

10 November 2006

Third Party Access to LNG terminals

Study commissioned by

NERA

Economic Consulting

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This study by the NERA Economic Consulting provides an input to the European Regulators Group for Electricity and Gas (ERGEG) for their consideration of future work on this topic.

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Abbreviations

AEEG	Autorità per l'Energia Elettrica e il Gas
ARS	Aggregated Reception Station
Bcm	Billion Cubic Metres
CAPEX	Capital Expenditure
CBP	Common Business Practice
CMP	Congestion Management Procedure
CNE	Comisión Nacional de la Energía
CPI	Consumer Price Index
CRE	Commission de Régulation de l'Énergie
CREG	Commission de Régulation de l'Electricité et du Gaz
DCF	Discounted Cash Flow
DTI	Department of Trade and Industry
EC	European Community
EMRA	Energy Market Regulation Authority
ERGEG	European's Regulator Group for Electricity and Gas
ERSE	Entidade Reguladora dos Serviços Energeticos
FCFS	First Come First Served
FM	Force Majeure
GCV	Gross Calorific Value
GIIGNL	International Group of Liquefied Natural Gas Importers
Gj	Gigajoule
GLNG	National Grid Grain LNG
GS(M)R	Gas Safety (Management) Regulations
GTCs	General Terms and Conditions
ITC	Ministry of Industry, trade and tourism (Spain)
ITP	Indicative Transport Programme
Kcal	Kilocalories
KWh	Kilo-watt hour
LDZ	Local Distribution Zone
LNG	Liquefied Natural Gas
LT	Long Term
m ³	Cubic meters
Mj	Megajoule
Mtpa	Metric tonnes per annum
MWh	Mega-watt hour
NBP	National Balancing Point
Nm ³ /h	Normal Cubic Meter per Hour
NNGS	National Natural Gas System
nTPA	negotiated TPA

NTS	National Transmission System
NTSO	National Transmission System Operator
OCIMF	Oil Companies International Marine Forum
Ofgem	Office of Gas and Electricity Markets
OPEX	Operational Expenditure
OTC	Over the Counter
Ppm	Parts per million
PSV	Punto di Scambio Virtuale
RAB	Regulatory Asset Base
RAE	Regulatory Authority for Energy
RD	Royal Decree
RoR	Rate of Return
rTPA	regulated TPA
SIGTTO	Society of International Gas Tanker & Terminal Operators
Sm ³	Standard cubic meter
STA	Specific Terms Agreement
TO	Terminal Operator
TOP	Take-or-Pay
TPA	Third Party Access
TSO	Transmission System Operator
TWh	Terawatt-hour
UIOLI	Use It Or Lose It
VAT	Value Added Tax
WACC	Weighted Average Cost of Capital

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Assumptions and limiting conditions

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1. Introduction

This report has been commissioned by ERGEG, in the context of the ERGEG Gas Focus Group Work Programme for 2006 which includes, as an area for work, considering the opportunity to develop guidelines for regulated access to LNG terminals.

The analysis and conclusions of this report are based on the premise that LNG is playing an increasingly important role for the European internal market in natural gas and on the assumption that there are potential benefits which could be gained from the realization of new LNG terminals. Benefits would stem from the contribution of LNG towards enhancement of competition and security of supply by being an instrument for diversification of supply sources.

This study assesses to which extent existing access rules to LNG terminals are working or could be improved, and if there is a need of harmonization for both regulatory practice and operational rules. The main objectives are to provide recommendations aimed at ensuring improvements in the regulatory and operational conditions for access to LNG terminals in Europe. These recommendations are designed to ensure that LNG fulfils its role of competitive source of supplies in Europe and allows effective third party access to LNG terminal so as to contributing to an increasingly competitive and secure gas market.

Current access conditions to LNG terminals in each national country in Europe have evolved almost independently taking into account historical and specific market characteristics. A careful evaluation of the current access conditions in different countries is therefore a necessary prerequisite to determine which ones can be considered as best practices and whether the current differences may represent an obstacle to competition and trade.

The content and results of this study are limited and conditioned by the information available on current arrangements concerning the regulation and operation of LNG terminals in Europe. Our assessment of existing regimes of LNG in Europe has used three main pieces of information. First, we have had at our disposal information gathered by ERGEG concerning the different European terminals and regulatory frameworks including those facilities planned or under construction, and collected through a questionnaire made up of questions on terminals use and users, access rules and regulations in force.

Second, we have considered appropriate to the goals of this study to complement the above information with a consultation process, undertaken within the timeframe and budget of this work, with selected users of LNG terminals in Europe. It aims at providing a different perspective and complements the view on regulatory and operational arrangements that the CEER and LNG operators express through the questionnaire. We note that the opinions expressed by the interviewees are influenced by their specific experiences and the difficulties they have found in implementing their strategies. The opinions are therefore not independent from companies' strategies or the way they conduct their business generally. Hence, the opinions expressed are not necessarily an accurate representation of the overall experience with LNG in each country. We have used the information and opinions provided by other parties in our best judgment, without necessarily confirming it, in the context of the overall information existing for this project.

Third, information on many operational procedures was not provided by ERGEG and has been reviewed on the basis of our own research. We have stressed in this report those aspects of operational rules that we regard as more relevant for ensuring third party access systems that meet the objectives of promoting efficient use and contribute to a more competitive gas market.

The recommendations contained in this report are based on our best judgement, based on international best regulatory practice, and on the use of the information described above. As such, the recommendations depend to a large extent on the current situation to which they are conceived to apply. However, it must be borne in mind that the current arrangements in existing LNG terminals differ considerably as a result of the specific features of LNG development in each country/gas system. It is not an objective of this report to draw specific recommendations applicable to specific LNG terminals. Rather, we aim at providing ideas that could shape general rules that might be applied consistently to improve current TPA arrangements.

The report is organised as follows. Section 2 reviews existing regimes for access to LNG terminals in Europe, focusing on transparency, regulatory arrangements and operational rules and assesses the current situation with respect to a set of criteria on promotion of competition, security of supply and non-discrimination. Section 3 draws a series of recommendations that we believe might help make progress towards a more coherent and unique set of principles for third party access to LNG terminals in Europe. Finally, Section 4, discusses those aspects that we regard as needing harmonisation at a European level.

A series of appendices provide useful supporting documentation. Appendix A provides a summary of the information available for each of the countries considered on the following three areas: 1) Services offered and conditions applied; 2) Tariff derivation, methodology and structure; 3) Technical, contracted and available capacities. Appendix B contains elements of conceptual discussion on the way different operational and regulatory options would affect the criteria used as reference. Appendix C contains a summary description of the main operational variables applied in each country/terminal. Appendix D contains a summary of the information provided by regulators through the questionnaire. Finally, Appendix E provides a summary of the views expressed by those LNG users interviewed.

2. Analysis of existing regimes of LNG terminals in Europe

The current organisation and regulation of third party access to existing LNG facilities in Europe differs among countries. This section analyses the current features of access according to a number of reference criteria:

- Transparency provided by terminal operators
- Competition in the European gas market
- Efficiency in capacity utilisation and use
- Security of supply and flexibility
- Non-discrimination
- Incentives for new investments

To assess the information currently provided by terminal operators and national regulatory authorities and current operational arrangements in each facility, three sources of information have been used:¹

- The description of the state of the art regarding access rules at the LNG terminals as collected by the questionnaire sent by ERGEG to regulators.²
- The information that operators and regulators make available by different means, in particular through existing regulation and on their websites.
- The information obtained from interviews of market players and in particular to terminal users.³

2.1. Analysis of the level of transparency provided by TOs

LNG terminal users requesting access to LNG facilities need to rely on a sufficient level of transparency to carry out their business, as otherwise business opportunities emerging from short and long term market developments could not be exploited.

Common minimum standards on such transparency requirements exist for access to natural gas transmission networks, as defined in Regulation 1775/2005.⁴ Although this Regulation does not apply to LNG terminal operators, the transparency requirements serve as a useful

¹ Our assessment of transparency does not take into account terminals that have not yet entered into operation. Although many of the features of rTPA systems are likely to apply to terminals in construction under rTPA regimes, it would be premature to generalize the evidence on transparency to existing exempted terminals to exempted terminals in construction.

² Appendix D summarizes the information provided by regulators.

³ Appendix E summarizes the views of terminal users interviewed.

⁴ Regulation 1775/2005 of the European Parliament and of the Council, of 28 September 2005, on conditions for access to the natural gas transmission networks.

guide to stress the information needs of gas companies willing to compete in European gas markets.⁵

Common minimum standard on transparency requirements for transmission operators are focused on the following three areas:

- Services offered and conditions applied (operational information);
- Tariff derivation, methodology and structure (commercial information);
- Technical, contracted and available capacities (operational information).

The information necessary for LNG terminal users to gain effective access to the system includes not only the information published but also the time schedule according to which this information is to be published.

2.1.1. Information regarding services offered and conditions applied

For LNG terminal users to gain effective access to LNG facilities, clear information on the different type of services provided and the conditions applied is required.

To define a common minimum standard on transparency requirements for services offered and conditions applied, we have taken into account the definition of the technical information necessary for network users to gain effective access to transmission systems established on the “Guidelines on Third Party Access Services” included in the Regulation 1775/2005 of the European Parliament and of the Council. Based on these Guidelines but also considering the specificities of the LNG operations, we have identified the following information as necessary for LNG terminal users to gain effective access to the system:

⁵ Regulation 1775/2005. Article 6: Transparency requirements

1. *Transmission system operators shall make public detailed information regarding the services they offer and the relevant conditions applied, together with the technical information necessary for network users to gain effective network access.*
2. *In order to ensure transparent, objective and non-discriminatory tariffs and facilitate efficient utilisation of the gas network, transmission system operators or relevant national authorities shall publish reasonably and sufficiently detailed information on tariff derivation, methodology and structure.*
3. *For the services provided, each transmission system operator shall make public information on technical, contracted and available capacities on a numerical basis for all relevant points including entry and exit points on a regular and rolling basis and in a user-friendly standardised manner.*
4. *The relevant points of a transmission system on which the information must be made public shall be approved by the competent authorities after consultation with network users.*
5. *Where a transmission system operator considers that it is not entitled for confidentiality reasons to make public all the data required, it shall seek the authorisation of the competent authorities to limit publication with respect to the point or points in question.*
The competent authorities shall grant or refuse the authorisation on a case by case basis, taking into account in particular the need to respect legitimate commercial confidentiality and the objective of creating a competitive internal gas market. If the authorisation is granted, available capacity shall be published without indicating the numerical data that would contravene confidentiality.
No such authorisation as referred to in this paragraph shall be granted where three or more network users have contracted capacity at the same point.
6. *Transmission system operators shall always disclose the information required by this Regulation in a meaningful, quantifiably clear and easily accessible way and on a non-discriminatory basis.*

- A detailed and comprehensive description of the different services offered (i.e. receiving and unloading of LNG carriers, storage, regasification, etc), and their charges;
- The different types of contracts available for these services (in particular, if these services are provided individually or included in slots);
- Duration of the contracts available (long term, short term);
- Information on availability of short term and/or spot services;
- Applicable standard conditions outlining the rights and responsibilities for all terminal users including standard contracts and other relevant documents;
- Flexibility and tolerance levels included in the services as well as any additional flexibility offered and its corresponding charges;
- A detailed description of the different infrastructures in the LNG terminal indicating all relevant points interconnecting the terminal with the transmission system;
- Information on technical specifications on vessel docking and unloading;
- Information on gas quality requirements;
- Any information on proposed and/or actual changes to the services or conditions.

The compliance of existing LNG operators or relevant national Authorities with these requirements has been assessed by reviewing the information provided in their web sites. The results obtained are briefly summarised in the table below⁶ and developed in detail country by country in Appendix A.

As Table 1 shows, all existing LNG operators or relevant national Authorities provide general information on services offered and conditions applied. However, for specific issues, such as flexibility services, type of contracts available and description of infrastructures, the amount of information provided by some operators is unsatisfactory and additional efforts to obtain transparent access rules are required. In addition, the LNG network code is only approved in one country (Spain), while in the others a provisional or a draft code has been released.

Not all LNG terminal operators have user-friendly and informative websites and, in addition, the amount of information provided differs significantly among operators. It would appear reasonable that all LNG terminal operators made an effort to streamline and standardise their websites at least to ensure a minimum level of information on services provided and fees charges, as well as a minimum common structure of the information available.

⁶ This table does not include the information corresponding to the LNG terminals in Portugal and Turkey due to the limited amount of information available.

Finally, with respect to the amount of information provided in English by the different LNG terminal operators and national Authorities, the information is, in general, unsatisfactory. It appears desirable that LNG terminal operators publish the terms and conditions of all services, LNG operation codes and access contracts, in national language(s) and in English. In addition, LNG terminal operators and national Authorities may cooperate to provide an English version of existing national gas regulation in their web sites as early as possible.⁷

⁷ Appendix A provides a summary of the information available on services provided and conditions applied. This information has been used to complete the table above.

Table 1 Transparency on services provided and conditions applied

	Assessment of the information available	Belgium	France	Greece	Italy (Panig.)	Spain	UK (GLNG)
Detailed and comprehensive description of the different services offered and charges applied	The level of information is, in general, satisfactory	General information on services and charges available at Fluxys and CREG web sites. However approval of ITP, which contains more detailed information on services, is pending	Information provided at GdF web site	Access to the terminal will be regulated by the Operation Code of the National Natural Gas System. This will include: 1. A standard contract for access to the terminal, 2. A vessel certification regulation. 3. A measurements regulation. 4. LNG quality specs. Through these documents all necessary information will be available to potential users.	Information provided on the documents “access conditions to LNG services for the Thermal 2005/2006” and “terms and access conditions to LNG spot services for Thermal 2005/2006”	Described in existing gas Regulation	Open Season Process Conditions
Types of contracts available (services provided individually or included in slots)	Information on types of contracts available in all cases		Information provided at GdF web site: services bundled with slots			Established in Regulation	Open Season Process Conditions
Information on duration of the contracts available	Information available in all cases		Information provided at GdF web site			Established in Regulation	Open Season Process Conditions
Information on availability of firm and/or interruptible services	Information on firm and interruptible services available in all cases		Only firm services			Established in Regulation	Only firm services for primary capacity
The network code and/or the standard conditions outlining the rights and responsibilities for all users including standard contracts and other relevant documents	Only one code approved, provisional or draft codes in other countries	Provisional LNG network code	Not available		Proposed code under examination by AEEG	Approved	As defined within the General Terms & Conditions in place at the facility and Specific Terms Agreement agreed with customer
Flexibility and tolerance levels included in the services without separate charge as well as any additional flexibility offered	Information available in all cases. Different level of detail provided	Described in Fluxys LNG conditions & tariffs	Standard contract is available on the web site		Defined in the “access conditions” documents	Described in Regulation	Individual compatibility study
Description of the different infrastructures and all relevant points interconnecting the terminal with the transmission system	Information available in all cases. Different level of detail provided	Described in Fluxys’ Main Conditions and provisional LNG code	General information available at GdF and GRT gaz web site		Information available at the regasification code	Info available at TOs web sites	Limits as per GS(M)R 1996
Information on technical specifications on vessel docking and unloading	Information available in all cases	Described in the provisional LNG network code	The approval procedure is available at GdF web site		Define in the “access conditions” documents	Information available on Enagas web site	new Secondary Capacity Mechanism
Information on gas quality requirements	Information available in all cases	Fluxys’ Main Conditions & provisional LNG network code	Requirements described at GdF & GRT gaz web site and access contract		Define in the “access conditions” documents	Detailed protocols of the Network code	-
Information on proposed and/or actual changes to the services or conditions	In general, information available on proposed changes	Multi-annual tariffs from 2007	Tariffs in force until Fos Cavaou starts operations		LNG code to be approved	Discussion Group established	-
Information provided in English	Limited information in English	Further efforts required regarding to regulation	Almost all information only available in French	Almost all info only in Greek	Almost all info only in Italian	Further efforts required	-

Source: NERA elaboration.

2.1.2. Information on tariff derivation, methodology and structure

For LNG terminal users to exploit business opportunities coming up in the framework of the internal gas market, information on tariffs is of significant importance.

To ensure transparent, objective and non-discriminatory tariffs and facilitate efficient utilisation of the gas network, LNG users need that terminal operators or relevant national Authorities publish, in national languages and in English, reasonably and sufficiently detailed information on tariff derivation and tariff structure, so as to allow transparent and predictable costs of use of the terminals in the short and medium term. Relevant pieces of information include at least the following:

- Tariff methodology (cost based, international cost references, etc) and derivation;
- Calculation of the allowed revenues (capex and opex):
 - Definition of the regulatory asset base (RAB) and asset valuation and depreciation principles applied;
 - Methodology followed to calculate the rate of return and current value;
 - Calculation of OPEX.
 - Incentive schemes, etc.
- Tariff structure;
- Cost allocation and capacity/commodity allocation principles;
- Detailed tariff design (tariff elements) including charges for capacity overrun and their derivation;
- Indexation of tariffs (if any), or principles for tariff variations (in particular if a defined regulatory period exists);
- Overall regulatory involvement in tariff setting.

The table below summarises the degree of transparency that existing LNG terminal operators and/or relevant national Authorities offer with respect to these pieces of information.⁸ A complete description of the analysis and information provided in each country and for each terminal is included in Appendix A.

As Table 2 shows, in general, the amount of information provided on tariff derivation, methodology and structure followed differs considerably among national Authorities.

The level of information on regulatory involvement in tariff setting, tariff structure and charges in force, and indexation of tariffs is satisfactory for most countries considered.

However, for the remaining variables considered (tariff methodology, RAB, allowed rate of return, cost allocation and tariff design) the situation differs significantly among countries. In some cases the methodology, calculations and the effective values obtained for the different

⁸ This table does not include the information corresponding to the LNG terminals in Portugal and Turkey due to the limited amount of information available.

financial variables are provided (such as Italy), while in some others there is only a general description of the methodology followed or even no information available on most part of the variables considered. In general, the level of information provided on the remuneration framework (including all financial variables) for LNG facilities and on tariff derivation (including the assumptions made) does not allow current and prospective users of LNG plants to predict with a reasonable degree of confidence the future evolution of applicable tariffs.

Publication of relevant data on tariff setting is important to the efficient and transparent operation of the LNG facilities; therefore, we conclude that further efforts are required in this area. It would appear useful that all national Authorities ensure a minimum level of information on the methodology followed and the results obtained when calculating or reviewing the tariff framework for the different services.

Finally, the information available in English on tariff methodology and calculations developed is almost inexistent in most cases or very limited in some others. Considerable additional effort is required in this area.

2.1.3. Information on capacity and flows

LNG terminal users, to gain effective access to LNG facilities, need information on available short term and long term capacity, as otherwise access to LNG facilities could not be used to support trading and selling strategies in natural gas markets. In addition, non-discrimination principles require that access to information on system use and available capacities is provided to all users in a way that does not provide undue advantages in accessing capacity.

The pieces of information that we believe help to obtain transparent knowledge of available capacities include the following:

- Information about the capacities of the landing terminal, the regasification plant and the LNG storage published on the Internet on a regular/rolling basis and in a user-friendly standardised manner including:
 - maximum technical capacity;
 - total contracted firm and interruptible capacity;
 - available capacity on the primary market.
- Number of months ahead that LNG terminal operators provide information on available capacities and how often this information is updated (i.e. every month, every time new information becomes available, etc).⁹
- Information on short-term available capacities and available capacities in the secondary market and how often this information is updated.

⁹ For example, the “Guidelines on Third Party Access Services” included in the Regulation 1775/2005 establish a period of at least 18 months ahead and a requirement of updating information at least every month.

Table 2 Transparency on tariff derivation, methodology and structure

	Assessment of the information available	Belgium	France	Greece	Italy (Panig.)	Spain	UK (GLNG)
Regulatory involvement in tariff setting	Competences are clearly defined in all countries	Competences defined in Regulation	Competences defined in Regulation	Competences defined in Regulation	Competences defined in Regulation	Competences defined in Regulation	Plant under an exempted regime
General methodology	Detailed information in some cases. General description or even no information in others	Briefly described in regulation and in Fluxys LNG conditions & tariffs	Public consultation with all actors and publication of explanatory statement	Described in the Ministerial Decision 4955/2006 (MD) by which tariffs were set.	AEEG document “Criteri per la Determinazione Delle Tariffe per il Servizio di Rigassificazione per il secondo periodo di regolazione” provides detailed information on tariff methodology, WACC and RAB calculation, tariff structure, allocation principles, tariff indexation, definition of the regulatory period, etc.	Established in Regulation	Open season process. Price paid based on market valuations
Definition of the RAB	Detailed information in some cases. Lack of information in others.	Methodology provided but effective values not published	available on CRE website ¹	Definition of the RAB and specific data are included in the MD		Methodology and values provided	Not available
Definition of the rate of return	Detailed information in some cases. Lack of information in others	Methodology provided but no values published	available on CRE website	RoR is provided in the MD		Methodology and values provided	Not available
Tariff structure	Information available in all cases	Established in Regulation and published in Fluxys LNG tariffs	Established in Regulation	Described in the MD		Established in Regulation	Annual capacity charge
Cost allocation to each service and capacity/commodity allocation principles	No information available in most cases	No information available	Not available	Capacity / commodity ratio and allocation principles are described in the MD		Not enough information available	Not available
Detailed tariff design (tariff elements) including charges for capacity over-run, imbalances and their derivation	In general, information available on charges in force but not on tariff derivation	Information available on charges but not on tariff derivation	Information available on charges but not on tariff derivation	Tariff elements and penalty charges for capacity over-run are provided in the MD (imbalances charges are not included)		Information available on charges but not on tariff derivation	Information provided in the contractual arrangements
Indexation of tariffs or principles for tariff variations (if a defined regulatory period exists)	Information available in most cases	Established in Regulation and described in Fluxys LNG tariffs	Tariffs in force until Fos Cavaou starts operations	Described in the MD		Established in Regulation	Information in the contractual arrangements
Information provided in English	Very limited information in English	Most CREG’s reports on tariffs not available in English	Available on CRE website	Tariff decisions not in English	AEEG docs on tariff methodology only in Italian	Some regulation is provided in English but not all	-

Source: NERA elaboration

¹ Available on CRE’s Website (http://www.cre.fr/uk_documents/deliberations.jsp).

- Provisions on capacity allocation, congestion management and anti-hoarding and re-utilisation procedures.
- Historical maximum and minimum monthly capacity utilization rates and annual average flows for the last years on a rolling basis.¹⁰
- User-friendly instruments for calculating tariffs applicable to capacities available and for verifying on-line the capacity available (such as bulletin boards).

The results of the analysis of the level of detail provided by each TO and/or regulator are summarized in the table below.¹¹

We note a lack of homogeneity on the type and amount of information provided on capacities by the different operators and also on the frequency of the updates.

Most information provided by existing LNG terminal operators on capacities is published on internet-based-web-sites. However not all operators provide user-friendly instruments for calculating tariffs for the services available and for verifying on-line the capacity available. In additions, in some cases, information is difficult to find. It would appear advisable that all operators made an effort to guarantee that for the services provided, a minimum level of information on physical and available capacities is published on the Internet on a regular/rolling basis and in a user-friendly manner. This is especially important with respect to short-term unused capacity that could be released either through a secondary market or via use-it-or-lose-it (UIOLI) mechanisms.

In addition, considerable additional effort is required with respect to the amount on information published in English.¹²

¹⁰ Publication of information regarding use of capacity is particularly valued by market participants as it allows them to form opinions about whether refusal of access is due to genuine capacity constraints or to capacity hoarding.

¹¹ This table does not include the information corresponding to the LNG terminals in Portugal and Turkey due to the limited amount of information available.

¹² Appendix A provides a summary of the information available on capacity per country.

Table 3 Transparency on capacity and flows

	Assessment of information	Belgium	France	Greece	Italy (Panig.)	Spain	UK (GLNG)
Information about the capacity situation on the Internet on a regular/rolling basis and in a user-friendly standardised manner including: <ul style="list-style-type: none"> – The maximum technical capacity – The total contracted and interruptible capacity – The available capacity 	Information on capacities provided by all operators Lack of homogeneity on the type and amount of information provided	Described in Fluxys LNG “conditions & tariffs” & “main conditions”. ARS operational two months later network code approval	All data available at GdF web site	Currently not available. Operator’s obligations regarding transparency on capacity will be prescribed in the Operation Code of	Information provided in GNL Italia web site until 30/9/2010	Information requirements established in Regulation	Information on capacity provided in GLNG web site
Number of months ahead that LNG terminal operators provide information on available capacities and how often this information is updated	Information provided in most cases but lack of homogeneity on the number of months ahead that this info is provided	Only until October 2006. Every ITP will provide this info for at least 2 years for primary market. Capacity on secondary market published 2 months ahead on a rolling basis on Fluxys LNG website	Monthly capacity for the next 6 months and yearly capacity till 2021 for Montoir and 2014 for Fos	the National Natural Gas System. The current draft of said Code (available on RAE’s site - unofficial translation available on request) provides for an electronic bulletin board in Greek and English, maintained by the TO, that covers all the issues requested in this report. Operating Code is expected to be in place by mid-2007.	Annual capacity over 10 years updated after any change. Monthly update for each month of thermal year	Approx. 30-36 months ahead	One berthing slot in advance of delivery
Information on short-term capacities	Information provided in most cases, but lack of homogeneity	Published on Fluxys LNG website	Capacities in the next six months and slots for next month available		Available at GNL Italia web site	Only ENAGAS (daily data published weekly)	Notice of unused slots on LNG Grain Agency website
Provisions on capacity allocation, congestion management and anti-hoarding and re-utilisation procedures	Information on these procedures available in all cases	Described in Fluxys’ Main Conditions and provisional LNG network code	Published at GdF web site		Annual allocation procedure and UIOLI	Established in Regulation (bail)	Developed by the joint shippers
Monthly capacity utilization rates and average flows	Information provided only by some operators	No information available	Published by GRT gaz daily export flows		Not available	Available at ENAGAS’ bulletin on gas statistics	Information on daily export flows
User-friendly instruments for calculating tariffs for the services available and for verifying on-line the capacity available	Instruments provided only by some terminal operators. Lack of these instruments in some cases	Not at present, but ARS operational two months later network code approval. Secondary market is supported by a platform.	Tariff simulator available at GdF’s web site		Examples on tariff calculation	Tariff simulator available at ENAGAS’ web site	Bulletin board
Information provided in English	Limited information in English	Provisional network code only in French	Most information only in French	Draft operation code in Greek & English	Only in Italian	Further efforts required	-

Source: NERA elaboration.

2.1.4. Overall assessment

The table below summarises the conclusions obtained in the analysis developed in previous sections on the level of transparency provided by each terminal operator¹³ with regard to services offered and conditions applied; tariff derivation, methodology and structure; and technical, contracted and available capacities.

Table 4
Overall assessment on transparency

Area	Overall assessment
Transparency on services provided and conditions applied	<ul style="list-style-type: none"> • The level of information on services offered and conditions applied is, in general, satisfactory. • For specific issues, such as flexibility services, type of contracts available and description of infrastructures, the amount of information provided differs significantly among operators. • LNG network code approved only in one country. Provisional or draft codes in other countries. • Standard contracts available in most countries. • Limited information in English.
Transparency on tariff derivation, methodology and structure	<ul style="list-style-type: none"> • Information on regulatory involvement in tariff setting, tariff structure and indexation of tariffs is, in general, satisfactory for most countries considered. • Information on tariff methodology, RAB, RoR, functional allocation and tariff design differs considerably among national Authorities. Insufficient information in most cases. • Very limited information in English.
Transparency on capacity and flows	<ul style="list-style-type: none"> • Lack of homogeneity on the type and amount of information provided on capacities by the different operators and also on the frequency of the updates. • User-friendly instruments for calculating tariffs and for verifying on-line the capacity available and historical flows provided only by some terminal operators. • Limited information in English.

¹³ These conclusions refer to Belgium, France, Greece, Italy, Spain and UK.

2.2. Review of existing regulatory arrangements

To appraise existing regulatory arrangements and operational rules, the information provided by regulators and the views expressed by selected LNG users have been compiled to assess existing arrangements at each terminal.^{14,15} The following criteria are assessed:

- Competition in the European gas market: commodity and capacity.
- Efficient capacity allocation and use maximization.
- Contribution to security of supply and provision of flexibility.
- Non-discriminatory, objective, transparent access rules.
- Incentives for investments in new capacity.

The regulatory variables considered correspond to those identified in the questionnaire regarding: 1) the application or exemption of the rTPA system established in the EU Directive, 2) the tariff and remuneration framework, and 3) capacity allocation procedures and the definition of the main services available. The selected interviews conducted have confirmed that these are the regulatory variables that are regarded as most relevant in TPA to LNG terminals.¹⁶

The table below illustrates a summary of the main conclusions from the evidence obtained from the interviews with LNG users across Europe in those aspects related to regulatory arrangements.¹⁷

¹⁴ Appendix D includes the information collected by the questionnaire sent by ERGEG to the national energy regulators. In particular eight Regulators have answered the questionnaire. In the Appendix, the information provided is organised in a way that allows comparing the situation on each LNG terminal.

¹⁵ Appendix E summarizes the information collected in the interviews to market players and the questionnaire used to collect the information. Given that some players have explicitly asked to keep the identity of their comments confidential we aggregate the comments and opinions expressed.

¹⁶ We note that the opinions expressed by the interviewees are influenced by their specific experiences and the difficulties they have found in implementing their strategies. The opinions are therefore not independent from companies strategies or the way they conduct their business generally. Hence, the opinions expressed are not necessarily an accurate representation of the overall experience with LNG in each country.

¹⁷ Appendix E includes a description of all responses and the questionnaire employed.

Table 5
Summary of respondents' views

Area	Overall conclusions
Access to terminals	<ul style="list-style-type: none"> • The responses from interviews make a strong distinction between terminals owned by the TSO (transmission system operator)¹⁸ or an affiliate of the same company or group of companies and terminals developed by other companies. • They also highlight the difference between the various EU markets and hence consider that any regulations have to take into account the role of LNG in each market. • The state of development of liberalisation and competition in the market downstream of the terminal was in many instances more the determinant of access than the terminal itself.
Status of legislation and regulatory framework	<ul style="list-style-type: none"> • Regulatory certainty and stability of the regulatory framework is beneficial to all players. • Terminals should be regulated taking account of all factors affecting the gas market • Competition between terminals in a given market should be an objective of the regulatory regime. • The functions of the TSO as TO should be separated effectively.
Ownership of terminal assets and/or capacity	<ul style="list-style-type: none"> • rTPA is appropriate for terminals which are owned and operated by the TSO or dominant incumbent. • New private developers of LNG terminals tend to regard 100% exemption of rTPA as desirable or essential. • Reserved capacity for TPA is regarded as a risk and a disincentive to investment by private developers. • Access rules should be aligned with provisions of long term LNG supply contracts particularly as regards duration.
Overall judgements	<ul style="list-style-type: none"> • Regulatory certainty and stability are beneficial to encouraging investment and competition. • Some regulatory regimes are well defined but not yet tested in usage. • Overall guiding principles should be developed across EU • Different regulatory regimes are required for different markets depending on the state of development of liberalisation and competition as well as the differing role of LNG in that market. • Regulation of terminals should take account of the full range of factors pertaining to that market including alternative supply infrastructures. • Harmonisation of gas quality specifications would be welcome • Harmonisation of rules between terminals located in the same country/market would be beneficial. • Small players were generally unable to take advantage of spot or short term capacity.

¹⁸ In this report, TSO refers to the transmission system operator and TO to the (LNG) terminal operator.

2.2.1. Regulated TPA and exemptions

2.2.1.1. Description of current situation

The primary regulatory decision regarding access to LNG terminals in Europe regards the TPA regime applicable. Existing regimes show distinct features with respect to regulated TPA (rTPA) access and the modalities of exemption (period and percentage of capacity exempted) according to article 22 of the Second Gas Directive.

Article 18 of Directive 2003/55/EC establishes the implementation of a TPA system to LNG facilities for which tariffs will be published by regulatory authorities prior to its entry into force. Article 22 allows major gas infrastructures to be exempted, upon request, from this provision, as an exception to the general rule of rTPA.¹⁹ The decisions regarding exemptions are made on a case-by-case basis upon compliance with five conditions established in the Directive.

Five LNG terminals have applied for exemptions so far: 3 in the UK (Grain LNG, South Hook and Dragon terminals) and 2 in Italy (terminals located at Rovigo and Brindisi respectively). All five terminals have been granted the exemptions requested. The UK terminals have been granted exemption for 100% of the capacity requested while in Italy, 80% of the capacity has been exempted and 20% remains under an rTPA regime.

In assessing the effects of rTPA versus exemptions we believe it is useful to distinguish the model for development of exempted terminals. One exempted terminal (Grain LNG) was developed to provide access to third parties and the exemption from rTPA effectively implies that agreements for use of the terminal are bilaterally negotiated. This is effectively a negotiated TPA system (nTPA) for both primary and secondary capacity.

The two remaining UK terminals and the two terminals in Italy, relatively to the 80% of capacity exempted, are developed under an “own-use” model. For these terminal exemptions from rTPA in practice imply that there is no third party access to primary capacity. However, third party access to secondary capacity will be possible.

The distinction between exempted capacity devoted to own-use and exempted capacity sold to third parties is relevant insofar the assessment of the impact of the exemption on the reference criteria might be different in both cases.

We understand that the primary reason to request an exemption in the four own-use plants was to ensure that regulated capacity allocation procedures for primary capacity do not impact on the right of owners of the plant to devote capacity to their own-use. Exemptions provide assurance to use of capacity and to investments upstream underpinning the development of the project. Therefore, the main role of these exemptions has been to promote investment in capacity devoted primarily to own-use.

¹⁹ See the interpretative note of DG TREN concerning exemptions from certain provisions of the TPA regime of 30.1.2004; page 1 “The possibility for such exemptions is clearly an exception to the general rule of third party access which is the basis of the new competitive market for electricity and gas.”

On the other hand, the only facility built to sell primary capacity (Grain LNG) to third parties argued that the need for exemption stemmed from the need to sell capacity to secure financial commitments to underwrite project investment. The capacity sale proceeds would provide the returns required by the developer only if secure long term access to capacity was granted to bidders so that they would be able to underwrite investments upstream. The sale process was conducted through a non-discriminatory and open auction whose features are similar to those of rTPA.²⁰ Certainty on long term access to capacity under stable conditions was therefore key to the request for exemption.

The exemption criteria described in the Directive leave room to several interpretations and practical quantifications of the impact assessment of an exemption on competition and security of supply. It seems in general difficult to see how an investment could be detrimental to security of supply although the size of an explicit benefit can be derived from several factors (such as a diversification of supply sources, entry of new players in the market, diversification of entry points in the transmission networks, and avoided costs in such a network to meet expected demand). As a result the most controversial effects of exemption decisions tend to focus on the competition assessment.

In its decisions regarding applications for exemptions, Ofgem has considered that competition was promoted if it can be shown that the market in question is sufficiently competitive and remains competitive following the addition of the new infrastructure or that the market is insufficiently competitive prior to the addition of the new infrastructure, but that the market will become more competitive at one or more levels of the supply chain after that infrastructure is built and that this positive impact is not attenuated by the possibility of any reduction in competitive pressures elsewhere as a consequence of the new infrastructure.

This fact has tended to lead regulators to set conditions on exemptions, such as those discussed by Ofgem for the exemptions granted to 3 LNG terminals in the UK. Specifically, Ofgem considered that minimum requirements for exemptions were given by:

- Effective capacity allocation in terms of an initial offer of capacity to the market (Ofgem considers that in very competitive markets this condition might be loosened),²¹
- Effective mechanisms to ensure that capacity is not hoarded, e.g. UIOLI arrangements and secondary market mechanisms;
- Information provision requirements related both to the regulator and potentially also to the market.

In Italy, the applications for exemption were made by agents that were new entrants in the market. As the DG Energy & Transport clarified,²² it would be difficult to conceive a case where an exemption could be granted to a new piece of infrastructure that was wholly or

²⁰ The Commission clarified that “Where there is a non-discriminatory and transparent auction procedure approved by the Regulator in conformity with this Directive the Commission confirms that this represents regulated third party access within the meaning of the Directive”.

²¹ However, even in competitive markets, such a condition allows smaller players to benefit from economies of scale of larger infrastructures.

²² Note of DG Energy & Transport on Directives 2003/54-55 and Regulation 1228/03 in the electricity and gas internal market. Exemptions from certain provisions of the third party access regime, 30/01/2004.

partly owned, controlled or likely to have a significant amount of its capacity allocated to a dominant player in one of the markets affected.

2.2.1.2. Assessment

Our assessment of the compliance of current regulatory regimes with the reference criteria is based on the evidence of current ownership and use of facilities and on the views expressed by users of LNG plants regarding the advantages/disadvantages of different systems.

Table 6 below describes some key features of each terminal/country and highlights the areas that may hinder compliance with each of the reference criteria. The evidence highlights several facts:

- The applications of rTPA and exemption approaches appear to reflect the degree and development of competition in each gas market, because both rTPA systems and the rationale on exemption decisions take into account the degree of development of competition in each market.
- Competition in capacity in rTPA regimes is heavily restricted by many cases of few third party users. Multiple operators exist at the moment only in one country (Spain).
- The contribution of LNG to gas competition appears limited by the number of users with subscribed long-term capacity. In some cases unsubscribed firm capacity exists.
- The benefits of diversification of supply sources are not very visible in some cases, few supply sources persist. Exempted systems appear to achieve diversification only across terminals given affiliation of promoters/capacity holders with producers.
- LNG terminal operators are affiliated to TSOs in most cases.
- Affiliation of operator and users in many cases may reduce transparency.
- Some exemption decisions appear to be conditioned on anti-hoarding rules not clearly defined. This creates uncertainty over the true value of long term capacity (see below).

Our assessment of the impact of current arrangements on the reference criteria is based on this evidence:²³

1. The potential for **competition in primary capacity** to access a gas market is driven by the presence of existing or projected new capacity, including LNG capacity. Therefore, a framework that supports the construction of LNG capacity will, if technical conditions allow it, tend to promote competition in capacity. Administrative, environmental and technical permits play a key role in ensuring potential entry of new capacity and do not depend on the type of regime (rTPA or nTPA) chosen. As a result, we believe that both regulated and exempted regimes can promote competition in capacity if multiple projects or facilities coexist. The current situation shows that capacity is being developed both in countries that have opted for exemptions (such as UK and Italy) and in countries that have followed rTPA systems (such as Belgium, France and Spain).

²³ Table 7 in Appendix B discusses theoretical considerations on the impact that the most relevant regulatory and operational variables might have on the reference criteria used in the assessment of current arrangements.

The development of some markets (Greece, Portugal and Turkey) is still at a state that does not support many users. However, the low number of independent shippers accessing terminals in Belgium, Italy, and France suggests that either this capacity is not effectively available to new users or that it is priced uneconomically to support new entry strategies in these markets. In some cases (such as France) there appears to exist available capacity and it is likely that lack of many new LNG players is due to difficulties to access the market that are not necessarily related with access to LNG capacity but with access to downstream networks instead (lack of capacity in downstream transmission network from the terminal was mentioned by several players interviewed).

Even if the diversity of features can be explained by historical and structural factors in each country, the market structure that is implied acts as a main constraint for effective competition both in gas and capacity. In this context the priority for LNG regulatory rules is to ensure that LNG import capacity is developed if it provides a competitive alternative to other entry points. Similarly the pricing of capacity is primarily aimed at supporting such competition by pricing capacity to imply efficient utilisation.

Competition for capacity would be increased if an open season is organised and every candidate (subject to the payment of the same fees) can book a part of the total capacity of the terminal. In that way, smaller users (that could not be able to bear alone the construction of a terminal) could benefit the economies of scale of a large terminal.

2. The impact on **competition in commodity markets** is not exogenous to the reasons alleged to grant exemptions or to implement rTPA. The mere application of the criteria required to grant exemptions would ensure that competition in gas markets is not adversely affected by exemption decisions. In some cases, exemptions may lead to fewer users of capacity with a bundling of access to gas and capacity, an effect that would increase, in general, with the percentage of capacity exempted.²⁴

However, our assessment of LNG terminal use shows that, with the exception of Spain and recently France, all other terminal/countries, whether exempted or under rTPA, have very few users of primary capacity and use of secondary capacity does not appear to allow the entry of new agents in each gas market. This is confirmed by views expressed by LNG users, none would consider viable a long term strategy to enter a gas market based on short term use of capacity or on use of released capacity (arising, for example, from the application of UIOLI rules).

It is also important to remark that most users consider that access to gas markets depends on effective regulation of TPA to downstream pipelines, so effective access to LNG capacity is a necessary but not sufficient condition for rTPA to promote gas competition.

²⁴ It is possible that the promoter of an LNG plant is itself a consortium of multiple users. In this case even 100% capacity exemption may not lead to few subscribers of primary capacity.

Table 6 Regulatory variable for LNG plants: rTPA v. exemptions

	Belgium (Zeebrugge)	Italy (Panigaglia)	Italy (Rovigo, Brindisi)	France (Montoir, Fos Tonkin)	Greece (Revithoussa)	Portugal (Sines)	Spain	UK	Turkey
Competition in capacity	- rTPA - one operator, affiliate to TSO (transmission system operator)	- rTPA	- 80% exempted for 20 years	- rTPA - all terminals controlled affiliate to TSO	- TO is the TSO	- temporal derogation from TPA -rTPA to be approved	- rTPA - multiple plants and multiple operators	- Exempted terminals for 100% of capacity - 3 new terminals	- vertically integrated sector - published tariffs approved by regulator
Competition in gas	- 1 user at present (3 from 08) - main user affiliate to owner/TO	- 4 users	- new entrants hold capacity	- 5 users - firm capacity available	- 1 user, affiliate to owner and operator	- 1 user	- 12 shippers with contracted capacity	- few users for new terminals	- one user
Use maximisation	- few users - UIOLI rule - monitoring of capacity utilisation			- 5 users - firm capacity available		- large amount of available capacity	- available capacity - monitoring of capacity utilisation - UIOLI rules	- monitoring of capacity utilisation	- available capacity in summer period
Contribution to security of supply	- few supply sources - 20% interruptible for TSO operational needs - all capacity subscribed LT	-few users			Currently, the only alternative supply source of the country		- many sources of supply	- few new sources of supply - main players linked to gas producers	
Provision of flexibility	- no short term contracted capacity	- 30% short-term capacity		- capacity available			- 25% reserved for short term use		
Non-discrimination and transparency in access	- non discriminatory rTPA - main user affiliate to operator and TSO - monitoring programme	- non discr. TPA - main user affiliate to operator and TSO	- 100% capacity in each terminal to 1 shippers - rTPA for 20%	- main user affiliate to operator and TSO - non discriminatory rTPA	- Currently, only user affiliate to operator and TSO	- rTPA to be defined	- non discriminatory TPA - owner of 3 terminal also TSO	- access conditions not public	- Operation code not approved yet
Incentives for investment	- capacity in expansion - 100% LT capacity		- exemption from TPA				- mandatory planning of plants - new capacity additions	- yes - UIOLI rules may increase cost of LT capacity	

3. With respect to the impact on security of supply, we distinguish potential effects on network/gas system security and diversification of supply sources. To the extent the number of LNG users is low, the number of suppliers and the degree of diversification remains low. On the other hand, the application of exemption criteria would ensure security is not affected. Several users expressed the view that stable long term patterns of use of plant provide a more stable flow of gas into the system and help promote greater stability and security of supply. However, other viewed flexibility as a key asset for use of plants. We observe that in two cases (Spain terminals and Panigaglia terminal in Italy) the regulatory framework establishes that a portion of primary capacity is reserved for short term use.
4. Regarding incentives to **maximise use of capacity**, although UIOLI in principle helps ensure use of capacity, our assessment of the current experience shows that exemptions conditional on ill-defined UIOLI rules may actually deter use of long term capacity. This is the case of the UK where the practical implementation of UIOLI rules appears unclear to most potential users of the plant interviewed. It is argued that the uncertainty with respect to the conditions to lose capacity might stop promoters from going ahead with investment or might reduce the value of long term capacity as revealed in auction-type offerings.
5. **Non-discrimination and transparency** is generally ensured under rTPA regime subject to the publication of operational and tariff information. On the other hand, exemption systems generally provide less transparency (service conditions are generally not publicly available). Our review of current arrangements shows also different structural relationships between TOs (terminal operators) with TSOs (transmission system operator) and users. Vertical integration or vertical relationships between terminal owner, terminal operator, TSO and terminal users is also a recurring feature of LNG use in several countries. In all countries all or some terminals are owned by an affiliate of the TSO. In the presence of multiple plant owners (such as in Spain and in the future in Italy and UK) it is perceived as important that TSOs provide assurance of non discrimination in favour of its own plants. For example, one user in Spain expressed the view that the commercial development of an independent terminal had been conditioned by TSOs delays in constructing adequate connections to the transport system.

Non discrimination between TOs and users is addressed either by effective separation (neither the TO nor any affiliate is a user of terminal) or by codes of internal conduct and monitoring programmes that actively review the implementation of non-discriminatory procedures. One such arrangement exists in Belgium. While in Spain and the UK, the TSO has no interest in trading activities, the TSO in France, Belgium and Italy is not proprietarily separated from the main shipper.

6. Finally, **incentives for investment** depend on the level of risk perceived by potential investors with respect to usage and remuneration conditions in both rTPA systems and exempted systems. Regulated system would entail a certain level of regulatory risk that can be minimised through commitments to transparent and predictable methodologies for the setting of remuneration and TPA tariffs. Exempted systems would offer a lower level of risk provided the application of the exemption criteria follows consistent and transparent procedures. Exemption conditional on ill-defined rules or rules whose practical application is subject to regulatory discretion may also provide significant disincentive to the construction of capacity.

2.2.2. Tariff framework

2.2.2.1. Description of current situation

The key properties of the tariff framework for rTPA in relation to the reference criteria are driven by three main features of the tariff system: 1) the competences for tariff setting; 2) the system to determine the regulated revenues of LNG terminal operators; and 3) the methodology employed for tariff design and how the different services provided by operators are bundled and priced.

Competences for tariff setting correspond, in most cases to national regulatory authorities who generally based their decision on the basis of a proposal by the operator. The cases where formal approval corresponds to the Government are France and Spain. Of these, in France, the national regulatory authority, CRE, proposes tariffs. Only in Spain the proposal corresponds to the Ministry of Industry and is then sent to CNE for a non-binding opinion.

In most cases²⁵ the annual income of TOs is determined by taking into consideration operating expenditures, capital costs and return on capital invested. All systems, but France (Belgium from 2007 onwards) appear to provide incentives for efficiency through predetermined factors for productivity offset, which are either explicit or determined ex post. In the case of Belgium, the allocation of recorded differences in costs at the end of the regulatory period with respect to approved costs is proposed by the operator and subject to approval from CREG.

Finally, with respect to tariff design, charges are defined for individual functions such as LNG reception, storage and vaporization but with structures that differ among countries. The structure of charges depends on each country since those with multiple terminals (France and Spain) apply unique charges to all terminals. We observe, however, that the structure of charges differs significantly among countries.

For example, in France tariffs are defined for services as a function of frequency of unloads, in practice promoting regularity in deliveries. In Italy, charges apply to delivered quantities, number of cargoes delivered and regasified quantities. In Greece, a capacity component applies to contracted regasification capacity and a volumetric charge to volume effectively regasified. In Spain, charges are defined for each regasification with capacity and commodity terms and operational storage for an amount equivalent to 5 days of contracted capacity is included in tariffs. In addition a specific LNG storage tariff applies to LNG that remains in the tanks for longer than the 5 days included in the standard service. Finally from 2007 Fluxys will start charging per slots, plus additional services for extra flexibility.

Assessment

- Our assessment of the compliance of the current tariff systems with the reference criteria is mainly based on the evidence provided by regulators. Table 7 below summarises the main features of each terminal/country and highlights the areas that may not comply with each of the reference criteria. The evidence highlights several facts:

²⁵ No information was provided in the questionnaires on revenue setting in Portugal and Turkey.

- Unique tariffs in multiple-plant rTPA systems do not promote competition in capacity.
- Tariffs are set mainly on the basis of cost plus approach for firm bundled services for primary capacity.
- Remuneration systems tend to provide incentives to operators to maximise throughput, in some cases specific incentives exist on operators.
- Specific tariffs for spot are services available only in few cases.
- Diversification and security benefits of LNG are not explicitly taken into account.
- Some distortions to efficient utilisation signals exist due to increase weight of commodity term.

These facts can be used to assess the impact of current arrangements on the reference criteria:²⁶

1. **Competition in capacity.** Tariff systems can promote competition in capacity if prices are set to reflect the value of capacity. Cost reflective tariffs exist in all rTPA systems but the definition of charges is different in each of them. Similarly, promotion of competition would be best facilitated by tariffs that are specific to each terminal so that no cross-subsidies exist among users of different terminals. Only if specific assets from different terminals were pooled in a single management scheme, differentiated tariffs for use of such assets would not promote competition since users would not be able to react to such pricing signals.
2. **Competition in gas markets** will be favoured mainly by tariffs that allow flexible use of plants. Pricing of each service, including short term services, at an individual level (or in similar bundled services, if multiple plants exist), would help users to adjust required vaporization patterns to their requirements and to the flexibility of competing pipeline gas. When slots are defined to include a given proportion of operational storage, separate pricing of additional storage would help provide a price signal for extra costs due to ship delays or unexpected variations in market demand.

²⁶ Table 12 in Appendix B shows the theoretical considerations on the impact that the most relevant regulatory and operational variables might have on the reference criteria used in the assessment of current arrangements.

Table 7 Regulatory variables for LNG plants: tariff framework

	Belgium (Zeebrugge)	Italy	France (Montoir, Fos Tonkin)	Greece (Revithoussa)	Portugal (Sines)	Spain	UK	Turkey
Competition in capacity	- from April 2007 slots include unloading and 10 days storage - no service programme approved by regulator	-continuous and spot services -tariffs specific to each terminal	- services vary with frequency of unloads -spot services -tariff common to all terminals	-rTPA system to be defined	-rTPA to be approved - information on services not publicly available	- unbundled services - unique national tariffs - short term tariffs	- Grain LNG offers bundled services - slot definition and service conditions not public	
Competition in gas	- bundling of firm LNG services	-capacity/ commodity split 80/20 (70/30 for first regulatory period)		- 90/10 capacity commodity split		-specific tariff for additional storage		
Capacity allocation			-capacity reservation term	- specific tariff term for capacity reserved	- capacity charge is main term of agreement to use terminal	- capacity reservation term - bails commit costs for capacity booked	- annual capacity charge based on market valuation (Grain LNG)	
Use maximisation	- incentives for maximum use via adjustment system	- spot services - remuneration scheme gives incentives for max. throughput	-Fine for cancelling scheduled unloads - ship or pay rule for 90% of subscribed capacities	-socialisation of 95% of revenues		- remuneration provides incentives to maximise volume - ship or pay for 85% of capacity term		
Contribution to security of supply	- system-wide benefits of LNG not explicitly considered	- system-wide benefits of LNG not explicitly considered	- tariffs promote regular and continuous use			- system-wide benefits of LNG not considered		
Provision of flexibility	- no short term tariffs - additional services offered	- spot service tariffs	-spot tariff available					
Non-discrimination and transparency	- no cross subsidies - published tariffs but no scheme approved - tariff derivation not public	- tariffs not published for rTPA in partially exempted terminals - costs for exempted capacity not public	- published tariffs - cost plus method	- cross subsidy from transmission system		- unique tariffs - tariffs published ex-ante	- Primary access conditions not public (GLNG)	
Incentives for investment	- cost plus system - multi annual tariffs from 2007 - asymmetric treatment of cost overruns (bonus/malus)	- tariffs proposed by operator and approved by regulator - 80% of capacity costs paid by system if rTPA capacity is not sold	-cost plus tariff method	- rate of return regulation	- current remuneration part of Subconcession and tolling agreement	- revenue cap system with published methodology	- no regulatory interference for exemption period	- Yearly tariffs to be approved by regulator

3. **Capacity allocation and use maximisation.** In designing tariffs, efficient capacity allocation and use maximisation is ensured if capacity costs are included in capacity reservation terms, while variable costs are included in terms that depend on LNG effectively regasified. Inclusion of capacity costs in variable terms would lead to a less efficient capacity allocation but might promote liquidity by increasing incentives for trading and reducing the fixed costs of new entrants.²⁷ We would expect these types of distortions to be only temporarily applied and only in markets where new entry is viable mainly through LNG.

Thus, cost reflective tariffs will tend to promote efficient use. Two exceptions to this rule that would be efficient are: 1) non by-passable charges to all system users for security or diversification benefits that are quantifiable and that are provided by LNG (this is because users of pipeline gas also benefit from the security of supply provided by access to LNG); 2) avoided transport or system costs derived from the existence of LNG from which all users benefit irrespectively of their use or not of LNG.

The practical application of tariffs and capacity reservation principles also aims at avoiding contractual congestion through commitment costs such as non by-passable capacity reservation charges such as ship or pay provisions or bails for securing capacity.

Finally, maximisation of use of capacity would also be favoured by proper allocation of excess capacity costs to future users of the terminal and not to current users. In case capacity clearly exceeds forecasted demand for the reference period for which TPA tariffs are computed, the costs corresponding to unused (excess) capacity could be removed from the tariff base so as not to increase the costs for current users. In order to ensure cost recovery to plant owners excess capacity costs would be capitalised at the allowed rate of return and charged to users of capacity in the future.²⁸ This possibility, however, does not appear to be explicitly taken into account in the countries analysed.²⁹ Socialization of current excess capacity costs with current users of LNG or (as is the case in Greece) with current users of the transportation system does not provide adequate signals for efficient use of capacity but maximizes in the short term the use of the plant, thereby encouraging players to use LNG.

4. **Security of supply and provision of flexibility.** An optimal allocation of the benefits derived from LNG in terms of improved diversification of energy sources and network security would require the quantification of such benefits and that all system users benefiting from such benefits support the costs associated with improved security. In addition, security of supply would be promoted by tariffs that provided clear economic signals for the value of flexibility. Flexibility in access to LNG terminals is mainly driven by the ability to contract tank storage in addition to the operational storage required to vaporize LNG.
5. **Non discrimination and transparency.** As it was mentioned in the transparency section the information made publicly available by TOs and regulatory authorities on tariff derivation and cost allocation is particularly scarce. Transparency in TPA would benefit

²⁷ However, the transfer of costs towards variable terms reduces the incentive to sell unused capacity in secondary market.

²⁸ This system would be equivalent to regulatory depreciation scheduled based on use of capacity.

²⁹ The proposed regulations in Portugal by ERSE is an exception to this general rule.

from the release of further details regarding tariff methodology and derivation, particularly in the area of cost allocation. More information is generally available with regard to the general methodology to determine regulated revenues of LNG operators.

6. **Incentives to investment.** rTPA systems can promote stability and certainty by favouring predictability and transparency on the evolution of revenues for TOs. While the tendency is to base revenue setting for a given regulatory period on incentive-based mechanisms,³⁰ substantial uncertainty persists in the transparency and methodology with which certain parameters are determined, particularly at tariff reviews. Ex-post adjustments to reconcile incurred costs with predicted values can reduce uncertainty if allows for symmetric treatment of cost overruns and cost savings. Given the current uncertainty regarding the development of LNG use in many countries, investments would be best promoted if the standard of efficiency applicable to regulatory decisions to allow costs was the prudence criterion.³¹ The difficulties associated with the definition of an efficient cost structure generally imply that efficiency considerations are applied ex post, once investments are sunk and demand is realized. This creates uncertainty on the true regulatory value of investments and might increase the risk perceived by developers of LNG infrastructures. If the criterion to approve or allow investments was based on variables observable at the time the investment decision is taken, for instance by allowing those costs incurred by TOs making a prudent use of the information available at the time investment and operating decisions are taken, investments would be promoted since those costs would be included in the cost base to be remunerated through tariffs.³²

2.2.3. Capacity allocation procedures

2.2.3.1. Description of current situation

Currently, three capacity allocation procedures for primary capacity are applied:

- Mechanisms based on an open season³³ (in Belgium and UK)
- first-come first-served (FCFS) (in France, Greece, Spain and in Belgium for capacity not awarded in the open season)
- pro-rata of demanded capacity, or other pre-specified orders of preference (in Italy and Turkey)

³⁰ Different approaches are observed, although there appears to be a trend towards incentive-based system with regulatory periods over which tariffs or revenues are set for an initial year and then updated according to pre-specified paths.

³¹ In Italy, Delibera n.178/05, art. 13, provides a sort of guarantee recovery of capacity costs for 80% of capacity in rTPA terminals. Up to 80% of capacity costs will be supported by all system users in case capacity remains unsold.

³² The prudence criterion is different from the efficiency criterion. The efficiency criterion, if strictly applied, would lead to non recognition of costs that are not part of an efficient cost structure. For example, costs incurred in the reasonable expectation that demand for LNG would realize but that ex post turn out to be redundant would meet the prudence criterion but not the efficiency criterion.

³³ Open seasons are not a capacity allocation mechanism per se but a procedure to assess the capacity demand for the following capacity allocation. For simplicity in what follows we refer generally to these systems as “open season”. In order to assess the real market demand, a capacity allocation has to be preceded by market survey (so called “open season”). The operator offers within the following capacity allocation step capacity according to the demand initially committed – e.g. via a pre-contractual commitment (Letter of Intent) – by market participants in the open season. The specific type of capacity allocation mechanism (pro rata or auction) to be applied is subject to the result of the open season and the respective national legislative requirements, if any.

Primary capacity tends to be sold long term with no limitations on the duration of long term contracts. Exceptions to this rule exist in Italy (in practice, currently capacity is awarded for a maximum period of seven years), Turkey (capacity is allocated annually) and Greece (maximum duration of contracts has been proposed at 15 years).

Specific regulations aimed at reserving a part of capacity for short term exist in Spain (where users are somewhat conditioned by the need to devote 25% of total entry capacity to contracts of duration lower than 2 years) and in France (for 10% of capacity at Fos Cavaou terminal).

Regarding UIOLI rules, we note that these rules exist in Belgium, France, Italy, Spain and UK. However, significant differences exist in the way they are implemented.³⁴ The differences apply to three areas: 1) the mechanisms employed to identify unused capacity; 2) the conditions to apply for releasing capacity; and 3) the length of time for which capacity is lost.

2.2.3.2. Assessment

Our assessment of the compliance of current capacity allocation procedures with the reference criteria is based on the current description of current arrangements and the views expressed by users of LNG plants regarding the advantages/disadvantages of different systems.

Table 8 describes some key features of each terminal/country that are relevant to the assessment of compliance with the reference criteria. The table highlights several facts:

- There is only one rTPA case of market assessment made according to open season mechanisms.
- First come-first served are widely used.
- Priority orders in some cases do not appear to encourage competition in gas.
- Limits to the length of long term contracts may impact on the ability to recover investment costs.
- Congestion management procedures are generally loosely defined in many cases and are based on market-values of capacity only foreseen in one case (Greece). In other (Belgium, Italy) pro-rate or pre-specified orders of priority apply.
- In general, there are no limits to percentage of capacity that can be contracted long term.
- Secondary trading of capacity does not appear to be developed in many countries.
- Detailed regulatory rules for secondary trading of capacity only present in one case (Belgium).
- UIOLI rules appear to have different practical roles, such as avoiding hoarding and/or promoting secondary trading.

³⁴ Appendix C contains a description of UIOLI rules country by country.

Table 8 Regulatory variables for LNG plants: capacity allocation

	Belgium (Zeebrugge)	Italy (Panigaglia)	France (Montoir, Fos Tonkin, Fos Cavaou)	Greece (Revithoussa)	Portugal (Sines)	Spain	UK	Turkey
Competition in capacity	-incentives to secondary trades of capacity discourages capacity hoarding	- no electronic platform for secondary trading - UIOLI mechanism	-regasification capacities can be transferred			-capacity hoarding discouraged by bails system and UIOLI - no secondary trades		
Competition in gas	-cap on secondary capacity market price 2 months ahead of use		-no capacity dedicated to short term contracts except for Fos Cavaou (10%)	- 33% limit to send-out capacity reservation		- one shipper can reserve up to 50% of short term capacity		-priority for existing contracts
Capacity allocation	- open season - CMP to be approved if excess demand - FCFS if excess supply - pro-rata allocation of constrained capacity for proven users	-annual capacity allocated with priority to LT contracts	- FCFS principle - pluriannual capacity contracts - Fos-Cavaou priority to promoters (lack of TPA on LT contracts)	- FCFS basis - CMP procedure foresees capacity release through auctions		-FCFS basis -bails required as commitment mechanism	- Open season for primary capacity	- priority for existing contracts - pro rata mechanism
Use maximisation	- obligation to use unneeded booked capacity - priority to bundled slots	- UIOLI over capacity booked for multi-year period (except if FM) - Unscheduled capacity offered 2 months ahead - penalties for failure to meet programs	- fine for late cancellation of cargos	-constraints to use of capacity above 1/3			- secondary capacity mechanisms envisaged (Grain, Dragon)	
Contribution to security of supply			-fines for cancellation disruptive of optimum plant management			-UIOLI in case of unused capacity		
Provision of flexibility	-unbundled slots can be sold 20 days ahead	-maximum booking period 7 years	-no capacity reserved for short term contracts except for Fos Cavaou	- limits to min and max capacity durations		- 25% of capacity reserved for less than 2 years contracts		
Non-discrimination and transparency	- CMP rules published - operational rules published	-access code approved by regulator	- third party users only up to 10% of capacity on short term basis for Fos Cavaou			-approved network code - publication of available and contracted capacities	- information on CMP not available - operational rules not available	
Incentives for investment	-100% LT contracts cover investment risk	-maximum contract duration						-annual contracts

CMP= congestion management procedure

The impact of specific rules regarding capacity allocation on the reference criteria is specific to each case.³⁵

1. **Competition in gas markets: capacity and commodity.** Our assessment shows that competition in the gas market is primarily driven by long term strategies by new entrants. These long term strategies are not based, as confirmed by our interviews, on access to short term capacity nor through spot cargoes. Therefore promoting long lasting entry of new agents in gas markets require, in the first place, to promote long term capacity reservation. Both open season procedures for long term capacity and FCFS systems are consistent with competition in gas markets.³⁶ Auction-based procedures, in general, allow competitive suppliers to bid for capacity on the basis of market value of gas, thereby promoting competition on the commodity market.
2. **Capacity allocation.** Auction procedures tend to be more efficient mechanisms for allocation of capacity, particularly when capacity is constrained since the allocation of capacity is made according to the value ascribed to capacity. On the other hand, FCFS systems involve an efficient allocation of primary capacity only in case of excess capacity.

In addition, capacity allocation mechanisms can help ensure that capacity expansion is timely. Open seasons may serve as a useful market survey instrument to decide on the feasibility of an investment help to anticipate congestions.

In case of congestion, efficiency in capacity allocation depends on the rules followed by physical congestion of capacity. However, procedures to manage physical congestion appear to be defined only in Belgium and Greece.³⁷ The most efficient mechanisms to solve congestions involve allocating capacity to those users that express a higher value for capacity and in a way that minimises the cost of managing the congestion.³⁸ This suggests that the efficient mechanism depends on the cause for the congestion.³⁹ However, we do not see any reason why general congestion procedures could not be defined upfront.
3. **Efficiency in capacity utilisation.** Efficient and maximum use of capacity can be achieved through secondary trading only when deep and liquid secondary capacity

³⁵ Table 14 and Table 15 in Appendix B discuss theoretical considerations on the impact that the features of capacity allocation procedures might have on the reference criteria used in the assessment of current arrangements.

³⁶ Capacity allocation mechanisms may be constrained or affected by other rules, such as ceilings on capacity booked by single shippers, reservation of capacity for short term uses or caps on long term contracts duration. In general any of these measures tends to protect the emergence of new users so that new players can access capacity for specific uses or can access capacity at all by preventing hoarding. As such, the rationale for these arrangements is of a transitory nature until new entry has occurred.

³⁷ See the answer from regulatory authorities to question 11 of the questionnaire in Appendix D.

³⁸ If buyer and seller have common interests, auctions might not be a feasible instrument to implement, however in many cases auctions can be designed so as to the seller revenue neutral.

³⁹ If the physical congestion is caused by the unexpected reduction in capacity available, in such a way that available capacity falls below aggregate capacity requests, then dynamic efficiency consideration suggest that the TO would be responsible for solving the constraint. To do that, it would apply interruptible criterion according to a pre-specified priority order or provide regasified LNG in the system to affected users.

If, on the other hand, congestion is caused by requests for capacity that exceed available capacity, efficient capacity allocation would be achieved via auction mechanisms. The amount of auctioned capacity would initially be the difference between available capacity and firm request and, in case firm requests exceed available capacity, total available capacity.

markets are developed. This is not the case in any of the national markets as yet. Specific rules have been set up in Belgium to promote secondary trades of capacity by requiring shippers to resell slots that are not going to be used. The definition of slots is consistent with maximisation of plant utilisation. Therefore we find appropriate that priority is given to the trading of complete slots, as required in Belgium. To maximise plant utilisation, though, it is also important that unbundled components of the slots can be traded with sufficient prior notice so as to ensure that potential users with specific needs for capacity are not deterred by the need to purchase a complete slot.

Secondary uses of capacity do not necessarily involve capacity trading. Rather it is possible for primary holders of capacity to use their own slots to unload and vaporise LNG of third parties. In turn primary capacity holders may use their slot for third parties in two different ways.

- First they can provide explicit capacity services by allowing third parties to decide how best to use the slot and the physical capacity in the tanks associated with the service. In this case there is an implicit secondary capacity use.
- However, a second implicit mechanism is for the primary holder to manage the use of the capacity and give back to the third party the LNG unloaded at the terminal as natural gas in the transmission system (delivered for instance at a virtual trading point such as the NBP). In this way the third party would not be required to obtain capacity at the terminal but would use the capacity of a primary capacity holder (this mechanism could be implemented by a swap of LNG at the terminal for gas in the downstream transmission network over a predetermined period of time).

UIOLI criteria are applied to ensure that unused capacity is freed up. While the existence of a secondary market for capacity acts as an incentive to primary capacity holders to resell capacity, given the very limited number of users in most cases, we believe that secondary trading markets need to be actively promoted. UIOLI rules, in general, provide an incentive for secondary trading directly as in the case of Fluxys operational procedure. However, the alleged role of UIOLI in most cases is to prevent the anti-competitive effects of capacity hoarding by primary capacity holders.

While anti-competitive hoarding practices can be subject to the scrutiny of antitrust authorities, effective anti-hoarding UIOLI rules that do not reduce the value of primary capacity would require at least the following features:

- systematic long-term underutilisation of capacity is detected;
- primary capacity holders provide reasons on its need to keep control of the capacity for the remaining term of the contract;⁴⁰
- in case they cannot justify this need, they resell capacity for the remaining term of the contract (as long term as possible); in case the need is not justified in the short term but could be justified in the longer term, capacity would be released for a shorter time frame.

⁴⁰ Certain users, such as electricity generation companies, reserve capacity for gas fired power plants over 20 year periods. Losing capacity due to unexpected temporary reductions in electricity demand might affect prospects for future generation and increase uncertainty over power generation investments.

- the resale of capacity takes place with a mechanism that ensures a market value of capacity (for example via an auction with a predetermined reserve price or at the regulated tariff for capacity)
- if resale does not take place the capacity is released back to the TO and increases available capacity for contracting.

In our view, UIOLI arrangements in Belgium are more devoted to promote secondary use of capacity and may not act as an anti-hoarding mechanism since systematically underutilised capacity is not sold long term (as required by new marketers strategies). On the other hand, UIOLI in Italy and in Spain appear to imply that capacity could be lost even if there are justifiable reasons for temporary underutilisation.

4. **Security of supply and flexibility.** In general security of supply is obtained if capacity can be traded freely so that in response to scarcity gas prices attract suppliers that find available capacity in secondary markets. Therefore we believe that security of supply is best promoted if market-based arrangements for trading capacity are available, including electronic anonymous booking mechanisms such as bulletin boards.
5. **Non-discrimination and transparency.** Capacity allocation rules and capacity management rules are part of the approved network codes and would be aimed at granting non-discrimination and transparency. We note that in many instances it is unclear when subscription periods for reserving capacities start in FCFS regimes. Ensuring non-discrimination would require that no agent has better access to information on when requests for capacity can be accepted.
6. **Promotion of investments.** Long term capacity sales provide assurance of capacity revenues to plants and would promote investments. In this respect, limiting the amount of long term capacity that can be contracted could be detrimental to investment if it increases TOs revenue exposure to the risk of underutilisation. It is worth noting that auctions for short or medium term capacity may yield variable and uncertain outcomes as a function of sudden changes in the short term value of capacity and auction design features. Long term auction systems based on open season-like market assessments and FCFS systems are more likely to provide stability to investment and reduce the level of risk.

2.3. Review of existing operational rules

To appraise existing operational rules, we have used the information provided by regulators and the views expressed by selected users of LNG terminals.^{41, 42} As for regulatory variables, the following criteria are assessed:

- Competition in the European gas market: commodity and capacity.
- Efficient capacity allocation and use maximization.
- Contribution to security of supply and provision of flexibility.
- Non-discriminatory, objective, transparent access rules.
- Incentives for investments in new capacity.

In this section we discuss those operational variables which we believe are more relevant on the key reference criteria as set out in section 2.2.

Our review of operational issues has considered a larger number of operational variables but our discussion and assessment is grouped into topics of major relevance to TPA because some operational issues can hardly be discussed in isolation.⁴³ The operational variables reviewed include the following:

- Calculation of unused capacity
- Services available
- Send out requirements
- Use It or Lose It mechanisms
- Measurement
- Management of LNG stock vessels
- Balancing regime
- Penalties
- Notice periods for UIOLI slots
- Capacity allocation procedures
- Standard contracts
- Monitoring programme
- Force majeure
- Financial guarantees

⁴¹ Appendix C includes the information collected by the questionnaire sent by ERGEG to the national energy regulators. In particular eight Regulators have answered the questionnaire. In the Appendix, the information provided is organised in a way that allows comparing the situation on each LNG terminal.

⁴² Appendix E summarizes the information collected in the interviews to market players and the questionnaire used to collect the information. Given that some players have explicitly asked to keep the identity of their comments confidential we aggregate the comments and opinions expressed.

⁴³ Appendix B described the impact of each grouping of issues on each of the reference criteria.

- Downstream network access
- Communication TO-TSO
- Vessel sizes available
- Ship vetting at terminal
- Quality constraints
- Transparency on quality requirements
- Quality interoperability

Appendix C contains a description of current arrangements for each of these variables.⁴⁴

In addition, market views of these factors have been explored through selected interviews with companies that are current and prospective users of capacity in various terminals around Europe. Table 9 below illustrates a summary of the main conclusions from the evidence obtained from the interviews with LNG users in operational aspects.⁴⁵

⁴⁴ The description reflects main issues as arising from public sources and NERA's own research. The analysis of current operational variables is naturally limited to existing terminals in operation.

⁴⁵ Appendix E includes a description of all responses and the questionnaire employed.

Table 9
Summary of respondents' views on operational issues

Area	Overall conclusions
Operation of terminals	<ul style="list-style-type: none"> • Usage of terminals on spot or short term basis is difficult for most companies due to the complexity of organising LNG cargoes upstream. • Notice period for UIOLI slots has to be of the order of one month for prospective users to locate a cargo and organise shipping. • Commercial operation of a terminal in a manner compatible with the downstream commercial gas market encourages new users and competition. • Preferred send out rate for a cargo is 30 days. • Bundled services do not obstruct access • The natural state for an LNG terminal is with the storage tanks full in readiness to send out gas at peak times or in an emergency. • “Virtual storage” is an efficient way to manage access to the terminal without having to empty the tanks. • Cooperation between terminal users and pooling arrangements are necessary for a TO to manage multiple users and maintain gas send out. • Liquid traded gas markets and open access to transmission are required downstream of a terminal for LNG trading to be feasible. • For small players to be able to cope with the large volume of gas in an LNG cargo it would be required to have a liquid traded market downstream or an active competitive market with bilateral trades.
Shipping	<ul style="list-style-type: none"> • Whilst some older terminals have physical constraints to ships they can accommodate (water depth etc) most terminals can receive ships in the 130,000 to 145,000 m3 range. • The challenge in future will be the new series of very large Qflex and Qmax vessels which will comprise a substantial proportion of the world fleet by 2010. • Ship vetting is a short term problem and over time most vessels will get registered at those terminals where they are likely to berth, although common standards of service should be established.
Gas quality	<ul style="list-style-type: none"> • Most respondents considered gas quality as one of the major obstacles to gas trading in Europe and for the efficient functioning of the EU gas markets in the short and medium term. • Responses indicate that problems arise mostly in NW Europe in UK and Zeebrugge Hub with interconnection to UK. • Harmonisation of gas specs across continental Europe in progress but there is a need for leadership on the Interconnector. • Harmonisation should aim at defining quality specs that do not allow denying ships, even if blending is required.

2.3.1. Calculation of available capacity

Information about available capacity at LNG terminals is an important indicator for market participants as it determines the possibility to access market regions in Europe. Therefore, it remains critical that the terminal operators do the calculations and the assessments in the

most transparent way and that the calculations used are all well understood by all market participants.

In general, LNG operators define available capacity in a simple way: the difference between total capacity and booked capacity. However, the information provided on the method for calculating total, effective and available capacities employed by Fluxys is the most complete and transparent one.

In this respect, the method applied by Fluxys and the amount of information provided could be taken as a reference for other LNG operators.

In particular, the Fluxys LNG method⁴⁶ defines total, effective and available capacities both for reception, storage and regasification facilities as described below:

- Reception capacity: Fluxys LNG defines the theoretical maximum frequency at which it can receive carriers and the size of those carriers. These two variables characterise the reception capacity of the LNG terminal.
- The definitions of total, effective and usable storage volumes are as follows:
 - The *total storage volume* corresponds to the physical volume of the LNG storage tanks;
 - The *effective storage volume of the LNG terminal* is the difference between the total volume and:
 - The heel volume (volume that cannot be extracted under normal operating conditions) and,
 - The dead volume, which cannot be filled under normal operating conditions.
 - The *usable storage volume* is the difference between:
 - the effective storage volume and,
 - the storage volume for the operational needs of Fluxys LNG.
 - The *volume available* at a given moment is the part of the non-allocated usable volume still available for the users.
- The definitions of total, effective and usable regasification capacities are as follows:
 - The *total regasification capacity*, is determined by the technical characteristics of the LNG regasification installations, taking into account the technical reserve capacities whose purpose is to improve the continuity of the regasification service which corresponds to the physical volume of the LNG storage tanks;
 - The *usable regasification capacity* is the difference between:
 - the total regasification capacity and,
 - the regasification capacities for the operational needs of Fluxys LNG.

⁴⁶ “Main Conditions for Accessing the Zeebrugge LNG Terminal of Fluxys LNG approved by the CREG”, 17 June 2004; and “Indicative Terminalling Programme of the Zeebrugge LNG Terminal for the period: 2005-2006”. Version 4.0

- The *available regasification capacity* of the LNG terminal at a given moment is the difference between (i) the usable regasification capacity of the LNG terminal and (ii) the regasification capacity of the LNG terminal already allocated to users of the LNG terminal.

In addition, Fluxys provides detailed information on the method followed for calculating the theoretical maximum number of slots of the LNG facility.

2.3.2. Monitoring programme

LNG system operators must comply with the confidentiality provisions of Article 10 of the Gas Directive by guaranteeing that they shall preserve the confidentiality of commercially sensitive information obtained in the course of carrying out their business. TOs are also obliged to prevent information about their own activities which may be commercially advantageous from being disclosed in a discriminatory manner. Finally, in case TOs have affiliated companies devoted to trading activities, they must avoid any possible abuse commercially sensitive information obtained from third parties in the context of providing or negotiating access to the system.

In this respect, all LNG terminal operators include confidential clauses in their contracts for the different services provided.

We have found only a specific arrangement for Fluxys that has implemented a monitoring programme, which aims to ensure that an active policy of non-discrimination and transparency is applied, both internally and externally towards facility users. This programme is based on the following two principles:

- Transparency and non-discrimination between users, and
- Protection of the confidential information relating to users.

As part of this monitoring programme, Fluxys has established both internal and external rules of conduct. Fluxys' internal rules of conduct comprise, in particular:

- Procedures that the employees of Fluxys must follow in their contacts with users, either actual or potential;
- Internal regulations, established in accordance with the Code of Conduct;
- Rules concerning how to deal with the questions and files of actual or potential users.

The internal rules also refer to the protection of confidential information. To this respect is remarkable that Fluxys defines what information is not considered as confidential, while setting strict rules with regard to the management of confidential information.

The external policy rules contain the principles of non-discrimination and transparency applied by Fluxys in its relations with suppliers, contractors and subcontractors, other service providers and users.

In addition, Fluxys' monitoring programme also includes a "compliance Officer", who is responsible for ensuring that the programme is properly complied with.

2.3.3. Send out requirements and UIOLI

The management of the LNG terminal tends to be based on two basic modes of usage: base load with constant rate of gas send-out, or peak shaving at times of extreme gas demand. Some terminals try to fulfil both requirements but generally the base load approach is more common. In a base load regime (such as in France) ship arrivals are planned on a consistent rateable basis which continues virtually uninterrupted throughout the year. The LNG supply is under long term contract with a production facility located many thousands of miles away and pauses due to maintenance are planned well in advance. Even under this tightly managed arrangement, though, there is still scope for delays and diversions of cargoes.

In markets where there is a liquid traded environment and traders receive clear pricing signals from the market, there can be opportunities to change the pattern of usage to take advantage of the best market conditions. The ‘slot’ to berth a ship and the capacity to store and eventually send-out a cargo has an option value. The user can evaluate the option at any time and decide whether to use that slot or send the cargo elsewhere. Where the user of the terminal has elected to send his ship to an alternative destination it does not necessarily imply that the storage tanks are empty. In fact, in order to be ready to respond to market opportunities the tanks would be in a state of readiness to send out gas – if the tanks were empty it would imply that the option value had been lost or passed-up. The point at which the user has to declare that he will not be using his berthing slot is therefore a contentious issue as there is value associated with that decision.

The promotion of competition and maximisation of use of plants are objectives partially in conflict. While the value of capacity would call for a short notice period to release unused capacity, too short a period appear to be incompatible with minimum times required by traders to organise shipping. For example, the 10 day notice period applied at Grain LNG appears too short to ensure plant maximisation.

Our assessment highlights how the concept of ‘Use It or Lose It’ for an LNG terminal is more difficult to implement than for pipeline capacity. For a gas pipeline the concept of UIOLI is straight forward, especially as users nominate only a short time in advance (typically the day before) and the capacity in the pipeline can be readily allocated between the parties contracting for access on a daily or hourly basis. The management of LNG supplies in European terminal, by contrast, requires a much longer lead-time.

The UIOLI rules require determining what capacity is used and in what sense it is “lost”.

First, the concept of ‘usage’ can be applied to the jetty being empty or there being space in the tanks or idle regas capacity – or all three simultaneously. When users elect not to take up the option to use the berthing slot it does not necessarily mean that the option value has reduced to zero – having LNG in readiness to meet upswings in market pricing has a tangible value. In most existing regimes we observe that the onus is on the user to notify the TO of capacity that he intends not to use (rather than the TO or other prospective users challenging him) and the main difference is in the amount of notice required (see below).

Second, UIOLI is a difficult concept because it implies that users would be required to give up capacity without recompense, whereas if the user has placed value at risk it might be more reasonable to require him to Use It or Sell It. Either a capacity trading market or secondary

capacity mechanism can be brought into play where the user receives financial compensation. In view of the current worldwide shortage of LNG supplies it is to be expected that some LNG terminal capacity will be idle from time to time. However it is generally recognised that in times of extreme market demand and impending crisis there has to be some mechanism to ensure that no capacity is withheld and it would be advisable that TOs have the powers to intervene.

Send-out requirements bring an added degree of complexity to the operational management of the terminal. In many regimes currently operating, the cargo is delivered to the terminal and stored in the tanks, then regasified LNG is sent out over a fixed period of time. Usually this send-out period is designed to empty the tanks prior to the arrival of the next consignment of LNG in order to make space available in the tanks. However the time is quite short – 5 days is not uncommon – and this means that a small trader or new market entrant is challenged to find a means to off-take this large a volume (on a spot basis). By contrast the standard gas contract in UK and USA is one month duration. This means that the trader has no effective commercial or financial means to manage the risk of the commodity contract because the tenor of the delivery cannot be aligned with the standard commercial contract. There is need to align the commercial characteristics of the terminal send-out with those in the rest of the gas market to facilitate trading (and admit smaller, new players). The physical flows of LNG and gas through the terminal can in many instances be managed so as to accommodate the commercial requirements, for instance small players with long send-out needs might contract additional tank storage space or might enter in bilateral arrangements with larger players with available LNG in tanks to smooth out LNG volumes over the send out period (one possibility would be to sell LNG not needed during the established send out period and buy it back afterwards until the arrival of its next LNG ship).

The concept of secondary capacity usage also falls into this category, where a berthing slot can be made available even at such time as there is no capacity available for contracting. The concept relies on the existence of a liquid traded gas market. The primary capacity holder would not sell or cede capacity to the secondary user but would use the primary capacity himself to provide regasified LNG to the user. The primary holder of capacity can send-out the gas to free up space in the tanks for the unloading of the LNG delivered by the secondary user. The secondary user could then have delivered gas available in the downstream gas market, for instance at a trading hub or through a pre-arranged bilateral sale. The arrangement consisting in making available natural gas in the downstream transport network for an LNG trader without having necessarily to reserve capacity in the LNG terminal is generally known as “virtual storage”. This “virtual storage” arrangement is an alternative mechanism for offering capacity to the market and relies on the ability of players to arrange trades and swaps of LNG and natural gas in the terminal and in the gas market.

2.3.4. Slot and LNG stock management

The management of the ‘slots’ to berth vessels and the management of stock levels in the tanks are central to the concept of ‘capacity’ in an LNG terminal, provided that there exists sufficient send-out capacity into the downstream network. The berthing ‘slot’ is defined by the time required to bring a vessel into the port and manoeuvre it onto the jetty; connect the loading arms; discharge the LNG cargo and depart. In Atlantic ports there is also consideration of the tides. For a jetty with a single approach (i.e. only one ship can berth at a time) the minimum time for which a ‘slot’ can effectively be available is generally two

consecutive calendar days or 3 high tides. The schedule of berthing slots is programmed well in advance by the TO and typically on the basis of one slot every 6 days to allow for ships to arrive late and/or early.

If an LNG trader either fails to use the slot or arrives late/early by accident – due to delays at sea or whatever - Force Majeure (FM) can rarely be claimed under the current regimes. The user may then suffer penalties and/or lose the slot. However, there is usually an element of FM available to the TO in the event that the Terminal facilities are unavailable through causes outside his control.

Slot management is usually conducted by the TO on the basis of information supplied by the User. Traders in the LNG market often find that they need to supplement this information (typically displayed on the TO website) with their own international market intelligence. It is helpful to know where the all ships on a specific trade routes are located at any given time in order to forecast whether a slot will be used or not, with sufficient fore-warning to arrange an alternative cargo to use that slot.

The time required to get a cargo to the terminal is considerable: to identify an available cargo of LNG, send a ship to collect it, load up and then sail to the destination can take several weeks. It is an exercise that is considerably more difficult for the new entrant and small or inexperienced players to achieve at short notice. It therefore follows that the notice period exhibited by some TOs for TPA slots of one or two weeks is insufficient for all but the biggest traders to use. However the requirement to release slots for TPA three months in advance is considered as a loss of significant option value by users.

The best and safest state for an LNG storage tank is for it to be virtually full most of the time in order to be able to provide the greatest flexibility in send-out and be ready as a source of security of supply. Stock management is therefore a central task for the TO. Daily updating of LNG stocks is considered good practice but not all TOs do this. Some terminals accommodate requests from users to swap, sell or lend LNG in the tanks to other users (for a fee). Penalties can be imposed for those users who either under/over deliver LNG or over/under off-take gas. The terms of the bilateral agreements to swap or lend gas between users would define the sharing of costs and risks (such as the risk from failure to deliver LNG).

2.3.5. Access to the downstream market and interactions between TOs and TSOs

The value of access to an LNG terminal is extremely limited if there is no access to the gas transmission system and final market downstream. Whilst LNG can be regarded as a powerful mechanism for creating new competition in gas markets, downstream access can act a serious constraint and it is crucial that regulation of transmission networks keeps pace with the opening up of the LNG trade in Europe.

The existing regime in some downstream markets is far from transparent to new users and has acted as a major deterrent to prospective users of LNG terminal capacity. Where the gas transmission system is operated on the basis of regulated open access, especially where the regime is Entry-Exit, the TO can book Entry Capacity from the outset that matches the send-out requirements of that terminal, irrespective of the user. Allocation of the Entry Capacity is

then a matter to be sorted out between the TO and User. In the situation where a prospective User has to negotiate downstream access individually and there is no transmission capacity apparently available then the LNG trader is obliged to sell the cargo ex-ship at the Terminal or find an alternative terminal.⁴⁷

Lack of gas market liquidity can have a similar impact: unless the LNG trader has access to a trading ‘hub’ where the cargo can be sold into the wider market then a bilateral sale must be lined up prior to the LNG cargo arriving at the Terminal. Given that a typical cargo of 138,000 m³ LNG (approximately 1 TWh) is worth around Euro 20 million at current market prices, it is difficult to market to individual consumers at short notice and (probably) on a ‘spot’ basis. Very few market players are capable of taking this sort of quantity at short notice, other than the established incumbent or perhaps major power generators.⁴⁸

In addition our assessment has indicated that obstacles to competition and security of supply exist due to restricted access or lack of transparency in access to the transmission networks and markets downstream of some LNG terminals. This relates not only to access to the immediate market downstream of the LNG terminal but also to trans-European networks which would need to be accessible in order to promote security of supply on an EU basis. For example, during the impending gas crisis of winter 2005-6 a number of gas companies operating in Italy and UK reported being unable to source gas supplies via France and Belgium LNG terminals for these reasons. It follows then that the interactions between LNG terminals and TSOs are a crucial factor in the development of competition.

In order to promote the entrance of new players, it would be advisable that LNG terminal operators (TO) and transmission system operators (TSO) co-operate in order to ensure interoperability between both systems. This cooperation can be verifiable in issues such as:

- Consistency in the service definitions required to allow full compatibility between the management of the terminal and the management of the downstream transport network (consistency in terms of duration of the access contracts, quality requirements, tolerance values, definition of “thermal year”⁴⁹, etc).
- Compatibility in the procedures for access. For example, the procedures for capacity subscription in the LNG terminal and in the transmission system may show certain degree of similarity: shippers wishing to book regasification capacity in an LNG terminal require also capacity in the adjacent transmission system, therefore the answer on the capacity request could be provided by both operators within a similar period of time. In general, if the TSO ensures that access to transmission is provided in line with terminal usage and send-out capabilities then capacity can be allocated more efficiently.

⁴⁷ Several users interviewed described their attempts to access capacity as unsuccessful and ended up by selling LNG ex ship to the incumbent.

⁴⁸ The timescale over which the gas must be sent-out from the terminal into the final market is also important in this respect and the notice period for UIOLI capacity being made available.

⁴⁹ In order to allow an efficient intake of gas into the transmission network, the definition of “thermal year” used in the regasification code or in the regasification access conditions of each LNG terminal should fit with the one used for the adjacent TSO.

- Facility of contracting for access, for instance by avoiding the duplication of the procedures required to access the gas system (as for example to send a request application form both to the LNG system operator and the adjacent TSO).

2.3.6. Shipping issues

The LNG industry has grown up through the development of dedicated trades of gas between specific LNG production terminals and corresponding receiving terminals. A fleet of special LNG vessels is usually dedicated to this trade and the same ships regularly ply the same course between supply point and market for the entire duration of the contract (often termed the 'milk run' or tram-track). The fleet may be owned by the producer, the importer or chartered from a third party. For trading of LNG between terminals to be feasible the fleet owners have to be able to arrange for the ships to be diverted from the scheduled course and deliver the cargo at an alternative destination before returning to the original schedule of deliveries. Given the high costs of ship charter (typically the day rate for a 138,000 m³ vessel is \$65,000 in 2006) and the long distances travelled the efficient management of the fleet is the primary concern of most LNG traders.

The early LNG projects deployed small ships (up to 70,000m³) which were deployed mostly in the Mediterranean. As the market has grown, technology improved and shipping distances become longer, the typical size of vessels has increased to around 138,000m³. Future developments are planning for super-sized vessels to trade in the Atlantic basin and aiming for economy of scale there are fleets of vessels in the 210,000m³ to 265,000m³ are in construction. The world fleet of LNG carriers currently stands at around 200 vessels in service but is set to increase by 75% by 2009. There is a wide diversity of ages – some of the original vessels from the 1960s are still in service – and sizes and specifications. Receiving terminals which were constructed for a specific fleet of vessels may therefore have difficulty in accommodating other ships, but in the interests of maximum flexibility and security of supply the TO would seek to ensure that as many vessels can be accepted as possible.

The constraints on ship acceptance are primarily viewed by TOs as concerning the safety and maintenance record of the ship and the 'vetting' of a ship can be undertaken by the TO itself but more usually by a specialised ship certification authority. Existing regimes rarely specify a code of conduct or standard of service for vetting suitability of ships. Terminal Operators generally state on their websites the procedure for ship vetting and frequently this involves an independent authority. However there is often no guarantee of how quickly this would be performed and if the TO takes longer than the notice period for a berthing slot (bearing in mind the time taken to divert a ship) then effectively the prospective capacity user is blocked from accessing the terminal. It is probable though that over time the ship owners will seek to have their vessels approved for each of the terminals that they would be likely to want to access.

In considering shipping there is the obvious requirement that the ship must fit into the marine facilities. Some terminals do not have sufficient depth of water either in the approach to the terminal or at the berthing jetty itself. Of these locations few if any are capable of being upgraded to provide the requisite deeper access and/or larger berthing facilities. The design and construction of new terminals however is generally with a view to accommodating the current 'new standard' vessels of around 150,000m³. The super-sized vessels of the 'QFlex' and 'QMax' specification are due to enter service from 2008 but will not necessarily be able

to berth at all new terminals and it is estimated that 35% of terminals will not be able to accept them.

In theory a vessel which has a much larger capacity than the storage tanks receiving the LNG can still offload albeit slowly whilst the gas is sent-out to the transmission system. In this situation the vessel has to stay on station for longer than usual for off-loading a standard cargo but at times of emergency the higher price for gas can offset the additional ship charter costs. It is also possible to offload only part of the cargo. The knock-on effects to the fleet management schedule can be very costly however and the trader must take an overall view before undertaking complex shipping manoeuvres. Flexibility of this kind can be important in meeting security of supply but requires close cooperation between TO and trader/capacity user. This kind of flexibility also has to be accommodated by the terminal operational rules including the scheduling of gas send-out and storage management.

2.3.7. Scheduling rules and nominations

With respect to scheduling, the aim of the scheduling of berthing and unloading activities is to optimise the use of the terminal, taking into account technical and operational constraints of the terminal. Each terminal operator could develop transparent and non discriminatory scheduling procedures, which would establish the methodology to program slots for unloading LNG ships and send out.

The scheduling programme requires a clear periodicity: annual, monthly, weekly. Moreover it would be advisable that the timing of the scheduling procedure is harmonized among the LNG terminals.⁵⁰

The scheduling procedure would refer also to contingencies such as:

- the possibility of delays on scheduling programme;
- programming constraints due to the need to receive cargos with different gas qualities so as to allow blending in tanks without affecting send out quality requirements;
- the costs and damages for terminal operator due to lack of LNG;
- balancing activities.

2.3.8. Measurement of volumes and gas send-out, stock management and pooling arrangements

The user of capacity at an LNG terminal needs to be confident that the LNG consigned and the gas redelivered to the network is handled in accordance with his requirements downstream. This means that there adequate alignment between the terminal operating procedures and the commercial practices in the market place would be beneficial. In the event that there are scheduling difficulties or LNG shortfalls, the capacity owner must not be required to suffer for the mistakes or misfortunes of another although there could be commercial management systems in place whereby the terminal operator can encourage cooperation and ‘pooling’ between users in order to make best use of the terminal capacity

⁵⁰ In addition, a same definition of “thermal year” could allow the terminal users to maximize the scheduling activity for the LNG quantity to be discharged at LNG terminals.

and to even-out any irregularities in the delivery schedule and send-out profile. Some terminals already do this but for instance at some terminals such as Panigaglia the process of averaging occasionally leads to capacity users not receiving as much gas as they had expected.

Capacity users need to be fully informed on the procedures used to measure the amount of LNG consigned to the terminal and there is scope for harmonisation in this area not only in the units of measurement but also in the techniques deployed. Gas send-out is net of gas used by the terminal operator and there is a variation in the ways in which this is carried out. Whilst some terminal operators have differing operation procedures for gas usage (depending on the type of vaporisation installed) a greater degree of transparency would ensure that capacity users know how much gas to expect to be delivered into the network.

Whilst the arrival of ships and the delivery of LNG to the storage tanks are conducted in accordance with a physical process the send-out of gas needs to be coherent with the commercial requirements of the market. Typical gas contracts in UK and USA are on a monthly basis. If stock levels are rigidly determined in a timeframe that does not reflect the commercial requirement it can create obstacles to multiple users of a terminal: for instance, the Fluxys procedure for a reducing volume of storage over a 5-6 day period effectively precludes the access for ships larger than the 145,000m³ current standard vessel even if the physical volume of storage can accommodate them. In case larger ships are expected in the future storage and send out periods would need to be adjusted.

2.3.9. Quality Issues

2.3.9.1. Interoperability

Quality issues are crucial to access at certain terminals but have necessarily to be addressed at a high level. Generally the quality specification is set by the TSO and is out of the hands of the Terminal Operator. Facilities for blending and adjusting the specification of the regasified gas can go some way to correcting the spec and making the LNG acceptable but in some instances this is not enough and certain sources of LNG are unable to offload.

Quality of LNG is generally set by the producing terminal and in the past where the source of LNG was dedicated to a specific market the spec would be designed accordingly at the producing facility. Nowadays with trading becoming more common practice some projects are installing facilities to adjust the quality to suit different destinations. Quality can also change slightly during the course of a long voyage due to boil-off of the lighter gases and needs to be checked on arrival. The main determinant of quality is the Wobbe Index but in some instances the calorific value is specified instead: both measures indicate the proportion of 'rich' gases with higher molecular weight such as propane to 'lean' gases' notably methane.

The existence of different requirements throughout Europe regarding natural gas quality has led the European Association for the Streamlining of Energy Exchange-gas (EASEE-gas) to approve in February 2005 a Common Business Practice (CBP), which recommends natural gas quality specifications to streamline interoperability at cross border points and at LNG plants in Europe.

The CBP also describes the recommended gas quality parameters, parameter ranges and the implementation plan, directly related to combustion properties –Wobbe index, relative density, oxygen- that will not be reasonably feasible before 1st October 2010. The CBP states that natural gas arriving at cross border points/LNG plants in line with these proposed quality specifications can not be refused for quality reasons.

We understand that a particular challenge is presented by the UK Interconnector and the various transmission systems that connect into it. The quality specification in UK is out of line with most of the EU although fairly similar to East Coast of the United States. This creates problems in providing interconnection to continental Europe and constrains the sources of LNG that can be accepted at UK terminals and at Zeebrugge which connects to UK via the Interconnector. As a general observation the information available on quality requirements was acceptable and relatively easy to find at most terminals.

2.3.9.2. Blending

Our assessment shows that at present there are only blending facilities in the following terminals:

- At Grain LNG, there are blending facilities (a nitrogen ballasting plant) for the injection of nitrogen and/or propane⁵¹ in order to bring gas within the UK gas specifications (Gas Safety Management Regulations of 1996);
- In Panigaglia terminal, there are facilities for the correction of LNG quality by means of addition of air or air and nitrogen;
- In Greece, liquid nitrogen injection is available.

There are no nitrogen blending facilities in the LNG terminals located in Spain, France, and Portugal, while in Zeebrugge terminal blending of gas is being studied to be offered in the coming years.

In Grain LNG, the shipper is responsible for all fixed and variable costs in relation to the provision of power, nitrogen and propane blending services required for the processing of their cargo through the terminal, as set out in the cost allocation principles which form part of the General Terms and Conditions made available to interested parties in the terminal.

In Panigaglia, GNL Italia charges a commodity fee for the correction of LNG quality (0.0913 €/m³ LNG if the Wobbe Index is in a range between 52.13 and 52.75 MJ/Sm³, and 0.1826 €/m³ LNG if the for Wobbe Index is in a range between 52.75 and 53.17 MJ/Sm³).

Finally, in Greece, no specific tariffs for this service have been set.

rTPA systems would ensure that the utilization risk borne by TOs investing in blending facilities is commensurate with the regulated remuneration received to blending activities. We would expect that in setting the rate of return for these activities regulators take into

⁵¹ Depending on the cargo quality, nitrogen and/or propane for blending are not always available in the amounts required at the times they are needed.

account the likely pattern of use of blending facilities and long term contracts that ensure utilization of blending capacity.

Regarding cost allocation, adjustments in the gas quality are not necessary for all gas imported at any given regasification plant but only for a number of origins and fields. As these cases are clearly identified, we understand that the capital and operating costs of building, operating and maintaining LNG quality adjustment equipment must be born only by the users of these services (those importing gas from origins which require gas blending or ballasting).

2.3.10. Overall assessment of operational issues by country/terminal

The table below summarizes the operational issues at each terminal that affect compliance with the reference criteria given above.⁵² In most countries the operational design is a legacy of the way in which the LNG trade has developed and depends on the role that LNG plays in the energy supply to that particular country and in the gas market itself. Nonetheless we believe that there are number of areas where terminal operational practices could be improved to help meet the reference criteria used in this report.

Not all new terminals in development have operational codes defined as yet so our review is necessarily restricted to those terminals which are already in operation. Also the Grain LNG operational details are confidential to the terminal users and this review has considered only information in the public domain. In Greece and Italy some elements of the operational requirements for new terminals or new Codes are already established and we refer to these where appropriate.

Mechanisms in place to ensure utilisation of capacity differ substantially between terminals. Some of the current features respond to previous experience. For example, in Italy in previous years, the main user of the terminal booked all the firm capacity and used only part without trading unused capacity on the secondary market even when in the presence of firm capacity requests. As a result, current access priority applies to TOP contracts signed before 1998 but only relatively to the quantity delivered in previous years. Also, the current world-wide shortage of LNG supplies means that UIOLI capacity is rarely taken up by third parties, so the effectiveness of the various regimes is not easy to test. Some terminals (Grain, Panigaglia, Zeebrugge) had spare capacity this winter despite record gas prices, mainly due to commercial decisions of traders to sell the gas in other markets. The notice period for UIOLI capacity is an important feature as it takes several weeks for a prospective user to organise the cargo and schedule its arrival at the Terminal: 10 days at Grain is about the shortest practical notice period and 2 months as at Zeebrugge is the longest offered although new entrants would prefer even longer.

In those countries where there is not yet a freely traded gas market and/or difficulty in gaining access to downstream gas transmission the barriers to terminal TPA are especially high. The only EU country with a liquid traded market at the moment is UK and LNG is

⁵² See Appendix B for a more detail description of the impact of each variable on each criterion..

regarded as potentially a 'seasonal' source of supply predominantly in winter (but this does not preclude new terminals operating at base load).⁵³

- In Italy access to the transmission system is straight forward and arranged via the TO but lack of market liquidity means that the user has to arrange a bilateral sale of gas upfront or take the gas for its own use.
- In France and Belgium the LNG terminals are used as base load facility with LNG supplies on long term contracts and hence most capacity tends to be booked at the terminal and in the transport network downstream of the terminal. May prospective terminal users consider that they have been generally obliged to sell LNG ex-ship at the terminal to the incumbent.
- In Spain there is capacity competition between terminals but there is insufficient capacity in the downstream transmission system to cope with all terminals operating at full send-out (partly because the system is planned according to an "n-1" criterion). In Spain LNG has been used to fuel the growth in gas usage especially in the power generation sector. The gas market is not yet traded on an exchange and hence prospective terminal users have to arrange a bilateral sale upfront or (more commonly) sell ex-ship at the terminal but there is a range of potential gas purchasers. Experience during last winter's gas shortage revealed that these obstacles did not only prevent competition within the gas market in question but also hampered security of supply (some users affirmed that LNG could not be landed in France or Belgium to bring to Italy).

As a general observation for all the terminals studied, the send-out requirements tend to be governed by the physical characteristics of the terminal operations rather than the commercial requirements of the gas market. Send-out periods of 5 to 10 days are observed (Panigaglia sends out over 1 month but the rate of send-out is unpredictable while in France send out is guaranteed in 1 month) whereas the standard contract length in traded gas markets is one month. In markets where LNG is providing a base load supply the continuous draw-down and refilling of the storage tanks is coherent with the continuous send out of gas. When a spot cargo is delivered, however, finding market for such a large amount of gas over a 5 or 6 day period is challenging (unless it is sold ex-ship to the incumbent). In Spain, shortage of downstream gas storage has led TOs to impose rules which require rapid draw-down of LNG storage in an attempt to enhance security of supply. In the longer term we would expect that there is convergence between the operational performance of LNG terminals and the commercial performance of gas markets.

Quality specifications appear to present a severe restriction on inter-operability of LNG terminals and gas transmission systems in some countries. The main problems arise in the UK where gas spec is low Wobbe Number and in Belgium where gas has to be able to enter the Interconnector to UK. In continental Europe there is a gas specification widely used that generally allows interoperability.

⁵³ There is ready Entry Capacity to the NTS at Grain: in April 2006 Gazprom successfully landed a 'spot' cargo at Grain, as part of a deal between Gazprom Marketing & Trading and BP. The cargo, which origin was offshore Egypt, was purchased by Gazprom from Gaz de France and sold to British Petroleum. The LNG supply volume was 140,000 m³ (some 85 million cubic meters of natural gas)..

The existence of public standard contracts and operational requirements are helpful in encouraging competition between terminals and in Spain and in France the terminals have the same tariffs and rules. The basic operating principles are public in Belgium, France, Italy and Spain (and in future Greece). In the UK, however, the information is confidential but each terminal will have its own operational code. New terminals in Italy will also have their own operational code. Even some consistency in measurement is desirable – LNG is measured in m³, KWh and GJ at various destinations. It would seem advisable to standardise one unit for volumes and one for energy in all plants.

Ship access is often a function of the history of the terminals – older facilities were constructed to accept small ships whereas the super-sized vessels currently in construction will not be able to berth even at some of the newer terminals. This is a physical, practical restriction that is difficult to overcome at Panigaglia and Fos. Older terminals in Spain have been upgraded to accept modern standard sized vessels. Ship vetting is an issue that affects all terminals though and the procedure tends to be carried out on a ‘best efforts’ basis – Grain aims to be able to assess the suitability of a ship in about 4 days but other terminals do not give standards of service. This is probably a short term problem however: as trading activity develops however it is probable that an increasing proportion of the LNG fleet will be vetted for the likely terminals in advance of requiring access.

Financial guarantees and commitments required by TOs vary by country: Spain requires the User to pay bails against future capacity usage and Grain requires a spot user to pay the entire terminal fee upfront. Other countries (Belgium, France) require financial/bank guarantees to be in place 30 days in advance. Given the high costs involved with the operations and the opportunity-cost if the user does not perform these requirements do not seem unduly onerous.

Table 10
Main operational obstacles to meet reference criteria

	Belgium (Zeebrugge)	Italy (Panigaglia)	France (Montoir, Fos Tonkin)	Greece (Revithoussa)	Spain	UK (Grain 1)
Competition in capacity	- Quality restrictions due to Interconnector to UK	- Ship sizes restricted to 70,000 m3	- Ship sizes restriction at Fos - Standard contract & operations code		- Standard contract & network code	- Quality restrictions due to UK low spec - Open access to transmission
Competition in gas	- Downstream transmission system capacity constraints & poor access - Sendout period 10 days from April 2007	- No market to trade gas	- Direct access to PEG (virtual balancing point)	- No market to trade gas	- Downstream transmission system capacity constraints - Lack of underground storage	- Hub trading at NBP - Sendout period 6 days
Capacity allocation		- Priority for legacy contracts	- Priority for legacy contracts	- Capacity calculated on vaporisation not storage or berthing		- Capacity notice period only 10 days
Use maximisation	- Downstream transmission system capacity constraints & poor access	- UIOLI rules based on historical usage	- Reported limited transmission system capacity	- TO can lend / borrow LNG in tanks between users if out of balance		- Secondary capacity mechanism
Contribution to security of supply	- Quality restrictions due to Interconnector to UK - Downstream access constrained		- Downstream access constrained	- designed for base load & security of supply	- shortage of downstream storage requires LNG storage to be used as quickly as practicable	- Secondary capacity mechanism
Provision of flexibility	- Rigid send-out and storage drawdown rules	- Send out & balancing regime unpredictable	Send out in 1 month for spot cargoes	- designed for base load & security of supply	- Operational storage included in LNG tariff	
Non-discrimination and transparency in access	- Downstream transmission system capacity constraints & unclear quality requirements		- Ship vetting procedures need a standard of service			

3. Recommendations to improve existing measures

From the analysis developed above of regulatory variables affecting third party use of LNG facilities, our assessment of current arrangements in the countries covered in this study highlights a number of areas for improvement, with the aim of:

- ensuring non-discriminatory and transparent access rules so that regulatory variables encourage as much as possible new marketers to use LNG facilities.
- improving the allocation of costs and risks between investors, users of the facility and end-users to ensure adequate incentives for investment in LNG facilities and for efficient use of the facility.

The recommendations below could be applied, in our view, both to rTPA and to exempted terminals. The only exception would be given by those recommendations explicitly addressed at rTPA variables. However, to the extent that capacity at exempted terminals can be traded with third parties, we would expect that regulatory approaches and operational procedures do not, in general, differ as a function of exemptions.

In case there are some own-used terminals for which back to back agreements with producers call for specific operational rules that differ from the general principles applied to other terminals in Europe, we would expect that requirements of specific rules are included in the application for exemption. In this way, consistently with article 22 of the Directive, regulatory authorities would have the chance to assess, on a case by case basis, whether the proposed rules can affect compliance with the five criteria for exemptions established.

3.1. Recommendations on transparency

Our assessment of the level of transparency suggests that common standards on transparency and minimum requirements on the type of information published by TOs could be established on the basis of the transparency requirements established in the Directive and in Regulation 1775/2005 on third party access to natural gas transport networks. The reason is that the information needs for marketers to compete in gas markets using LNG are parallel to those applicable to pipeline sources of gas. Taking into account the specific features of LNG, the following measures may help making more transparent the access to LNG terminals.

1. **Standardise information on service conditions.** All LNG terminal operators could make an effort to streamline and standardise their websites at least to ensure a minimum level of information on services provided, conditions applied, and fees charged.
2. **Improve information on flexibility services and possibilities of flexible use of the terminal.** Further efforts are required for some operators with regard to the information provided on flexibility services, types of contracts and description of infrastructures.
3. **Issue approval of relevant legislation.** It is advisable that LNG network codes or standard contracts are approved as soon as possible.
4. **Make operational information available in English.** It is recommended that LNG terminal operators publish the terms and conditions of all services, LNG operation codes and access contracts in English. In addition, LNG terminal operators and national

Authorities may cooperate to provide an English version of existing national gas regulation in their web sites.

5. **Publish details of tariff derivation.** In rTPA systems, further efforts are required with regard to the information provided on RAB and RoR definition, functional allocation and capacity/commodity allocation principles and tariff derivation. For exempted terminals under a nTPA approach, it would be advisable that active policies to ensure non discrimination are established.
6. **Publish tariff review methodology.** For rTPA systems, it is advisable that all national Authorities oblige themselves to ensure a minimum level of information provided on the methodology followed and the results obtained when calculating or reviewing the tariff framework for the different services.
7. **Make relevant regulatory and legal information available in English.** Considerable additional effort is required with respect to the amount on information on regulatory arrangements published in English.
8. **Standardise information on available capacities.** All operators could make an effort to guarantee that for the services provided, a minimum level of information on physical and available capacities is published on the Internet on a regular/rolling basis and in a user-friendly manner. This is especially important with respect to short-term unused capacity.
9. **Provide information on real flows.** It is advisable that TOs provide information on average monthly flows and keep a log of daily flows. The frequency and readiness with which flow information is presented would be consistent with the need to keep confidentiality of commercially sensitive information.⁵⁴

3.2. Recommendations on regulatory arrangements

As it was observed in the section on transparency the most significant feature in most countries with rTPA systems is the low number of users of LNG terminals (the exception is Spain) and the relatively small number of suppliers that actually deliver LNG to each terminal. The development of gas competition in Europe requires that LNG is accessed by a greater number of players.

Each terminal or country shows many specific features that respond to the specific state of development of the gas market in that particular country and the role played by LNG in the gas market itself. However, we believe that a number of improvements in regulatory features could go in the direction of facilitating use of LNG terminals by third parties.

3.2.1. Recommendations on access

10. **Promote certainty and stability.** Stable frameworks for rTPA are key for investment promotion. Tariff methodologies and derivation could be published. Similarly, plants exempted from rTPA can provide, in the respect of confidentiality, aggregate information on cost of use of plants. In case the number of users is so small that it cannot be revealed without conflicting confidentiality, information could be passed on to regulatory

⁵⁴ As a general rule, at least three sufficiently symmetric users are required to ensure that confidentiality is not at risk.

authorities that could aggregate information from multiple plants (with a minimum of three users).

11. **Promote long term access.** Competition in gas markets requires that LNG traders obtain long term access to plants, since entry in gas markets through systematic use of spot or short term capacity can hardly support credible long term strategies. It appears advisable that regulatory arrangements ensure that long-term capacity rights are well defined so as to allow long terms contracts for capacity and to promote the development of secondary trading. To avoid negative impacts on long term capacity, any limitations to long term contracts subscriptions would require an explicit justification to be explained and such limitation would be limited to the persistence of specific market circumstances, such as lack of actively traded secondary markets for gas and capacity or no possibility for new investments.
12. **For the time being, design regulatory systems on a case-by-case basis.** Regulatory arrangements that promote entry of new marketers need to take into account the market context where plants operate. Gas markets are being developed in all countries but with different speeds and starting points. Promotion of competition at a national level requires that regulatory rules are designed to overcome specific features of national gas markets and adapt to the role that in the short term LNG plays in the context of the overall national energy market.
13. **Apply rTPA to plants owned by TSO (or by affiliates for which there is no effective functional and managerial separation) and consider exemptions only when open non discriminatory capacity offerings are made under conditions previously approved by regulator.** In principle, effective functional separation of TSO activities from trading activities implies that TSOs would not be engaged in other businesses that might require capacity devoted for own-use. Exemptions from rTPA, though evaluated on a case by case basis, would ensure an initial capacity offering conducted on non discriminatory grounds that serve to identify market demand for LNG capacity.
14. **Implement effective separation between TSOs and TOs where there are multiple owners of entry capacity infrastructure.** We would expect that decisions on exemptions of LNG terminals promoted by TSOs take into account assurances that the TSO would not discriminate against other infrastructures to the benefit of its own plant. Competition in capacity is not limited to LNG terminals, but it also includes pipelines entry points to gas systems. As a result, an important condition for this competition to develop on non-discriminatory grounds is effective separation of TSO and terminal operator functions, especially if TSOs have a significant role in facility planning procedures.
15. **Implement internal codes of conduct.** Non-discrimination in the capacity allocation and management of the terminal would be favoured by effective separation of terminal operators and terminal users and/or by safeguards that ensure equal treatment with other plant users.
16. **Implement initial capacity offering to reveal adequate sizing of facilities but leave decisions on incremental capacity above own-use on developer.** Exemptions to TPA according to article 22 of the Directive that are made conditional on an initial capacity offering will allow an assessment of the appropriate sizing of the facility to understand the potential for LNG use in the market. Open-season type of requirements provides a transparent tool to check whether the level of interest in LNG capacity is enough to attract

investor's attention and assess market demand. When assessing the application of exemption criteria, this might provide comfort to the lack of a dominant position in entry capacity markets, at present or in the future, avoiding the risk of rent extraction in the future.⁵⁵ However, it should be noted that if the construction of an LNG plant is supported by back-to-back agreements upstream and mainly aimed at being used by the owners of the plant, the requirement of making capacity available to third parties might hinder the profitability of the project as initially conceived. Therefore, if a market is sufficiently competitive and entry is feasible for other players (even with LNG), we do not envisage such a requirement as investment-enhancing. Specifically the request for open season may actually deter investment in own-use plants.

17. **Exemptions conditional on anti-hoarding measures require clear definition of measures and its application in ways that are not detrimental to the right of primary capacity holders.** The definition of the conditions required for exemptions should not be detrimental to the investment, since the exemption decision main purpose is to ensure that capacity will be built. Conditions whose practical application may reduce significantly the ability of primary capacity holders to place unused capacity in the market and to keep the option value associated with it might, however, deter investment.

3.2.2. Recommendations on tariff regimes

18. **Cost reflective tariff structures per terminal.** Tariff structures that promote use of LNG would be such as to be designed according to the following principles: 1) reflect prudently incurred costs; 2) apply to individual plants if plants assets are managed independently from each other; 3) promote efficient use of the plants.

Cost reflective tariffs promote investment and efficient economic decisions by marketers. However, we note that currently both in Spain and France, LNG tariffs are common to all terminals. Unique national tariffs act against efficiency since those plants more efficient do not signal their lower costs and are relatively underutilised with respect to the social optimum. Only in case some assets are managed jointly by several TOs, the setting of individual signals for use of each plant may not be adequate.⁵⁶

19. **Design charges adapted to the usage patterns of LNG in each market.** Cost reflective tariffs require specific charges for each function that differentiate uses of the plant, including: 1) unloading operations; 2) non operational use of tank capacity; 3) vaporisation. The charging structure would be tailored to include billing determinants that are consistent with the patterns of likely use of the plant.

⁵⁵ GLNG's decision to hold an initial and second open season, as well as its decision to develop a website that is designed to facilitate secondary trading and sub-letting by the primary capacity owners was an important part of Ofgem's assessment of this exemption application.

⁵⁶ One example would be the case of pooling storage tank capacity in different plants, either because they belong to one operator or because they are part of one system which is operated as an integrated system. In these cases, the tank and regasification capacity would be managed jointly, by pooling the LNG belonging to users. As a result, users would be indifferent to the specific plant where its LNG is physically located since regasification patterns would set to meet the system's overall vaporization requirements. Users would not be able to react to specific price signals referring to different plant storage capacity since they would not be able to affect the operation of LNG plants, and therefore users would not be able to react to separate charges per plant and separating tariffs might not lead to efficient use of plant.

The adequate use of LNG terminals tariffs depend on the role played by LNG in each gas market and functional allocation of costs and billing determinants would reflect this fact. For example, where plants are designed to operate base load, tariff structure could reflect as billing determinants variables that reflect the regularity of discharges. On the other hand, plants that require long docking/undocking periods would tend to reflect lower costs for larger vessels. At present, these features depend on each plant and on the role played by LNG in each market and tailoring tariff design to such circumstances would promote cost reflective tariffs.

20. **Set tariffs for flexible plant services.** The definition of tariffs that allow a flexible use of plants adapted to the marketing needs of each user in the downstream gas market would promote marketers to use LNG facilities. Where active secondary trading of capacity has not developed and the market is not sufficiently competitive, tariffs for spot or short term services would help signal the marginal cost of short term access.

Applicable tariffs tend to be designed for a bundled combination of docking, storage and send-out services which are usually optimum from a system perspective. Although this system encourages an optimum plant management and stable send-out rates, therefore promoting security of supply, it also limits the flexibility to use each plant and, particularly, players with longer storage needs due to slower send-out rates may actually be penalised, to the detriment of gas competition. In this context secondary trading of capacity and flexible services such as spot, LNG lending or virtual storage might help new entrants. The variety of services offered for which there is public information appears quite limited in most cases, although tariffs for short term services exist in Italy and France and we understand that in Belgium some additional flexibility service is offered.

21. **Design efficient tariffs.** Tariffs designed to reflect capacity costs in capacity charges promote efficient use of capacity and construction of adequate capacity levels.

In most cases, where there is reported information, tariffs appear to load some fixed costs in variable terms. This pricing is inefficient but tends to reduce the volume risk for users by making a higher portion of usage costs avoidable. Given the lack of users accessing terminals, probably this pricing method is not a practical instrument to promote use of LNG. A more practical (but clearly more inefficient in the long run) method is applied in Greece by temporarily socialising most LNG costs with users of the transmission system. These pricing distortions to efficient pricing rules, if permanently applied, may end up severely distorting economic signals for use of capacity.

22. **Where possible, consider security of supply benefits of LNG.** In order to set efficient tariffs that promote use of LNG, the diversification and network security benefits of LNG would need to be quantified so as to avoid that costs related to improved security are borne by LNG terminal users only.

Despite most regulatory approaches appear to give great priority to LNG, partly due to improved security of supply, we have not observed any case where the system-wide benefits of LNG are explicitly taken into account in tariff design. Socialisation of LNG costs would be justified, on efficiency grounds, only for those costs that system users avoid when accessing the transmission grid.

23. **Transparency in cost allocation.** Tariffs that are perceived as transparent and non-discriminatory and that facilitate use of terminals would best be promoted if TOs and national regulatory authorities publish sufficiently detailed information on: 1) tariff methodology and derivation; 2) cost allocation to different functions and services; 3) billing determinants and tariff design.

As illustrated in the section on transparency, it is remarkable that the methodologies for tariff derivation are, in most cases, not publicly available. On the other hand, there is little information publicly on the structure of the pricing for exempted capacity and no information on its level. This is particularly relevant in the case of partially exempted terminals to ensure non-discrimination between users of exempted capacity and TPA users.

24. **Promote regulatory stability.** The promotion of an appropriate investment climate for LNG terminals would be favoured by tariff regime that contain: 1) clear explanations regarding the objectives and priorities underlying tariff policy; 2) clear indications regarding the publication of tariffs and determination of TO revenues and the methodology for their calculation, including any expected change in such a methodology as the market evolves.

25. **Base revenue regulation on recognition of prudently incurred costs.** Tariff regimes can promote an adequate allocation of risks from investment in LNG terminals by: 1) using prudence as the standard for costs recognition; 2) allowing TOs to share the risks of underutilisation of plants; 3) increasing predictability and transparency in revenue setting methodology.

Revenue regulation based on prudently incurred costs and providing incentives for efficient management of plants is consistent with an adequate investment climate while ensuring an efficient cost structure. A predictable system for revenue determination would allow plant developers to evaluate the risks of rTPA and help them assess the potential need for exemption from TPA. In order to reduce uncertainty on revenues from capacity sales, TOs can request contractual commitments from users through an initial offering of capacity conducted, for example through an “open-season” type of procedure. This procedure could be based, where possible, on market-valuations for capacity such as auctions that, if the market for capacity is sufficiently competitive, would reflect the efficient level of capacity. Where capacity markets are not competitive or limited information on market developments might underpin users’ ability to express a proper valuation for long term capacity, regulated tariffs can be used to set the price for capacity (or regulated reserve prices for auction-based capacity allocation mechanisms).

3.2.3. Recommendations on capacity allocation

26. **Establish transparent capacity allocation mechanisms.** In order to promote the development of competition, TOs would publish and implement capacity allocation procedures that: 1) promote the use of long term capacity; and 2) provide economic signals for efficient use of capacity. The duration of long term contracts would be limited only by the ability of the parties to contract in the regulatory regime applicable in each case. In the absence of excess capacity and to ensure adequate levels of capacity, capacity allocation procedures based on prior market assessments through open season mechanisms provide a more transparent level playing field. Unsubscribed capacity could subsequently be offered according to FCFS basis.

27. **Allow capacity allocation mechanisms consistent with own-use.** In order to promote investments in plants, capacity allocation mechanisms would allow all potential users to request capacity, including those developers that want to reserve capacity for their own use. This principle would apply without prejudice to the right of developers to ask for exemptions from TPA. This requirement should not go against the need for transparency and non-discrimination. For example, to ensure that this requirement is met, the commencement of the subscription period for capacity to be allocated according to FCFS principle need to be published sufficiently in advance (where applicable).
28. **Establish transparent congestion management procedures.** To favour transparency in the management of capacity, TOs would publish and regulatory authorities approve, congestion management procedures based, as much as possible, on the following principles: 1) minimum cost of solving the congestion; 2) based on market mechanisms.
29. **Promote actively secondary trading of capacity.** Promotion of efficiency and security of supply would be best achieved if all TOs establish detailed rules for secondary trading of capacity and property rights for long term contracts are well defined. It is advisable that TOs develop standardised procedures for trading and electronic platforms for anonymous trading (such as bulletin boards). Secondary trading can also be supported by ship or pay costs on capacity tariffs.
30. **Rules regarding secondary trading aimed at increasing flexibility and maximising throughput.** It is advisable that trading of complete slots (where defined) have priority but trading of unbundled components would also favour flexibility and would need to be allowed with sufficient prior notice for shippers to make use of capacity.
31. **Promotion of “virtual storage” services.** In addition to secondary capacity market, wholesale gas trading with sale/purchases of LNG in the transport system via virtual services can encourage the emergence of new marketers in downstream markets.
32. **Anti-hoarding measures are aimed at ensuring an ongoing efficient process of capacity reallocation through effective secondary trading of capacity.** However, if UIOLI arrangements impact substantially on the rights of primary capacity holders with long term arrangements for LNG supply along the value chain, the process for primary capacity allocation could be distorted, since agents will be wary to reserve long term.

In other sections we discuss operational arrangements in more detail but we believe that investment-enhancing exemption conditions would need to strike a balance between the need to promote gas competition (by releasing unused capacity in time for ships to reach the market) and to promote maximum capacity utilisation (by giving a notice period that protects primary capacity holders from utilisation risk from changing supply-demand conditions). Allowing users to sell unused capacity would provide incentives to primary capacity holders to release capacity in time to realise its value and therefore in time for shipping to be arranged. An advance notice period of 30 days would promote effective use of released secondary capacity.

33. **Implement mechanisms to monitor use of capacity as anti-hoarding discipline.** In addition, we believe that mechanisms to monitor the use of capacity can act as adequate safeguards against capacity hoarding by pointing out at possible anomalies that national regulators could use as a first element for further investigations and, in case such investigations do not explain observed behaviour, refer the case to competition policy

authorities. To improve transparency it would be advisable that indicators of capacity use are published, in the respect of confidentiality of commercially sensitive information.

3.3. Operational recommendations

3.3.1. General conditions

3.3.1.1. Calculation of available capacity

34. **Apply a homogeneous and transparent capacity calculation definition.** In our view, transparency and competition would be promoted if LNG operators apply as much as possible (i.e. taking into account balancing requirements of the transport system) a homogeneous and transparent criterion for calculating the available capacity in their LNG facilities, providing separately the capacities of the receiving terminal, the regasification plant and LNG storage tanks. It is recommended that the following elements are included in capacity definition:

- Reception capacity on the basis of frequency to receive carriers and vessel size.
- Effective storage capacity as total volume minus heel volume minus dead volume. This amount would be then divided between effective usable storage capacity for users and effective storage capacity required by TO for operational purposes
- Effective regasification capacity, measured as the total capacity for vaporization according to the technical characteristics of the plant minus the capacity required by the TO for operational purposes.
- Methodology for calculating the maximum number of slots of the terminal, based on average expected vessel size and maximum unloading time.

3.3.1.2. Monitoring programme

35. **Ensure the implementation of active programmes for monitoring non-discrimination.** It is advisable that the arrangements to implement the requirements included in Article 10 of the Gas Directive include a monitoring programme, both for staff and towards facility users, supervised by a Compliance Officer. This programme would provide additional guarantees in terms of ensuring transparency and non-discrimination access to LNG facilities.

36. **Establish common principles and rules for implementation of monitoring programmes.** A uniform and agreed monitoring programme implemented by the different LNG operators could have a positive impact in the development of existing competition. To this respect, Fluxys' existing monitoring programme can be considered as a good starting point. However, we believe that the programme could be reinforced by certain aspects such as:

- Ensure organizational independence of the compliance officer with respect to functions other than TO.
- Establish procedures to follow in case infringement of the compliance monitoring programme, whether intentional or unintentional, is detected (including notifications and possible indemnities to interested parties)

- Include an obligation to report to regulatory authorities any incident observed during the application of the compliance programme that might have affected equal treatment of users

3.3.2. Maximisation of use of capacity and efficient use

3.3.2.1. Capacity allocation mechanisms and secondary trading

Recommendations on capacity allocation and secondary trading were included in the regulatory section. From an operational perspective it is worth noting that secondary capacity mechanisms such as Fluxys' Automatic Reservation System and LNG Grain Agency bulletin board are very recent. Therefore there is not much experience in the practical testing of these systems. The main recommendations in this area would be:

37. **LNG system operators implement and publish non-discriminatory and transparent capacity allocation mechanisms.** We recommend that the mechanisms are designed to comply with the following requirements:
 - facilitate the development of capacity by means of a prior market assessment of potential demand;
 - refer to appropriately defined bundled services to maximize the utilisation of the LNG terminal;
 - provide appropriate economic signals for efficient and maximum use of technical capacity (see recommendations on tariff regimes);
 - avoid creating barriers to entry.
38. **Implement user friendly system for capacity allocation that promotes use of facilities.** Specific features of such a system would include the following:
 - an automatic booking system for capacity
 - a mechanism that allows the terminal user to check the availability of capacity and to book it easily, rapidly and on a daily basis by electronic means
39. **Allow and facilitate TPA capacity rights (both for bundled and unbundled services) to be freely tradable between shippers.**
40. **Develop standardised contracts and procedures on the primary market.** Standardised procedures would help facilitate secondary trade of capacity and recognise the transfer of primary capacity rights where notified by network users.
41. **Allow optimal use of aggregate capacity.** TOs would promote competition and remove obstacles to efficient utilisation of capacity if capacity acquired in secondary markets has no operational differences with respect to primary capacity. Purchases of secondary capacity would be aggregated with the shipper's existing capacity for operational purposes.
42. **Provide services to facilitate secondary capacity trading** (such as an electronic platform or bulletin board), priced at cost.

43. **Promote virtual storage services.** Virtual storage services can imply an efficient means of accessing gas markets for third parties by allowing third parties to deliver LNG at the plant and take gas at a virtual trading location.

3.3.2.2. Congestion management

44. **Provide information to users on potential risks of congestion at the terminal or interruption of service.** It is recommended that LNG terminal users are advised about the type of circumstances that could affect the availability of contracted capacity, such information being indicative.
45. **Publish and implement non-discriminatory, transparent and market-based congestion management procedures.** These procedures would need to take into account any regulatory rule on capacity allocation and use (such as pre-specified proportions of long-term and short term contracts) with the aim of promoting effective competition.
46. **Ensure revenue neutrality of TO.** Revenues from congestion management systems could create incentives to reduce congestion, provided there is a properly functioning market mechanism in place.
47. **Pro-rata mechanisms may be considered if they ensure equivalence in terms of non-discriminatory and competitive access.** Priority capacity allocation rules on the basis of the vintage and duration of LNG supply contracts used for primary capacity allocation would be applied in such a way as to not preventing the working of market based congestion management procedures.

3.3.2.3. Interactions between LNG terminals and transmission systems

In order to promote the entrance of new players, it is advisable that LNG TOs and TSOs cooperate in order to ensure interoperability between both systems. Specific recommendations with respect to the operational features of this cooperation are the following:

48. **Ensure consistency in operational parameters of LNG and TSO services.** These services would include consistent definitions of duration of access contracts, quality requirements, tolerance values and definition of “thermal year”. A common effort of harmonisation in all plant of the same system would promote entry in the downstream gas market and competition.
49. **Render operational procedures compatible with those of the adjacent TSOs.** The timing of the procedures for capacity subscription in the LNG terminal and in the transmission system need to be compatible so as to ensure that access to timely access to LNG terminals is not limited by a lengthy access request process in transport networks. Shippers willing to make use of released slots at short notice would need to be able to obtain rapid responses from downstream access to transport pipelines.
50. **Facilitate one-stop shop for access request and confirmation.** In order to avoid duplicating the procedures required to access the gas system TOs could offer the possibility of complying with the TSO formalities on behalf of the terminal user (*one-stop shop*).

3.3.3. Operational procedures

3.3.3.1. Ship approval, scheduling and nominations

In our view, the following measures are required to guarantee a non-discriminatory ship approval procedure to access LNG terminals:

51. **Publish a standard of service including a detailed description of the ship approval procedures and conditions for docking.** This code of conduct would establish a contractually binding notice period for each of the steps required to access to the terminal. In addition, the code of conduct would include the possible indemnities to the interested parties in case of breach of these notice periods.
52. **Establish approval procedures on the basis of professional societies recommendations.** For example, recommendation provided by organizations such as OCIMG (Oil Company International Marine Forum), SIGTTO (Society of International Gas Tankers and Terminal Operators) or GIIGNL (Groupe International des Importateurs de Gaz Natural Liquefi ) can be taken into account to ensure harmonized procedures.
53. **Allow national regulatory authorities to periodically review that the timing to obtain ship approval is providing a non-discriminatory access to the facilities.** Given the relevance that the timing for ship approval has on access, it is advisable that regulatory authorities have an oversight role in the monitoring of the impact of procedures on approval lead times.
54. **Publish specific constraints affecting scheduling programs.** Transparency in access and LNG trading would be promoted if TOs provide details of the programming constraints that may arise from specific events, such as delays in cargoes or the effects of lower send out rates and inability to unload ships as a result.

3.3.3.2. Operational tools increasing flexibility

In our view, the following operational aspects could be addressed at LNG terminals to promote flexibility:

55. **Implement standard procedures for computing LNG volumes consigned at the terminal and gas redelivered to the network.** Harmonization of procedures to compute losses or to compute balances of using the terminal would provide more transparency and would be necessary for terminals integrated in the same system.
56. **Facilitate commercial systems for sharing and swapping LNG in the storage tank in a cooperative manner between capacity holders.** Commercial balancing of LNG in terminals needs not be made according to physical criteria. In essence, the LNG once in the tanks is indistinguishable and users may find sharing and swapping LNG as an optimal tool to manage flexibility and to adjust send out rates in a manner that promotes secure operation of the terminal, with minimum impacts on shipping schedules. Swaps refer to exchanges of LNG in the tank at different points in time and could also refer to pooled LNG stored quantities in tanks of different terminals operated in an integrated system (with or without a monetary compensation between the parties).
57. **Align as much as possible gas send out rates with commercial practice in the downstream market which is typically 30 days.** In this way commercial use of LNG

would be better achieved, particularly for new entrants with non diversified portfolios of end user customers. Consistently with this rule, where delivery schedules for cargoes are at less than 30 day intervals the terminal operator could provide for gas send-out simultaneously for multiple users.

3.3.3.3. Quality issues

At present we consider that the following measures are advisable in order to promote transparency and improve the interoperability of LNG terminals:

58. **Publish detailed information on gas quality requirements.** It is advisable that TOs publish very detailed information in their web sites on their own gas quality requirements but also on quality requirements at other LNG regasification plants and existing cross border points in the country (in particular, potential users would be warned of existing differences between the quality requirements of the plant and other facilities in the country).
59. **Provide information on blending facilities.** LNG terminal operators must provide information on existing blending / ballasting facilities in the regasification plant, and in particular on the conditions applied and fees charged for the services provided.
60. **Comply as soon as possible with EASEE-gas CBP.** LNG system operators should do its best efforts to comply with EASEE-gas recommendations with regard to harmonisation of gas qualities as soon as possible.
61. **Allocate blending and nitrogen ballasting costs to users of the facilities.** Given that adjustments for gas quality are necessary only for certain specific gas origins and fields, the capital and operating costs of building, operating and maintaining LNG quality adjustment equipment must be born only by the users of these services.

4. Need for harmonisation

Our assessment of current arrangements highlights that the current use of LNG in many countries is limited in terms of the number of players that have effective access to LNG terminals. Any harmonisation effort would, therefore, be aimed at promoting use of LNG and TPA to terminals, both under rTPA and exempted regimes.

In order to promote entry of new players, our findings stress the need for access to long term capacity, which, in many cases, requires an adequate investment climate for capacity to develop. Two different frameworks appear to emerge in Europe regarding access to LNG terminals, as established in the Directive. On the one hand rTPA appears to be successful in attracting new investments in countries such as Spain, Belgium or France. On the other, capacity exempted from rTPA is (with the exception of Grain LNG) mostly devoted to own use (this is the case of other exempted terminals in the UK and in Italy).

While assuring new players the right to build LNG regasification capacity for own use, the emergence of new players in Europe would benefit from allowing TPA to regasification terminals. The integration of the European gas market would benefit, in our view, from equal opportunities to access LNG terminal for gas traders and marketers in all countries.

4.1. Guidelines of good practice

In order to promote competition and flexibility in the use of LNG plants we would expect that as the different gas markets open and become more liquid, operational and regulatory rules would tend to converge. A first progress towards establishing common guidelines in key areas would help reduce uncertainty about future evolution of regulatory arrangements and would allow a level playing field for capacity trading and investment.

Common guidelines to promote the key reference variables employed in this report (promotion of competition, efficient use of infrastructures, provision of security of supply and flexibility, non-discrimination and promotion of investments) could be set on the basis of the recommendations made in the previous section of this report. Common guidelines would apply to all terminals, whether they are exempted from TPA or not.

4.2. Regulatory practice

The considerations above suggest that, in addition to the drafting of common guidelines for access to LNG terminals, a certain degree of harmonisation would be advisable and could be reached among regulators in a number of key areas for investment and access such as:

1. **Harmonization of the principles to implement the exemption criteria.** In the context of a future European gas market where competition for capacity occurs not only at a national level but across countries, a harmonised approach requires to take into account the impact on the national market and also on the European market. Harmonisation would be advisable mainly in the interpretation and measurement of the impact assessment on competition of a given project so that investors can reasonably predict the effect of the conditions on the value of projected primary capacity. In this way the regulatory regime would provide a level playing field for investors and help promote efficient investment decision in terms both of unit cost and location, promoting market integration.

2. **Harmonisation of the separation requirements between TOs and TSOs.** To protect equal opportunities in the development of LNG terminals and TPA, an effort towards greater harmonisation of principles for effective separation of TSO and TO function would be advisable. The relevance of this separation will become increasingly clear as the number of LNG TOs increase and interact with TSOs.
3. **Requirement of internal codes of conduct between TO and terminal users.** The promotion of different models for access to terminal capacity needs to be made consistent with assurance of effective TPA to non-exempted primary capacity and to secondary capacity. It seems advisable that all TOs that give access to third parties to primary or secondary capacity implement monitoring programmes and internal rules according to common principles and that the basic requirements of such programmes are harmonised..

A unique regulation regarding tariffs and revenue setting for LNG operators does not seem appropriate or necessary at this stage. However the establishment of common principles for stability and predictability of the regulatory framework would help signal a more transparent and stable regime for LNG users. In this context, overall common principles for tariff design and recovery of prudently incurred investment could be established.

4.3. Operational rules

Our assessment has documented the variety of operational procedures that exist at the moment, but it has also pointed at the need to harmonise certain operational aspects to facilitate trading and cargo diversion. Specifically, harmonisation of ship vetting procedures and natural gas quality is a priority to foster LNG trading across terminals.

1. **Common standards for shipping specs and ship vetting procedures.** A standard of service for ship vetting would help remove obstacles to shipping and increase transparency, by allowing vessels to be registered at those terminals that are physically capable of accepting them. Physical restriction for accepting ships are likely to persist but further efforts are required in terms of harmonization of existing operative rules at LNG terminals in order to improve effective interoperability between different European LNG terminals. Common criteria to serve as reference for standards of service to ship approval procedures could also be specified in the Guidelines of Good Practice.
2. **Harmonisation of acceptable gas quality.** A common effort of harmonization in terms of gas quality requirements (including the set of parameters used for defining the gas specifications; values for common parameters and competences for setting quality requirements) could be done by LNG system operators to avoid restrict trading of LNG among different plants in Europe. Gas quality is one of the main current obstacles to interoperability in some markets such as Belgium and UK. A unique range of acceptable gas quality parameters would promote interoperability and cargo diversion. In determining this range attention should be paid to promote diversification of energy sources and liquidity in international LNG trade by not restricting access to high calorific gas.
3. **Harmonisation of nomination procedures, scheduling rules and balancing in terminals that are part of the same market or that are operated in a coordinated manner.** Certain terminals are not operated in isolation but in coordination with other

infrastructures including other LNG terminals. This trend is likely to increase in the future. As a result, coordination of scheduling and nomination procedures would help increase the flexibility of using different plants and provide both flexibility to traders and security of supply.

4. **Design of a homogeneous compliance program for existing LNG system operators to ensure non-discrimination in the operation of terminals.** The application of this program to all TOs that have affiliated trading companies would ensure a level playing field for access to terminals in all the European Union.

Current arrangements show different regulatory and operational features, partly in response to the evolution of each gas market, and partly due to the role played by LNG in each gas market. A unique regulation of terminal operations at the moment could provide advantages in terms of aspects such as:

- The standardisation of services provided by terminals
- The promotion of virtual storage services
- Standardisation of notice period for slots released in the short term
- The convergence towards a greater alignment of send out rate to the requirements of commercial market arrangements

However, the practical use of specific instruments may be limited at the moment by current market structures and liquidity of gas markets. Table 10 below highlights the different role played currently by LNG in each country and the likely role that, in our view, LNG will play in the future and identifies specific features of different national systems that might be difficult to harmonise in the short term. The four abovementioned aspects appear difficult to harmonise in the short term.

Table 11
Assessment of current and future role of LNG and possible short term constraints to harmonisation

Country	Current role of LNG	Likely future role of LNG	Issues for harmonisation
Belgium	Historically the terminal in Belgium have been used to support to base load for Distrigas long term contracts & Atlantic basin trading	Transit to NW Europe markets for new entrants and trading at Zeebrugge Hub	<p>Gas quality specs defined to comply with UK requirements rather than continental Europe.</p> <p>It should be feasible to operate virtual storage and extend send out periods to 30 days which would be better aligned with commercial markets downstream.</p> <p>Large vessels could probably be accommodated if tank storage was managed in a commercial manner.</p>
France	Base load for GdF long term contracts	Promote access for new entrants and competition.	<p>Historically the terminals in France have been used to support to base load requirements of Gaz de France and the transmission capacity downstream is fully booked accordingly.</p> <p>Shipping compatibility is an issue at Fos.</p>
Greece	DEPA relies on LNG to provide peak flexibility and an alternative to pipeline Russian supplies.	Access for new entrants to Eastern Europe corridor. Security/diversity of supply	<p>When the pipeline connections from Turkey and to South-eastern Europe are in place there should be a wider range of sources and access to much larger market. However there will still be a role for LNG for peak flexibility and storage will be an issue.</p> <p>It follows that the terminal will need to operate with surplus capacity.</p>
Italy	Minor role for Eni long term contracts	Promote competition & new entrants. Security/diversity of supply	<p>There is very little LNG import capacity at present but even this one terminal is not operating at full capacity. Ship compatibility is an issue at the existing terminal.</p> <p>Existing UIOLI rules (based on historical usage) appear to act as a deterrent to terminal usage and will be difficult to harmonize with other countries.</p> <p>New terminals will have reserved capacity for TPA but operational rules to manage this are have yet to be fully determined.</p> <p>There is no liquid gas market so virtual storage is not yet feasible.</p> <p>Pooling arrangements and cooperation between capacity users will be necessary.</p>
Portugal	Transgás long term contracts. Security/diversity of supply	Promote competition & new entrants. Security/diversity of supply (longer term access to Spain)	<p>The integration of Portugal and Spain into an Iberian energy market is likely and will call for coordination between TOs.</p> <p>In the short term, TPA arrangements requiring access to liquid market would be inadequate.</p>

Table 11 (continued)
Assessment of current and future role of LNG and possible short term constraints to harmonisation

Country	Current role of LNG	Likely future role of LNG	Issues for harmonisation
Spain	Main source of supply for base load and flexibility as well as a source of storage and diversity of supply. Supports competition & new entry	Same as actual use and also transit to France	Concerns about security of supply and lack of storage have led to strict rules on LNG capacity usage and send out of gas. Lack of a traded gas market means that ex-ship sales are the norm for TPA rather than physical access to capacity. Virtual storage would not be feasible at the moment. Integration of plant operation call for cooperation and pooling arrangements.
Turkey	Peak/flexibility. Storage and security/diversity of supply	Transit to Greece & south-eastern Europe. Promote competition & new entrants	Liberalisation of the Turkish energy markets is ongoing but needs to be completed before TPA can be effective.
UK	Peak. Storage and security/diversity of supply	Base load. Transit to NW Europe. Trading at NBP. Competition between terminals.	The role of LNG is developing rapidly as the UK switches from being a gas exporter to an importer. Shippers are looking to build portfolios of gas supply to cover their future (likely) requirements and LNG is key for security of supply. Grain currently operates at base load with relatively small storage tanks. Virtual storage is feasible in UK. A 30 day send out period would be more coherent with commercial practices. Market signals at NBP ought to be sufficiently clear for LNG shippers to determine whether there is a need for additional deliveries; in this active trading environment there is an Option value associated with slots at LNG terminals which capacity owners are not commercially motivated to give up until the last possible moment. However the notice period for TPA slots being made available has to be sufficient for Shippers to locate cargoes and make the arrangements for transportation. Harmonisation of shipping spec and vetting procedures would be beneficial. Quality specs in UK are different from continental Europe which may not impact too badly on exports via the Interconnector but is a major hindrance to imports. Ship compatibility is an issue at the existing Grain facility but not at the forthcoming expansion and other new terminals.

Appendix A. Description of the level of transparency by country

A.1. Information on services and conditions

A.1.1. Belgium

Description of the different services offered and their charges: The catalogue of the services offered by Fluxys LNG is named Indicative Transport Programme (ITP). It includes a description of the services offered and the calculation of the technical capacities. The ITP contains the firm, non-firm and interruptible capacities offered, the capacity allocation rules, the various types of service contracts and the duration of the standard contracts. The ITP is drawn up by the terminal operator for a period of at least two years and approved by the Commission for Regulation of Electricity and Gas (CREG). It is subject to annual adjustments on the basis of congestion policy.

No ITP has been approved yet. Fluxys LNG has submitted four ITPs since 30 August 2004. The first three ones were rejected; the last one is being examined by the CREG.⁵⁷

As for the moment the proposed ITPs have been refused, services and charges⁵⁸ available are described in the document: “*Fluxys LNG terminal services conditions and tariffs as from 1 January 2006*”. According to existing regulation⁵⁹ the following LNG terminal services are offered at regulated tariffs: a) receiving and unloading LNG carriers; b) basic storage; c) flexibility storage; and d) send-out capacity. Zeebrugge LNG terminal offers additionally a truck-loading service, currently limited to carrying of LNG from Zeebrugge terminal to the neighbouring peak-shaving plant at Dudzele. Bunkering facilities are also available at Zeebrugge terminal.

Types of contracts available for the services (individually or included in slots): According to the “*Fluxys LNG terminal services conditions and tariffs for 2006*” at the moment LNG services are provided individually. The new legal and regulatory framework allows Fluxys LNG to switch to multi-annual tariffs as from 2007. Fluxys LNG tariff proposal for the period 2007-2027 was approved by CREG in September 2004. The tariff structure for this period is defined in terms of slots. The ITP, which is pending of approval, proposes bundled capacity (slots) and additional flexibility if available.

Duration of the contracts available: According to the questionnaire provided by the CREG, there is no legal cap on the duration of the contracts. The CREG agreed with long term contracts up to 20 years from 2007 to make the extension of the terminal possible. However, Fluxys’ document on conditions and tariffs does not provide any information on contract

⁵⁷ CREG published the proposed ITPs in attachment of its decisions to refuse them on its website (last refused version is available in French at <http://www.creg.be/pdf/Decisions/B379-3FR.pdf>).

⁵⁸ In accordance with the Royal Decree of 15 April 2002, Fluxys LNG submitted its budget and tariff proposal for 2006 to the CREG on 30 September 2005. The CREG approved the proposal on 15 December 2005. The 2006 tariffs are applicable as from 1 January 2006.

⁵⁹ Amendments of 16 July 2001 to the Belgian federal Gas Act of 12 April 1965 and the Royal Decree of 15 April 2002 (Tariff Decree).

duration. The unapproved ITP mentions both long term contracts and spot contracts (the latter applicable to the primary market if capacity is available, and to the secondary market on basis of art. 31 of the Main conditions).

Information on availability of firm and/or interruptible services: According to Fluxys LNG document on conditions and tariffs, terminal services include both firm and interruptible send-out capacity. However, this document does not inform on how interruptible send-out capacity is defined (i.e. number and maximum duration of interruptions). The ITP, pending of approval, mentions interruptions due to technical reasons (maintenance/breakdowns) and interruptions aimed at assisting Fluxys in its TSO role.

Network code and/or standard conditions: The operational rules, scheduling and nomination rules, data exchange procedures, automatic reservation system's description, etc. are included in Fluxys LNG's Network code. Fluxys LNG introduced its first proposal of Network code on 14 February 2005 which was rejected by the CREG. A second version, introduced on 26 September 2005, was rejected as well on 8 December 2005. By rejecting this second proposal, the CREG imposed for a period of six months a provisional network code to be applied at Zeebrugge LNG terminal. By the 8 June 2006 the CREG renewed this network code with some adaptations (one new appendix and one deeply modified one) for a new six months period.

Flexibility: Flexibility and tolerance levels refer both to those levels included in the services without separate charges as well as any additional flexibility offered and its corresponding charges.

Currently (subject to ITP approval), the LNG has to be regasified within approximately 5 days⁶⁰ (10 high tides). As from April 2007, this period will be extended to approximately 10 days (20 high tides). The regasification capacity is always calculated to offer a flat send-out rate during the storage period.

Infrastructures in the LNG terminal indicating all relevant points interconnecting the terminal with the transmission system: Infrastructures in the LNG terminal are described in the Main conditions⁶¹ of Fluxys LNG and in the provisional network code (Annex F) to be applied at Zeebrugge LNG terminal.

Information on technical specifications on vessel docking and unloading: There is a ship approval procedure that all carriers must go through before accessing the LNG terminal, the purpose of which is to verify the compatibility between the carrier and the installations of the LNG terminal. This procedure is described in Annex D of the provisional network code to be applied at Zeebrugge LNG terminal. In addition, Fluxys LNG's network code refers to the Society of International Gas Tanker & Terminal Operators (SIGTTO) and the International Group of Liquefied Natural Gas Importers (GIIGNL) standard documents.

⁶⁰ If the storage duration which the terminal user needs is longer than the basic storage duration, the terminal user must subscribe to flexibility storage for this additional time period.

⁶¹ Main conditions for accessing the Zeebrugge LNG terminal of Fluxys LNG approved by the Commission for Regulation of Electricity and Gas (CREG) in accordance with articles 10 and 11 of the Royal Decree of 4 April 2003 concerning the Code of Conduct with regard to access to the natural gas transmission infrastructure. 17 June 2004.

Information on gas quality requirements: Gas quality requirements are clearly defined in the Main conditions of Fluxys LNG and in the provisional network code (Annex E) to be applied at Zeebrugge LNG terminal.

Any information on proposed and/or actual changes to the services or conditions: In anticipation of the transposition of the 2nd European Gas Directive, an amendment to the Belgian Gas Act was made on 12 August 2003. The amendment, implemented by the Royal Decree of 15 December 2003, makes it possible to apply multi-annual tariffs. The new legal and regulatory framework allows Fluxys LNG to switch to multi-annual tariffs as from 2007, when the capacity enhancement project for the Zeebrugge LNG terminal will have increased the annual throughput capacity to about 9 billion m³(n) of natural gas.

Information provided in English: Most documents published at Fluxys LNG website are available in English. However, a large proportion of regulation documents is only available in French.

A.1.2. France

Description of the different services offered and their charges: Tariffs are common for the 2 terminals and include 3 distinct regasification options proposed to terminal users (continuing, band and spot services).⁶² The characteristics of these services and their charges are available at GdF web site.

Types of contracts available for these services (individually or included in slots): According to GdF web site, services are provided included in slots.

Duration of the contracts available: Contract duration can be less, equal or more than a year.

Information on availability of firm and/or interruptible services: only firm services are available.

Network code and/or standard conditions: Standard contract in force.

Flexibility and tolerance levels included in the services without separate charge as well as any flexibility offered in addition to this and the corresponding charges: Appendix 1 of the access contract describes the general conditions of the service. With respect to other flexibility services offered, the transfer of LNG in storage between users is allowed (charges for this service are provided in Art. 8 of this Appendix).

Infrastructures in the LNG terminal indicating all relevant points interconnecting the terminal with the transmission system: General information on infrastructures is available at GdF and GRT gaz websites.

⁶² ‘Continuing’ service for shippers unloading at least one cargo at a terminal per month as an average over the year; ‘Band’ service for shippers unloading less than one cargo at a terminal per month as an average over the year; ‘Spot’ service reserved for unloading operations subscribed for a given month m after the 20th day of month m-1. The corresponding cargoes benefit from reduced prices in order to encourage shippers to take advantage of terminal capacities still available right up to the last moment and thus optimise their utilisation.

Information on technical specifications on vessel docking and unloading: Indicative lists of approved ships to Montoir and Fos Tonkin terminals are published. Compatibility of the ships listed with Terminal Operator's safety requirements has been assessed according to Gaz de France Ship Approval Procedure. This procedure is described in Gaz de France web site.

Information on gas quality requirements: This information is available both at GdF web site and in Appendix 1 (General Conditions) of the access contract.

Any information on proposed and/or actual changes to the services or conditions: The commissioning of the Fos Cavaou terminal, currently planned for the last quarter of 2007, will change the quantities to be regasified in the Fos Tonkin and Montoir terminals. This is why the current tariff has been designed to be applied from 1 January 2006 until the Fos Cavaou terminal has been commissioned.

Finally, with regard to the information provided in English, almost all information at GdF web site is only available in French (i.e. the access contract is only available in French).

A.1.3. Greece

Description of the different services offered and their charges: Currently, the terminal offers regasification of LNG along with related services (unloading and temporary storage). Following a proposal by the TSO and RAE's opinion, current LNG tariffs were set by the Ministerial Decision 4955/2006 (Government Gazette B 360/27.3.2006).

Types of contracts available for these services (individually or included in slots): LNG tariffs refer to booking and use of vaporization capacity and –implicitly- to the respective LNG reception services and temporary storage. There is no tariff for long-term storage services as yet.

Duration of the contracts available: The draft operation Code as proposed by RAE provides for minimum contract duration of 1 year and maximum duration of 15 years (since the code has not yet been finalised modifications may occur).

Information on availability of firm and/or interruptible services: The first draft of the National Natural Gas System Operation Code as proposed by RAE includes the offer of interruptible contracts. However, at present we understand that only firm services are available.

Network code and/or standard conditions: Law 3428/2005 foresees an Operation Code for the National Natural Gas System (NNGS). The latter includes both the high pressure pipeline (plus compressing and decompressing stations, control stations etc) and the Revithoussa LNG terminal. The Code is approved by the Minister of Development following RAE's binding opinion. A first draft of the NNGS operation code, proposed by RAE, has already been released. Until the Operation Code is finalised and approved by the Minister of Development, operation of the LNG terminal proceeds according to the existing practices of DEPA S.A.

Flexibility and tolerance levels included in the services without separate charge as well as any flexibility offered in addition to this and the corresponding charges: LNG tariffs refer to booking and use of vaporization capacity and –implicitly- to the respective LNG reception services and temporary storage. There is no tariff for long-term storage services as yet.

Infrastructures in the LNG terminal indicating all relevant points interconnecting the terminal with the transmission system: Limited information on infrastructures both at DEPA and RAE web sites.

Information on technical specifications on vessel docking and unloading: The facilities accommodate LNG vessels with capacities ranging from 25,000 m³ up to 125,000/135,000 m³ (290 m length, 11.5 m draft). There are three unloading arms of 12 inch diameter, two for unloading LNG and one for vapour return. The LNG unloading facilities are designed for a maximum LNG unloading flow rate of 3500 m³/h.

Information on gas quality requirements: The agreement between DEPA and SONATRACH includes a gas quality requirement.

Any information on proposed and/or actual changes to the services or conditions: A first draft of the National Natural Gas System Operation Code has been released, however the Code has to be finalised and approved. This Code will include: a standard contract for access to the terminal; a vessel certification regulation; measurements regulation; and LNG quality specs. Through these documents all necessary information will be available to potential users

Finally, with regard to the information provided in English, almost all information both at DEPA and RAE web sites is only available in Greek. In addition, gas regulation (including Law 3428/2005, Ministerial Decision 4955/2006 and also the draft of the network code) is only available in Greek.

A.1.4. Italy

Description of the different services offered and their charges:

- Panigaglia: The description of the different services offered (continuous and spot regasification services) is provided in the “access conditions to LNG services for the Thermal year 2006/2007” and in the “terms and access conditions to LNG spot services for Thermal year 2006/2007”, in accordance with Delibera n°167/05. Both documents as well as the charges for LNG services are available at GNL Italia S.p.A. web site.
- Brindisi and Rovigo terminals will also provide firm continuous and spot regasification services. For these terminals, TPA capacity tariffs will be set by the operator, and approved by the AEEG (*Autorità per l'energia elettrica e il gas*), according to the methodology set by AEEG.

Types of contracts available for these services (services provided individually or included in slots): Continuous and spot regasification services in Panigaglia include unloading, operational storage and vaporization services.

Duration of the contracts available: 5 years contracts can be signed two years in advance in Panigaglia LNG terminal. So capacity can be booked for a period of 7 years. Contract duration is not available for Brindisi and Rovigo terminals.

Information on availability of firm and/or interruptible services: Firm services.

Network code and/or standard conditions: The Authority set rules and criteria for access to regasification capacity. Terminal operators elaborate the access code according to the rules and criteria set by the regulator with a consultation process open to interested parties. The access code is then approved by the Authority. At present, the consultation process on the draft network code is opened to interested parties.

Flexibility and tolerance levels included in the services without separate charge and as well as any flexibility offered in addition to this and the corresponding charges: The “access conditions to LNG services for the Thermal 2005/2006”, in accordance with Delibera n.167/05, provides a detailed description of the services provided. This document and the corresponding charges for LNG services are available at GNL Italia S.p.A. web site. With regard to other flexibility services offered, there are facilities for the correction of LNG quality by means of addition of air or air + N₂. The facilities can treat LNG with a Wobbe Index in the range 52,13 ÷ 53,17 MJ/Sm³.

Tariffs for LNG services are proposed by the operator, and approved by the AEEG, according to the methodology set by AEEG. These tariffs are available at GNL Italia and AEEG web sites.

Infrastructures in the LNG terminal indicating all relevant points interconnecting the terminal with the transmission system: Information on LNG facilities at Panigaglia is available at GNL Italia S.p.A. web site.

Information on technical specifications on vessel docking and unloading: The specifications for Panigaglia terminal are included in the “access conditions to LNG services for the Thermal 2005/2006”. This information is not available for Brindisi and Rovigo facilities.

Information on gas quality requirements: Quality requirements defined in the “access conditions to LNG services for the Thermal 2005/2006” for Panigaglia terminal. Not available for Brindisi and Rovigo facilities.

Any information on proposed and/or actual changes to the services or conditions: Regasification code has to be approved.

Finally, with regard to the information provided in English, almost all information available at GNL Italia S.p.A web site is only in Italian. In addition, most existing gas regulation has not been translated to English.

A.1.5. Spain

Description of the different services offered and their charges: The description of the different services offered and the service charges are provided by existing regulation (in particular Royal Decree 949/2001⁶³ and the ministerial orders that the Ministry of Industry approves on a yearly basis providing the values of the tolls and fees associated with third-party access to natural gas facilities). Charges are common for all LNG terminals.

⁶³ Royal Decree 949/2001, dated August 3rd, regulating third party access to gas installations and establishing an integrated economic system for the natural gas industry.

Types of contracts available for these services (services provided individually or included in slots): All the services necessary to make the gas available at the entry of the transmission system (at the connection point between the LNG plant and the transmission system), once regasified, are jointly included in the regasification tariff: slots assignment, unloading operations, vaporization, loading of trucks transporting the LNG to satellite plants, etc. Other additional services can also be contracted: additional LNG storage capacity; ships cooling (operation required before introducing LNG into the tanks); loading of ships with LNG; transferring of LNG between ships.

Duration of the contracts available: The legislation does not envisage any cap on the duration of the contracts. Ministerial Order ITC 4100/2005⁶⁴ introduced for the first time a short-term TPA tariff (on daily, monthly and seasonal basis).

Information on availability of firm and/or interruptible services: Only firm services available. Ministerial Order ITC 4100/2005 introduced for the first time an interruptible transport tariff, however, LNG services are only provided on a firm basis.

Network code and/or standard conditions: The LNG operation rules are included in the Network Code, which was approved by the Ministry of Industry at the end of 2005⁶⁵, after long discussion among all system users/participants. The Network Code, together with the detailed protocols⁶⁶ approved by the Directorate General for Energy Policy and Mines, apply to all the agents who gain access to the system and to all the owners of installations.

Flexibility and tolerance levels included in the services without separate charge and as well as any flexibility offered in addition to this and the corresponding charges: This information is provided by existing regulation (mainly RD 949/2001 and yearly Ministerial Orders). The access tariffs to LNG terminals contain a significant degree of flexibility, as they include a certain amount of LNG storage capacity, 5 days of the contracted regasification capacity. If available, additional LNG storage capacity can be contracted.

Infrastructures in the LNG terminal indicating all relevant points interconnecting the terminal with the transmission system: This information is available at the terminal operators web sites.

Information on technical specifications on vessel docking and unloading: According to the Network code, terminal operators must provide this information at potential customer request. In addition, this information is available on the system operator (Enagas) web site.

Information on gas quality requirements: Gas quality requirements are defined in the detailed protocols of the Technical Rules for the management of the gas system (Resolution date March 13th, 2006).

⁶⁴ Ministerial Order ITC/4100/2005, dated December 27th, establishing the tolls and fees associated with third-party access to natural gas facilities.

⁶⁵ Order ITC/3126/2005, dated October 5th, which approved the technical rules for the management of the gas system.

⁶⁶ Resolution, dated March 13th, 2006, setting the detailed protocols of the Technical Rules for the management of the gas system.

Any information on proposed and/or actual changes to the services or conditions: There is a discussion group, in which all the agents/bodies with any relation/interest in LNG transmission and distribution activities (including LNG) are represented: the Ministry, the CNE, the System Operator, transmission companies, traders, etc. This group is in charge of examining the Network Code and its application to the system, discussing possible modifications required due to gaps, mistakes or changing conditions. In any case, the final responsible authority for approving regulatory changes is the Ministry of Industry, after a non-binding report issued by the CNE.

Finally, with regard to the information provided in English, most part of the regulation mentioned above is available in English at the CNE web site. However, regulation in English is provided with a long delay with respect to Spanish one (as an example, the network code and detailed protocols are not available in English yet). In addition, some regulation is not translated (i.e. Ministerial Orders on TPA and full service tariffs). ENAGAS, BBG and SAGGAS are improving the amount of the information provided in English.

A.1.6. UK

Description of the different services offered and their charges:

- Grain LNG: Berthing slots, Operational Storage, Regasification and blending services for compliance with GSMR.

The open season process for the first capacity offer took place between March and October 2003 and BP / Sonatrach jointly were awarded 100% of the Phase 1 capacity. This was at a price (an annual capacity charge) and contract duration (20 years) specified by BP / Sonatrach. This capacity entitles BP/Sonatrach to use the terminal to berth and unload LNG ships and store LNG, before regasification and nomination of gas for delivery into the UK's National Transmission System.

- South Hook: According to South Hook LNG Terminal Company's "Application for exemption from regulated third party access to UK LNG facilities", the terminal will be constructed to provide base capacity required to receive, temporarily store, regasify and process LNG consistent with the requirements of the upstream element of the QGII Project (Qatargas II LNG project) and redelivery as pipeline gas for sale by ExxonMobil Gas Marketing Europe Limited under the Gas Sales and Purchase Agreement.
- Dragon LNG: According to Dragon LNG Limited's "Application for exemption", the terminal will be constructed to provide terminal capacity required to receive, temporarily store, regasify and process LNG consistent with the requirements of the throughputters.

Types of contracts available for these services (individually or included in slots):

- Grain LNG: There may be times when shipper may not use a berthing slot at the Terminal and may have importation capacity (berthing slots) available for use by third parties. Grain LNG has recently developed a Secondary Capacity Mechanism to enhance the current arrangements for offering unused capacity at the Terminal by a Product that makes it possible to deliver up to a full cargo. If an available berthing slot is not going to be used by the Phase 1 Primary Capacity Holder, the LNG Grain Agency will offer a bundled service (via an auction process) which:

- provides send out and delivery of gas at NBP equivalent to up to one full cargo using the Primary Capacity Holder's contracted send out capacity;
- uses the berthing slot for which the Primary Capacity Holder has no scheduled use.
- South Hook: Base capacity is expected to be defined in terms of the key capacity components associated with an LNG import and regasification terminal, namely: annual berthing slots; working tank capacity for temporary LNG storage; firm regasification capacity; stand-by regasification capacity.
- Dragon LNG: Terminal capacity is expected to be defined in terms of the key capacity components associated with an LNG import and regasification terminal, namely: 1) berthing slots; 2) working storage tank capacity for temporary LNG storage; 3) regasification capacity.

Duration of the contracts available:

- Grain LNG: A 20-year contract has been signed with the Phase 1 Primary Capacity Holder (BP/Sonatrach).
- South Hook: A 25-year contract has been signed with the Phase 1 and Phase 2 Primary Capacity Holder (South Hook Gas Company Ltd, a 70/30 Qatar Petroleum/Exxon Mobil joint venture).
- Dragon LNG: Each of the Throughput Agreements with BG Group and Petronas is for a term of 20 years.

Information on availability of firm and/or interruptible services:

- Grain LNG: Firm service for the primary shipper. Capacity at the terminal has been accessible to potential third party shippers through interruptible capacity made available by the terminal operator.
- South Hook: not available.
- Dragon LNG: not available.

Network code and/or standard conditions:

- Grain LNG: The contracts between GLNG and its customers are:
 - a) Specific Terms Agreement (STA): these are the terms specific to individual users and cover such items as contract term, the level of the shipper's firm rights to berthing slots, capacity and deliverability, the annual charge to be levied and, where applicable, commissioning arrangements; and
 - b) General Terms and Conditions (GTCs): these are the standard terms applicable to any user of the facility covering for example, ship unloading, delivery to Transco's system and credit and billing arrangements. They are multi-user agreements that facilitate secondary trading and sub-letting of capacity, deliverability, berthing slots and LNG within the facility. These features are designed to help mitigate the exclusivity over the use of initial capacity when the incumbent shipper is not using this capacity.

In addition, the successful shipper has entered into a gas supply arrangement to provide system reserve and transmission support services to Transco (Transco Services Agreement).

Other agreements include the Operational Support Agreement and the Network Entry Agreements to each of the NTS and local distribution network.

- South Hook: The operational rules are the responsibility of the terminal owners.
- Dragon LNG: The operational rules are the responsibility of the terminal owners.

Flexibility and tolerance levels included in the services without separate charge as well as any flexibility offered in addition to this and the corresponding charges:

- Grain LNG: we understand that this information is provided in the contractual arrangements (STA and GTCs) between GLNG and the Shipper.
- South Hook: not available.
- Dragon LNG: not available.

Infrastructures in the LNG terminal indicating all relevant points interconnecting the terminal with the transmission system:

- Grain LNG: we understand that this information is provided in the contractual arrangements (STA and GTCs) between GLNG and the Shipper.
- South Hook: not available.
- Dragon LNG: not available.

Information on technical specifications on vessel docking and unloading:

- Grain LNG: The current jetty infrastructure in place at Grain LNG can accept vessels between 70,000 m³ and 205,000 m³ although an individual compatibility study is required for each vessel.
- South Hook: South Hook will receive LNG tankers with capacity in the range 120,000 - 250,000m³.
- Dragon LNG: 165,000 m³.

Information on gas quality requirements:

- Grain LNG: Limits as per GS(M)R 1996 and contractual limits as applied by National Grid Gas plc at entry to its NTS and Southern Gas Networks at entry to the LDZ.
- South Hook: Limits as per GS(M)R 1996 and contractual limits as applied by National Grid Gas plc at entry to its NTS and Wales and West Utilities at entry to the LDZ.
- Dragon LNG: Limits as per GS(M)R 1996 and contractual limits as applied by National Grid Gas plc at entry to its NTS and at entry to the Wales and West Utilities at entry to the DN.

Any information on proposed and/or actual changes to the services or conditions:

- Grain LNG: Since 31 July 2006, a new secondary capacity mechanism has been implemented.

A.1.7. Portugal

Description of the different services offered and their charges: Description of services provided (unloading, storage, truck loading and send-out) is available at Transgás Atlântico web site. **This terminal is temporarily exempted from TPA at present moment.**⁶⁷

Types of contracts available for these services: not available.

Duration of the contracts available: From October 26th, 2003 LNG supplied by Transgás; is received, stored, and regasified, with natural gas being sent out through Transgás' high pressure gas network and/or LNG being loaded onto LNG trucks by Transgás Atlântico. This is carried out all in accordance with the terms of a Subconcession Agreement and a Tolling Agreement made between Transgás and Transgás Atlântico on November 13th, 2000.

Information on availability of firm and/or interruptible services: not available.

Network code and/or standard conditions: not available.

Flexibility and tolerance levels included in the services without separate charge and as well as any flexibility offered in addition to this and the corresponding charges: not available.

Infrastructures in the LNG terminal indicating all relevant points interconnecting the terminal with the transmission system: LNG Port and Jetty Guide available at Transgás Atlantico web site.

Information on technical specifications on vessel docking and unloading: Ships accepted in the Sines LNG Terminal, in compliance with GTE Ship Approval Procedure.

Information on gas quality requirements: not available.

Any information on proposed and/or actual changes to the services or conditions: not available.

Finally, with regard to the information provided in English, some information is available in English at Transgás Atlântico web site.

A.1.8. Turkey

The two main functions of the Marmara Ereğlisi LNG Import Terminal are:

- The storage of the LNG imported
- The regasification of the LNG at required volumes to be sent out to Russian Federation – Turkey Natural Gas Main Transmission Line.

The Storage Code (Code of Operations for LNG Terminal) has been drafted. A consultation process is currently opened to interested parties. The code is then approved by the Authority.

A new LNG terminal, EGEGAZ Aliaga, owned and operated by Ege Gaz A.Ş. is expected to start its operations in December 2006.

⁶⁷ Portugal was defined as an emergent market according to the terms established in the gas Directives.

A.2. Information on tariffs

In what follows we provide a summary of the information available on tariff derivation, methodology and structure for each of the countries considered:

A.2.1. Belgium

Regulatory involvement in tariff setting: According to the Royal Decree of 15 April 2002, every year Fluxys LNG has to submit its budget and tariff proposal for the following year to the CREG. . As from April 2007 the Royal Decree of 15 Dec 2003 allows long term tariffs updated every 4 years (see below).

General methodology: According to the document “*Fluxys LNG terminal services conditions and tariffs as from 1 January 2006*”, regulated tariffs are cost-based. Accordingly, the costs of Fluxys LNG are distributed on the basis of objective criteria over the various services offered by the company.

Definition of the RAB and the rate of return: Both the RAB and the WACC are determined by the CREG. Although the CREG provides information on the methodology followed it does not provide the effective values obtained and applied to Fluxys.

Access tariff structure: The amendments of 16 July 2001 to the Belgian federal Gas Act of 12 April 1965 and the Royal Decree of 15 April 2002 (Tariff Decree) provide the services to be offered at regulated tariffs as well as their tariff structure. In anticipation of the transposition of the 2nd European Gas Directive, an amendment to the Belgian Gas Act was made on 12 August 2003. The amendment makes it possible to apply multi-annual tariffs and a specifically calculated fair profit margin for new infrastructure of national or European interest if such derogation is necessary for the long-term development of this infrastructure. The amendment was implemented by the Royal Decree of 15 December 2003.

Functional allocation and capacity/commodity allocation principles: We understand that this information is not provided either on the CREG or Fluxys LNG web sites.

Detailed tariff design (tariff elements) including charges for capacity overrun, imbalances and their derivation: Information on tariff elements is available at the documents “*Fluxys LNG terminalling services. Conditions and Tariffs*” and “*Main Conditions for accessing the Zeebrugge LNG terminal*” (i.e. chapter V of this document refers to Balancing). Additionally, the CREG provides some information on the allowed income from regulated activities. However, we understand that information on tariff derivation is not available.

Indexation of tariffs (if any), or principles for tariff variations (in particular if a defined regulatory period exists): According to the current procedure (in force until March 2007) by 30th September of **each year**, the operator submits a tariff proposal for the following year to the CREG; after requesting additional information, the CREG has 30 days to approve or reject this proposal; if the CREG approves the proposal, the tariffs are published and apply as of 1st January; if it rejects the proposal, the CREG has to indicate which points need to be adapted and the operator can submit a revised proposal to the CREG. If this is refused, the CREG can adopt provisional tariffs for three months.

From April 2007, multi-annual budget and tariff proposal are subject to approval by the CREG. The tariffs are published and the operator has gone ahead with the investment. The tariffs set a ceiling which the operator may only exceed in exceptional circumstances.

Every four years as from the commissioning of the investment, the operator submits a four-year report to the CREG (actual use, real costs and real income). By comparing reality with the budget, it is possible to determine whether the facility is generating a surplus (bonus) or a loss (malus). In case of a bonus, the surplus will be split between a tariff reduction for the next 4 years term, the reserves for new investments and/or dividends to the TO's shareholders.

Finally, with regard to the information provided in English, most part of documents published on remuneration of regulated activities by the CREG is not available in English.

A.2.2. France

Regulatory involvement in tariff setting: The law of 3 January 2003 guarantees all consumers and suppliers open non-discriminatory access to LNG terminals and rules that decisions on tariffs for utilisation of these systems are proposed by the CRE and approved by the Minister for the Economy and Industry who cannot change them (he can only accept or refuse).

General methodology: Cost Plus method. The CRE calculates the tariffs for LNG services based on the allowed income (CAPEX and OPEX) and the expected demand of the services. The access fees to the networks must be defined on the basis of objective, non-discriminatory and publicly available criteria, and should take into account the characteristics of the service provided and the costs incurred.

Definition of the RAB and the rate of return: The explanatory statement is in the tariff proposed by CRE on 26 October 2005 (http://www.cre.fr/uk_documents/deliberations.jsp#).

Access tariff structure: Tariffs are common for the 2 terminals and include 3 options (continuing, band, and spot services). The tariff structure is similar for the three services offered and is made of 6 terms (tariff structure is available at GdF web site and formally came into force with the Decree 2005-1616 dated 20th December 2005 to be applied as of 1st January 2006).

Functional allocation and capacity/commodity allocation principles: Information not available.

Detailed tariff design (tariff elements) including charges for capacity overrun, imbalances and their derivation: There is only information on charges for LNG services but not on tariff derivation.

Indexation of tariffs (if any), or principles for tariff variations (in particular if a defined regulatory period exists): The commissioning of the Fos Cavaou terminal, currently planned for the last quarter of 2007, will change the quantities to be regasified in the Fos Tonkin and Montoir terminals. This is why the current tariff has been designed to be applied from 1 January 2006 until the Fos Cavaou terminal has been commissioned.

Finally, with regard to the information provided in English, most part of documents and regulation published at the CRE web site are not available in English.

A.2.3. Greece

Regulatory involvement in tariff setting: According to law 3428/2005, the methodology for TPA tariffs to both the LNG terminal and the transmission system is defined in a Tariff Regulation, which is elaborated by RAE, following a recommendation by the Terminal Operator (TO) and public consultation. TPA tariffs will be set by the TO, on the basis of the Tariff Regulation, and will be approved by RAE. Both the Tariff Regulation and the tariffs are submitted to the Ministry of Development for formal approval. Ministerial Decision 4955/2006 by which existing tariffs were set provides all the information with regard to tariff methodology, definition of RAB and rate of return, tariff structure, capacity/commodity split, penalty charges for capacity over-run,⁶⁸ etc.

General methodology: According to the information provided to the questionnaire, the methodology for the calculation of tariffs is based on rate-of return regulation.

Definition of the RAB and the rate of return: For each year over a certain period, the annual required revenue of the TO is calculated taking into account both capital and operational expenses. The WACC used in the calculation of capital expenses is 10.06% nominal pre-tax or 6.56% real pre-tax.

Access tariff structure: Tariff structure is made of a capacity charge and a commodity charge. The capacity charge is applied to the maximum daily booked/used send-out capacity during the respective year, while the commodity charge is applied to each MWh of LNG vaporized during the year.

Functional allocation and capacity/commodity allocation principles: According to the information provided by the questionnaire, due to the considerable uncertainty regarding the utilization of the Revithoussa LNG terminal within the next few years (for balancing and/or TPA) provisions have been made to recover 95% of the required revenue through the natural gas transportation tariff via the high pressure pipe line running through mainland Greece rather than from the LNG tariff. The unit tariff is calculated by a division of the required revenue by the projected volumes of LNG for the respective year. The unit tariff is then split in a 90/10 capacity/commodity ratio.

Detailed tariff design (tariff elements) including charges for capacity overrun, imbalances and their derivation: see above.

Indexation of tariffs (if any), or principles for tariff variations (in particular if a defined regulatory period exists): Annual LNG tariffs for the next three years (2006 to 2008) have been published. CPI adjustment applies from then on.

Finally, with regard to the information provided in English, in general, gas regulation is only available in Greek (i.e. the Ministerial Decision on LNG tariffs).

⁶⁸ Imbalances charges are not included.

A.2.4. Italy

Regulatory involvement in tariff setting: The AEEG document “*Criteri per la Determinazione delle Tariffe per il Servizio di Rigassificazione per il secondo periodo di regolazione*” (5 August 2005) provides detailed information on tariff methodology, including calculation of the RAB and WACC, tariff structure, capacity and commodity allocation principles, indexation of tariffs and definition of the regulatory period. Previous to this document, the AEEG published a consultation document in January.

General methodology: see above

Definition of the RAB and the rate of return: see above.

Access tariff structure: see above.

Functional allocation and capacity/commodity allocation principles: see above.

Detailed tariff design (tariff elements) including charges for capacity overrun, imbalances and their derivation: see above.

Indexation of tariffs (if any), or principles for tariff variations (in particular if a defined regulatory period exists): see above.

Information provided in English: The AEEG documents on tariff methodology are only available in Italian.

A.2.5. Spain

Regulatory involvement in tariff setting: the final responsible for determining and approving tariffs is the Ministry of Industry. The CNE also participates in the process, by, normally, issuing a not-binding report to the Ministry’s proposal.⁶⁹

General methodology: Existing remuneration framework and tariff structure were initially established by Royal Decree 949/2001. At the end of each year the Ministry of Industry publishes a ministerial order setting the revenues for the companies who carry out regulated activities in the gas market, as well as a ministerial order setting tolls and fees associated with third-party access to natural gas facilities for the following year. Through these annual orders the Ministry has introduced some changes in the original remuneration framework and tariff structure.

Definition of the RAB: It was initially defined in Order ECO/301/2002⁷⁰, dated February 15th, establishing the remuneration for regulated gas sector activities. For facilities put into operation prior to December 31st 2001 the accredited costs of the investments made (deducting any subsidies received) were used to calculate the allowed remuneration, which is

⁶⁹ Competences defined in the Hydrocarbons Act 34/1998, dated October 7th and in the Royal Decree 949/2001, dated August 3rd, regulating third party access to gas installations and establishing an integrated economic system for the natural gas industry.

⁷⁰ Ministerial Order ECO/301/2002, dated February 15th, establishing the remuneration for regulated gas sector activities.

updated annually using an efficiency factor (currently 0.85). The remuneration for facilities put into operation since 2002 depends on how they were authorised:

- Directly: The remuneration to be received is the sum of the investment costs, the depreciation charges and the specific operating costs for the facility. The value of the recognised investment is obtained from the unit values of reference for investments published by ministerial order on a yearly basis. To calculate depreciation charges, the values defined for the useful life of each type of facility are used. Operating costs are obtained from the unit values of reference also published in said ministerial order.
- Open tenders: Remuneration will be calculated according to the conditions of the awarded contract.

Definition of the rate of return: 10-year Government Bond + 150 Basis Points (calculated on a yearly basis), as defined in Order ECO/301/2002.

Access tariff structure: The regasification and LNG storage tariffs were defined by Royal Decree 949/2001. On an annual basis, the Ministry of Industry publishes a ministerial order with the values of these tariffs for the corresponding year. In addition, one of these annual orders (Ministerial Order ITC/103/2005⁷¹) introduced other specific and regulated services: loading of ships with LNG, ships cooling and transferring of LNG between ships.

Functional allocation and capacity/commodity allocation principles: The information on how existing regasification and other services tariffs are derived from allowed revenues to LNG asset owners is not publicly available.

Detailed tariff design (tariff elements) including charges for capacity overrun, imbalances and their derivation: LNG tariff design (and services included) and charges for capacity overrun were established by Royal Decree 949/2001. On an annual basis the Ministry of Industry publishes a ministerial order setting the values of the tolls and fees associated with third-party access to natural gas facilities for the following year.

Indexation of tariffs (if any), or principles for tariff variations (in particular if a defined regulatory period exists): On an annual basis, the Ministry of Industry publishes a ministerial order setting the values of tolls and fees associated with third-party access to natural gas facilities for the following year. Royal Decree 949/2001 defined a four year length regulatory period.

Finally, with regard to the information provided in English, most part of the regulation mentioned above is available in English at the CNE web site. However, not all regulation is translated (for example, Ministerial Orders setting full service tariffs and Ministerial Orders setting tolls and fees associated with third-party access to natural gas facilities are not translated). In addition, there is a long delay in translating regulation.

⁷¹ Ministerial Order ITC/103/2005, dated January 28th, establishing the tolls and fees associated with third-party access to natural gas facilities.

A.2.6. UK (GLNG)

Regulatory involvement in tariff setting:

- Grain LNG: No part of the costs for the GLNG projects underwritten through regulated charges. All costs are covered by the receipt of revenues arising solely from the charges levied on the users of the facility (an annual capacity charge).
- South Hook: Not applicable.
- Dragon LNG: Not applicable.

General methodology:

- Grain LNG: Open season process whereby the price paid (an annual capacity charge) for capacity was based on market valuations.
- South Hook: The sponsors of the project consider that own use terminal developers should not be expected to offer initial capacity to the market. It appears to the sponsors that an open season process would not, in the case of an own use LNG terminal, benefit the consumer.
- Dragon LNG: In order to find customers and partners Petroplus conducted an open season solicitation of offers to attract interest in the project. Morgan Stanley was retained as Petroplus' financial adviser to help in the solicitation of potential throughputters. Morgan Stanley sent a solicitation letter on behalf of Petroplus to several potential partners. In this letter it is said that "Petroplus expects that on this volume basis the cost of the service will be expressed as a Capacity Charge estimated to be [.] pence per therm of gas and a Variable Charge, estimated to be [.] pence per therm of gas, with an Operator's *Fuel Gas Allowance of [.]*". The offer of the Open Season winner showed prices slightly below those proposed by Petroplus.

Definition of the RAB and the rate of return:

- Grain LNG: not available.
- South Hook: not available.
- Dragon LNG: not available.

Access tariff structure:

- Grain LNG: An annual capacity charge.
- South Hook: According to the "Application for exemption", Qatargas Petroleum and Exxon Mobil will publish the tariffs on which exempt capacity will be charged.
- Dragon LNG: According to Morgan Stanley solicitation letter "Petroplus expects that on this volume basis the cost of the service will be expressed as a Capacity Charge estimated to be [.] pence per therm of gas and a Variable Charge, estimated to be [.] pence per therm of gas, with an Operator's Fuel Gas Allowance of [.]". Further details in relation to pricing were set out in the Confidential Appendix 1 to the Term Sheet

Functional allocation and capacity/commodity allocation principles:

- Grain LNG: We understand that only an annual capacity charge applies.

- South Hook: not available.
- Dragon LNG: According to the “Application for an Exemption”, the charging regime is set out in the “Throughput Agreements” between Dragon LNG and the terminal users (BG Group and Petronas).

Detailed tariff design (tariff elements) including charges for capacity overrun, imbalances and their derivation:

- Grain LNG: we understand that this information is provided in the contractual arrangements (STA and GTCs) between GLNG and the Shipper.
- South Hook: not available.
- Dragon LNG: According to the “Application for an Exemption”, the charging regime is set out in the “Throughput Agreements” between Dragon LNG and the terminal users (BG Group and Petronas).

Indexation of tariffs (if any), or principles for tariff variations (in particular if a defined regulatory period exists)

- Grain LNG: we understand that this information is provided in the contractual arrangements (STA and GTCs) between GLNG and the Shipper.
- South Hook: not available.
- Dragon LNG: According to the “Application for an Exemption”, the charging regime is set out in the “Throughput Agreements” between Dragon LNG and the terminal users (BG Group and Petronas).

A.2.7. Portugal

From October 26th, 2003 LNG supplied by Transgás; is received, stored, and regasified, with natural gas being sent out through Transgás’ high pressure gas network and/or LNG being loaded onto LNG trucks by Transgás Atlântico. This is carried out all in accordance with the terms of a Subconcession Agreement and a Tolling Agreement made between Transgás and Transgás Atlântico on November 13th, 2000.

Under this agreement, Transgás is required to pay to Transgás Atlântico a capacity charge denominated in Euros based on a formula that aggregates the estimated average fixed cost of operating and maintaining the terminal, actual financing costs payable by Transgás Atlântico in the relevant month and a return on equity.

The nominal Capacity Charge is subject to deduction to the extent that the availability of the terminal falls short of the agreed availability levels specified over the 12 month period that precedes the relevant month for which the capacity charge is payable.

Force Majeure events are carefully treated in the Tolling Agreement in order to provide protection to Transgás Atlântico in case of force majeure events affecting the other parts of the LNG chain. As counterpart, there is a community of interest between all parties to the Sines LNG project (inclusive lenders) in order to provide remedies to the consequences of force majeure events affecting the Sines LNG terminal.

Transgás is also required to pay to Transgás Atlântico a processing fee denominated in Euros calculated on the basis of the quantity of LNG unloaded from the carriers and put through the

terminal multiplied by a unitary processing charge. The unitary processing charge is calculated by reference to the estimated average variable costs per cubic meter of processing LNG.

A.2.8. Turkey

EMRA published a tariff regulation which is prepared within the framework of the Natural Gas Market Law. According to this regulation, tariffs shall be prepared by the end of October of each year and will be subjected to EMRA approval. EMRA shall review such applications by December 31 of the same year and shall approve them, if deems appropriate. The tariff principles and limits may be revised by EMRA taking inflation and other issues into account.

A.3. Information on capacity

Below we provide a summary of the information available on capacities for each of the countries considered:

A.3.1. Belgium

Information about the capacities: Information on capacities is provided in the documents “*Fluxys LNG terminal services conditions and tariffs as from 1 January 2006*” and “*Main Conditions for accessing the Zeebrugge LNG terminal*”. The availability of capacity can be checked in Fluxys LNG’s Indicative transport programme (primary market) and on Fluxys LNG’s website (primary and secondary markets). The ITP is updated once a year and Fluxys LNG’s website is updated continuously. In addition, according to the Code of conduct, Fluxys LNG has to develop an automatic reservation system (ARS) within 2 months from the approval by CREG of the Network code (not approved yet). By this ARS, any terminal user who signed the Network code can check the availability of capacity and book available capacity.

Number of months ahead that terminal operators provide information on available capacities: The document, “*Fluxys LNG terminal services conditions and tariffs as from 1 January 2006*” only includes information on capacities until October 2006. However, every ITP will provide this information for at least 2 years and Fluxys LNG’s website indicates available capacity at least 2 months ahead.

Short-term available capacities and frequency of updates: information on short-term available capacities is available at Fluxys LNG web site.

Capacity allocation and congestion management procedures: These procedures are defined in the “Main Conditions” document (Chapters III and X) of Fluxys LNG and in the provisional LNG network code (Annexes A and B).

Historical data on capacity utilization and flows: No historical data available at Fluxys LNG web site.

User-friendly instruments for calculating tariffs: Not at present, however Fluxys LNG has to develop an automatic reservation system (ARS) within 2 months from the approval by CREG of the Network code (not approved yet). By this ARS, any terminal user who signed the Network code can check the availability of capacity and book available capacity. In addition,

Fluxys supports the secondary market by a platform on which publishes the secondary market offers, bringing seller and interested users in contact.

Finally, with regard to the information provided in English, most part of the information is available in English, however it would be useful for terminal users an English version of the provisional LNG network code.

A.3.2. France

Information about the capacities: Gaz de France has published all the necessary data concerning booked and available capacities and recorded flows (firm capacity, subscribed capacity, scheduled quantity, number of cargoes expected, available slots, flows).

Number of months ahead that terminal operators provide information on available capacities: GdF publishes the monthly LNG reception capacity for 6 months ahead and yearly data on reception capacity until 2021 for Montoir and 2014 for Fos Tonkin.

Short-term available capacities and frequency of updates: Currently GdF publishes total monthly capacities, subscribed monthly capacities and available monthly capacities for the following six months (sliding) and the number of slots for the coming month.

Capacity allocation and congestion management procedures: On 27 December 2004, the GdF published a regasification capacity allocation rule with immediate effect. This document introduces the following measures:

- possibility of subscribing pluri-annual capacities (pluri-annual capacities may concern the total terminal capacity, leaving no capacity reserved for short-term subscriptions);
- allocation according to the «first come, first served» principle (the applicant must be able to show an LNG supply contract consistent with the regasification capacity application);
- a «use it or lose it» mechanism set up by the terminal operator in the event of congestion, if a user has clearly under-used capacities and has refused to put them back on the market and cannot justify the need to keep these capacities on the basis of future import contracts..
- the new tariff provides for a fine for late cancellation scheduled unloading operations
- a ship or pay provision applies to 90% of contracted capacity

Historical data on capacity utilization and flows: GdF publishes the unloaded quantities (GWh/month) and the number of cargoes unloaded per terminal. Daily quantities are published on GRTgaz web site.

User-friendly instruments for calculating tariffs: GdF provides a tariff simulator in its web site.

Finally, with regard to the information provided in English, almost all the information available at GdF web site is only available in French.

A.3.3. Greece

Information about the capacities: Currently, there is only one sales & purchase agreement (until 2021) between DEPA and LNG supplier SONATRACH, that provides for an annual throughput between 0.51 (min) to 0.68 (max) bcm. Under the current send-out capacity, the theoretical annual throughput is 1.4 bcm/yr in normal operating mode.

Operator's obligations regarding transparency on capacity will be prescribed in the Operation Code of the National Natural Gas System. The current draft of said Code (available on RAE's site - unofficial translation available on request) provides for an electronic bulletin board in Greek and English, maintained by the TO. Operating Code is expected to be in place by mid-2007.

Number of months ahead that terminal operators provide information on available capacities: not available.

Short-term available capacities and frequency of updates: not available.

Capacity allocation and congestion management procedures: According to the first draft of the National Natural Gas System Operation Code as proposed by RAE, in the absence of congestion, vaporisation capacity (and the respective LNG reception services and temporary storage) is allocated on a "first-come, first served" basis.

In addition, the draft Operation Code foresees a congestion management procedure for the Revithoussa LNG terminal. The TSO would inform RAE when total booked send-out capacity exceeds two thirds of total send-out capacity and also when available send-out capacity is inadequate to fulfil a user's request. The latter case is followed by proposals to RAE towards congestion management in terms of (a) increases of available capacity through new infrastructure (b) offer of interruptible contracts and (c) capacity release through auctions. RAE decides on the method to be finally adopted. According to the draft Code, if option (c) is adopted then RAE would require existing long term capacity holders to release their booked capacity so that the total send-out capacity can be reallocated through the auction. The TSO would have to reimburse terminal users for the released capacity that would have already been paid for via the LNG tariffs.

Historical data on capacity utilization and flows: currently not available.

User-friendly instruments for calculating tariffs: currently not available.

Finally, with regard to the information provided in English, almost all information at DEPA and RAE web sites is available only in Greek.

A.3.4. Italy

Information on capacities: This information is available at GNL Italia web site for Panigaglia LNG terminal.

Number of months ahead that terminal operators provide information on available capacities: According to deliberazione n. 167/05 the TO should publish information on capacity for the 10 years ahead on an annual basis, and this information should be updated after any change.

Annual capacities are allocated monthly before the beginning of each thermal year (1 oct-30 sept.). Information on monthly capacities are then updated for the remaining part of the thermal year on a monthly basis..

Short-term available capacities and frequency of updates: The slots still available, either because they have not been granted or because they are not used at the time of the definition of the unloading programme, are made available monthly so as to permit "spot" unloadings (information referred to Panigaglia LNG terminal).

Capacity allocation and congestion management procedures:

- Panigaglia: Annual allocation procedure, each year available capacity for the following years and available capacity for a 5 years period from year+2 to year +7 is allocated. With respect to congestion management procedures, capacity is allocated with the following priority: 1) TOP contracts signed before 10/08/1998 up the minimum quantity delivered in the previous years; 2) long term contracts; 3) annual contracts.
- Rovigo and Brindisi: Rules for the allocation of the remaining capacity for terminals whose capacity is partially exempted from TPA has recently set by the Ministry of Productive Activities (Delibera n. 168/06, July 31, 2006).

Historical data on capacity utilization and flows: not available.

User-friendly instruments for calculating tariffs: GNL Italia provides some examples on how charges for LNG services are calculated.

Finally, with regard to the information provided in English, almost all information available at GNL Italia S.p.A web site is in Italian. In addition, most part of existing gas regulation is also only in Italian.

A.3.5. Spain

Information about capacity: According to Article 6.5 of Royal Decree 949/2001: *“The owners of regasification, storage and transportation installations shall publish on a quarterly basis the contracted and available capacity in each one of their installations. They shall make a distinction between capacity assigned to access contracts for a term of two or more years and access contracts signed for a term of less than two years”*. In addition, LNG terminal operators provide detailed information on technical capacities.

Number of months ahead that terminal operators provide information on available capacity: Information on available capacities is provided on a monthly basis for, approximately, three years ahead, and on a yearly basis for the following five years. This information is updated every quarter.

Short-term available capacities and frequency of updates: ENAGAS provides for its plants information on available capacities for the current week; this information is updated on a weekly basis. The rest of the operators, as well as ENAGAS, provide information on available capacities for the month ahead.

Capacity allocation and congestion management procedures: Capacity allocation and congestion management procedures are established on existing regulation. The capacity allocation procedure is based on a first come first served principle. In order to avoid contractual congestion, it is also required to the agents the provision of a bail, equivalent to an amount of 12 times the fix term of the tariff, applied to 85% of contracted capacity. The bail and the capacity would be lost in case of infra-utilization (firm Use it or lose it mechanism).

Historical data on capacity utilization and flows: ENAGAS, as system operator, publishes a monthly bulletin on gas statistics which includes the maximum, average and minimum daily send-out rate for each regasification terminal in Spain.

User-friendly instruments for calculating tariffs: ENAGAS provides a tariff simulator for calculating charges for regasification and LNG storage services. As tolls and fees associated with third-party access to gas facilities are unique in Spain, this simulator also applies to Bilbao and Sagunto LNG terminals.

Finally, with regard to the information provided in English, ENAGAS, BBG and SAGGAS have improved considerably the amount of the information provided in English. However some information is only available in Spanish (as for example the tariff simulator user's manual).

A.3.6. UK (GLNG)

Information about capacity:

- Grain LNG: Open season for primary capacity sales process. The contractual arrangements at the site allow the primary capacity holders to sell importation capacity to secondary users.
- South Hook: The primary shipper will be required to offer to the market any part of the base capacity that does not require. Such capacity will be termed Available Capacity. South Hook will promptly advertise the available capacity to the market in an appropriate electronic form such as on a website, together with dates by which applications for access are to be submitted and allocated or rejected. All other information necessary for third parties to determine their applications will be made available including: 1) quality specification ranges; 2) all standard terms and conditions, including credit requirements; 3) framework contract; 4) priorities.
- Dragon LNG: Open season for primary capacity sales process. Under the terms of the Throughput Agreements, the primary capacity holders have contracted for 100% of the terminal capacity. The Throughputters will be obliged to notify Dragon in the event that they do not expect to use any of their capacity entitlement. In the event that there is capacity available which the Throughputters do not intend to use, Dragon will advertise this available capacity to the market in an appropriate electronic form such as on a website, together with dates by which applications for access are to be submitted and allocated or rejected. All other information necessary for third parties to determine their applications will be made available including: 1) quality specification ranges; 2) all standard terms and conditions, including liabilities; 3) framework contract; 4) timing and priorities.

Number of months ahead that terminal operators provide information on available capacities:

- Grain LNG: The primary shipper's three month unloading programme (also known as the Ninety Day Schedule), is published in advance on the LNG Grain Agency website (www.lngga.com). Ten days in advance of a scheduled unloading date, if the primary shipper decides, at its discretion, not to use the next available scheduled berthing slot, then the primary shipper will make that berthing slot available for use by third parties under the secondary capacity mechanism.
- South Hook: not available.
- Dragon LNG: The precise arrangements by which the market will be advised of available capacity will be developed and notified prior to first operation of the facility.

Short-term available capacities and frequency of updates:

- Grain LNG: The commercial operations section at GLNG web site holds information on how parties may be able to access secondary or Use It Or Lose It (UIOLI) capacity at the terminal.
- South Hook: According to the "Application for exemption", South Hook will advise the market promptly on any spot capacity that may be identified within the year.
- Dragon LNG: The precise arrangements by which the market will be advised of available capacity will be developed and notified prior to first operation of the facility.

Capacity allocation and congestion management procedures:

- Grain LNG: All primary capacity at the terminal was auctioned through open season processes and was fully contracted: BP/Sonatrach have a 3.3 mtpa, 20-year contract to use the terminal to berth and unload LNG ships and store LNG, before regasification and nomination of gas for delivery into the UK's National Transmission System. 6.5 mtpa of expansion capacity has been contracted to Centrica, Gaz de France and Sonatrach, again on a long term basis.

Ofgem granted an exemption from rTPA requirements on the basis that GLNG would meet certain requirements, including the allocation of the terminal capacity to primary capacity holders through open season processes and the implementation of effective anti-berthing measures. GLNG has provided information on how it satisfies these requirements: the Commercial Operations web page holds information on how parties may be able to access secondary or Use It Or Lose It (UIOLI) capacity at the terminal.⁷²

⁷² Since the start of commercial operations, in July 2005, capacity at the Terminal has been accessible to potential third party shippers through arrangements with the Primary Shipper to sell LNG on an ex-ship basis or through interruptible capacity made available by the Terminal Operator. This interruptible capacity offered by the Terminal Operator to date comprises the unused berthing slot together with any storage and delivery capacity which the Primary Shipper is not using. From 31 July, 2006, these two existing methods are complemented by a third method – the "Secondary Capacity Mechanism". Under the Secondary Capacity Mechanism a berthing slot the Primary Shipper decides not to use will be auctioned with corresponding temporary storage and delivery capacity. The Primary Shipper will, in these circumstances, be making available storage capacity and delivery capacity which they would otherwise be using, to complement the unused berthing slot.

- South Hook: The terminal operator will manage a process that invites priced offers for Available Capacity and where there is more than one qualifying third party user making an application, South Hook will allocate capacity in the following manner:
 - preference will be given to the applicant whose access request allows revenues for South Hook to be maximised;
 - spot capacity which becomes available from time to time will be allocated either on the same basis as Available Capacity, or on the basis of first come, first served, depending on the timing of spot capacity availability.

To further encourage the efficient use of capacity, the operator would intend to establish an appropriate system to enable the primary shipper and third parties who obtain Available Capacity to market such capacity on a secondary market.
- Dragon LNG: Throughput Agreements require to pay fixed charges irrespective of use of the terminal. Throughputters will have an incentive to maximise use of the terminal. In addition, the Throughput Agreements enable secondary trading of capacity between the throughputters in the event that they do not use its fully capacity entitlement.

Historical data on capacity utilization and flows:

- Grain LNG: Information in relation to Grain daily export flows is posted on the TSO web site.
- South Hook: terminal currently under construction.
- Dragon LNG: terminal currently under construction.

User-friendly instruments for calculating tariffs:

- Grain LNG: a bulletin board is available for parties to express interest in buying or selling capacity at the terminal.
- South Hook: The terminal operator will advertise the Available Capacity to the market in an appropriate electronic form such as on a website.
- Dragon LNG: The precise arrangements by which the market will be advised of available capacity will be developed and notified prior to first operation of the facility.

A.3.7. Portugal

Total annual throughput: 5.25 bcm/yr; available capacity: approximately 4 bcm/yr. At present, Transgás Atlántico does not provide any information on capacities in its web site.

A.3.8. Turkey

Marmara Ereğlisi LNG Import Terminal has a total annual throughput: 5.2 bcm/yr. In the winter period, the terminal is in its full capacity, while in the summer period the terminal is run roughly with 60% capacity.

With respect to the capacity allocation procedure in this terminal, there is a priority for BOTAŞ existing Contracts. Pro Rata is applied for the remaining Capacity.

Contractual Congestion Management has not been clarified yet. In the drafted Code of Operations for the Marmara Ereğlisi Terminal, it is stated that Pro Rata is to be applied in proportion with the existing amount of LNG in Storage Tanks.

Appendix B. Application of key reference criteria

This Appendix contains theoretical considerations on the impact that the most relevant regulatory and operational variables might have on the reference criteria used in the assessment of current arrangements.

The considerations below have been largely confirmed by our discussions with LNG users and have served as guide to our appraisal of current arrangements.

Table 12
Regulated TPA and exemptions as of art.22

	rTPA or exemption	Exemption date and duration	Percentage of capacity exempted
Competition in capacity	<ul style="list-style-type: none"> - Both systems can promote competition for primary capacity - rTPA allows competition for incremental capacity in the market - Effective separation of TSO and terminal operator functions key for effective competition in capacity - Exemptions are consistent with competition for the capacity market if multiple plants are developed 	<ul style="list-style-type: none"> - Longer durations may foreclose entry in future - Duration of exemption not to refrain future competition in capacity if expected demand growth is likely to put capacity at a premium 	Increasing % for rTPA allows competition for shorter term use
Competition in gas	<ul style="list-style-type: none"> - rTPA favours gas-to-gas competition and multiple users of capacity, particularly in long term - rTPA to LNG terminals can only increase competition where there is effective open access downstream of the terminal 	See left	Increasing % for rTPA allows entry for a larger number of players, unless there is high fragmentation of sales of exempted capacity
Efficient capacity allocation	<ul style="list-style-type: none"> - Not a function of rTPA or exemption decision per se, depends on capacity allocation procedures congestion management, UIOLI rules 	See left	
Use maximisation	<ul style="list-style-type: none"> - Exemptions conditional on ill-defined UIOLI rules may put capacity utilisation at risk - Exemptions may increase the risk of dominant positions in secondary trades - Plants operation efficiency varies, competition in capacity key for efficient functioning 	-	- monitoring of capacity utilisation
Contribution to security of supply	<ul style="list-style-type: none"> - Exemptions may lead to fewer users and supply diversification - Homogeneous use of plant with long terms contracts to few users contributes to stable functioning and security of supply but increase exposure to failure of main shipper - rTPA creates price signals if based on capacity value 	-	- additional measures to allow a percentage to rTPA or UIOLI might help create liquidity and better price signals
Provision of flexibility	Depends on services offered. Exemptions provide more flexibility to users but might reduce competition in flexibility market, depending on efficiency of secondary markets	-	-
Non-discrimination and transparency in access	<ul style="list-style-type: none"> - rTPA ought to provide access on non-discriminatory grounds - Exemptions may imply non-public service conditions - Functional separation between TSO and terminal operator key for transparency when there are multiple entry points with different operators - Separation between operator and users helps transparency in capacity allocation and plant operation 	-	-
Incentives for investment	<ul style="list-style-type: none"> - rTPA inherently increase regulatory risk in regulatory reviews - Exemptions conditional on ill-defined rules increase investment risk - Open season for initial capacity may increase the risk of plants conceived for own use 	<ul style="list-style-type: none"> - Security of investment recovery increase with duration of exemption and/or long term capacity subscription agreements - duration consistent with depreciation period of plant 	<ul style="list-style-type: none"> - Incentives for investment increase with % exempted, but there could be a minimum scale under which investment would only take place with full exemption - Thorough examination of need for full exemption

Table 13
Tariff framework

	Bundling of services & tariffs	Remuneration framework	Competences for tariff setting
Competition in capacity	<ul style="list-style-type: none"> - Unloading, storage and send-out in fixed proportions might inhibit competition between plants for individual services - Short term services favour competition for installed TPA capacity 	<ul style="list-style-type: none"> - cost plus regulation inhibits capacity competition in primary markets - tariff conditions specific for each terminal 	
Competition in gas	<ul style="list-style-type: none"> - unbundled tariffs allows users to adjust to their own consumption needs and promotes entry in the short term - capacity/commodity split loaded onto commodity term might favour development of liquidity trading 		
Efficient capacity allocation	<ul style="list-style-type: none"> - capacity charges to include capacity costs only - commitment costs (i.e. bails) required to avoid contractual congestion 		
Use maximisation	<ul style="list-style-type: none"> - appropriately defined bundled tariffs ought help ensure efficient utilisation - avoid charging fixed costs on tariff terms that depend on usage - interruptible tariffs and short terms/spot services ensure capacity utilisation - LNG terminals costs as unavoidable TPA charge for all transmission network user may provide incentive for development of LNG and maximisation of use in plant in a first stage of development of market 	<ul style="list-style-type: none"> - guaranteed recovery of incurred variable costs do not provides operational incentives to maximise throughput - incentive schemes with sharing factors in remuneration of variable costs favour throughput maximisation 	
Contribution to security of supply	<ul style="list-style-type: none"> - LNG terminals diversification benefits in terms of greater security and avoided incremental transmission capacity to be taken into account in tariff setting 		
Provision of flexibility	<ul style="list-style-type: none"> - short term tariffs and interruptible services set on the basis of their value to customers - unbundled tariffs for unloading would increase flexibility, particularly for small player. Also the existence of storage and send-out or additional services over those included in bundled service 		
Non-discrimination and transparency in access	<ul style="list-style-type: none"> - Individual LNG terminal tariffs to be paid by LNG users of that terminal - Exceptions to the above rule for quantifiable system-wide benefits (such as diversification of entry routes or avoided transmission costs) 	<ul style="list-style-type: none"> - Predictable remuneration methodologies for existing and new plants 	<ul style="list-style-type: none"> - Tariff methodologies to be approved by national regulator.
Incentives for investment	<ul style="list-style-type: none"> - If tariff framework establishes allowed revenues and there is a settlement system, bundling is indifferent - In case there is no settlement system a well-design bundled tariff might promote use and maximize revenues - In case capacity costs are loaded onto variable terms, utilisation risk is shifted to operators 	<ul style="list-style-type: none"> - prudently built capacity (in response to firm committed requests or to fill planned needs) included in remuneration promotes investment 	

Table 14
Capacity related procedures

	Capacity allocation rules			Other mechanisms	
	Auction	First come-first served	Pro-rata or order of preference	Open season	Secondary market of capacity
Competition in capacity				-Ensures LT capacity is evaluated on the basis of market demand	
Competition in gas					- favours gas to gas competition by allowing access to capacity
Efficient capacity allocation	- allocates to users that value it most - auction rules determine degree of efficiency	- only in case of excess capacity	-only in case of excess demand if price signals cannot be used to discriminate		- provides price signal on scarcity
Use maximisation					- if it is liquid then it ensures maximum utilisation - priority to trading of complete slots
Contribution to security of supply		- provides stability to investment if capacity is not tight		- provides stability and predictability to investment if capacity is not tight	- ensures minimum cost of demand forecast error - direct access to capacity for secondary users rather than berthing slot might make it harder for operator to optimise plant
Provision of flexibility					- allows flexible use of capacity - capacity trading might involve less flexibility in adapting to market circumstances than use of capacity by primary holder for a secondary user - award of physical storage capacity inflexible. It effectively limits the size of vessels that can use the terminal. In the event that the spare capacity is not used then the tank stays empty
Non-discrimination and transparency	- very transparent	- might be seen as less transparent		- open season rules determine degree of transparency	
Incentives for investment	- price signals - uncertainty over outcome for short/medium term capacity				

Table 15
Regulatory variable for allocation of capacity

	Ceilings on capacity booked by single shipper	Ratios on long term/short term contracts	Cap on long term contract duration
Competition in capacity	- prevent capacity hoarding	- in the presence of other anti-hoarding mechanisms, competition would not be affected	- in the presence of other anti-hoarding mechanisms, competition would not be affected
Competition in gas	- allows access to more players but may prevent realization of economies of scale in LNG operation	- in the short run it may favour the increase of number of agents in the market	
Efficient capacity allocation	no	no	
Use maximisation		- might go against maximisation of use if there is not enough demand for short term capacity and long term capacity requests are not met	
Contribution to security of supply	Favours larger number of suppliers		
Provision of flexibility		- in the absence of developed secondary markets might provide a means of flexible access to short term capacity	
Non-discrimination and transparency in access	- transparency on evolution of ceilings is required to take informed long term capacity reservation decisions and avoid discrimination against current users - the specific ceiling level might be perceived as arbitrary	- transparency on future evolution of ratio required to avoid discrimination	
Incentives for investment		- may increase uncertainty on future utilisation of capacity	- may increase uncertainty on future revenues from capacity and make financing more difficult (except if cap is longer than depreciation period)

Table 16
Send out requirements and UIOLI

	Calculation of unused capacity	Send out requirements	Use It or Lose It
Competition in Capacity		- send-out profiles that can be aligned with commercial gas contracts should attract more business than more restrictive operating regimes	- different definitions of what is to be used and what is to be lost possible. - competition in capacity enhanced only if UIOLI makes available extra capacity without putting at risk incentives for continued use of capacity
Competition in gas		- the send out period has to be aligned with commercial practice in traded gas markets for the capacity user to be able to effect the trade.	- in a fully functioning and liquid market, most companies regard UIOLI as a last resort safeguard because the market should give signals which encourage the use of the terminal
Efficient capacity allocation		- the large size of a typical LNG cargo means that a short send out period cannot be accommodated by any but the largest players.	
Use maximization	- where 'unused' capacity is not identified there can potentially be under-utilisation	- maximum fixed send-out number of days ensures rotation of stocks	- at the moment and for the foreseeable future there is a shortage of LNG supply and it must therefore be expected that some terminal capacity must be idle at times
Contribution to Security of Supply	- where 'unused' capacity is not identified sufficiently early there may not be time to source supplies in an emergency	- overly rigid send out rules can, effectively restrict the availability of the terminal to send out at short notice or when emergency supply is required	- If UIOLI prevents hoarding of capacity in crisis situations, they can enhance SoS.
Provision of flexibility			
Non-discrimination & transparency in access	- most users are unsure about the definition of 'unused capacity', a clear definition is required to ensure non-discrimination	-- to impose send-out on a short period favours large players with regular unloading pattern but can ensure free storage capacity for spot access	
Incentives for investment			

Table 17
Management of LNG stock levels and notice period for slots

	Management of LNG stock levels	Notice period for TPA slots
Competition in Capacity		Capacity has an option value both to the Primary capacity holder and a potential secondary user. The option decreases in value over time until it becomes worthless for the secondary holder a few days before the berthing slot whereas the primary holder may still be able to utilize the slot. The Primary capacity owner wants to leave the decision of when to offer the capacity to third parties until the last moment whereas the potential secondary user needs at least 10 days to bid for the capacity and to organize the cargo
Competition in gas		A major international gas trader can probably respond more quickly than a smaller player or a new entrant. Longer notice periods might be helpful to competition by providing time to react to different type of players and LNG supply origins
Efficient capacity allocation	-	
Use maximization		
Contribution to Security of Supply	- rigid send out rules can effectively restrict the availability of the terminal to send out at short notice or when emergency supply is required	-sufficient notice of capacity availability needs to be given for the market to be able to respond to an emergency. However the Primary capacity holder should be given a fair chance to provide that supply himself
Provision of flexibility	- when multiple plants are present “pooling” of stock levels of LNG	- long notice periods may restrict the ability of terminal operators to provide flexibility
Non-discrimination & transparency in access		- short notice periods effectively discriminate against small/new players and players with distant supply origins
Incentives for investment		- investors will not proceed if the notice periods are so long that option value is destroyed

Table 18
Management of LNG stock levels and notice period for slots

	Network access downstream
Competition in Capacity	Restricted or non-transparent access to transmission networks restrains third party usage of some terminals
Competition in gas	Restricted or non-transparent access to transmission networks seriously inhibits downstream competition
Efficient capacity allocation	If capacity users are responsible for getting access to transmission networks then the procedure can be inefficient. If TO ensures that access to transmission is provided in line with Terminal usage and send-out capabilities then capacity can be allocated more efficiently
Use maximization	As above
Contribution to Security of Supply	Network access is key to security of supply
Provision of flexibility	Network access rules but be aligned with terminal operation rules to achieve any degree of flexibility
Non-discrimination & transparency in access	Access to the terminal does not necessarily provide access to the network and hence not all companies can use capacity
Incentives for investment	A new investor will not proceed unless access to the network is available. This can be a major deterrent to new infrastructure

Table 19
Shipping issues

	Vessel sizes available	Ship vetting at the terminal	Ship diversion
Competition in Capacity	Ship sizes have typically been in the range 60,000m ³ to 150,000m ³ but by 2008 the new Qflex Qatari ships will be 210,000m ³ in service. Around 35% of terminals will not be able to receive these larger ships	Time taken to vet ships varies from 2/3 days to 10 days. Terminal Operators taking longer than the slot notice period to vet a ship can effectively obstruct access to capacity	
Competition in gas			International traders can take opportunities for gas supply in new markets if the flexibility exists to divert cargoes from the original destination
Efficient capacity allocation	Some sources of LNG may be excluded if the ships which deliver are not compatible with the receiving terminal		
Use maximization	As above		Ability to receive diverted ships at (relatively) short notice can help utilise the full terminal capacity
Contribution to Security of Supply	As above		Ability to divert a ship at (relatively) short notice is key to security of supply
Provision of flexibility			
Non-discrimination & transparency in access	Ship vetting procedures are key here	As left	As left
Incentives for investment	New terminals will construct marine facilities capable of accepting the full range of ship sizes provided the tariffing and exemption scheme are sufficiently attractive		

**Table 20
Gas quality**

Regulatory variables	Quality constraints	Quality requirement transparency	Quality interoperability
Competition in Capacity	A major constraint on competition between terminals when the quality specification is markedly different	Quality spec is generally set by the TSO not TO and hence beyond their control	A major constraint on competition between terminals when the quality specification is markedly different
Competition in gas	As above	As above	
Efficient capacity allocation	Quality restrictions can rule out certain sources of LNG and hence inhibit efficient capacity allocation		
Use maximization	As above If segregation of gas in a separate tank due to different specs, limitation of terminal's storage use.		
Contribution to Security of Supply	Quality restrictions can rule out certain sources of LNG hence reduce the effectiveness of LNG as a means of providing security of supply		The inter-connection between markets should provide enhanced security of supply but is inhibited where there is a major difference in quality spec
Provision of flexibility			
Non-discrimination & transparency in access		As above	
Incentives for investment	Some upstream producers are installing facilities to adjust quality to access a range of markets.		

Appendix C. Operational conditions

This Appendix summarizes the key operational variables for each country, indicating the terminals for which information is either available or is relevant (some terminals are under construction).

The operational variables to which we refer in this Appendix are those variable that have been identified as the most relevant for TPA to LNG terminals (as given by the regulators' questionnaires and market interviews with selected LNG users in European terminals).

Table 21
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Calculation of unused capacity	<p>Theoretical maximum berthing frequency of one vessel every 3 high tides.</p> <p>Fluxys LNG draws up a record of use of the capacities of the LNG terminal that details, for each user of the LNG terminal:</p> <ul style="list-style-type: none"> i. the number of slots nominated by the user of the LNG terminal for each month; ii. the unloading dates of carriers and the amounts unloaded; iii. the nominated slots but which have not been used by the user of the LNG terminal and the reasons why these slots have been missed. iv. the regasification capacity allocated (and not interrupted) to the user of the LNG terminal and v. the maximum and the daily total of scheduled regasification nominations. 	<p>GdF publishes a schedule on its website of available capacity for each of the next six months as at the beginning of the coming month. An indication of the number of available slots is given for the coming month. Dates of slots are available only on application to GdF.</p>	<p>Vaporisation send-out capacity is the determining factor at present (although the installation of additional vaporisation equipment is planned). The current practice of unloading 3 cargoes per month has nothing to do with the potential berthing frequency. According to the draft Operation Code for the National Natural Gas System published by RAE, LNG terminal users submit yearly to the TO the annual unloading schedule. Based on this schedule and also on the monthly schedule also submitted by the LNG terminal users, the TO publishes on the web the available capacity for the next three months as well as the berthing slots available.</p>	<p>GNL Italia publishes available berthing 'slots'. A 'slot' is defined as available for a spot cargo when contemporaneously the jetty is available for two consecutive calendar days and there is sufficient space in the tanks to offload a cargo provided it would not disrupt the programme of deliveries for the current and subsequent month.</p>	<p>ENAGAS publishes in its web site Bulletins on Gas Statistics, which are updated monthly. These Bulletins provides data on number of cargoes unloaded, volume of gas regasified, LNG stored in tanks, and utilization rate for each terminal.</p>	<p>Primary capacity holder determines whether berthing slot will be used or not. The objective is to keep tanks 'full' at all times. Secondary capacity arrangements provide access as a bundled service.</p> <p>Grain LNG determines the level of spare capacity in the tanks whenever a berthing slot is likely to be unused and calculates the amount of LNG that could be discharged in the slot, which could be a part-cargo.</p>

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy ¹ (Panigaglia)	Spain	UK ² (Grain Phase 1)
Type of service available	Receiving and unloading of LNG carriers, Basic storage, Flexibility storage, Send-out capacity. 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 complete slots (without breaking them down according to 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 make up a slot separately on the secondary market.	Receiving & unloading of LNG carriers, storage of LNG and sendout of gas - effectively bundled together 2 services : continue or band; within the band service, it is possible to have a spot service	Vaporisation capacity with implicit associated berthing and short term storage capacity.	Bundled – LNG delivery at flange on jetty and redelivery gas at PSV or nominated Redelivery Point on transport system	The basic tariff bundles services: unloading of LNG ships, regasification or tanks loading and a LNG operational storage equivalent to 5 days of the daily contracted capacity. Further storage and other services (loading of ships with LNG, ships cooling and transferring of LNG between ships) can be bought in addition to the basic service bundle.	Bundled and/or separate berthing/ storage/ sendout

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Send out requirements	Basic storage per consignment is 6 days plus up to a further 4 Days Flexible storage, hence send out is over a 6 to 10 day period.	For users who schedule a yearly average of more than one ship per month, daily output is set by the TO so as to be as steady as possible depending on the duration between two arrivals of the same user’s ships. Daily output is proportional to total terminal capacity, so that within the possibilities of terminal limits, users can benefit from a certain amount of flexibility. For users scheduling an annual average of less than one ship a month, regasification of a cargo is ensured with constant output over 30 days. This service enables isolated cargoes to benefit from constant output over a relatively long period so as to provide regular deliveries adapted to market needs downstream. This service nevertheless imposes certain terminal restrictions on regular long term users as their unloads must physically guarantee a third party’s contractual cargo output over 30 days . The 30-day band is therefore not flexible, but output is guaranteed.	Single terminal user at present so send-out is according to market demand. The primary role of LNG in Greece is as Peak Shaving and security of supply.	Send out is aggregated for all users during the month in question	The Regasification tariff includes an operational storage equivalent to 5 days of the daily contracted capacity, additional storage capacity available at a separate LNG storage tariff.	Sendout over 6.5 to 7 days

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Use It or Lose It	Fluxys LNG will market any slot whose use has not been confirmed two months before the service start date, on behalf of the holder and at the regulated price. This gives capacity holders the possibility of negotiating freely on the secondary market, but prevents them being able to hoard capacity by offering it at an unreasonably high price on the secondary market until shortly before the beginning of the slot, then reducing this price so as the comply with the provisions of the code of conduct.	<p>TO has the right to re-assign capacity if it is not being fully utilised at times when there is demand for it. A shipper can make a request to the TO as to whether there is any unused capacity. For this to be the case the following 3 conditions must be simultaneously met:</p> <ul style="list-style-type: none"> - under utilisation of capacity by a Capacity Owner where the capacity is all subscribed - refusal by the Capacity Owner to sell the unused capacity on the secondary market at a price at least that of the tariff in force - Capacity Owner unable to justify its need to keep control of the capacity during the period in question <p>If so then the Capacity Owner loses the unused capacity for the period in question and the TO can sell it on to parties who have requested the capacity on a ‘first come first served’ basis at the prevailing tariff. Any obligation to pay the minimum tariff passes to the new Capacity Owner.</p> <p>-ship or pay for 90% of contracted capacity</p>	Defined in the draft Operation Code for the National Natural Gas System on the basis of a yearly capacity.	<p>A user that in a thermal year fails, except in case of FM, to use all the capacity booked for a multi-year period has to offer the unused capacity to the market for the remaining part of the multi-year period. If no other user ask for this capacity the first user continues to hold it. No UIOLI applies for the capacity booked for a single year.</p> <p>No secondary rights – all capacity is managed by the TO</p>	<p>Under “firm UIoLP”, primary capacity holders not using their contracted capacity will lose the unused capacity plus the corresponding share of a bail provided as a guarantee of utilisation - equal to 85% of a sum equivalent to a 12 month payment of a portion of the relevant tariff (the so called “fixed part” of the tariff).</p> <p>Capacity and the bail are lost if capacity utilisation goes below 80% of contracted capacity during the first six months of the contract. The terminal user only loses a percentage of the bail and of the capacity equal to the corresponding decrease in the utilization rate.</p>	TO determines the level of spare capacity in the tanks whenever a berthing slot is likely to be unused and calculates the amount of LNG that could be discharged in the slot, which could be a part-cargo. Primary Capacity owner also computes secondary capacity that could be made available but this is a special service not UIOLI.

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Measurement	LNG consignment measured in GWh	LNG consignment measured in MJ, volume measured in m3, conditions as spec by GIIGNL, but terminal capacity is stated in terms of GWh.	LNG consignment measured in MWh and volume in cubic meters.	LNG consignment measured in MJ and volume m3	LNG consignment measured in kWh. The measurement procedure is described in detail, including conversion factors, in the Detail Protocol 05 for the Network Code.	
Management of LNG stock levels	Fluxys LNG draws up, on an hourly basis, a gas-in-storage account for each user of the LNG terminal on the basis of the input and output allocations of the LNG terminal and any quantities of LNG that may be transferred between users of the terminal.	Stock Variation calculated on a daily basis by TO. Volume net is the difference between LNG consigned or transferred between users and gas sent out. Capacity owner can request verification of the measurements.	According to the draft Operation Code for the National Natural Gas System the TO manages LNG stock levels.	All for the TO to manage – capacity users are allocated volumes after the end of the month	The system technical manager (ENAGAS) calculates a daily physical and commercial balance by user and LNG facility according to the Network Code (dated 5 October 2006 and published in the Journal of the Official Gazette of October 11, 2005). The balance is calculated according to the following formula: Initial stock + gas entry – (losses + own consumption) – gas exit – final stock + gas exchanged = 0	TO tries to keep the tanks full for maximum flexibility of sendout.

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Balancing regime			<p>Shippers are obliged to be balanced regarding LNG quantities monthly timeframe</p> <p>There are no explicit penalties for out-of balance positions</p> <p>However, the TSO may use LNG belonging to “long” shippers or refrain from fulfilling regasification requests of “short” shippers should planning and operational arrangements of the terminal so require</p>	<p>All for the TO to manage – capacity users are allocated volumes after the end of the month. If there is an under-delivery by one or more Users then redelivery of gas is scaled down pro-rata</p>	<p>Daily balancing.</p> <p>The capacity holders using installations under TPA must provide the TO with a schedule for the gas they estimate they will actually put in, take out, store, supply or consume. Daily schedules and the monthly vessel off-loading schedules are binding. The TO relies on shippers to balance the scheduling programmes they submit with projected demand.</p>	

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
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<p>Penalties</p>	<p>Compensation shall amount to: a/ For each slot lost or interrupted following an event or a series of events: an amount equal to five times the regulated payable tariff for the slot concerned; b/ For each service (other than the slot) envisaged by the terminalling contract that is lost or interrupted following an event or a series of events: an amount equal to 2.5 times the regulated payable tariff for the slot concerned; c/ Per contractual year : an amount equal to 3/12 of the invoicing amount payable by the user of the LNG terminal concerned during the contractual year for all its contracts, with a minimum equal to the regulated payable tariff for a slot.</p>	<p>Penalty payable for cancellation of a delivery Euros 10 000, if: - less than 5 days notice - the delivery is not reprogrammed for another time within the same month or first 5 days of the next month; and - the berthing slot is not used by any other</p>	<p>The draft Operation Code for the National Natural Gas System foresees penalties for the cancellation of a delivery and also for cases where unloading times exceed pre-specified duration.</p>	<p>Yes – even if the slot is used by others. Penalty for cancellation varies for 3 to 7 days notice or for early/late arrival +/- 1 to 2 days</p>	<p>According to the network code (NGTS-3; paragraph 3.6.3), the following penalties are applied to the LNG stored in excess to the maximum allowed (8 days of the daily contracted capacity or 300 GWh, calculated on a daily basis as the arithmetic average of the LNG stored in the previous 30 days):</p> <ul style="list-style-type: none"> • From 8 to 8.5 days of the daily contracted capacity: 5 times the LNG storage tariff; • >8.5 days of the daily contracted capacity: 30 times the LNG storage tariff. 	
<p>Notice period for UIOLI slots</p>	<p>2 months</p>		<p>To be specified in the Operation Code for the National Natural Gas System</p>	<p>Notice period for UIOLI: Booked capacity in month M whose use is not scheduled in the program issued in the month M-2 (5 days before the end of the month) is offered by the TO to the market. If some user buy this capacity, the primary user doesn't pay for it.</p>	<p>Capacity holders can apply for a reduction in capacity up to three months ahead of when the capacity is to be used, or one month when the reduction is due to a decrease in gas customers to the benefit of other shippers.</p>	<p>10 days</p>

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Allocation of capacity		A shipper can make a request to the TO as to whether there is any unused capacity – this can be either a non-binding request or a binding request in the event that capacity is available. For a shipper to granted capacity there must already be a relevant LNG supply contract in force. Requests will normally be answered within 7 days. Capacity is allocated on a ‘first come first served’ basis.	Capacity is allocated on a ‘first come first served’ basis. The TSO informs RAE when: the total booked send-out capacity exceeds two thirds of the total send-out capacity, and also when the available send-out capacity is inadequate to fulfill a user’s request. For capacity release: RAE would require existing long term capacity holders to release their booked capacity so that the total send-out capacity can be reallocated through the auction.	Priority given to pre-1998 Take or Pay LNG contracts, then multi-year contracts then annual contracts. Unassigned capacity reverts to the TO.	There is a provision in the legislation establishing that companies must assign at least 25% of the sum of regasification, storage and entry transmission capacities to short term contracts, with duration less than 2 years. As previously indicated, the capacity allocation procedure is based on a first come first served principle, accompanied with the provision of bails and the firm UIOLI mechanism.	A shipper can make a request to the TO or to Primary Capacity Owner as to whether there is any unused capacity and make a bilateral contract.
Standard contract	Main Conditions For Accessing The Zeebrugge LNG Terminal of Fluxys LNG Approved By The Commission For Regulation of Electricity and Gas (CREG) in Accordance With Articles 10 And 11 of The Royal Decree of 4 April 2003 Concerning The Code Of Conduct With Regard to Access to the Natural Gas Transmission Infrastructure	Yes: “Contrat D’Accès Au Terminal Méthanier“	Yes under forthcoming Network Code and should be available 4Q2006	Contratto di Rigassificazione based on the principles of “Condizioni di accesso al servizio di rigassificazione per l’anno termico 2006 – 2007”.	The standard request application form, and the standard access contract to the regasification facilities are available both at ENAGAS and CNE web sites (“ <i>Contrato de Acceso a las Instalaciones de Regasificación</i> ”; “ <i>Solicitud de Acceso y Reserva de Capacidad de Regasificación</i> ”).	

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Force majeure	In the event that a Capacity Owner cannot use a slot by FM of the TO then the slot can be made up at another time.	TO can call FM but Capacity owner can only do so once arrived at the jetty otherwise still obliged to pay Minimum Fee.	The rights and obligations of TO and users reg. FM will be described in the standard contract	Only on the part of TO or TSO not Capacity Owner	TO can call force majeure as a reason that temporarily limits a part or the whole capacity of the LNG facilities.	
Financial guarantees	The user of the LNG terminal must, at latest thirty (30) days before the provision of services, have a bank guarantee, in favour of Fluxys LNG of an amount at least equal to the average monthly amount (VAT included).	Capacity Owner must supply TO with a guarantee or guarantee from a first rank French bank within 30 days of contract signature. The sum of the minimum fees due during the contract period.	It is expected that under the standard contract, a bank guarantee corresponding to a percentage of the annual capacity charge will be required from the user in order to book capacity	Credit Rating Baa3 (Moody's Investor Services) or BBB- (Standard & Poor's Corporation). Otherwise a Bank Guarantee for one third the annual contractual liability	In order to avoid contractual congestion, it is required to the agents the provision of a bail, equivalent to an amount of 12 times the fix term of the tariff, applicable to 85% of contracted capacity.	Secondary Capacity user has to pay fee upfront.
Network access downstream	Negotiated access.		Draft Network Code for Entry-Exit procedure. rTPA. It is necessary to book capacity at the entry and exit point of the transmission network.	Entry-Exit procedure	It is not necessary to book capacity at the entry and exit point of the transmission and distribution network. There are at least two companies with contracted capacity at LNG terminals but no capacity at exit points of downstream pipelines.	Booked by Primary Capacity Owner

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Communication TO - TSO	TO – Fluxys LNG - owned by TSO – Fluxys	TO and TSO both owned by Gaz de France	TSO will also be the TO, subject to an accounting unbundling obligation. The TSO will be DESFA S.A, a 100% subsidiary of incumbent DEPA S.A. and will be established by the end of 2006.	TO - GNL Italia - owned by TSO - Snam Rete Gas	ENAGAS is the terminal owner and the TSO of Barcelona, Cartagena and Huelva LNG terminals; BBG is the TO and TSO of the LNG terminal in Bilbao; SAGGAS is the TO and TSO of the LNG terminal in Sagunto (Valencia).	TO – Grain LNG - owned by TSO – National Grid
Vessel sizes available		Fos Tonkin vessels restricted to 75,000m ³ due to shallow approach channel. Montoir can accept vessels up to 148,000m ³	Vessels with capacities ranging from 25,000 m ³ up to 125,000/135,000 m ³ (290 m length, 11.5 m draft).	Vessels restricted to 65.000-70.000m ³ due to water depth at the jetty of only 10 m	At present, all LNG terminals are prepared for dealing with cargoes up to 140.000 m ³ of LNG. ENAGAS web site provides which tankers are compatible with each one of the regasification terminals in Spain.	70,000m ³ -205,000m ³ (Not QMax size)
Ship vetting at the terminal		Ship Approval procedure published on Website. Gaz de France Major Infrastructures Division carries out inspection & unloading test (OCIMF & SIGTTO principles). Approval lapses after 3 years.	TSO is obliged to publish a “Vessel certification regulation”	Ship Approval procedure published on Website. Includes Port of La Spezia. Verdict must be given within 70 days of application. Pretty well all the suitable (small) vessels in service are already known and vetted. A list is on the GNL Italia website	The procedure for tanker compatibility is ruled by the Detail Protocol 06 for the Network Code. The development of this procedure is available at ENAGAS web site. In addition, ENAGAS publishes which tankers are compatible with each regasification terminal.	Ships are vetted by a specialist authority as well as by Grain. Procedure could take as little as 4 or 5 days in an urgent case. Shippers using Fluxys (for example) might be advised to pre-Vet their vessels to facilitate diversion to Grain at short notice.

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Quality constraints	Wobbe <51.17 MJ/Sm ³ achieved by air and/or N ₂ ballasting onsite for an additional fee	13.40 < Wobbe < 15.56 kWh/m ³ (n) (48.24 - 56.02 MJ/m ³ (n))	9640kcal/Nm ³ <GCV< 10650kcal/Nm ³ No Wobbe spec	Wobbe < 52.33 MJ/Sm ³	Gas introduced in the gas system entry points must comply with the natural gas quality specifications set by Detail Protocol 01 for the Network Code which are shown in Appendix D (Question 7).	UK quality standard is far leaner than most of EU but close to East Coast USA.
Quality requirement transparency	Fluxys LNG website specifies 14.17 < Wobbe < 15.56 kWh/m ³ (n) for LNG terminal and Fluxys transmission system (49.14 - 56.02 MJ/m ³ (n))	Gaz de France website gives spec for High and Low spec systems	LNG quality according to the agreement between DEPA S.A. and SONATRACH		Quality requirements are set by Detail Protocol 01 for the Network Code and are also published in ENAGAS web site	Compliant with National Grid transmission system

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Quality interoperability	Quality spec is constrained by requirements for the Interconnector rather than the Belgian transmission system hence some LNG sources cannot be accepted even though they are compliant with Belgian (French, German) specs. However access to the LNG terminal does not give direct access to the Interconnector	High spec is in line with EASEE gas spec	Future linkage of Greece LNG into European TEN gas transmission system will require alignment of Wobbe standards	Wobbe <52.33 MJ/Sm3 achieved by air and/or N2 ballasting onsite for an additional fee		National Grid GS(M)R 1996 spec is 47.20 < Wobbe < 51.41 MJ/Sm3 under normal conditions (slight variations allowed in a supply emergency). Entry conditions at Grain will be set to achieve correct network blend. Most LNG is outside this range: correction can be achieved by N2 ballasting onsite for an additional fee. Some sources are too far off spec to be useable as the amount of N2 required would breach the 5mol% limit

Table 21 (continued)
Current arrangements regarding operational variables

	Belgium (Fluxys)	France³ (Fos Tonkin & Montoir)	Greece⁴ (Revithoussa)	Italy¹ (Panigaglia)	Spain	UK² (Grain Phase 1)
Other features	Capacity user may transfer LNG in storage to another user (for a fee)	Shipper must have an LNG supply contract in place if the capacity is booked more than 9 months before the berthing (in order to avoid hoarding).			The process to access the terminal is summarized as follows: shippers wishing to book regasification capacity have to send a request application form (Standard Form) to the company operating the terminal. For an existing customer, the answer on the capacity request has to be provided within 12 days, whereas a new customer shall be replied within 24 days. After positive answer, access contracts have to be signed within the following 24 days.	Capacity User has to be a registered Shipper on the National Grid network

Source: NERA elaboration.

1. New terminals at Rovigo and Brindisi are under construction and do not have operational rules as yet. LNG regasification Code is still undergoing consultation: access to Panigaglia is according to 'Conditions of Access Thermal Year 2006-2007' as published on the GNL Italia website.

2. New terminals Dragon and South Hook are under construction do not have operational rules as yet. Grain Phase 2 is also under construction and different capacity owners may adopt different operational rules.

3. New terminal Fos Cavaou is under construction do not have operational rules as yet.

4. There is a draft Operating Code for the existing terminal at Revithoussa which is due to be authorised by end 2006.

Appendix D. Questionnaire for regulators

In order to carry out the study on LNG issues included in the ERGEG Gas Focus Group Work Programme 2006, a Task Force was put in place to deal with access to LNG regasification terminals. The Task Force needed to gather information concerning the different European terminals and regulatory frameworks including planned or under construction ones. To help the Task Force in this task, each interested regulator was invited to contribute by answering a questionnaire, providing information on its own national system. The questionnaire was made up of questions concerning the terminals, their use and users, the access rules and in force regulations. The following regulators have answered the questionnaire:

- The *Comission de Regulation de l'electricite et du gaz* (CREG) from Belgium;
- The *Comission de Regulation de l'Energie* (CRE) from France;
- The *Autorità per l'energia elettrica e il gas* (AEEG) from Italy;
- The *Bundesnetzagentur* (BNetzA) from Germany;
- The *Ρυθμιστική Αρχή Ενέργειας* (RAE) from Greece;
- The *Entidade Reguladora dos Servicos Energéticos* (ERSE) from Portugal;
- The *Comisión Nacional de Energía* (CNE) from Spain;
- The *Enerji Piyasası Düzenleme Kurulu /Energy Market Regulatory Authority* (EMRA) from Turkey; and
- The *Office of Gas and Electricity Markets* (Ofgem) from the United Kingdom.

The information provided by each Regulator is shown below classified according to the three sections defined in the questionnaire.

D.1. Information concerning the terminal

Question 1.

- *Terminal name:*
- *Location of the terminal (full address);*
- *Terminal ownership (incl. relations between the owners and the TSO, vertically integration, etc);*
- *Terminal Operator (incl. relations with owners).*

Country	Terminal name	Location	Terminal ownership	Terminal operator
Belgium	Zeebrugge LNG Terminal	Port of Zeebrugge	Owner and operator: Fluxys LNG, affiliate to Fluxys (TSO). Shareholding is divided between Fluxys (93%) and Tractebel (7%), both affiliates to Suez.	
France	Montoir-de-Bretagne (hereafter Montoir)	Port autonome de Saint-Nazaire	Gaz de France Large Infrastructure Division	Gaz de France Large Infrastructure Division
	Fos-sur-mer (hereafter Fos Tonkin)	Port autonome de Marseille	Gaz de France Large Infrastructure Division	Gaz de France Large Infrastructure Division
	Fos Cavaou (under construction)	Fos-sur-mer	Total 30% ; Gaz de France Large Infrastructure Division 70%.	Total 30% ; Gaz de France Large Infrastructure Division 70%.
Italy	Terminale Gnl di Panigaglia	Port of Panigaglia	Gnl Italia Spa, vertically integrated with TSO Snam Rete Gas Spa	Gnl Italia Spa
	Terminale di rigassificazione di Brindisi (planned)	Port of Brindisi	Brindisi LNG Spa (no relations with TSO)	Brindisi LNG Spa
	North Adriatic Lng Terminal (planned)	15 km offshore Porto Levante (Rovigo)	Terminale Gnl Adriatico Srl (no relations with TSO)	Terminale Gnl Adriatico Srl
Germany	At the moment there is no LNG-Terminal. However there is a consortium holding a planning permit for a terminal in Wilhelmshaven at the North coast of Germany.		Majority shareholder of the "Flüssigerdgas Terminal Gesellschaft" consortium is E.ON Ruhrgas, the other shareholders are VNG, EWE, and BEB.	
Greece	Revithoussa LNG (Import) Terminal	Revithoussa Island, Megara Bay (Pahi), Attica, Greece	Currently, the Public Gas Corporation S.A. (DEPA S.A.) is the <u>owner and operator</u> of the Terminal. DEPA S.A. is a vertically integrated company, state owned by 65%. The remaining 35% is owned by HELLENIC PETROLEUM S.A (HELPE) in which the Greek State holds about 28% of the shares. ⁷³	
Portugal	LNG Terminal of Sines	Sines	Galp Atlântico, GalpEnergia' Group	Transgás Atlântico

⁷³ Law 3428/2005 for the liberalisation of the natural gas market was enacted in December 2005 and transposed Directive 2003/55/EC in the national legislation. It foresees the creation of a National Transmission System Operator (NTSO) in the form of a société anonyme by 31.12.2006 at the latest. The NTSO will be a 100% subsidiary of DEPA and will be granted the exclusive and non-transferable right to own, operate, maintain and develop both the national natural gas transmission system and the Revithoussa LNG terminal. Therefore, from 1.1.2007 NTSO will be the owner and operator of the Revithoussa LNG Terminal.

Country	Terminal name	Location	Terminal ownership	Terminal operator
Spain	Barcelona LNG plant	Port of Barcelona	ENAGÁS, S.A. This firm is the terminal owner and the TSO that operates the terminal. It develops transmission, LNG and underground storage activities, being also in charge of acquiring the gas with destination the regulated market. The shareholding and voting rights in the company are limited by law to 5%.	
	Cartagena LNG plant	Escombreras (Murcia)		
	Huelva LNG plant	Palos de la Frontera (Huelva)		
	Bilbao LNG plant	Port of Bilbao (Ziérbena)	BAHIA DE BIZKAIA GAS, S.L. (BBG) This firm is the terminal owner and the TSO that operates the terminal. It develops only LNG activities. The four promoters, BP, Ente Vasco de la Energía (EVE), Iberdrola and Repsol YPF, are also the stakeholders and all of them hold equal stakes (25%).	
	Sagunto LNG plant	Port of Sagunto (Valencia)	PLANTA DE REGASIFICACIÓN DE SAGUNTO (SAGGAS) is the terminal owner and the TSO that operates the terminal. It develops only LNG activities. The stakeholders are the following: Unión Fenosa Gas (42,5%), Iberdrola (30%), Endesa (20%) y Omán Oil Co. (7.5%).	
	Reganosa LNG plant (under construction)	Mugardos (La Coruña)	REGASIFICADORA DEL NOROESTE (REGANOSA) This firm is the terminal owner and the TSO that operates the terminal. It develops only LNG activities. The stakeholders are the following: Endesa (21%), Unión Fenosa (21%), Grupo Tojeiro (18%), Xunta de Galicia (10%), Sonatrach (10%), Caixa Galicia (10%), Caixanova (5%) y Banco Pastor (5%)	
	El Musel LNG plant (project)	Port of Gijón (Asturias)	-	-
	Gran Canaria LNG plant	Isle of Gran Canaria	Compañía Transportista de Gas Canarias (Gascan) is the promoter of both plants, and both are in project.	
	Tenerife LNG plant	Isle of Tenerife		
Turkey	Marmara Ereğlisi LNG import terminal	Tekirdağ	Botaş Petroleum Pipeline Corporation	Natural Gas Operations Directorate
	Aliğa/İZMİR	Aliaga, Izmir	Ege Gaz A.Ş.	
UK	National Grid Grain LNG	Isle of Grain – Rochester	National Grid Grain LNG is a wholly owned subsidiary of National Grid PLC. National Grid Grain LNG Ltd is a separate legal entity to the regulated gas transportation businesses in the UK	National Grid Grain LNG, the same company that owns the facility
	Milford Haven Dragon	Waterstone, Milford Haven, Pembrokeshire, SA7 31DR	Dragon LNG Ltd co-owned by BG 50% Petronas 30% Petroplus 20%	Dragon LNG Ltd, the same company that owns the facility
	South Hook LNG	Victory House, Nelson Quay, Milford Haven Marina, Milford Haven	The terminal is owned by South Hook LNG Terminal Company Ltd, a 70/30 Qatar Petroleum/Exxon Mobil joint venture	South Hook LNG Terminal Company Ltd (owner)

Question 2.*Operation starting date.*

Country	Terminal name	Operating starting date
Belgium	Zeebrugge LNG Terminal	1987
France	Montoir-de-Bretagne	1972
	Fos-sur-mer	1980
	Fos Cavaou (under construction)	Q4 2007
Italy	Terminale Gnl di Panigaglia	1971
	Brindisi (planned)	2009
	North Adriatic Lng Terminal (planned)	2008
Germany	Project at Wilhelmshaven	2009/2010
Greece	Revithoussa LNG (Import) Terminal	2000. First LNG cargo unloaded in February 2000, performance test carried out in May 2000, plant hand over to DEPA S.A. in November 2000.
Portugal	LNG Terminal of Sines	2003
Spain	Barcelona LNG plant	1969
	Cartagena LNG plant	1989
	Huelva LNG plant	1988
	Bilbao LNG plant	2003
	Sagunto LNG plant	2006
	Reganosa LNG plant (under construction)	2007
	El Musel LNG plant (in project)	2010
	Gran Canaria LNG plant (in project)	2009
	Tenerife LNG plant (in project)	2010
Turkey	Marmara Ereğlisi Liquefied Natural Gas Import Terminal	1994
	EGEGAZ Aliaga LNG Terminal	December 2006
UK	National Grid Grain LNG	Commercial operations commenced on 15 th July 2005
	Milford Haven Dragon	approx late 2007/early 2008
	South Hook LNG	Q1 2008

Question 3.

- Number of tanks and individual tank storage capacities (m^3 LNG):⁷⁴
- Total annual throughput (bcm/yr);
- Maximal send-out capacity (Nm^3/h);⁷⁵
- Spare capacity (Nm^3/h);
- Contracted capacity (Nm^3/h):
 - On long term basis (Nm^3/h)⁷⁶
 - On short term basis (Nm^3/h)
- Available capacity (Nm^3/h)

Plant (Country)	Number of tanks and storage capacity	Total Annual throughput	Maximal send- out capacity	Spare capacity	Contracted capacity		Available capacity
					Long-term	Short-term	
	<i>Bcm/yr</i>	<i>Nm³/h</i>	<i>Nm³/h</i>	<i>Nm³/h</i>	<i>Nm³/h</i>	<i>Nm³/h</i>	<i>Nm³/h</i>
Zeebrugge LNG Terminal (Belgium)	3 x 87,000 m ³ (240,000 m ³ useful capacity); 1 x 140,000 m ³ useful capacity by 2008	4.5 bcm/yr (9 bcm/yr by 2008)	950,000 Nm ³ /h (1,850,000 Nm ³ /h by 2007)	350,000 Nm ³ /h, incl. 150,000 Nm ³ /h capacity interruptible for operational purpose (TBD from April 2007)	950,000 Nm ³ /h (1,850,000 Nm ³ /h from 2007)	0	0
Montoir-de- Bretagne (France)	150,000 m ³	7 bcm/yr	Total annual firm cap.: 123 TWh	-	GDF Négoce has booked between 90%- 95% for 2006. For 2007, 85 % have been booked by GDF and 10% by a third party.	-	Available firm capacity: from 5% to 10% in 2006
Fos-sur-mer (France)	360,000 m ³	10 bcm/yr	Total annual firm cap.: 83 TWh	-	GDF Négoce has booked 95% of the capacity in 2006	-	Available firm capacity: 5% in 2006.
Fos Cavaou, under const. (France)	3 x 110,000 m ³	8.25 bcm/yr	-	-	-	-	At least 10%
Panigaglia (Italy)	2 x 50,000 m ³	3.6 bcm/yr	457,500 Nm ³ /h	-	From the next year it will be possible to sign 5 year long term contract. Access priority for the TOP contract signed before 10/08/1998	Contracts for the delivery of 4,147,500 m ³ signed for Oct05– Sep06. Receiving capacity of 5,845,000 m ³ signed for the same period	For the period 1 May 06 – 31 Sep 06 is available receiving capacity for 910,000 m ³ of LNG
Brindisi – planned (Italy)	2 x 160,000 m ³	8 bcm/yr	n.a.	-	80% of the total annual receiving capacity	0	20% of the total annual receiving capacity
Rovigo – planned (Italy)	2 x 125,000 m ³	8 bcm/yr	n.a.	-	80% of the total annual receiving capacity	0	20% of the total annual receiving capacity
Willhelmsha- ven project (Germany)	-	10 bcm/yr	-	-	-	-	-

⁷⁴ Data referred to 2006 and 2010, if available.

⁷⁵ This maximal capacity includes spare capacity for fall down or maintenance.

⁷⁶ Long term contracts: more than one year.

Plant (Country)	Number of tanks and storage capacity	Total Annual throughput	Maximal send-out capacity	Spare capacity	Contracted capacity		Available capacity
					Long-term	Short-term	
Revithoussa (Greece)	2 x 65,000 m ³ (excluding heel). Addition of a third tank has been discussed but no decision has been taken so far.	Total annual throughput is 1.4 bcm/yr in normal operating mode (5 bcm/yr in 2008).	160,000 Nm ³ /h. In emergency, 310,000 Nm ³ /h (580,000 and 725,000 Nm ³ /h respectively in 2008).	152,000 Nm ³ /h.	Since the terminal is so far operated only by DEPA S.A. there is no "contracted capacity" as such.		-
Portugal	2 full-containment tanks: 2x120.000 m ³	5.25 bcm/yr	900,000 Nm ³ /h	-	-	-	approximately 4 bcm/yr
Barcelona LNG plant	2006: 2x40.000 m ³ ; 2x80.000 m ³ ; 1x150.000 m ³ 2010: 1x80.000 m ³ ; 4x150.000 m ³	2006: 14.5 bcm/yr 2010: 17.1 bcm/yr	2006: 1,650,000 Nm ³ /h 2010: 1,950,000 Nm ³ /h	-	2006: 540,417 Nm ³ /h 2010: 787,083 Nm ³ /h	2006: 133,333 Nm ³ /h 2010: 0 Nm ³ /h	2006: 596,250 Nm ³ /h 2010: 722,916 Nm ³ /h
Cartagena LNG plant	2006: 1x55.000 m ³ ; 1x105.000 m ³ ; 1x127.000 m ³ ; 2010: 1x55.000 m ³ ; 1x105.000 m ³ ; 1x127.000 m ³ ; 2X150.000 m ³ .	2006: 10.5 bcm/yr 2010: 11.8 bcm/yr	2006: 1,200,000 Nm ³ /h 2010: 1,350,000 Nm ³ /h	-	2006: 759,583 Nm ³ /h 2010: 1,034,583 Nm ³ /h	2006: 233,333 Nm ³ /h 2010: 0 Nm ³ /h	2006: 0 Nm ³ /h 2010: 165,416 Nm ³ /h
Huelva LNG plant	2006: 1x60.000 m ³ ; 1x100.000 m ³ ; 2x150.000 m ³ ; 2010: 1x60.000 m ³ ; 1x100.000 m ³ ; 3x150.000 m ³ .	2006: 10.5 bcm/yr 2010: 11.8 bcm/yr	2006: 1,200,000 Nm ³ /h 2010: 1,350,000 Nm ³ /h	-	2006: 543,333 Nm ³ /h 2010: 1,072,500 Nm ³ /h	2006: 97,917 Nm ³ /h 2010: 0 Nm ³ /h	2006: 408,750 Nm ³ /h 2010: 277,500 Nm ³ /h
Bilbao LNG plant	2006: 2x150.000 m ³ 2010: 4x150.000 m ³	2006: 7 bcm/yr; 2010: 10.5 bcm/yr	2006: 800,000 Nm ³ /h 2010: 1,200,000 Nm ³ /h	-	2006: 426,865 Nm ³ /h 2010: 506,211 Nm ³ /h	2006: 166,365 Nm ³ /h 2010: 0 Nm ³ /h	2006: 206,770 Nm ³ /h 2010: 293,788 Nm ³ /h
Sagunto LNG plant	2006: 2x150.000 m ³ 2010: 4x150.000 m ³	2006: 6.6 bcm/yr; 2010: 10.5 bcm/yr	2006: 750,000 Nm ³ /h 2010: 1,200,000 Nm ³ /h	-	2006: 562,213 Nm ³ /h 2010: 562,213 Nm ³ /h	2006: 93,702 Nm ³ /h 2010: 0 Nm ³ /h	2006: 93,702 Nm ³ /h 2010: 187,404 Nm ³ /h
Reganosa LNG plant (under construct.)	2006: - 2010: 2x150.000 m ³	2006: - bcm/yr 2010: 3.6 bcm/yr	2006: - Nm ³ /h 2010: 412,800 Nm ³ /h	-	2006: - Nm ³ /h 2010: 284,351 Nm ³ /h	2006: - Nm ³ /h 2010: 0 Nm ³ /h	2006: - Nm ³ /h 2010: 128,4360 Nm ³ /h
El Musel LNG plant (project)	2006: - 2010: 2x150.000 m ³	2006: - bcm/yr 2010: 7 bcm/yr	2006: - 2010: 800,000 Nm ³ /h	-	-	-	-
Gran Canaria LNG plant	2006: - 2010: 1x150.000 m ³	2006: - bcm/yr 2010: 1.3 bcm/yr	2006: - 2010: 150,000 Nm ³ /h	-	-	-	-
Tenerife LNG plant	2006: - 2010: 1x150.000 m ³	2006: - bcm/yr 2010: 1.3 bcm/yr	2006: - 2010: 150,000 Nm ³ /h	-	-	-	-
Turkey (Marmara Ereğlisi)	3 tanks (85.000 m ³)	5.2 bcm/yr	18,303,967 Nm ³ /day	-	762,665 Nm ³ /h	-	In the winter period, the Terminal is in its full capacity. In the summer period the terminal is run roughly with 60% capacity

Plant (Country)	Number of tanks and storage capacity	Total Annual throughput	Maximal send- out capacity	Spare capacity	Contracted capacity		Available capacity
					Long-term	Short-term	
Turkey (Aliaga/ IZMIR)	2 tanks of 140,000 m ³	6 bcm/yr	685,000 Nm ³ /hr	n.a.	-	1.1 bcm/yr	n.a.
National Grid Grain LNG (UK)	4 tanks of ~50,000 m ³ of liquid LNG each From winter 2008/09 forecast to have an additional 3 tanks each of ~190,000 m ³ of liquid LNG	current 4.4 bcm/yr, from winter 2008/09 this will be increased by 8.6 bcm/yr		No spare contractable capacity	Maximum Contracted Capacity is ~540,000 Nm ³ /hr by winter 2008/09 this will be increased by ~980,000 Nm ³ /hr	n.a.	None
Milford Haven Dragon (UK)	2 tanks of 160,000 m ³	6 bcm/yr phase 1 additional capacity of up to 6 bcm/yr phase 2	656,376 m ³ /hr phase 1 additional 656,376 Nm ³ /hr phase 2	No spare contractable capacity	656,376 m ³ /hr phase 1 additional 656,376 Nm ³ /hr phase 2	None	None
South Hook LNG (UK)	3x155,000 m ³ tanks (Q1 2008) and 2 further 155,000 m ³ tanks (2009/2010) (number of tanks in each phase of the project to be confirmed – may be 4+1 instead of 3+2).	10.5 bcm/yr (Q1 2008), further 10.5 bcm/yr (2009/2010)	1,198,630 m ³ /hr (Q1 2008), further 1,198,630 Nm ³ /hr (2009/2010)	No spare contractable capacity	1,198,630 m ³ /hr (Q1 2008), further 1,198,630 Nm ³ /hr (2009/2010)	None	None

D.2. Information concerning terminal use

Question 4.

- *Number of users:*
- *Description of users (TSOs, shippers: independent, vertical integrated companies...);*
- *Relations between the users and the owner/operator of the terminal;*
- *Percentage of contracted capacity in annual throughput for each user;*
- *Percentage of capacities booked by TSOs for balancing purposes.*

Country	Number and description of users	Relations between the users	% of contracted capacity in annual throughput	% of capacities booked by TSOs for balancing purposes
Belgium	2 (3 from 2007, 4 from 2008) - Fluxys : part of Suez, TSO, owner of the terminal operator (93%), uses the terminal for operational needs (balancing of its transmission network); - Distrigaz : incumbent for supplying gas in Belgium, part of Suez; - From April 2007 , in addition to Fluxys and Distrigaz, ExxonMobil/Qatar Petroleum, independent; - From 2008 : in addition to Fluxys, Distrigaz and ExxonMobil/Qatar Petroleum, Tractebel Global LNG (Suez LNG), part of Suez.		<u>From 1987 till March 2007</u> : 100% capacity allocated to Distrigaz (a part of which can be interrupted by Fluxys for operational needs on its transmission network). <u>From April 2007 till 2008</u> : 50% capacity allocated to Distrigaz and 50% allocated to ExxonMobil/Qatar Petroleum. <u>From 2008</u> : 50 % allocated to ExxonMobil/Qatar Petroleum, 30% allocated to Distrigaz and 20% allocated to Tractebel Global LNG.	Till March 2007, 20% of effective capacity interruptible by Fluxys for operational purpose
France (Montoir and Fos-sur-mer)	5 users: 3 in 2006 and 5 by 2008		Gaz de France Négoce is a long term user which has contracted in 2006, 100% of Fos Tonkin capacities and 90% - 95% of Montoir capacities.	No capacity is booked by the TSO
Italy (Panigaglia)	2 annual capacity users + 2 spot capacity or infra-annual capacity users	One user (Eni) is the major shareholder of TSO who is the owner of the operator of the terminal; 3 are independent shippers	Eni holds 40% of the annual maximum throughput; user 2: 30 %. The remaining capacity is available for infra-annual contracts	None
Italy (Brindisi)	1 user (an independent shipper)	1 shipper holds 100% of the operator of the terminal	1 user, 100% of contracted capacity	None
Italy (Rovigo)	1 user (an independent shipper)	1 shipper holds 100% of the operator of the terminal	1 user, 100% of contracted capacity	None
Germany	-	-	-	-
Greece	1 user: DEPA, S.A.	DEPA, S.A. is the sole owner, operator and user of the terminal.	-	This will be defined as soon as the NTSO is formed and an Operating Code enacted (see question16)
Portugal	1 user: TSO (Transgás, SA, Grupo GalpEnergia)	Tansgás and Transgás Atlantico are integrated in the same company group.	-	-

Country	Number and description of users	Relations between the users	% of contracted capacity in annual throughput	% of capacities booked by TSOs for balancing purposes
Spain	<p>At the end of 2005 there were 18 trading operative companies. Most of them have signed access contracts to the LNG terminals to introduce gas to supply their customers or for selling it to other traders. Apart from traders, Enagas is also a user of the LNG terminals, as it is in charge of acquiring the gas supplies for the regulated market. Enagas is active in transmission, LNG and storage activities, being also the System Operator. It is a private company, whose shareholding and voting rights are limited by law to 5%.</p> <p>The users of the terminals are (or could be) transmission companies, trading companies and final customers.</p> <p>The trading companies are diverse. Some of them only develop activities as traders, for example BP, Shell, Cepsa, while others are part of vertically integrated companies, for example Gas Natural, the incumbent, or Endesa, developing also distribution activities.</p> <p>Final users could also access directly the terminals for procuring themselves their supplies. Nevertheless, although the possibility exists, this is not a common practice in the sector.</p> <p>The relation between the users and the operator of the terminals is regulated, as described along this questionnaire.</p>		<p>The contracted capacities by each user in the different LNG terminals are confidential data and it could only be foreclosed in an aggregated manner</p> <p>The list below shows the percentage of contracted capacity each shipper holds. Apart from that, 0,2% of the total capacity is reserved by Enagas in his 3 terminals to supply full tariff clients.</p> <p>Shipper 1.....26.9% Shipper 2.....16.6% Shipper 3.....14.2% Shipper 4.....10.1% Shipper 5..... 7.3% Shipper 6..... 6.2% Shipper 7..... 5.4% Shipper 8..... 4.0% Shipper 9..... 3.9% Shipper 10..... 3.7% Shipper 11..... 1.4% Shipper 12..... 0.2%</p>	Non applicable
Turkey (Marmara Ereğlisi)	1 user: Botaş Petroleum Pipeline Corporation	Vertical integrated companies.	100% by Botaş	-
Turkey (Aliğa/İZMİR)	One potential user	-	-	-
National Grid Grain LNG (UK)	Grain LNG currently has one customer, by winter 2008/09 it will have an additional 3 customers (independent third parties to Grain LNG ltd).	A long-term capacity contract on commercial terms	Current is 100% (4.4 bcm/yr) to one consumer.	The TSO has not booked any primary capacity from Grain LNG Ltd, but is known to have a contract for variable amounts with BP/Sonatrach. Grain LNG is unaware of any additional services being considered for additional customers from winter 2008/09
Milford Haven Dragon (UK)	The terminal will have 2 users: BG group and Petronas	Both capacity owners have stake in terminal ownership	100%	None
South Hook LNG (UK)	1 user: South Hook Gas Company Ltd, a 70/30 Qatar Petroleum/Exxon Mobil joint venture	Sister companies, same participation	100%	None

Question 5.

- *LNG supply sources:*
- *Annual number of cargoes in the last 3 years:*⁷⁷
 - *Annual number of spot cargoes (month of unloading);*
 - *Maximal number of cargoes/month;*
- *Unloading winter/summer ratio (“winter” refers to October-March period).*

Country	LNG supply sources	Annual number of cargoes in the last 3 years	Annual number of spot cargoes	Maximal number of cargoes/month	Unloading winter/summer ratio																																																									
Belgium	Till March 2007: Algeria (Arzew) on a long term basis + spot (supply source N.A.). From April 2007: Qatar on a long term basis (Distrigaz, ExxonMobil/Qatar Petroleum); N.A. for Tractebel Global LNG.	2003: 45 cargoes unloaded; 2004: 41 cargoes unloaded; 2005: 35 cargoes unloaded.	0 cargoes.	7 cargoes (December 2005).	<table border="1"> <tr> <td rowspan="12">Number of cargoes unloaded</td> <td></td> <td>2003</td> <td>2004</td> <td>2005</td> </tr> <tr> <td>Jan</td> <td>3</td> <td>4</td> <td>4</td> </tr> <tr> <td>Feb</td> <td>4</td> <td>5</td> <td>2</td> </tr> <tr> <td>Mar</td> <td>2</td> <td>3</td> <td>3</td> </tr> <tr> <td>Apr</td> <td>6</td> <td>4</td> <td>4</td> </tr> <tr> <td>May</td> <td>5</td> <td>3</td> <td>2</td> </tr> <tr> <td>Jun</td> <td>3</td> <td>4</td> <td>2</td> </tr> <tr> <td>Jul</td> <td>3</td> <td>2</td> <td>1</td> </tr> <tr> <td>Aug</td> <td>3</td> <td>1</td> <td>4</td> </tr> <tr> <td>Sep</td> <td>4</td> <td>2</td> <td>2</td> </tr> <tr> <td>Oct</td> <td>3</td> <td>3</td> <td>2</td> </tr> <tr> <td>Nov</td> <td>4</td> <td>5</td> <td>3</td> </tr> <tr> <td>Dec</td> <td>5</td> <td>5</td> <td>7</td> </tr> <tr> <td>Annual</td> <td>45</td> <td>41</td> <td>35</td> </tr> </table>	Number of cargoes unloaded		2003	2004	2005	Jan	3	4	4	Feb	4	5	2	Mar	2	3	3	Apr	6	4	4	May	5	3	2	Jun	3	4	2	Jul	3	2	1	Aug	3	1	4	Sep	4	2	2	Oct	3	3	2	Nov	4	5	3	Dec	5	5	7	Annual	45	41	35
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Montoir-de-Bretagne (France)	-	2004: 95 cargoes unloaded; 2005: 101 cargoes unloaded.	n.a.	11 cargoes in March 2005	April 2005-March 2006 Unloading winter/summer ratio= 1.1																																																									
Fos-sur-mer (France)	-	2004: 123 cargoes unloaded; 2005: 167 cargoes unloaded.	n.a.	17 cargoes in May 2005	April 2005-March 2006 Unloading winter/summer ratio= 1																																																									
Panigaglia (Italy)	-	95	19 (spot capacity can be available every month according to delivery schedule of firm users)	11	0.85																																																									
Brindisi (Italy)	-	Around 100 (planned)	-	-	-																																																									
Rovigo (Italy)	-	Around 90 (planned)	-	-	-																																																									
Germany	-	-	-	-	-																																																									
Greece	Currently, there is only one sales agreement between DEPA and Sonatrach (Algeria): annual throughput from 0.51 to 0.68 bcm/yr.	3 for 2003; 27 for 2004; and 26 in 2005. Each cargo is approximately 28.000 m ³ LNG.	0 cargoes.	3 cargoes.	1 in 2002, 1.2 in 2003, 0.92 in 2004, 1.36 in 2005. The accident at the Sonatrach facilities in Skikda on 19/1/2004 has affected the number and frequency of cargo delivery during 2004 and 2005.																																																									
Portugal	-	2003: 2 cargoes; 2004: 19 cargoes; 2005: 23 cargoes.	0 cargoes.	2 cargoes.	Approximately 2																																																									

⁷⁷ New regasification terminals can include here the number of forecasted cargoes for this year or the first operating year.

Country	LNG supply sources	Annual number of cargoes in the last 3 years	Annual number of spot cargoes	Maximal number of cargoes/month	Unloading winter/summer ratio
Spain (Barcelona)	In 2005, LNG supplies represented 65.03% of the total	2003: 235 cargoes; 2004: 200 cargoes; 2005: 150 cargoes.	-	24 cargoes in June 2003	1.1 in 2003, 1.0 in 2004, 1.1 in 2005.
Spain (Bilbao)	supplies: Algeria 23.1%; Libya, 4.04%; Persian Gulf, 30.53%;	2003: 11 cargoes; 2004: 36 cargoes; 2005: 44.7 cargoes.	-	5 cargoes in July 2005	1.0 in 2004, 0.9 in 2005.
Spain (Cartagena)	Trinidad and Tobago, 1.80%; Nigeria, 23.21%;	2003: 94 cargoes; 2004: 92 cargoes; 2005: 104 cargoes.	-	12 cargoes in May 2003	1.1 in 2003, 1.0 in 2004, 1.0 in 2005.
Spain (Huelva)	Egypt, 15.69%; others, 1.63%.	2003: 54 cargoes; 2004: 57 cargoes; 2005: 91 cargoes.	-	10.6 cargoes in March 2005	1.0 in 2003, 0.8 in 2004, 1.2 in 2005.
Turkey (Marmara Ereğlisi)	-	2003: 66 cargoes; 2004: 58 cargoes; 2005: 61 cargoes.	-	7 cargoes/month	1.47
Turkey (Aliğa/İZMİR)	Various	12-14 cargoes expected for the first operating year	-	-	-
National Grid Grain LNG (UK)	-	July 05 – Mar 06 has seen the arrival of 19 cargoes	None thus far.	Current Annual Berthing Entitlement is 55 slots for each programme year, from winter 2008/09 the annual slot programme will increase by 110.	Given only one summer and one winter of operation we have no evidence to support a ratio, the berthing programme contained in the contract assumes an annual flat allocation of berthing slots
Milford Haven Dragon (UK)	-	-	-	-	-
South Hook LNG (UK)	-	-	-	-	-

Question 6.*Limitations in vessel size.*

Country	Terminal name	Limitations in vessel size (m ³ LNG)
Belgium	Zeebrugge LNG Terminal	From 40,000 to 135,000 m ³ (or more, subject to ship approval procedure).
France	Montoir-de-Bretagne (France)	The Loire access canal is wide and deep enough to receive the largest LNG tankers currently in service
	Fos-sur-mer (France)	Only a small number of ships with a lower tonnage than standard LNG ships can access the facilities. LNG tankers carrying up to 75,000 cubic metres of LNG can reach the terminal via a 4-kilometre channel built by the Port Autonome de Marseille from the Fos harbour
	Fos Cavaou (under construction)	Up to 160,000 m ³
Italy	Panigaglia (Italy)	65,000 m ³
	Brindisi (Italy)	n.a.
	Rovigo (Italy)	152,000 m ³
Germany	-	-
Greece	Revithoussa LNG (Import) Terminal	The facilities accommodate LNG vessels with capacities ranging from 25,000 m ³ up to 125,000/135,000 m ³ (290 m length, 11.5 m draft). There are three unloading arms of 12 inch diameter, two for unloading LNG and one for vapour return. The LNG unloading facilities are designed for a maximum LNG unloading flow rate of 3,500 m ³ /h.
Portugal	LNG Terminal of Sines	45,000 to 165,000 m ³ LNG.
Spain	All LNG terminals	At present, all LNG terminals are prepared for dealing with cargoes up to 140,000 m ³ of LNG.
Turkey	Marmara Ereğlisi Liquefied Natural Gas Import Terminal	From 40,000 to 140,000 m ³ of LNG
	Aliğa/İZMİR	From 40,000 to 160,000 m ³ of LNG
UK	National Grid Grain LNG	The current jetty infrastructure in place at Grain LNG can accept vessels between 70,000 m ³ and 205,000 m ³ although an individual compatibility study is required for each vessel.
	Milford Haven Dragon	165,000 m ³
	South Hook LNG	South Hook will receive LNG tankers with capacity in the range 120,000 - 250,000m ³

Question 7.

Gas quality:

- Definition of required LNG quality (e.g. GCV, Wobbe-Index, etc);
- Description of available conversion facilities (e.g. N2 injection), offered services, tariffs.

Country	Required LNG quality	Available conversion facilities																																																																																								
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Italy (Panigaglia)	<p>(H₂S) < 6 mg/ Sm³ Sulphur (mercaptani) < 15 mg/ Sm³ Sulphur total < 150 mg/Sm³ HCV 38,18 ÷ 43,18 MJ/Sm³ Wobbe index 47,31 ÷ 52,13 MJ/Sm³ GNL density 445 ÷ 470 kg/Sm³</p>	There are facilities for the correction of LNG quality by means of addition of air or air + N ₂ . The facilities can treat LNG with a Wobbe Index in the range 52,13 ÷ 53,17 MJ/Sm ³ .																																																																																								
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PCS	MJ/m ³ (n)	42.11	45.07																																																			
H ₂ O	ppmv/°C	-	-5 (75 bara)																																																			
H ₂ S	mg/m ³ (n)	0	5.28																																																			
S (Total)	mg/m ³ (st)	0	31.66																																																			
Spain	<table border="1"> <thead> <tr> <th>Property</th> <th>Units</th> <th>Minimum</th> <th>Maximum</th> </tr> </thead> <tbody> <tr> <td>Wobbe index</td> <td>kWh/m³</td> <td>13.368</td> <td>16.016</td> </tr> <tr> <td>Gross calorific value</td> <td>kWh/m³</td> <td>10.23</td> <td>16.23</td> </tr> <tr> <td>D.</td> <td>m³/m³</td> <td>0.555</td> <td>0.700</td> </tr> <tr> <td>Total S</td> <td>mg/m³</td> <td>-</td> <td>50</td> </tr> <tr> <td>H₂S+COS (as S)</td> <td>mg/m³</td> <td>-</td> <td>15</td> </tr> <tr> <td>RSH (as S)</td> <td>mg/m³</td> <td>-</td> <td>17</td> </tr> <tr> <td>O₂</td> <td>mol %</td> <td>-</td> <td>[0.01]</td> </tr> <tr> <td>CO₂</td> <td>mol %</td> <td>-</td> <td>2.5</td> </tr> <tr> <td>H₂O DP</td> <td>°C at 70 bar (a)</td> <td>-</td> <td>+2</td> </tr> <tr> <td>HC DP</td> <td>°C at 1-70 bar (a)</td> <td>-</td> <td>+5</td> </tr> </tbody> </table> <p>Note: Reference conditions: 25°C and 1.01325 bar</p>	Property	Units	Minimum	Maximum	Wobbe index	kWh/m ³	13.368	16.016	Gross calorific value	kWh/m ³	10.23	16.23	D.	m ³ /m ³	0.555	0.700	Total S	mg/m ³	-	50	H ₂ S+COS (as S)	mg/m ³	-	15	RSH (as S)	mg/m ³	-	17	O ₂	mol %	-	[0.01]	CO ₂	mol %	-	2.5	H ₂ O DP	°C at 70 bar (a)	-	+2	HC DP	°C at 1-70 bar (a)	-	+5	At present there are not specific conversion facilities at LNG terminals. The system allows a wide margin for the gas quality specifications, which practically includes all the gas coming from a variety of origins (natural gas and LNG).								
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National Grid Grain LNG (UK)	Limits as per GS(M)R 1996 and contractual limits as applied by National Grid Gas plc at entry to its NTS and Southern Gas Networks at entry to the LDZ.	Grain LNG has installed, at the request of our current customer a Nitrogen blending facility to blend a defined quality of LNG to within GSMR specification, Future customers may have additional requirements.																																																				
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D.3. Access rules and regulations

Question 8.

rTPA or exemption from TPA. In case of exemption, please specify:

- *Exemption date and duration;*
- *Percentage of capacity exempted.*

Country	rTPA or exemption	Exemption date and duration	Percentage of capacity exempted
Belgium	Regulated TPA for both access and tariffs	No exemption	No exemption
France (Montoir and Fos-sur-mer)	Regulated TPA	No exemption	No exemption
Italy (Panigaglia)	Regulated TPA	-	-
Italy (Brindisi)	Exemption	20 years starting from the operation of the terminal	80%
Italy (Rovigo)	Exemption	25 years starting from the operation of the terminal	80%
Germany	LNG-terminals are subject to non discriminatory TPA.	The provision of Art. 22 of Directive 2003/55/EG listing the requirements for the exemption of TPA has been transposed into the German Energy Industry Act.	
Greece	A fully regulated TPA regime has been established by the new gas law 3428/2005 .	-	-
Portugal	In exemption from TPA at present moment.	-	-
Spain	There is a regulated TPA regime for all the LNG terminals, with a first come first served access principle. There is also a firm Use it or lose it mechanism in place, applicable in case of infra-utilization of the capacity.	The Royal Decree-Law 5/2005 allows TPA exemptions in case of new infrastructures or important capacity increments of existing infrastructures, when they have singular characteristics. The exception implies that the infrastructure is not included in the retribution system. Although it is legally possible since the passing of this legislation, until this moment there has not been any request for TPA exception.	
Turkey (Marmara Ereğlisi)	-	-	-
Turkey (Aliğa/İZMİR)	-	-	-
National Grid Grain LNG (UK)	Exemption	Commenced Jan05; Phase I exempt for 20 year period; Phase II exempt for 25 years.	100%
Milford Haven Dragon (UK)	Dragon is exempt	The initial capacity of the facility, 20 years from the date that the facility commences commercial operation; the expansion capacity, 20 years from the date that the expansion capacity commences commercial operation.	100%
South Hook LNG (UK)	South Hook is exempt	The initial capacity of the facility, 25 years from the date that the facility commences commercial operation; the expansion capacity, 25 years from the date that it commences commercial operation.	100%

Question 9.

LNG tariffs, including TPA tariffs and tariffs for the services (brief summary about methodology, who is responsible for its elaboration and approval):

Country	LNG tariffs (methodology, competences, etc).
Belgium	<p>Principle: the terminal operator receives an income that enables it to cover its costs (accepted by the CREG), provide a fair margin, enable it to meet its obligations (quality-safety) and invest in its infrastructure. This income is generated by tariffs: ‘cost plus’ system:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; width: 15%;"> <p>Operating expenditures staff, services and goods, energy, etc. = costs controlled by the CREG</p> </div> <div style="font-size: 2em;">+</div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> <p>Depreciation Rules set by the CREG <i>(guidelines)</i></p> </div> <div style="font-size: 2em;">+</div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> <p>Return on capital invested RAB x WACC determined by the CREG <i>(guidelines)</i></p> </div> <div style="font-size: 2em;">+</div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> <p>Positive/ negative balance Year (n-2) Approved by the CREG</p> </div> <div style="font-size: 2em;">=</div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> <p>Total cost for regulated activity = Income from regulated activity (tariffs)</p> </div> </div> <p>Current procedure for setting tariffs for use of the terminal (till March 2007): -by 30/9 every year: the operator submits a tariff proposal for the following year to the CREG; -after requesting additional information, the CREG has 30 days to approve or reject this proposal; -if the CREG approves the proposal, the tariffs are published and apply as of 1/1; -if it rejects the proposal, the CREG has to indicate which points need to be adapted and the operator can submit a revised proposal to the CREG. If this is refused, the CREG can adopt provisional tariffs for three months.</p> <p>From April 2007: Multi-annual tariffs (linked with a new investment) Multi-annual budget and tariff proposal are subject to approval by the CREG. - If approved, the tariffs are published and the operator can go ahead with the investment. The tariffs set a ceiling which the operator may only exceed in exceptional circumstances. - If rejected, the CREG has to indicate the points which the operator needs to adapt to obtain approval. The operator may resubmit a revised tariff proposal.</p> <p>Every four years as from the commissioning of the investment, the operator submits a four-year report to the CREG (actual use, real costs and real income). By comparing reality with the budget, it is possible to determine whether the facility is generating a surplus (bonus) or a loss (malus). -If the operator records a bonus, it submits to the CREG a proposal of distribution of all or part of this bonus among: 1° allocation to a reduction in tariffs for the next four years; 2° allocation to a reserve for new investments (to be undertaken within four years, otherwise the amount is allocated to tariff reductions); 3° allocation to the operator’s shareholders (if costs are reduced). -If the CREG rejects this, the operator has to submit a revised proposal for the distribution of the bonus on which the CREG has to take a final decision. -In the event of malus, it is covered by the operator: the higher level of the fair profit return should make it possible to cover budget overruns. -If a significant malus is caused by exceptional circumstances: the operator submits to the CREG a report and a proposal for higher tariffs, possibly over the ceiling set. -The new tariffs for four years (bonus/malus) are published and replace the previous tariffs.</p>

Country	LNG tariffs (methodology, competences, etc).
France	<p>The law of 3 January 2003 guarantees all consumers and suppliers open non-discriminatory access to LNG terminals and rules that decisions on tariffs for utilisation of these systems are proposed by the CRE and approved by the Minister for the Economy and Industry who cannot change them (he can only accept or refuse).</p> <p>On 24 July 2003, CRE proposed initial tariffs for utilisation of LNG terminals for planned validity of 12 to 18 months. These tariffs have been applied by the operator since 1 July 2004 and formally came into force with the Decree of 21 September 2004, to be applied as of 1st January 2005.</p> <p><u>CRE has proposed to the Government a new tariff for utilisation of LNG terminals in Montoir and Fos Tonkin in October 2005, which has been applied as of 1 January 2006. This tariff is to be applied at least until start-up of the Fos-Cavaou terminal currently under construction and planned for 4Q - 2007.</u></p> <p>In order to draw up its proposal, CRE held hearings and organised a public consultation from 23 July 2005 to 16 September 2005 to collect the opinion of all parties concerned.</p> <p>The tariff proposal concerns the LNG reception, storage and regasification facilities of Fos Tonkin and Montoir and takes into account increased capacity subscriptions due to the arrival of Egyptian LNG purchased by Gaz de France. This increase in quantities has resulted in a 15% drop in average unit price, based on current Euro value.</p> <p>Tariffs are common for the 2 terminals and include 3 options:</p> <ul style="list-style-type: none"> • ‘Continuing’ service for shippers unloading at least one cargo at a terminal per month as an average over the year; • ‘Band’ service for shippers unloading less than one cargo at a terminal per month as an average over the year; • ‘Spot’ service reserved for unloading operations subscribed for a given month m after the 20th day of month m-1. The corresponding cargoes benefit from reduced prices in order to encourage shippers to take advantage of terminal capacities still available right up to the last moment and thus optimise their utilisation. <p>The commissioning of the Fos Cavaou terminal, currently planned for the last quarter of 2007, will change the quantities to be regasified in the Fos Tonkin and Montoir terminals. This is why the proposed tariff has been designed to be applied from 1 January 2006 until the Fos Cavaou terminal has been commissioned. Lastly, the aim of the proposed tariff is to encourage new shippers to use the French LNG terminals. That is why it includes specific arrangements as regards terminal operating mode when several shippers are operating at the same time and a reduction of around 20% for spot cargoes in comparison with the previous tariff.</p> <p>Tariff elaboration methodology: Cost Plus method.</p>
Italy (Panigaglia)	<p>Tariffs component:</p> <ul style="list-style-type: none"> -annual contractual component for delivered quantity (€/m³); -annual contractual component for number of cargo delivered (€/number of cargo delivered); -variable component for regasified quantity (€/GJ); -additional variable component for regasified quantity (€/GJ); -gas consumption and losses: 2% (€/cm) of regasified gas.
Italy (Brindisi)	<p>TPA capacity tariffs are set by the operator, and approved by AEEG; according to the methodology set by AEEG.</p>
Italy (Rovigo)	<p>TPA capacity tariffs are set by the operator, and approved by AEEG; according to the methodology set by AEEG.</p>
Germany	<p>-</p>

Country	LNG tariffs (methodology, competences, etc).															
Greece	<p>According to law 3428/2005, the methodology for TPA tariffs to both the LNG terminal and the transmission system is defined in a Tariff Regulation, which is elaborated by RAE, following a recommendation by the Terminal Operator (TO) and public consultation. TPA tariffs will be set by the TO, on the basis of the Tariff Regulation, and will be approved by RAE. Both the Tariff Regulation and the tariffs are submitted to the Ministry of Development for formal approval.</p> <p>Until the elaboration of the Tariff Regulation, TPA tariffs are proposed by the operator and approved by the Minister of Development, following the opinion of RAE.</p> <p>In detail, following a proposal by the TSO and RAE's opinion, current LNG tariffs were set by the Ministerial Decision 4955/2006 (Government Gazette B 360/27.3.2006). The methodology for the calculation of tariffs is based on rate-of return regulation. For each year over a certain period, the annual required revenue of the TO is calculated taking into account both capital and operational expenses. The WACC used in the calculation of capital expenses is 10.06% nominal pre-tax or 6.56% real pre-tax. Due to the considerable uncertainty regarding the utilization of the Revithoussa LNG terminal within the next few years (for balancing and/or TPA) provisions have been made to <u>recover 95% of the required revenue through the natural gas transportation tariff via the high pressure pipe line running through mainland Greece rather than from the LNG tariff</u>. The unit tariff is calculated by a division of the required revenue by the projected volumes of LNG for the respective year. The unit tariff is then split in a 90/10 capacity/commodity ratio.</p> <p>LNG tariffs refer to booking and use of vaporization capacity and –implicitly- to the respective LNG reception services and temporary storage. There is no tariff for long-term storage services as yet.</p> <p>The tariff coefficients are as follows:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Capacity charge (€/peak day MWh/year)</th> <th>Commodity charge (€/MWh)</th> </tr> </thead> <tbody> <tr> <td>1.1.2006-31.12.2006</td> <td>29.088</td> <td>0.021947</td> </tr> <tr> <td>1.1.2007-31.12.2007</td> <td>26.247</td> <td>0.019804</td> </tr> <tr> <td>1.1.2008-31.12.2008</td> <td>22.703</td> <td>0.017130</td> </tr> <tr> <td>Future years</td> <td colspan="2">CPI adjustment</td> </tr> </tbody> </table> <p>The capacity charge is applied to the maximum daily booked/used send-out capacity during the respective year, while the commodity charge is applied to each MWh of LNG vaporized during the year.</p>	Year	Capacity charge (€/peak day MWh/year)	Commodity charge (€/MWh)	1.1.2006-31.12.2006	29.088	0.021947	1.1.2007-31.12.2007	26.247	0.019804	1.1.2008-31.12.2008	22.703	0.017130	Future years	CPI adjustment	
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Future years	CPI adjustment															
Portugal	-															

Country	LNG tariffs (methodology, competences, etc).										
Spain	<p>Regasification tariff. It is the same for all the terminals and includes the right to the use of the installations needed for the unloading of LNG ships, transmission of LNG, regasification or tanks loading and a LNG operational storage equivalent to 5 days of the daily contracted capacity.</p> <table border="1"> <thead> <tr> <th>Regasification tariff Pr</th> <th>Fixed term Tfr €/kWh/day/month</th> <th>Variable term Tvr €/kWh</th> </tr> </thead> <tbody> <tr> <td></td> <td>0.014662</td> <td>0.000087</td> </tr> </tbody> </table> <p>The calculation of the regasification tariff is as follows: $Pr = Tfr * Qr + Tvr * Cr$ Pr: Monthly regasification tariff (€) Qr: Daily flow of gas natural contracted (kWh/day) or equivalent in LNG Cr: kWh of natural gas regasified or supplied as LNG, during the contracting period.</p> <p>There is a “penalty” system for regasification, transmission and distribution access tariff, as follows, affecting the capacity term of the tariff:</p> <ul style="list-style-type: none"> • If the nominated daily capacity is above 105% the maximum contracted daily capacity, the user is billed for the maximum nominated daily capacity in the month plus a penalty that depends on the percentage exceed. • If the nominated capacity is between the 85% and 105% the maximum contracted capacity, the customer is billed for the nominated capacity. (No penalty) • If the nominated daily capacity is below the 85% the maximum contracted daily capacity, the customer is billed for the 85% of the maximum contracted capacity. <p>LNG storage tariff. LNG storage capacity, additional to the quantity included in the tariff, can also be independently contracted. Monthly liquefied natural gas storage is calculated by the expression:</p> $Ca = Tv \cdot \sum_{i=1}^n Eai$ <p>where Ca is the monthly tariff (€), Tv is the variable coefficient of LNG storage, Eai is the storage above the 5 days of consumption included in the regasification tariff and n is the number of days that the LNG storage was above that volume.</p> <table border="1"> <thead> <tr> <th>LNG storage tariff Ca</th> <th>Variable term Tv €/m³ GNL/day</th> </tr> </thead> <tbody> <tr> <td></td> <td>0.086873</td> </tr> </tbody> </table> <p>Apart from the latter and the services included in the regasification tariff, unloading, 5 days LNG storing and vaporization services, LNG terminals provide other specific and regulated services. These are: loading of ships with LNG, ships cooling and transferring of LNG between ships. Currently, according to the Order ITC/4100/2005, the services of loading of ships with LGN and ships cooling will have a tariff with a fix term, equal to 105,274 €/operation, and a variable term, equal to 0.0005109 €/kWh, with a minimum price for operation of 50.000 €. In case of transferring of LNG between ships services, the tariff is the 80% of the previous one.</p> <p>The final responsible for determining and approving the tariffs is the Ministry of Industry. The CNE also participates in the process, by, normally, issuing a not-binding report to the Ministry’s proposal. The process could be summarized as follows. Firstly, tariffs are designed by the Ministry. After drafting them, the document is sent to the National Energy Commission, in order to obtain the compulsory comments of this entity. The CNE, on his part, send the document to the Consultative Board, which is a body composed by all the gas sector agents: consumers, traders, TSO, Regional Administration representatives, etc. After obtaining the opinion of this Board, CNE prepares its final report that is sent to the Ministry. After that, the Ministry of Economy analyses the CNE report and, taking into account or not the comments, approve the final regulation.</p> <p>For example, the CNE, as a consultative board of the Ministry, issued a report, under request, proposing the tariffs for the three services mentioned in the previous paragraph, which were finally approved by the Ministry.</p>	Regasification tariff Pr	Fixed term Tfr €/kWh/day/month	Variable term Tvr €/kWh		0.014662	0.000087	LNG storage tariff Ca	Variable term Tv €/m ³ GNL/day		0.086873
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Turkey	<p>EMRA published a tariffs regulation which is prepared within framework of the Natural Gas Market Law. According to this regulation Tariffs shall be prepared by the end of October each year and subject to approval of EMRA. EMRA shall review such applications by December 31 of the same year and shall approve them, if deems appropriate. The tariff principles and limits may be revised by EMRA taking inflation and other issues into account.</p>										
UK (Grain, South Hook Dragon)	<p>n.a.</p>										

Question 10.*Capacity allocation procedures:*

Country	Capacity allocation procedures
Belgium	Capacity is offered on a long term basis by Open Season procedure . In case the demand is higher than the offered capacity and no extra-capacity is going to be built, the CREG has to approve the allocation criteria for capacity allocation. The remaining capacity, if any, is sold on a first-come-first-served basis .
France (Montoir and Fos-sur-mer)	On 27 December 2004, the LNG terminal operator published a regasification capacity allocation rule with immediate effect. This document introduces the following measures: <ul style="list-style-type: none"> • possibility of subscribing <u>pluri-annual capacities</u> (pluri-annual capacities may concern the total terminal capacity, leaving no capacity reserved for short-term subscriptions); • allocation according to the «first come, first served» principle (the applicant must be able to show an LNG supply contract consistent with the regasification capacity application); • a «use it or lose it» mechanism set up by the terminal operator in the event of congestion, if a user has clearly under-used capacities and has refused to put them back on the market and cannot justify the need to keep these capacities on the basis of future import contracts. <p>Currently the LNG terminal operator publishes total monthly capacities, subscribed monthly capacities and available monthly capacities for the next six months (sliding).</p> <p>Since 4 May 2005, the LNG terminal operator has published total pluri-annual capacities and a percentage range for available pluri-annual capacities. Regasification <u>capacities</u> sold by the operator <u>can be freely transferred</u> between shippers, either partially or fully.</p>
Italy (Panigaglia)	Annual allocation procedure, each year available capacity for the following years and available capacity for a 5 years period from year +2 to year +7 are allocated.
Italy (Brindisi)	Rules for the allocation of the remaining capacity for terminals whose capacity is partially exempted from TPA has recently established by the Ministry of Productive Activities (Delibera n. 168/06, July 31, 2006)
Italy (Rovigo)	Rules for the allocation of the remaining capacity for terminals whose capacity is partially exempted from TPA has recently established by the Ministry of Productive Activities (Delibera n. 168/06, July 31, 2006).
Germany	-
Greece	According to the first draft of the National Natural Gas System Operation Code as proposed by RAE (see question 16), in the absence of congestion, vaporisation capacity (and the respective LNG reception services and temporary storage) is allocated on a “ first-come, first served ” basis (note that since the Code has not yet been finalised, modifications/additions to capacity allocation procedures may occur).
Portugal	-
Spain	The capacity allocation procedure is based on a first come first served principle. In order to avoid contractual congestion, it is also required to the agents the provision of a bail, equivalent to an amount of 12 times the fix term of the tariff, applied on the 85% of the contracted capacity. The bail and the capacity would be lost in case of infra-utilization (firm Use it or lose it mechanism).
Turkey Marmara Ereğlisi	There is a priority for BOTAS existing Contracts. Pro Rata is applied for the remaining Capacity (The Code of Operations has not been approved by EMRA yet).
Turkey (Aliğa/ İZMİR)	n.a.
National Grid Grain LNG (UK)	Open season for primary capacity sales process. The contractual arrangements at the site allow the primary capacity holders to sell importation capacity to secondary users. Grain LNG has recently developed a Secondary Capacity Mechanism to enhance the current arrangements for offering unused capacity at the Terminal by a Product that makes it possible to deliver up to a full cargo.
Milford Haven Dragon (UK)	Open season for primary capacity sales process. The Throughput Agreements enable secondary trading of capacity between the throughputters in the event that they do not use its fully capacity entitlement. The primary capacity holders will be obliged to notify Dragon in case they do not use its fully capacity entitlement and to offer the capacity available to third parties.
South Hook LNG (UK)	The primary shipper will be required to offer to the market any part of the base capacity that does not require. The terminal operator will manage a process that invites priced offers for Available Capacity and where there is more than one qualifying third party user making an application, South Hook will allocate capacity in the following manner: <ul style="list-style-type: none"> -Preference will be given to the applicant whose access request maximise South Hook revenues; -Spot capacity which becomes available from time to time will be allocated either on the same basis as available capacity, or on the basis of first come, first served, depending on the timing of spot capacity availability.

Question 11.*Congestion management procedures:*

Country	Congestion management procedures
Belgium	<p>The <u>Code of conduct</u> (royal decree) says (general for both LNG and transmission systems):</p> <p>Art. 48. §1. In the event of congestion, the transmission company shall, without prejudice of Article 45, paragraph 3, provide the CREG with the following data:</p> <ol style="list-style-type: none"> 1° the place and the probable duration of the congestion; 2° the applicants and network users concerned by the congestion; 3° per applicant concerned, the requested quantity of firm capacity that can't be allocated, together with the duration of the transmission contract wished for by the applicant; 4° per network user concerned, the quantity of unused capacity; 5° the measures taken to limit the congestion to a minimum; 6° the measures to be taken to remedy the congestion if possible; <p>§2. In the event of congestion, every applicant concerned shall demonstrate that he will actually use the capacity newly applied for. The applicant may demonstrate this with supply contracts. If the applicant is already a network user, account shall be taken, insofar as is applicable, of the degree of utilisation of the capacity already allocated to him on the basis of the existing contracts.</p> <p>§3. On the basis of the data mentioned in §§ 1 and 2 of the present Article, the CREG shall take the necessary steps to ensure that the transmission company shall suspend the allocation of the unused capacity wholly or in part, to the extent that this is necessary to satisfy the new demand for capacity.</p> <p>§4. The transmission company shall apply the aforesaid releases to the network users pro rata the extent of their respective unused capacity. The releases may only become effective forty five days after notification by the CREG of its request to the transmission company, and this on the basis of the non-discrimination of network users. The transmission company shall apply to the network users concerned a tariff which at least covers the costs and losses incurred by the transmission company further to application of the first paragraph. Pursuant to Article 15/5, §2 of the Gas Act, the transmission company shall submit this tariff annually to the CREG for approval.</p> <p>§5. In the event of persistent congestion, the transmission company shall modify the capacity allocation rules (...) in accordance with the existing demand on the market and taking account of the provisions mentioned in Article 11.</p>
France (Montoir and Fos- sur-mer)	<p>The new tariff provides for a <u>fine for cancelling scheduled unloading operations</u>.</p> <p>For each terminal, the monthly unloading programme for month m is set by the operator on the 25th day of month m-1, in line with shippers' requests received on the 20th day of month m-1 at the latest. This programme can then be modified on request from shippers. Nevertheless, any unloading operation recorded in the monthly programme of month m which is cancelled after the 20th day of month m-1 can disrupt optimum terminal management. This system therefore includes a fine for cancelling scheduled unloading operations with notice of less than or equal to 5 days.</p> <p>The fine is set at 10,000 € per cancelled cargo and is not applicable in the following cases:</p> <ul style="list-style-type: none"> • Cancellation gives rise to the same cargo being rescheduled in the month; • Unloading slot can be used by another shipper; • Cancellation is due to circumstances beyond their control.
Italy (Panigaglia)	Capacity is allocated with the following priority: 1) TOP contract signed before 10/08/1998 up the minimum quantity delivered in the previous years; 2) long term contracts; 3) annual contracts
Italy (Brindisi)	See question 10.
Italy (Rovigo)	See question 10.
Germany	-

Country	Congestion management procedures
Greece	<p>The first draft of the National Natural Gas System Operation Code as proposed by RAE (pls see reply to question 16) foresees a congestion management procedure for the Revithoussa LNG terminal. In detail, the TSO informs RAE when the total booked send-out capacity exceeds two thirds of the total send-out capacity and also when the available send-out capacity is inadequate to fulfil a user's request. The latter case is followed by proposals to RAE towards congestion management in terms of (a) increase of available capacity through new infrastructure (b) offer of interruptible contracts and (c) capacity release through auctions. RAE decides on the method to be finally adopted. According to the draft Code, if option (c) is adopted then RAE would require existing long term capacity holders to release their booked capacity so that the total send-out capacity can be reallocated through the auction. The TSO would have to reimburse the terminal users for the released capacity that would have already been paid for via the LNG tariffs. Note that since the Code has not yet been finalised, modifications/additions to the congestion management procedures may occur.</p>
Portugal	-
Spain	<p>As indicated in the previous answer, the provision of bails is a mechanism designed for avoiding contractual congestions in the system. It has revealed to be a very practical and effective tool. Furthermore, at present this Commission is designing a procedure for managing the physical congestion that could arise from the starting operation of the Sagunto LNG plant, due to the lack of enough transmission capacity to evacuate the regasification capacity of both Sagunto and Cartagena LNG plant simultaneously.</p>
Turkey (Marmara Ereğlisi)	<p>Contractual Congestion Management has not been clarified yet. In the drafted Code of Operations for the Terminal, it is stated that Pro Rata is to be applied in proportion with the existing amount of LNG in Storage Tanks (The Code of Operations has not been approved by EMRA yet).</p>
Turkey (Aliğa/ İZMİR)	n.a.
UK (Grain, South Hook Dragon)	n.a.

Question 12.*Ceiling on the share of capacity booked by a single shipper:*

Country	Ceiling on the share of capacity booked by a single shipper
Belgium	None.
France	None for the existing terminals. For the new Fos Cavaou terminal, at least 10 % of the capacities will be available on short term basis to third party access. The remaining capacity will be contracted by Gaz de France and TOTAL, companies which have invested in the terminal construction and will operate the terminal on long term basis. (CRE deliberation of 15 December 2003 on CRE's website).
Italy (Panigaglia)	None.
Italy (Brindisi)	See question 10.
Italy (Rovigo)	See question 10.
Germany	-
Greece	The issue will be dealt by the Operation Code for the National Natural Gas System (see to question 16) According to the first draft of the Code, the send-out capacity booked by a single LNG terminal user cannot exceed a third of the total send-out capacity of the terminal. A revised version of the Code is likely to add to or modify the capacity ceiling provisions.
Portugal	-
Spain	There is not a ceiling on the share of the capacity booked on a long term basis. In principle, the hoarding of capacity is discouraged by the provision of bails and firm Use it or lose it (UIOLI) mechanism previously described. Nevertheless, in the case of the capacity booked on a short term basis, (with a contracting period less than 2 years) there is a limitation of 50% of the capacity reserved for this purpose that can be booked by a single shipper.
Turkey (Marmara Ereğlisi)	Depends on Botaş existing long term contracts.
Turkey (Aliaga/ İZMİR)	n.a.
UK (Grain, South Hook Dragon)	100%.

Question 13.*Maximal long term/short term ratios of the contracts:*

Country	Maximal long term/short term ratios of the contracts
Belgium	None.
France	None for the existing terminals. For the new Fos Cavaou terminal, at least 10% of the capacities will be available on short term basis to third party access. The remaining capacity will be contracted by Gaz de France and TOTAL, companies which have invested in the terminal construction and will operate the terminal on long term basis. (CRE deliberation of 15 December 2003 on CRE's website)
Italy (Panigaglia)	None.
Italy (Brindisi)	See question 10.
Italy (Rovigo)	See question 10.
Germany	-
Greece	n.a. since currently there is only one contract
Portugal	-
Spain	There is a provision in the legislation establishing that companies must assign at least 25% of their overall ⁷⁸ regasification capacities to short term contracts, with duration under 2 years.
Turkey (Marmara Ereğlisi)	-
Turkey (Aliaga/ İZMİR)	n.a.
UK (Grain, South Hook Dragon)	n.a.

⁷⁸ The indicated legal provision is referred to 25% of the sum of the capacities of regasification, storage and entry transmission capacity, and not only for regasification capacity. This means, for example, that if a company owns more than one regasification plant, the referred 25% is in overall. So, one plant can have less than 25% of its total capacity in short terms contract, if considering all the plants together, the sum of short term contacted capacity is at least the 25% of the global regasification capacity. It is same for a company which owns, for example, a regasification plant and storage facilities, the 25% applies on the sum of the global capacity (the sum of all the infrastructures capacity).

Question 14.*Cap on long term contracts duration:*

Country	Cap on long term contracts duration
Belgium	No legal cap on the duration of the contracts. The CREG agreed with long term contracts up to 20 years from 2007 to make the extension of the terminal possible.
France	None for the existing terminals.
Italy (Panigaglia)	5 years contracts can be signed two years in advance. So capacity can be booked for a period of 7 years.
Italy (Brindisi)	See question 10.
Italy (Rovigo)	See question 10.
Germany	-
Greece	The draft operation Code as proposed by RAE provides for minimum contract duration of 1 year and maximum duration of 15 years. Again note that since the code has not yet been finalised modifications may occur.
Portugal	-
Spain	The legislation doesn't envisage any cap on the duration of the contracts.
Turkey (Marmara Ereğlisi)	1 year.
Turkey (Aliaga/ İZMİR)	n.a.
UK (Grain)	n.a.
UK (Dragon)	20 years.
UK (South Hook)	25 years (exemption duration).

Question 15.*Access rules to the terminal:*

Country	Access rules to the terminal
Belgium	<p>Access rules to the terminal are described in the Main conditions of Fluxys LNG. Operational rules are enclosed in its Network code (not approved yet).</p> <p>For the allocation procedure, cf. point 10. According to the Code of conduct, Fluxys LNG has to develop an <u>automatic reservation system</u> (ARS) within 2 months from the approval by CREG of the Network code. By this ARS, any terminal user who signed the Network code can check the availability of capacity and book available capacity.</p> <p>The <u>Code of conduct</u> imposes that any shipper that doesn't need its capacity has to offer it on the secondary market (art. 46). If booked capacity is not used and has not been offered on the secondary market at a price less or equal to the regulated tariff, this capacity is registered in a record that can be used by the CREG to free capacity in case of congestion (cf. point 11 above).</p> <p>As unused capacity has to be made available early enough to be usable for another shipper, the access rules to Zeebrugge LNG terminal require that any shipper that doesn't intend to use its capacity can offer it at a negotiated price but has the obligation to notify 2 months in advance to Fluxys LNG that this capacity will not be used, giving the right to Fluxys LNG to commercialise it on behalf of the shipper at the regulated price. By doing this, the access rules impose a cap on capacity price on secondary market from 2 months before the service start date. These measures aim to stimulate spot trading at the terminal.</p> <p>In order to maximise the throughput of the terminal and the number of cargoes that can be unloaded, a priority is given to the sell on secondary market of bundled slots (unloading, buffer storage and send-out, cf. point 18 hereunder). Unbundled slots can be sold 20 days only before the service start date (10 days before by Fluxys LNG on behalf of the shipper).</p> <p>These rules are described in article 31 of the Main conditions of Fluxys LNG:</p> <p>Art. 31. <i>Within the framework of its congestion management policy and facilitating the secondary market, Fluxys LNG provides for the following measures:</i></p> <p>(i). <i>For the period preceding the first day of month M-2, without prejudice to point (ii) of the present article, no specific measures are taken by Fluxys LNG with regard to the secondary market. However, Fluxys LNG points out that the Code of Conduct stipulates:</i></p> <p><i>Article 46 Paragraph 2: "Without prejudice to Article 10, §2 12°, the grid user offers, on the secondary market, the firm allocated capacity which it no longer needs momentarily or which it no longer needs permanently".</i></p> <p><i>Article 46 Paragraph 3: "In the absence of a public stock market for the capacity and the flexibility, as stipulated in Article 24, or if the grid user does not wish to offer its capacity via this stock exchange, the grid user communicates, to the transport company, the quantity and the price of the offer each time that it submits or modifies an offer. The transport company publishes this offer at the same time as the offer for the primary market in accordance with the provisions of Article 34."</i></p> <p>ii. <i>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 to 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.</i></p> <p>iii. <i>Before the 20th day of month M-3, the user of the LNG terminal nominates the number of slots that it is scheduling for the month M. Before the 20th day of month M-2, the user of the LNG terminal notifies the dates of the slots that it has nominated.</i></p> <p>iv. <i>On the 1st of month M-2 at the latest, the user of the LNG terminal must notify Fluxys LNG of the slots that it does not intend to use. Through this notification, the user of the LNG terminal authorises Fluxys LNG to sell, on behalf of the user of the LNG terminal, the slot in question.</i></p> <p>v. <i>Fluxys LNG sells the slots that it has been notified of in accordance with Point (iv). These slots are published on Fluxys LNG's website, and are sold as complete slots (without breaking them down to their constituent services) at the regulated tariff up to 10 days before the start date of the slot and are allocated on the basis of the principle of First Committed First Served. Ten days before the start date of the slot, the capacities that constitute the slot are marketed by Fluxys LNG in a dissociated way at the regulated price. Fluxys LNG shall immediately notify the user of the LNG terminal when the slot or the constituent capacity has been allocated.</i></p> <p>vi. <i>Without prejudice to Points (iv) and (v) of this Article and without prejudice to Article 46 Paragraph 3 of the Code of Conduct, the user of the LNG terminal still retains the possibility of selling the slots (and, from 20 days before the start date of the slot, the services making up this slot - cf. Point (ii) on the secondary market, at a negotiated price. If the user of the LNG terminal has sold a slot (or capacities constituting a slot) that has been the subject of a notification in accordance with Point (iv) of this Article, the user of the LNG terminal will immediately notify Fluxys LNG, which will discontinue the sale of the slot in question. If the user of the LNG terminal has sold capacity in a dissociated way, the possible residual capacity not sold ten days before the start date of the slot will be marketed by Fluxys LNG in accordance with Point (v).</i></p> <p>vii. <i>Fluxys LNG enters, in the record mentioned in Art. 17 (iii), any slot nominated by the user of the LNG terminal pursuant to the Point (iii) of this Article but not used, provided that this slot was not the subject of a notification pursuant to Point (iv) of this Article. In accordance with Article 48 of the Code of Conduct, this information is transmitted to the CREG in the event of congestion.</i></p>

Country	Access rules to the terminal
Belgium (continued)	<p>By way of indication, the diagram below shows, in schematic form, the way the secondary market operates:</p> <div style="text-align: center;"> <p>Secondary market</p> </div> <p>(*) as from D-10, separated services</p> <p>UIOLI is also applicable day-ahead, as not nominated send-out capacity is offered by Fluxys LNG on the primary market.</p>
France	Capacity allocation procedures are published on the operator web site.
Italy (Panigaglia)	See Question 10.
Italy (Brindisi)	See Question 10.
Italy (Rovigo)	See Question 10.
Germany	-
Greece	Third party access to the terminal is fully regulated; tariffs were published in March 2006 (see question 7).
Portugal	-
Spain	<p>As previously indicated, there is a regulated Third Party Access to the LNG terminals, based on the first come first served principle, accompanied with the provision of bails and the firm UIOLI mechanism.</p> <p>The process to access the terminal could be summarized as follows. Shippers wishing to book regasification capacity have to send a request application form (Standard Form) to the company operating the terminal. For an existing customer, the answer on the capacity request has to be provided within 12 days, whereas a new customer shall be replied within 24 days. After positive answer, access contracts have to be signed within the following 24 days.</p>
Turkey (Marmara Ereğlisi)	It is included in the draft code. But it has not been approved and published yet.
Turkey (Aliaga/İZMİR)	n.a.
UK (Grain)	As defined within the General Terms & Conditions in place at the facility and Specific Terms Agreement agreed with customer.
UK (Dragon)	-
UK (South Hook)	-

Question 16.

LNG operation code (brief summary about methodology, who is responsible for its elaboration and approval):

Country	LNG operation code (methodology, competences, etc)
Belgium	<p>The operational rules, scheduling and nomination rules, data exchange procedures, automatic reservation system's description, etc. are included in Fluxys LNG's Network code.</p> <p>The <u>Code of conduct</u> stipulates that:</p> <p><i>Art. 87. The transmission company shall draw up a network code which shall contain, in particular, the following elements:</i></p> <p><i>1° the provisions concerning the use and operation of the automatic booking system (...) and the relations with any secondary markets (...);</i></p> <p><i>2° the rules on capacity and flexibility offered on any secondary markets;</i></p> <p><i>3° the capacity allocation rules;</i></p> <p><i>4° the rules on congestion;</i></p> <p><i>5° all rights and obligations mentioned in this chapter, together with the procedures and lead-times;</i></p> <p><i>6° the way in which information and data are exchanged between the transmission company and the network user, (...);</i></p> <p><i>7° the way in which data are exchanged by electronic means between the transmission company and the network user and the transmission companies of transmission networks that connect to its own transmission network, (...).</i></p> <p><i>The Code of conduct also indicates the approval procedure of the Network code:</i></p> <p><i>Art. 88. §1. The network code shall be subject to the approval of the Commission and shall only enter into force after said approval has been given.</i></p> <p><i>§2. The transmission company shall submit any proposal for amending the network code to the network users who have signed this code, for consultation. These network users shall be given at least one month, counting from the notification of the proposal for amending, to forward their comments on this to the transmission company. The transmission company shall submit the proposal for amending to the network code, accompanied by the comments from the network users, as the case may be, to the Commission for approval. The amendment to the network code shall only enter into force after this approval has been given.</i></p> <p><i>Art. 89. Considering altered market conditions or its assessment of the market functioning, the Commission may order the transmission company to review and adapt the network code. (...)</i></p> <p>If the Commission rejects the network code proposed by the transmission company, the transmission company shall transmit an adapted network code to the Commission within 75 calendar days following receipt of the decision to reject. Within 75 calendar days following receipt of the adapted network code, the Commission shall inform the transmission company of its decision to approve or to reject.</p> <p>For a renewable period of six months, the Commission may impose a provisional network code to be applied by the transmission company if it should fail to meet its obligations within the time referred to in the third paragraph or if the Commission has decided to reject the adapted network code.</p> <p>Fluxys LNG introduced its first proposal of Network code on 14 February 2005 which was rejected by the CREG. A second version, introduced on 26 September 2005, was rejected as well on 8 December 2005. By rejecting this second proposal, <u>the CREG imposed for a period of six months a provisional network code to be applied at Zeebrugge LNG terminal</u> (cf. last paragraph of art. 89 of the code of conduct above). By the 8 June 2006 the CREG will have to decide if it imposes a network code for a new six months period.</p>
France	Standard contract
Italy (Panigaglia, Brindisi, Rovigo)	The Authority set rules and criteria for the access to the regasification capacity. The terminal operators elaborate the access code according to the rules and criteria set by the regulator with a consultation process open to interested parties. Access code is then approved by the Authority.
Germany	-
Greece	<p>Law 3428/2005 foresees an Operation Code for the National Natural Gas System (NNGS). The latter includes both the high pressure pipeline (plus compressing and decompressing stations, control stations etc) and the Revithoussa LNG terminal. The Code is approved by the Minister of Development following RAE's binding opinion.</p> <p>A first draft of the NNGS operation code, proposed by RAE, has already been released. Until the Operation Code is finalised and approved by the Minister of Development, operation of the LNG terminal proceeds according to the existing practices of DEPA S.A.</p>
Portugal	-

Country	LNG operation code (methodology, competences, etc)
Spain	<p>The LNG operation rules are included in the Network Code, which has been approved by the Ministry of Industry at the end of 2005, after long discussion among all the system users/participants. The approval methodology and elaboration process is described below.</p> <p>The System Operator, in collaboration with all the other agents involved, is in charge of drawing up a proposal for the Network Code that is submitted to the Ministry of Industry for approval or amendment. The Network Code shall be approved by the Ministry, following a report from the National Energy Commission. Its purpose is to guarantee the proper technical functioning of the gas system and the continuity, quality and security of the natural gas supply. The System Operator shall put forward to the Directorate General for Energy Policy and Mines the detailed protocols regarding the System Technical Management Rules. They shall be approved or amended by the Directorate General following a report from the National Energy Commission.</p> <p>The Network Code, together with the detailed protocols to be approved by the Directorate General for Energy Policy and Mines, shall apply to all the agents who gain access to the system and to all the owners of installations.</p> <p>The Network code must regulate the following aspects among others:</p> <p>The mechanisms to guarantee the necessary level of supply of natural gas for the system in the short and medium term and the maintenance of the minimum security stocks.</p> <p>The coordination procedures guaranteeing the correct operation and maintenance of the regasification, storage and transportation facilities, in accordance with the necessary security and reliability criteria.</p> <p>The procedures to control the movement of natural gas into and out of the natural gas system.</p> <p>The procedure to calculate the daily balance of each agent authorised to bring natural gas into the system.</p> <p>The procedure for the management and use of international connections.</p> <p>The procedure for steps to be taken in the case of emergency and supply shortage.</p> <p>Scheduling: the agents using installations, under TPA, must prepare scheduling for the gas they estimate they will put in, take out, store, supply or consume in a given period. Annual, monthly, weekly and daily schedulings shall be drawn up. Whatever the case, the flow stated in the daily schedulings and the monthly schedules on vessel off-loading, international pipelines and pipelines which connect national gas fields to the network are binding. The System Technical Management Rules shall set out the minimum content of each one of the schedules, the procedures and dates for their notification and the procedures for action to be taken if they are not fulfilled.</p> <p>Balances: both physical balances for each one of the installations shall be carried out and commercial balances for each user who gains access to the third party installations. These balances shall have a minimum daily scope. The aspects to be regulated thereto shall include the following: the scope of each one of the balances, their content, the calculation procedures, together with procedures, periods and reasons for their revision.</p> <p>System imbalances: action procedures shall be established in the event that variations in supply procurement or in demand are detected that might trigger imbalances in the system on account of an excess or shortage of natural gas. The necessary measures shall be activated to avoid interruption of supplies and to minimise the impact of such measures on all the other agents who operate in the system. Likewise, the procedures to determine the economic repercussions those measures might have shall be established.</p> <p>Losses and self-consumption: the procedures to be followed to determine the amounts to be withheld to cover losses and auto-consumption for each type of installation shall be established.</p> <p>Measurements: the points where the measurements should be made shall be established, together with the type of measurement at each one and the share-out criteria in line with them.</p> <p>Communication mechanisms: the lines to develop an information system that will allow channels to be set up for communication and the flow of information from the different agents involved in all of the operations required for the management of the system shall be established.</p> <p>Capacity of the installations: the criteria, rules and procedures to determine, with generally accepted technical criteria in the gas industry, the maximum capacity of the installations that make up the gas system as listed in article 3 of this Royal Decree, and to determine the capacity actually used and the remaining capacity at all times shall be established. To do so, the service factors, simultaneity, safety margins and any other parameter that might be relevant to determine all the above shall be defined.</p>
Turkey (Marmara Ereğlisi)	The Storage Code (Code of Operations for LNG Terminal) had been drafted with an open consultation process and approval process by the Authority is still going on.
Turkey (Aliğa/ İZMİR)	n.a.
UK (Grain, South Hook Dragon)	Not available. The operation rules are the responsibility of the terminal owners.

Question 17.

If different from point 16, existing and expected future regulations for operation of LNG terminals (documents in English if available of summary):

Country	Existing and expected future regulations
Belgium	Cf. Question 16 above.
France	-
Italy	-
Germany	-
Greece	-
Portugal	-
Spain	There is a discussion group, in which all the agents/bodies with any relation/interest in LNG transmission and distribution) activities (including LNG) are represented: the Ministry, the CNE, the System Operator, transmission companies, traders, etc. This group is in charge of examining the Network Code and its application to the system, discussing possible modifications required due to gaps, mistakes or changing conditions. In any case, the last responsible for approving regulatory changes is the Ministry of Industry, after a not-binding report issued by the CNE.
Turkey	-
UK (Grain, South Hook Dragon)	-

Question 18.

Catalogue of main services (slots, flexibility, additional storage, loading, etc):

Country	Catalogue of main services (slots, flexibility, additional storage, loading, etc)
Belgium	<p>The catalogue of the services offered by Fluxys LNG is named Indicative Transport Programme (ITP). It includes a description of the services offered and the calculation of the technical capacities. The ITP contains the firm, non-firm and interruptible capacities offered, the capacity allocation rules, the various types of service contracts, the duration of the standard contracts.</p> <p>The ITP is drawn up by the terminal operator for a period of at least two years and approved by the CREG. It shall be adjusted annually, i.e. on the basis of the congestion policy.</p> <p>No ITP has been approved yet. Fluxys LNG has submitted four ITPs since 30 August 2004. The first three ones were rejected; the last one is being examined by the CREG.</p> <p>Fluxys LNG proposed in its last ITP the offer of 66 slots including the unloading of a cargo, the storage of LNG during 5 to 6 days (storage capacity decreasing linearly within 5 to 6 days) and the regasification capacity allowing a continuous regasification within 5 to 6 days of the unloaded LNG. The storage and send-out duration will be extended to 10 days as from April 2007. Some storage and regasification capacities are offered as flexibility but CREG considers this couldn't be detrimental to the number of slots that could be commercialised. Zeebrugge LNG terminal offers additionally a truck-loading service, currently limited to carrying of LNG from Zeebrugge terminal to the neighbouring peak-shaving plant at Dudzele. Bunkering facilities are also available at Zeebrugge terminal. Blending of gas and lending of LNG are being studied to be offered in the coming years.</p>
France	<p>The pricing proposal covers three distinct regasification options proposed to terminal users. This distinction is required to define the terminal operating mode with several users present at the same time.</p> <p>The three options on offer are:</p> <ul style="list-style-type: none"> • Continuing service for shippers unloading at least one cargo at a terminal per month as an average over the year; • Band service for shippers unloading less than one cargo at a terminal per month as an average over the year; • Spot service reserved for unloading operations subscribed for a given month m after the 20th day of month m-1. The corresponding cargoes benefit from reduced prices in order to encourage shippers to take advantage of terminal capacities still available right up to the last moment and thus optimise their utilisation.
Italy	Firm regasification service and spot regasification service
Germany	-
Greece	Currently, the terminal offers regasification along with related services (unloading and temporary storage)
Portugal	-
Spain	<p>All the services necessary to make the gas available at the entry of the transmission system (at the connection point between the LNG plant and the transmission system), once regasified, are jointly included in the regasification tariff: slots assignment, unloading operations, vaporization, loading of trucks transporting the LNG to satellite plants, etc. The access tariffs to LNG terminals contain a significant degree of flexibility, as they include a certain amount of LNG storage capacity, 5 days of the contracted regasification capacity. Other additional services can also be contracted: additional LNG storage capacity (only if the plant has available capacity); ships cooling (operation required before introducing the LNG into the tanks); loading of ships with LNG; transferring of LNG between ships</p> <p>Nevertheless, according to what is said in the Directive related to the legal separation between transmission activities and gas supply activities of any type, there is a legislative project that will enforce Enagas to proceed to such a separation, stopping his activity as supplier of the gas addressed to the regulated market.</p>
Turkey (Marmara Ereğlisi)	<p>The two main functions of the Marmara Ereğlisi LNG Import Terminal are: 1) The storage of the LNG imported 2) The regasification of the LNG at required volumes to be sent out to Russian Federation – Turkey Natural Gas Main Transmission Line.</p> <p>The 300m long LNG Terminal's jetty has 16 m. water depth, 110 m. long breasting line and 380 m. long outer dolphin opening. There are three 16" unloading arms that unload LNG from the tanker and an 12" loading arm that loads back the gasified LNG to the tanker, three LNG storage tanks with a capacity of 85.000m³ (in liquefied) each and three open rack vaporisers (ORV) and four submerged vaporisers.</p> <p>The LNG unloaded from the tankers by the unloading arms is sent to the storage tanks via 30" unloading lines. The natural gas coming from the vaporisers is odorised at the outlet of the metering station and sent to the Russian Federation – Turkey Natural Gas Main Transmission Line by a 23 km long 24" line.</p>
Turkey (A-liğa/İZMİR)	
UK Grain	Berthing slots, Operational Storage, Regasification and blending services for compliance with GSMR
UK (Dragon)	-
UK South Hook	-

Question 19

Arguments set forth to grant exemptions. Conditions (capacity, tariffs...) and pro-competitive measures required for granting long-term contracts or exemptions to rTPA:

Country	Arguments set forth to grant exemptions
Belgium	No exemption has been requested at Zeebrugge.
France	Exceptions are possible legally since 2005, but until now there have been no TPA exception request
Italy	Exemption is granted case by case. The respect of Condition set in the directive 2003/55/CE, article 22, paragraph 1, must be verified. Exemption can be granted for at least 80% of the new capacity, and for at least 20 years.
Germany	The provision of Art. 22 paragraph 1 of Directive 2003/55/EG listing the requirements for the exemption of TPA has been transposed into the German Energy Industry Act. The Federal Network Agency will put high standards for TPA-exemption. It needs to make the decision in accordance with the Federal Cartel Office. The final decision will be made after the recommendation for decision has been brought forward to the commission.
Greece	-
Portugal	-
Spain	Exceptions are possible legally since 2005, but until now there have been no TPA exception request.
Turkey	No argument for exemption to rTPA is set forth by Botaş. However, in the drafted code it is stated as a provisional clause that there shall be priority for Botaş existing long term contracts in capacity booking.
UK (Grain, South Hook, Dragon)	In June 2003, the Department of Trade and Industry (DTI) and Ofgem identified three areas that would be minimum requirements for an exempt regime: ⁷⁹ -effective capacity allocation in terms of an initial offer of capacity to market (though under specific circumstances this condition might be loosened); -effective mechanisms to ensure that capacity is not hoarded (i.e. use it or loose it arrangements); and -information provision requirements relating both to the regulator and potentially also to market. Ofgem considered that Grain LNG Ltd, South Hook LNG Terminal Company Ltd and Dragon LNG Ltd (the applicants for the exemption) satisfied each of the exemption criteria (including those set out in the Article 22.1 of the Directive 2003/55/EC). In addition, Section D of the Exemption orders includes some additional conditions applied to the exemption.

⁷⁹ In November 2003, the DTI and Ofgem issued final views in relation to the new Directives and the resulting regulatory regime. By and large, the final views document confirmed, and clarified, the position set out in June 2003. DTI and Ofgem expanded upon grounds for withdrawal of an exemption: · breach of exemption criteria; · breach of competition law; · bankruptcy; or · mergers / acquisition activity.

Question 20

Which are the powers of the regulator to enforce the TPA rules or to decide on exemptions?

Country	Powers of the regulator to enforce the TPA rules or to decide on exemptions?
Belgium	<p>Without prejudice to the CREG's role in approval of the Main conditions, Network code and Indicative transport programme (see above), the decision to grant an exemption to TPA rules is taken by the King after the CREG has provided an advice (cf. Gas law, art. 15/5duodecies).</p> <p>When an exemption is granted, the Minister for Energy can stipulate rules and mechanisms concerning the management and allocation of capacity, insofar it does not hamper the carrying out of the long-term contracts.</p>
France	<p>Tariff: The law of 3 January 2003 guarantees all consumers and suppliers open non-discriminatory access to LNG terminals and rules that decisions on tariffs for utilisation of these systems are proposed by the CRE and approved by the Minister for the Economy and Industry who cannot change them (he can only accept or refuse).</p> <p>Disputes: The Commission can be requested to settle disputes related to access to or the use of liquefied natural gas plants (LNG). In particular, disputes may concern for access to LNG facilities: refusals to give access or disagreements on the conclusion, interpretation or performance of contracts and protocols giving access to LNG plants concluded by the operator Gaz de France with suppliers or their representatives. Article 22 has been transposed in French law by the decree of 31 July 2005. This decree defining the procedure for exemption from the general principle of third-party access to gas infrastructures states that:</p> <ul style="list-style-type: none"> -the exemption is granted by the Minister of energy, -the CRE gives an advice. <p>No exemption has been asked by gas investors.</p>
Italy	<p>The exemption is granted by the Ministry of Productive Activities. Before granting the exemption the Ministry have to acquire the opinion of AEEG.</p>
Germany	<p>The Regulatory Authority may obligate an operator of an energy supply system, including operators of LNG facilities, that abuse its position to discontinue violations. It may impose all measures on the undertaking that are necessary to effectively stop the violation. Additionally, the Regulator may impose fines.</p>
Greece	<p>According to the provisions of law 3428/2005, current and new infrastructure included in the National Natural Gas System will be open to TPA under a regulated regime, in full compliance with the provisions of the directive. The regulator has a binding opinion on the methodology for and setting of tariffs as well as the issuing of the Operating Code. RAE has also the right to request from the TSOs the change of the terms and conditions for TPA to their respective system, in order for those terms and conditions to be non-discriminatory. Finally, RAE has been assigned by the law all the competences provided for by Directive 2003/55/EC with respect to load balancing.</p> <p>The possibility for exemption from TPA obligation is only allowed for Independent Natural Gas Systems (i.e. other than the National Natural Gas System). The procedure for proceeding with each application for exemption from TPA is the one described in article 22 of Directive 2003/55. As far as the national authorities are concerned, the decision regarding the exemption is taken by the Ministry of Development after a binding opinion of RAE (equivalent with the procedure described in article 22.3.a of the Directive).</p>
Portugal	-
Spain	<p>The CNE is in charge of solving the TPA conflicts. However, powers related to the TPA regime definition, as well as the powers related to the decision on TPA exemptions doesn't belong to the CNE but to the Ministry of Industry.</p>
Turkey	-
UK (Grain, Dragon, South Hook)	<p>Gas Act 1986 (as amended) 19c & 19d - Exemption from 19d.</p>

Appendix E. Questionnaire for users of LNG terminals

In the context of this study NERA has conducted a number of selected interviews of market players, in particular to terminal users. The interviews were conducted along the lines of a questionnaire concerning the market player's terminals, their use and users, the access rules and in force regulations.

The questionnaire below is indicative and users were free to answer in any way they preferred and to qualify any response at their will. No sensitive commercial information was asked nor required. The objective was to give players an opportunity to describe and discuss their experience as users of European LNG terminals, the problems encountered and their views on areas for improvement.

We have planned 10 interviews with the following users of LNG terminals. A large majority of these users have experience in more than one country/terminal and have tested several access conditions in Europe.

Most users have expressed some objection to link their names with specific opinions about terminal operators, As a result below we provide, in addition to the questionnaire employed, a brief summary of the main issues raised in the interviews, organised by country.

E.1. Indicative questionnaire

Access to LNG terminals

- describe your current use of LNG terminals in Europe (terminals and type of use)
- do you foresee to continue making use of the terminals in the same way? Why or why not?
- how do you value the information provided by operators regarding capacity availability?
- what capacity reservation mechanisms do you use and which ones would you prefer? Do you think capacity is allocated to the users that value it most?
- do you use spot or short term capacity in any terminals? If so how do you go about identifying the available capacity and then securing it?
- Do you make use of secondary markets of capacity (OTC or electronic)? Are you satisfied with its role and trading rules?
- do you see regulated TPA to LNG terminals as an effective means to introduce competition into gas markets?
- should Use It or Lose It rules be rigorously applied? What would be appropriate periods of dis-use (e.g. both winter and summer?)
- can hoarding of capacity impact the gas/LNG markets?
- does TPA contribute to competition in the gas market by helping divert cargos from one terminal to another?
- what issues do you consider an impediment to effective use of TPA e.g. management of upstream LNG supplies and shipping

Operation of terminals

- how would you define ‘unused capacity’ in a regas terminal?
- what issues do you encounter in ‘congestion management’?
- are bundled services an obstacle to efficient terminal usage? Is it better to split out berthing/storage/regas and sendout to the network?
- how easy is it in your market to line up network access and downstream sales to match LNG deliveries – are there liquid/traded markets?
- how can operational rules best achieve an efficient operation of facilities (ie operation at minimum cost plus maximisation of amount of capacity offered plus efficient use of the capacity)?
- What aspects of access to the terminal are sources of flexibility? do you have access to all the flexibility you need? How can operational rules best allow a flexible use of the facility so as to contribute to security of supply?
- Have you ever tried to divert a cargo to/from another terminal? Comment on difficulties encountered. What measures would favour cargo diversions to other terminals?
- what operational issues/difficulties can arise with multiple users of a terminal?
- What is the structure of access fees you pay? Out of the services you use which ones are optional? What services you would use if they were offered?

Shipping Issues

- what sizes of LNG carriers do you usually deploy?
- are there LNG terminals where this size/specification of vessel would not be acceptable?

Gas quality issues

- is gas quality a constraint on access to LNG terminals where you operate?
- are there LNG sources that could not be accepted at regas terminals where you operate?
- is quality correction (Nitrogen ballasting etc) an option?
- have you experienced an LNG cargo being turned down on quality grounds?

Status of legislation and regulatory framework

- is there a well defined legal/regulatory framework for regas terminals where you operate?
- what aspects of the regulations would you prefer to see changed and/or better defined?
- does the Regulator and/or Government where you operate have a proper understanding of the LNG industry and if not what are the consequences?
- have you filed any access conflict? What is your view on the mechanisms and institutions in charge of conflict resolution (simplicity and length of process)?

Company ownership of terminal assets and/or capacity

- do you own equity in any regas terminal(s)? If Yes is this linked to capacity rights? Do third parties use the terminal in which you own equity/capacity?
- are you considering or in the process of developing any new regas terminals? If so, what do you consider the main criteria in the development decision making? is exemption from TPA important and if so why?
- what would you regard as the minimum acceptable TPA terms (e.g. length of exemption over what proportion of the capacity)

Overall judgments

- In your view, do the regulatory arrangements and operational rules applied in the LNG terminals you use favour competition in the European gas market?
- At the time you booked your current capacity did you consider alternative infrastructure/capacity? If so, what factors were key in opting for your current arrangements? Do you have alternatives terminal operators face competition in capacity?
- Do you consider the amount of LNG terminal capacity available sufficient to accomplish your trading/wholesale strategy? If not, what steps you consider should be taken to increase/improve available capacity?
- Overall, do you think access to terminals is transparent and non discriminatory?
- Do you think there is a need to harmonise any aspect of access to terminals in different countries? If so which aspects should be harmonised?

E.2. Summary of opinions expressed

The 10 companies interviewed companies were selected to represent experiences in all the EU countries where LNG is currently imported and to get a range of company characteristics: international major, mid-stream trader, gas market incumbent, power utility and new entrants to LNG.

Below we summarise by topic the main issues raised by interviewees when describing their experiences and expectations regarding TPA to LNG facilities. The topics listed respond to the groups of questions made in the questionnaire. There was overall consensus among interviewees that these topics are the most relevant ones when discussing practical TPA to LNG facilities.

E.2.1. Access to terminals

Countries where have LNG operations: Of the 10 companies interviewed, 7 already import LNG into more than one EU country and of these 4 have LNG import operations in the USA. Those who did not already do so all had the ambition to trade LNG in multiple countries. All interviewees were actively pursuing opportunities to either develop their own LNG terminal or gain access to third parties' in new countries.

Spot / secondary capacity usage: Whilst long term arrangements were widely used, spot or secondary capacity usage was far less practised. No company reported using spot or secondary capacity as routine and 3 interviewees said they would far rather sell ex-ship at the jetty. Two gave their reason for not using this capacity as that of short notice period to source a cargo and to arrange shipping (see below).

Information available: Even where the TO was considered to be providing appropriate / adequate information, 3 interviewees pointed out that the capacity user needed to know more than this and it was necessary to have knowledge of the entire LNG market upstream in order to be an active participant. Furthermore TO could only be expected to publish information regarding short term capacity usage and that long term arrangements were made on a bi-lateral basis.

UIOLI definition: The question of ‘Use It or Lose It’ triggered strong responses from some interviewees. There was a marked difference in attitude depending on whether the terminal in question was owned and operated by a TSO or had been developed by a private company. Even the 2 ‘new entrants’ interviewed were of the view that those developers who put capital at risk should have the right to do what they want with their capacity: one drew a direct analogy with a Southern North Sea gas field. It was generally agreed that UIOLI terminology had been developed originally for pipeline gas infrastructure and was not directly applicable to LNG terminals. Two interviewees explained their views in terms of the ‘option value’. The option value of LNG capacity is different from a pipeline where the notice for capacity usage is usually one day ahead and then the option value of the capacity becomes zero. The option value of LNG regas capacity remains above zero. Two interviewees believed that UIOLI should be better termed “*Use It, Trade It or Release It*” and one interviewee added that if market signals were working properly then a capacity owner ought not to be forced to send out gas when the market did not require or value it. There were 3 interviewees who criticized long term UIOLI schemes, such as that used in Italy, whereby the capacity rights of the user were curtailed if historical usage had been low and it was pointed out that such a scheme was a disincentive to investment in new terminals. One interviewee went on to report that this system of UIOLI was partly responsible for the Panigaglia terminal being under utilized.

Capacity reservation system preferred: Of the 7 companies that expressed a preference, 4 favoured an Open Season for long term capacity and 3 preferred First Come First Served. Two of these interviewees qualified their statement as appropriate for long term capacity and 2 others mentioned that this applied only when there were multiple terminals and/or excess capacity. One interviewee was in favour of first come first served system coupled with effective UIOLI of short term capacity. Only one company was in favour of reserving a specific (small) percentage capacity for TPA, as is proposed in Italy and that it should be offered on a spot basis.

Terminals where failed to get access: Whilst this was not asked explicitly in the questionnaire, several companies illustrated their responses with examples of their attempts to gain access to terminals without success. Seven interviewees gave accounts of markets where they could not gain access for their own LNG: all of them cited France and Belgium. One company finally did get access to a French terminal but felt that they were uniquely positioned to ‘break in’. One company said that they were content to sell LNG ex-ship at the jetty in Spain but not in France and Belgium because of the different degrees of market liberalisation and competition. Another company mentioned that access to the Italian gas

market was not effective through existing terminal and that investment in LNG terminals was required to access the market.

Reason failed: Of those who claimed to have tried and failed to get access 5 gave reasons and 4 of these cited as the reason lack of access to transmission downstream of the terminal. The fifth interviewee gave the more generic reason of ‘obstructive tactics’ by the incumbent, which again included lack of access to transmission downstream. One interviewee claimed that they had lost the opportunity to use a slot because the TO had taken too long to undertake the requisite ship vetting procedures.

Hoarding capacity can distort markets: Of the 5 interviewees who answered this question 4 believed that in a competitive market where the incumbent does not occupy a dominant position the ‘hoarding’ of LNG capacity is unlikely to have a significant impact on the market. One interviewee added that when the terminal is owned by the incumbent consideration needs to be given to their control of all gas import infrastructure – including pipelines – not just LNG. The fifth company was not comfortable with the concept of hoarding but suggested that in a competitive market the non-use or disuse of capacity could be the result of a rational commercial choice on the part of the capacity owner.

TPA to promote competition: Nine interviewees answered this question and all of them regarded LNG as a key method for promoting competition into gas markets but with a number of qualifications. Four of these stated that access to downstream transmission was crucial for LNG (with or without TPA) to promote competition and 3 said that TPA had to be part of a tough regulatory regime that forced the incumbent to allow new players into the market. Two interviewee observed that it was not possible to build a business from spot LNG cargoes or from released UIOLI capacity and therefore long term access was important. Another interviewee, whilst in favour of TPA preferred to see regulations that encouraged construction of more terminals and to let competition in capacity develop.

Impediments to TPA: In addition to the comments about TPA given above, 6 interviewees gave specific examples of impediments to TPA. Two interviewees reported that destination clauses in LNG contracts were an impediment. The lack of un-contracted LNG supplies on the market now and for the foreseeable future was also considered to be a constraint by one interviewee. Three interviewees saw incompatible shipping and quality specs as impediments (see 2 below). One interviewee cited operational factors including short notice periods and short send-out periods (discussed further in 2 below) whilst another cited general inflexibility of operational rules as an impediment.

Conclusions on Access to Terminals:

- 1.1 The responses from interviews make a strong distinction between terminals where the TSO is owner or operator and terminals developed by private companies.
- 1.2 They also highlight the difference between the various EU markets and hence any regulations have to take account of the role of LNG in each market.
- 1.3 The state of development of liberalisation and competition in the market downstream of the terminal was in many instances more the determinant of access than the terminal itself.

E.2.2. Operation of terminals

Unused capacity definition: This question was not answered directly by many of those interviewed and most opinions were reflected in the discussion of UIOLI. One company said that it could only really be identified in hindsight, in other words too late to be of use. The only other to answer said that it was capacity which is never utilized over a substantial period of time – which could be many years in highly competitive markets. Two more said that UIOLI should only imply losing capacity for a short period of time.

Bundled services: No interviewee spoke out against bundled services per se and of the 4 that responded to this question 2 stated that bundled services were an efficient way to run a base-load operation. One respondent though that bundling was useful to prevent arbitrage of capacity by hoarding tank capacity. However one of these complained that at Panigaglia there was great uncertainty about the send-out of gas to the transmission network by the TO and in this case bundled services were not transparent to the user and very difficult to live with. The third interviewee stated that they did not see that physical access for third parties was necessary (bundled or otherwise) and believed it was more efficient and less risky to sell LNG ex-ship at the jetty with re-delivery of gas into the market (provided the market is open and competitive).

Upstream / downstream alignment: Three interviewees responded to this question but a lot of the above remarks about access to transmission networks apply here too. One interviewee observed that gas markets (especially traded markets such as USA, UK) are often volatile and the price of gas can move significantly in the time it takes for a ship to travel there. A second interviewee stated that the commercial operation of a terminal must be compatible with the market where it is located to enable trading (where LNG and pipeline gas need to be fungible) to work. The third interviewee observed that it is a lot easier to align upstream and downstream operations for the UK market than anywhere else in EU.

Diverting cargoes: Five interviewees said that they had diverted cargoes between markets – generally from Europe to the USA.

Notice to use UIOLI slot: The responses to this question differed depending on whether the interviewee was a terminal owner or a capacity user. Four interviewees responded with a specific time preference which ranged from 10 days to one year. For a new entrant to the LNG business it is very difficult to source spot LNG cargoes and one interviewee described this as a ‘club’ that was difficult to join. Another remarked that organising spot cargoes was easier for those operators who had their own fleet of ships. Terminal owners were keen to retain the Option Value of the berthing slots and prefer to keep the notice period as short as possible.

Preferred send-out rate (days/cargo): The 4 interviewees who stated a preference were unanimous in wanting 30 days send out per cargo. This is mainly because in the traded gas market a standard contract is one month. Even if the terminal send out period does not coincide exactly with the start of a month it is possible to hedge short time periods whereas there is no futures market through which to hedge (say) 3 weeks. Terminal owners with base load contracts did not express a preference presumably because it should not affect them. One interviewee expressed the view that fixed send out rates are necessary to avoid parking of

LNG in tanks but also remarked that tend to block entry in new markets due to difficulties to hedge market risks.

Multiple users: Of the 5 interviewees who answered this question only one did not regard multiple users as an operational headache. Examples were cited by 2 interviewees of the difficulties encountered in the USA in establishing workable arrangements for multi-user terminals and that there was not much experience yet of this in EU terminals. Apparently it took 2 years to negotiate the Intra-Terminal Use agreement at Cove Point, Maryland. Two interviewees also pointed out that there could be more difficulties in working with smaller users and ad hoc arrangements than with long term users of the same terminal. The opposite view was that new terminals are tending to be developed by companies in joint venture anyway so the commercial and operational rules must already be in place to accommodate multiple users.

Conclusions on operation of terminals:

- 2.1 Usage of terminals on spot or short term basis is difficult for most companies due to the complexity of organising LNG cargoes upstream.
- 2.2 Notice period for UIOLI slots has to be of the order of one month for prospective users to locate a cargo and organise shipping.
- 2.3 Commercial operation of a terminal in a manner compatible with the downstream commercial gas market encourages new users and competition.
- 2.4 Preferred send out rate for a cargo is 30 days.
- 2.5 Bundled services do not obstruct access
- 2.6 The natural state for an LNG terminal is with the storage tanks full in readiness to send out gas at peak times or in an emergency.
- 2.7 Virtual storage is an efficient way to manage access to the terminal without having to empty the tanks.
- 2.8 Cooperation between terminal users and pooling arrangements are necessary for a TO to manage multiple users and maintain gas send out.
- 2.9 Liquid traded gas markets and open access to transmission are required downstream of a terminal for LNG trading to be feasible.
- 2.10 For small players to be able to cope with the large volume of gas in an LNG cargo it requires a liquid traded market downstream or an active competitive market with bi-lateral trades.

E.2.3. Shipping issues

Sizes of vessels used: The current standard size of vessel is 130,000 – 145,000 m³ but some older vessels are much smaller at around 63,000 m³. Four interviewees answered this question directly pointing out that they were looking to use much larger vessels in future –

the Qflex and Qmax at 200,000 and 220,000 m³ respectively. The importance of shipping was emphasised by one interviewee who observed that if all their ships were to slow down by 2 knots they would need an extra 30 vessels at a cost of around \$200m each.

Terminals where not acceptable: Not all terminals are able to accept all sizes of vessel. Older terminals – Fos and Panigaglia – as reported by one interviewee are not able to take ships bigger than 70,000 m³ and this is unlikely to change in the foreseeable future. Another interviewee remarked that by 2010 some 35% of terminals will not be able to receive the big Q series ships although this restriction was not always physical but could also be commercial (see below).

Ship vetting: All the 4 who responded to this question recognised that there were differing standards in the time taken by TOs to vet ships and that there should be a standard of service. One interviewee reported that slow ship vetting was an obstructive behaviour whereas the other two felt that in due course the LNG traders would have got all the likely ships vetted in advance at those terminals which they were likely to use. One interviewee thought that only physical constraint should remain and legal or administrative procedures should be harmonised.

Conclusions on Shipping:

- 3.1 Whilst some older terminals have physical constraints to ships they can accommodate (water depth etc) most terminals can receive ships in the 130,000 to 145,000 m³ range.
- 3.2 The challenge in future will be the new series of very large Qflex and Qmax vessels which will comprise a substantial proportion of the world fleet by 2010.
- 3.3 Ship vetting is a short term problem and over time most vessels will get registered at those terminals where they are likely to berth, although standards of service should be established.

E.2.4. Gas quality issues

Gas quality a constraint: The issue of gas quality was addressed by 8 interviewees and those who operate at Zeebrugge and/or in UK all felt that quality could be a constraint on LNG operations and interoperability of gas transmission systems. Gas quality specifications in Italy, France and Spain were not considered to be a problem. Gas quality harmonisation was considered essential by most respondents. One respondent said that gas quality should not be a justification to reject a cargo if in line with EU harmonised rules and TOs could deal with the problem offering blending services.

Sources not acceptable: Five interviewees reported that certain sources of LNG might not be acceptable at terminals where they operate: all said that the first train at Oman LNG and Nigeria Bonny LNG were too high Wobbe Index for UK and Zeebrugge, even with nitrogen ballasting. One interviewee mentioned that these sources would also be difficult to accommodate in France but could be blended with other lower Wobbe LNG supplies provided the storage tanks were big enough. Another interviewee commented that Nitrogen injection is an option but it does not alleviate some customer gas quality concerns (flame

lifting, yellow-tipping, etc.) and it adds significant cost to the gas. One interviewee also mentioned that new LNG export trains tend to design the LNG spec to match the market where it is destined to land so quality issues mostly affect cargoes being diverted or traded.

Conclusions on Gas Quality: this is evidently a serious issue for the efficient functioning of the EU gas markets in the short and medium term. The problems arise mostly in NW Europe in UK and Zeebrugge Hub with interconnection to UK. Harmonisation of gas specs across continental Europe in progress but there is a need for leadership on the Interconnector.

E.2.5. Status of legislation & regulatory framework

Well defined legal/regulatory framework: Four interviewees commented on the legal & regulatory situation where they operate. Two remarked on the Belgian regulatory framework as being well defined but still to be tested with multiple users at Fluxys and that regulatory scrutiny should look at the competitive situation at Fluxys in the round, not just the LNG terminal. Two interviewees observed that the Italian regulatory framework for TPA was still being developed and it was not yet clear how the 20% TPA would work in practise. Two interviewees said that with well-defined regulations in Spain there was capacity competition between terminals and in UK there was a robust market with competition between terminal expansions (and competing against Fluxys). Two interviewees stated in response to both this question and related questions their strong desire for regulatory certainty and stability of the regulatory framework to avoid them getting ‘caught out’ at a later date.

What should be changed or better defined: Five interviewees made recommendations for changes, one of whom made the general remark that terminals should be regulated ‘in the round’ rather than focus on individual, specific aspects. One recommended that Belgium revise the 10-day sendout requirement at Fluxys because it was too short. Three criticised the rTPA scheme proposed in Italy feeling that 20% TPA was counter-productive and 2 of those interviewees said they would like changes to the UIOLI rules in Italy which are based on historical usage to determine future capacity rights. Two interviewees regarded as important that in Spain the TSO separate the functions of transport (asset owner), TSO and planning agent. One respondent regarded ownership separation of gas owners and gas users as essential. Finally, in Spain one respondent noted that cancelling capacity reservations for more than one year is free and another pointed out that bails for short term capacity are not operative due to timing issues (better framework contract & confirmation notice for short term users).

Conclusion on the status of legislation & regulatory framework:

- 5.1 Regulatory certainty and stability of the regulatory framework is beneficial to all players.
- 5.2 Terminals should be regulated ‘in the round’ taking account of all factors
- 5.3 Competition between terminals in a given market should be an objective of the regulatory regime.
- 5.4 The functions of the TSO should be separated.
- 5.5 There should be changes to the regulations in Italy to reserve up to 20% for TPA and to base UIOLI on historical usage.

E.2.6. Company ownership of terminal assets and/or capacity

TPA exemption importance: Of the 5 interviewees who responded to this question 2 were firmly of the opinion that 100% exemption was essential to them. The other 3 were more tempered in their preference: if not 100% exempt there should be some provision for private investors to compensate them for the cost and risk of the rTPA capacity. One interviewee went on to say that partial exemptions (e.g. 80/20) creates risk of stranded capacity at the outset of a project i.e. there is a risk of stranded regasification, network transmission, tugs capacity etc. These comments all referred to terminals developed by private investors: there was a general agreement that open access is appropriate if the TSO is also the TO.

Minimum acceptable TPA terms: Two interviewees made comments beyond the responses on TPA exemptions given above and both stated that the regime should be aligned with the tenor of long term Take or Pay LNG contracts.

Conclusion on company ownership of terminal assets and/or capacity:

- | | |
|-----|--|
| 6.1 | Open access is appropriate for terminals which are owned and operated by the TSO or dominant incumbent. |
| 6.2 | Private developers of LNG terminals regard 100% exemption of rTPA as desirable or essential. |
| 6.3 | Reserved capacity for TPA is regarded as a risk and a disincentive to investment by private developers. |
| 6.4 | TPA terms should be aligned with those of long term LNG supply contracts particularly as regards duration. |

E.2.7. Overall judgements

Regulations & operational rules favour competition: All five interviewees who answered this question pointed out that the LNG business is extremely high cost and high risk so that new entrants have to be relatively large companies such as power utilities. Access to short term capacity was virtually impossible except for the established international majors. Competition was also created when international majors (for example) came into markets dominated by the incumbent even though they were no 'new entrants' to the LNG business. Two interviewees mentioned that in the UK competition was well established and that the regulatory regime there was good. One mentioned that competition was developing in Spain but France was less so. Those who commented on the UK mentioned that gas market price signals were important not only to LNG terminals but also to transmission networks: National Grid was constructing the requisite transmission capacity to accommodate LNG in response to the market whereas this was not happening in Spain. One interviewee observed that competition and private investment had developed strongly in UK without any intervention by government or regulator. Another interviewee commented that rules should be set from the outset and that stability was important for competition to develop.

Alternatives to terminal used: Of the 3 interviewees who expressed an opinion one would prefer to go to the USA where there is a liquid traded market and no regulatory intervention on LNG terminals. A second wanted access to gas markets in NW Europe and in theory this

should be possible via any terminal in Belgium, France and UK (and in future Netherlands). The third felt that differences in TO efficiency and personnel influenced their choice of which terminal to use.

Need for harmonisation: Of the 6 interviewees who answered this question 3 were strongly against attempts at harmonisation, especially any ‘mix and match’ approach, but rather terminals should be regulated individually to reflect the local market conditions. One of these interviewees added that terminals located in the same country/market should have harmonized rules. However one interviewee felt that harmonisation across EU might help reduce the risk to investors of rules changing and that a clear regulatory framework and guidelines would be beneficial. Three interviewees said they would like to see harmonisation of gas quality specifications. One would like to see ring-fencing of all activities at a terminal (offloading, regasification, storage, and send-out) with a single tariff charged at tailgate of the plant. Finally, one respondent argued in favor of harmonization of operational rules in plants to help new entrants.

Conclusion on overall judgements:

- 7.1 Regulatory certainty and stability are beneficial to encouraging investment and competition.
- 7.2 Some regulatory regimes are well defined by not yet tested in usage.
- 7.3 Overall guiding principles should be developed across EU
- 7.4 Different regulatory regimes are required for different markets depending on the state of development of liberalisation and competition as well as the differing role of LNG in that market.
- 7.5 Regulation of terminals should take account of the full range of factors pertaining to that market including alternative supply infrastructures.
- 7.6 Harmonisation of gas quality specifications would be welcome
- 7.7 Harmonisation of rules between terminals located in the same country/market would be beneficial.
- 7.6 Small players were generally unable to take advantage of spot or short term capacity.

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Inscrita en el Registro Mercantil de Madrid,
Tomo 337, Folio 28, Hoja N.º M-6683, Insc. 1.ª,
N.I.F. N.º A-4001695-H