



## European LNG terminals are entering a renewed era of attractiveness

Europe will stand as a growing valuable outlet for global LNG players. The increasing role of LNG in the European gas supply mix will heighten cross-infrastructure competition.

By **Sébastien Zimmer** and **Sébastien Plessis**

**Overview:**

The high availability of European regasification capacities, the decrease of indigenous gas production and the limited increase of pipe gas imports are all reasons that make Liquefied Natural Gas (“LNG”) a future key contributor to the European gas supply.

In spite of recent historic low LNG imports in Europe which led to the mothballing or abandon of some regasification terminal projects, LNG is destined to play a renewed role in the competitiveness and security of the European energy supply mix.

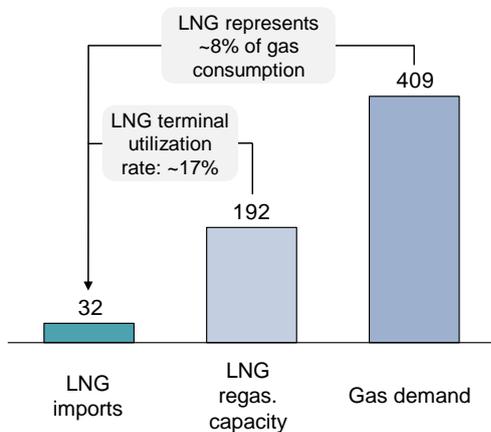
Europe will stand as a growing valuable outlet for global LNG players who will leverage competitive regasification infrastructures and access liquid wholesale gas markets, offering them the option to optimize their LNG portfolio.

The growing role of LNG terminals in enhancing the security of supply and providing flexible gas will heighten cross-infrastructure competition among LNG terminals themselves as well as with underground gas storage and transmission system operators.

## 1. Liquefied Natural Gas (“LNG”) imports have been a minor contributor to the European gas supply mix in recent years

A significant part of European players’ LNG supply portfolios has been recently rerouted to Asia and South-America. In spite of massive installed regasification capacities, LNG has been a minor contributor to the European gas supply mix. The share of LNG imports reached an ~8% low point in 2014, leading to an average ~17% utilization rate of the European LNG terminals. The 23 operational large-scale European LNG terminals are located along the Western and Southern European coasts as well as in the Baltic Sea since 2014. The current LNG importing EU countries are Portugal, Spain, Italy, Greece, France, the UK, Belgium, the Netherlands and Lithuania. Despite 4 terminals under construction and 20+ projects, some regasification terminals projects have been recently delayed, mothballed or abandoned<sup>(1)</sup>.

Figure 1. 2014 LNG imports, regas. capacities<sup>(2)</sup> and gas demand in the European Union (bcm per year)



Source: Eurogas, Gas Infrastructure Europe

## 2. LNG imports have not recently contributed to the modulation of the European gas demand

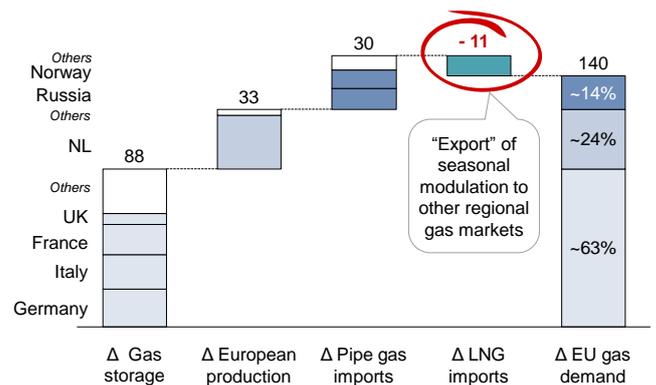
European gas demand is highly dependent upon seasonal heating needs. Underground gas storage and other supply sources contribute to satisfy these

variable seasonal needs (i.e. seasonal modulation).

In 2012/13, gas storage covered ~63% of the overall seasonal variation of the EU gas demand whereas the EU gas production (mainly the Dutch production) covered ~24% of these needs.

Meanwhile, LNG imports were higher in summer than in winter. The LNG import profile had therefore an inverse pattern compared to the seasonal variation of EU gas demand. Under these circumstances, Europe virtually exported EU-sourced seasonal modulation through its global LNG imports. This results from different seasonal prices between Europe and other regional gas markets.

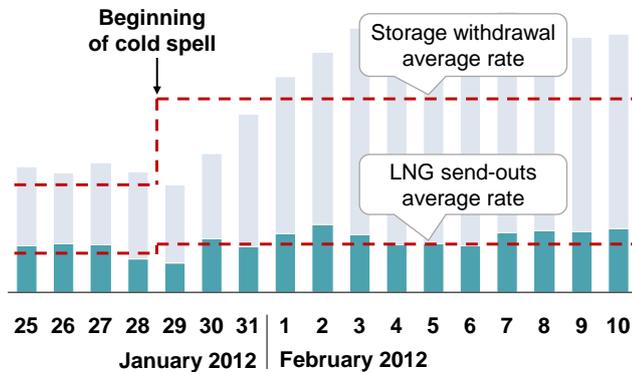
Figure 2. EU seasonal variations in gas demand and supply (bcm per year, Δ winter 2012/13 - summer 2012)



Source: Gas Infrastructure Europe, Cedigaz, Emerton analysis

In addition to seasonal modulation, short-term flexibility needs were massively covered by underground storage. For instance, from the first day of the February 2012 cold spell, gas storage withdrawals quickly increased to respond to market demand while LNG terminals send-outs barely changed. Gas storage was able to bring an immediate support to unplanned short-term balancing needs whereas LNG terminals, whose LNG storage tanks were almost empty, were unable to substantially increase their emissions. Regasification terminals were faced with the limited responsiveness of the upstream LNG logistics chain: for instance, the travel time from Qatar to Europe takes up to 18 days<sup>(3)</sup>.

Figure 3. Evolution of daily storage withdrawals and LNG send-outs in Western Europe<sup>(4)</sup> during February 2012 cold spell



Source: Gas Infrastructure Europe, ENTSOG, Emerton analysis

### 3. In spite of its recent limited contribution, LNG is destined to play an increasing role in the European energy supply mix

The decrease of indigenous gas production, the limited increase of pipe gas imports, the large installed regasification capacities and the EU objective to strengthen its security of gas supply by diversifying its historic gas sources are all reasons that make LNG a key supply source for the future.

In the European Union, natural gas is the only hydrocarbon whose consumption is growing (+0.6% per year) in the context of a global long-term decreasing energy demand (-0.5% per year). The (limited) growth of natural gas demand mainly results from the replacement of more polluting fuels, notably in the transportation sector (development of compressed natural gas and small-scale LNG in road and sea transport) and in the power sector, including as a back-up to renewable intermittent generation.

The increase of the LNG share in the European gas supply mix derives from the decrease of both EU and Norwegian productions, the moderate increase of Russian gas imports and the opening-up of new supply routes notably from the Caspian region<sup>(5)</sup>.

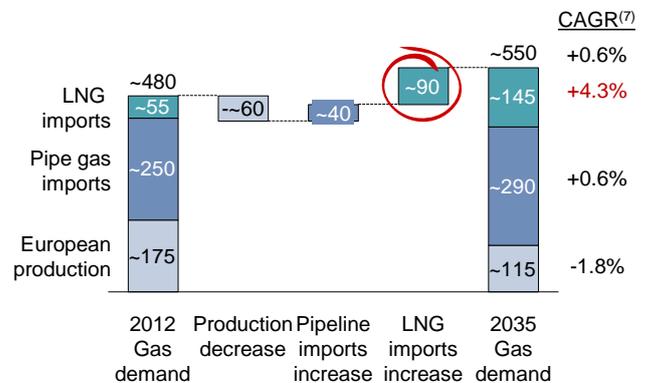
Extra LNG production coming from Australia, the US or closer sources such as Egypt and East Africa will therefore directly or indirectly contribute to the LNG supply to Europe.

In addition to increasing net importations, transshipments from Russian LNG (Yamal project) at Zeebrugge and Montoir LNG terminals will add up to ~12 bcm of LNG per year along the North-West European coast. These volumes may generate arbitrage opportunities and additional liquidity for European wholesale gas markets.

On the regulatory side, the growing role of LNG is shared and supported by the European Commission which aims to define an LNG strategy to improve both security and competitiveness of supply in the mid and long term<sup>(6)</sup>.

**LNG supplies to Europe stand as a rare source of growth despite the long-term decrease of the European energy demand. The LNG share in the European gas supply mix may reach up to ~25% of the gas supply by 2035 with a ~4% average growth rate per year.**

Figure 4. Evolution of EU gas demand, production and imports (base case 2012-2035, bcm per year, directional figures)



Source: BP statistical review, BP energy outlook 2035, AIE World Energy Outlook 2014, Cedigaz, Emerton analysis

### 4. The growing role of LNG will increase competition among gas and LNG infrastructures

Additional imports of LNG into Europe will emphasize competition not only among LNG terminals themselves but also with storage and transmission operators.

On the one hand, the European regasification terminals will compete with each other to attract

additional LNG whether they are regulated or exempt from tariff-regulation. Such competition will be reinforced by the upcoming termination of some long-term regasification capacity bookings. For years, captive long-term shippers have been subject to regular increases of regulated tariff levels without negative effects on terminal operators; this situation is about to change.

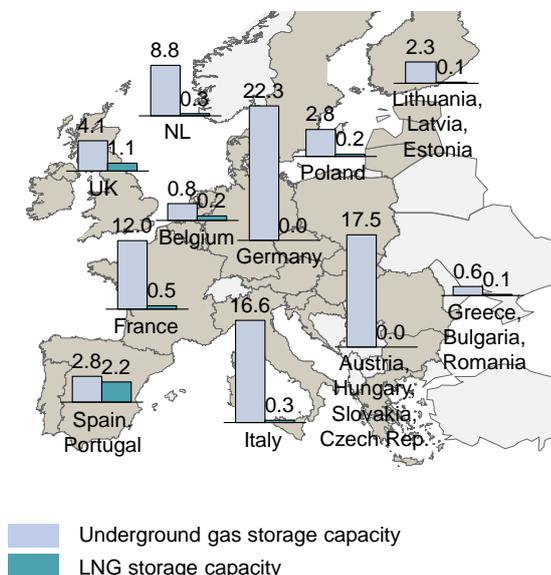
**Levels of access tariffs will become a key determinant of regulated LNG terminal operators attractiveness.**

On the other hand, LNG terminals will compete with storage and transmission system operators which will all be able to offer short-term services. Transmission system operators will offer short-term services on the basis of their linepack while LNG terminals will be able to provide flexibility services thanks to their higher utilization rate.

The flexibility services provided by LNG terminals will be nonetheless constrained by their LNG storage capacity which globally represents only ~5% of the whole European underground gas storage capacities.

**Cross-infrastructure competition will therefore focus on the short-term flexibility market where all infrastructure operators will be able to play.**

Figure 5. European map of LNG and gas storage capacities in 2015 (bcm of natural gas or regas. LNG)



Source: Gas Infrastructure Europe, Emerton analysis

**5. The potential introduction of a new security-of-supply regulatory framework should guarantee a fair competitive playing field among infrastructures**

European gas markets compete with other market areas to be the most attractive outlets for LNG production. The potential introduction by the European Commission of a new regulatory framework aiming at enhancing security of supply should minimize the operational constraints on LNG terminals' users.

**Any side-effect which may harm LNG terminals commercial attractiveness will have to be taken in account.**

For instance, the introduction of a minimum LNG storage obligation in winter would strongly constrain the LNG terminals' ability to schedule flexible unloading slots and would therefore hamper their attractiveness to market players. The applicable regulatory frameworks should not hamper the attractiveness of the various gas and LNG infrastructures whether they are regulated or not.

**6. The wholesale gas markets liquidity is a primary determinant of imported LNG competitiveness**

By creating the option to import LNG in places where only pipe gas was originally available, LNG terminals improve both security and competitiveness of gas supply. The impact of new LNG terminals on the competitiveness of gas supply strongly depends on the liquidity of the wholesale gas market they provide access to.

Some recent investments in LNG terminals made in poorly liquid gas markets are likely to result in decreases of oil-indexed long-term-contracted gas prices without reaching the North-West European wholesale gas price levels.

**Only the most liquid, deep and transparent wholesale markets are able to attract LNG supplies at prices aligned with North-West European wholesale gas markets.**

For instance, South Hook (UK) and Gate (NL) LNG terminals respectively reached ~31% and ~3% utilization rates for gas year 2013/14. The higher utilization rate of South Hook stems from its role as the dedicated physical outlet of “Qatargas 2” LNG trains. The fact that the UK gas market was (and still is) the most liquid, deep and transparent European wholesale gas market played a major role in the choice of the UK as the physical outlet of the Qatari LNG. On the UK market, LNG is a *price taker* which is the most suitable situation for gas consumers.

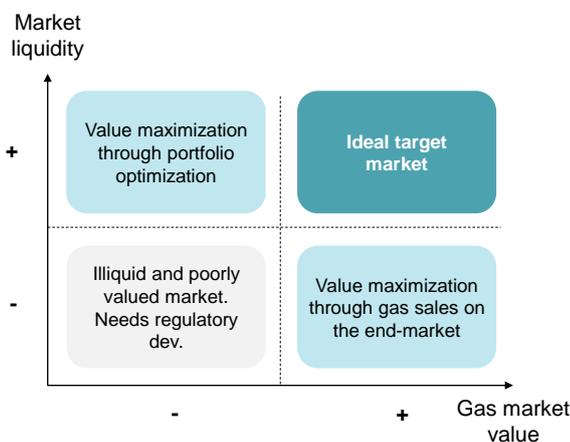
In the case of less liquid markets (e.g. French Trading Region South), LNG is a *price maker* which means that any marginal LNG volume delivered is priced against the highest price on worldwide gas markets (including shipping cost differentials).

**Thanks to its competitive regasification terminals and liquid wholesale markets, Europe will be a growing valuable outlet for global LNG players.**

LNG players should select their European physical outlets by targeting the right balance among gas price levels, infrastructure costs and ease of LNG re-routing, the latter being strongly linked to wholesale gas market liquidity.

On the contrary, European gas utilities which are more focused on pipe gas than LNG may target the less liquid, and rather overvalued, Central and Eastern European gas markets.

Figure 6. Main sources of value in various European gas markets



Source: Emerton analysis

## 7. Transmission system operators will play a structuring role in improving the liquidity of their home markets

The debottlenecking of some transmission capacities could offer an indirect LNG access to Central and Eastern European countries which strive to reduce the prices of their historic Russian gas supplies in a tense political context. The creation of targeted backhaul or reverse capacity would strongly improve the liquidity of some central European markets.

In some cases, transnational mergers of gas hubs would be an efficient way to boost markets’ liquidity and competitiveness.

Transmission system operators should therefore select and implement the most valuable scheme to maximize the attractiveness of their network and trading hub.

### Notes:

- (1): e.g. Fos Faster project, Musel LNG, Wilhelmshaven LNG.
- (2): The 192 bcma capacity excludes the 13-bcma Dunkirk LNG terminal in France which is planned to enter into commercial operations by the end of 2015 and the 5-bcma Swinoujscie LNG terminal in Poland which is planned to start up in 2016.
- (3): Qatar is the main LNG supplier to Europe. The 18-day travel time corresponds to an LNG unloading at South Hook LNG terminal in West Wales which is the main physical outlet of the Qatargas 2 logistics chain.
- (4): Countries taken into account are: Belgium, France, Germany, Italy, the Netherlands, Portugal, Spain and the United Kingdom.
- (5): Source: BP, IEA, Cedigaz. Main assumptions: constant market share of Russian gas imports in Europe (~31%); No change in imports from North Africa; Norway: ~10 bcma decrease of gas exports to Europe; Other sources: ~25 bcma increase. European production: ~60 bcma decrease is a minimum assumption, a higher assumption of ~100 bcma could have been selected depending on various sources.
- (6): European Commission’s consultation published in July 2015 on the “EU strategy for LNG and gas storage”.
- (7): Compound Annual Growth Rate.

**About Emerton:**

- Emerton is a premier global, mid-size, strategy consulting firm, with offices in Europe (Paris & Brussels) and North America (Boston)
- Its Oil & Gas practice consists of seasoned industry professionals with in-depth experience in energy markets and regulation
- Emerton offers a unique value proposition through decision-driven analytics and unparalleled personal expertise in the gas and LNG industries

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