a major supplier of gas and service equipment in Beijing and Tianjin, and has created a joint venture with Utah-based CH4 Energy Corp. to build a network of natural gas fueling stations for trucks along the major highways across the U.S.

LNG players, especially private companies, willing to enter the automotive market will need to focus on market access (self-owned [newly built or acquired], franchised or partnered with a retail gas station network). They will also need to secure an LNG supply. Various supply options exist but the automotive demand would not be sufficient to absorb the volumes to support a dedicated import terminal. The two private challengers (ENN and Guanghui) have already gotten initial approval to build an LNG import terminal, that can be used for automotive LNG and residential / commercial NG after re-gasification. Capital investment required being significant, players should anticipate operating rate considering current unused capacity in some terminals located adjacent to large municipal markets like Beijing and Tianjin.

The high potential profit margin of LNG stations in given regions has raised the interest of various players including biogas (from animal or municipal waste) and syngas producers.

#### About the authors

**Yann Cohen** is a Partner of Monitor Deloitte based in Shanghai, and Deloitte Oil & Gas Consulting Co-Leader in China. You may contact him at [yanncohen@deloitte.com.cn](mailto:yanncohen@deloitte.com.cn).

**Adi Karev** is a Partner of Deloitte ERS based Hong Kong and Deloitte Oil & Gas Leader in China and globally. You may contact him at [adikarev@deloitte.com.hk](mailto:adikarev@deloitte.com.hk).

**Dr. Marco H. Hecker** is a Partner of Monitor Deloitte based in Shanghai, and Deloitte Automotive Consulting Leader in China. You may contact him at [mhecker@deloitte.com.cn](mailto:mhecker@deloitte.com.cn).

**Dr. Ken Dewoskin** is a Senior Advisor of Deloitte based in Beijing, and Senior Vice President at The Conference Board. You may contact him at [kdewoskin@deloitte.com.cn](mailto:kdewoskin@deloitte.com.cn).

#### Acknowledgements

The authors would like to thank Helen Deng, Rosa Fan and Lydia Chen for their contributions in editing, review and design of this Oil & Gas Spotlight article.



#### **About Deloitte Global**

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. Please see [www.deloitte.com/cn/en/about](http://www.deloitte.com/cn/en/about) for a more detailed description of DTTL and its member firms.

Deloitte provides audit, tax, consulting, and financial advisory services to public and private clients spanning multiple industries. With a globally connected network of member firms in more than 150 countries and territories, Deloitte brings world-class capabilities and high-quality service to clients, delivering the insights they need to address their most complex business challenges. Deloitte's more than 200,000 professionals are committed to becoming the standard of excellence.

#### **About Deloitte in Greater China**

We are one of the leading professional services providers with 22 offices in Beijing, Hong Kong, Shanghai, Taipei, Chengdu, Chongqing, Dalian, Guangzhou, Hangzhou, Harbin, Hsinchu, Jinan, Kaohsiung, Macau, Nanjing, Shenzhen, Suzhou, Taichung, Tainan, Tianjin, Wuhan and Xiamen in Greater China. We have nearly 13,500 people working on a collaborative basis to serve clients, subject to local applicable laws.

#### **About Deloitte China**

The Deloitte brand first came to China in 1917 when a Deloitte office was opened in Shanghai. Now the Deloitte China network of firms, backed by the global Deloitte network, deliver a full range of audit, tax, consulting and financial advisory services to local, multinational and growth enterprise clients in China. We have considerable experience in China and have been a significant contributor to the development of China's accounting standards, taxation system and local professional accountants.

This communication contains general information only, and none of Deloitte Touche Tohmatsu Limited, its member firms, or their related entities (collectively, the "Deloitte Network") is, by means of this communication, rendering professional advice or services. No entity in the Deloitte network shall be responsible for any loss whatsoever sustained by any person who relies on this communication.

