



# **EREGG study on congestion management procedures & anti- hoarding mechanisms in the European LNG terminals**

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## INFORMATION PAGE

### Abstract

This document E10-LNG-11-03 is an ERGEG document on congestion management procedures & anti-hoarding mechanisms in the European LNG terminals

The objective of this study is to put forward a comprehensive overview of the congestion management procedures in European LNG importing countries, taking into account the various constraints which influence LNG business.

### Target Audience

Energy suppliers, traders, gas/electricity customers, gas/electricity industry, consumer representative groups, network operators, Member States, academics and other interested parties.

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### Related Documents

CEER/ERGEG documents

- Monitoring the implementation of GGPLNG, 3 June 2009, by ERGEG, E09-LNG-07-03, available at: [http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_PUBLICATIONS/CEER\\_ERGEG\\_PAPERS/Gas/2009/](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_ERGEG_PAPERS/Gas/2009/)
- Guidelines for Good Third Party Access Practice for LNG System Operators (GGPLNG), 7 May 2008, by ERGEG, E08-LNG-06-03, [http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/GGPLNG/CD](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/GGPLNG/CD)

External documents

- 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
- 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

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## Scope and Objectives

At the XV Madrid Forum, held on 6-7 November 2008<sup>1</sup>, the European Commission called for analysis of the need for harmonisation of anti-hoarding rules in the European LNG terminals<sup>2</sup>.

EREGEG's previous monitoring<sup>3</sup> of the compliance of different LNG regimes for the GGPLNG<sup>4</sup> provisions in Europe confirmed that it is necessary to further develop the understanding of congestion management procedures (CMPs) applied in LNG terminals. At GLE Bilbao Workshop<sup>5</sup> (March 2009) and at the meeting with the European Commission (June 2009), GLE<sup>6</sup> and stakeholders (Eurogas and EFET), ERGEG committed to launch a specific study on the current CMPs and anti-hoarding mechanisms in Europe, with a special focus on the need for harmonisation and transparency at the EU level.

In fact, different congestion management mechanisms are being applied in existing European LNG terminals. These mechanisms differ in a variety of specific provisions from one country to another, as application calendars (ex-post, ex-ante), underutilization evaluation criteria, effective development of secondary markets, application of penalties, etc. The objective of this study is to put forward a comprehensive overview of the Congestion Management Procedures in European LNG importing countries, taking into account the various constraints which influence LNG business. This analysis may be used in 2010 as the basis for future recommendations and developments.

Building on the findings of the Monitoring of GGPLNGs, and the conclusions of this paper, future ERGEG work could be focused on demonstrating whether regulated or exempted LNG access regimes, could be improved, mainly through the development of effective, simple and consistent CMPs. Also, analysis is needed on how more transparency regarding this issue and a progressive European harmonisation of these principles will fortify the common market.

To be able to accomplish the study, all regulators who currently have LNG terminals in their countries, have described them, explaining the rules and regulations in place and how the market is working.

To understand the different regimes and be able to reach conclusions on this study, the different operations and process that users need to follow for unloading, storing, and regasifying a spot cargo, had been tested in the different terminals.

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<sup>1</sup> Cf. XV Madrid Forum at [http://ec.europa.eu/energy/gas\\_electricity/forum\\_gas\\_madrid\\_en.htm](http://ec.europa.eu/energy/gas_electricity/forum_gas_madrid_en.htm)

<sup>2</sup> Cf. the ten action points proposed by the European Commission in its „Discussion Paper on LNG“, presented at the XV MF [http://ec.europa.eu/energy/gas\\_electricity/forum\\_gas\\_madrid\\_en.htm](http://ec.europa.eu/energy/gas_electricity/forum_gas_madrid_en.htm)

<sup>3</sup> Cf. „Monitoring the implementation of GGPLNG“, 3 June 2009, by ERGEG, E09-LNG-07-03, available at: [http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_PUBLICATIONS/CEER\\_ERGEG\\_PAPERS/Gas/2009/](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_ERGEG_PAPERS/Gas/2009/)

<sup>4</sup> „Guidelines for Good Third Party Access Practice for LNG System Operators (GGPLNG)“, 7 May 2008, by ERGEG, E08-LNG-06-03, [http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/GGPLNG/CD](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/GGPLNG/CD)

<sup>5</sup> Cf. Conclusions of GLE workshop held in Bilbao on 13 March 2009 <http://www.gie.eu.com/workshop/presented.html>

<sup>6</sup> In this sense GLE accepts that harmonisation of cross border rules is desirable but also signals that priorities must initially reflect the need for LSO's to first implement and demonstrate compliance with the new European legislation that comes into force in March 2011. The evidence supporting harmonisation of LNG terminal access (beyond high level principles) is not clear to GLE because there is limited or no experience of LNG terminal operations in all but a few Member States.

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## Definitions

All the terms used in this document need to be understood as defined in *ERGEG Guidelines for Good Third Party Access Practice for LNG System Operators* and Regulation (EC) No 715/2009.

## Regulatory regimes of LNG infrastructures

When the LNG regulatory frameworks existing worldwide are compared, differences arise for a wide variety of reasons, including for example: the terminal technical constraints; country downstream gas market characteristics (including the market share of LNG and the role played in providing flexibility to users); historical reasons and regulatory decisions.

For instance, in the United States, since 2002 (Hackberry decision), LNG terminals have been considered as competitive infrastructures. As such, they are part of the upstream gas chain, as if they were production infrastructures, so they have the status of “supply source” (section 3 of Natural Gas Act). This position was justified by the existence of a liquid market, where competition between players tends to be intense. In contrast, European law considers that LNG terminals are essential facilities. They belong to the downstream gas infrastructures like transmission gas pipelines, understanding that these facilities cannot be easily duplicated by competitors either for practical or economical reasons. In the absence of access arrangements, this would endow their owners an excessive market power (however, in certain cases exemptions could be granted if a number of conditions are fulfilled, so the American scheme is also followed in Europe in such cases). From now on the analysis will focus on the European case.

### ***LNG regulation in the EU***

In Europe, LNG facilities are subject to a regulated Third Party Access regime and their owners are required to open and share the access with any third party granted with access rights, under transparent and non-discriminatory conditions.

Furthermore, the European legal framework also offers the possibility, for new large-scale gas infrastructures or for significant increases of capacity in existing infrastructures, such as LNG facilities, to obtain an exemption from third party access requirements according to pre-defined conditions (Article 22 of Directive 2003/55/EC and Article 36 of Directive 2009/73/EC). Nevertheless, the implementation of a secondary market and anti-hoarding mechanisms is often a condition precedent to grant an exemption, compelling the primary shippers to make available to others the non used capacities. 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 get access to capacity when it is not used.

The aim of making capacity available to the market, which is included in the European regulatory framework affecting LNG infrastructures on the 3<sup>rd</sup> Package, provides an essential role to secondary markets and anti-hoarding mechanisms (which may differ from one terminal to another), and pursues the final objective of enhancing competition and achieving a single market at European level.

Regulation related with this subject in the 3<sup>rd</sup> Package is presented in Annex I.

## 1. European LNG market evolution and terminal utilisation

Differences among national regulatory provisions are largely explained by particular characteristics and/or technical constraints, both at the existing LNG terminals and in the downstream gas markets (for example, share of LNG supplying national demand, system flexibility, terminals operational patterns reflective of capacity holders' contractual provisions and downstream regulations). An assessment of congestion management requires an evaluation of the existing access arrangements and, in particular, access to capacity for third parties. As a consequence, in case of detecting low rates of capacity use, the question would be whether this rate is explained by technical factors, is market driven or is explained by imperfect regulation, which therefore could be improved.

Such a debate is particularly important in the current European gas context. LNG does in fact play an increasingly important role. Recent events such as the Russia-Ukraine gas crisis have raised concerns about the security and price of gas supplies at a time when many European countries are becoming dependent on imports. Facilitating access to LNG terminals throughout Europe is therefore important, both to stimulate competition and to improve security of supply, through greater diversification and flexibility - for instance - by means of rerouting vessels in Europe, in case of supply crisis situations. The following section aims at investigating the issues related to congestion management in order to determine possible ways towards improvement in Europe.

### 1.1 Towards greater flexibility in the European LNG market

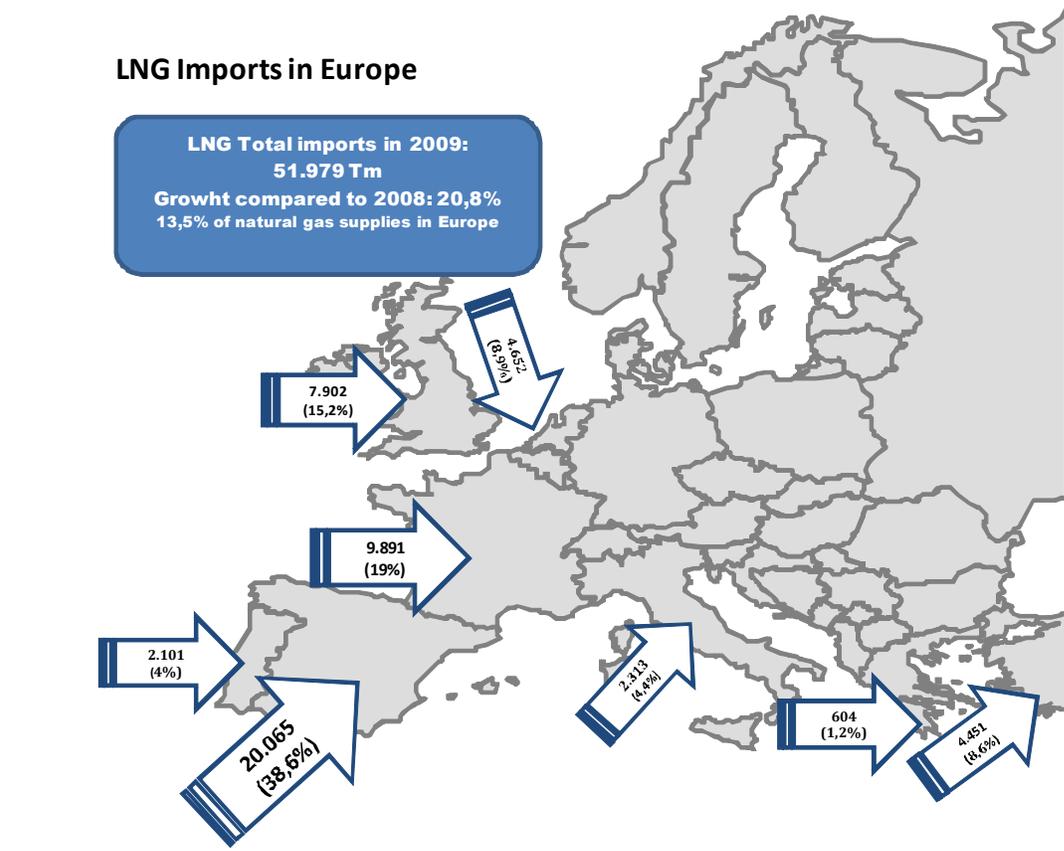
The **role** played by LNG imports in Europe differs from one country to another depending, for example on its supply profile, including geographical situation, demand values, number of active shippers, LNG import terminal capacity etc. For instance, due to a negligible domestic production and in order to face a fast-developing natural gas market, Spain has historically been the major LNG importing country in Europe. In recent years, Great Britain has seen significant investment in LNG import facilities as indigenous production from the UK Continental shelf continues to decline. In France, LNG and pipeline imports are both complementary parts of the supply portfolio. LNG supplies are principally set on long term contracts. This fact, in combination with the optimized LNG terminal integration with pipelines infrastructures, explains why the rates of use in French terminals are amongst the highest in Europe. Furthermore, plans have been set to increase the presence of LNG in many countries, not only to meet increasing demands, but also as a tool for improving the security of supply through the diversification of supplies<sup>7</sup> as it is the case of the Swinoujscie LNG terminal project<sup>8</sup>, in Poland, that will constitute a vehicle to improve security and competition in the Polish gas sector.

LNG imports, which currently represent around 13,5% of total gas supplies in Europe (BP Statistics 2010), are likely to increase in the coming years.

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<sup>7</sup> As an example of this, it can be noted that, in the recent Ukraine-Russian dispute, which led to gas shortages in several European countries, Greece confronted its supply disruption thanks to the flexibility provided by its LNG terminal, supplying also neighbouring countries.

Figure 1. LNG imports in Europe in 2009



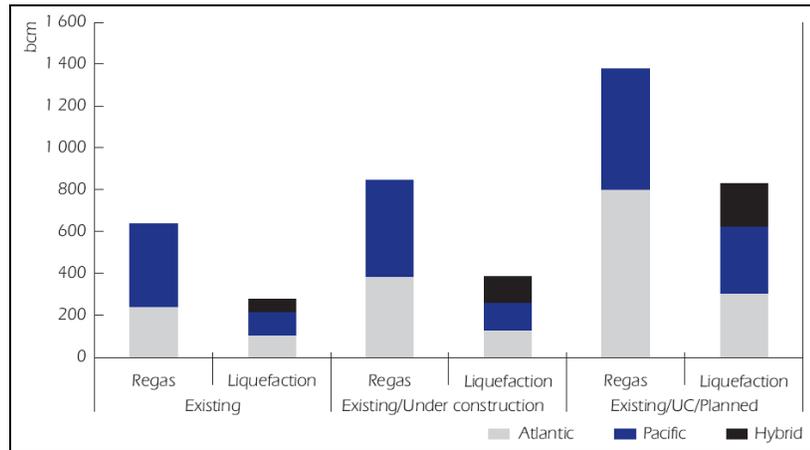
### ***LNG role in market flexibility and security of supply***

From the importing country's perspective, LNG supply provides flexibility and can help to improve security of supply, as the market will be able to source gas from a more diverse range of sources. Through LNG shipping, nearly 80% of gas reserves are accessible to Europe (radius of 7.000 km)<sup>9</sup>.

In contrast to pipeline suppliers who are bound by asset-specific infrastructure availability, LNG suppliers can currently benefit from excess regasification capacities around the world. This regasification overcapacity, compared to liquefaction capacity, helps to encourage arbitrages between the three LNG market areas, namely Europe, North America and Eastern Asia. Finally, LNG flows are directly influenced by freight costs and regional gas prices differences, assuming there are no market distortions.

<sup>9</sup> Source : DSDD, BP, Statistical Review 2009

Figure 2 – Liquefaction and regasification capacity: existing, under construction and planned



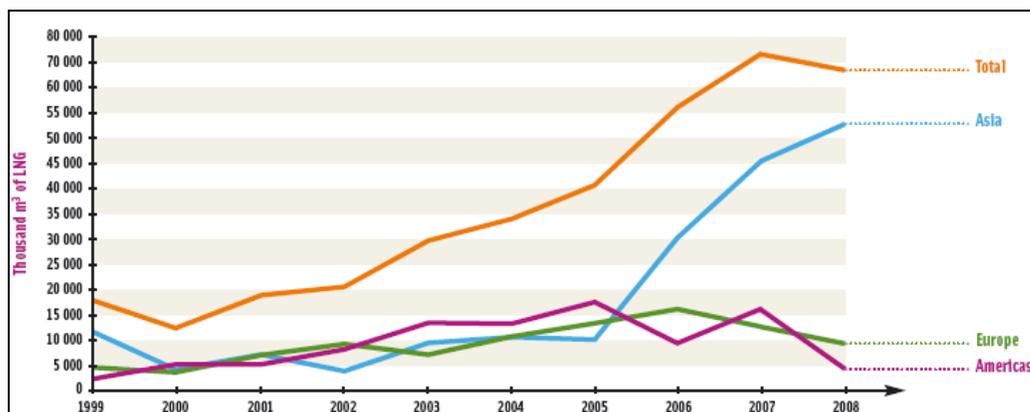
Source: IEA, Natural Gas Market Review, 2009

### LNG trade

LNG projects demand high capital investments, therefore promoters of these infrastructures have traditionally tried to secure long term contracts in order to mitigate investment risk exposure. Under the traditional business model, LNG is sold in large volumes under long-term contracts to the supplier of a specific market. This type of commerce model has traditionally imposed rigid commitments on shippers and caused access restrictions in the short term.

However, recent experience shows that market participants are increasingly opting for more flexible contracts, combining short and long-term contracts as well as shorter overall contract periods. Consequently, it seems that the amount of spot LNG transactions is gradually increasing, and more flexible contractual arrangements are common among LNG traders. In fact, nowadays shippers are gradually diverting more cargos to respond to price signals from markets which offer the best netback value.

Figure 3. Spot LNG transactions in the world, 1999-2008



Source: Waterborne

## 1.2 Rate of utilisation of European terminals

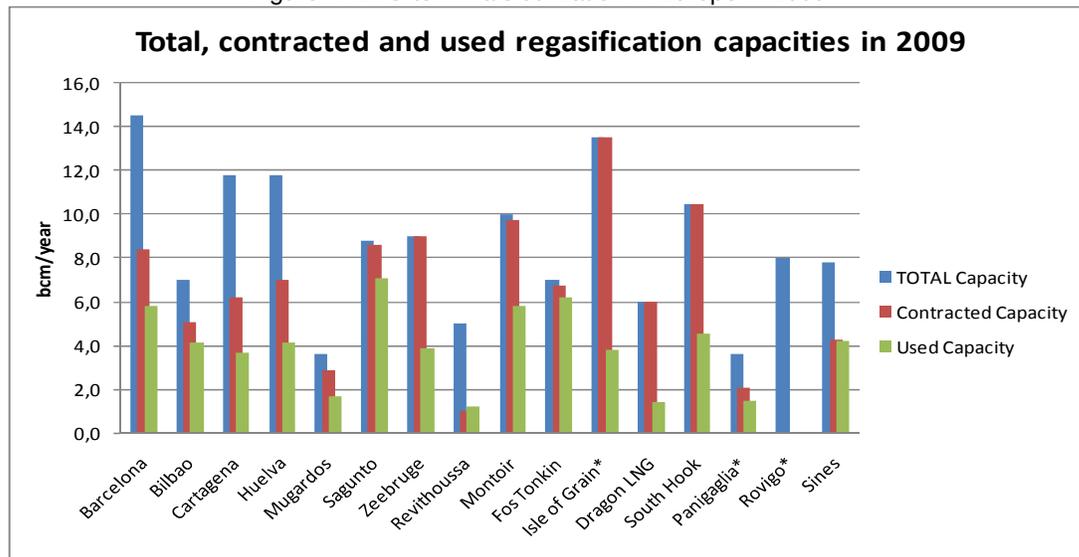
All the factors mentioned in previous paragraphs result in strong fluctuation in the use of LNG terminals, e.g. temporary unused capacities in a given region if LNG prices are pushed up by the situation in another area, etc. Indeed, the average rate of use of LNG terminals in Europe is around 50%. This element has to be taken into consideration when defining the notion of congestion.

Table 1 –Rate of use (%) of terminals in Europe in 2008 and 2009

Country	Terminal	Rate of use 2008	Rate of use 2009	Country	Terminal	Rate of use 2008	Rate of use 2009
BE	Zeebrugge	32%	43%	SP	Cartagena	35%	31%
FR	Fos Tonkin	71%	89%	SP	Bilbao	67%	59%
FR	Montoir-de-Bretagne	74%	58%	SP	Sagunto	80%	80%
GR	Revithoussa	20%	24%	SP	Mugardos	47%	35%
IT	Panigaglia*	40%	n.a.	UK	Isle of Grain Phase 1*	28%	n.a.
IT	Rovigo	Started in 2009	n.a.	UK	Isle of Grain Phase 2	Started in 2009.	n.a.
PT	Sines	34%	54%	UK	Dragon LNG	Started in 2009	23%
SP	Barcelona	43%	40%	UK	South Hook	Started in 2009	43%
SP	Huelva	42%	35%				

Source: National Regulatory Agencies

Figure 4. LNG terminals utilization in Europe in 2009



Source: National Regulatory Agencies \* 2009 Values

## 2. LNG business understanding when defining CMPs

### 2.1 Defining congestion in LNG terminals

Regulation (EC) No 715/2009 on conditions for access to the natural gas transmission networks, 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, any type of congestion could be classified as a 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”*

Practically speaking, physical congestion occurs when the capacity is fully booked, it is being 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.

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.

It is in the latter case when effective congestion management procedures (such as Use-It-Or-Lose-It or secondary trading) have to be implemented in order to facilitate efficient capacity use and in order to avoid potential capacity hoarding.

Compared to transmission facilities, there are specificities which must be taken into account when designing CMPs for LNG terminals. The constraint may come from one of the three complementary elements:

- *Unloading capacity*: size and number of vessels per unit of time; *Storage capacity*: capacity of the tanks.
- *Send-out (regasification) capacity*: maximum hourly re-gasification capacity.

Underutilisation of capacity can therefore result from several different factors including, among others:

- Voluntary underuse, ( because LNG cargoes are being diverted to more attractive markets, because there is no need of LNG in the market or because there is capacity hoarding);
- Lack of attractiveness of the downstream market (no price reference, not open to competition);
- Late re-scheduling of deliveries causing the impossibility to nominate additional vessels in the minimal lead time.

Providing evidence of congestion can be a difficult task. Congestion can be the result of deliberated action by a primary capacity holder, but it can also occur when the “absorption capacity” of the market is reduced, due to the existence of low demand, high supplies from other sources or when underground storage is full since they are also a competitive source of gas. As a result, it is not always easy to define whether congestion comes from users, terminals management or downstream market.

In any case, congestion management procedures have to be applied when there is evidence of capacity underuse occurring at the same time as shippers failing to get capacity. From this perspective, it appears necessary to go beyond the strict definition of efficient anti-hoarding and secondary market mechanisms by addressing the LNG business as part of the gas chain as a whole, namely influenced by upstream supply chain and downstream market.

## 2.2 Contractual constraints of the downstream market

It is also important to note other circumstances, not directly related with LNG infrastructures, which can affect LNG utilisation. This is the case of the contractual regime for accessing downstream markets. In some cases, it is far from transparent, mainly for new users, and can act as a major restriction to eventual users of LNG terminal capacity.

Furthermore, allocation of entry capacity to the transmission system is not always possible. In the situation where a prospective user wants to acquire downstream access and there is no transmission capacity available, the LNG trader is obliged to either sell the cargo to another user holding capacity, or to look for an alternative terminal.

## 2.3 Operational constraints

As the LNG infrastructures present certain **operational particularities**, LSOs terminal's operation and the design of CMPs should respond to the constraints to which shippers are subject.

The management of LNG terminals tends to be based on two basic models of use: base load with a constant rate of gas send-out; or peak shaving, to cover fluctuations of gas demands. Some terminals function with a regime between both, but the base load approach is currently more common.

In a base load regime ship arrivals are planned on a consistent schedule, virtually uninterrupted throughout the year. The LNG supply is contracted mainly on a long term basis, with a production facility located many thousands of miles away. Maintenance is normally planned well in advance (in any case, even under this tight management there are delays and diversions of cargoes).

In markets where there is a liquid market and traders receive effective price signals, there can be opportunities to change the pattern of use and take advantage of market opportunities. The berthing slots, the storage and, eventually, send-out capacities have then an option value. The capacity owner should have the opportunity to evaluate it and decide whether to use that slot or to release it.

While from a capacity holder's perspective, maximising the value of capacity would call for a short notice period before releasing some unused capacity, a too short period would appear to be incompatible with the minimum desirable time required by traders to organise their shipping schedules. The challenge is therefore to find an appropriate combination between stability and flexibility which allows for the reselling of unused capacity, if requested by some shippers.

The role of the terminal operator is to manage the commercial requests of shippers, who may reschedule their unloadings, while dealing with the physical constraints of the terminal (number of jetties, number and size of tanks, emission capacity, quality of gas etc.) as well as external factors (tides, weather conditions, etc.).

For instance, storage capacity can vary significantly depending on the role of LNG terminals in managing downstream market demand. Although LNG ships may be used as floating storage from time to time on special commercial or logistical occasions - usually when there is not enough storage capacity at the receiving point - ship operators must take care to schedule their loading and unloading operations in an orderly manner so that ships will stay in a cold state, being idle for the least time possible.

Operators must therefore optimise the management of these different constraints through adapting various parameters such as the maintenance programmes (grouping work, coordination with the TSO, coordination with seasonal level of terminal use, etc.), the management of LNG inventory (in France, the gas in stock is pooled for the different shippers, while on the Isle of Grain terminal, each shipper has a dedicated virtual capacity) and gas emission programmes on the network based on shipper profiles.

As a consequence, it is important that capacity allocation, CMP and anti-hoarding principles balance the existing capacity holder's rights and potential users' requests for capacity.

In addition to this, such procedures must be made as transparent as possible, especially regarding terminal planning, availability of capacity or notice periods. The necessary requirements to be fulfilled by shippers when booking capacity such as licenses or supply contracts could also constitute access barriers. Anti-hoarding mechanisms are instruments that restore the equilibrium between the rights of primary capacity holders and potential users which is why their definition is so important to ensure competitive and fair market construction.

### 3. Existing congestion management and anti-hoarding mechanisms in Europe: a huge variety of approaches

#### 3.1 Typology of mechanisms

Anti-hoarding clauses are characterized by a considerable variety of specific provisions. They are mainly UIOLI, with either *ex ante* or *ex post* effect, applying over unused slots or unused regasification capacity.

- A) Ex-ante mechanisms:** each reserved capacity service that is not used by the capacity holder must be offered to the market. In an *ex ante* system, transparency and updating of information are fundamental.

*Example: the GB market:* when contracted capacity is going to be unused, primary holders of capacity have the right to offer their unused capacities in the secondary market. If capacity is not sold in the secondary market, it goes back to the LSO, who offers it through its own bulletin board, respecting a minimal notice period before the berthing date.

- B) Ex-post mechanisms:** in an *ex post* system, the rate of utilisation of the capacity is supervised afterwards. Should the terminal user that has reserved capacity on the terminal not use a certain amount of it, for a certain period of time, the booked future capacity rights (or a part of it) will be lost. This mechanism assumes the definition of an objective threshold, such as the level and the period of under-use, the amount of released capacity and the period during which this capacity will be released.

*Example: Spanish system.* An analysis is performed by the LSO and the Technical System Manager over the shipper utilisation in the terminals. A capacity underuse occurs when during a certain period the shipper does not use a minimum percentage (80%) of his assigned capacity. If there is under use of the capacity, this is automatically reduced in the fraction not used, in a firm basis.

- C) Other mechanisms:** Other capacity redistribution mechanisms can be designed as "*use it or lend it*", or "*use it or sell it*" combinations. Also there is an opportunity to economically penalise or incentivise shippers when programming and effectively use their assigned capacity. Other anti-hoarding mechanisms are implemented as periodical assignments of capacity for short periods.

*Example: Portuguese system.* Capacity is allocated on annual short term basis, in Open Subscription Procedures. All the capacity is allocated on the primary market in the short term. There is no secondary market. UIOLI mechanisms are used every month comparing the monthly request with the annual allocation. Thus, contractual congestion and capacity hoarding is diminished and, as a result, underutilisation is prevented.

## 3.2 Belgium

### a) *Infrastructures description and ratios*

Belgium has one LNG terminal, located in Zeebrugge, with a send-out capacity of 9 bcm/year. It is one of the main entry points to the Belgian natural gas market, representing 12% of the total consumption in 2008, although the terminal is not only devoted to the national market. Regasification capacities are held by 3 different companies. Gas imports mainly come from Qatar, via long term contracts.

At national level, the terminal provides the system with flexibility; also it plays an important role in the security of supply at European level. As a fundamental piece of the Zeebrugge hub, the supplies coming from this terminal can also be sent to the British market, through Interconnector, and to the French and German markets, via transit pipelines crossing the country (VTN, Troll)<sup>10</sup>.

### b) *Contractual framework and capacity allocation mechanisms*

The TPA regime at the Zeebrugge terminal is regulated. Capacities are fully subscribed under long-term contracts on the primary market. These capacities are sold via open season procedures<sup>11</sup> to ensure non-discriminatory market-based allocation. If the demand for capacity is greater than Fluxys LNG' (the terminal operator) offer, priority criteria, based on transparency and non-discrimination, are used to decide between the applicants. The capacities still available upon conclusion of the open season are subject to a short-term allocation procedure, on FCFS basis. Capacity is offered in the form of slots, which combines LNG unloading, storage and regasification services.

In order to subscribe capacity, the prospective terminal user needs to enter into a capacity Subscription Agreement with the terminal operator.

### c) *Notice periods and nomination. Terminal production*

Fluxys LNG publishes the total, effective and usable capacities of the LNG terminal. Once the terminal user proceeds to contract capacity, it is entitled to nominate the unloading cargoes and the send out capacity throughout the contracting period, which can be accepted or refused by Fluxys LNG. In particular, before the 20<sup>th</sup> of the month M-3, the terminal user shall send a nomination schedule for the number of slots to be used during month M. One month after, before the 20<sup>th</sup> of the month M-2, shippers have to finalise their nominations, indicating the dates for the nominated slots. Every week W-1, the terminal user shall issue its daily nominations for the following week. Thanks to an ongoing process of revision, the terminal user may adapt its nominations during the gas day.

Under the current model, all capacities at the LNG terminal have been commercialized by means of standard slots. Such slots allow shippers to:

- arrive and berth their LNG carrier and unload the LNG cargo within a window of 3 consecutive high tides;
- use a basic storage capacity of 140,000 m<sup>3</sup> LNG, linearly decreasing over 20 high tides (starting on the first high tide of the abovementioned berthing window);
- use a basic send out capacity of 4.2 GWh/h during the above mentioned 20 high tides.

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<sup>10</sup> The transmission network of natural gas in Belgium both supplies the national gas market and provides major transit routes to the other European markets. On the period 2000-2008, in average 42.1% of natural gas flows were bound for national supply and 57.9% for transit.

<sup>11</sup> The last open Season (2<sup>nd</sup> capacity enhancement) was launched in December 2007. 16 parties signed the confidentiality agreement and non-binding capacity interest was received by Fluxys from 10 parties in May 2008.

In addition, the shippers can book additional storage flexibility and send-out capacities. Fluxys LNG is also willing to discuss the provision of a range of other services to subscribers at the LNG terminal, such as: quality adjustment services to render gas compliant with the required quality specifications of neighbouring networks, cooling down, loading services for LNG carriers and the transfer of LNG between LNG carriers.

**d) Congestion management procedures and anti-hoarding measures**

The code of conduct requires all unused capacity to be placed back on the market by its holder. It has the possibility to negotiate this unused capacity on the secondary market at a price inferior or equal to the regulated tariff. In particular, more than 20 days before the start date of the slot, the user of the LNG terminal can only sell its slots on the secondary market in the form of full slots (without breaking them down into their constituent services). From 20 days before the start date of the slot, the user of the LNG terminal can sell the different services that constitute a slot separately on the secondary market.

Besides that, Fluxys LNG automatically receives a mandate to market a slot whose user has not been confirmed two months before the service start date, on behalf of the holder and at regulated prices.

If there are slots available, Fluxys commercializes them in the market through an Automatic Reservation System. The slot is commercialized as follows:

- As a complete slot, until 10 days before the Slot Start Date
- As unbundled services from 10 days before the Slot Start Date

It is also stipulated that Fluxys LNG establishes a record of use of the capacities of the LNG terminal, detailing, among other things, the nominated slots which have not been used by the user and the reasons why these slots have been missed. However, the capacity is not listed as unused capacity if it is needed for public service obligations. The system user will never lose contracted capacity unless there is, at the same time, underutilisation of part of the contracted capacity, if it is contractually congested and the capacity owner refuses to sell part of capacity on the secondary market at a price equal or lower than the tariffs and the capacity owner is unable to justify its behaviour. The shipper does not receive a penalisation for underutilisation of its assigned capacity.

In the case of regasification, the non nominated capacities are offered to the market for the next day on an interruptible basis.

**e) Spot cargoes unloading**

Given the fact that at present the capacity is fully booked, spot cargoes have the opportunity to be unloaded only when acquiring capacity in the secondary market, directly to the holders, of through the Automatic Reservation System, obtaining the non-used capacity commercialized by Fluxys (as described in the previous section).

Terminal	Storage capacity m3	Emission capacity bcm/year	Number of active shippers	Available primary capacity to contract?	Regasification use ratio (% 2009)	Services offered	Applied CAM	Applied CMP
Zeebrugge	261.000	9	3	No	43%	Slots: combined LNG unloading, storage and regasification	<i>New capacities:</i> Open Season  <i>Short term available capacities:</i>  First Come First Served	Secondary Market

### 3.3 France

#### a) *Infrastructures description and ratios. Role of LNG*

France has 3 LNG regasification terminals (Montoir de Bretagne on the Atlantic coast and Fos Tonkin / Fos Cavaou<sup>12</sup> on the Mediterranean coast) where access is regulated. In 2009, regasification capacity was used by 7 different shippers in Montoir and Tonkin LNG terminals. 3 new projects have been publicized (Antifer, Dunkerque LNG and Fos Faster) with a commissioning planned between 2014 and 2016.

Due to very small domestic production, France imports 98% of its supplies, from Norway (32%), the Netherlands (19%), Algeria (18%) and Russia (15%). The French portfolio is mainly composed of long term contracts (93%). The country chose to develop LNG infrastructures in the 1970s in a complementary approach to gas supply by pipelines to improve its supply diversification. Today, France has the third biggest regasification capacity in Europe (25 bcm/year) behind Spain and the UK, and receives 28% of its natural gas imports in the form of LNG (145 TWh), mostly from Algeria; France also imports some LNG from Nigeria, Egypt and Yemen. France also benefits from large underground storage capacity (equivalent to about 25% of the annual consumption) which covers most of the need for seasonal and short term flexibility. LNG terminals were, therefore, not objectively designed to help balancing the system.

#### b) *Contractual Framework and Capacity Allocation Mechanism*

Except during the open season for Montoir, capacity is allocated on a *First Come First Served* basis under short-term (below 1 year) and long-term (above 1 year) contracts. For accessing LNG terminals, i.e. to apply for regasification capacity, it is necessary to sign a standard contract with the LSO. Moreover, to be acceptable, a reservation request regarding annual or supra-annual capacities must be justified by a LNG supply contract consistent with the request.

French LNG terminals are designed to offer some “upstream” flexibility to shippers. Access to terminals is systematically offered through bundled products including the unloading of cargoes, the storage of liquefied gas and the sent-out on the gas transmission networks.

Thus, depending on their profile of LNG delivery, shippers can either subscribe to a “30-day band” emission service or to a continuous service. The “30-day band” emission service is designed for small/medium users who unload less than 12 cargoes at a terminal over a year. The regasification of one cargo is spread out over a 30-day period through constant emissions to the transmission network. The continuous service is designed for medium/big users who unload 10 or more cargoes at a terminal over a year. The LSO provides a continuous emission over the contractual period, as regular as possible for the user. Besides these two standard types of service, a spot service is also offered. The reservation is based on non-nominated slots for the month ahead; spot cargoes are unloaded under the “30-day band” format.

In this system, storage tanks are mutualised between users. This mutualisation enables the LSO to manage the intermittent arrival of cargoes and to ensure a continuous delivery on the transmission networks. This system explains, for instance, why a shipper cannot request unbundled products such as LNG storage capacity alone. Consequently, in France, LNG tanks are not used by shippers as a flexibility tool. On average, LNG is stored from 3 to 5 days.

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<sup>12</sup> Fos Cavaou has been authorised by prefectorial decree to operate at 20% of its total regasification capacity. It should be commissioned at full capacity during Q1 2010

**c) Notice periods and nomination modalities**

Every year (N), and for the period of the following year (N+1), the shipper and the LSO agree on an estimated unloading schedule indicating the monthly amount of LNG to be unloaded (annual scheduling). This unloading schedule is updated every month for the following month (monthly scheduling), knowing that each shipper has a priority on the dates agreed upon with the LSO in the annual program. On the 20<sup>th</sup> of month M-1 (Cf. Figure 5), the shipper informs the LSO about the cargo arrivals planning (unloading dates, loading port and names of the LNG tankers). Spot cargos can be planned after the 20<sup>th</sup> depending on the availability of slots.

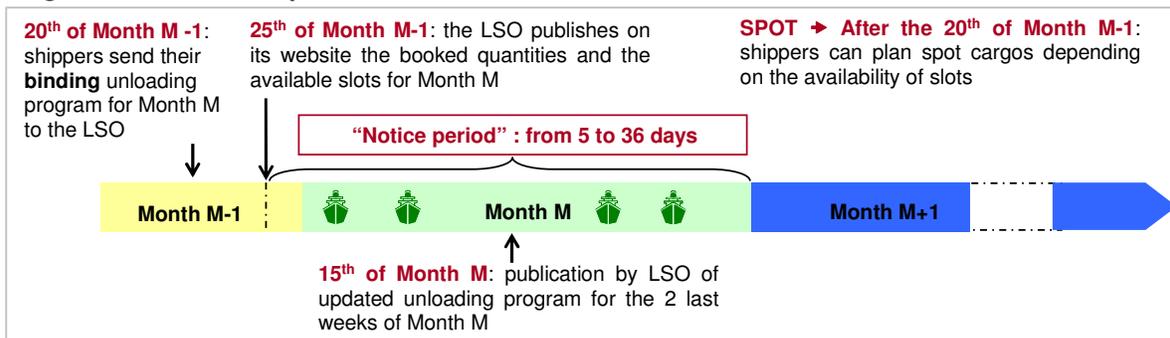
On the basis of all shippers' requests, on the 25<sup>th</sup> of month M-1, the LSO sets the monthly program and informs each shipper of his allocated unloading windows. This program is binding. The booked quantities and the available slots for month M are published on LSO's website.

On the 15<sup>th</sup> of month M, the LSO updates its website with the unloading program for the next two weeks, providing more visibility on available slots to the market.

Shippers have the possibility to request from the LSO a rescheduling of their cargos for the current month. Depending on the operational constraints, the operator makes reasonable efforts in order to accept the rescheduling request.

Therefore, the nomination process in the French LNG terminals is monthly-based. Considering that a slot can be used between the first and the last day of the month M and the monthly binding program is known by the 25<sup>th</sup> of month M-1, a shipper who wishes to unload a spot cargo has a theoretical notice period that can last from 5 to 36 days.

**Figure 5 – Nomination process in French LNG terminals**



Source: CRE

**d) Congestion management procedures and anti-hoarding measures**

Utilisation rates recorded in the French LNG terminals are amongst the highest in Europe. This is due to the role traditionally played by LNG in France, namely a strong complement to gas supply by pipelines for the historical market players. Four different mechanisms have been implemented to be sure any available slot will be offered to the market.

In a self-regulatory approach, the right is given to primary capacity holders to offer their unused capacities on the secondary market by entering into bilateral deals. Reselling primary capacity is upon shipper's choice; the LSO's role is to encourage this by providing a secure platform allowing the two parties to meet. The secondary market is conceived as an ex-ante, non-obligatory tool made available to primary capacity holders who want to optimise their capacity use. In practice, the platform, and secondary market in general, are rarely used.

To prevent anti-hoarding behaviour, two other procedures have been implemented as a complement to the voluntary use of secondary markets. Firstly, for any late cancellation during month M, a penalty is applied to the primary shipper. In practice, any cancellation can affect emission flows for other users and may translate in the terminal operator not having an appropriate emission level. Moreover, when the cancellation is late (a few days before the unloading date), it strongly hinders the possibility for a third shipper to bring a spot cargo on time. In this case, the primary shipper can be required to compensate (in gas or financially) the shipper(s) whose emissions have been reduced as a consequence of the alteration. The other option – up to the LSO – is the application of a penalty set at 50% of the regasification cost of the cancelled delivery if the cancellation is notified three days or less before the scheduled date. Income relating to this option is wholly distributed between terminal users.

Finally, two types of UIOLI mechanisms have been designed. The first one is an ex-ante short-term UIOLI. The slots that are reserved through the annual program 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 may be available. The other mechanism is an ex-post UIOLI, and has also been designed to sanction capacity hoarding. In case of congestion (i.e. if the program for Month M+1 shows no available unloading slot) any cancellation without notice to the LSO will be formally noted and the regulator informed. In this case, the French regulator (CRE) may, on a case-by-case basis, require the shipper concerned to release part of its booked capacity, to the benefit of other shippers.

New disposals reinforcing regulator's control means have been introduced by the new tariff for the use of LNG terminals which came into force on 1 January 2010 for Tonkin and Montoir and starting from the commissioning of the terminal for Fos Cavaou. Before, CRE had no power to collect information about cancellation or underuse of capacity. Previously, a mechanism designed and applied by the LSO existed against systematic underuse but it has never been applied. No abuse has ever been previously reported.

**e) *Spot cargoes unloading***

Every month, the LSO indicates on its website the number of planned and available berthing slots for the month ahead. This unloading program is updated on the 15<sup>th</sup> for the last 2 weeks of the month. The reservation is based on non-nominated slots in the schedule for the month ahead. Spot cargoes are unloaded under the "30-day band" LNG delivery profile. Shippers requesting spot services must have signed a standard contract with LSO.

The fact that reselling primary capacity is conceived as a non-obligatory mechanism upon shipper's choice (secondary market) may be a limit to the availability of spot services. Ex-ante short-term UIOLI, ex-post UIOLI and penalties have been designed to penalise capacity hoarding and increase the accessibility to the spot market by releasing part of primary shippers' booked capacity in the benefit of other shippers.

Terminal	Storage capacity m3	Emission capacity bcm/year	Number of active shippers	Available primary capacity to contract?	Regasification use ratio (% 2009)	Services offered	Applied CAM	Applied CMP
Montoir	360 000	10	5 in 2009	Full till 2011 and 12% free in average from 2012	58%	Bundled products	First Come First Served  (OS in Montoir in 2011)	Secondary market  Penalty  Ex-post monthly UIOLI
Fos Tonkin	150 000	7	1 in 2009	Full till 2011 and 20% from 2011 to 2014	87%	Continuous service / "30-day band" service		
Fos Cavaou	330 000	8.25	NA	Yes (10% dedicated to ST bookings)	NA			

### 3.4 Greece

#### a) Infrastructures description and ratios

Greece has one LNG terminal in Revithoussa, operating since year 2000. Currently the terminal send-out capacity (SMSR) is circa 5 bcm/year. In 2009, LNG represented 24% of the country's natural gas consumption. Until April 2010, the terminal was used only by the national incumbent DEPA and working on average under a 0.7 bcm/year send-out rate, serving mostly the existing Algerian contract. This implied that until April 2010 more than 80% of yearly send-out capacity was available and unused. Following the entry into force of the National Natural Gas System Code (NNGS Code) in April 2010 that specified the rules and conditions of TPA access to Revithoussa and RAE's approval of the standard contract for the use of the LNG facility, two new players (power producers) gained access at the terminal and are scheduled to unload circa 530 bcm until the end of the year amounting to 40% increase in the terminal utilisation.

This terminal is considered by Greece of capital importance, as it provides safer energy supply, operational flexibility in the transmission system, capability for covering the market's peak-hour demands and additional capacity for new entrants as already demonstrated above. Nevertheless, there is a bottleneck in the terminal, regarding storage capacity. There are two tanks with 65,000m<sup>3</sup> of capacity each, but a third tank is mandatory in order to facilitate (and maximise) the use of berthing, unloading and regasification services, and also for reasons related to security and diversification of supply.

#### b) Contractual framework and capacity allocation mechanisms

The TPA services offered by the terminal, capacity allocation mechanisms, congestion management procedures as well as the content and terms and conditions of the standard LNG contract are included in the NNGS Code approved by the Ministry of Environment, Energy and Climate Change in April 2010. According to the Code, the LSO offers a firm basic service i.e. a slot or a series of slots each including entitlements to:

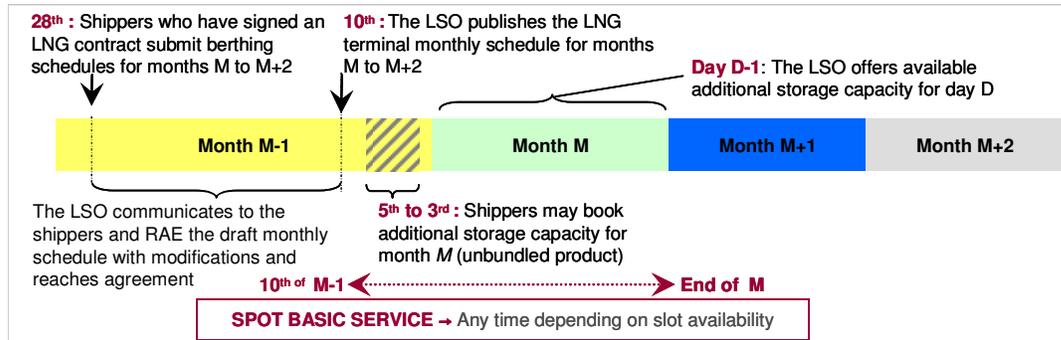
- Connect an LNG ship to the terminal unloading arms, unload the cargo and disconnect;
- Temporarily store the ship cargo in the LNG terminal storage tanks. Temporary storage capacity is defined on the basis of each cargo and is linearly reduced within an 18 gas day period following the completion of unloading;
- Regasify the LNG and inject it into the National Gas Transmission System.

The minimum duration of LNG contracts is one month. No upper limit is specified. Capacity is allocated on a first come first served basis. Ships wishing to unload LNG at the Revithoussa terminal need to undergo through a formal Ship Approval Procedure published on the LSO's website.

Additional storage and regasification capacities are also offered in the form of unbundled products. Requests for basic services are prioritised over unbundled products. Other services include ship cooling and gassing up. The storage capacity available for TPA is defined by the TSO on a monthly basis according to the methodology described in the Code.

Note that for the Greek system the LSO is also the TSO, so that the term TSO will be adopted in the remaining of this section.

**Figure 6 – Berthing nomination process in the Greek LNG terminal**



Source: RAE

**c) Notice periods and nomination. Terminal production**

All interested parties may submit an annual berthing schedule 12 weeks before the beginning of each calendar year. The TSO publishes the LNG terminal annual schedule 8 weeks before the beginning of each year. On the 28<sup>th</sup> of month M-1, shippers that have already signed an LNG contact with the TSO are required to submit a monthly berthing schedule for the next three months (Cf. Figure 6). Shippers who have not participated in the annual berthing schedule are also entitled to participate in the monthly process. The annual schedule is tentative whereas the monthly programme is binding for month M.

The following rules are applied by the TSO when preparing the LNG terminal annual schedule

- The shipper with the largest annual LNG amount is accommodated first with minimum modifications in the requested unloading times. The shipper with the second largest amount follows etc;
- Cargoes of shippers that have already signed a contract with the TSO are accommodated in priority to cargoes of all other interested parties;
- The TSO rejects cargoes that exceed the available storage capacity.

The following rules are applied by the TSO when preparing the LNG terminal monthly schedule:

- Deliveries included in the annual schedule are shifted in time in reverse order to the magnitude of the deviations that were introduced (either in terms of the unloading time or the cargo size) in comparison to the annual schedule;
- Deliveries not included in the annual schedule are shifted in time in reverse order to the magnitude of the LNG cargo requested to be unloaded;
- the TSO rejects cargoes that were not included in the annual schedule and exceed the available storage capacity for the particular three month period.

Regasification nominations are submitted by the users of the National Gas Transmission System who are supplied by the LNG shippers. Regasification nominations are submitted by the transportation users as part of their overall weekly and daily nominations.

**d) Congestion management procedures and anti-hoarding measures**

A number of mechanisms are foreseen to prevent contractual congestion and capacity hoarding. These include

- **Cancellation penalty charges.** In case a shipper requests the cancellation of a cargo scheduled for month M after the publication of the LNG terminal monthly schedule, he is charged with a cancellation penalty.
- **Release of a booked slot.** In case the cargoes of a particular shipper were included in the LNG terminal annual schedule but the shipper has failed to sign an LNG contract with the TSO at least 30 days before the first unloading is due, the slot is released through the monthly nomination procedure or made available for spot cargoes. The same applies to all cargo cancellations.
- **Release of unused gasification capacity (short term UIOLI).** In case a shipper has reserved gasification capacity at the LNG terminal but has no LNG stock and has not scheduled any new deliveries over a certain period of time, the TSO proceeds with the short term release of the shipper's booked regasification capacity to all interested parties. The TSO credits the first shipper according to the applicable tariffs.
- **Compulsory adjustment of the daily regasification rate (short term anti-hoarding of storage capacity).** In case a shipper's LNG stocks exceed the storage capacity he has been allocated, the TSO may request the modification of the weekly and daily nominations of the transmission network users serviced by the particular LNG shipper so that the LNG amount in excess is reduced. If such a regasification rate adjustment is not possible for reasons related to the TSO's contractual obligations to other users or to the safe operation of the system, the TSO may debit the LNG shipper with a penalty charge for exceeding the allocated storage. To further discourage storage capacity hoarding, the Code establishes that the penalty charge is increased by 10% every day that the LNG stokes remain in excess of the allocated storage capacity. If the above measures are not adequate or cannot be implemented for any reason, the TSO reserves the right to oblige the LNG shipper to sell the LNG in excess at a largely reduced price to the remaining gas market players (users of the transportation system). The level of price reduction to be imposed by the TSO is to be determined following RAE's approval.

In the event of congestion during the allocation of additional storage capacity, capacity is allocated through auctions. The Code foresees for pro-rata allocation until an auction system is in place.

**Secondary capacity markets** are not active in the Greek LNG terminal so far. The Code foresees the resale of LNG stored in the tanks and also trade of gasification capacity rights (swaps) through bilateral agreements and an electronic platform developed by the TSO.

The TSO also reserves the right to modify the storage rights allocated to a shipper in the case of delayed arrival of the LNG carrier.

**e) Spot cargoes unloading**

The TSO publishes the available storage capacity 10 days before the beginning of month M for a period from month M to month M+2. Any interested party may submit an application for a *spot* basic service at any time. Shippers requesting spot services must have signed a standard contract with the TSO at least three days prior to the unloading of the cargo. A fast track procedure for signing LNG contracts for spot cargoes is foreseen.

Terminal	Storage capacity m3	Emission capacity bcm/year	Number of active shippers	Available primary capacity to contract?	Regasification use ratio (% 2009)	Services offered	Applied CAM	Applied CMP
Revithoussa	135117	5	3	Yes	24%	Basic Service (slot): unload, regasification and storage	First Come First Served	UIOLI and capacity transfers among users

### 3.5 Italy

#### a) *Infrastructures description and ratios*

Italy has two operating LNG terminals: Panigaglia and Rovigo (offshore). The Panigaglia terminal was built in 1971, it has a limited import capacity of 3.6 Bcm/year and it can only receive small ships, up to 70 000 m<sup>3</sup>. Its rate of use declined from 100% in the thermal year<sup>13</sup> 2001/2002 to 27% in the thermal year 2008/2009. Since Q4 2009 Panigaglia capacity has been temporarily reduced to 70% because of a maintenance intervention on a regasification unit. It is expected that total capacity will be restored in 2011. The Rovigo terminal entered into operation in Q4 2009 with a regasification capacity of 8 bcm/year and is able to receive up to 150 000 m<sup>3</sup> cargoes.

Due to a limited regasification capacity, LNG has played, up to now, a restricted role in the Italian gas market, accounting for less than 5% of total natural gas consumption. However, new projects are seen as a way of promoting competition, supporting new entrants and diversifying supply<sup>14</sup>.

The Panigaglia terminal is regulated. Rovigo is partially exempted (80% of the regasification capacity is exempted from third party access for 25 years and 20% remains under regulated TPA regime). Five users shipped LNG to Panigaglia terminal in 2008/2009, 3 of which only shipped spot cargoes. One shipper has been allocated part of the r-TPA capacity at Rovigo terminal in 2008.

#### b) *Contractual framework and capacity allocation mechanism*

Italian legislation assigns the NRA the power to fix the criteria for accessing regasification capacity and for offering and executing regasification services, as well as the obligations of terminal's users and LSOs. This regulation was defined by the *Autorità per l'energia elettrica e il gas* (AEEG) in the order 167/05. In the case of exempted terminals (partially or totally), the regulation is integrated with special provisions issued by the Ministry (decree 11 April 2006) concerning the allocation of the TPA capacity of partially exempted terminals and the way to re-allocate the exempted capacity that is not used.

LSOs have to draft their terminal code assuring compliance with the mentioned regulation and after a consultation open to all stakeholders. The code is then verified and eventually approved or amended by the NRA<sup>15</sup>.

When shippers ask for capacity, they must demonstrate they have the relevant LNG supply and transport contracts or agreements to make the LNG available at the terminal. They must also be in possession of the authorisation to import natural gas granted by the Ministry and they have to dispose of a defined amount of strategic storage (around 10% of the import volumes). The authorisation isn't required for spot cargoes or imports shorter than one year.

LSOs have to offer bundled services on a continuous and spot basis, including unloading, storage and regasification capacity. Other services, as ships cooling and pressure, Wobbe index correction are offered unbundled.

Contracts contain two main data to define the regasification capacity: the maximum LNG amounts that the shipper can unload within a certain period (for instance in one month or in one year) and the relevant maximum number of berthing.

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<sup>13</sup> Thermal year is the period from 1 October of one year to 30 September of the following year.

<sup>14</sup> Many projects of terminals have been publicized (12 projects, accounting for a capacity of 85 bcm/year, if all constructed). Only one of these has currently authorization for its construction. It's a floating off-shore LNG terminal for 3,75 bcm/year to be permanently anchored in the Tyrrhenian sea offshore Livorno.

<sup>15</sup> The regasification code of Panigaglia was approved in 2006. That of Rovigo terminal is under consultation process.

Capacity is allocated through OSPs. One is yearly held, in the month of July, to allocate capacity for the following thermal years. Other OSPs are monthly held, for the allocation of the available capacity within the thermal year. Different procedures apply for the allocation of capacity in the terminals (regulated and r-TPA part of the partially exempted terminal). These differences refer to the maximum duration of the regasification contracts and to the criteria applied in case of congestion.

- *Regulated access terminal*

By the 1st of July each year, shippers can ask for capacity for the following thermal year (Y+1) and multi annual capacity for the period (Y+3 to Y+7). In the case that requests exceed available capacity priority criteria apply, which mainly refer to the supply contract for which access to the terminals is asked for:

- Take or pay LNG supply contracts signed before 10th August 1998. The maximum amount of capacity that can be asked within this class of priority is limited to the minimum historically volume of LNG delivered at the terminal.
- LNG supply contracts longer than one year.
- LNG supply contracts of one year.

A pro-rata mechanism is applied within each class of priority if necessary. This system was put in place in order to cope with the observed congestion in Panigaglia terminal some years ago. This capacity allocation mechanisms established in 2005 freed up capacity in the following years.

- *Exempted from TPA terminal*

Rovigo has been developed under an own-use model, whereby the shareholders are involved in the LNG supply for the exempted capacity, which is being allocated to one shipper.

The 20% not exempted capacity is awarded to applicants through annual OSPs based on priority of access, defined by the Ministry, where capacity can be granted for 10 thermal years firstly to final customers and then to those importers that commit to sell all the delivered LNG volume in the Italian notional hub (PSV). Capacity up to five thermal years can be allocated also to: shippers that commit to sell at the PSV at least 20% of the delivered volume, those that diversify import sources (with respect to the situation in 2004).

In case requests exceed available capacity, priority based on contracts volumes, starting date, duration, number of berthing, volume offered at PSV are applied within each class of priority.

**c) Notice periods and nomination. Terminal production**

Regulation provides that each month the LSOs have to define the delivery schedules of the terminal for the following three months. This program contains, for each month, the LNG amounts to be delivered by each shipper and the relevant number of unloadings. The definition of the date of berthing is only required for the following month. Detailed procedures, deadlines and criteria that users and LSOs have to follow to define the unloading schedule are then established for each terminal in the regasification code.

According to the Panigaglia code, at the end of the year Y-1 capacity of each shipper is distributed within each month over the next year, constantly with some tolerance. The network code defines the limits users can use to adjust the annual program by exchanging or shifting and anticipating their monthly rights during the year.

Four days before the end of each month, the user submits the unloading schedule for the next 3 months. The schedule (dates of berthing and LNG volumes) is binding for month M+1; only LNG volumes and not dates, are binding for M+2 month. The program for M+3 is only indicative. Users unloading programs are approved by the LSO in the month M-1.

With respect to terminal production the regulations, in order to assure a continuous flow of gas to all the users (even if they deliver only one cargo per month), provide that the gas is given back to the users with a pattern as stable as possible within each month. To do so, LSOs have the power to define the regasification program according to transparent and discriminatory criteria and procedures, set in the regasification code for each terminal. Only if there is flexibility the users can request a modification to the regasification program.

Criteria defined in the regulation with respect to the definition of unloading schedules and regasification programs apply to regulated terminals as well as to exempted terminals.

**d) Congestion management procedure and anti-hoarding measures**

Two mechanisms apply. The first one is an ex-ante mechanism and refers to the schedule of unloading. If LNG volumes scheduled for the month M+2 are lower than the shipper's capacity rights, the LSO has to offer the non-nominated capacity to the market. Shippers are levied with charges in case program mismatch exceed a defined tolerance, in order to provide incentives to provide schedules as correct as possible.

A second mechanism, recently reformed, is ex-post and refers to the annual use of the capacity that was granted for contracts longer than one year. If the shipper fails, apart from force majeure reasons, to deliver at least 90%<sup>16</sup> of the LNG contracted volumes, it is then obliged to give back the amount of the unused capacity to the LSO, who then offers it in the market within the OSP to allocate annual and multi-annual capacity. This released capacity is allocated after the previously available capacity and if no-one buys it, it goes back to the primary shipper. This mechanism has been applied twice but the released capacity was not allocated because there was still primary unasked available capacity. In consequence, shippers are not entitled to directly sell the capacity they do not use, as this is done by the LSOs. In case the released capacity is allocated to other shippers, the primary user is not obliged to pay any charge.

The first mechanism applies to both regulated and exempted capacity. The second one applies only to regulated capacity (even in the partially exempted terminals). For the exempted capacity applies a similar ex-post mechanism defined by the Ministry.

**e) Spot cargoes unloading**

LSOs have to offer all the capacity of the terminal that is available each month, after taking into account the unloading schedule defined at the end of the previous month, after considering possible capacity freed up because the cancellation of cargoes, delays or advances. The spot capacity is offered with reference to the maximum LNG volume that can be accepted and the relevant date of unloading. LSOs define a deadline for submitting requests.

In case of congestion spot capacity is allocated to the shipper that delivers the LNG volumes nearest to the capacity offered. If the deadline expires without any request, the spot capacity is then allocated on a FCFS basis.

Terminal	Storage capacity m3	Emission capacity bcm/year	Number of active shippers	Available primary capacity to contract?	Regasification use ratio (% 2008)	Services offered	Applied CAM	Applied CMP
Panigaglia	100.000	3,6	5	Yes	40%	Continuous and spot. Both bundled,	Priority of access according to contract	Ex-ante UIOLI non nominated capacity, starting from M-

<sup>16</sup> From the contracted volumes it is deducted the capacity that is released in M-3, also if it's not booked by other users, and the capacity released after M-3 if it's booked by other users

Rovigo	250.000	8	2	No	Started 2009	including unloading, storage and regasification	parameters and different priorities established.  Spot capacity is offered in OSP. Priority is given to the users whose request is nearest to the offered capacity. If OSP deadlines expires in vain, FCFS applies	2 schedules, is automatically offered by the LSO to the market  Ex-post UIOLI
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### 3.6 Poland

#### a) *Infrastructure description and ratios. Role of LNG*

Swinoujście LNG Terminal is scheduled to start operation in June of 2014. Initial annual liquefaction capacity is planned up to 5 bcm, which equals to approximately 40% of present annual Polish gas consumption. If gas demand grows in coming years, a possible extension of the annual liquefaction capacity to 7.5 bcm is technically feasible. Despite the forecasts of growing gas consumption in Poland, terminal use will not be restricted to national market.

The construction of a LNG terminal allows Poland to diversify its supply sources, and become less dependent on Russian gas. In addition the terminal will provide extra flexibility to the Polish TSO. So far one supply contract for 1.5 bcm of Qatari LNG has been signed. Other possible suppliers are considered Algeria and Persian Gulf countries.

Moreover, options to organise a hub on the physical point of Swinoujście terminal, where supplies coming from this terminal could also be sent to the Danish, German and Lithuanian markets, via future Interconnectors, are being considered.

#### b) *Contractual framework and capacity allocation mechanism*

In the Swinoujście LNG Terminal a regulated TPA regime is being planned. In order to ensure non-discriminatory access to the terminal, *Polskie LNG S.A. (Polish TSO GAS-SYSTEM)*, offered in 2009, send-out capacity in Swinoujście LNG Terminal on the *Open Season Procedure* basis. A non-binding petition was submitted by *Polish Oil and Gas Company (PGNiG)* and the contract between *PGNiG* and *Polskie LNG* was signed in March 2010. As a result of this procedure 370 000 m<sup>3</sup>/h (of available 570 000 m<sup>3</sup>/h) of regasification capacity were allocated to *PGNiG*. The rest of regasification capacity will be offered on the basis of the terminal code rules. According to Polish law, *Polskie LNG S.A* is still not completely regulated, although the company complies with *acquis communautaire*.

The rules for rendering terminal services are described in the terminal code. The LNG System Operator will provide long-term services based on contracts (established for an indefinite period or for a definite period of at least a year) as well as spot services.

**c) Notice periods and nomination. Terminal production**

The current model foresees that the terminal's users submit an annual berthing schedule for coming year, with a monthly breakdown up to 15<sup>th</sup> September of each calendar year. Moreover, short-term regasification contracts include the berthing schedule for the months when the regasification services will be rendered. Nominations for short-term contracts are submitted in two-week cycles.

**d) Congestion management procedures and anti-hoarding measures**

LNG terminal operator will release unused regasification capacities in accordance with the established regulation. Analysis of send-out capacities use will be regularly performed in order to prevent underuse and capacity hoarding. Terminal users will be entitled to sell their unused send-out capacity on secondary markets. LNG Operator will publish on its website a *Bulletin Board* including secondary market offers.

**e) Spot cargoes unloading**

Shippers interested in contracting regasification capacity on spot basis could apply for a berthing slot to the LNG Operator. The Operator will analyse the application, and allow its feasibility, taking into consideration accessible send-out capacity, fuel quality, safety parameters, and integrity of terminal installations.

Terminal	Storage capacity m3	Emission capacity bcm/year	Number of active shippers	Available primary capacity to contract?	Regasification use ratio (% 2008)	Services offered	Applied CAM	Applied CMP
Swinoujscie (2014)	320.000	5	1	Yes	-	Base product: slots, unloading, temporary storage and send-out	Regulated allocation through OSP.	Terminal users will be entitled to sell his unused send-out capacity on secondary markets

### 3.7 Portugal

**a) Infrastructure description and ratios. Role of LNG**

There is one regulated LNG terminal in Portugal located in Sines, with a regasification capacity of 5.25 bcm/year. It started operation in 2003. In 2009, this regasification plant provided 60% of Portuguese gas supply. The construction of a LNG terminal allows Portugal to diversify its supply sources and become less dependent on Algerian gas. In 2009, a total of 36 LNG tankers mostly from Nigeria unloaded 4.6 Mm<sup>3</sup> of LNG. Up to now, there is only one shipper using the terminal and available infrastructure capacity exceeds its demand. Consequently, this terminal does not operate at full capacity. However, due to expected demand growth, the construction of a new storage tank and the reinforcement of the send-out capacity are being planned.

**b) Contractual framework and capacity allocation mechanism**

The base product in the Sines terminal consists of individual slots, bundling the unloading of vessels, temporary storage and send-out capacity. Unbundled services are also offered, including LNG storage without unloading based on backhaul flows from the transmission network.

All the available capacity is offered to the market on short term periods (a year of duration). Capacity is booked by shippers in an annual OSP, and an auction mechanism is used to allocate capacity when demand exceeds offers. The capacity allocated in the yearly schedule is firm, however it is not binding. This means that the shipper may change the unloading slots and also request additional storage in the monthly schedules. Available capacity is published every year, prior to the allocation process.

It is important to note that the regulatory framework in force does not consider a contracted capacity concept. The contracts include a set of rules without having capacity rights established on them.

**c) Notice periods and nomination. Terminal production**

Monthly schedules for the following three months have to be communicated before the day 12<sup>th</sup> of the month prior to the first month of use. Programmed slots for the first scheduled month are binding, and the ones corresponding to the other two months are only for indicative purposes. The unloading programme is confirmed by the Technical System Manager on the 20<sup>th</sup> of every month.

Whenever the monthly schedules comply with the annual schedule the allocated capacity is immediately confirmed by the Technical System Manager. On the contrary, if the shippers require different unloading slots and extra storage capacity, the Technical System Manager has to assess the viability of the overall capacity demand. If the shipper's requests are not compatible, the Technical System Manager confirms all firm slots allocated in the yearly schedule and triggers a congestion management procedure, based on auctions, for the remaining slots demanded by more than one shipper. The allocation of slots and storage capacity with shorter notice periods (less than one month) are accepted depending on the availability of the LNG terminal.

The LNG send-out capacity is integrated in the transmission network schedule, and is allocated in sequential OSP - yearly, monthly and weekly schedules and nominations/renominations. In the allocation mechanisms for the transmission network, namely for the connection to the LNG terminal, the shippers must participate in the scheduling process until the daily nominations take place. The capacity allocated in an OSP, or auction in case the demand exceeds the offer, is firm, and the sequential OSP's details the shipper's requests towards the daily nomination. The shippers must always address or confirm their previous requests in all subsequent OSP's and nominations or else surrender the capacity to the market. All capacity allocated and not intended for use are again made available to the shippers, at least, on a day-ahead basis.

There is a penalty scheme applied to the LNG terminal users, in order to prevent hoarding behaviours. If a shipper doesn't use a slot allocated in a monthly schedule, it must pay a penalty corresponding to the sum of unload tariff and storage tariff related to the capacity and the number of days that were booked.

For the send-out capacity there are no penalties applied beyond the imbalance charges of the transmission network.

**d) Congestion management procedures and anti-hoarding measures**

When monthly schedules do not match the yearly schedule, a short term UIOLI mechanism is applied. Thanks to the short term capacity allocation and the UIOLI mechanism, contractual congestion and capacity hoarding is diminished.

There are no capacity rights available to trade on a secondary market. All capacity is allocated on the primary market. Since there is only one user in the terminal, booked capacity is not published according to minus three rule.

**e) Spot cargoes unloading**

All capacity allocated in a monthly schedule is binding and if a shipper surrenders a slot booked at that stage he must pay a penalty for that. The spots cargoes are accepted depending on the LNG terminal availability and the LSO should make an effort to fulfil any shipper's request.

In cases where a shipper surrenders a slot on short notice (less than a month) the LSO should facilitate access to other shippers, who have manifested interest on those specific slots. Until now, these were not made publicly available to potential terminal users, on a web platform, short term forecasts (slots) for the Sines LNG terminal, based on the minus three rule.

The acceptance of spot cargoes in Sines LNG terminal depends on the same preconditions as any other service in that infrastructure, including a usage contract and a compatibility assessment of the tanker with the LNG terminal. All preconditions are made public on the LSO web page.

The tariffs applied to the LNG terminal distinguish short term and long term usage, and the shippers may choose the tariff scheme that fits better their usage profile

Terminal	Storage capacity m3	Emission capacity bcm/year	Number of active shippers	Available primary capacity to contract?	Regasification use ratio (% 2009)	Services offered	Applied CAM	Applied CMP
Sines	240.000	7,8	2	Yes	54	Base product: slots, unloading, temporary storage and send-out	Annual short term allocation by OSP.	Capacity is reassigned each month. Hazards on potential contractual congestion and capacity hoarding are diminished moving from annual assignment to monthly operation. Application of UIOLI mechanisms over the annual unused capacity.

### 3.8 Spain

#### a) *Infrastructure description and ratios. Role of LNG*

There are 6 active terminals in the country, with new expansion of regasification capacity and storage projected in all of them; one additional terminal is under construction.

Spain has chosen to develop LNG infrastructure in order to face a fast-developing natural gas market that has moved from a consumption of 5 bcm/year in 1990 to 35 bcm/year in 2009, mainly driven by the economic growth and the development of new power generation based in CCGTs. In 2009 LNG represented 74% of total gas supplies, mainly coming from Algeria, Nigeria, Qatar, Egypt and Trinidad & Tobago. Spain is the main LNG importer in Europe, representing 57% of the European LNG supplies in 2008.

The country has no domestic production and the underground storage capacity is limited. In consequence, most of the system flexibility is based in LNG storage.

#### b) *Contractual framework and capacity allocation mechanism*

All terminals have regulated TPA regime, being the capacity, at present, held by 18 different users. Newcomers totalize 55% of the reserved capacity.

The capacity allocation mechanism in place is First-Come-First-Served. At least 25% of the total capacity managed by a TSO, LSO or SSO is reserved for short term contracts (less than 2 years). A single shipper cannot hold more than 50% of this short-term capacity. The access regime has been beneficial for the competition development due to its transparency and simplicity of application and also because enough capacity is available. Nevertheless, there is the possibility of moving to a different CAM in case congestion arises.

For accessing LNG terminals, i.e. to apply for regasification capacity, it is necessary to be a licensed shipper<sup>17</sup>; after the terminal operator allocates the regasification capacity to the shipper, a standard contract is signed with the LSO. Apart from the regasification capacity, the contract grants the shipper the right to use all the additional necessary services, mainly ships downloading and LNG storage, as a bundled package. There is also the possibility to contract additional unbundled services, such as ship cooling, ship loading or truck loading. The availability of any of these services is determined by the LSO.

**c) Notice periods and nomination. Terminal production.**

At the end of the year,  $n-1$ , an annual tentative program organising the ship unloading calendar for next year,  $n$ , is drafted by the Technical System Manager. This annual program has an informative character and several factors are evaluated to allocate the slots: apart from the requests sent by shippers, expected demand, past year demand, ships technical parameters, etc. Taking this document as a reference, monthly firm nominations are required to shippers to fix the definite unloading date. On the 20th of each month, shippers must send information to the LSOs related to the date (respecting as much as possible the annual program), technical parameters of the ship and gas to be unloaded in the next 3 months.

After validation, this program is binding for the next month and a half. In this program, the slots are allocated taking into consideration the daily regasification and level of storage requested by shippers. This is to say that the shippers can request the regasification level they wish along the month, provided that they have sufficient gas in storage and that they do not surpass their storage rights.

To discourage storage capacity hoarding, the regulation establishes a LNG storage fee that is raised heavily ( $\times 12$ ) to those shippers that try to store volumes above 8 days of their regasification contracted capacity, in monthly average, in all the 6 plants. In order to facilitate the entry of new players, small shippers are exempted from this obligation if their LNG stocks are below 300 GWh.

**d) Congestion management procedures and anti-hoarding measures**

To prevent underuse and capacity hoarding, firm UIOLI measures can be applied by LSO, in two different situations. The rule for the first one is that, if during the 6 first months of a contract, the shipper does not use (during at least 1 month) 80% of his regasification capacity, this capacity is automatically and proportionally reduced and a penalty is applied. This penalty represents a portion of the financial guarantee required from terminal users when signing any capacity contract. After one year of fine utilisation, the bank deposit is reimbursed.

This second one has been designed to prevent systematic underutilisation of capacity. Only in situations of congestion and on the basis of a new shipper's request, this mechanism applies when a primary holder does not use 80% of the reserved capacity (during at least 1 month of last year). If this happens, the primary shipper loses the fraction of unused capacity asked by the new applicant. Both CMPs have been already applied in the Spanish system several times.

The current situation is that there are no main contractual congestion problems in the regasification facilities. In fact, according to the information published by LSO's, there is available regasification capacity at any of the plants. However, the complex daily operation of the terminals (there are many different players acting at each) can make it difficult to incorporate new supplies (spot cargoes) once the monthly program is closed, in some situations.

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<sup>17</sup> Since December 2009, when Law 25/2009, which transposed Directive of Services 2006/123/CE, was approved shippers do not need to apply for a license in order to operate in the Spanish gas market. However, a communication of the starting of activity, and a declaration that all duties are fulfilled, is still required.

Secondary capacity markets in LNG terminals are not very active in Spain so far, since there is available primary capacity at all terminals. Nevertheless, secondary gas markets are very active at the terminals where shippers use to reach bilateral agreements among them to balance their supplies. Enagás has made available to shippers a bulletin board at its website to facilitate secondary capacity market. From late February 2010 when Enagás made available this bulletin board to all its infrastructures, including LNG terminals, several offers and requests have been posted.

**e) Spot cargoes unloading**

If a shipper arrives on short notice with a cargo, since there is available regasification capacity in every terminal, it will be able to sign a short-term contract with the LSO provided it is a licensed shipper in the Spanish market. Nevertheless, it could be problematic at certain terminals, and on particular days, to identify a slot to unload, since all the ship's slots program has been allocated at the end of previous month and no slot publication is mandatory for the Spanish system. In the case that a shipper will not be able to unload in a given terminal, the Technical System manager will indicate to the shipper which is the terminal with available slots.

It has to be noted that LSOs, jointly with the Technical Manager of the System, have an active role in determining the availability of slots, as it depends on many variables, such as the level of LNG stored in the tanks or the size of the ships. For example, a variation in the weather conditions can reduce the foreseen consumption and make the LNG accumulate in the tanks, hampering (delaying) the programmed unloads of subsequent ships. Or the utilisation of several small ships instead of a large ship to unload the same quantity of gas can punctually congest the plant, in particular the dock (a small ship uses almost the same time to dock than a large one), even if there is available regasification capacity to be contracted.

There is no penalty for late cancellation of a slot, as far as it does not make the shipper become imbalanced.

Terminal	Storage capacity m3	Emission capacity bcm/year	Number of active shippers	Available primary capacity to contract?	Regasification use ratio (% 2009)	Services offered	Applied CAM	Applied CMP
Barcelona	540.000	17,08	Average 8 per terminal	Yes	40%	Contracting regasification capacity adds access to storage and unloading services as bundled services.	First Come First Served	<p>Underuse:</p> <p>Deposit of a financial guarantee. If in the first 6 months period the shipper does not use, at least one month, the 80% of his allocated capacity, the capacity is reduced in the fraction not used, losing also the proportional part of the financial guarantee.</p> <p><i>Systematic underutilization:</i></p> <p>Initiated when a new shipper requests capacity in a congested service. Not using, at least one month of the previous 12 month, 80% of his capacity. The shipper loses the percentage, of not used capacity, requested by the new applicant.</p>
Cartagena	437.000	11,83		Yes	31%			
Huelva	469.500	11,83		Yes	42%			
Bilbao	300.000	7,01		Yes	59%	Unbundled services are ship cooling, ship loading or truck loading		
Sagunto	450.000	10,51		Yes	80%			
Mugardos	300.000	3,62		Yes	35%			

### 3.9 Great Britain

#### a) *Infrastructure description and ratios. Role of LNG*

In recent years, Great Britain has seen significant investment in LNG importation facilities as indigenous production from the UK Continental Shelf continues to decline. Since 2005, regasification capacity has been expanded from 8 to 44 bcm, and through its LNG terminals, Great Britain diversifies its gas suppliers and imports gas from regions such as the Middle East and North Africa, in addition to the interconnectors and other pipelines which give GB access to gas from Norwegian and Dutch gas fields and the European gas markets. On top of the capacity under construction (7 bcm), there are several more projects planned, with a total capacity of around 40bcm. However, it should be noted that the existence of such capacity provides no guarantee of the quantity of gas to be delivered to the GB market. In 2009, LNG represented around 7% of total supplies to the GB market.

#### b) *Contractual framework and capacity allocation mechanism*

All GB terminals are exempted from the requirement to provide a regulated third party access. The capacity at terminals is sold via *open season* procedures to ensure non-discriminatory market-based allocation, for 20 to 25 years. At present, GB re-gasification capacity is held by eight companies across three terminals, to increase to ten companies when the third phase of the Isle of Grain terminal is completed.

#### c) *Notice periods and nomination. Terminal production.*

The procedure for organising slot allocation and daily re-gasification is determined by each terminal.

#### d) *Congestion management procedures and antihoarding measures*

Ofgem does not specifically approve the anti-hoarding measures but monitors their effectiveness on a case-by-case basis. Project sponsors together with primary shippers design and implement the anti-hoarding arrangements. Each terminal has its own organisation. In the situation where any concerns are raised regarding the nature or implementation of the anti-hoarding arrangements, these will be investigated by Ofgem. Exemptions are granted on the basis that effective anti-hoarding arrangements are in place. Were concerns to be raised on the effectiveness of these arrangements then Ofgem would consider whether the exemption should be revoked or amended.

In every terminal, primary holders of capacity have the right to offer their unused capacities on the secondary market, either by entering into bilateral deals or through their formal anti-hoarding mechanisms, whereby slots are sold by auctions and notice periods vary from 7 days to 10 days before the berthing date. Thus, in Isle of Grain phases 1 and 2, parties interested in obtaining secondary capacity need to contact primary capacity holders who publish on their own website the available berthing slots from 14 to 7 days for Grain phase 1 and from 14 to 12 days for Grain phase 2 before the slot date. These anti-hoarding mechanisms have been implemented in accordance with the conditions set by Ofgem in the exemption orders. On D-7/D-12, the berthing slot is sold by auctions. In Dragon, the unused capacity is sold by auctions on Dragon website and the notification of auction is given (by email to the prequalified bidders) at least 12 working days before the berthing slot. Each primary shipper sets a reserve price for slot (to take into account the market value of the slot and the cost of emptying tanks). The successful bidder is notified at least 8 days before the berthing slot date. In South Hook, 14 days (D-14) in advance of each day (D), the terminal operator assesses whether a release of slot is possible. If so, the slot is sold by auctions. The winning bid is announced in D-10. Therefore the procedure chosen for all terminals is ex-ante UIOLI: any capacity unused by the primary capacity holder will be offered in advance to the secondary market. The table below provides further information on the arrangements in place at different GB LNG terminals.

**Table 2 – Anti-hoarding arrangements in LNG terminals in UK**

	Isle of Grain 1	Isle of Grain 2	Dragon	South Hook
<b>Method</b>	Auctions held by Primary Capacity Holders			Auctions held by Terminal Operator
<b>Parties</b>	Direct relation primary / secondary holders			Primary / secondary holders
<b>Publication of slots</b>	Available slots on primary shippers website <sup>18</sup>		Electronic Bulletin Board of LSO	Electronic Bulletin Board of LSO
<b>Notification of auctions</b>	D-14 to D-7	D-14 to D-12	At least D-12 to D-8	D-14 to D-10
<b>Notice period before slot date</b>	D-7	D-12	D-8	D-10
<b>Product</b>	Firm right to berthing slot, to temporary storage, to access gas at NBP		Firm right to berthing slot, to temporary storage, to access gas at NBP	South Hook Bundle (SHB) Single berthing slot, firm redelivery capacity and temporary LNG tank storage
<b>Redelivery</b>	Flat daily basis over 6 or 7 days		Flat basis over 10 days	Gas delivered over 7 day period

GB LNG terminals are recent. The Dragon LNG and South Hook terminals entered into commercial service in late 2009. Experience at the Isle of Grain Terminal suggests that around 25% of cargoes arriving at the terminal have been delivered on the basis of bilateral trades, with this method of gaining access to the LNG terminals being more regularly used than the formal anti-hoarding provisions.

**e) Spot cargoes unloading**

Shippers interested will need to check the primary capacity owner web pages to see whether there is a slot opportunity. In order to bid for a berthing slot in the secondary market, parties may need to prequalify with the terminal operator. The process for this varies between terminals, depending upon the requirements of the terminal operator.

Terminal	Storage capacity m3	Emission capacity bcm/year	Number of active shippers	Available primary capacity to contract?	Regasification use ratio (% 2008)	Services offered	Applied CAM	Applied CMP
Isle of Grain	770.000	13.5	5	No	28%	Determination in each terminal of offered services.	Open Season	Secondary market. Auctions held by Primary Capacity Holders
Dragon LNG	640.000	6	3	No	Started 2009 (Utilisation rate of 23% since commissioning)			

<sup>18</sup> The Isle of Grain Terminal has a two-stage formal anti-hoarding procedure whereby any unused berthing slots which have not been sold via the primary capacity holders' main auction process then revert to the Terminal Operator, who publicises their availability on their own website.

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South Hook Phase 1	465.000	10,5	1	No	Started 2009 (Utilisatio n rate of 43% since commissi oning)			Secondary market. Auctions held by Terminal Operator
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#### 4. Conclusions on the different countries arrangements

Taking into account the study on the different terminal arrangements, the following conclusions could be made:

- Access: Requirements to be fulfilled by shippers when booking any type of capacity could constitute access barriers for small shippers and spot unloading due to the need to understand several regulation and arrangements in the different terminals:
  - Different type of licenses needed around Europe
  - Special agreements to be signed with LSOs in some cases
  - Knowledge of terminal specific technical procedures.

Gaining access to a market via an LNG terminal involves significant effort and commercial skills. The long-term nature of the LNG market, capital-intensive investments, safety in ports, and batch supply and delivery are all specific aspects. There are commercially reasons for specific procedures and contracts, and parties seeking and expecting to secure participation rights in LNG terminals must be financially and commercially skilled. As Europe's experience and dependence on LNG grows, we can expect a growth in the number of companies wishing to and able to participate in LNG.

- Regulations governing CMPs in the LNG European terminals are different. Differences arise from:
  - the mechanisms employed to identify the unused capacity
  - the way in which capacity is released and the role of the LSO when doing so
  - the period of time in which capacity is lost
  - the effective development of secondary markets
  - the application of penalties.

The diversity of CMPs could be explained by the particular characteristics and technical constraints both in the existing LNG terminals and in the downstream gas markets. For example, the market share of LNG, its role in providing flexibility to users or security of supply requirements, could influence the type of CMP and anti-hoarding mechanism currently chosen. At present, the establishment of consistent CMPs in all European terminals has not been reached.

- Transparency: all countries have already published their CMP's. Nevertheless, in a number of the cases the information is either, very disseminated or difficult to find directly on the web pages of the terminals:
  - It is part of the general regulatory framework or included in the terminal code
  - They are spread out in several documents that have been published in different ways.
  - There are CMPs provisions to be included in terminal codes that are in the drafting process.
  - In some cases applicants (maybe a new entrant), are unable to learn the rules beforehand.

Also, transparency regarding the technical parameters and procedures of the terminals is poor. It is difficult to find the information directly on the web pages of the terminals. To face this problem, the preparation of a template to identify for potential users the routes to information at European LNG terminals appears to be a pragmatic solution.

- No sufficient experience. Effectiveness of anti-hoarding measures in European is still to be gained.
  - The applicable regulation has not been applied in some countries, as their infrastructures offer excess of capacity.

- Other countries have already applied the CMPs provisions contained in their regulations, obtaining results that improve accessibility.
  - In others, the development of secondary markets is encouraged as a tool to ensure the capacity use and to foster system flexibility.
- Nowadays the most common CMP is *ex-post* UIOLI. Ex-ante UIOLI is, and/or has been, broadly exercised in some regulatory approaches. Secondary markets start to develop in many places following market demands and supported by LSOs.
- There is no clear definition of capacity underutilisation in many countries and the associated consequences. Binding slots schedules or mandatory secondary markets to be efficient would require to apply penalties the primary capacity holder for late cancellation.
- There are still barriers to the creation of secondary markets, normally related to the national regulations in place, or the development of the downstream market. For example, the regulatory regime for accessing downstream markets when not transparent enough can act as a restriction to eventual users of LNG terminal capacity. In this sense LSO's should reach a consensus for establishing access arrangements that facilitate access and trade of capacity among users and which detail the CMP and antihoarding procedures.

## 5. Way Forward

ERGEG future work in 2010 and 2011 is to be developed taking into consideration the conclusions of this study addressed to European level. They should serve as a basis for further analysis on how these problems are influencing each national or regional market preventing the single European market. Final decision on the way forward needs to be taken once the document had been submitted for a public survey and the recommendations had been drafted.

## ANNEX I: 3<sup>rd</sup> PACKAGE REGULATORY PROVISIONS REGARDING LNG

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

### Article 32 Third-party access

1. Member States shall ensure the **implementation of a system of third party access to the transmission and distribution system, and LNG facilities** based on published tariffs, applicable to all eligible customers, including supply undertakings, and applied objectively and without discrimination between system users.(...)

### Article 36 New infrastructure

1. Major new gas infrastructure, i.e. interconnectors, **LNG and storage facilities, may, upon request, be exempted**, for a defined period of time, from the provisions of Articles 9, 32, 33 and 34 and Article 41(6), (8) and (10) under the following conditions:[...]

(...)

**Before granting an exemption, the regulatory authority shall decide upon the rules and mechanisms for management and allocation of capacity.** The rules shall require that all potential users of the infrastructure are invited to indicate their interest in contracting capacity before capacity allocation in the new infrastructure, including for own use, takes place. **The regulatory authority shall require congestion management rules to include the obligation to offer unused capacity on the market, and shall require users of the infrastructure to be entitled to trade their contracted capacities on the secondary market.** In its assessment of the criteria referred to in points (a), (b) and (e) of paragraph 1, the regulatory authority shall take into account the results of that capacity allocation procedure.

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

### Article 17 Principles of capacity-allocation mechanism and congestion-management procedures concerning storage and LNG facilities

1. The maximum storage and LNG facility capacity shall be made available to market participants, taking into account system integrity and operation.

2. LNG and storage system operators shall implement and publish non-discriminatory and transparent capacity-allocation mechanisms which shall:

- (a) provide appropriate economic signals for the efficient and maximum use of capacity and facilitate investment in new infrastructure;
- (b) be compatible with the market mechanism including spot markets and trading hubs, while being flexible and capable of adapting to evolving market circumstances; and
- (c) be compatible with the connected network access systems.

3. LNG and storage facility contracts shall include measures to prevent capacity-hoarding, by taking into account the following principles, which shall apply in cases of contractual congestion:

- (a) the system operator must offer unused LNG facility and storage capacity on the primary market without delay; for storage facilities this must be at least on a day-ahead and interruptible basis;
- (b) LNG and storage facility users who wish to re-sell their contracted capacity on the secondary market must be entitled to do so.

(...)

**Article 19**

**Transparency requirements concerning storage facilities and LNG facilities**

1. LNG and storage system operators shall make public detailed information regarding the services it offers and the relevant conditions applied, together with the technical information necessary for LNG and storage facility users to gain effective access to the LNG and storage facilities.

(...)

4. **LNG and storage system operators shall make public** the amount of gas in each storage or LNG facility, or group of storage facilities if that corresponds to the way in which the access is offered to system users, inflows and outflows, and the available storage and LNG facility capacities, **including for those facilities exempted from third-party access**. That information shall also be communicated to the transmission system operator, which shall make it public on an aggregated level per system or subsystem defined by the relevant points. The information shall be updated at least daily.

(...)

**Article 22**

**Trading of capacity rights**

Each transmission, storage and **LNG system operator shall take reasonable steps to allow capacity rights to be freely tradable** and to facilitate such trade in a transparent and non-discriminatory manner. **Every such operator shall develop harmonised transport, LNG facility and storage contracts and procedures** on the primary market to facilitate secondary trade of capacity and shall recognise the transfer of primary capacity rights where notified by system users.

The harmonised transport, LNG facility and storage contracts and procedures shall be notified to the regulatory authorities.

## ANNEX II: SOME IDEAS TO TAKE INTO CONSIDERATION WHEN PREPARING A TEMPLATE TO FACILITATE USER'S ACCESS TO INFORMATION

The different operations and process that users need to follow for unloading (and regasifying) a spot cargo, had been used as a summary of the main issues to take into account when accessing an LNG plant. Along the different cases we have learnt that, **to unload a spot cargo** in a European LNG terminal, **the user needs** (at least):

- To obtain any type of license / reach an agreement with the terminal operator (which varies a lot from country to country: from no license to spot cargoes to general conditions agreements with the LSO, etc).
- To know and fulfil vetting and comply with technical parameters.
- To know if there is available primary capacity at the terminal.
- To know if there is available capacity in the secondary markets and/or released capacity: who is offering it (LSO / users) and what are the conditions?
- To know how the capacity can be contracted (ways, services, schedules):
- The capacity is offered through bundled and/or unbundled services? What are the characteristics of each service?
- To be aware of how the capacity can be used and how the gas is going to be delivered to the market.
- Slot and regasification conditions (flat, limited storage and/or regasification capacity use, etc.)
- Additional flexibilities (i.e. LNG storage, possibility to trade with other shippers, etc.)
- Price of each bundled/unbundled service.
- Subsequent downstream market conditions: capacities availability, liquid markets, price signals, possibility of easy access to the final customers, etc.

The previous list to be considered by a shipper wishing to unload a spot cargo (maybe after using the capacity released after the application of a CMP), highlights the substantial amount of circumstances and information to be taken into account during the process. This clearly reveals the importance of applying the principles stated along this study (simplicity, easily accessible and placed in the same document, adequate time frameworks, etc.) in order to make it possible that CMPs reach their targets.