

Analysis of China's Seaborne Imported LNG Market

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ABSTRACT. This Article studies the supply and demand of China's Seaborne imported LNG market, and compares the development level of with the global Seaborne LNG trade market. The results show that there are huge gaps between China's remarkably growing demand for LNG transportation and existing fleet capacity, and finally gives four suggestions to enhance the core competitiveness of LNG carrier owner in China. Firstly, using FOB terms to achieve the goal of "transporting the China's seaborne Imported LNG by its own fleets"; Secondly, expanding China's LNG fleets capacity to improve the localization rate of transportation; Thirdly, improving the construction technology of LNG ships and ships' supporting facilities. In the end, improving the terminal receiving facilities and regasification capacity to achieve LNG door-to-door transportation.

KEYWORDS: liquefied natural gas, China imported LNG, seaborne LNG trade

1. Introduction

China is the world's largest energy consumer, accounting for 23.2% of global energy consumption. China's restructuring energy has brought huge benefits to the import of LNG. In 2018, China's LNG imports reached 54.8 million tons, which is the second largest importer of LNG, with a growth rate of 40.85%, accounting for 17% of global LNG trade volumes. China becomes the main driving force in the growth of global LNG trade.

As a link between upstream developers and downstream importers, Seaborne LNG trade is an important part of the entire LNG industry chain. Different from other shipping markets, the Seaborne LNG Trade market mainly has five characteristics: firstly, seaborne LNG Trade is a capital-intensive market. As an extra low-temperature special vessel, LNG vessels are expensive and have a complex system. According to Clarksons Research, in July 2019, a new $174 \times 10^3 \text{m}^3$ LNG shipbuilding price was 186 million US dollars, which is about 4 times the cost

of the same deadweight oil tanker or 6~7 times that of the dry bulk carrier; Secondly, the market concentration is high. Seaborne LNG Trade is mainly based on long-term contracts. In addition, the previous capital investment is large and the return period is long, which makes the market threshold high and belongs to the oligopoly market; Thirdly, the contract period is long. The contract is generally more than 15 years. according to the newly signed natural gas purchase agreement in 2018, about 75% of the projects are long-term contracts while only 25% are spot and medium-term contracts; Fourthly, the amount of transportation is dependent on the contract both parties signed. The Seaborne LNG transportation market serves the trade contracts. Ship-owner strictly fulfill their own shipping obligations, and the market has “Take or Pay” rules. Lastly, the freight rate is obviously seasonal. As a fuel, LNG is mainly used for heating and power generation. Therefore, the demand for LNG is larger in winter, and the freight rate will go higher, and vice versa in summer.

It is because of aforementioned five characteristics, the LNG sector have an outstanding performance. Although the global economic growth is continuous decline, and the trade volumes are low by weak demand and serious trade conflicts between China and America. The whole shipping market has a low profit rates, some shipping companies even went bankrupt.

2. Demand Analysis of Seaborne LNG Trade Market

With the increasing significance of environmental regulation globally, interest in the use of natural gas and seaborne LNG trade is continuing to grow. In 2018, the number of global import LNG countries increased to 37. Among them, Bangladesh and Panama added onshore terminals in 2018, becoming new members of LNG import countries. According to International Gas Union (IGU) statistics, the global LNG import volume reached a record high to 316.54 million tons in 2018, up by 9.78% year-on-year, accounting for 32.94% of the total global natural gas trade.

2.1 Demand Analysis of Global Seaborne LNG Trade Market

In the past decade, LNG in marine shipping has been one of the main ways of LNG transportation. The overall volume of trade has shown a steadily upward trend. According to Clarksons Research, the global LNG shipments in 2018 were 314.59 million tons, up by 7.57% year on year. On the other hand, since LNG exporting countries such as Australia and Qatar have added production projects and signed 88 long-term contracts with LNG import countries, including 12 projects with China. it is foreseeable that LNG shipping volume will continue to increase in the future. According to Clarksons' forecast, global LNG shipping volumes are projected to rise to 344.14 million tons in 2019, an increase of 9.38%. 2009-2019(forecast) global LNG seaborne trade volumes is show in Figure. 1.

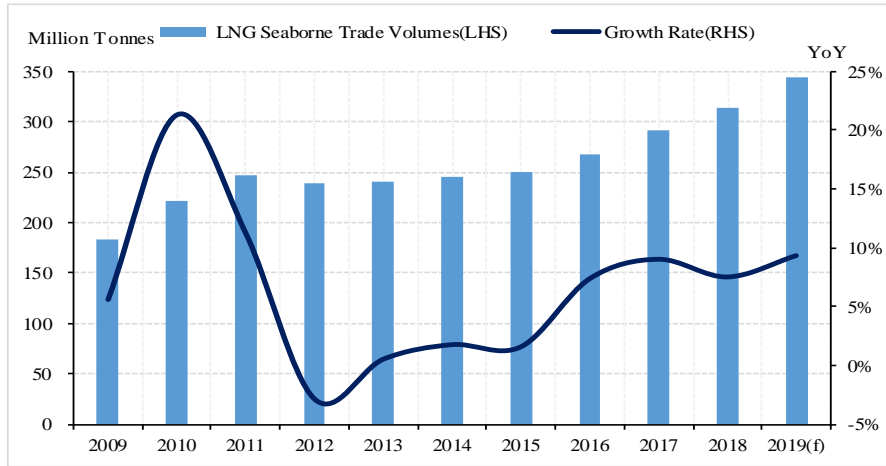


Figure. 1 2009-2019 (forecast) global LNG seaborne trade volumes

Asia is the global main LNG import market, including the world's top three LNG importers. According to IGU statistics, Japan was still the largest import LNG country with the amount of 83.2 million tons in 2018, but the import volume has declined slightly. China ranks second with 54.75 million tons, accounting for 17% of global LNG imports. Followed by South Korea. Among them, China and South Korea are the main drivers of the increase in LNG imports in 2018, accounting for about 80% of the increase in imports. The top 10 LNG import countries in the world in 2018 are shown in Figure. 2.

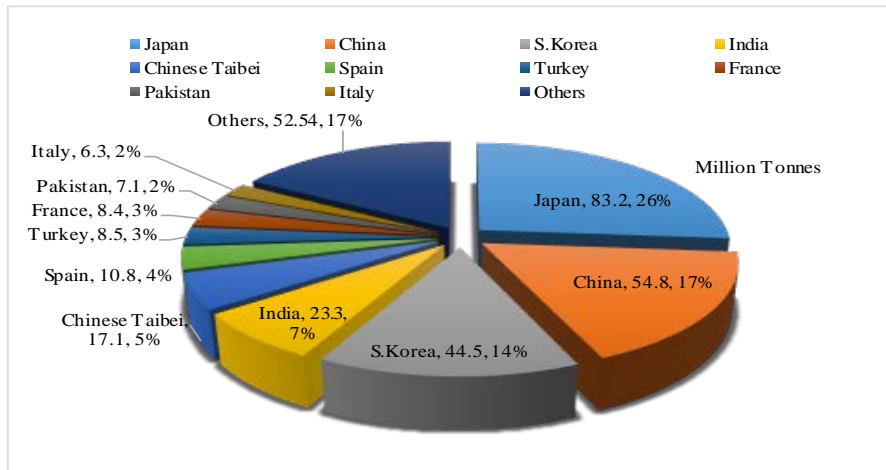


Figure. 2 The top 10 LNG import countries in 2018

2.2 Demand Analysis of China's Seaborne LNG Trade Market

China's natural gas resources are scarce, and natural gas is mainly distributed in Tarim, Ordos, Chaidamu and other places in western China, and coastal areas such as Bohai Bay and East Sea are also distributed. However, compared with the voracious domestic consumption demand, China's natural gas production is difficult to meet the strong demand, so it needs a large amount of imported natural gas. Seaborne LNG trade is one of the main ways of LNG transportation. In 2018, under the pressure of environmental protection policies and price subsidies, China's LNG seaborne imports amounted to 54.8 million tons, with a growth rate soaring to 40.85%, surpassing South Korea to become the world's second largest LNG importer, showing a huge gap between natural gas supply and demand. China's LNG import volumes during the period 2012 to 2018 are shown in Figure. 3.

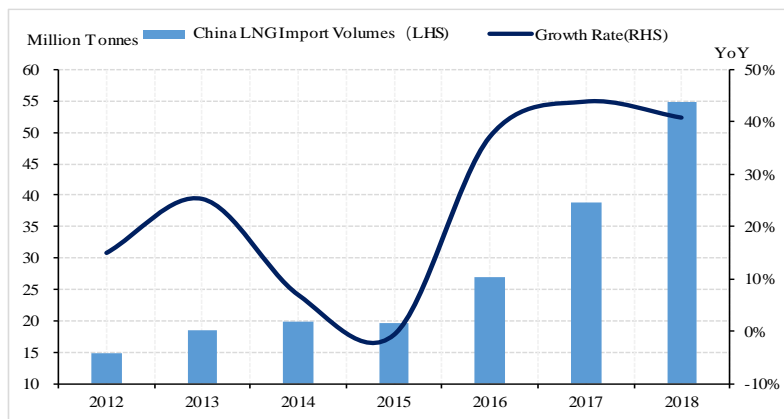


Figure. 3 China's LNG import volumes during the period 2012 to 2018

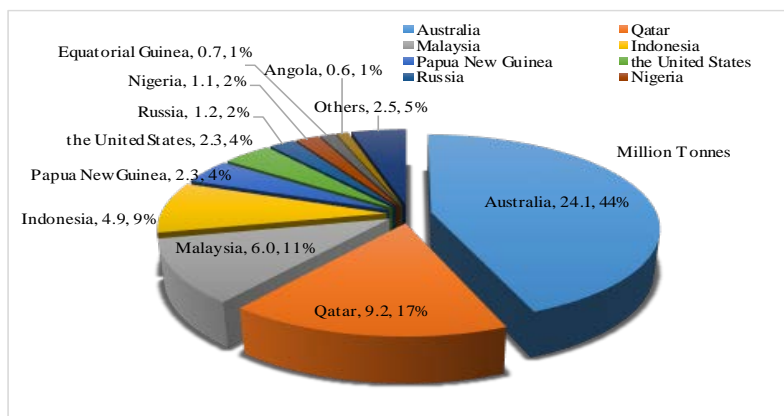


Figure. 4 The top 10 China's LNG import countries in 2018

From the perspective of import structure, China's LNG import countries are mainly Australia (44%), Qatar (16.8%), Malaysia (11%), Indonesia (8.9%), see Figure. 4.

3. Analysis of LNG Fleet Capacity Market

3.1 Analysis of Global LNG Fleet Capacity Market

In the past decade, with the continuous increase of LNG trade volume, the development of LNG fleet has grown year by year and the size of the individual LNG vessel has become larger and larger. According to Clarksons Research, there are 554 LNG ships in service in the world in July 2019, with a total capacity of $82,149 \times 10^3 \text{ m}^3$ (44.44 million DWT), an increase of 11.3% year-on-year, and the average size of each vessel is $148.3 \times 10^3 \text{ m}^3$. Among them, there are only 17 vessels which are less than $10 \times 10^3 \text{ m}^3$, accounting for only 0.06% of the total capacity; 32 vessels' size lies in $10 \sim 100 \times 10^3 \text{ m}^3$, accounting for 1.22% of the total capacity; There are 505 vessels whose size are more than $100 \times 10^3 \text{ m}^3$, accounting for 98.71% of the total capacity. The trend of large-scale vessels is obvious.

According to Clarksons Research, 22 new vessels will be delivered in 2019, with a new capacity of $3,819.12 \times 10^3 \text{ m}^3$ while there is no vessel to be demolished. The shipyard has a orderbook of 140 vessels in July 2019, and will deliver $20980.9 \times 10^3 \text{ m}^3$ capacity in the future, which will fully meet the LNG transportation demand. The development of the global LNG fleet capacity is shown in Figure. 5.

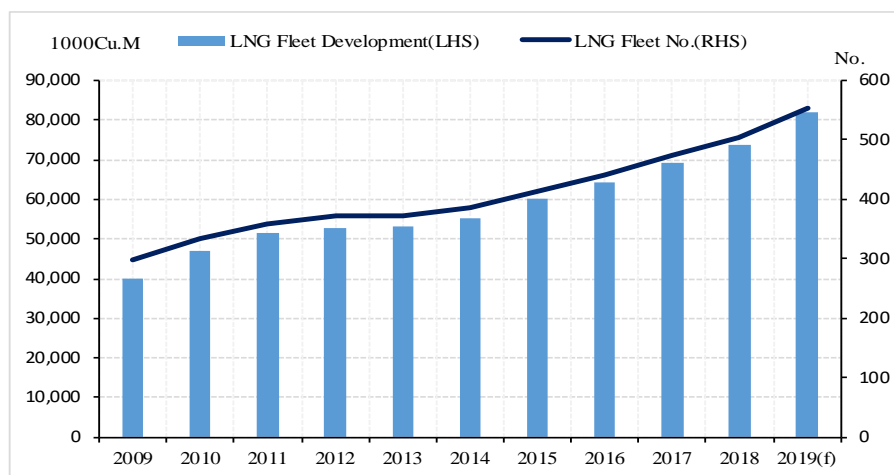


Figure. 5 The development of the global LNG fleet capacity

3.2 Analysis of China's LNG Fleet Capacity Market

Until to July 2019, China only has three LNG carrier fleet owners, they are China LNG Shipping Holdings Limited (CLNG), COSCO SHIPPING Energy Transportation Co., Ltd. and China National Offshore Oil Corporation(CNOOC) respectively. The CLNG was established in 2004 by Dalian Ocean Shipping and China Merchants Energy Transportation Co., Ltd. It is the first LNG ship-owner and operator in China, with a total of 6 LNG carriers to $882.87 \times 10^3 \text{m}^3$. Mainly responsible for Guangdong Shenzhen LNG project, Shanghai LNG project and Fujian LNG project; In the last two years, COSCO Ocean Energy Transportation Co., Ltd. has successively invested in the construction of 7 large LNG carriers to meet LNG transportation needs. In addition, the energy company CNOOC also built a $31.043 \times 10^3 \text{m}^3$ LNG ship at the end of 2015 to better serve its own LNG contract. The Structure of the three ship-owners LNG fleet is seen in Table 1.

Table 1 The development of the China's LNG fleet capacity

Owner Group	Name	Built Date	Size (Unit: m^3)	DWT (Unit: Tones)
CLNG	Shen Hai	2012	147,210	69,777
	Min Lu	2009	147,000	69,777
	Min Rong	2009	147,000	69,678
	Dapeng Star	2009	147,210	69,777
	Dapeng Moon	2008	147,210	69,777
	Dapeng Sun	2008	147,236	69,789
China COSCO Shipping	CESI Wenzhou	2018	174,323	95,530
	CESI Lianyungang	2018	174,323	95,638
	CESI Qingdao	2017	174,323	95,641
	CESI Tianjin	2017	174,323	95,628
	CESI Beihai	2017	174,323	95,599
	CESI Gladstone	2016	174,323	95,638
	Golar Crystal	2014	160,000	82,058
CNOOC	Hai Yang Shi You 301	2015	31,043	14,714

4. Results and discussion

This article uses quantitative methods to analyze the supply and demand of global and China's seaborne LNG market, and come to conclusion that global LNG carrier fleet capacity is greater than trade volumes, while China's LNG carrier business started late, although LNG imports accounted for 17% of the world, its own fleet capacity only accounted for 2.58% of total global capacity. There is a huge gap between the fleet capacity and the increasing transportation demand. What's worse, when China's energy enterprises sign import LNG contracts with foreign export countries, they usually use CIF, DES trade terms to transfer LNG transportation rights to upstream exporters, making China's transportation localization rate is low. Finally, due to the failure of China's LNG carriers and energy import enterprises to achieve integrated operations, they cannot provide integrated services for mid-

stream and downstream, such as LNG storage, re-gasification and natural gas pipeline transportation, which cause China to lose its core competitive advantage when negotiating with upstream exporters.

5. Conclusion

Aiming at the problems and shortcomings of China's LNG carrier fleet owners in the seaborne LNG trade market, the corresponding solutions are proposed: firstly, when signing contracts, China should use FOB terms to Transfer shipping rights to buyers in FOB trade terms, which lays a solid foundation for achieving the goal of the "transporting the China's seaborne Imported LNG by its own fleets"; Secondly, expanding China's LNG fleets capacity to improve the localization rate of transportation; Thirdly, improving the construction technology of LNG ships and ships' supporting facilities. In the end, improving the terminal receiving facilities and enhancing LNG regasification capacity to achieve LNG door-to-door transportation.

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