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# CEER Status Review on monitoring access to EU LNG terminals in 2009-2013

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**INFORMATION PAGE**

## Abstract

This document (C14-GWG-111-03) provides an assessment of the level of capacity utilisation of European LNG terminals in terms of spot contracting, secondary market functioning, application of Congestion Management Procedures, as well as the new services offered in the terminals and the new uses of LNG.

The five years of analysis (2009-2013) show the evolution of the LNG facilities in Europe: business development, consolidation and new tendencies. The paper also reports on the new role of LNG in terms of security of supply.

## Target Audience

Shippers, European Commission, regulators, energy suppliers, traders, network operators, Member States, gas customers, gas industry, consumer representative groups, academics and other interested parties.

## Keywords

LNG, LNG terminal, spot cargo, regasification, LNG storage, services, uses

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## Related Documents

CEER documents

- "CEER 2014 Work Programme", 9 January 2014, Ref. C13-WPDC-23-05
- "CEER Monitoring Report on Implementation of the Transparency Template in the European LNG Terminals", Ref.C13-GWG-102-04, 20 December 2013
- "CEER Status Review and evaluation of access regimes at LNG terminals in the EU", 12 March 2013, Ref. C12-LNG-15-03
- "ERGEG 2011 study on congestion management procedures and anti-hoarding mechanisms in the European LNG terminals", April 2011, Ref. E10-LNG-11-03b
- "Monitoring the implementation of GGPLNG", June 2009, Ref. E09-LNG-07-03
- "Guidelines for Good Third Party Access Practice for LNG System Operators (GGPLNG)", May 2008, Ref. E08-LNG-06-03

External documents

- European Energy Security Strategy, 28 May 2014
- Proposal for a Directive of the European Parliament and of the Council on the deployment of alternative fuels infrastructure, 24 January 2013
- XXIV Madrid Forum, 15-16 October 2013 and XXV Madrid Forum, 6-7 May 2014
- Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC
- Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005

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## EXECUTIVE SUMMARY

### *Objective and scope of the report*

The Council of European Energy Regulators (CEER) has long promoted fair competition and market access in Europe's electricity and gas sectors. Transparency and fair rules for access to Liquefied Natural Gas (LNG) terminals in Europe are important to promote a competitive gas market in Europe, especially when we seek to increase Europe's security of supply in gas through diversification of our energy sources and routes.

Understanding how LNG terminals are operating and to what degree their capacity is being used (and made available to the market) is an important test of market assessment.

There have been a number of recent developments in the global LNG market that have led to a lower utilisation of current LNG terminals that foster the development of new services in the European LNG facilities. These include a decrease in gas demand in Europe, a growing demand for LNG in the Asian and South American markets as well as the changing role of gas in the transition to a low-carbon generation mix.

In addition, taking into consideration recent events in Russia and Ukraine, the European Commission adopted its Communication[1] on a European Energy Security Strategy in May 2014, including key actions to increase European capacity to overcome a potential disruption to energy supplies. One of the proposals concerns taking advantage of the potential of LNG.

This CEER Status Review provides an assessment of the functioning of LNG terminals: level of capacity utilisation, spot contracting, secondary market functioning, application of Congestion Management Procedures (CMPs), as well as the new services offered in the terminals and the new uses of LNG. It focuses on market evolution in, and utilisation of, European LNG terminals over the past five years (2009-2013).

The report covers those Member States which have LNG terminals[2]. In addition, other countries which do not have LNG terminals have provided useful feedback and information: Denmark, Finland, Lithuania, Malta, Slovak Republic, Slovenia, Sweden and Romania.

### *Key findings*

In general, the role of LNG in Europe depends mostly on the geographical situation, capacity of the LNG import terminal, prices of LNG versus natural gas, level of gas demand, alternative sources of supply flexibility and downstream market development in every Member State. However, the contribution of LNG and associated facilities to security of supply through diversification of sources, routes and competition are common in all Member States.

Analysis of data collected in the period 2009 - 2013 shows that the market share of LNG in total gas supplies initially increased from 2009 to 2011 but has decreased since then..

[1] European Energy Security Strategy, 28 May 2014.
[2] Belgium, France, Greece, Italy, Portugal, Spain, the Netherlands and the United Kingdom.

Regarding LNG capacity in Europe, regasification and storage capacity have increased by 44% and 39% respectively since 2009, with new terminals coming on line and several under construction.

It is worth noting that although the average rate of capacity contracted and used in Europe increased from 2009 to 2011, both ratios have decreased since 2011. The reduction is more noticeable in the utilisation of the terminals' send-out capacity, which was around 23% of the technical capacity in 2013 (was 53% in 2010).

Meanwhile, the number of active shippers at the terminals remains almost the same in the different Member States. The number is higher in the terminals subject to regulated Third Party Access (TPA).

Data also shows that unused capacity was released to the market (at those terminals that are almost fully booked). Released capacity was hardly contracted, suggesting that generally there was no contractual congestion. Following the same pattern, the secondary capacity market is active in Belgium, France, Greece, Portugal, Spain, the Netherlands and the United Kingdom.

From a European perspective, there is capacity available to contract, either on the primary market or through the secondary market and the application of CMPs whereby previously contracted capacity is brought back to the market. This Status Review reveals that all terminals have properly functioning CMP provisions, even though the capacity released is not often subscribed to by other shippers. The subscription of slots in the secondary market or coming from CMP applications has noticeably decreased since 2011, due to less capacity demand in general. In addition, the number of spot cargoes unloaded at the European LNG terminals has also decreased since then.

By contrast, the number of terminals that offer reloading services has increased since 2011 and many operations have been performed at 9 terminals in 2013. The service was introduced in response to demand from terminal users to be able to move the LNG ships to more attractive markets. On average, more than 30% of the ships unloaded have been reloaded at the 9 terminals in 2013. Zeebrugge and Mugardos are the terminals where this service has been most active: nearly 60% of the ships unloaded have been reloaded in both terminals (in terms of GWh the percentages are 50% and 20% respectively).

This fact proves that the European terminals are adapting their facilities to the changes in the global LNG market and the low rates of regasification capacity utilisation.

The challenges and innovation in the LNG market are related to new services offered in the terminals, such as truck loading, small ship loading, trans-shipment, storage as an unbundled service and bunkering. These activities promote the new uses of LNG as fuel for ships and long-haul trucks and are in line with the European proposals for the development of alternative fuels and their infrastructure.

***Next steps***

Transparent and non-discriminatory access to LNG terminals is a relevant issue to develop a well-functioning gas market in Europe. From this report, CEER commits to continue monitoring European LNG terminals, as a basis to promote a single and competitive gas market in Europe.

LNG terminals play an increasingly important role in European gas markets in terms of security of supply, through diversification of our gas resources and routes in a highly import-dependent region. Transparency on access to services is crucial to improve the market and the European security of supply.

CEER could cooperate and examine the proposals, mechanisms or measures that could be developed at European level as key actions derived from the EC European Energy Security Strategy.

The role of LNG in Europe is associated with gas market fundamentals. The analysis of the past five year period shows that LNG terminals have adapted their facilities to market dynamics, e.g. cargoes reloading, truck loading and bunkering services among other services.

Following market trends, LNG volumes have been delivered following market prices around world markets.

CEER plans to carry out a further analysis of new activities, challenges and innovation at the LNG plants, as well as new uses of LNG following the recent provisions adopted by the European institutions, namely the Proposal for a Directive[3] on the deployment of alternative fuels infrastructure.

[3] Proposal for a Directive of the European Parliament and of the Council on the deployment of alternative fuels infrastructure, 24 January 2013.

# 1. INTRODUCTION

## 1.1. BACKGROUND

European energy regulators have dedicated significant resources over the past years so as to understand and improve how LNG terminals operate in Europe, with the aim of promoting competition and security of supply.

In 2008, ERGEG published Guidelines for Good Third Party Access Practice for LNG System Operators (GGPLNG)[4]. Subsequently, regulators assessed the progress to recommend further improvements in an effort to harmonise capacity allocation, congestion management procedures and other market tools to promote a competitive, transparent and non-discriminatory gas market in Europe.

ERGEG studies in 2009[5] and 2011[6] found that differences persisted in the level and format of information available at LNG terminals across Europe, possibly hindering the access of small players or players willing to unload spot cargoes at LNG terminals.

More specifically, the 2011 ERGEG study concluded that users were generally satisfied with the CMP rules applied, although there were several areas where regulations and procedures could be improved or further harmonised.

In 2012, CEER undertook yet another review of access conditions at LNG terminals. With the support of a questionnaire submitted to its members, CEER gathered information on the rules in place, the level of capacity utilisation, spot contracting, secondary market functioning and application of CMPs at individual European LNG terminals. Responses were received from eight National Regulatory Authorities (NRAs), covering all Member States where LNG terminals exist[7]. The results were published in Mach 2013 in a CEER Status Review, which focused on market evolution and utilisation relevant to the European LNG terminals over the past three years (2009-2011) in March 2013[8].

This report updates the analysis collecting the information for the years 2012 and 2013.

Furthermore, in 2012, a Transparency Template (TT) was launched by Gas LNG Infrastructure Europe (GLE) and CEER. The aim of the TT is to facilitate access to information published by LNG operators, providing users with the information they need in an accessible and standard way. The TT also allows LNG System Operators (LSOs) to comply with transparency provisions in European regulation. In December 2013, CEER published its evaluation of the implementation of the TT[9] in the operators' websites, analysing the format, content and purpose of the template for users and customers.

[4] "Guidelines for Good Third Party Access Practice for LNG System Operators (GGPLNG)" , Ref. E08-LNG-06-03, 7 May 2008.

[5] "Monitoring the implementation of GGPLNG", Ref. E09-LNG-07-03, 3 June 2009.

[6] "ERGEG 2011 study on congestion management procedures & anti-hoarding mechanisms in the European LNG terminals", Ref. E10-LNG-11-03b, 12 April 2011.

[7] Belgium, France, Greece, Italy, Portugal, Spain, the Netherlands, the United Kingdom.

[8] "CEER Status Review and evaluation of access regimes at LNG terminals in the EU", Ref. C12-LNG-15-03, 12 March 2013.

[9] "CEER Monitoring Report on Implementation of the Transparency Template in the European LNG Terminals" Ref.C13-GWG-102-04, 20 December 2013.

This CEER Status Review provides an assessment of the rules in place, the level of capacity utilisation, spot contracting, secondary market functioning, application of CMPs, as well as the new services offered in the terminals and the new uses of LNG. It focuses on market evolution and utilisation relevant to European LNG terminals over the past five years (2009-2013).
The analysis serves as the basis for identifying areas of attention where procedures can be improved or further harmonised and determine the future agenda for LNG related activities.

The report covers those Member States which have LNG terminals. Furthermore, other regulators have participated and provided information: Denmark, Finland, Lithuania, Malta, Slovak Republic, Slovenia, Sweden and Romania.

## 1.2. RECAP OF KEY MARKET ASPECTS OF LNG TERMINALS

LNG terminals play an increasingly important role in Europe's gas markets, providing additional sources of gas in a highly import-dependent region. Indeed, LNG supplies contribute not only to security of supply through diversification but also provide more flexibility to the system through a wider market and allow greater competition both in upstream and downstream gas markets.

The way in which the overall capacity at an LNG terminal is managed is therefore crucial in ensuring market participants are able to gain access to regasification, storage and spot contracting.

Generally speaking, regasification and storage capacity at LNG terminals must be contracted (or "booked"). This capacity can then be used or "released" from initial bookings to be sold to market participants. This can be done in the secondary market or through CMPs.

Hoarding capacity (rather than selling it on the market) can distort competition. EU legislation makes LNG facilities subject to a regulated Third Party Access (TPA) regime; LNG operators are required to offer unused LNG capacity on the primary market without delay and to allow access to third parties, under transparent and non-discriminatory conditions. For terminals which have received an exemption from these requirements, additional measures require them to make available any unused capacity to others.

The aim of making capacity available to the market, which is included in the European regulatory framework for LNG infrastructure in the 3rd Package[10], is to give an essential role to secondary markets and anti-hoarding mechanisms (which may differ from one terminal to another), as well as ensuring the final objectives of enhancing competition and achieving a single market at European level are reached.

LNG plays a key role in connecting producers and consumers all over the world. Market prices in the different regions drive the flows of LNG. In recent years Europe has lost an important amount of cargoes to Asia and South America due to the high premiums paid in these regions.

If LNG is to continue to play an important role in the European market, flexibility is paramount in the services provided by the terminals.

## 1.3. GLOBAL LNG MARKET DYNAMICS

Competition between regional consumption areas has strengthened since 2011. The regasification capacities in importing countries have increased sharply in recent years and global LNG demand has surged while the number of new liquefaction capacity in exporting

[10] http://ec.europa.eu/energy/gas_electricity/legislation/legislation_en.htm

countries has grown. At the end of 2013, the total regasification capacity of the 29 LNG importing countries was 721 MTPA[11] while the total liquefaction capacity of the 17 LNG exporting countries was only 286 MTPA[12].

In this context, the global LNG market has been increasingly under tension, due in particular to the significant increase of Asian demand. This has been a result of the nuclear closures in Japan and South Korea as well as the rapid rise in gas consumption in China. South America has also emerged as a key importing region, with Argentina in particular relying on LNG to compensate for declining domestic production and Brazil strongly increasing its imports in 2013 because of a lower availability of hydropower.

As a result, Asian and South American buyers have been willing to pay high prices to meet surging demand and the spread with prices on European gas hubs widened at the end of 2013. In this context, shippers have been encouraged to maximise deliveries of pipe-gas in place of imports instead of LNG to cover the demand of their European customers. This way, LNG has been sent to higher paying-markets.

As a result, a significant number of cargoes have been diverted from Europe to the Asian and South American markets in recent years.

### 1.4. CUSTOMER PERSPECTIVE

Europe depends on imports for much of its gas needs. The European Union imports 53% of the energy it consumes. The energy import dependency in relation to natural gas is 66%, some of which reaches Europe in the form of LNG, i.e., LNG imports into Europe were 19% in 2013. This form of gas is a growing part of our energy mix in Europe, and helps: 1) to ensure we have the amount of gas we need for consumption; 2) to diversify our sources of gas so as to reduce dependence on any one provider (security of supply); and 3) to promote price-based competition (by virtue of having more competing sources of gas) which should ultimately translate into efficient prices for customers. Additionally, it is an important source of flexibility (alongside other tools such as storage and interconnection).

Each LNG terminal can accommodate a certain capacity of LNG for unloading, regasification and storage. Therefore, access to terminals must be contracted with the LNG terminal's system operator. EU legislation requires these terminals to be 'accessible' to third parties, that is to say, to shippers or other gas companies without the need to be associated to the company operating the LNG terminal. Regulators therefore monitor how competition - including non-discrimination, transparency of information, contracting and trading mechanisms - is functioning at LNG terminals.

LNG infrastructure development is of key importance for diversification of gas supplies and to facilitate the development of competition for the benefit of end-customers. Effective utilisation of LNG terminals also needs to be ensured and quality of service assured in order to avoid inefficient infrastructure, since investment costs are generally passed on to consumers through their energy bills.

The main goals of this work are to inform stakeholders of the situation over the past five years (2009 – 2013, to show the new role of LNG in Europe (new services and uses), and to learn about areas where procedures can be improved or further harmonised.

[11] MTPA: Million Tons Per Annum.

[12] "The LNG Industry in 2013", GIIGNL report.

## 2. MAIN ASPECTS OF ACCESS REGULATION FOR LNG TERMINALS

In Europe, there are 18 LNG facilities in operation (Table 1) located in eight Member States. 13 of them are subject to a regulated TPA regime so their owners are required to open and share access with any third party granted access rights, under transparent and non-discriminatory conditions.

The other five LNG terminals have been granted an exemption from TPA requirements according to pre-defined conditions (Article 36 of Directive 2009/73/EC[13]). Such exemptions have been granted to: South Hook, Grain, Dragon, Gate and Rovigo. The implementation of secondary markets and anti-hoarding mechanisms is often a pre-condition for such an exemption, compelling the primary shippers to make unused capacity available to others. Thus, in an exempted terminal the owner is free to negotiate contracts directly with primary shippers, but the terminal's anti-hoarding mechanisms, which are monitored by regulators, must be sufficiently transparent and enable secondary shippers to gain access to capacity when it is not used.

Overall, a high level of transparency is required in order to increase competition, remove barriers to entry, ensure effective access to gas facilities, enhance cross-border trading and minimise information asymmetry and costs for market participants. GLE and CEER have agreed on a transparency template with the intention of streamlining access to newcomers.

[13] "Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC"

*Table 1 Number of European LNG terminals in operation in 2013.*

| 8 Member States | 18 LNG Terminals | Technical Regasification capacity (bcm/year) | % of capacity used out of the technical capacity in 2013 |
|---|---|---|---|
| **Belgium** | Zeebrugge | 9 | 16% |
| **France** | Fos Tonkin | 5.5 | 56% |
| | Montoir | 11.4 | 11% |
| | Fos Cavaou | 8.25 | 48% |
| **Greece** | Revythoussa | 5.20 | 13.2% |
| **Italy** | Panigaglia | 3.54 | 1% |
| | Rovigo | 8 | 65% |
| **Portugal** | Sines | 10.95 | 36% |
| **Spain** | Barcelona | 17 | 19% |
| | Cartagena | 12 | 19% |
| | Huelva | 12 | 19% |
| | Bilbao | 7 | 36% |
| | Sagunto | 9 | 17% |
| | Mugardos | 4 | 35% |
| **The Netherlands** | Gate | 12 | 5.5% |
| **The United Kingdom** | Grain | 21 | 7% |
| | Dragon | 8 | 2% |
| | South Hook | 22 | 41% |

# 3. NATURAL GAS DEMAND AND LNG SUPPLIES

## 3.1. KEY TRENDS

LNG and associated facilities contribute to the EU's security of supply through diversification of sources, routes and competition. This being said, the role played by LNG is different from one country to another, depending mostly on supply characteristics, geographical situation, capacity of the LNG import terminal, level of gas demand, alternative sources of flexibility and downstream market development.

The share of LNG in total imports to Europe increased in the period 2009-2011 from 28% to 32%. However, the rate has fallen in the last two years, down to 19% in 2013.

Figure 1 shows the evolution of European natural gas demand by Member State, as well as the share of LNG supplying this demand. The trends are comparable in all Member States covered by the study; natural gas demand has decreased compared to 2010 levels and the share of demand covered by LNG supplies has also declined.

The decrease in LNG imports – 28% lower than 2012– is first a consequence of the lower demand for natural gas in the EU, which relates to (i) the economic crisis, (ii) the increasing RES penetration, (iii) low prices of coal and, (iv) the current functioning of the European emission trading system. It is also a result of the high prices in the Asian and South American gas markets attracting more LNG cargoes at Europe's expense.

The LNG unloaded in Europe is not always consumed in Europe. Therefore, lower send out can be the result of cargoes being reloaded into other LNG tankers that move the LNG towards other markets. In 2013, re-exports from Spain and Belgium increased: LNG importers have taken advantage of arbitrage opportunities by selling LNG to higher priced markets, although first unloading part of the LNG into the European terminals, to reload it later, in order to comply with long term contracts (destination clauses, ship rotation).

## 3.2. CONSEQUENCES OF THE DECREASE OF LNG SUPPLIES

While less LNG is reaching Europe, it tends to be offset by a stronger reliance on the pipeline connections to supply natural gas demand.

However, the ability to replace LNG with pipe-gas imports is different from one Member State to another. NRAs from Belgium, France (for the gas exchange point North only - PEG North), the United Kingdom, Italy, Spain and the Netherlands reported that the decrease of LNG deliveries had not raised particular issues for the gas market and transmission system of their jurisdictions from a security of supply point of view because a wide range of supplies were available and could be substituted for each other.

In South-West Europe (France for the balancing zone PEG South-TIGF, Spain and Portugal), LNG deliveries play a key role for meeting gas demand. The possibility to replace LNG with pipe-gas is limited in this area and this had led to some Interconnection Points (IPs) becoming significantly congested. The French Regulator, CRE, reported that the rate of use of the IP between GRTgaz North and South areas had reached unprecedented levels. The average rate of use has been 93% in 2013 (89% in 2012) and capacity has been used at its maximum level during 207 days (103 in 2012). At the bidirectional connection between France and Spain, despite the recent increase of capacity of April 2013, all capacity is booked in the southward direction and the average rate of use (since April) has been 70% in 2013 with several days of maximum use at the end of the year.

CRE (French NRA) and ERSE (Portuguese NRA) indicated that the dependency on LNG supplies had also led to price increases on wholesale markets and divergence with prices on the North-West European markets. CRE indicated that PEG Sud Day-Ahead products had traded at an average premium to PEG North of 2.9 €/MWh in 2013 (1.5 €/MWh in 2012), with the premium reaching a record high on 16 December of 14.75 €/MWh.

RAE (Greek NRA) also indicated that the cross-border interconnections have been used at a higher level, although not reaching maximum levels. Nonetheless, RAE pointed out that this change in flow patterns might compromise the diversification of energy supplies and routes.

Regarding the functioning of the LNG terminals themselves, ERSE also referred to an increase of the terminal's tariffs and LNG storage losses.

### 3.3. REGULATORY MEASURES

Most NRAs reported that the decline of LNG deliveries was the result of global market dynamics and had not required any regulatory response in their jurisdiction.

In France, CRE indicated that a cost-benefit analysis had been carried out on the investments necessary to remove the North to South congestion and create a single market place in France. The French regulator organised a public consultation in February 2014 and issued a deliberation in May 2014 setting out guidelines for the creation of a single PEG France by 2018. Considering the high price conditions in the South part of France, CRE is also studying regulatory measures for 2014-2018 in order to help minimise price shocks arising from PEG South structural problems.

### 3.4. POTENTIAL IMPLICATIONS FOR THE EU GAS TARGET MODEL

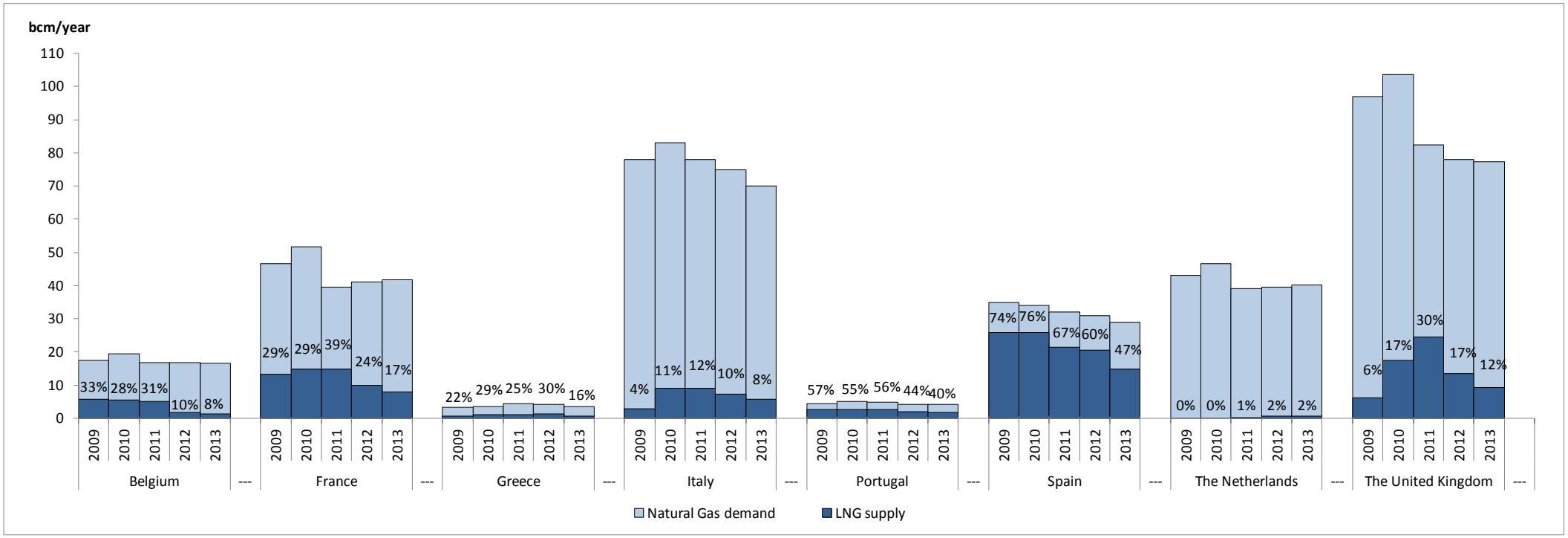
While the decrease of LNG supplies has had different impacts for the Member States covered by the study, all NRAs considered that the Gas Target Model update should note the importance of LNG in diversifying EU gas supplies. NRAs also considered that market forces should drive LNG development and utilisation.

It was observed that the contribution of LNG to security of supply had changed now that cargoes are being diverted to countries outside the European Union. In this context, the role of LNG could be considered more as one of a flexibility provider than base load supply. Another NRA stressed that the drop in LNG deliveries confirmed the conclusions of the Gas Target Model on the need to have sufficiently diversified and substitutable supply sources if market areas are to function properly.

It was also highlighted that LNG should compete in the market on a level playing field with other imports/ sources of flexibility.

Finally, NRAs pointed out that special attention should be given to the availability of LNG terminals towards the realisation of the internal energy market. The existence of LNG terminals significantly enhances the pluralism of sources of supply. LNG is not constrained by pipeline national systems and is not affected by pipeline congestion. LNG can contribute to extending the relevant geographic market. LNG can also contribute to reducing dependency on long-term contracts and ensuring that wholesale markets for gas can further develop. The availability of sufficient gas system infrastructure, interconnection points as well as the transmission capacity via pipelines would be essential to bring gas from the countries where the terminals are located to where the demand is.

*Figure 1: Natural gas demand. Rate LNG/natural gas supplies (*)*




(*) In Spain, the % of LNG supplies is calculated on the basis of total national supplies.

# 4. SERVICES OFFERED IN LNG TERMINALS

## 4.1. BASIC SERVICES

LNG terminals provide regasification or send out capacity: the rate at which LNG can be converted back to its gaseous form. LNG can also be stored in tanks at the terminal until it is needed. Terminals have different proportions of regasification capacity versus storage capacity.

Figures 2 and 3 show that Spain's LNG terminals account for the highest capacity for both regasification and storage, followed by the United Kingdom and France.

Figure 2 also illustrates that, since 2009, the regasification capacity in Europe has increased 44%, up to 186 bcm in 2013, mainly due to developments in the Netherlands and the United Kingdom. Spanish send-out capacity has not changed in the period (33% of the European regasification capacity in 2013). In the United Kingdom (28% in 2013), the send-out capacity has increased by 147% since 2009. The changes in French capacity are linked to the opening of the Fos Cavou terminal in 2010. In the Netherlands, Gate terminal has been in operation since September 2011.

As regards storage capacity, the 2013 level is 7.88 $Mm^3$ (of LNG in liquid form), representing 2 million $m^3$ more than in 2009l; the situation mirrors that of regasification capacity. Spanish terminals account for 40% of total LNG terminal storage in Europe in 2013, followed by the United Kingdom (27%), which increased its level of storage capacity by 32% over the past five years.

*Figure 2: Regasification capacity at LNG terminals*

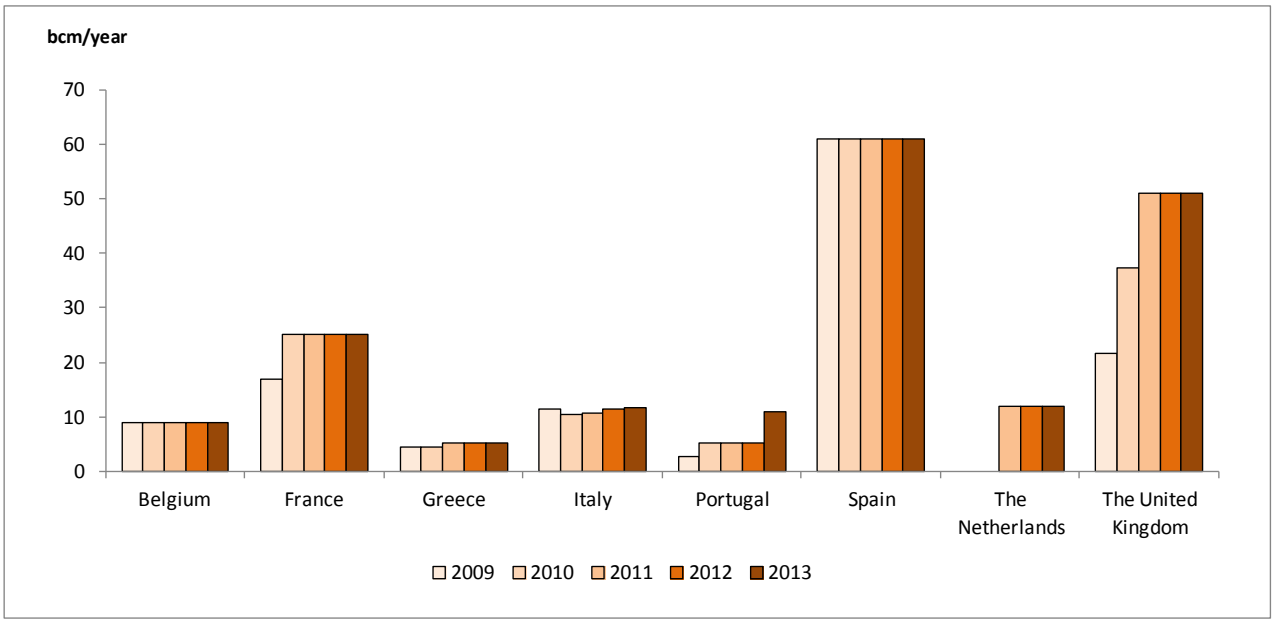
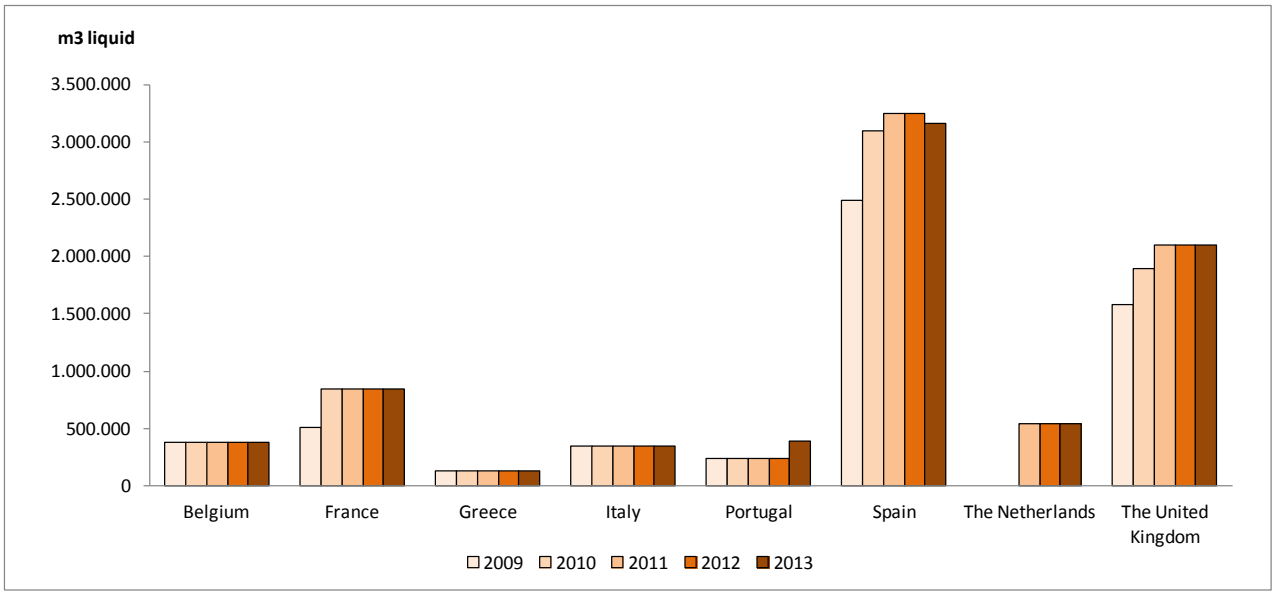


*Figure 3: Storage capacity at LNG terminals*




(*) 1 bcm = $10^9$ $m^3$

## 4.2. NEW SERVICES OFFERED BY LNG TERMINALS

New services can generally be provided using available capacity and therefore do not interfere with the basic operations of the national systems. The main new services offered in the terminals are the following:

- Ship loading: standard LNG ships are loaded from the importing terminals.
- Truck loading: transfer of LNG from the terminal into trucks for transport to small gas regasification plants and distribution networks to final consumers.
- Storage as unbundled service: storage of LNG in tanks at the terminal as a service not associated to the bundled service of regasification.
- Small ship loading: transfer of LNG from the terminal into small ships (<10,000 $m^3$).
- Cooling down and gassing up service: makes use of LNG to cool down and gas up ships.
- Bunkering: when the LNG transferred from the terminal is used as fuel for transport (LNG fuelled ships, trucks, rail…).
- Transshipment: transfer of LNG from one vessel to another.

Table 2 shows what ancillary services are offered at operational European LNG terminals.

*Table 2: Ancillary services offered at the European LNG terminals in operation in 2013.*

| Member State | LNG Terminal | Services offered in 2013 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Ship loading | Truck loading | Storage as unbundled service | Small ship loading | Cooling down and Gassing up | Bunkering | Transshipment |
| Belgium | Zeebrugge (*) | x | x | | x | x | | |
| France | Fos Tonkin | | x | | x | x | x | |
| | Montoir | x | x | | x | x | x | x |
| | Fos Cavaou | x | | | x | x | x | |
| Greece | Revythoussa | | | x | | x | | |
| Italy | Panigaglia | | | | | | | |
| | Rovigo | | | | | | | |
| Portugal | Sines | x | x | | | x | | |
| Spain | Barcelona | | x | | | x | | |
| | Cartagena | x | x | | x | x | | x |
| | Huelva | x | x | | x | x | | |
| | Bilbao (**) | | | | | x | | |
| | Sagunto | x | x | | | x | | |
| | Mugardos | x | x | | | x | x | |
| The Netherlands | Gate | x | | | x | x | | |
| The United Kingdom | Grain | | | | | | | |
| | South Hook | | | | | | | |
| | Dragon | | | | | | | |

(*) The 0 transshipment activity is expected as from 2015. The project consists of a capacity of 14,000 $m^3$ LNG/h and a minimum ship size of 2,000 $m^3$ LNG.

(**) The construction of a tank of 150,000 $m^3$ storage is under construction at Bilbao terminal. The construction started in 2011 and is expected to be operational by July 2014. At that time, ship reloading and truck loading services will be offered.

The **cooling down and gassing up** services are the most common services offered in the terminals. 13 out of the 18 can cool down the LNG ships prior to loading operations.

9 out of these 13 terminals offer the service of **truck loading**. The LNG is transferred from the terminal into trucks. The LNG truck loading service includes the right to use the installations necessary for loading tank trucks with LNG stored at the regasification plants for its subsequent transport to satellite plants and distribution networks or direct use.

The transfer of LNG from the terminal into **small ships** is available in 7 terminals. These small LNG carriers (<10.000 $m^3$) are able to get closer to the final customer.

The **bunkering** service is provided in 4 terminals in Europe: Fos Tonkin, Montoir, Fos Cavou and Mugardos. The service allows using the infrastructure to supply LNG to ships and trucks.

The **transshipment** activity is available at Montoir and Cartagena terminals. The minimum ship size is 20,000 $m^3$ in Montoir and 7,500 $m^3$ in Cartagena. The service capacity is 5,000 $m^3$ LNG/h in Montoir and 1,800 $m^3$ LNG/h in Cartagena.

The **ship loading** activity is analysed in detail in the following section.

## 5. SHIP LOADING ACTIVITY

LNG loading services were introduced in response to demand from terminal users to be able to capitalise more effectively on commercial opportunities in the LNG market. If the LNG market is more attractive somewhere else in the world, the user can transfer the LNG shipment from the terminal to another market if the terminal offers the reloading service.

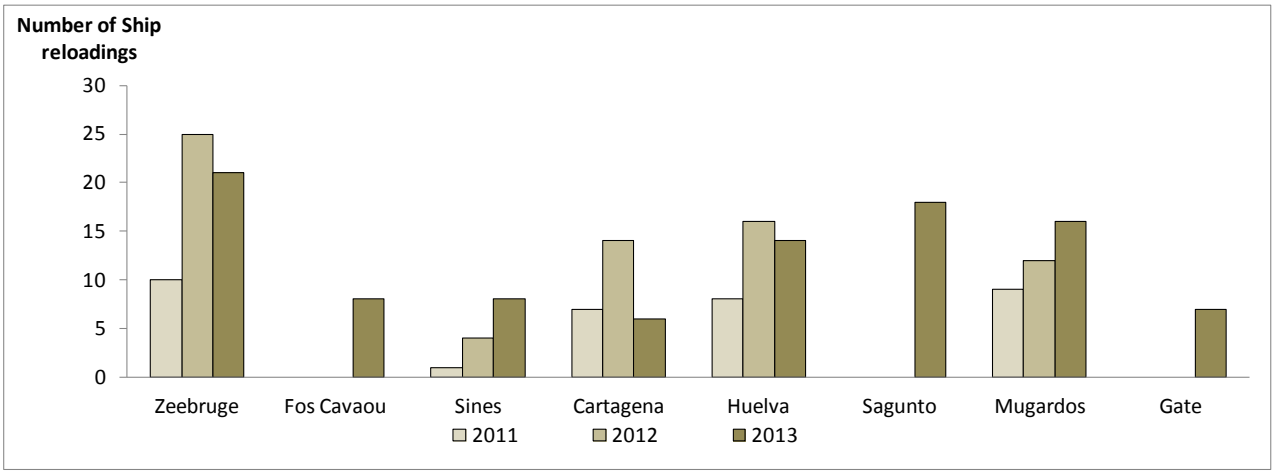
These operations have increased over the past three years, as shown in Table 3 and Figure 4. The number of terminals that offer reloading has increased from 5 to 9 since 2011. Furthermore, the cargoes reloaded in 2013 were twice the number in 2011.

*Table 3: Ship reloading activities at the European terminals in the period of 2011-2013*

| Ship reloading | | | | | |
|---|---|---|---|---|---|
| **Country** | **Terminal** | **Year** | **Reloading services offered** | **Reloaded cargoes (number)** | **Reloaded cargoes (GWh)** |
| Belgium | Zeebrugge | 2011 | YES | 10 | 8,650 |
| | | 2012 | YES | 25 | 20,102 |
| | | 2013 | YES | 21 | 16,888 |
| France | Fos Cavaou | 2011 | NO | | |
| | | 2012 | YES | 1 | 583 |
| | | 2013 | YES | 8 | 5,029 |
| | Montoir | 2011 | NO | | |
| | | 2012 | YES | 4 | 2,873 |
| | | 2013 | YES | 2 | 1,327 |
| Portugal | Sines | 2011 | YES | 1 | 25 |
| | | 2012 | YES | 4 | 114 |
| | | 2013 | YES | 8 | 3,068 |
| Spain | Cartagena | 2011 | YES | 7 | 1,903 |
| | | 2012 | YES | 14 | 10,419 |
| | | 2013 | YES | 6 | 4,665 |
| | Huelva | 2011 | YES | 8 | 2,786 |
| | | 2012 | YES | 16 | 8,877 |
| | | 2013 | YES | 14 | 11,348 |
| | Sagunto (*) | 2011 | NO | | |
| | | 2012 | NO | | |
| | | 2013 | YES | 18 | 12,295 |
| | Mugardos (*) | 2011 | YES | 9 | 3,912 |
| | | 2012 | YES | 12 | 3,485 |
| | | 2013 | YES | 16 | 3,604 |
| The Netherlands | Gate | 2011 | NO | | |
| | | 2012 | NO | | |
| | | 2013 | YES | 8 | 3,375 |

(*) The number of operations includes the gassing up and cooling down services.

*Figure 4: Number of ship reloading operations in the period 2011-2013*




## 5.1. OVERVIEW OF THE UNLOADING-RELOADING ACTIVITIES IN 2013

In order to study the unloading and reloading activities existing in Europe, the year 2013 has been analysed. Nine terminals offer this service: Zeebrugge, Fos Cavaou, Montoir, Sines, Cartagena, Huelva, Sagunto, Mugardos and Gate.

The unloaded cargoes shown in Table 4 and Figure 5 refer to all unloaded cargoes at the terminals.

In Zeebrugge and Mugardos terminals, nearly 60% of the unloaded LNG ships were reloaded in 2013. In Gate terminal, this percentage was 53%, followed by Sagunto (38%). In terms of energy, 50% of the unloaded LNG shipments at the Belgian terminal were reloaded and a range of 20-40% at the Spanish terminals, while in the French and Portuguese terminals around 10% of the GWh was reloaded.

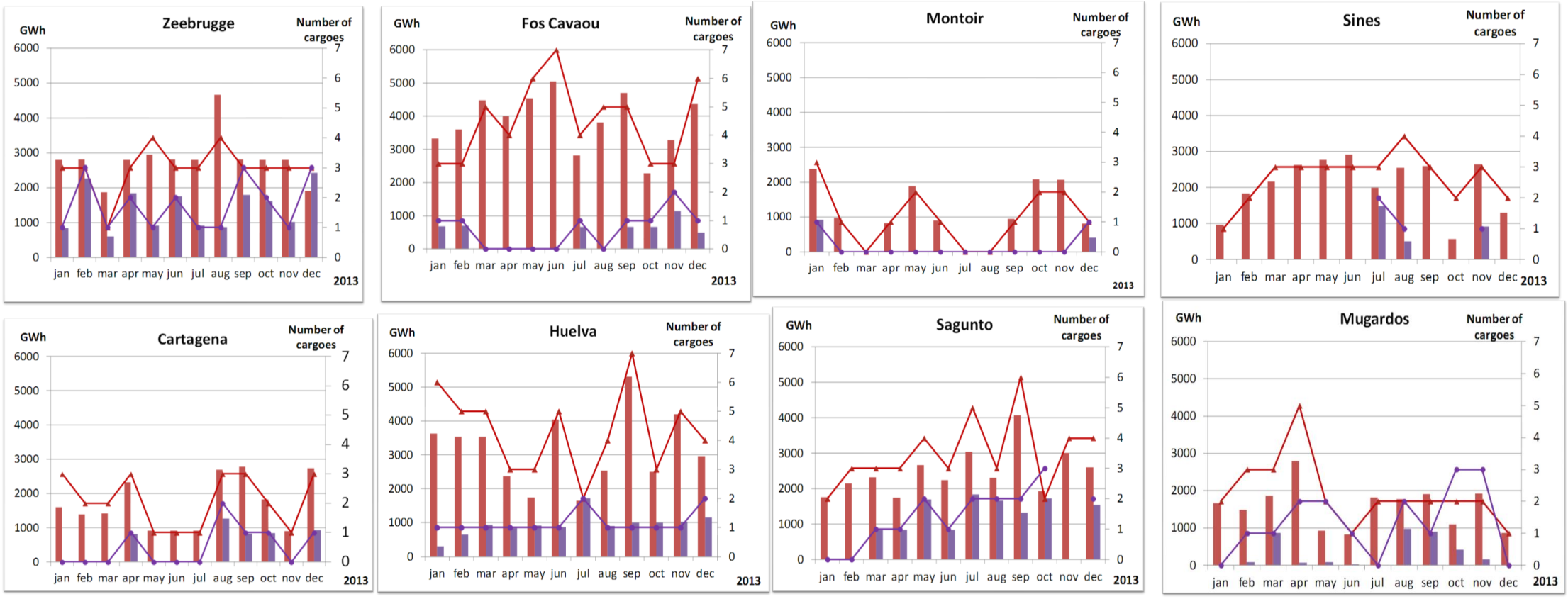
In Fos Cavaou and Huelva, there were 7 reloaded cargoes (around 5,000 GWh) in June and September respectively. It appears that there is no seasonality governing reloading activity at European terminals and cargoes are reloaded throughout the year.

*Table 4: Ratio of reloaded cargoes out of the unloaded cargoes in 2013. (Two rates have been calculated: % of number and % of GWh of the total unloaded cargoes)*

| % of reloaded cargoes out of all unloaded cargoes at the terminals in 2013 | | |
|---|---|---|
| | **Number** | **GWh** |
| Zeebrugge | 58% | 50% |
| Fos Cavaou | 15% | 11% |
| Montoir | 14% | 10% |
| Sines | 13% | 12% |
| Cartagena | 24% | 23% |
| Huelva | 27% | 30% |
| Sagunto | 38% | 41% |
| Mugardos | 59% | 19% |
| Gate (*) | 53% | - |

(*) Gate terminal only provide data (number) on a yearly basis.

*Figure 5: Number and GWh of the unloading and reloading activities during the year 2013.*




(*) Units (GWh) as provided

# 6. MARKET EVOLUTION IN LNG TERMINALS

## 6.1. NUMBER OF SHIPPERS

According to data reported by NRAs, the evolution in the number of shippers that access the terminals differs among the 18 European terminals in the period 2009-2013 (Figure 6).

The number of shippers that have access to terminals in Belgium, the Netherlands, the United Kingdom, the French Fos Cavaou and Montoir and the Italian Rovigo terminals has been relatively stable in the period analysed.

In some terminals, such as Revythoussa, Panigaglia and Fos Tonkin, the number of users increased in the first two years and decreased since 2011.

The number of shippers who have booked capacity at the terminals of Sines, Mugardos and Barcelona has increased. In Cartagena, Huelva, Sagunto and Bilbao terminals, the number increased in 2010 and decreased significantly in 2011. The figures show that the number has increased progressively since 2012.

*Figure 6: Number of active shippers at LNG terminals in 2009-2013*

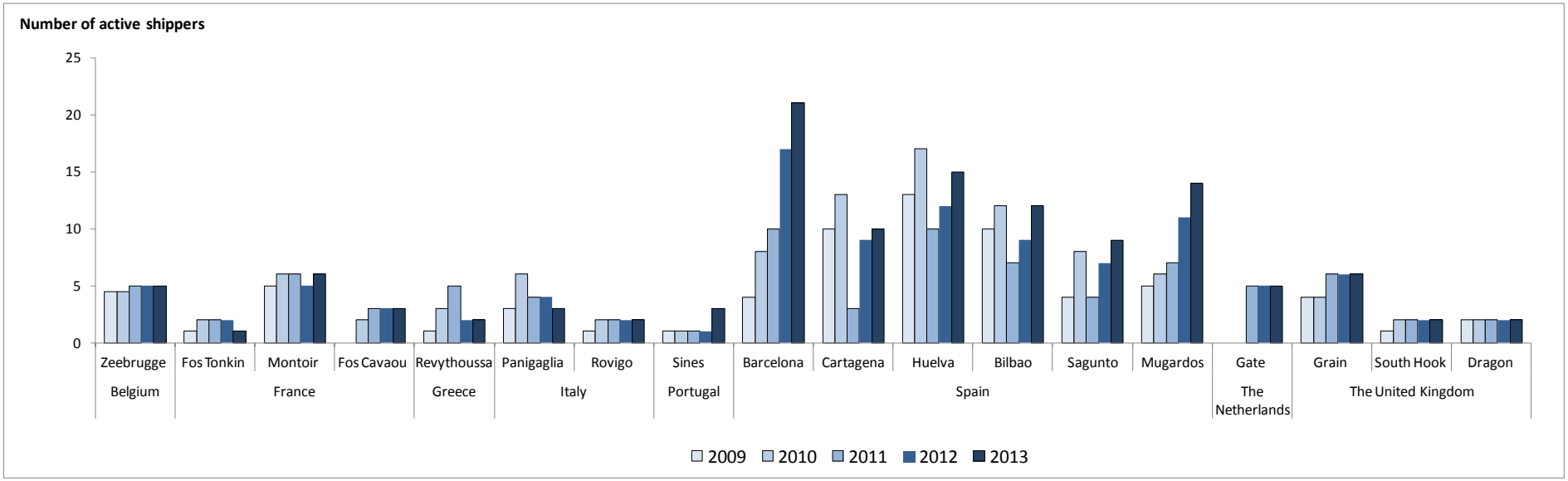
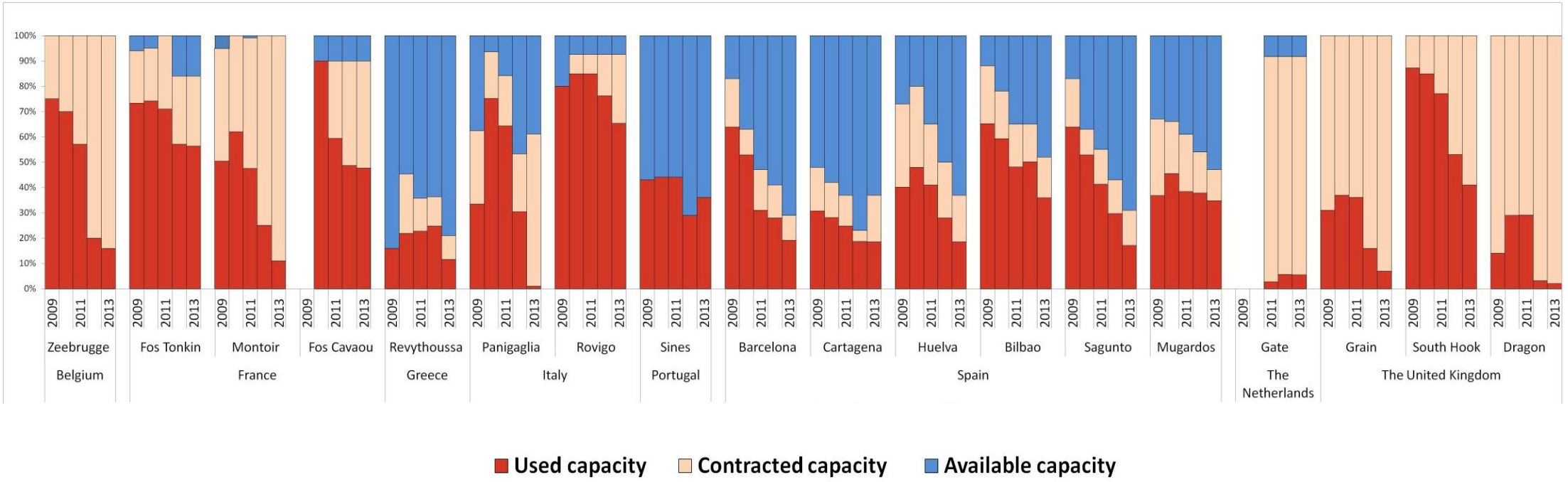


*Figure 7: Regasification capacity at LNG terminals, % available, % contracted and % used in 2009-2013*



## 6.2. EVOLUTION OF CONTRACTED AND USED CAPACITY

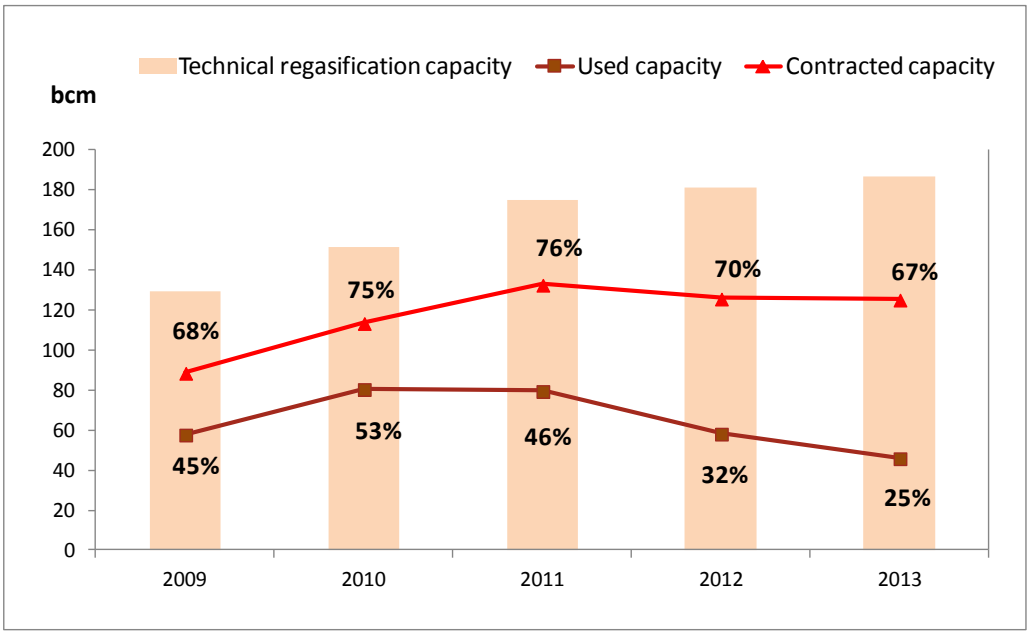
Figure 7 shows the capacity that has been used and contracted at the 18 LNG terminals during 2009-2013. Figure 8 shows the aggregated data and the average rate in Europe.

The average contracted regasification capacity was roughly 70% over the past five years, which contrasts with the average used capacity, around 39% on average during the period.

The average utilisation rate of LNG terminal in Europe (of total installed capacity) has decreased since 2010, from 53% to 25% in 2013.

In general, the lowest contracted capacity terminals are located in Spain, Portugal and Italy, terminals. In contrast, regasification capacity is fully contracted at the Belgian terminal, one of the French terminals (Fos Cavaou) and the British terminals all of which are exempted terminals (except Zeebrugge).

*Figure 8: Regasification capacity in Europe, Contracted and used in 2009-2013*




In the terminals of Belgium, France, Greece, Italy, Spain, the Netherlands and the United Kingdom, the unloading, storage and regasification services are booked at the same time through bundled products.

Some particularities are found on capacity subscriptions:

- **Zeebrugge:** the entire capacity is sold on a long-term basis. For short term bookings, Fluxys LNG offers a few additional slots or shippers can go to the secondary markets which is functioning well.
- **Sines:** the concept of contracted capacity was introduced on 1 October 2013. Until then, payment was done according to usage.
- **Gate terminal:** has been granted an exemption for a period of 20 years from the start of operations. 11 bcm of capacity were sold, there is currently 1 bcm available, which is offered to the market. No capacity is currently set aside for short term bookings.

- **South Hook terminal:** was granted an exemption from regulated TPA for a period of 25 years from the start of commercial operations: Phase I on 6 October 2009 and Phase II on 1 April 2010. The exemption enabled 100% of the capacity to be purchased by South Hook Gas.
- **Dragon LNG:** has two shippers (BG Group and PETRONAS Energy Trading Limited) who own 50% each of the rights to the terminal.
- **Grain LNG:** has 6 shippers (BP/Sonatrach, Centrica, GDF Suez, Sonatrach, E.ON and Iberdrola). Capacity has been allocated through an open season process.
- **The Spanish, Italian and Greek terminals** have capacity available in the primary market.

Available primary capacity is more common and the number of active shippers is higher in the regulated terminals in Europe.

### 6.3. CAPACITY REQUEST DENIALS

Based on the data gathered by NRAs, nearly all European LNG terminals have not denied access to capacity in the last five years. However, in the Greek LNG terminal, four and six capacity requests respectively for 2010 and 2011 were denied due to lack of available storage capacity.

In those cases, the mechanisms applied were the reduction of the temporal storage period below the standard period of 18 days.

## 7. EVOLUTION OF CMP APPLICATION

Regulation (EC) No 715/2009 on conditions for access to the natural gas transmission networks[14] defines congestion management as:

> *"Congestion management means management of the capacity portfolio of the transmission system operator with a view to optimal and maximum use of the technical capacity and the timely detection of future congestion and saturation points".*

In general terms, congestion could be classified as contractual or physical congestion, according to the definitions given by Regulation (EC) No 715/2009:

> *"**Physical congestion** means a situation where the level of demand for actual deliveries exceeds the technical capacity at some point in time".*
>
> *"**Contractual congestion** means a situation where the level of firm capacity demand exceeds the technical capacity".*

Physical congestion occurs when the capacity is fully booked and used, and any additional demand cannot be accommodated. The only way to avoid such congestion would be to anticipate it, but once it occurs the only way to accommodate the additional requests would be to invest in additional capacity.

[14] "Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005"

On the other hand, contractual congestion occurs when the capacity is fully booked, but a proportion of it remains unused and there is still demand for capacity. This congestion can occur either in the long-term, when booked capacity remains constantly unused for long periods, or in the short-term, when part of the booked capacity is occasionally not nominated.

In the latter case, effective CMPs (such as Use-It-Or-Lose-It (UIOLI), or secondary trading) have to be implemented in order to facilitate efficient use of capacity and to avoid potential capacity hoarding.

The CMP applied at the European terminals are UIOLI, with either ex ante or ex post effect, applied to unused slots or unused regasification capacity, and other mechanisms such as “use it or lend it” or “use it or sell it” combinations.

As shown in Table 5, the application of CMP executions has made capacity available in twelve terminals in France, Greece, Italy, Spain, the Netherlands and the United Kingdom. A significant amount of capacity was returned to the market with the application of CMP mechanisms. Nonetheless, results show that released capacity was in practice contracted only in a few terminals, suggesting that the needs of market players were generally already covered.

*Table 5: Available and contracted capacity through the application of CMP at LNG terminals*

| Country | LNG terminal | Year | Amount of capacity made available through the application of CMP executions *(GWh)* | Amount of capacity contracted on the basis of the application of CMPs *(GWh)* |
|---|---|---|---|---|
| France | Fos Tonkin/Montoir | 2010 | 29,400 | 4,600 |
| | Fos Tonkin/Montoir/Fos Cavou | 2011 | 80,700 | 0 |
| | Fos Tonkin | 2012 | 6,850 | |
| | | 2013 | 7,000 | |
| | Fos Cavou | 2011 | 26,500 | |
| | | 2012 | 34,100 | |
| | | 2013 | 32,500 | |
| Greece | Revythoussa | 2012 | | 6,155,352 |
| | | 2013 | | 733,488 |
| Italy | Panigaglia | 2009 | 10,528 | 0 |
| | | 2010 | 11,260 | 0 |
| | | 2011 | 3,415 | 0 |
| | | 2012 | 7,574 | |
| | | 2013 | 21,989 | |
| | Rovigo | 2009 | 0 | 0 |
| | | 2010 | 6,972 | 975 |
| | | 2011 | 6,456 | |
| | | 2012 | 13,613 | |
| | | 2013 | 22,609 | |
| Spain | Barcelona | 2011 | 0.006 Truck loading | 0 |
| | | 2012 | 0.0876 Regas | 0 |
| | | | 0.6402 Truck loading | 0 |
| | Huelva | 2013 | 0.02048 Regas | 0 |
| | | | 0.208168 Truck loading | 0 |
| The United Kingdom | All | 2011 | 373,246 | |
| | | 2012 | 379,504 | |
| | | 2013 | 379,491 | |
| The Netherlands | Gate | 2011 | Terminal enters into operation in Sept. 2011 | |
| | | 2012 | 119,022 | 0 |
| | | 2013 | 107,884 | 0 |

CMPs executions are characterised by a considerable variety of specific provisions and operations, according to the information reported:

- **Fos Tonkin and Fos Cavaou terminals:** Ex-ante short-term UIOLI. The slots that are reserved through the annual programme but not requested during the month M, for M+1 scheduling, are systematically put back on the market. The LSO announces them in its fortnightly publications, together with the primary capacity which remained unsold.
- **Panigaglia terminal**: the CMPs applied are Ex-Ante UIOLI and Ex-post UIOLI.
- **Rovigo terminal**: the CMPs are related to release of slots/capacity according to national regasification code (cap II par. II.2.6).

- **South Hook terminal:** the capacity is available pursuant to an objective test of scheduled berthing slots, ullage and redelivery, and notifies customers that have signed up to its access arrangements under a Terminal Access Agreement. Such capacity is advertised 14 days ahead of an available berthing slot and is offered on a firm basis. The UIOLI process is applied via auctions: 6 in 2011; 25 in 2012 and 43 in 2013.
- **Grain terminal:** the primary capacity holders have their own mechanisms to offer unused capacity to the secondary market. To the extent that primary capacity (or secondary capacity) is not being utilised, in accordance with the terminal's exemption from TPA requirements, Grain LNG will operate a UIOLI. Available quantities of UIOLI capacity are set out on the bulletin board, this information is updated regularly. 7-8 days before a berthing slot date, any unused capacity is released to Grain LNG by the primary shipper. The unused capacity is offered directly to the secondary market. Each advertised berthing slot has an associated storage capacity of 1000 GWh.
- **Spanish terminals:** CMPs in force are (i) Under-use: deposit of a financial guarantee. If in the first 6 month period the shipper does not use, at least one month, the 80% of its allocated capacity, the capacity is reduced by the fraction not used, losing also the proportional part of the financial guarantee; (ii) Systematic under-utilisation initiated when a new shipper requests capacity in a congested service (not using, at least one month of the previous 12 months, 80% of its capacity). The shipper loses the percentage of unused capacity requested by the new applicant.
- **In Greece, RAE** (Greek NRA) explained that one major problem of the Revythousa LNG terminal was the rather limited storage space of 130,000 $m^3$. A third storage tank with a space of 95,000 $m^3$ is under construction. After completion, the total storage space of Revythousa will be 225,000 $m^3$. In an effort to make the existing storage facilities as versatile as possible in order to facilitate third party access, the network code foresees several flexibilities such as flexible vaporisation rates and flexible storage capacity bookings. Any cargo size may be accommodated, provided that storage space is available and additional provisions to allow for the unloading of several cargoes from several users from the same ship are also in place. Additional vaporisation rates and additional storage are offered as separate unbundled products. Although the bundled product (unloading of an LNG cargo, temporary storage and vaporisation) is designed so that each cargo should be fully vaporised in 18 days, the unbundled additional storage on offer (as a monthly and daily auctioned product) allows for significant extensions of the original storage time. However, to ensure that no capacity hoarding takes place, in cases of storage space scarcity, the system operator is obliged to undergo any possible endeavour to accommodate a new cargo request: cargo requests (spot) have priority over requests for the reservation of additional storage space, the bundled product can also be made available for periods less than 18 days, if such a modification is aligned to a user request and forced vaporisation is foreseen for users exceeding their allocated storage space. Several other CMP provisions for storage are in place such as ex-ante short term UIOLI: contracted but unused storage capacity is offered to the market on daily basis.
- **Gate terminal** Based upon the granted exemption, the LSO offers any unused capacity month ahead before the start of regasification, through an UIOLI mechanism, for sale on the secondary market. The UIOLI mechanism is part of each Throughput Agreement. All unused slots have been offered to the market and no amount of capacity was contracted for the application of CMP in 2013 and in previous years.

## 8. FUNCTIONING OF SECONDARY CAPACITY MARKETS

The secondary capacity market[15] works differently in each country. During the period covered by this review, six countries had operations on the secondary market: Belgium, France, Italy, Portugal Spain and the United Kingdom. Figure 9 illustrates the number of agents active in those. The availability of data on capacity transferred/contracted in the countries differs. Consequently, it is difficult to undertake a comparative analysis (see Table 6).

The distinctive features in each country are as follows:

- **In Belgium,** the secondary market is functioning well when looking at the amount of capacity offered. In the framework of the second code of conduct, new regulatory documents (access code, standard LNG terminating agreements and terminating programme) were developed by the terminal operator and were approved by CREG on 15 November 2012. Until now, primary capacity holders had offered the unused capacity to the market by placing it on the bulletin board. In the new access code, the use of CMP will be developed in order to include an Electronic Data Platform. The limited amount of bookings on secondary market shows that the European gas market is less attractive for LNG.
- **In France**, shippers are allowed to transfer some or all of their rights and obligations to a third party, the buyer being required to sign an access contract with the LSO. Interested companies can also sign a master agreement allowing them to directly participate to the secondary market. To facilitate transactions, the LSO publishes a list of potentially interested sellers and buyers.
- **In Italy,** the national regasification codes provide rules for capacity release by users. A secondary market platform is not implemented.
- **In Portugal,** all capacity allocated on a monthly schedule is binding. If a shipper surrenders a booked slot, a penalty must be paid. Spot cargoes are accepted depending on LNG terminal availability and the LSO should make an effort to fulfil any shipper's request. In the event a shipper surrenders a slot at short notice (less than a month), the LSO should facilitate access to other shippers who have shown interest in those specific slots. Due to the three minus one rule[16] for the Sines LNG terminal, short term forecasts (slots) were not made publicly available. The acceptance of spot cargoes at Sines LNG terminal depends on the same pre-conditions as any other service in that infrastructure, including a utilisation contract and a compatibility assessment of the ship with the LNG terminal.

[15] Secondary capacity markets in Member States are described in detail in "Final ERGEG study on congestion management procedures & anti-hoarding mechanisms in the European LNG terminals", Ref. E10-LNG-11-03b, 12 April 2011.

[16] Three minus one rule establishes that the LNG system operator is not obliged to publish information on capacity contracted if less than three users are using the services offered.

- **In Spain,** the secondary capacity market bulletin board was implemented on the technical system manager's website in February 2010, with data available from then onwards. Gas is bought and sold in the terminal as a way to exchange capacity storage rights. Apart from the LSOs, the technical system manager has an active role in determining the availability of slots, which can depend on many variables, such as the level of LNG stored in the tanks, the size of the ships and variations in weather conditions. The technical system manager will allow short-term bookings if there is availability of the docking facilities.
- **In the United Kingdom,** LNG tends to be traded upstream of the import terminal, with delivery being handled by a shipper who already holds capacity, rather than the capacity at the terminal being traded in a secondary market. This means that unused LNG capacity may be traded even though formal secondary market mechanisms are not used.
    - Dragon: Fallback UIOLI arrangements for terminal capacity are available but are rarely used. All capacity rights have been sold to the primary shippers for a period of 20 years. The primary shippers have the right to sell or sublet their capacity rights to third parties. Parties can also enter into ex-ship arrangements with the primary shippers for the delivery of LNG to the Dragon LNG terminal. In the event that the primary shippers identify that a berth slot will not be used by either the primary shippers or a third party, they will use the anti-hoarding mechanism.
    - South Hook: Secondary capacity marketing is carried out by the primary capacity holder. Fallback UIOLI arrangements for terminal capacity are available but are rarely used. Third parties can purchase secondary terminal capacity rights through a non-discriminatory and transparent process. Secondary capacity marketing is carried out by the primary capacity holder.
    - Grain: As with many other EU and global markets, LNG tends to be traded as a cargo upstream of the import terminal with title ultimately being purchased by one of the many importation capacity holders. The market has developed this protocol given it is the most efficient and effective way of managing the contractual and operational frameworks associated with importation. As a fallback, Grain offers full secondary / UIOLI arrangements as published on their website. The regulatory arrangements for Grain customers require the primary capacity holders to offer to sell spare importation capacity (berthing slots, space and deliverability) to secondary users. Parties interested in obtaining secondary capacity therefore need to contact the primary capacity holders in the first instance.
- **In the Netherlands,** shippers have the right to offer primary unused capacity/slots on the secondary market. All slots/capacity that were not used by customers (115 out of 138 slots) were advertised, no capacity/slots were contracted on the secondary market.

*Figure 9: Number of users of secondary capacity markets in Belgium, France, Greece, Portugal, Spain, the Netherlands and the United Kingdom*

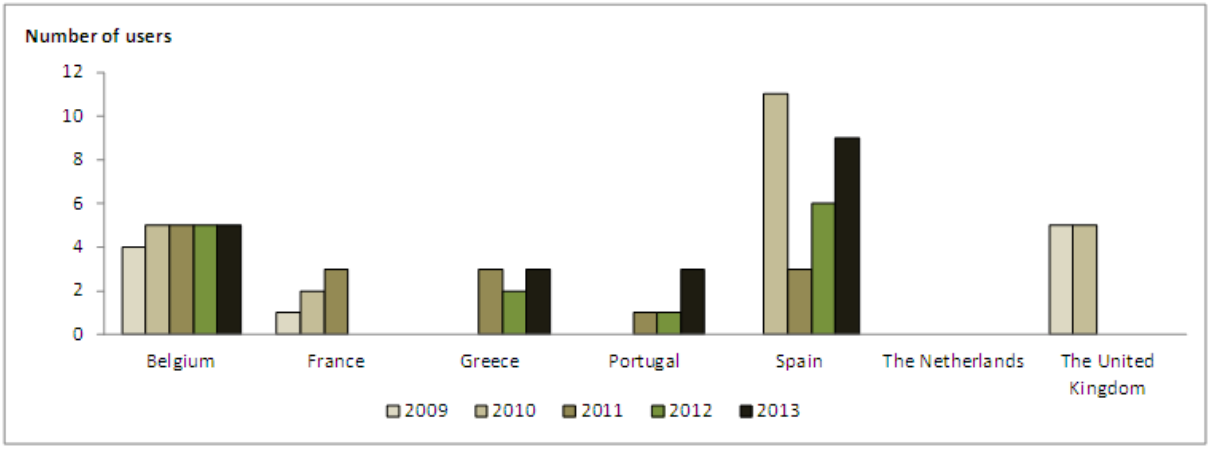


*Table 6: Amount of capacity transferred/contracted in the secondary capacity market*

| Country | Terminal Name | Year | Amount of capacity transferred/contracted in the Secondary Market (GWh/year) | Number of operations | Comments |
|---|---|---|---|---|---|
| Belgium | Zeebrugge | 2009 | 5 Entire Slots/4 Berthing rights/1 Storage rights | | |
| | | 2010 | 3 Entire Slots/ 3 Berthing rights | | |
| | | 2011 | 4 Entire Slots, 3 Partial Slots (Berthing rights | 7 | Offered: 23 entire slots |
| | | 2012 | 6 Entire Slots, 11 Partial Slots (Berthing rights) | 17 | Offered: 45 entire slots |
| | | 2013 | 15 Partial Slots (Berthing rights) | 15 | Offered: 64 entire slots |
| France | All | 2009 | 0 | | |
| | All | 2010 | 11,200 | | 12 unloadings over one year |
| | All | 2011 | 11,200 | | |
| | All | 2012 | | | |
| | All | 2013 | | | |
| Greece | Revythoussa | 2011 | 14,303.17 | 4 | |
| | Revythoussa | 2012 | 10,7471.96 | 13 | |
| | Revythoussa | 2013 | 5,652.2 | 2 | |
| Spain | All | 2011 | 16.28 | 7 | |
| | All | 2012 | 11.20 | 5 | |
| | All | 2013 | 32.88 | 9 | |
| The Netherlands | Gate | 2011 | 0 | 10 | 117 slots advertised |
| | | 2012 | 0 | 23 | 105 slots advertised |
| The United Kingdom | All | 2009 | 240 | | |
| | All | 2010 | 27,707 | | |
| | All | 2011 | 0 | | |
| | All | 2012 | 0 | | |
| | All | 2013 | 0 | | |

## 9. UNLOADING SPOT CARGOES

In the period analysed, countries where spot cargoes were unloaded are Belgium, France, Greece, Italy, Spain and the United Kingdom.

Spot cargoes refer to those cargoes contracted by acquiring capacity on a short-term basis (i.e. less than a month).

In the first years, there were shippers who contracted regasification capacity or slots in the secondary market or coming from CMP applications (see Table 7) by acquiring capacity on a short-term basis (less than a month). Since 2011, the number of LNG spot cargoes to have been unloaded has declined, possibly as a consequence of increased demand in other markets.

At times, short term cargoes may be delivered without the need for a short-term capacity booking. This can occur where cargoes are traded upstream of the import terminal. In this case, delivery will be handled by the shipper with long-term capacity. Such transactions would not be captured in the data below.

The number of transactions fluctuates from 1 to 10 per year, except for Spain where 26 spot cargoes were unloaded at the terminals in 2013 (the transactions mentioned above are included).

*Table 7: Spot cargoes unloaded at the European LNG terminals during 2009-2013.*

| Country | Year | Number of operations performed | Aggregated volumes (GWh) (*) | Spot cargoes origin | Comments |
|---|---|---|---|---|---|
| Belgium | 2009 | 3 | 1,443 | 100% from secondary market | % obtained by dividing the total of short-term (ST) operations performed by the number of ST operations on the secondary market |
| | 2010 | 7 | 6,733 | 116% from secondary market | |
| | 2011 | 4 | na | | |
| | 2012 | 6 | na | | |
| | 2013 | 0 | 0 | | |
| France | 2009 | na | na | | |
| | 2010 | 4 | 4,600 | 100% obtained by CMP application | |
| | 2011 | 0 | 0 | | |
| | 2012 | 0 | 0 | | |
| | 2013 | 0 | 0 | | |
| Greece | 2010 | 4 | 1,215 | | |
| | 2011 | 10 | 4,191 | | |
| | 2012 | 13 | 5,330 | 100% from primary market | |
| | 2013 | 7 | 2,750 | | |
| Italy | 2009 | 5 | 2,517 | 100% from primary market | A secondary platform is not implemented |
| | 2010 | 5 | 3,208 | 69% from prim. market / 31% by CMP application | |
| | 2011 | 2 | 1,333 | 100% from primary market | |
| | 2012 | 0 | 0 | | |
| | 2013 | 0 | 0 | | |
| Spain | 2009 | na | na | | |
| | 2010 | na | na | | |
| | 2011 | na | na | | |
| | 2012 | 8 | 6,380 | 100% from primary market | |
| | 2013 | 26 | 14,622 | 100% from primary market | |
| The United Kingdom | 2009 | na | na | | South Hook |
| | 2010 | 1 | 1,415 | | |
| | 2011 | 0 | 0 | | |
| | 2012 | 1 | 860 | | |
| | 2013 | 0 | 0 | | |

(*)The conversion factor used is 6.87 MWh/$m^3$

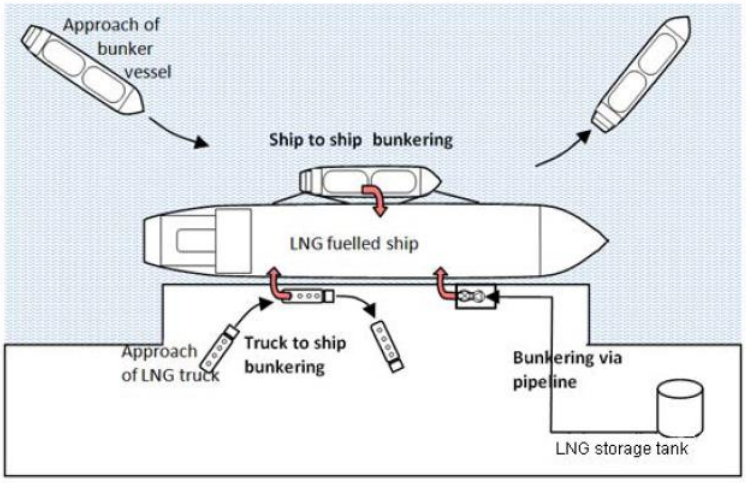
## 10. NEW USES

The trend in terminals to offer new services is based on the benefits of using LNG as a fuel for ships and land transportation through long-haul trucks (Figure 10). Switching to LNG will result in significantly lower emissions, immediately contributing to Europe's efforts to achieve the climate targets.

LNG can be transported in trucks, small tankers, pipelines or vessels to LNG satellite plants with the objective of using LNG, for instance, as a fuel. Figure 10 below illustrates the service.

The European Commission issued a Proposal for a Directive in 2013[17] for the development of alternative fuels and on a minimum infrastructure for alternative fuels. The draft Directive proposes to make a minimum infrastructure coverage the build-up of mandatory for natural gas: both Compressed Natural Gas (CNG) and LNG. Some of the measures related to LNG are LNG refuelling points in all maritime and inland waterway ports, and along motorways (within maximum distances, of the Trans-European Transport Core Network).

*Figure 10: Illustration of some of the new services at the terminals for the new uses of LNG as fuel*




The information requested regarding new uses has been extended to other European regulators (who do not have a regasification terminal in their jurisdiction) with the objective of reflecting the recent market trends affecting the new role of LNG in Europe. The main developments in these countries are listed below:

**Finland**: The Ministry of Trade has reserved 123 million euros in financial state aid for small scale LNG terminals. No decisions have been issued so far. There is also a Finnish LNG terminal project in the Project of Common Interest (PCI) list. Although, the size of the terminal is yet to be determined, it should correspond to the needs of the Baltic and Finnish markets.

**Sweden:** To provide easy access to natural gas for shipping, industrial and trucks, an LNG terminal is planned in the harbour of Gothenburg. The LNG terminal will be the first in Sweden and based on the principle of “open access”. That means that anyone who wants to deliver LNG to the Swedish market is offered the opportunity to reserve capacity. The stakeholders for this investment are Swedegas, Vopak and Harbour of Gothenburg. The terminal is expected to be in operation during 2015.

**The Netherlands**: As of 2014, Gate terminal (next to the already existing services of ship loading, small ship loading and cooling down and gassing up) is offering a truck loading service. In addition, an LNG Break Bulk project is currently under construction (expected to become operational in 2016).

[17] Proposal for a Directive of the European Parliament and of the Council on the deployment of alternative fuels infrastructure, 24 January 2013

**The United Kingdom**: no additional use of LNG is currently available. At the Grain LNG terminal, truck loading services are currently under construction. The additional use of LNG may be under consideration at other terminals.

**Lithuania:** An LNG terminal in Klaipeda is foreseen as an alternative to pipeline supply. The rules for the use of the LNG terminal in Klaipeda have been prepared by the LNG terminal operator SC Klaipedos nafta and have been adopted by National Commission for Energy Control and Prices (NCC) regulation on 14 April 2014. According to the provisions of the Law on Liquefied Natural Gas terminal, the operation of the LNG terminal in Klaipeda should start no later than 3 December 2014.

## 11. CONCLUSIONS

The data provided by NRAs for 2009-2013 has been analysed to understand the status of capacity utilisation, spot contracting, secondary markets and the application of CMPs at European LNG terminals. Moreover, an overview of new services offered and uses of LNG show that:

- Since 2009, regasification and LNG storage capacity in Europe has increased by 44% (186 bcm in 2013) and 39% (7.88 $Mm^3$ in 2013) respectively. Two new terminals began operating in France (Fos Cavaou in 2010) and the Netherlands (Gate in 2011). Additional regasification capacity was also developed at the existing United Kingdom terminals.

- The share of LNG in total gas supplies in the countries analysed increased over the years 2009-2011 from 28% to 32% and decreased to 19% in 2013.

- The number of active shippers is higher in terminals subject to a regulated TPA than in exempted terminals.

- The average rate of contracted and used capacity in Europe increased from 2009 to 2011, but both ratios have decreased since 2011. The decrease is more noticeable in the utilisation of the terminals' send-out capacity, which is around 25% of the technical capacity in 2013 (accounted for 53% in 2010).

- Unused capacity was then released to the market (at those terminals that are almost fully booked) and hardly contracted, suggesting that generally there was no contractual congestion. All terminals have properly functioning CMP provisions, even though the capacity released is not often subscribed to by other shippers.

- The secondary capacity market is active in Belgium, France, Greece, Portugal, Spain, the Netherlands and the United Kingdom. The subscription of slots in the secondary market or coming from CMP applications has been particularly decreased since 2011, due to less capacity demand in general. In addition, the number of spot cargoes unloaded at the European LNG terminals has decreased since then.

- No denial of access to capacity was reported for the period, except at the Greek LNG terminal where capacity requests were denied due to lack of storage capacity.

- The number of terminals that offer reloading activity has increased since 2011 and many operations performed at 9 terminals in 2013. The service was introduced in response to demand from terminals users to be able to move the LNG ships to more attractive markets. On average, more than 30% of the ships unloaded were reloaded at the 9 terminals in 2013. Zeebrugge and Mugardos are the terminals where this service has been most active: nearly 60% of the ships unloaded were reloaded at both terminals (in terms of GWh the percentages are 50% and 20%, respectively).

- From a European perspective, there is capacity available to contract, either on the primary market, through the application of CMPs (whereby previously contracted capacity is brought back to the market) or through the trading of primary capacity.

European LNG terminals have adapted their facilities to the changes in a global LNG market and the low rates of regasification capacity utilisation. The challenges and innovation in the LNG market are related to the new services offered in the terminals, such as truck loading, small ship loading, transhipment, storage as an unbundled service and bunkering. These activities promote the new uses of LNG as fuel for ships and long-haul trucks and are in line with European proposals for the development of alternative fuels and their infrastructure.

## Annex 1 – CEER

The Council of European Energy Regulators (CEER) is the voice of Europe's national regulators of electricity and gas at EU and international level. Through CEER, a not-for-profit association, the national regulators cooperate and exchange best practice within and beyond Europe's borders. CEER includes national regulatory authorities from 33 European countries (the EU-28, Iceland, Norway, Switzerland, FYROM, Montenegro and growing).

One of CEER's key objectives is to facilitate the creation of a single, competitive, efficient and sustainable EU internal energy market that works in the public interest. More specifically, CEER is committed to placing consumers at the core of EU energy policy. CEER believes that a competitive and secure EU single energy market is not a goal in itself, but should deliver benefits for energy consumers.

CEER works closely with (and supports) the Agency for the Cooperation of Energy Regulators (ACER). ACER, which has its seat in Ljubljana, is an EU Agency with its own staff and resources. CEER, based in Brussels, deals with many complementary (and not overlapping) issues to ACER's work such as international issues, smart grids, sustainability and customer issues. European energy regulators are committed to a complementary approach to energy regulation in Europe, with the Agency primarily focusing on its statutory tasks related to EU cross-border market development and oversight, with CEER pursuing several broader issues, including international and customer policies.

The work of CEER is structured according to a number of working groups and task forces, composed of staff members of the national energy regulatory authorities, and supported by the CEER Secretariat.

This report was prepared by the LNG Task Force of CEER's Gas Working Group.

CEER wishes to thank in particular the following regulatory experts for their work in preparing this report: Ana Barrera García, Benoît Esnault, Rocío Prieto.

## Annex 2 – List of abbreviations

| Term | Definition |
|---|---|
| ACER | Agency for the Cooperation of Energy Regulators |
| CAM | Capacity Allocation Mechanism |
| CEER | Council of European Energy Regulators |
| CNG | Comprised Natural Gas |
| CMPs | Congestion Management Procedures |
| CRE | Commission de Régulation de l'Energie (French NRA) |
| CREG | Commission pour la Régulation de l'Electricité et du Gaz (Belgium NRA) |
| ERSE | Entidade Reguladora dos Serviços Energéticos / Energy Services Regulatory Authority (Portuguese NRA) |
| GGPLNG | Guidelines for Good Third Party Access Practice for LNG System Operators |
| GLE | Gas LNG Europe |
| GWG | Gas Working Group |
| LNG | Liquefied Natural Gas |
| LSO | LNG System Operator |
| NCC | National Commission for Energy Control and Prices in Lithuania |
| NRA | National Regulatory Authority |
| PCI | Projects of Common Interest |
| RAE | Ρυθμιστική Αρχή Ενέργειας (Regulatory Authority for Energy in Greece) |
| TPA | Third Party Access |
| TT | Transparency Template |
| UIOLI | Use-It-Or- Lose-It |