Seasonality: Enabling Factor for LNG in EU?

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Regasification Capacity in Europe

Key LNG importing countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Regasification Capacity (Mtpa)</th>
<th>Number of Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Belgium</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Greece</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Portugal</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Poland</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Lithuania</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Malta</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>154</td>
<td>23</td>
</tr>
</tbody>
</table>

Spain: 45
UK: 36
France: 26
Italy: 11

Regasification capacity in Europe.
The utilization rate* of EU LNG receiving facilities was on average as low as 22% of the nominal capacity.

Source: ICIS LNG EDGE, ALSI

*Calculated on send-out volumes net of reloadings
LNG Contracted Volumes in EU are Mostly Flexible

LNG imports vs. EU Demand

- Import LNG
- Production
- Import Pipe
- LNG share on Demand (right axis)

LNG imports represented on average the 11% of the overall European gas demand

LNG Contracted Volumes in EU by Type

- Flex
- Firm

Much of the contracted LNG volume in EU is associated to Flexible contracts

Source: ICIS LNG EDGE, Cedigaz, Eurostat, BP Statistical Review
LNG Price Spread between Europe and Asia Narrowed in the Last Years

Since the Oil price plunge occurred in 2014, LNG Price Spread between Europe and Asia began to narrow.

Source: Authors' own calculation based on ICIS LNG EDGE data.
2012-15: Intense reloading activity across EU...

**EU Reloading* Activity per Season and Price Spread**

- In summer of GY13-14 intense reload activity arose in Europe when oil prices began to collapse and LNG price spread between the EU and Asian markets remained sufficiently high to economically market cargo reloadings.

- Additionally, reduced consumption requirements in summer months may have enabled European market players to optimize their position by seizing the opportunity to deliver excess LNG volumes in premium markets.

- As a result, LNG demand in the observed period decreased in Europe partly because of:
  - **Stable demand requirements** and increasing LNG consumption in Asia bolstering LNG needs in the Pacifica Basin;
  - Price spread with Asia **sufficiently high** to enable cargo reloadings.

Source: Authors’ data processing on ICIS LNG EDGE

* Reloadings do not include Transshipment operations
EU Reloading Activity per Season and Price Spread

- **Summer**
- **Winter**
- **Spread Summer**
- **Spread Winter**

Spread Asia-EU Squeezed in Summer ’16 & ‘17

Low LNG Price Spread in Summer ’16 and ’17 made reloadings from EU less attractive

Source: Authors' data processing on ICIS LNG EDGE

... partly reduced in 2016-17...
EU LNG Imports surged in Summer ’16 & ’17

- The progressive squeeze of price spread in Summer between Europe and Asia is deemed to have fostered LNG arrivals in EU.
- The differential between Summer and Winter deliveries in GY16-17 was as much as 4 Bcm.

Summer Utilization rate of EU Terminals

EU terminals utilization rate ticked up in Summer of Gas Years 15-16 and 16-17

Source: ICIS LNG EDGE, ALSI (GIE)
... but other drivers contributed to bolster LNG imports in Summer: the case of Spain

- Low LNG spot prices (in the range of 5-6 $/MMBtu) enabled LNG to compete against traditional oil indexed contracts sourced via pipeline.
- This condition triggered optimization strategies by market players who allegedly displaced piped gas from Algeria to import incremental LNG, as occurred in Spain in Summer 2017

Source: ICIS LNG EDGE, Enagas
* Algerian oil indexed deliveries in Spain: authors’ own assumption assuming a 11% ratio on oil (Brent Dated) and a time lag of 6 months.
Conclusions

The increase of LNG activity in Europe in the period 2016-17 occurred during Summer months when typically:

1. **Price spread with Asia narrows below the reloading break-even price**
2. **Gas demand requirements in Asia are traditionally low**

Other elements contributed to attract more LNG in Europe:

3. **Spot LNG prices were substantially low in absolute terms competing against other sources at the European gas hubs**
4. **Oil indexed piped gas resulted more expensive than spot LNG, creating a room for optimization.**

Seasonality is likely to enable Europe to become more attractive, especially when LNG shall find a room in a period of low demand, thus becoming the market of last resort.
LNG Price Spread Fell in Q4 2018 because of milder weather...

...and Charter rates surged by limiting cross-Basin activity

Source: ICIS LNG EDGE
As a result a sharp rise of LNG deliveries to EU materialized

Source: ICIS LNG EDGE, ALSI (GIE)