

Recent Trends in European LNG Reloading Business

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Introduction

Amid the unprecedented expansion of the global LNG industry underway in 2016 and 2017, changing trends have been observed also in the LNG reloading business activities, which have become common in recent years especially in Europe as a tool to adjust seasonal and regional imbalances between LNG markets and secure more flexibility in the markets by reloading LNG volumes from a primary LNG receiving terminal to reexport to another consuming market.

This paper outlines recent trends in such LNG reloading activities and presents the author's view on future prospect of such activities.

1. A history of LNG reloading activities

According to the GIIGNL's "The LNG Industry" annual report published in March 2017, which covers notable figures in the industry in 2016, the global LNG imports in the year increased by 7.5% year-on-year to 263.6 million tonnes, underscoring the anticipated major market expansion driven by massive Australian production growth and increasing imports into newly emerging gas consuming countries.

One of other interesting facts is that reloading (or reexports) of LNG cargoes¹ from European LNG receiving terminals decreased slightly further in 2016 following the significant reduction in 2015.

The primary reason for this has been recovery of demand for natural gas in Europe, as imported LNG has been consumed locally in the areas surrounding the LNG receiving terminals there in accordance with the original purpose of those terminals. Eurogas, the industry association representing the European gas wholesale, retail and distribution sectors, reported another 7% increase of natural gas consumption in the European Union (EU) 28 member countries in 2016, following a 4% increase in 2015².

Having said that, while reloaded volumes in Spain have decreased significantly, volumes reloaded in Belgium, the Netherlands and the United Kingdom have been

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¹ Preconditions of reloading of LNG cargoes include changing demand for gas that encourages transfers of cargoes between primary and secondary receiving terminals, price differences that help those activities make economic sense, and physical capabilities at the reloading terminals that enable cargo reloading within specific time frames (including pumps).

² "More gas use in 2015 and 2016 makes CO₂ emissions tumble" 10 April 2017, Eurogas, http://www.eurogas.org/uploads/media/Eurogas_press_release_-_More_gas_use_in_2015_and_2016_makes_CO2_emissions_tumble.pdf

relatively stable and significant increases in reloaded activities have been observed in France.

Reloading activities earlier were initiated in the United States from 2009, where domestic natural gas production mushroomed through the shale gas revolution, as a tool to capture arbitrage opportunities of regional and seasonal price differences utilising underutilised LNG receiving terminal capacity. In the end those reloading activities there can be viewed as a transitional function of those facilities in the United States which have undergone transformation from LNG receiving terminals to LNG exporting plants.

Table 1 Number of LNG cargoes reloaded at LNG receiving terminals in the United States

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|--------------|------|------|------|------|------|------|------|------|
| Sabine Pass | | 8 | 12 | 3 | | | | (4)* |
| Freeport LNG | 2 | 4 | 5 | 4 | 1 | 1 | 4 | |
| Cameron | | | 2 | | | | | |

*Four cargoes in 2016 were part of cargoes that included domestically produced LNG.

(Source) compiled by the author based on data from the Department of Energy, the United States.

In Europe as demand for natural gas stagnated after 2009 and LNG receiving terminals were severely underutilised, reloaded volumes grew significantly after 2011, buoyed by expansion of the LNG markets in South America and the Middle East, as well as increasing demand for LNG in Asia, partly triggered by the shutdown of nuclear power in Japan following the Fukushima disaster.

The reloaded volumes in Europe peaked in 2014 at slightly more than 6 million tonnes before subduing to 3.6 million tonnes in 2015 and 2016 respectively. Although Spain boasted 4 million tonnes of reloading in 2014, the volumes shrunk to just a quarter of it in 2015 (1 million tonnes), and further to just around 90 thousand tonnes in 2016.

Part of the reasons for the reduction of reloading activities in Spain included recovery of demand for natural gas in the country, in line with the recovery in Europe, which resulted in corresponding recovery of net imports of LNG in the country from 8 million tonnes in 2014 to more than 10 million tonnes in 2016. Naturally the country consumed more imported LNG locally within its border in the year.

However, as Spain imported more than 20 million tonnes of LNG annually until 2010, even if the country consumed more than 10 million tonnes of LNG in the country, reloading with the peak frequency (6 million tonnes as in 2014) could not be constrained.

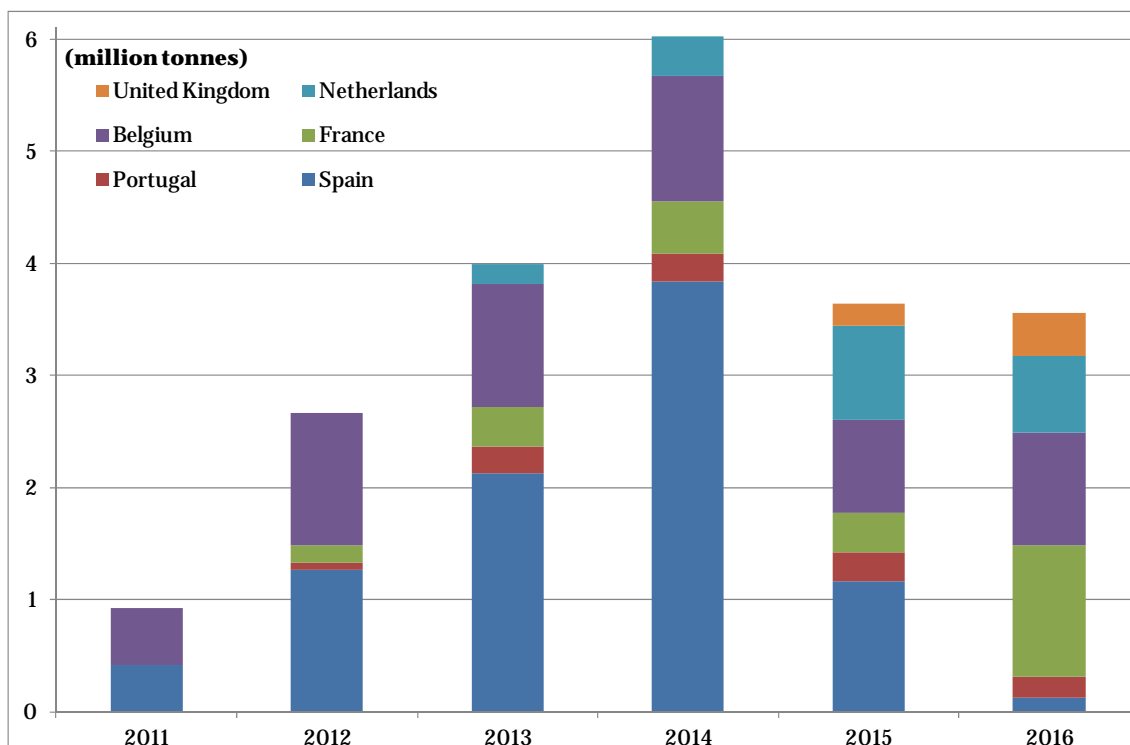
Assessed spot prices of LNG in Asia and the world have gone down significantly since the beginning of 2014, resulting in steep contraction of regional price differences and

arbitrage opportunities that had underpinned monetary gaining from those LNG reloading activities, leading in turn to significant reduction in reloaded volumes.

As for the regional price differences, there have been additional differences between Spain and Northwest Europe. As for most of the period of this analysis prices in Spain were higher than those in Northwest Europe, smaller regional price differences for the Spanish terminals against targeted markets for reloaded cargoes may have been reflected in the different trends of reloading activities between Spanish and Northwest European LNG terminals. Under those circumstances local consumption of imported LNG was apparently prioritised and cargo procurement activities for purely reloading to take advantage of smaller arbitrage opportunities were back burned.

In addition, significantly increasing volumes from new LNG production projects in the Asia Pacific region, especially those in Australia since 2015 have resulted in reduced needs for reloaded volumes from Europe. Other destinations for reloaded volumes also decreased demand for them as Brazil has decreased imports of LNG as a whole and Kuwait has directly imported more LNG from Qatar.

Figure 1 Volumes of reloaded LNG from European LNG importing countries



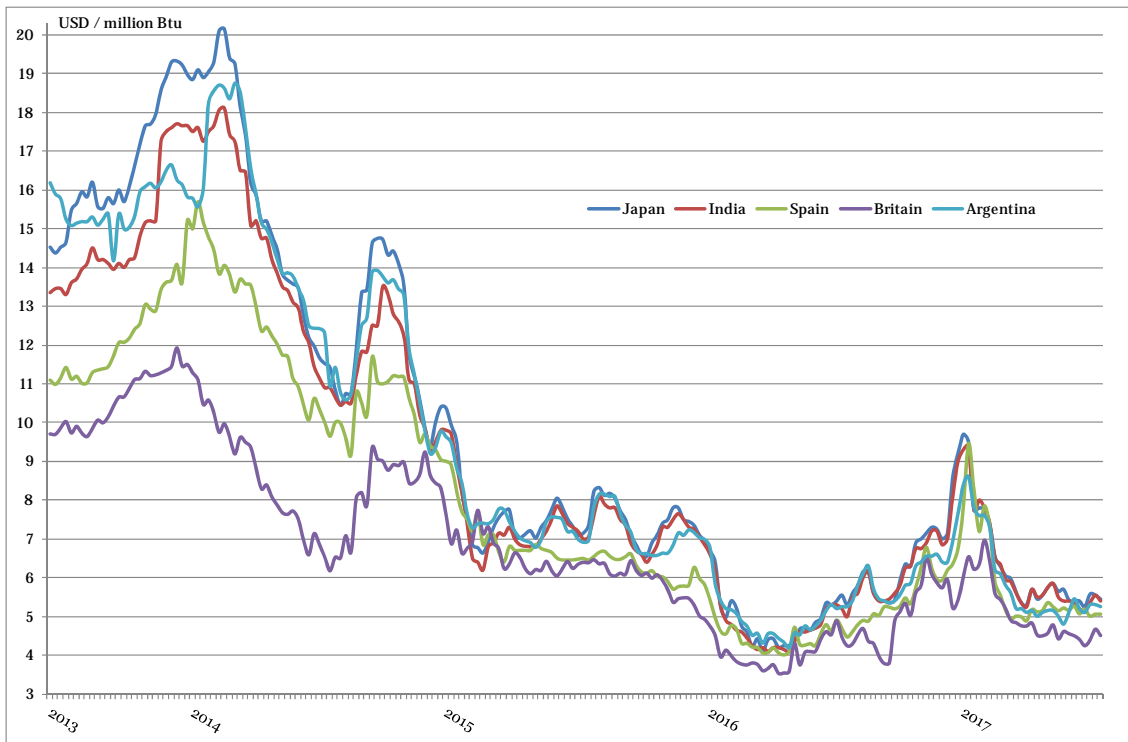
(Source) compiled by the author based on data from GIIGNL Annual Report 2017

Table 2 Volumes of LNG reloaded in Europe and then received in Asia

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|-------|-------|-------|-------|-------|-------|
| Japan | - | 0.349 | 0.181 | 0.782 | 0.257 | 0.525 |
| Korea | 0.053 | 0.111 | 0.188 | 1.111 | 0.268 | 0.069 |
| China | - | - | 0.057 | 0.188 | - | 0.025 |
| Chinese Taipei | 0.053 | 0.064 | 0.127 | - | 0.056 | - |
| India | 0.180 | 0.180 | 0.061 | 0.216 | 0.425 | 0.196 |
| Pakistan | - | - | - | - | 0.126 | 0.072 |
| Thailand | - | - | 0.104 | - | - | - |
| Malaysia | - | - | - | 0.123 | 0.014 | 0.069 |
| Singapore | - | - | - | 0.138 | 0.068 | - |
| Asia | 0.287 | 0.704 | 0.717 | 2.558 | 1.215 | 0.957 |
| Rest of World | 0.63 | 1.96 | 3.28 | 3.47 | 2.42 | 2.60 |
| Share of Asia | 31% | 26% | 18% | 42% | 33% | 27% |

(Source) compiled by the author based on customs statistics and data from GIIGNL Annual Report 2017

Figure 2 Assessed spot prices of LNG in the world in recent years



(Source) compiled by the author based on data from various sources

2. Increase and decrease of volumes reloaded in Spain

Demand for LNG in Spain grew steadily after 2000, before LNG terminal capacity reservation decreased in 2008. The decrease was caused by slowdown of economic activities and competitive disadvantage of LNG against import of natural gas via pipelines. In response terminal (and pipeline) operator Enagás implemented measures to enhance services to international customers by reducing boil-off rates and increasing reloading rates at several receiving terminals between 2008 and 2013, as well as improving services to customers of existing regasification business.

With this enhanced capability and increasing regional price differences between Europe and other regions, Spain steadily increased LNG reloading activities until 2014.

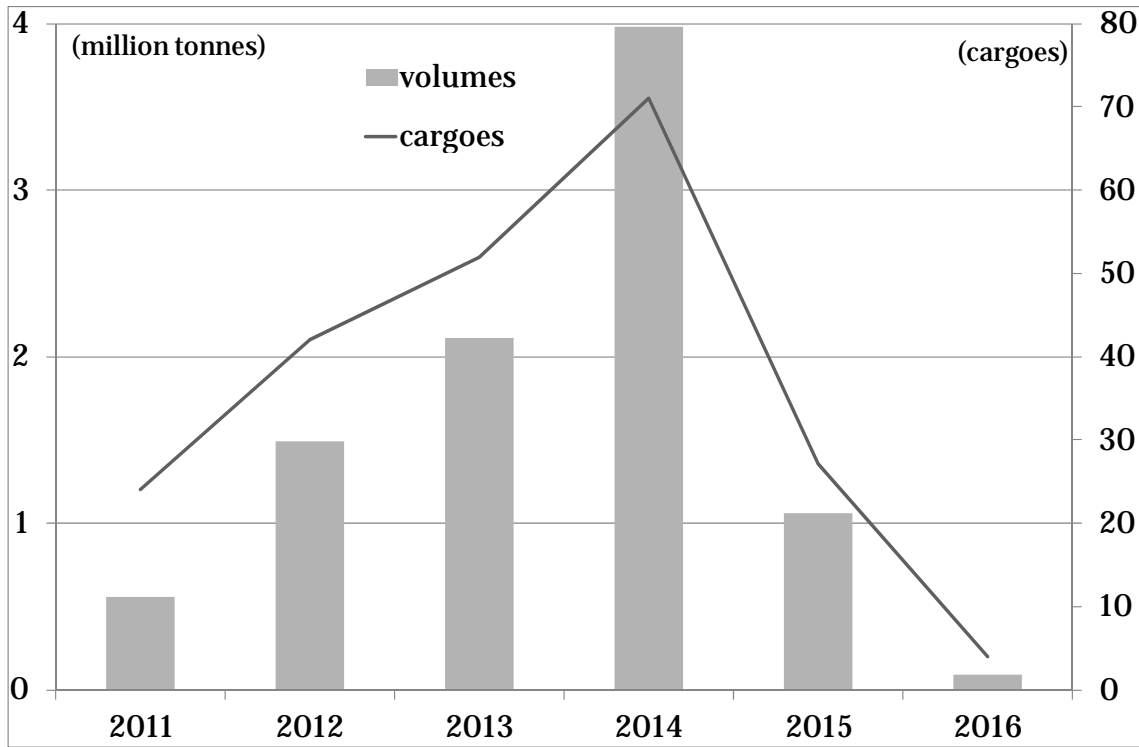
While destination restrictive clauses in LNG sales contracts are deemed illegal in the European Union (EU), profit sharing between the seller and the buyer is allowed when the cargo destination is altered under a DES (delivered ex-ship at the flange at the receiving port) contract.

However, as this profit sharing is a complicated practice and preferred to be avoided, players tend to reload and reexport cargoes after unloading them at the Spanish receiving terminals rather than changing destinations under DES agreements, resulting in more reloading activities in Spain during the period.

The EU regulations on resale restrictions may not look perfect in a sense that transfers of cargoes are not always physically optimal by creating multiple discharging operations of LNG at receiving terminals between production and end-use of gas. However, once a cargo is discharged into tanks at an LNG receiving terminal, it can be freely resold to anybody, even by reloading to a tanker yet in liquid form. In that sense, the regulations are greatly taken advantage of, in cargo reloading activities.

In any case, reloading activities in Spain were subdued in 2015 and 2016.

Figure 3 LNG reloading activities in Spain



(Source) compiled by the author based on data from *Boletín estadístico, Gestión del Sistema Gasista, Enagás*

3. Still steady reloading activities in France

On the other hand reloading activities in France have still been steady even after 2015.

Although judging purely from the assessed spot prices of LNG presented in Figure 2, reloading activities in that country may not look to have kept advantage, France supplied eight cargoes to Japan in 2016. In fact Japan did not import any other reloaded cargoes from Europe in the year.

These deliveries were believed to be made under a term contract that a primary user of the French LNG receiving terminal had with a Japanese LNG buyer. Under this arrangement, the price to beat was supposed to be the over-all average of Japanese LNG prices that include long-term contracts, instead of the assessed spot LNG prices, resulting in continuing competitiveness of deliveries into the Japanese market (The weighted average price of LNG from France landed in Japan in 2016 was USD 6.83 per million Btu, against USD 6.94 for the over-all weighted average of total Japan's imports of LNG in the year).

4. Indicative fee calculation of reloading operations

Calculation of indicative reloading fees are shown in the following table based on data published by terminal operators (Table 3) assuming reloaded volumes of 900 GWh (approximately 60,000 tonnes) per cargo, excluding primary discharging and storage costs.

As they represent only a few dimes per million Btu, they will enable economic regional arbitrages. However, if there are long time lags between discharge and reloading operations, they may result in constraints over physical terminal operations and increasing costs.

Table 3 Indicative fee calculation of reloading operations at selected LNG receiving terminals

| | Montoir | Fos | Zeebrugge | Spanish terminals |
|---------------------|---------|---------|-----------|-------------------|
| per reload | 330,000 | 255,000 | 75,000 | 176,841 |
| €/GWh | 160 | 160 | 180 | 1,563 |
| Total estimated | | | | |
| fees for one reload | 474,000 | 399,000 | 237,000 | 1,583,541 |

(Source) Calculated by the author based on the information obtained from the published data by the operators

Conclusions

LNG reloading business is a complicated practice that is largely dependent on price differences between the reloading point and final consuming market.

As it is also physically dependent on spare tank capacity, it is especially difficult at those LNG receiving terminals with higher utilisation rates of storage tanks. It is not a kind of business that can be easily implemented at LNG receiving terminals in Japan, where companies are almost totally dependent on LNG imports for their natural gas supply and terminals have been designed in a manner to minimise spare capacity.

Whereas in Europe, LNG reloading business has functioned as a tool to enhance operational rates of LNG terminals, whose operational rates in accordance with original purpose of receiving have been lower than intended.

Even though regional price differences have shrunk price levels for LNG in Japan are still relatively higher than those in other parts of the world. Even if time may come when some terminals in Japan face lower downstream gas demand and have spare capacity in the future, it could be still difficult to carry out reloading activities in an economical manner.

As it is becoming the fashion to relax and eliminate destination clauses in LNG supply contracts in line with government policies to facilitate unrestricted movement of LNG cargoes, flexibility of LNG sale and resale activities should be pursued through straightforward designation of final cargo destinations, rather than cargo reloading.

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