Country factsheets

Entry-Exit Regimes in Gas, a project for the European Commission – DG ENER under the Framework Service Contract for Technical Assistance TREN/R1/350-2008 Lot 3. Contract ENER/B2/267-2012/ETU/SI2.628337

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Contents

1 GUIDE TO THE DOCUMENT

This document provides an overview of relevant details relating to the implementation of entry-exit regimes, as well as to the characteristics of the regimes for natural gas in EU Member States[1].

In-depth understanding of the applicable regulations and processes within the EU requires coverage of a large amount of detail, due to the complexity and/or particular features of solutions applied in the individual Member States. At the same time, the large numbers of Member States and topics to be covered strongly requires a significant degree of standardisation in data representation and nomenclature.

Therefore, this document consists of 25 standardised 'fact sheets'. Each fact sheet describes one individual Member State, focusing on five key issues: Network Topology; Design of the Entry-Exit System; Tariff Structure and Capacity Products; Balancing & Imbalance Settlement and Market Environment and Trading. The next sections provide for a guide to the reader on the set-up of the format and the standardised tables.

Network Topology

This section provides a brief overview of the physical infrastructure in place and potential specificities in the given Member State. It contains a table providing high level data on the network: length, pressure range, import and export capacities, storage, LNG, TSOs and DSOs. The accompanying text and notes provide specific details. For most countries a map depicting the main outline of the network is included. The information in this section serves mainly as background information, for instance if dedicated (and separated) cross-border pipelines exist, storage capacity, etc.

Design of the Entry-Exit System

This section presents the main characteristics of the entry-exit system in the given Member State, including access arrangements and requirements that the market players meet and should fulfil in order to enter/participate in the market. The entry-exit system is represented in a schematic overview, summarizing the basic access arrangements in a uniform manner, in combination with a standardised table covering the licensing regimes and required contractual arrangements. Please note both the schematic and the table are compiled from the perspective of a shipper.

The lay-out and interpretation of the schematic representation and the contractual arrangements table are clarified below.

[1] Please note that not all of the 27 Member States have gas markets with a corresponding network infrastructure, and/or are connected with any other market (yet). Therefore, it was agreed not to incorporate Cyprus and Malta in this document.

In the scheme the existing entry-exit system in the given Member State is illustrated in a square representing the country´s natural gas system, both on TSO and DSO level. The basic lay-out of the scheme representing a fully implemented entry-exit regime is shown in the figure below.

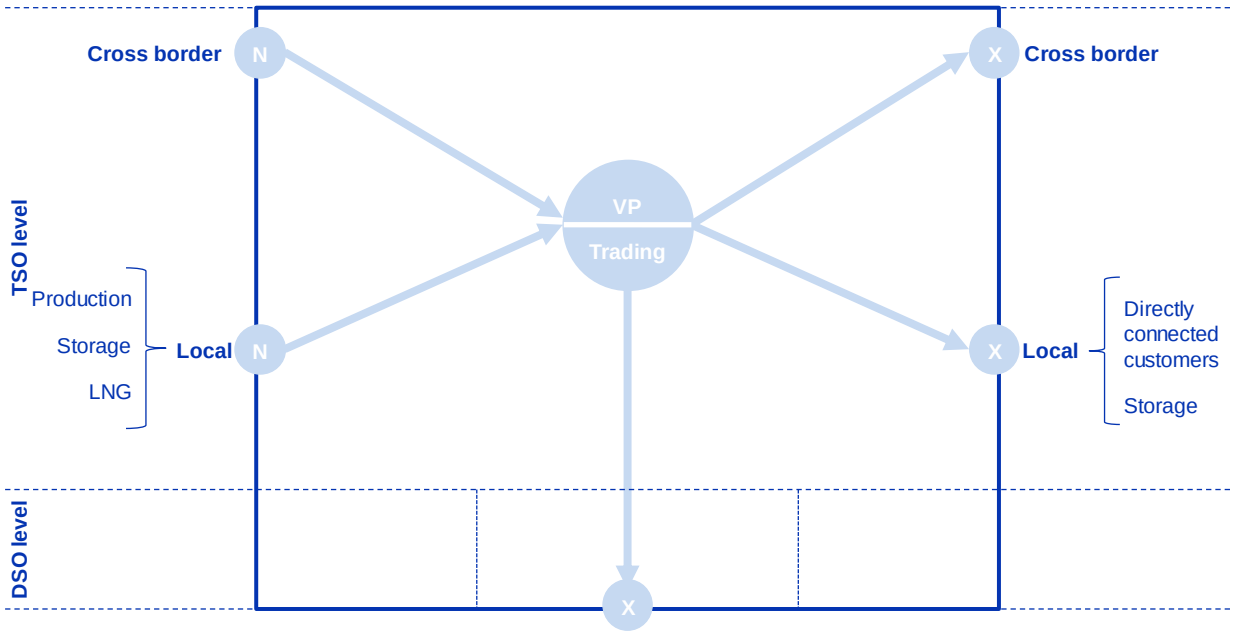


Figure 1: Schematic representation of a fully implemented entry-exit system

In a fully implemented entry-exit system the network users contract entry and exit capacity separately (this is indicated by the blue entry and exit points in the scheme) within the balancing zone (the box). The entry-exit system has a virtual trading point, indicated by the blue circle in the middle of the box. The circle is split in two parts. The upper half circle indicates the presence of a virtual trading point. When a trading platform is connected to the virtual point, this is indicated in the lower half circle. From the entry and exit points the network users have free access to the virtual point, this is indicated with the blue arrows. Gas exits the system either via cross border exits, via directly connected customers at TSO level or at exit points in the distribution network.

In some systems additional solutions are implemented related to for example the non-free allocability of capacities, transit flows, explicit bookings at city gates, etc. When such additional solutions are in place, these are also depicted schematically. In case of multiple entry-exit zones exist in the Member State, this is indicated by a corresponding number of parallel rectangles. For other additional solutions, we used a template of symbols in order to visualise the differences. This is shown in the figure and general explanation of symbols below.

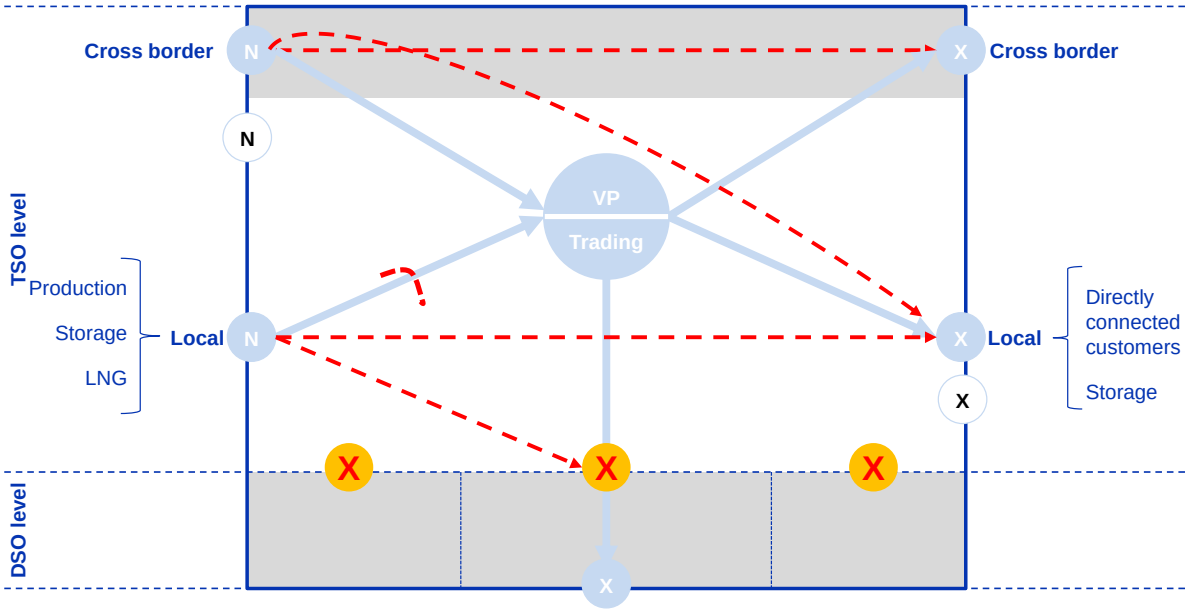


Figure 2: Schematic representation of particularities in entry-exit systems implemented

Symbol	Explanation
N	Physical entry point where capacity is contracted.
X	Physical exit point where capacity is contracted.
N → X	Applicable for example in some systems where capacity is contracted at exit points and not explicitly at entry points.
N → X	Applicable for example in some systems where capacity is contracted at entry points and not explicitly at exit points.
- - →	Locational restrictions: capacities may be offered with a mandatory point-to-point relation.
⤳	Limited allocability: access to other points (including the VP) outside of a predefined pair of points may be limited to access on an interruptible basis.
X	Explicit capacity booking by the network user at interface between TSO and DSO (this indicator is not used in the case of automatic allocation of transmission exit capacity at city gate to a supplier based on for example his downstream market share)
	Areas excluded from balancing zones / separate balancing zones

Bundled capacity products between two entry-exit zones

The table provides an overview of the contractual arrangements in the given Member State. An example of the lay-out of the table is given in the table below.

Table 1: Example of the table summarizing the contractual arrangements

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader	1	3	4				
Shipper							
Supplier	2						
Contracting party	NRA	TSO	TSO	TSO	VP	DSO	

In this table we distinguish three main roles for market parties, indicated in the first vertical column in grey shading. These three roles are trader; shipper and supplier.

The relevant licence or contractual arrangements are indicated in the horizontal heading in light blue shading. These are licence, framework agreement, balancing, capacity contract, Virtual Point access contract and distribution contracts.

The 'contracting party' indicated in the last row of Table 1 above refers to the party issuing the respective licence or the party with which the relevant market party (trader, shipper, or supplier) enters into a contractual relationship. These parties can be the NRA (the National Regulating Authority) or the relevant Ministry, an MO (Market Area Operator), the TSO(s) and DSO(s).

The contractual requirements a network user needs to fulfill in order to act as one of the defined roles are indicated by numbered light-green boxes. Explanation on the agreements required and on their scope is provided in the corresponding number in the list of short explanations and additional information below the table. The presence/absence and size of the light-green boxes indicate the following:

- The presence of a light-green box at the intersection between a market party and a licence/contract type indicates the presence of a requirement. E.g. the light-green box 1 in the illustrative example in Table 1 above indicates that in the respective Member State a specific

licence is required for trading activities. Similarly, the light-green box 2 indicates that a specific licence is required for supplying.

- The absence of a light-green box at the intersection box between a market party and a licence/contract type the absence of the requirement. E.g. the absence of a light-green box at the intersection of Shipper and Licence, indicates that in the respective Member State a licence is not required for shippers.
- The presence of a light-green box vertically spreading over two or more roles indicates that the requirement for a given type of licence or contractual agreements extends to more than one market party. E.g. the light-green box 3 in the table above below indicates that in the respective Member State a framework agreement with the TSO needs to be signed both by traders and by shippers.
- The presence of a light-green box horizontally spreading over two or more columns indicates that two requirements are covered by the same contractual agreement. E.g. the light-green box 4 in the table above indicates that in the respective Member State an agreement with the TSO covering both balancing and capacity needs to be signed by all market parties.

Tariff Structure and Capacity Products

This section provides information on the actual transmission tariff system applied and the methodology how tariffs are derived in the given Member State. It consists of four tables, introductory text and numbered notes provide additional details.

The first table indicates for every combination of capacity products (annual, quarterly, monthly, daily and within-day) and entry-exit points (entries, domestic exits and border exits) whether firm, interruptible and/or reverse flow tariffs apply.

The second table provides an overview of the tariff calculation and the division of costs: the tariff mode, the role of the NRA, price control mechanisms, tariff calculation methodology, and specific splits and distinctions. The focus lies on the translation of allowed revenues into individual tariffs, including.

In the third table, capacity allocation mechanism is defined and priorities indicated.

The fourth table zooms in on the reservation of capacities for which (type of) products, which may form an indication of availability of capacities for short-term trades where arbitrage opportunities arise.

Balancing and Imbalance Settlement

This section describes shortly the specific characteristics of balancing and imbalance settlement in the respective Member State. Here the balancing regime in use (daily, hourly, WDO) is specified, as well as, where applicable, the division in balancing zones or market/network areas.

Market Environment and Trading

This section describes shortly the organisation of the gas market and provides an overview of the volumetric extent of the gas market (supply portfolio, consumption and traded volumes) in place in the respective Member State. All the data for the volumes in this section is provided by Eurostat.[2] All the numbers are as of 2011.

[2] http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/

2 AUSTRIA

Network Topology[3]

The network in Austria actually consists of three separate balancing zones, known as Market Areas. The main balancing zone, located in the east of Austria, has a high pressure transmission grid and a high and low pressure distribution grid. The two further, much smaller networks are located in the west central (market area Tirol) and western parts (market area Voralberg) of the country. Both are not physically connected to the Eastern Area, or to each other, but they have direct connections to Germany.

The transmission system which is largely used for cross-border shipments is operated by 3 TSO's.

The Austrian gas grid has an important function, acting as a hub that transports natural gas imports onward to destinations in Western Europe and as a link between North West (German) and South East (Italian) markets. Following an Open Season process in 2008-09, the expansion of the WAG has been commissioned January 1st, 2013.

Providing seasonal flexibility storage in the wider region is of high importance in Austria.

Network topology		Notes
Network length high pressure (km)	2,900	(1)
Pressure range TSO (bar)	49-70	(2)
Import capacity (GWh/d)	2,047.7	(3)
Export capacity (GWh/d)	1,916.4	(4)
Storage (bcm)	7.5	(5)
LNG (bcm/year)	--	(6)
TSOs (number)	3	(7)
DSOs (number)	21	(8)

(1) The total length of the Austrian transmission grid is approx. 2,900 km; distribution networks approx. 39,500 km.

(2) Pressure regulation and metering stations are owned by the TSO and DSO depending on the location of the metering stations. Costs for pressure regulation and metering stations between transmission and distribution level are ruled into the distribution charges

(3) Oberkappel entry 107.2 GWh/d, Überackern entry 113.6 GWh/d, Kiefersfelden entry 22.8 GWh/d, Arnoldstein entry 190.9 GWh/d, Baumgarten entry 1611.9 GWh/d, Pfronten entry 1.32 GWh/d (source: ENTSOG)

(4) Oberkappel exit 146 GWh/d, Überackern exit 230.1 GWh/d, Murfeld exit 90.2 GWh/d,

[3] Information in this section is based on Impact Assessment for the Framework Guidelines on Harmonised transmission tariff structures, The Brattle Group, 6 August 2012 and www.e-control.at

Arnoldstein exit 1135.0 GWh/d, Baumgarten exit 186.6 GWh/d, Mosonmagyarovar exit 128.5 GWh/d. (source: ENTSOG)

(5) The Austrian gas storage facilities are all located in the Eastern market area. All storage facilities can be accessed by third parties. Through the investments in 2011 the total storage capacity has been increased by 57% reaching an injection capacity of 2.98 mcm/h.

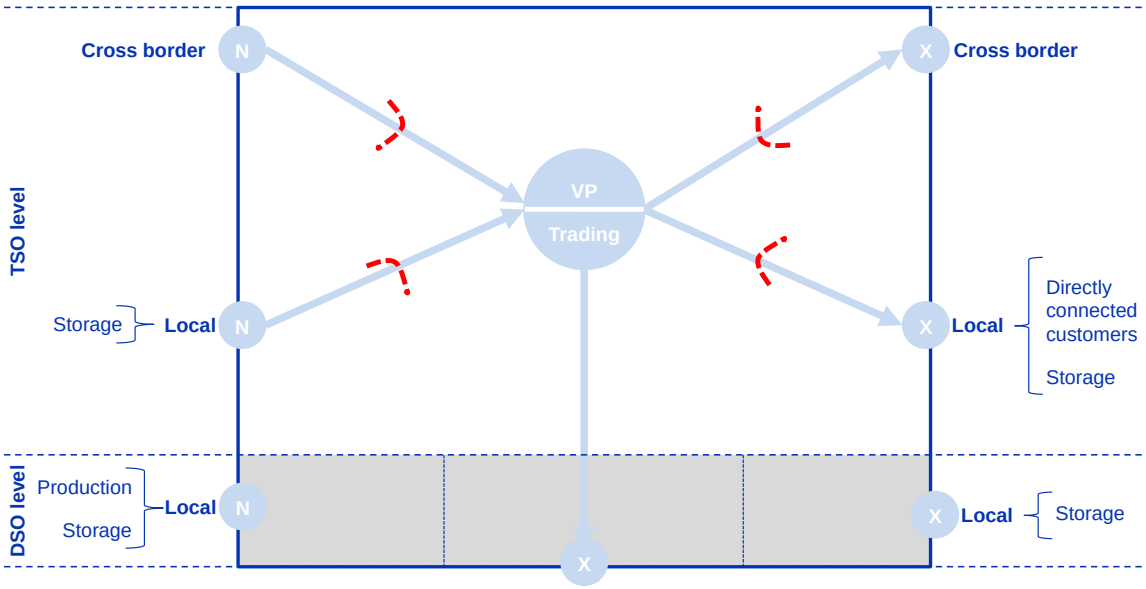
(6) Due to its geographical location, Austria has no direct access to LNG shipments. According to the BP Statistical Review 2011, Austria traded 0.44 bcm LNG and pipeline gas with Germany.

(7) TSO´s in the Eastern zone are TAG, GCA and BOG.

(8) There are 21 system operators in Austria.[4]

Design of the Entry-Exit System[5]

The figure below gives the schematic representation of the entry-exit system in Austria as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



[4] As communicated by E-Control.

[5] Information in this section is based on National Report 2011 to the European Commission, Austria, E-Control; E-Control Report 2008 and E-Control Marketreport 2010

Symbol	Explanation
	In Austria the TSOs offer a small part of the capacity in form of products which include restrictions to free allocability (the virtual point or other physical points outside of a predefined point-specific link are only accessible on interruptible basis).
	In Austria there are two different balancing systems. Although the separation is not from the perspective of the network but rather from the exit points where a shipper ships gas to, in fact, the result is very close to having a separate balancing system on distribution level.

In Austria, an entry-exit system has been introduced by January 1st, 2013. Austria has three market areas and balancing zones (East, Tirol and Voralberg), however, Tirol and Voralberg are neither connected with East or each other, but supplied via Net Connect Germany. Approximately 95% of Austrian gas consumption takes place in the Eastern Market Area. The domestic exit zone is integrated in the entry-exit system as well. CEGH is from 01/01/2013 a virtual trading point.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

There is a distinction between the roles of shippers and gas suppliers in Austria. Shipping and trading of natural gas is not subject to a license, only a registration at the Authority and AGCS is required. Only a so-called Balancing Responsible Party (BRP) requires a license of the NRA. For further explanation see below at 1).

Roles	Contractual arrangements						
	License	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader			1	2	3		
Shipper							
Supplier							
Contracting party			BPR	TSO	CEGH		

(1) Every network user (trader, shipper, supplier) has to be a member of balance group. This can be achieved by joining an existing balance group which only requires an agreement with a Balance Responsible Party (BRP). No agreement with a BRP is required if the

network user decides to establish an own balance group. However, the activity performed by a Balance Responsible Party is subject to a license. The costs of a license are € 152,70. No license is required for 'virtual traders'. They just have to notify the NRA of the start of their activities. The applicant of a license has to meet the following requirements in order to obtain a license:

- Location of the applicant – a proof of seat (principal residence) is necessary
- Agreements with operators – agreement with the clearing and settlement agency (CSA), the distribution area manager (DAM) and the market area manager (MAN) are necessary to obtain a license.
- Financial information – only a proof of entry in the 'Firmenbuch' in form of an extract from the Commercial Register or an equivalent register is necessary.
- Financial guarantee – a financial collateral of € 50,000is required
- Technical capability:
  - Proof of compliance with the personal prerequisites of the applicant and its bodies; non-existence of any reasons of exclusion.
  - Proof of technical qualification of the BRP (at least for one – general – partner or at least for one managing director or managing board member or executive). Proof by submitting CV and description of activity in the company.
  - Current extract from the register of previous convictions or equivalent certificate by a court or administrative authority in the country of origin of the natural persons who control the applicant.

(2) In order to participate at capacity auctions a registration at PRISMA primary capacity platform and the signature of a Frame Capacity Agreement with the respective TSO are required. Furthermore general terms and conditions apply to capacity booking. The transmission system operator shall be entitled to demand a temporary deposit of up to EUR 100,000 as security deposit for concluding a capacity contract.

(3) Registration at CEGH is needed in order to access the VTP. For registration CEGH request a minimum credit limit of EUR 100,000 or a bank guarantee, amounting to EUR 100,000 and having a minimum term of 12 month after issuing date. Furthermore, in order to participate in the daily business CEGH recommends the members setting up and testing the business communication to its OTC Dispatching. CEGH members have to pay a one-off entrance fee, along with a monthly fee and in addition various variable volume-depended fees (such as transaction and clearing fee).

Tariff structure and Capacity Products[6]

According to the new Austrian Natural Gas Act, the entry-exit model adopted on January 1st, 2013 suspended the distinction between transit and import and brought all existing transit contracts in line with the Third Package provisions. To that reason, TSOs have implemented a transition process to adapt former point-to-point (and transit) contracts to the entry-exit regime.

Shippers pay entry and exit charges based on contracted capacities at transmission system entry points (border entry) and transmission system exit points (border exit). Domestic exit points are booked by AGGM, acting on behalf of all DSOs.

The basic contract duration for transport capacity tariffs is one year. Existing contacts that have been converted include multiple year agreements. Standard capacity contracts have durations according to the CAM NC. TSOs offer the capacity products on the PRISMA platform since April 1st, 2013.

Non physical backhaul is always offered as interruptible capacity.[7]

Regulated tarrif figures are the starting price for capacities allocated via auction. The regulatory period is 4 years.

According to the new gas regulations in place on January 1st, 2013, cross-border capacities can be traded bundled, provided that agreements with neighbouring TSO have been reached. The regulated tariffs are applied as starting price for bundled capacity allocation auctions.

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Withinday	Capacity	Commodity	Notes
Entry	F/I/DZK[8]	F/I/DZK	F/I/DZK	F/I/DZK	--	EUR/kWh/h	--	(1)
Domestic exit	F/I	F/I	F/I	F/I	--	EUR/kWh/h	--	(2)
Border exit	F/I/DZK	F/I/DZK	F/I/DZK	F/I/DZK	--	EUR/kWh/h	--	
		(3)	(4)	(5)				(1)

(1) Shippers can book firm, interruptible and dynamically allocable (DZK) capacities. DZK capacities are capacity products which include restrictions to free allocability (the virtual point or other physical points outside of a predefined point-specific link are only accessible on interruptible basis).

[6] Information in this section is based on Gas-Marktmodell-Verordnung 2012, National Report 2011 to the European Commission, Austria, E-Control

[7] The flow at the IPs Überackern, Oberkappel and Baumgarten is physically reversible.

[8] F = firm, I = interruptible, DZK = dynamically allocable

Interruptible capacities are charged with the same tariff as firm capacities. Interruption shippers will be refunded based on a regulated formula; no refund is applied for DZK capacities.

TSO´s have the possibility to offer interruptible capacities differentiated by the probability of interruption.

Non-physical backhaul capacities (always offered as an interruptible capacity) are charged with the tariffs set by NRA.

Physical reverse flow capacity is offered on firm and interruptible basis for WAG and Penta West pipelines.

(2) Transmission system exit charges for transmission/distribution exit points are shifted to the distribution system. Compensation payments between system operators secure their cost coverage.

(3) Quarter capacity tariff is calculated as follows:

(annual entry (exit) tariff/ 365)*number of days of the respective quarter*1.25

(4) Monthly capacity tariff is calculated as follows:

(annual entry (exit) tariff/ 365)* number of days of the respective month*1.5

(5) Daily capacity tariff is calculated as follows:

(annual entry (exit) tariff/ 365)*1.75

It is important to note that the multiplier of 1.75 is not applicable if the daily capacity product is allocated in a day-ahead auction procedure. If it is allocated in a day-ahead auction procedure there is no multiplier and the capacity tariff refers to Entry Baumgarten tariff for all Entries respectively FZK exit tariffs for all Exits divided by 365.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	
Role of NRA	Approval	(1)
Price control mechanism	Rate-of-Return Regulation	
Tariff calculation methodology	Locational	
Entry/exit split	20/80	
Capacity/commodity split	100/0	(2)
National/cross-border distinction	None	(3)
Locational or uniform tariffs	Locational	
Charging basis (booked capacity/other)	Booked capacity	

(1) Cost basis is prepared by the TSO and approved by the regulator. En/Ex tariffs are established by the Regulator.

(2) No commodity charge is applied in Austria.

(3) Since January 1st, 2013 transit is integrated in the new entry-exit system.

Since April 1st, 2013, Entry/Exit capacities of the Market Area East are allocated via the European capacity Online-Platform PRISMA in a transparent and non-discriminating manner. The allocation is carried out according to the auction algorithms for long term and short term auction mechanisms according to the CAM NC (ascending clock algorithm and uniform price algorithm). Starting January 1st, 2014 Capacity will be offered and searched via PRISMA also for the secondary market. Until this data capacity for secondary market will be booked via the Online-Platform.made available by the Market Area Manager (Capacity Bulletin Board) in an anonymised and non-anonymised way.

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	Booking period of max. 1 quarter	10%	(1)
Entry points	Booking period of max. 4 years	35%	(1)

(1) This regulation shall not apply to already booked capacity.

Reservation of capacities at cross-border points other than regulated by CAM NC is only possible if the neighboring countries apply a harmonized approach, e.g. the technical annual capacity will be reserved to the same extent for the same reasons at both sides of an IP.

Balancing and Imbalance Settlement[9]

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	yes	(1)
Application of WDOs in daily balancing	yes	(2)
Tolerance provided	no	
Number of tolerance levels	none	
Balancing gas procurement	Wholesale and balancing market	
Imbalance settlement	Market based imbalance fee	(3)
Imbalance fee	External price + Multiplier/Penalty	(4)

[9] Information in this section is based on National Report 2011 to the European Commission, Austria, E-Control and ACER answers to DG ENER Questionnaire on Balancing to ACER and ENTSOG

(1) In Austria there are two co-existing balancing systems. Although the separation is not done from the perspective of the network but rather from the exit points where a shipper ship gas to, it results in a system very similar to having separate balancing system on DSO level.

(2) Customers with a load profile meter and a capacity of more than 50,000 kWh/h are subject to an hourly balancing scheme.

(3) The imbalance fee is based on the balancing energy procured by the distribution area manager on the gas exchange and the offers it has accepted from the merit order list.

(4) Positive imbalances are charged by a market based reference price multiplied by 1.2, while a multiplier of 0.9 is applied on the reference price in case of negative imbalances.

In Austria, TSOs and DSOs are in the same balancing regime. Under the applied balancing group system, every user connected to the Austrian gas grid that is supplied from it or feeds gas into it must belong to a virtual balancing group. On January 1st, 2013- the start of the new regime in Austria – 79 balance group representatives were registered.

This new balancing regime has to be differentiated into an ex-ante balancing regime, which is proceeded by the market area manager (MAM) and an ex-post balancing regime, which takes place at the clearing and settlement agency. In that sense there are actually two different balancing systems in place. Although the separation is not from the perspective of the network but rather from the exit points where a shipper ships gas to, in fact, the result very close to having a separate balancing system on distribution level.

In general, the market area´s balancing period is the gas day and additionally incentives for the avoidance of hourly imbalances are in place.

Concerning the ex-post balancing, this means the following: the imbalances of the balancing group are balanced on an hourly basis. Physical balancing energy is provided by the organized balancing market in the Eastern market area. It is a within-day market, run by CEGH Gas Exchange of Wiener Börse. Balancing energy is traded by the distribution area manager at the gas exchange located at the VTP. The clearing and settlement agent, Gas Clearing and Settlement AG (AGCS) is calculating the imbalance price based on the executed orders of the distribution area manager, as well as offers accepted from the merit order list when balancing via the VTP should not be possible. These prices will be adjusted for a percentage mark-up (offset) of 3% on the volume-weighted average hourly price for positive (negative) balancing energy.

Concerning the ex-ante balancing this means the following: Day-ahead balancing is proceeded by the MAM per balance group at the VTP if the balance group representative does not balance his own balance group´s nominations.[10] The MAM (Market Area Manager) may impose within-day

[10] Daily imbalances of a balance group below 24 MWh will be carried forward on a Carry Forward account. to the next day.

obligations (WDOs) on balancing groups that are causing the hourly imbalances which might endanger system stability. The MAM collects a balancing incentive markup from the balance responsible parties to cover for within-day balancing of the hourly imbalances in each balance group. From 1 January 2013 this markup, which is charged monthly, is capped at 0.4 cent/kWhA market based balancing platform (Gas Exchange within-day market) has been operated by CEGH as the operator of the VTP established as of January 1st, 2013.

The deviations from end consumer consumption, as well as biogas injections, are balanced separately against the metering data.

Market Environment and Trading[11]

Volumes	TWh/year	Notes
Indigenous production	18,8	
Import	144.4	(1)
Export	38.5	(2)
Consumption	100.2	
Traded volumes	approx. 391	(3)

(1) Austria imports roughly 80% of its inland consumption (6.4 bcm in 2010). 75% of total imported natural gas (including domestic consumption and transit) comes from Russia, 15% from Germany and 10% from Norway.

(2) In 2010 80% of the physically imported gas was exported. The lion´s share of the physical exports (about 21.7 bcm in 2009) went to Italy.

(3) In 2011 CEGH achieved a total trading volume of approx. 40 bcm of natural gas.

The wholesale market is dominated by long-term oil-indexed supply contracts, the OTC and the gas exchange. Till 2013, the trading possibilities in the wholesale market have been limited by the distinction between transit and import.

The Central European Gas Hub (CEGH) is an important trading hub for natural gas in Central Europe. It is a virtual trading point with a primary role of facilitating trading and also sourcing of gas for onward operators.

The CEGH Gas Exchange started operating the spot market in late 2009, launching the Futures market in late 2010. As of January 1st, of 2013 CEGH introduced the CEGH Gas Exchange

[11] Information in this section is based on www.cegh.at; Continental European gas hubs: Are they fit for purpose?, Patrick Heather, June 2012, The Oxford Institute for energy studies; Study on cross-border market integration, June 2012, E-Bridge and ACER answers tot he DG ENER Questionnaire on Balancing to ACER and ENTSOG ; National Report 2011 to the European Commission, Austria, E-Control

Within-Day Market. The trading volumes are still relatively small; however they are expected to increase by the development of the Austrian VTP. CEGH offers three different layers of trading: anonymous exchange trading, OTC trading and the balancing market. At the CEGH OTC market a myriad of traders and many shippers,[12] mainly transporting gas to Germany, Hungary and Italy have been active.

Austria is very important to the physical context of gas deliveries to Western Europe. Austria´s gas sector is characterised by large export volumes to Italy with gas mainly entering the country at Baumgarten and at Oberkappel. Austria is also increasingly used as a West-East route sourcing on the german market (Net Connect Germany) and delivering to markets in the region: Austria, but also Italy (PSV), Hungary, Slovakia, Slovenia. This lead in the last years to physical imports in Oberkappel at a high level.Austria is import dependent; Russian gas supplies to Austria can however be fully physically substituted, as shown during the January 2009 crisis. The traditional procurement channel for the gas industry consist of long-term contracts with large contractual quantities including price escalation, clauses and little provision for off-take flexibility.

With new pipelines planned to come to Central Europe (such as Nabucco and South Stream) and the development of new storage sites near Baumgarten, CEGH is expected to gain further importance.

Trading		**Notes**
Trading volume	**Twh/year**	(1)
Spot (CEGH Gas Exchange)	391	(2)
OTC (CEGH OTC)	2.0	(3)
Other	435	
Participants (number)	--	(4)
Churn rate	134	

(1) In 2011 CEGH achieved a total trading volume of approx. 40 bcm of natural gas.

(2) The spot market of the gas exchange has 66 non-clearing and 8 clearing members as of 17.01.2013. The limited number of participants results in a wider bid/offer spread. The churn rate at CEGH ranges between 2 and 4 (3.61 in December 2012), which is in line with other continental European hubs. As a consequence of Russian gas being the dominant source at CEGH, the liquidity of the hub is low and the price level is high in comparison to other hubs. The average price level at the CEGH gas exchange was 26.11 EUR/MWh in 2012.[13]

The futures market has 6 clearing and 22 non-clearing members as of January 17th, 2013. In 2011 20 trades were concluded in the futures market, with a total trading volume of

[12] More than 120 from 16 different countries as of October 2011

[13] http://www.ceghotc.com/index.php?id=137

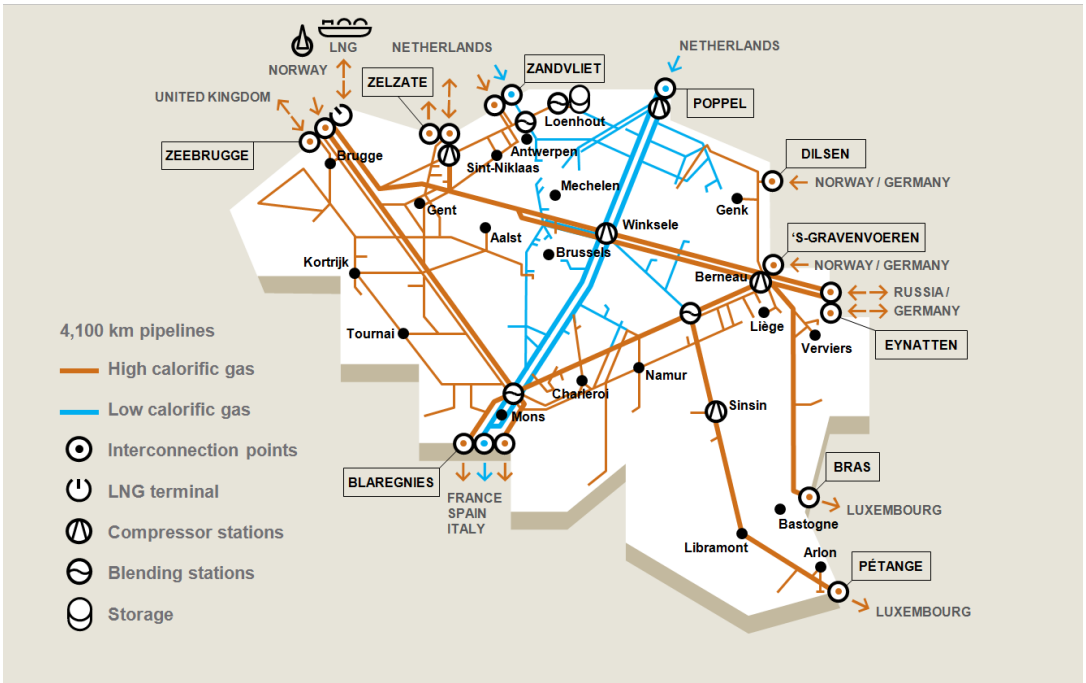
0.51 TWh and an average settlement price of 24.32 EUR/MWh.

(3) Net traded volume at CEGH OTC amounted to 435 TWh in 2011, showing an increase of 14% compared to 2010 (378.6 TWh) and 71% compared to 2009 (253.3 TWh). Physical volumes reached 128.5 TWh in 2011. An increasing trend can be observed by the evolution of churn rate, growing from 2.97 in 2009 to 3.39 in 2011. As of 17.01.2013 the OTC market counts 50 virtual traders.

(4) At the end of 2011 134 customers were registered at CEGH.

3 BELGIUM

Network Topology



Network topology		Notes
Network length high pressure (km)	4 100	(1)
Pressure range TSO	>14.71 bar	(2)
Import capacity (bcm/yr)	104	(3)
Export capacity (bcm/yr)	82	
Storage (bcm)	0.7	(4)
LNG (bcm/year)	9	(5-6)
TSOs (name)	Fluxys Belgium	
DSOs (number)	17	(7)

(1) The gas transport grid is interconnected to all neighbouring countries. The system is divided into a high calorific (H-gas) and low calorific (L-gas) zone.

(2) The Fluxys Belgium network is connected to the DSO grids via 180 pressure reduction stations.

(3) The country has 18 gas interconnection points. Technical import capacity via pipelines amounts to 104 bcm. L-gas flows in from the Dutch network via Hilvarenbeek and

Poppel (24 bcm). Another 23 bcm of H-gas can be imported from the Netherlands ('s Gravenvoeren, Zandvliet and Zelzate). At Eynatten, import capacity from Germany amounts to 21 bcm. Via the Interconnector, import capacity from the UK is 20 bcm. Furthermore, Zeepipe coming ashore near Zeebrugge, brings 16 bcm of Norwegian gas to the market.

(4) Total export capacity amounts to some 82 bcm, with 27 bcm via the IUK to the UK, 1.6 bcm to Luxembourg, 13 bcm to Germany (Eynatten), 11 bcm to the Netherlands (Zelzate), and 29 bcm to France via Blaregnies (9 L-gas and 20 H-gas).[14]

(5) The only Belgian underground gas storage facility, Loenhout, is situated near the Dutch-Belgian border. Access to the aquifer is regulated. Withdrawal and injection capacities are 625,000 and 325,000 m3(n)/h respectively.[15]

(6) LNG is sourced from Qatar, Algeria, Egypt, Oman and others. The 110 slots per year are fully booked long term by: 1) Qatar Petroleum/Exxon Mobil (Rasgas), transferred to EDFT 2) ENI Gas & Power (former Distrigas), and 3) GDF Suez LNG Trading, partly transferred to ConocoPhilips. Additional slots are regularly offered to the primary market based on loading and unloading schedule. A second jetty for loading and unloading LNG carriers is currently under construction at the LNG terminal, to become operational in 2015.

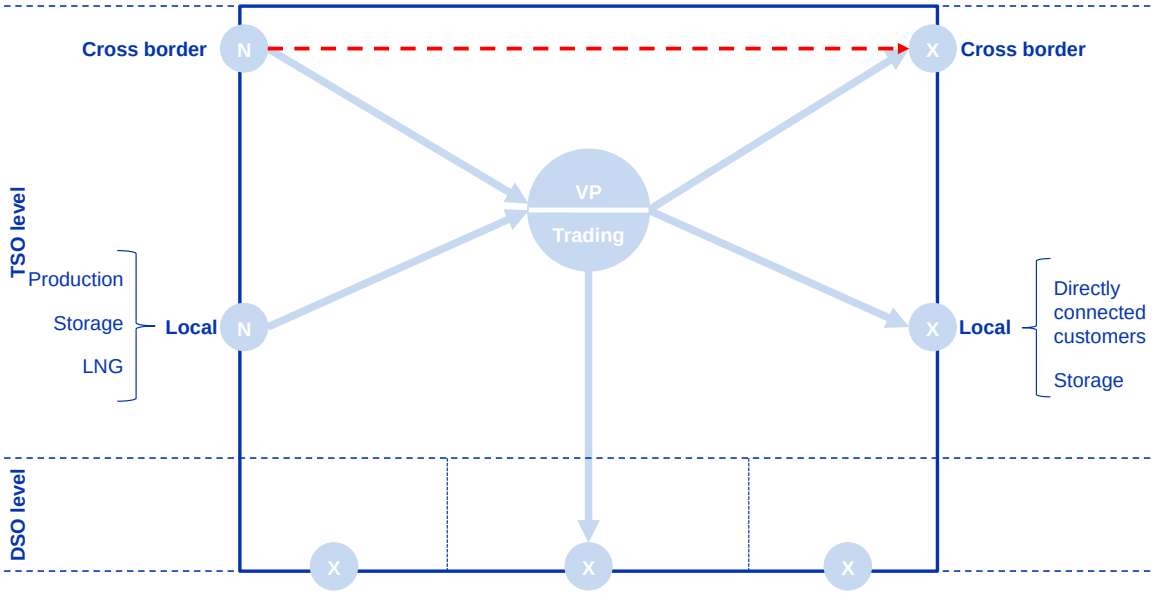
(7) Fluxys Belgium is physically connected to distribution grids operated by 17 different DSOs via 180 physical connections grouped into 90 aggregated stations. In addition, about 250 large industrial sites, power stations and combined heat & power units are directly connected to the Fluxys Belgium grid.

[14] ENTSOG capacity map data, May 2012

[15] Fluxys storage programme 2012-2015

Design of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in Belgium as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
⇢	In Belgium Fluxys offers so-called OCUC capacities. OCUC is an acronym of Operational Capacity Usage Commitment. OCUC is an operational agreement between network user and the TSO in the framework of the proactive congestion management policy. An Operational Capacity Usage Commitment consists of a commitment on the combined use of an entry service at an Interconnection Point with an exit service at another Interconnection Point, to avoid a potential congestion in the Transmission Grid, and without access to the Market Based Balancing model, nor to the Zeebrugge Trading Point. The OCUC capacities are offered at the following entry-exit combinations: Zelzate - IZT/Zeebrugge Beach, IZT/Zeebrugge Beach - Zelzate, Alveringem/Blaregnies - IZT/Zeebrugge Beach, 's Gravenvoeren - Eynatten and Eynatten - 's Gravenvoeren.

On October 1st, 2012 Fluxys Belgium introduced a new transmission model enabling decoupled entry-exit booking of transport capacity and implementing a new virtual trading service (ZTP) in addition to the existing physical trading services at Zeebrugge Beach. Both the notional and physical hubs are operated by Huberator (95% Fluxys and 5% SNAM).

For distribution domestic exit there is no explicit subscription of exit capacity. Fluxys Belgium allocates a calculated peak (exit) capacity on a monthly basis to grid users based on their market

share of final customers within each distribution network, taking into account the different final customers profile segmentations. This implicit allocation of distribution domestic exit capacity is free of charge.

A distinction is made between the H and L gas zones. Each interconnection point and domestic exit point is located in one zone; both zones are balanced separately (see below in the sections on balancing and trading). From the perspective of the shipper the zones are not necessarily separated since the shipper imbalances can be corrected by subscribing and using a quality conversion service.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	License	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader		2/3/4			5		
Shipper							
Supplier	1						
Contracting party	Minister of Energy	TSO	TSO ENDEX	TSO	TSO	DSO	

(1) Holders of a federal supply license are entitled to supplying gas to end consumers at gas transmission level (TSO). A fee of €1,500 applies to cover file administration costs. A supply license is valid for a period of 5 years. The applicant for a supply license has to show that he has sufficient resources to:

- Technical - the supplier should have sufficient and adequate technical resources, sufficient experienced staff, and a management and administrative structure that supports e.g. gas balancing.
- Financial information - the applicant should provide proof that he is able to meet financial obligations towards gas suppliers. In order to do so the applicant has to submit balance sheets and annual statements of the last 3 years.

- Financial guarantees – only necessary if the above mentioned financial information fails to attest for financial health. When applicable the guarantee may include a Letter of Comfort, Parent Company's Guarantee, Bank Guarantee.
- Compliance - comply with the code of conduct, ensure compliance with public service obligations.
- EU/non-EU - the applicant should be legally established in of the countries of the European Economic Area
- Proof of ability to secure gas supply – A supplier should have sufficient gas volumes and adequate transportation capacity to ensure the gas supply to its customers.

We note that in addition to typical requirements towards applicants for a license Belgium imposes additional requirements of the proof of ability in securing gas supplies (see above).

(2) Network users have to enter into the Standard Transmission Agreement (STA) with the TSO, Fluxys Belgium, in order to use the transmission services offered by the TSO (e.g. capacity services, transport of gas and balancing). The general conditions of the STA include (amongst others):

- Operating conditions and quality requirements, including references made to the Access Code for Transmission. The purpose is mainly to avoid damages.
- Warranties, e.g. ensuring that the parties act under given laws and jurisdictions. The grid user warrants to the TSO that he has title to all natural gas delivered by it at the interconnection point and that it holds all licenses, permits and authorizations required.
- Liabilities.
- Creditworthiness requires that the grid user provides a bank guarantee or has an acceptable credit rating, or has a sufficient equity base.

(3) Balancing is governed by the STA with the TSO and related codes and regulations (e.g. the Access Code for Transmission). However, if the network user wants to take part in the balancing market, he needs to sign up with the ENDEX gas ZTP exchange. Membership of the exchange is required and ENDEX gas market and clearing rules have to be accepted. Moreover ENDEX Gas ZTP members are required to be a licensed grid user through a Hub Service Agreement (HSA) with Huberator and a Standard Transmission Agreement (STA) with Fluxys Belgium

(4) The STA governs capacity reservation.

(5) Via a Hub Services Agreement with the hub operator (Huberator), a network user can use both the Zeebrugge Beach physical trading services and the ZTP(L) notional trading services. Access to notional trading services offered by Huberator is subject to confirmation by Fluxys Belgium that the grid user has a valid signed standard transmission agreement (STA) in force. A monthly hub service fee applies, which

depends on the specific services taken and primarily depends on the nominated volumes.

Tariff structure and Capacity Products

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	Notes
Entry	F/I/RF[16]	F/I/RF	F/I/RF	F/I/RF	--	€/m^3(n)/h	€/kWh	(1)
Domestic exit	F/I/	F/I	F/I	F/I	--	€/m^3(n)/h	€/kWh	(2)
Border exit	F/I/RF	F/I/RF	F/I/RF	F/I/RF	--	€/m^3(n)/h	€/kWh	(3)
	(4)				(5)			

(1) Bundles, implemented bundled capacities, if allowed by neighboring TSOs. Firm, interruptible and backhaul transmission capacity types are available. Firm capacity is always available and usable under normal operating conditions. Interruptible capacity can be interrupted by the TSO, at its sole discretion. Backhaul capacity is offered at unidirectional interconnection points, in the opposite direction of the physical gas flow direction and is available as long as the resulting physical flow remains in the physical direction.

Note that the capacity tariff is expressed in volume terms, while the capacity bookings are in energy terms, thus for the eventual payment of capacity a fixed predefined conversion factor per zone is applied.

(2) Two types of domestic exit points are distinguished: end-users directly connected to the Fluxys Belgium grid (end-user domestic exit) and distribution grids connected to Fluxys Belgium (distribution domestic exit). The domestic exit tariff depends on the pressure level of the connection and may be either firm or interruptible. For distribution domestic exit there is no explicit subscription of exit capacity. Fluxys Belgium allocates a calculated peak (exit) capacity on a monthly basis to grid users based on their market share of final customers within each distribution network, taking into account the different final customers profile segmentations. This implicit allocation of distribution domestic exit capacity is free of charge.

(3) At each border exit point it is specified whether backhaul or interruption is possible. Although any duration of exit capacity at the border can be reserved, the network user always pays the annual rate for exit border capacity in proportion to the duration. Exit tariff levels are equal at clustered locations, with the highest levels at the Zeebrugge points (IZT, Zeebrugge Beach, ZPT and LNG) and Eynatten, and the lowest at the

[16] F = firm, I = interruptible, RF = reverse flow (backhaul)

Luxembourg exit points.

(4) Seasonal factors (ranging from 0.7 in July and August to 2.6 in January) apply to sub-annual contracts for entry capacity and end user domestic exit capacity. Interruptible capacities are charged at a discount. A discount also applies to backhaul at entry points. Backhaul exit points have specific tariffs which take into account the network topology.

(5) No within-day capacities can be reserved directly at Fluxys Belgium. Trades including within-day products run via the newly established ICE Endex Gas ZTP market, and are nominated in aggregate to Fluxys Belgium by Huberator.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	(1)
Role of NRA	Approval	(2)
Price control mechanism	Mix between revenue cap and price cap	
Tariff calculation methodology	Allowed total income	
Entry/exit split	Yes	
Capacity/commodity split	Yes	
National/cross-border distinction	No	
Locational or uniform tariffs	Locational (partly)	
Charging basis (booked capacity/other)	Subscribed capacity	(3)

(1) Tariffs for transmission services are based on allowed revenue, both Capex (regulated asset base, reasonable return and depreciation) and Opex. Variable operational costs (fuel gas, electricity for compression and nitrogen for quality adjustment) are covered by the energy in cash tariff. Other costs are covered by capacity tariffs. Where possible, specific costs are allocated to the specific services provided (this is done for pressure reduction, odorization, ZEE Platform, capacity pooling and gas quality conversion). For other services, the total allocable costs are divided by the sum of expected sales multiplied by a weighting factor. The latter is based on the costs generated by each service.

(2) Tariff levels are subject to official approval by CREG, based upon a tariff proposal by Fluxys Belgium. Tariffs are approved for the regulatory period of 4 years (subject to annual indexation).

(3) In contrast, charging of commodity fees are based on allocation (i.e. used capacity).

The newly implemented decoupled entry-exit system in Belgium distinguishes between interconnection points (bi-directional or uni-directional) and domestic exit points (either to end users or distribution). Fluxys Belgium offers entry and exit capacity according to this distinction. Additional services, such as weeling, ZEE platform service, capacity pooling and gas quality

conversion, are also offered by Fluxys Belgium.

Fluxys Belgium does not make any explicit distinction between durations of products. A shipper can simply reserve capacity for a period specified by the shipper, with a minimum of one day. However, the capacity tariffs or 'rate types' differ in function of the booking duration. For entry and wheeling services with a duration of one year (or a multiple of years), the yearly rate applies. For entry and wheeling services with a duration less than 12 consecutive months, the seasonal rate type applies (i.e. the capacity tariff is multiplied by a monthly factor). For end user domestic exits, the same method applies. However, for exit services at interconnection points with any duration and for distribution domestic exit, the yearly rates apply without multipliers nor seasonal factors.

Entry capacity tariffs are equal for all entry points in Belgium and differentiated by firm, backhaul, interruptible level 1 and interruptible level N capacity (8.79, 5.79, 7.04 and 5.28 €/m3(n)/h/yr respectively). Exit capacity tariffs at interconnection points are differentiated by specific exit point (locational tariffs to some extent), as well as for firm, backhaul and interruptible capacities. Exit capacity tariffs are equal for all exit services at domestic exit points in Belgium and differentiated by firm, and interruptible. Annual entry tariffs are lower than annual exit tariffs at interconnections; however, note that seasonal rates apply to entry and not to exit.

In addition to the capacity fee, a commodity fee (energy in cash) applies to both entry and exit of gas. It amounts to 0.08% of the allocated capacity in kWh at the reference price (ICE Endex ZTP day-ahead from 2013, until then ZIG day-ahead as published by Dow Jones) in €/kWh.

Capacity allocation		Notes
Capacity allocation mechanism	FCFS	(1)
In case of congestion	Secondary market (of unused capacity)	
In case of new capacity	Open season	
Priorities in capacity allocation		(2)
Customer type	Connected to distribution system	
Duration	Not specified	
Congestion management procedures	UIOLI	(3)

(1) Requested firm and backhaul services are allocated in the order as they have been requested (as long as firm and backhaul capacity is available at an interconnection point). The same applies for interruptible level N capacity. Interruptible level 1 capacity is proportionally allocated to the requested quantities made during the applicable subscription window.

Since April 2013 Fluxys Belgium proposes new bundled day-ahead capacity through PRISMA via daily auction.

(2) The implicit allocation of domestic distribution exit capacity to network users supplying customers connected to lower pressure distribution systems may be regarded as priority allocation.

(3) Fluxys Belgium applies 'proactive congestion management', consisting of a) offering the maximum transmission services to grid users, taking into account system integrity and operation and within the actual exploitation boundaries; b) offering and developing transmission services that are aligned with the market needs; c) adopting non-discriminatory and transparent service allocation rules; d) encouraging the "use or sell" principle for transmission services by both actively monitoring the utilization rate of the grid users' subscribed transmission services and facilitating the transfer of transmission services via the secondary market; e) offering interruptible services offered in different levels; f) offering operational capacity usage commitments between grid users and Fluxys Belgium on specified interconnector entry-exit combinations. When congestion occurs, Fluxys Belgium, on behalf of the grid users, will release anyway on the secondary market all or part of the unused subscribed firm transmission

Accessibility of flexibility sources

Fluxys Belgium offers 680 million m^3 of the Loenhout storage capacity to the market (20 million m^3 is reserved for balancing purposes). The capacities (both firm and conditional) are made available by means of standard bundled units. Storage service offers are split into long term (2 – 10 years) and yearly service (one year).[17]

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	--	--	(1)
Exit points	Domestic distribution	Variable	(2)

(1) DNV KEMA is not aware of any capacity reservations at border entry and exit points.

(2) Implicitly exit capacity is reserved at domestic distribution exit points for the supply of consumers connected to the distribution grid. The allocation of this capacity to network users is based on their market share of final customers within each distribution network, taking into account varied profile segmentations of final customers.

[17] Fluxys, Storage programme – approved by CREG on 21 February 2013 and applicable as from 4 March 2013.

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	Yes	(1)
Tolerance provided	No	(2)
Number of tolerance levels	1	
Balancing gas procurement	Wholesale market	
Imbalance settlement	Market based imbalance fee	
Imbalance fee	External price + Multiplier	

(1) Although the system relies on daily balancing, hourly imbalances are also registered in Belgium aiming to incentivize shippers to profile intraday gas injection (or withdrawal) into (or from) the system.

(2) In Belgium no individual tolerance is granted to shippers, but there is a system-wide tolerance with a predefined market threshold. The TSO takes imbalance actions when the system is going outside this operational band width. Generally, under normal market behavior these thresholds won´t be exceeded.

A new balancing regime is introduced since October 1st, 2012. Balancing is now market based and Fluxys Belgium will use the new ICE Endex Gas ZTP exchange to keep the system balanced (residual balancing; both H and L gas). The market based balancing system consists of a daily cash-out of the end-of-day imbalance of grid users, with a potential adjustment on cash-out price to incentivize balancing by the grid users. The incentive is set at 10% of the financial settlement. In order to maintain the system within a safe operational envelope, Fluxys Belgium may take within-day actions based on hourly evaluation of the market balancing postion (i.e. buying or selling gas at ICE ENDEX Gas ZTP). The costs of these within-day actions are passed back-to-back onto the grid users whom caused the imbalance (for that specific hour). Pre-defined market thresholds (MT) determining the operating envelope, are defined per zone and vary on a seasonal basis. There are no individual tolerance margins for network users.

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	0.5	
Import	241.3	(1)
Export	44.8	
Consumption	196.3	
Traded volumes	644.8	(2)
Churn rate	4.8	

(1) Without any production or export, Belgium's gas needs are completely imported. Besides receiving LNG from Qatar, Algeria and other countries, Belgium has long-term import contracts in place with the Netherlands and Norway and also receives spot gas (e.g. from the UK). However, the gas system is extensively used for border-to-border gas transit. According to Fluxys Belgium, total transit amounts to ~90 bcm per year.

(2) Physical throughput at the Zeebrugge Beach amounted to almost 14 bcm. The churn rate in 2011 at the Zeebrugge Beach was 4.8.[18]

The Zeebrugge Beach has been a UK-driven market in its early years. The bi-directional Interconnector allows capacity holders to move gas between Belgium and the UK according to the value of the price differential (the basis). As a result, the basis and spot trade (day-ahead) dominated the Zeebrugge Beach. Afterwards the Zeebrugge Beach grew further by attracting gas flows coming from or going to Qatar, Algeria, Egypt, Oman and others for LNG and Norway, France, Germany, the Netherlands and Luxembourg for border-to-border transmission. The Zeebrugge Beach became also a source for supplying domestic exit points in Belgium. The introduction of the notional ZTP and ZTPL trading services should simplify access to the Belgian system (i.e. attracting new participants and enhancing trade volumes). In order to take part in notional and/or physical trading services, a Hub Service Agreement (HSA) with Huberator should be signed. A monthly hub service fee applies, which depends on the specific services taken and primarily depends on the nominated volumes.

The launch of ZTP has lead to a new portfolio of products by ICE-Endex. Since Fluxys Belgium will enter ZTP for balancing purposes through the new ICE-Endex Gas ZTP exchange, this will bring more liquidity on the spot. On the curve, liquidity may take longer to build up. All trades at ICE-Endex Gas ZTP are nominated to Huberator.

At ICE-Endex Gas ZTP exchange there are two TSO physical balance of day products (ZTP and ZTPL respectively). For notional ZTP trading services there is also a balance of day product, as well as four different within-day block products. In the day-ahead market for notional ZTP

[18] Huberator

trading services there are day, weekend, balance of week and working day next week products. Notional products on the ICE-Endex Gas ZTP exchange are only offered for H-gas.

ICE ENDEX Gas ZTP members are required to be a licensed grid user through a Hub Service Agreement (HSA) with Huberator and a Standard Transmission Agreement (STA) with Fluxys Belgium. In addition, the ICE-Endex gas market and clearing rules have to be accepted and confirmation of good financial standing is required. Moreover, several fees apply to be eligible to trade on ICE-Endex Gas ZTP exchange: a one-off entrance fee of 5,000 EUR, a fixed trading fee of 13,550 EUR per year, and variable trading fees of 0.25 €ct/MWh (or 0.10 above a certain trading volume threshold).

Trading	TWh	Notes
Trading volume	770	(1)
Exchange spot	0.24	
Exchange futures	--	
OTC	770	
Other	--	
Participants (number)	81	
Churn rate	4.8	

(1) Data given is for the calendar year 2011. At national level, activity on the ICE ENDEX Gas ZEE natural gas exchange (day-ahead and within-day) has been very limited: 85 transactions were recorded in 2011, representing a volume of 240 GWh. With 286 transactions (949 GWh) trade increased substantially over the first 9 months in 2012 (until the introduction of the new market). The OTC trade at the Zeebrugge Beach remained the central element of the trade in Belgium. Total volume traded at this hub in 2011 was slightly higher than that of 2010 (724 TWh). In the first 9 months of 2012 540 TWh was traded and the average churn was similar to the level in 2011.

Additional Comments

Fluxys Belgium is looking into shortening re-nomination timing for the facilities connected to the network. These include the Zeebrugge LNG facility, the Loenhout storage facility and the gas quality conversion facilities.

4 BULGARIA

Network Topology[19]

Bulgaria is connected to Russia via a single corridor through Ukraine, Moldova and Romania. Bulgaria has a relatively well developed main gas transmission infrastructure including two physically separated pipeline systems for national transmission and international transits. The national transmission network is connected through 65 physical interconnection points to the distributions system, operated by 17 DSOs, and transports gas to the distribution system operators and about 386 directly connected consumers. The transmission system projected capacity is 8 bcm per year and the current load factor is less than 50%. Thus, the system currently experiences no congestion issues under normal operation conditions.

Bulgarian TSO, Bulgartransgaz, operates a dedicated transit pipeline system. The transit pipeline transports natural gas to Greece, Macedonia and Turkey.[20] Transit capacity is assumed to be around 20 bcm per year, the load factor is supposed to be relatively high, with little free capacities.

Source: website Bulgartransgaz

The national transmission system consists of one international entry point (Negru Voda 1, at the

[19] Information in this section is based on SEWRC, 2011, National Report to the European Commission

[20] Gas quantities transited through Bulgaria meet 100% of the consumption in Macedonia, around 70% of the consumption in Greece and around 35% - 40% of the consumption in Turkey

Romanian border), two entry points from domestic production, and one entry point at UGS Chiren. The entry point for the transit system is Negru Voda (2 & 3), exit points are Malkoclar (to Turkey), Sidirokastron (to Greece) and Zidilovo (to Macedonia). Technically, the transit and national transmission systems are interconnected, but operate at different pressure levels. Parts of the domestic exits are supplied through the transit system.

Due to the high vulnerability of the country in regard to security of supply, several investments in storage and transmission capacities are being assessed (aiming amongst others to connect the gas transmission systems of Bulgaria with Romania, Serbia and Greece). Domestic transmission pipelines are in a process of development between Dobrich – Silistra and Silistra GDS. An upgrade of UGS Chiren and new construction of storage using the depleted Galata offshore gas field (located in the Black Sea) are also under discussion. Furthermore, according to the final investment decisions, Bulgaria will participate in the South Stream project with expected start of offshore construction by the end of 2012.

Network topology		Notes
Network length high pressure (km)	2,645	(1)
Pressure range TSO	>38 bar	(2)
Import capacity (GWh/d)	820.3	(3)
Export capacity (GWh/d)	634.5	(4)
Storage (mcm)	650	(5)
LNG (bcm/year)	--	
TSOs (name)	Bulgartransgaz EAD	(6)
DSOs (number)	17	

(1) Total length of the national transmission network is approximately 1,700 km, while the international transit network comprises of 945 km of high pressure pipelines.

(2) Pressure range at the entry point is between 38 and 54 bar, while at border exit points the minimum pressure ranges between 40 and 52 bar (Malkoclar 52 bar, Kula 50 bar and Jidilovo 40 bar).

(3) Negru Voda I entry 210.3 GWh/day, Negru Voda II-III entry 610.0 GWh/day.

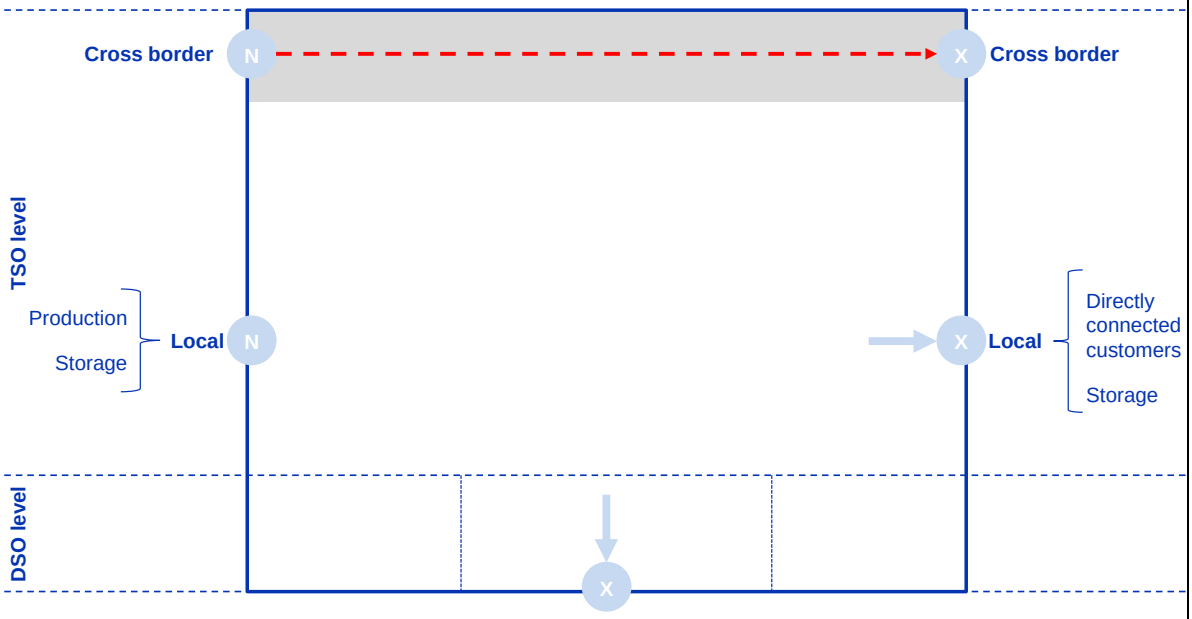
(4) Zidilovo exit 33.4 GWh/day, Kula exit 133.9 GWh/day, Malkoclar exit 467.2 GWh/day.

(5) The only gas storage in Bulgaria is the underground storage site in Chiren, owned and operated by Bulgartransgas EAD. The process of reconstruction to expand the working volume of the underground gas storage in Chiren has begun and its connection with Kozloduy and Oryahovo is forthcoming. The gas extraction site in Galata is expected to be transformed into Bulgaria's second gas storage.

(6) The TSO Bulgartransgas EAD owns the transmission and transit gas pipelines, maintaining the pipelines at a high pressure.

Design of the Entry-Exit System[21]

The figure below gives the schematic representation of the entry-exit system in Bulgaria as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
- - →	In Bulgaria transit and transmission in the national network is currently separated and treated differently.
	Technically, the transit and national transmission systems are interconnected, but operate at different pressure levels.

At the moment the TSO operates a postage stamp system where the transmission tariff consists of a simple commodity-only charge both at entry and exit points. However an entry-exit system is currently implemented. In future this should provide for equal treatment of transmission gas pipelines and transit of natural gas. There is no trading point in the country. Transit is not part of the national transmission system; tariffs for the use of separate transit pipeline system owned and operated by Bulgartransgaz are not subject to regulation, but are freely negotiated bilaterally. At the moment the only shipping customer of Bulgartransgaz is Bulgargaz.

[21] Information in this section is based on ACER, 2012, Answers to DG ENER Questionnaire on Balancing; ACER, 2012, Transit contracts in EU member states; SEWRC, 2011, National Report to the European Commission; www.bulgargaz.bg; http://www.gazpromexport.ru;

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader							
Shipper	1		3				
Supplier	2					4	
Contracting party	NRA		TSO	TSO		DSO	

(1) Three types of licences are used in Bulgaria: transmission licence, distribution licence and public supplier licence. The shipper thus needs a transmission licence. A licence is not required for trading natural gas.

(2) For supplying gas to end consumers a Public Supplier licence is required. The applicant for a licence has to meet the following requirements:

- Local office – The applicant should have a branch office in Bulgaria
- Financial information – The applicant has to provide financial company information
- Financial guarantees – The applicant has to provide a financial guarantee of 30,000 BGN
- Technical capability – The applicant has to shown their technical capability, and proof to secure gas supplies.
- EU/non-EU – A different procedure applices for granting a licence for market players from non-EU countries.

We note that Bulgaria specific requirements of establishing a local branch office which could appear cumbersome for some categories of market entrants. We also note a difference in procedure for EU and non-EU applicants.

Additionally we observe a distinction between domestic suppliers and importers: in Bulgaria a separate license is required to import gas.

(3) TSO grants access to its transmission network upon availability of preliminary Contracts for ensured quantities of natural gas from the public supplier, shippers or production entreprises, within or outside of the country. In order to participate in the capacity allocation procedure of the TSO the following requirements are set:

- Financial guarantee - a bank guarantee is required from the shippers. Standard contracts generally don't have a specified duration.
- Gas supply - copy of signed preliminary contract/contracts on natural gas supply
- Technical capability - declaration stating that the applicant can ensure continuous operational contact 24 consecutive hours
- Certificate for Actual State by the Trade Register

With the booking of capacity the shipper has a 5% tolerance on the nominated transport volumes.

(4) The DSOs grant access to their distribution networks upon availability of preliminary Contracts for ensured quantities of natural gas from the public supplier, shippers or production entreprises, within or outside of the country.

Tariff Structure and Capacity Products[22]

Tariff structure	Products					Tariff basis		Notes
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	
Entry	F[23]	--	--	--	--	--	--	
Domestic exit	F	--	--	--	--	--	BGN/cm	
Border exit	F	--	--	--	--	--	BGN/cm	
	(2)						(1)	

(1) The transmission tariff consists of a simple commodity-only charge derived from the allowed revenue divided by the forecasted transmission volume. Current price for natural gas transmission is 19.73 BGN/ 1,000 cm.[24]

(2) The tariffs are set for a pure transport-volume oriented product without differentiating for types of capacity usage and different contract durations. However, only annual contracts are currently used.

[22] Information in this section is based on ACER, 2012, Input for Initial Impact Assessment for draft FG for harmonized Gas Tariff structures and SEWRC, 2011, National Report to the European Commission

[23] F = firm, I = interruptible

[24] According to the Decision No Ц-001, dated February 10, 2005

Tariff calculation and division of cost		Notes
Tariff model	Post stamp	(1)
Role of NRA	Determination	(2)
Price control mechanism	Rate of return	
Tariff calculation methodology	Uniform	
Entry/exit split	--	(3)
Capacity/commodity split	--	(3)
National/cross-border distinction	Yes	(4)
Locational or uniform tariffs	Uniform	
Charging basis (booked capacity/other)	Volumes transmitted	

(1) The introduction of an entry-exit tariff model is envisaged in pursuance of the 3rd energy liberalised package.

(2) Transmission tariffs are derived from a cost based regulatory approach, using rate of return regulation.

(3) Only commodity charges apply, splits between capacity and commodity or entry and exit charges are not applicable.

(4) National transmission and transit are separated; transit tariffs are not subject to regulation, but are freely negotiated bilaterally.

The current capacity allocation mechanism is first-come-first-served (FCFS) with the application of use-it-or-lose-it principle. As the national transmission system has considerable available capacity, there are currently no congestion issues, nor is there system congestion on the cross-border level.

There is no secondary market for transport capacity. However, network users have the right to trade the capacity allocated to them among themselves, provided prior consent of the TSO.

Capacity allocation		Notes
Capacity allocation mechanism	FCFS	(1)
In case of congestion	--	
In case of new capacity	--	
Priorities in capacity allocation		
Customer type	--	
Duration	--	
Congestion management procedures	UIOLI	(2)

(1) Allocation of available capacities is aligned with the ´first-come-first-served´ principle.

The UIOLI principle represents a rather theoretical option since there's no congestion at the national and cross-border level.

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	Old long-term transit contracts	As much as necessary	(1)
Exit points	Old long-term transit contracts	As much as necessary	(1)

(1) The old long-term transit contracts in force have priority access to cross-border capacities. The ratio of capacity needed to serve old contracts to total cross-border capacity is 100%.

Balancing and Imbalance Settlement[25]

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on a daily basis	
Number of tolerance levels	1	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Gas-in-kind compensation	
Imbalance fee	Penalty	(1)

(1) Imbalances outside the tolerance are penalized by an imbalance fee administratively set.

Bulgartransgaz is responsible for the physical balancing of the gas transmission system. BTG's current balancing regime is mainly based on the physical availability of substantial amounts of linepack and access to UGS Chiren. There's no balancing gas market, even gas volumes from the storage are only rarely needed. The amount of linepack is estimated at roughly 4% of the total transport capacity.

The current balancing regime is based on a daily balancing period with a 5% tolerance on nominated transport volumes. Deviations from the tolerance are penalised at 4.66 BGN/1,000 m³. The missing or surplus gas is repaid in-kind. In Bulgaria, monthly cash-out will be applied. There are no WDOs in place.

[25] Information in this section is based ACER, 2012, Answers to DG ENER Questionnaire on Balancing

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	4.5	(1)
Import	29.3	(2)
Export	0	
Consumption	33.9	(3)
Traded volumes		

(1) Only 1.3% of total consumption came from domestic production in 2011.

(2) The import of natural gas is carried out on the basis of long-term agreements with Gazprom.

(3) The forecast for natural gas consumption in 2018 was 4.0 bcm.

Bulgaria's gas supply is characterised by limited domestic production, limited storage volume and daily withdrawal capacity, and a single supply route (thus, a very high import dependency from a single source). There is only a single entry connecting Bulgaria to Romania (and further to Moldova and Ukraine), which the natural gas is supplied based on one long-term gas transit contract between Bulgartransgaz and Gazpromexport (expiring in 2030). The contracted volume transited is 17.8 bcm/year with an option to be increased by 5 bcm/year from 2007 onwards. In 2006 the ship-or-pay threshold was increased from 80% to 90% of contracted volume and the take-or-pay clause was eliminated.

Bulgargaz EAD is the sole Public Provider that carries out wholesale trade at SEWRC regulated prices, with a market share of 97.9% of the total resource in 2010.

Trading	Notes
Trading volume	--
Spot	--
OTC	--
Other	--
Participants (number)	--
Churn rate	--

5 CZECH REPUBLIC

Network Topology

The transmission pipeline system in the Czech Republic has five main cross-border delivery points: Lanžhot in the South East, Waidhaus in the South West, Hora Svaté Kateřinyas well as Brandov in the North-West and Cieszyn in the North-East. The Czech transmission pipelines are among others used to transport Russian and Norwegian gas to Germany, France, Slovakia and Poland.[26] The Czech transmission system is operated by NET4GAS. In the Czech Republic seven regional distribution systems are connected to the transmission system.[27]

Network topology		notes
Network length high pressure (km)	3810	(1)
Pressure range TSO	40-100	(2)
Import capacity (GWh/d)	3239.1	(3)
Export capacity (GWh/d)	2292.7	(4)
Storage (bcm)	2.8 bcm	(5)
LNG (bcm/year)	--	
TSOs (name)	NET4GAS	(6)
DSOs (number)	86	(7)

(1) The total length of the transmission network is 3,810 km (including newly built Gazelle pipeline connecting Brandov and Waidhaus).

(2) Pressure regulation and metering stations are owned by the transmission system operator. [28] TSO operates the metering instruments at the delivery points between distribution systems.[29]

(3) Brandov entry 960.2 GWh/d, Hora Svaté Kateřiny-Olbernhau entry 370.0 GWh/d, Hora Svaté Kateřiny entry 48.7 Gwh/d, Lanžhot entry 1634.4 GWh/d, Mokry Háj entry 25.0 GWh/d, Waidhaus entry 200.8 GWh/d[30]

(4) Český Těšín exit 27.9 GWh/d, Hora Svaté Kateřiny-Olbernhau exit 290.1 GWh/d, Hora Svaté Kateřiny exit 289.4 GWh/d, Waidhaus exit 1071.5 GWh/d, Lanžhot exit 613.8 GWh/d[31]

[26] Input for Initial Impact Assessment for draft FG for harmonized Gas Tariff structures, ACER, June 2012; NET4GAS

[27] NET4GAS

[28] National report to ERGEG

[29] NET4GAS

[30] Forecast for technical capacity in 2014 by the TSO, http://www.net4gas.cz/en/media/Longterm_forecast_of_available_capacities_2013-aj.pdf?jis=20130208112250

(5) Three companies operate storage facilities in the Czech market. RWE Gas storage, s. r. o. owns six, while MND Gas Storage owns one underground storage facility. The remaining one storage facility, owned by SPP Storage s.r.o is only used for the Slovak Republic´s needs.

Planned investments in storage facilities are expected to increase the storage capacity by more than 1 bcm, which will bring it close to 34% of the country´s total annual gas demand up to 2022.[32]

As of November 1st, 2012 all gas suppliers are obliged to have in storage capacity sufficient to cover at least 20% of the demand of their protected customers before the beginning of the heating season.[33]

(6) The Czech transmission system is operated by NET4GAS, which operates the inland gas transmission system as well as the gas transit system across the Czech Republic.

(7) In the Czech Republic seven regional distribution systems (RDSOs) are connected to the transmission system, each of them serving more than 90,000 customers.[34] Further there are 80 smaller holders of licences for gas distribution systems (local distribution system operators – LDSO), in the Czech Republic as of January 1st, 2012, which are not directly connected to the transmission system or that have less than 90,000 connected customers at the end of a calendar year.[35]

[31] Forecast for technical capacity in 2014 by the TSO, http://www.net4gas.cz/en/media/Longterm_forecast_of_available_capacities_2013-aj.pdf?jis=20130208112250

[32] The Czech Republic´s National Report on the Electricity and Gas Industries for 2010, NET4GAS

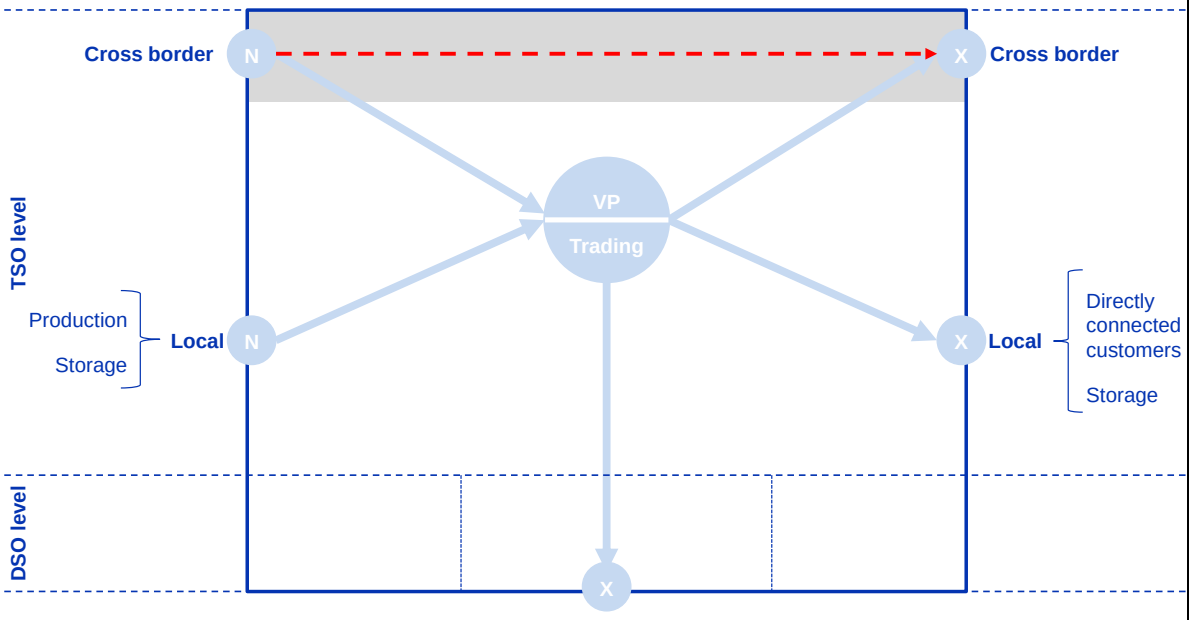
[33] NET4GAS

[34] http://www.eru.cz/user_data/files/plyn/40_Statistic/charakteristikaEN.pdf

[35] http://www.eru.cz/user_data/files/licence/info_o_drzitelich/souhrn_12_01.pdf

Design of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in the Czech Republic as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
- - →	The entry-exit rule does not apply for the point-to-point transit contracts concluded before January 1st, 2011 unless the capacity holder decides to accept the mandatory offer of the TSO to split the capacities into separate entry and exit capacities. According to the TSO (NET4GAS) most of the remaining point-to-point transit capacity contracts have been transferred into the entry-exit regime during 2012.
	The entry-exit transit contracts that do not cover gas supply to the Czech Republic and where the shippers do not intend to trade gas on the Czech VTP are balanced separately in order to avoid the necessity for shippers to register at the VTP.

The Czech tariff transmission system is structured as a decoupled entry-exit system with five main interconnection points, three with Germany (Hora sv. Kateriny and Brandov in the North and Waidhaus in the South West), one with Slovakia (Lanzhot) and one with Poland (Cieszyn). Further there is one rather small entry point (Mokry Háj).

The Czech territory is operated as one balancing zone with a single Virtual Trading Point (VTP), at which all gas transactions are registered (excluding point-to-point transit contracts concluded before January 1st, 2011, for which the entry-exit rule does not apply unless the capacity holder

decides to accept the mandatory offer of the TSO to split the capacities into separate entry and exit capacities, and entry-exit transit contracts that do not cover gas supply to the CR).[36] The domestic exit zone is integrated in the entry-exit system; therefore shippers do not have to book capacity at interconnection points between transmission and downstream networks. There are two virtual storage points and one virtual trading point (VTP), as well as an organized gas market (the day-ahead gas market with gate closure for offers at 10 a.m. for the following day and the intra-day market).

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	License	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader	1		2	3	2		
Shipper							
Supplier						4	
Contracting party	NRA		MO	TSO	MO	DSO	

(1) The Czech legislation does not distinguish between gas traders and gas suppliers, the NRA grants gas trader licenses to the applicants aiming to act as trader and/or supplier on the Czech gas market. License for gas trading is granted for 5 years. Financial wholesale trading does not require a license. The applicant of a license has to meet the following requirements:

- Financial – the applicant has to demonstrate it has sufficient funding to secure the operation of the activities for which the license is required and that it has the ability to cover current and future liabilities for a period of at least 5 years. The applicant shall document that it has no arrears on taxex, levies, contributions to social security, fines and fees payable to the Czech Republic.
- Technical capability - the applicant should have the professional competence interms

[36] OTE annual report 2011

of education. Professional competence for gas trading is not needed.

(2) Shippers supplying the Czech Republic or trading at the Czech VTP need to sign an agreement with OTE (the Czech electricity and gas market operator). Balancing is performed by OTE.

(3) In terms of capacity booking there is no difference between traders, shippers and suppliers, they all have to be licenced as gas traders. Shippers shall submit a request for conclusion of a General Contract for gas transmission and shall deliver the Security Certificate Transfer Contract to the TSO before the beginning of transmission.

(4) There are no explicit bookings of transmission exit capacities to the entries into the distribution grids anymore; the "rolling" of costs is handled between the TSO and the DSOs. Distribution exit capacities are still booked by suppliers with the DSOs. Companies providing universal services to households and small consumers have to fulfil specific requirements regarding service quality and the obligation to supply. However no price regulation is applied.

Tariff Structure and Capacity Products

NET4GAS operates a fully decoupled entry-exit system. From 2011 legacy transit contracts (point-to-point) may be transferred into separate entry and exit capacities subject to the decision of the capacity holder to accept the mandatory offer of the TSO to split the point-point capacities.[37] According to NET4GAS during 2012 most of the remaining point-to-point transit capacity contracts have so been transferred into the entry-exit regime.[38]

For tariff setting a Price Cap methodology is applied for cross-border gas flows and a Revenue Cap methodology is applied for domestic gas flows. At entry/exit border points of the transmission system, both long-term and short term capacity booking is possible. The regulator's current objective is to have low entry tariffs in order to promote imports of gas and to enable entry of new suppliers. No explicit backhaul capacity booking is possible; however at all border points both entry and exit capacity can be booked on a firm basis.

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	notes
Entry	F/ I[39]	-	F/ I	F/ I	--	CZK/MWh/d	CZK/MWh	(1)
Domestic exit	F / I	-	F/ I	F/ I	--	CZK/MWh/d	CZK/MWh	
Border exit	F / I	-	F/ I	F/ I	--	CZK/MWh/d	CZK/MWh	(1)
			(5)	(4)		(3)	(2)	

[37] NET4GAS

[38] http://www.net4gas.cz/en/media/Prevod_kontraktu-aj.pdf, NET4GAS

[39] F = firm, I = interruptible

(1) Long-term capacity booking at entry/exit border points of the transmission system is possible on an annual basis and for a term of at least 5 years. The minimum size of the required long-term firm transmission capacity is 10,000 MWh/day.[40]

The day-ahead transmission capacities between virtual trading points in Germany (GASPOOL Hub) and in the Czech Republic (VOB) are traded bundled. As from 1st October 2012 a bundled day-ahead capacity product enabling the bi-directional transmission between the Czech VTP and Slovak VTP and/or the Czech VTP and entry/exit point from the eustream transmission system at Baumgarten is available (GATRAC Platform).

Interruptible capacity is charged based on the actual interruption, at 100% of the price of the firm product which is returned to the network user in case of interruption.[41] In case of interruption the network user gets compensation for a reduction in transmission nomination on the gas day. The compensation is calculated as a portion of the reduction until it reaches 60 %. If the reduction in nomination is higher than 60 %, then the network user uses transmission system free of charge for capacity reservation.

(2) Commodity charge is based on percentage of natural gas flow for the TSO to cover costs related to the operation of compressor stations.[42]

(3) Capacity charge aims to cover the remaining part of the transmission charge.[43]

(4) Daily capacity is charged depending on the duration of the contract.[44]

(5) Monthly capacity is charged by 188% of 1/12 of the annual capacity tariff with a decrease depending on the duration of the contract. For 11 months duration contract monthly capacity is charged by 119% of 1/12 of the annual capacity tariff. [45]

Monthly transmission capacity for border points and virtual gas storage facility points can be booked for no more than 60 gas months.[46]

[40] http://www.net4gas.cz/en/media/2012_12_18_NC_aj_final_18_12_2012.pdf section 3

[41] NET4GAS

[42] The Czech Republic´s National Report on the Electricity and Gas Industries for 2010

[43] The Czech Republic´s National Report on the Electricity and Gas Industries for 2010

[44] Input for Initial Impact Assessment for draft FG for harmonized Gas Tariff structures, ACER, June 2012

[45] NET4GAS

[46] NET4GAS

Tariff calculation and division of cost		notes
Tariff model	Entry-exit	(1)
Role of NRA	Determination	(2)
Price control mechanism	Price Cap Regulation for cross-border flows, Revenue Cap Regulation for domestic flows	
Tariff calculation methodology	Locational	
Entry/exit split Revenue Cap domestic	38.5/61.5	
Capacity/commodity split	--	
National/cross-border distinction	None	(3)
Locational or uniform tariffs	Uniform for entry points, differentiated for exit points	(4)
Charging basis (booked capacity/other)	Booked capacity	(5)

(1) The Czech tariff transmission tariff system is structured as a fully decoupled entry-exit system.

(2) NRA sets the tariffs using a methodology established in regulatory provisions.[47]

(3) A Price Cap methodology is applied for cross-border gas flows and a Revenue Cap methodology is applied for flows that are aimed at domestic consumption. Cross-border costs currently account for 18.5 % of Revenue Cap revenues, domestic network costs for 81.5 % of Revenue Cap revenues.[48] The charge for transit across the Czech Republic is calculated on the basis of benchmarking of tariffs on routes competing for gas transmission, using two components. One component related to the tariffs of transmission capacity for a pair of entry and exit points in international transmission, and the other component covering fuel gas.[49]

(4) The same transmission tariff is applied at all entry points (727.12 CZK/MWh), while the tariffs at exit points are differentiated (Lanžhot 3740.6 CZK/MWh, Waidhaus 4675.31 CZK/MWh, Hora sv. Kateřiny – Olbernhau 4701.49 CZK/MWh, Hora sv. Kateřiny – Sayda 4704.21 CZK/MWh, Hora sv. Kateřiny – Brandov 4701.49 CZK/MWh, Český Těšín 4675.31 CZK/MWh, storage 94.16 CZK/MWh).[50]

(5) Capacity tariffs are charged based on booked capacity. For the commodity part of tariff, the transported gas quantity is relevant.

[47] Input for Initial Impact Assessment for draft FG for harmonized Gas Tariff structures, ACER, June 2012

[48] NET4GAS

[49] The Czech Republic´s National Report on the Electricity and Gas Industries for 2010

[50] Energy Regulatory Office Price Decision No. 3/2012 of 26 November 2012

Capacity allocation		notes
Capacity allocation mechanism	OSW, FCFS for bundled day-ahead	(1)
In case of congestion	Auction	
In case of new capacity	Open Season	(2)
Priorities in capacity allocation	Duration	(3)
Congestion management procedures	Capacity trading on secondary market, UIOLI	

(1) Capacity is generally allocated according to the Open-Subscription-Window (OSW) principle, only in case of bundled day-ahead capacity products according to the First-Come-First-Served (FCFS) principle. In case of congestion, the NET4GAS Network Codes foresees capacity auctions. Bundled capacity is allocated through GATRAC platform (based on FCFS).

(2) By the end of 2010, in order to allocate the capacities of the Gazelle pipeline, NET4GAS carried out an open season process to allow potential shippers to express their interest in the project and to make firm bookings. [51] The Gazella Pipeline was officially commissioned on January 14th, 2013.

For allocation of capacities long-term capacity bookings have priority over short-term bookings.

Reservation of capacities			notes
Point	***Reason***	***Amount***	
Entry/exit border points - existing infrastructure	Shorter than 5years	10%	(1)
Entry/exit border points - new infrastructure	Shorter than 5 years	35%	(2)

(1) By the allocation of existing transmission capacities 10% of the total capacity is reserved for short-term contracts.

(2) In case of new transmission infrastructure commissioned after January 1st, 2011, 90% of the technical capacity can be booked under long-term (minimum duration of 5years) contracts.[52]

[51] http://www.djnewsletters.de/news/article_detail.php5?bnlId=1400201&productId=10

[52] http://www.eru.cz/user_data/files/legislativa/english/notice_458/365_incl_%20347_AJ.pdf section 5a (6)

Balancing and Imbalance Settlement[53]

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on a daily basis	
Number of tolerance levels	1	
Balancing gas procurement	Wholesale market	
Imbalance settlement	Financial settlement / Gas-in-kind compensation	
Imbalance fee	External price + Penalty	(1)

(1) Imbalances are charged by the daily price of balancing gas, derived from euro settlement prices on the EEX exchange, increased/decreased by EUR 4/MWh.

The whole Czech Republic is one balancing zone, comprising the DSO level as well. The balancing process is based on daily interval of imbalance evaluation. The physical balancing of the Czech gas system (transmission, distribution, storage, production) is done by the Czech transmission system operator NET4GAS. The commercial balancing of gas flows intended for consumption either in whole or in part by final customers in the Czech Republic is performed by the market operator OTE, while the commercial balancing of transit gas flows (transmitted from border entry to border exit and where the shipper does not wish access to the VTP) is carried out by NET4GAS.[54] Shippers are granted balancing tolerances at each entry and exit point calculated by the NRA in relation to the use of the transmission system and the line pack. The bilateral trade of unused tolerances is possible on the unused tolerance market organised by the market operator.

Shippers are entitled to transfer their responsibility for imbalance by supply points, and also to transfer overall responsibility for imbalance.

The daily balancing imbalances can be partly or entirely balanced by either financial or in-kind settlements. In the event of in-kind settlement of all imbalances, no financial settlement for balancing is required (except for penalty charges for ´off-tolerance balancing imbalances´). In case of financial settlement, the fixed daily charge for missing (excess) balancing gas has been set at the daily price of balancing gas (Cpv in EUR/MWh) increased (decreased) by EUR 4/MWh. In the Czech Republic there are no within-day obligations in place.

[53] Information in this section based on ACER answers to DG ENER Questionnaire on Balancing to ACER and ENTSOG and http://www.net4gas.cz/en/1259/ and www.net4gas.cz/en

[54] http://www.net4gas.cz/en/1259/

Market Environment and Trading

Volumes	TWh/year	notes
Indigenous production	2.0	
Import for the Czech Republic	98.8	(1)
Export from the Czech Republic	1.8	(2)
Transit through the Czech Republic	292.419	
Consumption	87.5	
Traded volumes	--	
Churn rate	--	

(1) Since indigenous gas production is negligible, the Czech Republic imports 99% of the natural gas that it needs. 64.1% of the imported gas came in 2011 from Russia, 12.4% from Norway and 23.5% from other EU countries.

As at the end of 2010 19 trading companies imported gas into the Czech market, the largest part of these imports was based mainly on long-term take-or-pay gas supply agreements. RWE Transgas a.s. with 72.6% holds the largest market share. Its long-term natural gas supply contract with Gazprom export Ltd. will remain in effect until 2035; its gas sales agreement with Norwegian producers expires in 2017. The second largest importer is VEMEX with a market share of 5.8% and importing gas to the Czech market based on a five-year agreement with Gazprom of an annual volume of 0.5 bcm, with the option of doubling both the term of the contract and the annual volume. [55]

In 2010 the number of companies exporting gas to other countries increased compared to 2009. In 2011 natural gas started to be exported from the Czech Republic to Poland, in addition to existing exports to Germany and Slovakia. 22.97 bcm of gas coming from Russia passed through the Czech transmission system in 2011.[56]

In the Czech Republic there are is virtual trading point (VTP) and an organized gas market. The HHI index of 5,370 of the wholesale market concentration in 2010 and its drop from the level of 7,760 in 2009 indicates the importance of the entry of new gas importers.[57] In 2011 the HHI index has dropped to level 3,905.

The organized short-term gas market was launched by the market operator (OTE) in 2010.[58] It comprises a day-ahead and an intra-day gas market; both organized in EUR and both have a fixed

[55] The Czech Republic´s National Report on the Electricity and Gas Industries for 2010

[56] http://www.gazpromexport.ru/en/partners/czech/

[57] The Czech Republic´s National Report on the Electricity and Gas Industries for 2010

[58] http://www.eru.cz/user_data/files/legislativa/english/notice_458/365_incl_%20347_AJ.pdf section39 (1)

charge for the gas quantity traded of CZK 0.30/MWh.

The unused tolerance market is also defined as a short-term market by the legislation. However this "market" was not a genuine trading market in 2011 as it served only to register bilateral exchanges/transfers of unused tolerance between traders. Deals and prices related to unused tolerance were agreed upon outside of this "market". As of December 2011 an auction mechanism has been introduced.

Trading[59]	**GWh**	**notes**
Trading volume	82,601	(1)
Spot	189	(2)
OTC	82,412	(3)
Other	--	
Participants (number)	160	(4)
Churn rate	--	

(1) The most important trader on the Czech gas market is RWE Transgas a.s. with a market share of 72.62% of gas imports for customers (including gas exported from the Czech Republic to international customers). Another major player in the gas wholesale market is VEMEX s.r.o. with a market share of 5.78%.

(2) The organized day-ahead gas market is based on an auction principle. In 2011, a total of 189 GWh was traded on the intra‑day gas market in the amount of EUR 4.3 million. Compared to the 2010 figure of 59.3 GWh, the volume of traded gas tripled year-on-year.

In 2011 the average spot price level on the organized gas market amounted to 23.38 EUR/MWh, which is slightly below the Austrian market price (average spot price of 23.78 EUR/MWh in 2011).[60]

The Czech Moravian Commodity Exchange Kladno (CMKBK) opened a market in natural gas for end-users in 2010. There are two products of natural gas that can be traded on the CMKBK Energy Exchange, gas offtake up to and over 630 MWh yearly/delivery point.[61] In 2011 the total trading volume amounted to 1,697 GWh. The market was characterised by a less volatile prices in comparison with that of electricity, ranging between 650 CZK/MWh and 740 CZK/MWh during the year. [62]

(3) In 2011, most gas exchanges between subjects of settlement were executed through bilateral contracts – obligations to supply or obligations to take. Volumes of bilateral

[59] OTE, Annual report, 2011

[60] Study on cross-border market integration, macroeconomic analysis of the CEE region, June 28, 2012, E-Bridge

[61] http://www.cmkbk.cz/en/?page_id=186

[62] http://www.cmkbk.cz/en/wp-content/uploads/2011/10/Vyrocni_zprava_2011.pdf

contracts performed at the Virtual Trading Point registered in the OTE system in 2011 was 82,412 GWh.[63] In 2011, the OTE system did not register gas transmission on the basis of transit contracts across the territory of the Czech Republic; the statistics refer only to intra-state gas transmission.

(4) Thanks to the new legislative measures in 2010 boosting the competition in the gas market, a total of 160 gas trade licence holders were in the Czech Republic, as of November 1st, 2012.[64]

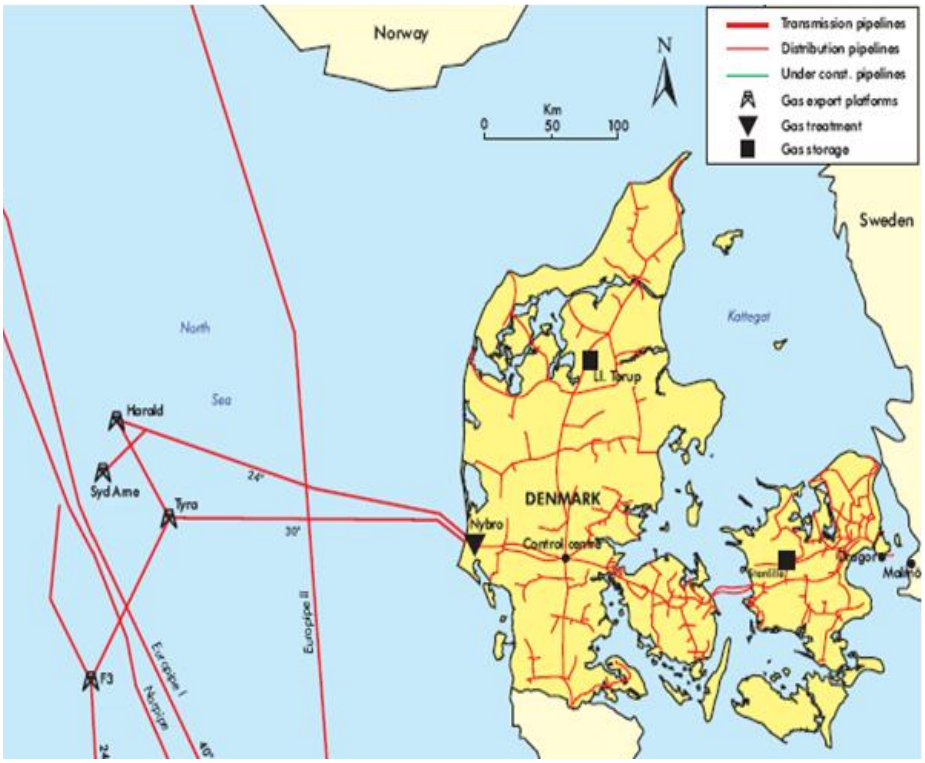
[63] OTE, Annual report, 2011

[64] http://www.eru.cz/dias-read_article.php?articleId=265

6 DENMARK

Network Topology[65]
The Danish gas transmission system shows a rather simple topology. Main pipelines run from East to West and North to South. Pipelines connect the landfall terminal from North Sea production at Nybro (gas treatment facilities), the Northern sector (where one, Lille Torup, of the two storage facilities is located), the exit to Sweden at Dragor (close to the location of the second storage facility Stenlille on the island of Zealand) and the cross-border point with Germany at Ellund. The transmission grid is run by the TSO Energinet.dk (ENDK). Furthermore, Denmark has three DSOs responsible for operating the distribution grids. Nybro is an entry-only point; whereas Dragor only exit flows occur (Sweden has no other gas sources, thus relying on imports from Denmark). Since October 2010, after discussions concerning gas quality and pressure levels, Ellund is eligible for physical entries from Germany. Entry capacities will be further increased by infrastructure investments until 2015. There is a dedicated upstream offshore pipeline system owned by DONG, connecting offshore production platforms with the landfall terminal at Nybro. The offshore system is partly open for TPA (further elaborations will be limited to the onshore system only).

[65] Information in this section is based on DERA, 2011 National Report to the European Commission, and www.energinet.dk, in particular on Energienet.dk, Shipping gas in Denmark, November 2008, and presentations of the ENDK Shippers' Forum



Network topology		Notes
Network length high pressure (km)	860	(1)
Pressure range TSO	50	(2)
Import capacity (Nm^3/d)	32.4	(3)
Export capacity (Nm^3/d)	16.9	(4)
Storage (bcm)	1 bcm	(5)
LNG (bcm/year)	--	
TSOs (name)	Energienet.dk	(6)
DSOs (number)	3	

(1) Total length of the gas network (including DSOs) is approximately 26,000 km. The Danish transmission system is currently being extended with a new (parallel) pipeline towards Germany. The pipeline will be ready for gas transport by the end of 2013 and the length of the Danish transmission system is thereby extended from 860 to 950 kilometres.

(2) Pressure regulation and metering stations are owned by ENDK.

(3) Nybro entry capacity of 32.4 Nm³/day; at Ellund entry capacity of 4.8 Nm³/day is only available on interruptible basis.

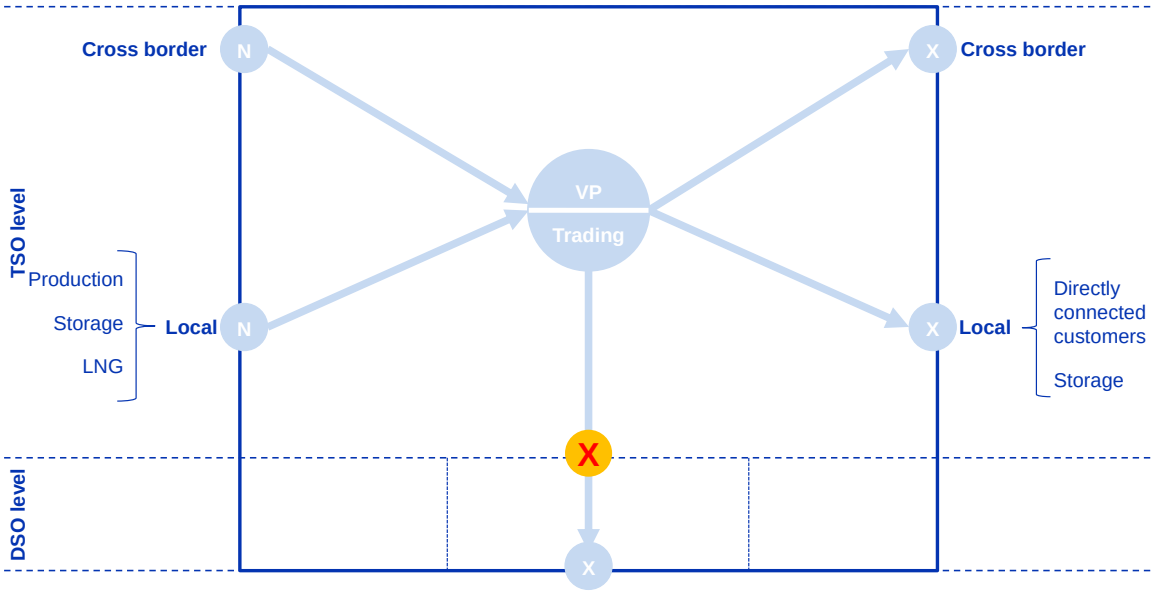
(4) Ellund exit capacity of 8.3 Nm³/day, Dragor exit capacity of 8.6 Nm³/day.

(5) There are two storage facilities, a cavern storage owned by ENDK (Lille Torup) and a porous storage owned by DONG (Stenlille). The storage is of particular importance as North Sea production capacity is limited to approx. 22-24 mcm/day, while Danish (i.e. domestic) peak demand reaches up to 30-33 mcm/day.

(6) Energinet.dk operates the Danish power transmission network as well.

Design of the Entry-Exit System[66]

The figure below gives the schematic representation of the entry-exit system in Denmark as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
X	There is only an exit booking requirement for the whole domestic exit zone, this is not an explicit booking at individual city gates.

ENDK operates a decoupled entry-exit system with three cross-border entry/exit points and integrating the domestic exit zone. The system has a number of virtual points of which the functionality differs. The entry-exit system has a virtual trading point (Gas Transfer Facility, GTF), as well as a virtual gas exchange (Nord Pool Gas Facility, NPTF). GTF is the virtual point

[66] Information in this section is based on www.energinet.dk, in particular on Energienet.dk, Shipping gas in Denmark, November 2008 and Business Model for the upcoming Rules for Gas Transport RfG, Version 12.0, July 2012

for bilateral title transfer. NPTF is the transfer point for the gas exchange. At the exchange only physical trade is possible, allowing within-day up to month-ahead and swaps with German market places. In addition, there is a virtual biogas entry point. There are also two physical storage entry/exit points. As can be seen from the schematic representation above the Danish entry-exit system does not apply any restrictions on free allocability and VP access.The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

The Danish market model distinguishes between gas suppliers and shippers. Shippers are responsible for acquiring the transmission rights and deliver gas to suppliers, suppliers deliver the gas to the consumers based on contractual agreement. A shipper can deliver gas to several suppliers, and a supplier can receive gas from several shippers. Also, a consumer can be supplied by several suppliers. The same party can act as shipper, supplier and consumer.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader					5		
Shipper		2/3		4			
Supplier	1					6	
Contracting party	Ministry	TSO	TSO	TSO	TSO	DSO	

(1) Market players do not need a licence to become active on the Danish gas market. A licence is only required for Universal Service Providers. Denmark is divided into three universal service areas. All other market parties are free to enter the market without a licence.

The licence for Universal Service Providers is issued Ministry subsequent to a tendering process with the lowest bid winning the licence. Licences used to be valid for 5 years, but validity period is only 3 years as of May 2013. There are no costs involved in obtaining a licence (except for the costs of the tender procedure and bank guarantees). The tenderers have to comply with the following requirements:

- Registration at TSO – The tenderer for a Universal Service Provider must be registrered as a Gas Supplier in register of market participants of the Danish TSO

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- Customer handling system – The tenderer must have an adequate and sufficient customer handling system
- Financial information – The tenderer must submit annual reports for the last 5 years
- Financial collaterals – The tenderer should furnish a bank guarantee or parent company guarantee of minimum 10 percent of the expected revenue of the specific universal service area.

(2) The format of gas transmission agreement used in Denmark is framework agreement: market parties become shippers by signing the FA with the TSO, and by doing so they gain access to all the services provided by the TSO (capacity, balancing and access to the VP). In other words, Danish shippers only sign one contract for all services: this is a model of one-stop-shop for the shippers.

Depending on the requested credit limit and the shipper's financial data, Energinet.dk either grants the credit limit accordingly or requests additional securities. In addition, online data access agreements and communication tests are required before a shipper is allowed to book capacities.

(3) Balancing as well as imbalance settlement is handled by the TSO. The shipper may conclude a Balancing Service Agreement with Energinet.dk. A Balancing Service Agreement means that the shipper is allowed to increase its balance margin within the quantity limits specified in the Balancing Service Agreement, thus avoiding balancing charges.

(4) Shippers book capacity at cross-border points on PRISMA Primary. For the domestic exit zone, shippers also need to book capacity at ENDK (using an FCFS mechanism). However, capacity at the (virtual) domestic exit point is also subject to requirements with regards to the consumers' portfolio to prevent hoarding. Traders that are only active on GTF (Gas Transfer Facility) or NPTF do not need to book capacity.

(5) The access to the VP is an integral part of the E/E system: in order to become a shipper the market party must sign the FA with TSO, and the FA extends to capacity, balancing and VP. GTF is the virtual trading point for bilateral contracts, NPTF the spot market. Both are freely accessible for all shippers. No transmission capacities are required if shippers trade only at GTF, NPTF or storage points. In order to trade gas at NPTF an additional registration with Nord Pool Gas is required.

(6) Gas suppliers have to enter into a framework agreement with ENDK and into consumer handling agreements with DSOs of distribution areas (where they potentially supply to concumsers). Gas supplier may only act as a gas supplier in the distribution networks for which the gas supplier is registered in the register of players as having a gas supplier agreement and have accepted the provisions of rules for gas distribution.

Tariff Structure and Capacity Products

ENDK operates a decoupled entry-exit model with separate tariffs for the three cross-border points, the domestic exit zone and the biogas entry. The network is considered as one market area and one balancing zone. There are no dedicated on-shore pipeline systems for cross-border transport. Cross-border transport is integrated into the overall tariff system. Capacity at Ellund and Dragor is auctioned via PRISMA Primary with the regulated tariffs serving as reserve price. For all entry and exit points, as well as the exit zone, the same procedure applies. In addition, a commodity charge for transported volumes applies at domestic and cross-border exits for capacity charges based on booked capacity. Together with capacities, a balancing tolerance margin is allocated free of charge (c.f. Balancing).

Capacity is regularly only available up to an annual basis, with the booking window starting only three months before the relevant gas year.

Given the simple structure and the largely predetermined flows (in particular before physical entry at Ellund was enabled, the implementation of the entry-exit system should not have posed a problem in terms of uncertain load flow patterns, etc.)

There are no fees for GTF, secondary capacity and balancing margin markets.

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commo-dity	Notes
Entry	F/ I[67]	F/ I	F/ I	F/ I	--	DKK/kWh/h/a	--	(1)
Domestic exit	F	F	F	F	--	DKK/kWh/h/a	DKK/kWh	(1)
Border exit	F / I	F/ I	F/ I	F/ I	--	DKK/kWh/h/a	DKK/kWh	(1)
Biogas entry	F / I	F/ I	F/ I	F/ I		DKK/kWh/h/a	--	(1, 2)
		(3)	(3)	(3)				

(1) Interruptible capacity is only offered when sufficient firm capacity cannot be offered. Since October 2012, only one interruptible product is offered per point. Interruptible capacity is offered at a 5% discount for Dragor and entry at Ellund, a 10% discount applies for exit at Ellund. Discounts match expected probability of interruptions. Annual capacity tariffs are 9.48 DKK/kWh/h/yr (1.27 €/kWh/h/yr[68]) for entry points, the exit zone and cross-border exit. The commodity charge is 0.00109 DKK/kWh (0.000134 €/kWh). Since 2005, nominal tariffs have decreased substantially.

(2) The interruptible capacity charge for biogas entry is 100% of the firm capacity charge.

[67] F = firm, I = interruptible

[68] Based on average exchange rate 2011:, 1 €= 7.46 DKK, European Central Bank

[%]	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Qua	38.5	38.5	38.5	70.0	70.0	70.0	21.7	21.7	21.7	16.8	16.8	16.8
Mth	7.0	10.5	21.0	24.5	24.5	21.0	10.5	5.6	5.6	5.6	5.6	5.6
Day	0.29	0.40	0.80	0.99	0.99	0.80	0.40	0.26	0.26	0.26	0.26	0.26

Tariff calculation and division of cost		**Notes**
Tariff model	Entry-exit	
Role of NRA	Methodology approval	(1)
Price control mechanism	Cost-plus / Auction	(2)
Tariff calculation methodology	Uniform	(3)
Entry/exit split	50/50	
Capacity/commodity split	75/25	(4)
National/cross-border distinction	None	
Locational or uniform tariffs	Uniform	
Charging basis (booked capacity/other)	Booked capacity	

(1) DERA approves the tariff calculation methodology ex ante, but has to be informed about resulting tariffs and can demand for amendments.

(2) ENDK's revenues are determined on a cost plus basis, with separate accounts for the gas and power network. Tariffs are derived based on the allowed tariff calculation methodology. However, for annual, quarterly and monthly capacities at Ellund and Nybro the actual prices are determined through auctions with tariffs serving as reserve prices.

(3) In order to accommodate new investments needed to secure future gas imports at Ellund, it is planned to (partly) deviate from uniform tariffs as of October 2013.

(4) The split is expected to change from the existing 75/25 after October 1st, 2013 where the volume based tariff will increase and the capacity charge will be lowered. The exact ratio between volume/capacity will depend on the capex/opex ratio of the underlying cost base and may therefore change over time.

Capacity allocation		Notes
Capacity allocation mechanism	Auction/FCFS	(1)
In case of congestion	--	
In case of new capacity	Open Season	
Priorities in capacity allocation		(2)
Customer type	--	
Duration	--	
Congestion management procedures	Auction	(3)

(1) Transmission capacity for Ellund and Dragor is auctioned using a volume-based, cleared-price auction. All other capacities are allocated according to the FCFS principle. It is scheduled that Denmark will take part in the European capacity allocation platform planned to start operation in 2013.

(2) Given the auction calendar and the allocation schedule respectively, annual capacity is allocated with priority, apart from capacity reserved for daily capacities (10%). Additional short-term capacities are made available based on what remains unallocated after allocation of annual capacities.

(3) Currently only applied at Ellund and Dragor.

Capacities can be freely traded on the secondary market (Capacity Transfer Facility, CTF).

Reservation of capacities			notes
Point	***Reason***	***Amount***	
Entry points	Short-term/daily	10%	(1)
Exit points	Short-term/daily	10%	

(1) Availability of capacity secured for daily capacity allocation, applicable only at Ellund and Dragor. Recent data on capacity bookings (i.e. since October 2011) show a very hesitant use of daily capacities at Ellund and a somewhat higher interest in daily capacities at Dragor. At the moment, the booking of annual capacities seems to prevail.

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on a daily basis	
Number of tolerance levels	1	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Market based imbalance fee	
Imbalance fee	External price + Multiplier	(1)

(1) Denmark charges only the imbalances above the granted tolerance level. The imbalances below the tolerance level are rolled over.

Denmark has a daily balancing regime in which pooled imbalances of each shipper are settled separately. Shippers are granted a free tolerance margin of +/-3%, shippers delivering biogas are granted a 15% tolerance margin. Additional tolerance margins are available through auctions from ENDK and the secondary market where shippers are free to sell their basic 3% margin as well as any additionally acquired balancing margins.

Market Environment and Trading[69,70]

Volumes	TWh/year	Notes
Indigenous production	81.7	(1)
Import	4.2	
Export	36.1	
Consumption	48.0	
Traded volumes	~32.0	(2)

(1) 2011 data from Eurostat. The larger part of Danish gas demand is covered by domestic production from North Sea gas fields owned by Danish Underground Consortium (DUC), consisting of Maersk, Shell and Chevron. DONG Energy has control over 80% (2010) of the Danish production volumes, mostly by long-term contracts with DUC, but also by its own production. In order to limit DONG's market power, DUC was obliged to sell 17%

[69] DERA, 2011 National Report to the European Commission

[70] Information based on www.energinet.dk, www.nordpoolgas.com and DERA, 2011 National Report to the European Commission

of its volume to outside parties and DONG was obliged to release 400 mcm/year from 2009 to 2013 (through swaps at TTF, NCG and GPL; also NBP in 2009).

According to a 2010 survey of DERA, 90% of the traded volumes on the wholesale market was traded under long-term contracts (oil-indexed, ToP), only 9% was traded OTC and only 1% was traded on the spot market (2009 data, spot traded volumes increased singnificantly since then, as is shown below). Traded volumes on GTF and NPTF were approximately 32 TWh in 2010 (rising tendency) of which roughly 4.5 TWh was traded on NPTF.

Until physical entry at Ellund was enabled in 2011, Denmark was relying on its own offshore production, while exporting gas to Sweden and Germany and, directly from offshore production through the NOGAT pipeline, to the Netherlands. The market is still dominated by long-term contracts (traditionally oil-indexed), but since 2010 hub price-indexed contracts gained importance.

The Danish system has a virtual trading point, GTF, and gas exchange, Nord Pool Gas. GTF is the virtual point for bilateral title transfer. NPTF is the transfer point for the gas exchange. At the exchange only physical trade is possible, allowing within-day up to month-ahead and swaps with German market places. GTF and NPTF are freely accessible for all shippers, no transmission capacities are required if shippers trade only at GTF, NPTF or storage points. However, traded volumes are very small, thus the spot market lacks illustration of the representative market price. NPTF prices are linked to prices in Germany and the Netherlands as long as the physical connection at Ellund is not congested.

Trading		Notes
Trading volume	32 TWh	(1)
Spot (Nord Pool Gas)	4.2 TWh	(2)
OTC (GTF)	27.5 TWh	
Other	--	
Participants (number)	27	(3)
Churn rate	0.7	

(1) The market is dominated by long-term contracts, traditionally oil-indexed, but since 2010 hub price-indexed contracts gained importance. According a DERA survey (2010), 90% of the traded volumes on the wholesale market were traded under long-term contracts (oil-indexed, ToP) in 2009 only 9% were traded OTC and only 1% were traded on the spot market. Trade volumes on GTF and Nord Pool Gas were rougly 32 TWh in 2010, rising tendency, of which approximately 4.2 TWh were traded on Nord Pool Gas, i.e. around 10% of Danish consumption (compared to 1% in 2009).

(2) Similar volumes for 2010 and 2011. Trade volumes for 2012 are significantly higher with approx. 4.7 TWh already for January – September. The average number of trades per day

is around 30 to 40 during winter and roughly 20 during summer. The predominant product traded (by number and volume) is day-ahead. The average market share in 2012 (based on Danish consumption) is reported as 18%. HHI has been decreasing during recent years, with 13% in 2012.

(3) According to ENDK, 27 shippers are registered, and in principle, able to get access to GTF and NPT. 19 participants are listed for Nord Pool Gas. At Nord Pool Gas only physical products are traded, participants have to be registered as shippers at ENDK.

Additional Comments

The Danish gas market was liberalised in 2004 and the transmission model has been continuously adjusted to ongoing developments. The new system, valid since October 2012, has witnessed slight changes in the tariff design; future changes in tariffing and capacity allocation are expected.

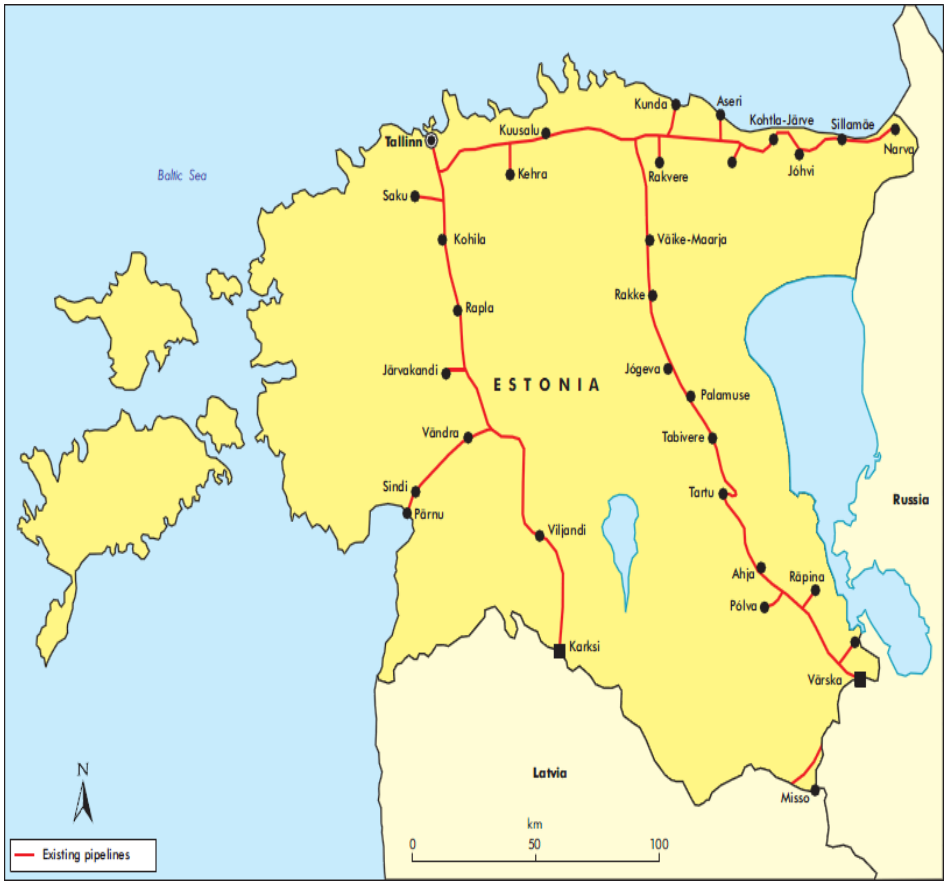
The tariff structure still shows a strongly profiled seasonality for short-term tariffs, where the sum of several short-term products may easily exceed the cost of matching annual products. With the new Network Code on tariffing, a revision of short-term product prices is expected for 2013. In addition, plans are underway to implement differentiated capacity tariffs (development in relation to the new Ellund-Egtved pipeline loop) and a changed capacity/commodity split in 2013/2014.[71]

The planned change in tariff methodology from October 2013 is under review by the Danish Regulatory Authority (DERA) who has to approve (ex ante) any change in tariff methodology.

[71] ENDK, Shippers' Forum, 20. September 2012

7 ESTONIA

Network Topology
The Estonian transmission network has two interconnection points with Russia: one point is located in the northeast of Estonia at Narva, the second is located in the southeast at Värska. The Narva entry point is used only limitedly due to congestion problems towards the Russian border. In addition Estonia has one connection with Latvia at Karski, which allows Estonia to use the storage facility in Inčukalns, Latvia. The transmission system has an abundent capacity to easily satisfy the current and expected peak demands.



Network topology		Notes
Network length high pressure (km)	880	(1)
Pressure range TSO (bar)	<38-55	(2)
Import capacity (GWh/d)	107	(3)
Export capacity (GWh/d)	0	
Storage (bcm)	0	
LNG (bcm/year)	0	
TSOs (name)	EG Võrguteenus	(4)
DSOs (number)	26	(5)

(1) Total length of the transmission system with a pressure level of more than 16 bars is approx. 880 km. In addition, there is about 2,035 km of distribution lines in Estonia. In the year 2010, 16.1 km of new natural gas pipelines were built[72]. There are no compressor stations in Estonia; the required pressure levels are maintained by either the compressor stations in the Russian transmission network or the Inčukalns underground gas storage located in Latvia.

(2) The maximum operating pressures in the Estonian gas network range between 38 and 55 bar. The maximum operating pressure (MOP) of the west to east pipeline in northern Estonia is 38 bar, whereas the MOP in the other pipelines is 55 bar.

(3) The Estonian transmission system is connected to Russia (with OOO Gazprom transgaz Saint-Petersburg) at Narva and Värska, and with Latvia at Karski (JSC Latvias Gaze). Normally, the Narva connection is not used due to congestion problems on the Russian side of the transmission system. Technical import capacities are 194 MW (4.66 GWh/d) and 1,555 MW (37.32 GWh/d) from Narva and Värska respectively and 2,721 MW (65.30 GWh/d) at Karski. Driving total capacity to 107.28 GWh/d.

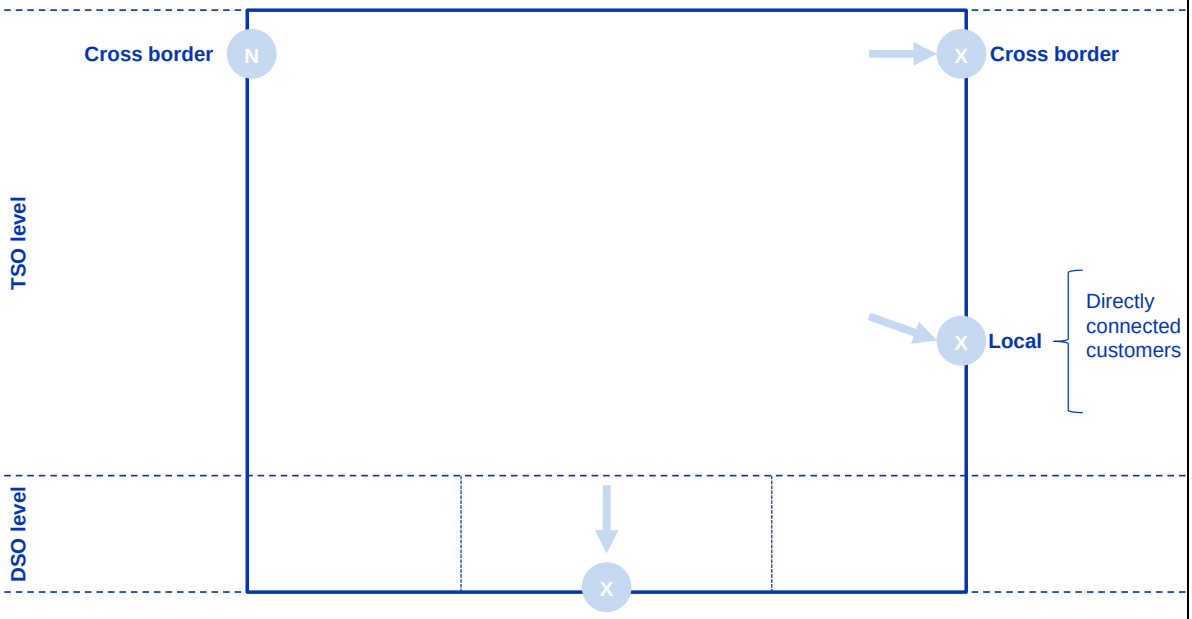
(4) EG Võrguteenus is the TSO of the gas transmission system in Estonia. Besides the transmission system, it also possesses the largest distribution network in Estonia. EG Võrguteenus is wholly owned by AS Eesti Gaas, the sole importer and main gas supplier in Estonia. Eesti Gaas has four major shareholders: Gazprom, Ruhrgas GmbH, Fortum Heat & Gas OY and Itera. Therefore, EG Võrguteenus acts as an Independent System Operator (ISO). Although Estonia is derogated from the EC's unbundling requirements, the draft Natural Gas Act requires full ownership unbundling from January 1st, 2015 onwards.

(5) Next to EG Võrguteenus, there are 25 other DSOs. EG Võrguteenus supplies 43,500 customers and has a market share of around 92%. The remaining DSOs usually supply only 1,000 customers or less with an annual sales volume of 10 million m^3.

[72] Estonian Competition Authority, "Estonian electricity and gas market 2010", Tallinn 2011.

Design of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in Estonia as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Estonia does not have a virtual trading point, nor explicit contractual realations regarding transmission or distribution capacity.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader							
Shipper							
Supplier	1/2					3	
Contracting party	NRA					NRA	

(1) The roles of trader, shipper and supplier are not distinguished. The major network user is Eesti Gaas (the sole importer and main supplier).

(2) Separate licences are granted by the Estonian Competition Authority for the provision of transmission and distribution services and for the importation and sale of gas. The latter two are relevant for new market entrants. The applicant has to meet the following requirements in order to obtain a licence:

- Entry in commercial register - Only private or public limited companies entered in the commercial register or being founded may apply for a gas importation licence or gas sales licence.
- Technical capabilities - Furthermore, the company is required to have sufficient technical capabilities and skilled personnel to achieve operation levels which comply with requirements set through legislation, environmental protection and occupational safety.
- Financial requirement - The network operator and the company's share capital should be at least € 31.940

The licences are issued by the NRA and costs are € 639.11 and € 255.64 per year repectively for importing and selling gas.

(3) Retail distribution and supply of gas is an integrated business, thus most DSOs also

supply gas to end consumers. The same supplier licence is required as described above.

Tariff Structure and Capacity Products

Tariff structure	Products					Tariff basis		Notes
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	
Entry	--	--	--	--	--	--	--	(1)
Domestic exit	F	--	--	--	--	--	€/1000m^3	(2)
Border exit	F	--	--	--	--	--	€/1000m^3	

(1) Estonia has a postage stamp commodity tariff, it's only applied at exit points, and therefore there is no entry tariff in Estonia. The transmission tariff is 8.79 EUR per 1000 m^3.

(2) The minimum duration of a transmission contract is one year. There are no discounts applied for multi-annual contracts.

Tariff calculation and division of cost		Notes
Tariff model	Postage stamp	
Role of NRA	Approves	(1)
Price control mechanism	Revenue cap	(2)
Tariff calculation methodology	Uniform	
Entry/exit split	--	
Capacity/commodity split	--	
National/cross-border distinction	Ex-post regulation for transit tariffs	(3)
Locational or uniform tariffs	Uniform	(4)
Charging basis (booked capacity/other)	Booked or actual usage	(5)

(1) The Estonian Competition Authority approves all individual network charges submitted by the network operator as well as the methodology for the calculation of the connection charges. Both are approved on an ex-ante basis, with the exception of the transit of gas tariff, which is regulated on an ex-post basis (i.e. supervision of the price).

(2) The Estonian Competition Authority applies revenue cap regulations to the TSO (except for transit tariffs, which are regulated ex-post). The default regulatory period is three years, but can be altered on the request of the regulated company. There is an annual reset of under or over recovered revenue.

(3) There is an explicit difference between the regulation of tariffs for the supply of domestic customers and transit gas flows. Tariffs for the supply of domestic customers are regulated on an ex-ante basis, whereas tariffs for the transit of gas are determined ex-post.

(4) The applied postage stamp model implies that there are no locational signals in the network tariffs of EG Võrguteenus.

(5) Depending on the contract, charging is based on either the actual volume of gas taken from the system or the booked capacity in the system.

Capacity allocation		Notes
Capacity allocation mechanism	FCFS	(1)
In case of congestion	--	(2)
In case of new capacity	--	(3)
Priorities in capacity allocation		
Customer type	--	
Duration	--	
Congestion management procedures	--	(4)

(1) Capacity is allocated according to a First-Come-First-Served procedure.[73]

(2) Currently, the Estonian transmission system has abundant capacity with a maximum deliverability of approximately 11 million cubic meters per day. In 2009 Estonia's peak demand was only 4.4 million cubic meters per day.[74]

(3) EG Võrguteenus doesn't specify any conditions for the allocation of new capacity.

(4) Currently, the transmission system has abundant capacity and there is only a single supplier of gas to Estonia. Therefore, there is no need for special congestion management systems. The Estonian TSO EG Võrguteenus does not expect any shortage of capacity until 2016.[75]

[73] Pöyry, "Liberalization of the Estonian gas market", October 2011

[74] Ibid

[75] Estonian Competition Authority, "Estonian electricity and gas market report 2010", Tallinn 2011

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	No	
Number of tolerance levels	None	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Gas-in-kind compensation	
Imbalance fee	N/A	

Theoretically, each market participant is responsible for its balance position. The balancing period is one 24-hour period. The balance position of a market participant is not related to the nominated or allocated gas quantities in the transmission network, but is related to the contracted and sold volumes of gas. In fact, the balance of a market participant is defined as the quantity of gas agreed upon by the sales contract and the quantity of gas consumed or re-sold by the market participant. Therefore, the balance in the transmission system is the same as the 'balance' of the participant's gas supply agreement.

Operational balancing is organised as follows: the TSO, EG Võrguteenus, is responsible for the operational balancing of the transmission network. There may be several balance providers on the market, however due to the lack of competition in the wholesale market, Eesti Gaas is the only provider of balancing for consumers and other network operators. Furthermore, this balancing service is included in the price of gas.

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	0	
Import	6.5	(1)
Export	0	
Consumption	6.5	
Traded volumes	--	

In 2011 total natural gas consumption amounted to just over 700 million cubic meters. More than half of this volume was used for the production of electricity and heat (363 million m^3).

Competition is absent in the Estonian wholesale market for gas; AS Eesti Gaas is the only company active. AS Eesti Gaas is the sole importer of natural gas from Russia, Estonia's only source of supply. Given these circumstances, it is not expected that competition will emerge in the near future.[76]

Notwithstanding the above, Eesti Gaas and Gasum signed a Memorandum of Understanding on December 21st, 2011 for the creation of a natural gas exchange in Estonia. This MoU should be one of the first steps in creating a single Baltic market for natural gas; which would include Finland, Estonia, Latvia and Lithuania. In November 2011 Gasum also signed a similar agreement with Lithuanian gas company Lietuvos Dujos.[77]

Gas is imported under a long-term contract ending in 2015.[78] The contractual gas price is determined by a formula that considers heavy and light fuel average oil prices (in USD/ton) for six months (nine months since 2011) proceeding to the accounting month, taking into account the USD/EUR exchange rate.[79]

In contrary to the wholesale market, the retail market has been fully opened to competition. However, AS Eesti Gaas also has a dominant position in the retail market with a market share of 89% (2008). The remaining 11% is divided between the other parties on the retail market, which are the different network undertakings. These network undertakings purchase their gas from AS Eesti Gaas and resell it to their customers. Since AS Eesti Gaas remains the dominant supplier on the retail market, gas prices charged to household customers are subject to approval by the Estonian Competition Authority. 1,674 consumers changed their supplier in 2010.

Trading	Notes
Trading volume	--
Exchange spot (TWh)	--
Exchange futures (TWh)	--
OTC (TWh)	--
Participants (number)	--
Exchange spot	--
Exchange futures	--
OTC (TWh)	--
Churn rate	--

[76] Ibid

[77] http://www.bloomberg.com/news/2012-01-03/finland-s-gasum-estonia-s-eesti-gaas-plan-natural-gas-exchange.html

[78] Pöyry, "Liberalization of the Estonian gas market", October 2011

[79] Estonian Competition Authority, "Estonian electricity and gas market report 2010", Tallinn 2011

8 FINLAND

Network Topology[80]

The natural gas market in Finland is relatively isolated and small. Finland doesn't have direct connection to the natural gas network of another EU member state. Finland has one single pipeline to Russia. The whole transmission system is owned and operated by the only TSO, Gasum. Further investments in the gas network (such as its expansion to the western part of Finland, as well as the construction of a new interconnector linking the Finnish, Estonian and Latvian natural gas grids) are currently under consideration.

Network topology		Notes
Network length high pressure (km)	1,187	(1)
Pressure range TSO	35-54 bar	(2)
Import capacity (million Nm³/d)	11.2	(3)
Export capacity (Nm³/d)	0	(4)
Storage (bcm)	--	(5)
LNG (bcm/year)	--	(6)
TSOs (name)	Gasum	(7)
DSOs (number)	23	(8)

(1) The total length of the gas transmission network is 1,187 km.

The TSO is planning to expand the natural gas transmission network to the western part of Finland where currently no natural gas pipeline exists. However, impacts of the current energy taxation system on the competitiveness of assorted fuels may present possible delays to the project.

Gasum is examining the feasibility of constructing a pipeline (so called Balticconnector) to link Finnish, Estonian and Latvian natural gas networks, which would enable the Latvian natural gas storage facilities to be used to improve reliability in natural gas transmission to Finland.

(2) Pressure range is between 35- 42 bar in summer, max 54 bar in winter. Pressure in the TSO´s network is controlled by the operator. TSO (Gasum) owns the pressure regulation and metering stations.

(3) Imatra entry is 11.2 million Nm³/day.

[80] Information in this section is based on Input for Initial Impact Assessment for draft FG for harmonised Gas Tariff structures, ACER, June 2012; Annual report to the European Commission, Finland, 2011; http://www.energiamarkkinavirasto.fi; Gasum´s Annual Report 2011 and www.gasum.com

(4) Finland has no border exit points.

(5) There are no storage facilities in Finland.

(6) Gasum is considering building an LNG terminal to expand natural gas sourcing in Finland.

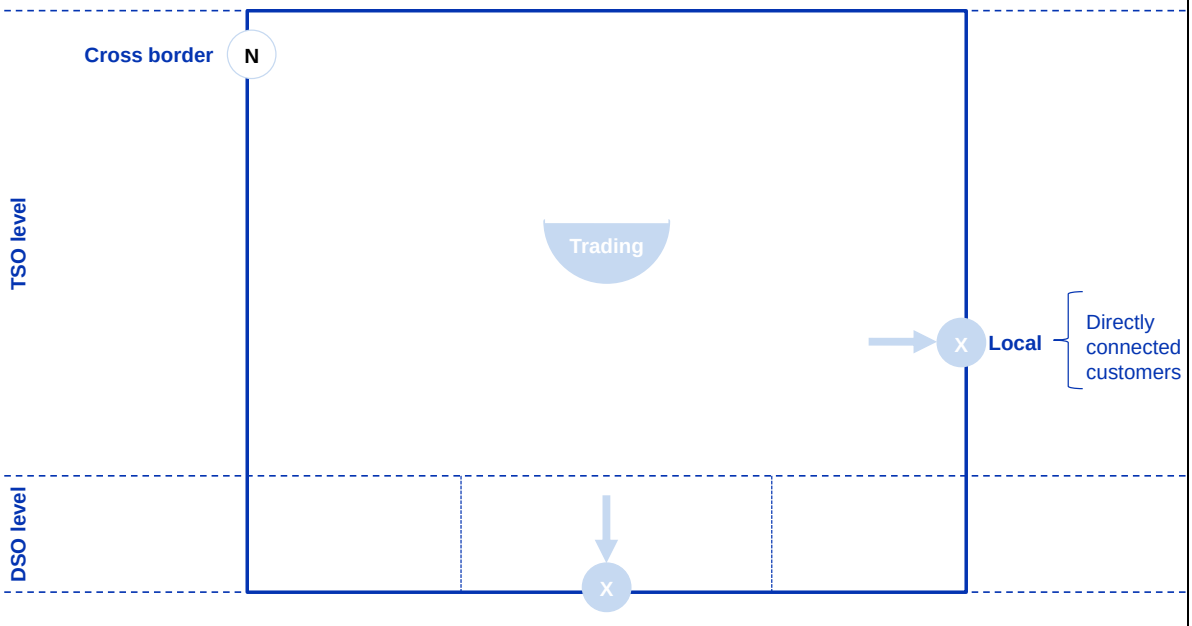
The Baltic Energy Market Integration Plan, proposed by the Commission Finland, would open up the possibility for Finland to subsequently begin the importation of LNG as a joint venture carried out among the region´s natural gas companies.

(7) The whole transmission system is owned and operated by Gasum, who is the only TSO and the single importer and wholesale supplier for gas in Finland.

(8) Local distribution accounts for around 5% of Finland's natural gas sales.

Design of the Entry-Exit System[81,82]

The figure below gives the schematic representation of the entry-exit system in Finland as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



[81] Information in this section is based on DERA, 2011 National Report to the European Commission; Annual report to the European Commission, Finland, 2011; IEA Statistics, Natural Gas Information 2011; Input for Initial Impact Assessment for draft FG for harmonised Gas Tariff structures, ACER, June 2012

[82] Information in this section is based on www.energiamarkkinavirasto.fi and Annual report to the European Commission, Finland, 2011

Symbol	Explanation
N	The TSO (Gasum) operates a postage-stamp system.

The natural gas market is characterised by vertical integration. The wholesale supplier of natural gas (Gasum) is the sole importer and operator of the transmission system. Furthermore, it is vertically integrated into retail supply and distribution network operation. Finland has availed itself of the possibility of an exemption of legal and operational unbundling specified in the Natural Gas Directive. The exemption is effective if the following remains: a) Finland does not have a direct connection to the natural gas network of any other EU Member State, b) Finland has only one main natural gas supplier. Gasum operates a postage-stamp system with one entry point, without any border or storage exits. There is a gas exchange (Kaasupörssi) operated by a subsidiary of Gasum

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader				1			
Shipper							
Supplier							
Contracting party				TSO			

(1) The sale of natural gas is not subject to a licence. There is no need for capacity allocation mechanisms since only one wholesale supplier (Gasum) is present in the market. Thus, reservations for capacities are not relevant here. There is no distinction between shipper and gas supplier due to the Finnish shipper and gas supplier being one entity.

Tariff structure and Capacity Products[83]

Gasum operates one postage-stamp system. As Finland is an isolated market with no current connections to the European interconnected gas network, there are no transit contracts. The network is considered as one market area and one balancing zone. There is no need for a capacity allocation mechanism since Gasum is the single TSO and importer in Finland. Transmission charges consist of fixed charges related to annual capacity reservations as well as variable-rate charges based on the volumes of gas transmitted. In the beginning of 2011 Gasum increased wholesale transmission prices by 9%.

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commo-dity	Notes
Entry	--	--	--	--	--	--	--	(1)
Domestic exit	F/I	F/I	F/I	F/I	--	EUR/MWh	--	(2)
Border exit	--	--	--	--	--	--	--	(3)
	(4)							

(1) Since Gasum is the only natural gas importer and sole TSO in Finland, there is no need for entry capacity management.

(2) Wholesale customers' gas procurements are based on supply and connection agreements and the annual orders which supplement given agreements, in which the customer determines the annual maximum capacity for gas transmission as well as the amount and capacity of gas required per month. Month-specific orders can be amended by customers over the year.

The overall price of natural gas comprises two parts: (the sales of) natural gas energy and the transmission of gas. The price of the reserved capacity is 15-25% of the total price of natural gas.

The tariffs are differentiated by annual gas volumes, number of usage hours and peak capacity.

The charges are not calculated based on distance.

(3) Finland has no current connections to the European interconnected gas network; therefore the transmission system has no border exit points.

(4) The basic contract duration for transmission tariffs is one calendar year. Additional capacity in excess of already booked capacity is available subject to free transmission capacity.

[83] Information in this section is based on Transit Contracts in EU Member States, Results of the ACER inquiry, 2012 Draft version (Final); Annual report to the European Commission, Finland, 2011; www.gasum.com; http://www.energiamarkkinavirasto.fi; Natural Gas Market Act 508/2000 and Input for Initial Impact Assessment for draft FG for harmonised
Gas Tariff structures, ACER, June 2012

Tariff calculation and division of cost		Notes
Tariff model	Postage-stamp	
Role of NRA	Methodology approval	(1)
Price control mechanism	Revenue cap	
Tariff calculation methodology	Uniform	
Entry/exit split	None	(2)
Capacity/commodity split	None	(3)
National/cross-border distinction	None	(4)
Locational or uniform tariffs	Uniform	
Charging basis (booked capacity/other)	Booked capacity	

(1) Tariffs are set by Gasum based on the tariff methodology approved by NRA for the regulatory period.

(2) Since the Finnish transmission system has one single entry point and no border exit point, a split of costs between entry and exit points is not of relevance.

(3) Only capacity charges are applied.

(4) Transit contracts don not exist in Finland.

There is no need for capacity allocation mechanisms since only one wholesale supplier (Gasum) is present in the market. Thus, reservations for capacities are not relevant here. There is no distinction between shipper and gas supplier due to the Finnish shipper and gas supplier being one entity. Due to this special situation, we have the impression that the secondary market doesn't trade using gas contracts, but in practice participants buy/sell unused delivery capacity. A real secondary capacity market does not exist.

Balancing and Imbalance Settlement[84]

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	Other	(1)
Tolerance provided	No	
Number of tolerance levels	None	
Balancing gas procurement	Other forms than wholesale or balancing market	

[84] Information in this section is based on EMV, 2011, Annual report to the European Commission and ACER answers to DG ENER Questionnaire on Balancing to ACER and ENTSOG

Imbalance settlement	Gas-in-kind compensation	
Imbalance fee	N/A	

(1) In Finland in case of imbalances the TSO intervenes by increasing the price of the "very short term products" which are the deliveries above prebooked volumes. This intervention can be seen as a sort of WDO as the action is carried out on hourly basis.

TSOs and DSOs are in the same hourly based balancing regime. There is no direct imbalance charge, but deliveries above prebooked volumes are sold by the sole gas wholesale seller as "very short term product". The secondary market can also be used to balance gas demand in a day-ahead market. The balancing period applied to natural gas trading on the Kaasupörssi Oy (natural gas exchange) is one hour. The settlement of imbalances is available on-line in the SCADA system. At the moment, the Finnish system is not a pure balancing regime due to the following: a) vertical integration, b) deliveries over prebooked amounts belong to the gas wholesale seller (only during transmission system needs will the TSO take over balancing).

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	0	(1)
Import	43.4	(2)
Export	0	(3)
Consumption	43.4	
Traded volumes	24.45	

(1) Finland has no production of natural gas. Only propane is produced indigenously; it is the only gas to be stocked in small amounts by Gasum as an immediate substitute for lack of natural gas scenarios.

(2) Finland has mainly one gas supplier; all gas available in Finland is supplied from Russia. Gasum has anoil and coal indexed long-term supply contract with Gazprom Export for Russian natural gas imports (expiring in 2026); prices of natural gas follow the fluctuations in domestic market energy prices.

(3) Since the Finish transmission network has no border exit point, export of natural gas is not possible.

The wholesale supply of natural gas to the Finnish end-users and retailers is for the majority of the users based on public tariff. However, there are few whole-sale customers who still continue to buy natural gas based on fixed-term contracts. The contracts concluded before the Natural Gas Market Act entered into force, providing a significantly lower price than Gasum currently applies

to its customers. The TSO (Gasum) is the single importer and wholesale supplier for gas, selling to roughly 50 final users. Universal service suppliers don't exist explicitly. However, since the Finnish gas market has not been fully opened to competition and there is only one importer/wholesaler (Gasum). The retail supply of natural gas covers only about 5% of total consumption. 50% of total volume is represented by the top three retail suppliers.

The wholesale market and OTC are the same.

Kaasupörssi Oy, a subsidiary of Gasum, has been operating a secondary market with a separate market place since 2002. Here natural gas users, with a consumption of more than 5 million cm and with remote metering, can trade to balance their gas demand day-ahead. Almost all major Finnish natural gas users have joined the gas exchange. Since 2006, Gasum offers short-term product, Gasum Plussa, on the trading platform of the gas exchange. The secondary market is about 5–10 % of the wholesale market.

In late 2011 Gasum signed a memorandum of understanding (MOU) with leading Lithuanian and Estonian natural gas companies on development projects aiming to establish jointly owned natural gas exchanges in the Lithuanian and Estonian markets. The MOUs strengthen the long-term objective for Finland and all Baltic States to function as one single market with a regional gas exchange.

Trading	Twh	Notes
Trading volume	24.45	(1)
Spot (Kaasupörssi Oy, Gasum Plussa)	2.45	(2)
OTC	22.0	(3)
Other	--	
Participants (number)	27	(4)
Churn rate	--	

(1) In 2010 the share of wholesale supply sold under public tariffs was about 75%.

(2) The total volume of GFP (gas physical forward) trading in 2011 amounted to 2,445 GWh, down almost 40% on the year before (3,981 GWh in 2010). Secondary market trading accounted for 732 GWh in 2011, while the volume of Gasum Plussa achieved 1,713 GWh. GFP trading accounted for 6.3% of total natural gas consumption in Finland. The value of trading was 66 million EUR. The number of secondary transactions on the gas exchange totalled 60,000 and Plussa transactions reached 32,000 (2011).

(3) Contract-based trading covers some 90% of the wholesale market.

(4) As many as 27 companies currently trade on the Kaasupörssi Oy gas exchange.

9 FRANCE

Network Topology[85]

The French transmission system consists of approx. 38,000 km of pipeline network operated by two TSOs, GRTgaz and TIGF. There are more than 20 distribution system operators.

While most of France is supplied by high calorific gas, there's a small L-gas area in nothern France supplied with gas from the Netherlands.

France is one of the principal LNG importers in Europe. Three LNG terminals are operational (Fos Tonkin, Montoir-de-Bretagne and Fos Cavaou). A fourth LNG terminal is planned to be built in Dunkirk (expected commissioning date of 2015) with a capacity of 10-13 bcm/year.

There are 14 aquifer or salt cavern storage sites (installed capacity equal to 25% of annual consumption).

Network topology		Notes
Network length high pressure (km)	38,000	(1)
Pressure range TSO	67.7-90	(2)
Import capacity (GWh/d)	3,386.7	(3)
Export capacity (GWh/d)	333	(4)
Storage (TWh)	136.5	(5)
LNG (GWh/d)	780	(6)
TSOs (name)	GRTgaz, TIGF	(7)
DSOs (number)	>20	(8)

(1) Total length of the gas network (including DSOs) is approximately 233,000 km.

(2) Maximum operating pressures in the transmission system are between 67.7 and 90 bar, while regional networks are operated at a lower pressure between 20 and 40 bar.

(3) Dunkerque entry 585 GWh/d, Taisnieres entry 800 GWh/d, Obergailbach entry 1,162.7 GWh/d, Larrau entry 50 GWh/d[86], Biriatou entry 9 GWh/d[87], Montoir de Bretagne entry 370 GWh/d, Fos Tonkin entry 410 GWh/d.

[85] Information in this section is based on www.gasinfocus.com; CRE, 2011, National Report to the European Commission and CRE, Electricity and gas market observatory Q2 2012

[86] 30 GWh/d in winter and 50 GWh/d in summer

[87] 5 GWh/d in winter and 9 GWh/d in summer

(4) Oltingue exit 223 GWh/d, Larrau exit 100 GWh/d, Biriatou exit 10 GWh/d.[88]

(5) The underground French storage facilities are operated by Storengy (79% of French capacity), which manages twelve (12) storage facilities and by TIGF, which operates two aquifers sites in the South (21% of French capacity).

(6) France covers 28% of its annual gas consumption with LNG (155.6 TWh of LNG imports in 2010).

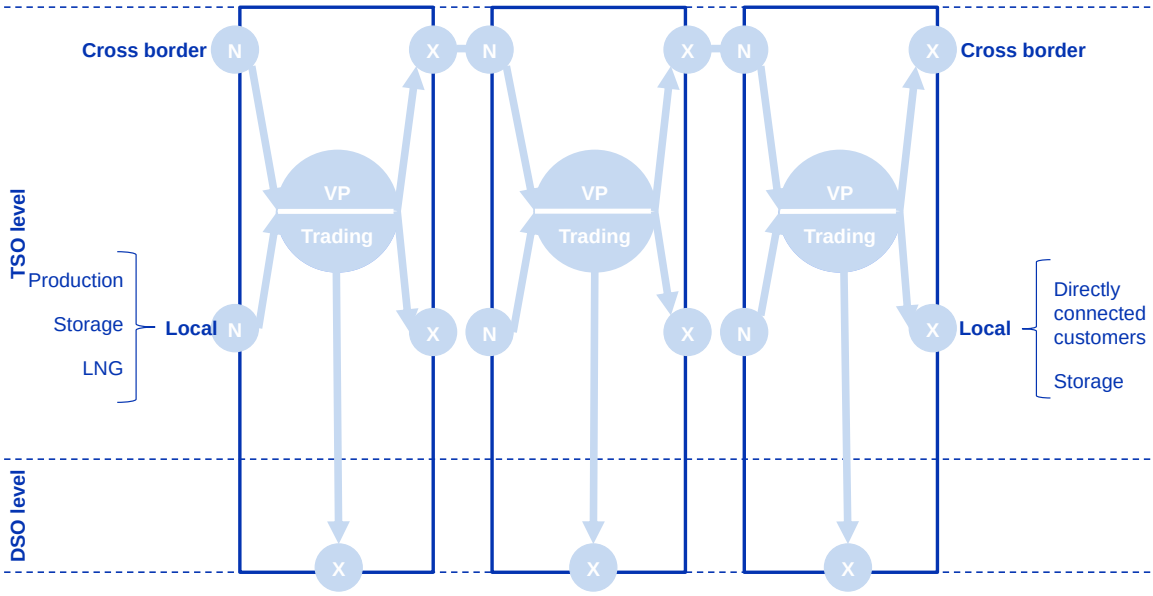
(7) GRTgaz operates the transmission system (of 32,000 km) in the North and the South zones (PEG Nord and PEG Sud); TIGF operates the transmission system (of 6,000 km) in the South-West zone (PEG SudOuest).

(8) Distribution system operators in France are GrDF, Regaz, Réseau GDS, and Gaz Electricité de Grenoble. GrDF controls about 170,000 km of the distribution network.

[88] Only in summer

Design of the Entry-Exit System[89]

The figure below gives the schematic representation fo the entry-exit system in France as seen from the shipper's perspective. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
X N	GRTGaz proposes partial bundling at Taisnieres H and at Obergailbach, and full bundling at Liaison Nord-Sud and PIR Midi. TIGF proposes also full bundling at Larrau and Birriatou.

There are 3 entry-exit zones in France, each corresponds to a balancing zone and each has a virtual trading point. The DSO level is not part of the balancing zones, but the quantities delivered to DSOs are taken into account to calculate the imbalance of each shipper in each balancing zone meaning that there are no imbalance settlements at DSO level. The regional network is integrated in the entry-exit system. The gas exchange (Powernext) offers spot contracts on all three PEGS and future contracts on the PEG Nord.

The table below gives an overview of the contractual arrangements which are in place for access to the entry-exit system. This table show the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

[89] Information in this section is based on www.cre.fr; CRE, 2010, Activity Report; ACER, 2012, Answers to the DG ENER Questionnaire on Balancing; CRE, 2011, National Report to the European Commission (in French); CRE, Electricity and gas market observatory Q2 2012; CRE, 2011, The French wholesale electricity, natural gas and CO2 markets in 2010-2011 and http://www.statistiques.developpement-durable.gouv.fr

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader	1		2/3			4	
Shipper							
Supplier							
Contracting party	Ministry	TSO	TSO	TSO	TSO	DSO	

(1) In France a trader license is essentially a type of supply license, classified as supply to non-end consumers (no distinction between physical and financial trading). In the context of this study, it is considered that there are separate licenses for supply and trading in France. A supply licence issued by the French Ministry of Ecology is required when a company wants to sell gas on French territory, including at the Title Transfer Points (PEG). Applicants shall prove their financial, technical and business capability, including forward-looking gas procurement plan for 5 and 10 years and evidence that the capacity necessary has been secured. More specifically the applicant must demonstrate that it has sufficient capacity to ensure in particular the provision of gas to its customers continuously. The applicant has to provide the following information.[90]

- Administrative information
- Proof of ability to secure gas supplies of final customers in relation to their consumption
    - List of upstream supply contracts (duration, suppliers, source countries, delivery point and entry point contracted volumes (for long term contracts Y-1 to Y+12), maximum daily volume that could be delivered for the current year, average monthly volume for the current year.
    - Actual or expected sales for each category of customer (Y-1 to Y+3)
    - Different scenarios clarifying how the shippers will supply gas to its different categories of customers in different cases (regular weather, regular weather with a 6 months interruptioin of the main supply during winter, regular winter, extremely cold winter and peak demand during

[90] Source: information provided by the French Regulatory Commission

three consecutive days (both with a statistical probability of once in 50 years). The shipper should specify the use of each category of supply source (long term contract, storage, spot market).

- A shipper delivering gas to more than 5% or 10% of the domestic market must subscribe capacity at two, respectively three entry points at least.

For traders (shippers which don't deliver gas to final customers or only their own company needs):

- List of contracts
- Traded quantities (sold or bought) on the different virtual trading points from Y-1 to Y+4.

We note that France is an example of demanding reporting requirements: all shippers have to present their delivery scenarios for different weather conditions to the relevant Ministry (for each category of customers and the use of each category of supply source) e.g. long term contract, storage and spot.

We also note that in addition to typical requirements associated with a license, in France a mandatory diversification of entry capacity bookings is additionally required (as described in the procedure overview above): suppliers delivering to more than 5% of the domestic market must book capacity at a minimum of 2 entry points, to more than 10%- at least at 3 entry points. In addition, the applicant has to submit a list of upstream supply contracts to the relevant Ministry (including their duration, suppliers, source countries, contracted volumes, as well as delivery point and entry point for the contracted volumes).

Such detailed requirements sometimes could appear cumbersome for some categories of market entrants.

(2) In France, there is a mandatory link between licensing and contractual relationship with the TSO: either a supplier or a trader license is a pre-requisite for becoming a shipper. To become a shipper on GRTgaz's network, the applicant must be in possession of a supply licence, then sign a transmission contract with GRTgaz and provide a payment guarantee.

We note that the access to VP in France is covered by a separate agreement, only available to suppliers (pre-requisite). As the VP access in France is covered by the transport contract (which can only be signed by the shippers, for whom a license is a prerequisite), in fact only market parties in possession of supply (or trade) license can gain access to VP.

(3) Prior to capacity booking parties need to sign a framework agreement with the TSO and provide the mandatory guarantee as well as the supply licence granted by the Ministry. The guarantee can be composed either of a first demand guarantee or a security deposit.

The amount of the guarantee depends on the capacity subscribed, but is equal to at least €100,000 for pure traders and 2 months of booked capacity for others. If the company's credit rating is good, it will be exempted from this guarantee. The gas transmission contract with the TSO also covers balancing requirements, there is no separate balancing contract used. Also access to the Virtual Trading Points is included in the transmission contract. If the shipper uses only the Virtual Trading Points a minimum guarantee of €100,000 euro is required. However, it is possible that suppliers (not traders) who use only PEGs are required to provide a lower amount of guarantee (€20,000). There is no distinction made between physical traders and paper traders.

(4) Each shipper present at a Transport Distribution Interace Point (PITD) will automatically receive an allocation of transmission capacity of GRTgaz corresponding to the capacity allocated on the distribution side of the (PITD). The standard subscription system consists in allocation by the GRT of transmission capacity (CGlobale) to the PITD up to the "1-in-50" severe demand peak capacity evaluated by GRTgaz in its winter analysis, plus the expected evolution of consumption over the upcoming year on the relevant PITD. Operationally, this means automatic allocation month by month of transmission capacity subscriptions to the PITD. (source: website GRTgaz).

Tariff Structure and Capacity Products[91]

Tariff structure	Products					Tariff basis		
	Annual	Seasonal	Monthly	Daily	Within-day	Capacity	Commo-dity	Notes
Entry	F/ I[92]	F/ I	F/ I	F/ I	--	€/MWh/d	--	(1)
Domestic exit	F/ I	F/ I	F/	F/ I	--	€/MWh/d	--	
Border exit	F/ I	F/ I	F/ I	F/ I	--	€/MWh/d	--	(1)
			(2)	(3)				

(1) Backhaul capacities are offered only at Taisnières H, Obergailbach, Oltingue, Larrau, price is 20% of firm capacities.

Releasable capacities, are applied to those shippers who have more than 20% of total capacity at congested IP. They correspond to 20%[93] (15% for Taisnieres B) of shippers´ annual firm capacities above the 20% of total capacity. These releasable capacities are

[91] Information in this section is based on ACER, 2012, Input for Initial Impact Assessment for draft FG for harmonised Gas Tariff structures; CRE, 2011, National Report to the European Commission (in French), www.grtgaz.com and www.tigf.fr

[92] F = firm, I = interruptible

[93] at IPs Dunkerque and Obergailbach

sold at 90% of the annual firm capacity price, but when released to other suppliers on demand they are sold at 100% of the annual firm capacity price. They are allocated in the form of Open Subscription Period (OSP) and sold for a term of 1-4 years.

Pricing of interruptible capacity is based on the probability of interruption: from 50% up to 90% of the price of the firm product. Interruptible capacity is also made available from non nominated capacity taken from shippers according to the UIOLI principle on short notice. The UIOLI is 1/500 of firm annual capacity or 1/1500 of total firm summer and winter season prices if all available capacity is sold (otherwise, the price to be paid is the one of the firm capacity).

Availability of the different interruptible capacity products depends on the specific entry/exit point: at GRTgazSud/TIGF link only seasonal interruptible capacity can be requested; at Larrau seasonal, monthly and daily products are available as well.

Bundled capacities are proposed by GRTgaz at Taisnieres H (monthly capacities in the direction Zeebrugge to PEG North and daily capacities in both directions) and at Obergailbach (monthly capacities from PEG North and NCG and daily capacities in both directions).

(2) Monthly tariffs are 1/8 of annual tariffs.

(3) Daily tariffs are 1/160 of annual tariffs.[94] Auction daily tariffs are 1/200 of annual tariffs.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	
Role of NRA	Determination	(1)
Price control mechanism	Revenue Cap Regulation	
Tariff calculation methodology	Uniform	
Entry/exit split	--	
Capacity/commodity split	100/0	(2)
National/cross-border distinction	None	(3)
Locational or uniform tariffs	Uniform	(4)
Charging basis (booked capacity/other)	Booked capacity	

(1) NRA is in charge of setting the tariffs upon the TSO´s proposal. They are then approved by the ministers of economy and energy.

(2) No commodity charge is applied in France.

(3) In France, transmission tariffs are applied in the same way to cross border and domestic

[94] Daily tariffs are exactly 2.3/365 annual firm capacity price

flows.

(4) Each exit zone of the TSO main network is defined by the set of delivery points attached to it. For all of the exit zones of a TSO, the charge applicable to the exit capacity is equalised. There is a discount proximity charge for shippers supplying consumers located close to the following entry point Taisnieres B, Taisnieres H, Dunkirk and Obergailbach.

Capacity allocation is done either based on the FCFS principle or by 'Open Subscription Period' (OSP) arrangements. In case of congestion capacity is allocated either pro rata or on first-come-first-served principle, depending on the respective TSO.

Capacity allocation		Notes
Capacity allocation mechanism	FCFS/OSP	(1)
In case of existing capacity	FCFS/OSP	(2)
In case of new capacity	Open Season	
Priorities in capacity allocation		
Customer type	--	
Duration	--	
Congestion management procedures	Releasable capacity, UIOLI, LUIOLI	(3)

(1) GRTgaz allocates long-term capacities based on the first-come-first-served principle, and the court-term and monthly capacities through an 'Open Subscription Period' (OSP). By allocation of capacities TIGF always applies an 'Open Subscription Period' (OSP) where all users can apply for capacity.

(2) If capacity is insufficient; the available capacity is distributed on a pro rata basis by GRTgaz, while TIGF applies the first-come-first-served principle.

(3) As mentioned before, releasable capacities are an important congestion management tool in France. Releasable capacities are applied to network users subscribing to a higher percentage than 20% of total firm capacity. They have to release (if there is a demand) 20%/15% of their booked capacity (for the part above the capacity which is above 20% of firm capacity), which is then offered in form of "releasable capacity" (regarded as firm capacity) to other market participants.

Capacity can be freely traded on secondary market on the platform Capsquare. The liquidity of Capsquare is still regarded as limited, as only 17.7 TWh/d of capacity have been traded in 2010. In general, property rights stay with the original shipper and only capacity rights (e.g. right to nominate) are exchanged. Therefore capacity charge shall be paid by the original shipper. However if the whole amount of capacity subscribed is traded, than property rights are exchanged as well.

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	Short-term	20%	(1)
Exit points	Short-term	20%	(1)
Link between GRTgaz North and GRTgaz South	Shorter than 4 years	20%	(2)

(1) Capacities of one year or less are required to present 20% of the whole capacity portfolio offered.

(2) Multi-annual capacity subscriptions limited to a duration of 4 years for the link between GRTgaz North and GRTgaz South may not make up more than 80% of total capacities.

Balancing and Imbalance Settlement[95]

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	ndividual tolerance on a daily basis	(1)
Number of tolerance levels	1	
Balancing gas procurement	Wholesale market	
Imbalance settlement	Market based imbalance fee	
Imbalance fee	External price + Multiplier	(2)

(1) Tolerances are granted to shippers delivering final customers. These tolerances vary between 5% and 8% depending on the delivery capacities to final customers.

(2) France charges the imbalances above the granted tolerance level at the external price plus 30% penalty. The imbalances below the tolerance level are rolled over.

In each balancing zone a daily balancing regime is applied, where a daily imbalance is calculated for each shipper. Tolerances are applied on network users which deliver final customers. These tolerances are proportional to the delivery capacities to final customers (5-8%).

GRTgaz´s and TIGF´s imbalance charge calculation methodologies are slightly different. For both TSOs, a first part of the daily imbalances (under the tolerance) are roll-over thanks to a

[95] Information in this section is based on ACER, 2012, Answers to the DG ENER Questionnaire on Balancing and CRE, 2011, National Report to the European Commission

cumulative imbalance account. A part of the daily imbalance is purchased or sold by the TSO, as applicable, at the daily balancing price which is market based (calculated on the basis of transactions on the organised gas market Powernext Gas). If the daily imbalance exceeds the Maximum Daily Imbalance, these quantities are charged at the balancing price plus a penalty (30 % of the market price). Part of the daily imbalance can be roll-over thanks to the cumulative daily imbalance authorised. This service will disappear, according to the new market based balancing rules, consonant with the balancing framework guidelines, expected to be in place by 2013. There are no WDOs in place in France.

The two network operators in France balance their network differently. TIGF physically balances his network principally through storage. GRTgaz buys and sells balancing gas in the market.

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	6.53	(1)
Import	538.1	(2)
Export	43.6	(3)
Consumption	478.7	(4)
Traded volumes	246	

(1) France no longer has significant natural gas resources within its territory. The gas production that is traded comes almost entirely from Aquitaine, and, specifically, from the Lacq field, operated by Total, which represents around 75%, but whose operation is due to come to an end towards the end of 2013.

(2) Gas supply in France is very diverse: in 2010 around 37.2% of gas imported by France came from Norway (177TWh); 16.4% from the Netherlands (80 TWh); 15.6% from Algeria (74 TWh); and 16.2% from Russia (77 TWh). Net importation of has decreased from 495 TWH in 2009 to 475 TWh in 2010.

(3) Export in 2010 declined by 12% (13 TWh) compared to 2009.

In 2010 consumption of end consumers increased of 50 TWh or 10% compared to 2009. The wholesale market covers the organised market (Powernext) and bilateral transactions on the intermediated OTC market (brokers). Transactions may be conducted in marketplaces tied to gas title transfer points (virtual trading points called "Point d´Echange de Gaz" (PEGs), one in each entry-exit zone). The wholesale gas market developed both in terms of the quantity of gas traded or exchanged, and in terms of the volume of gas that was actually delivered. During 2010, the increasing activity of shippers has improved significantly competition on the wholesale market.
Title transfer products are specifically available on the gas exchange, Powernext Gas Spot and

Futures operating since November 26th, 2008. On the organised market (Powernext) there are 5 market makers. On the spot market the following products are available on all three PEGs: Within-day, Day-Ahead and Week-End contracts. On the future market contracts are offered on the PEG Nord only.

Trading	TWh	Notes
Trading volume	245.5	(1)
Organised market (Powernext)	41.1	(2)
OTC	204.4	(3)
Other	--	
Participants (number)	70	(4)
Churn rate		

(1) During 2010 the traded volumes have marked a progression of 65% in relation to 2009 levels. This volume represents 36,921 transactions concluded in 2010. The trading volume on the spot market amounted to 80 TWh (39 TWh day-ahead products) and on the futures market to 165 TWh (monthly products 57TWh, seasonal products 68 TWh).

The volumes delivered at gas title transfer points increased by 64 TWh and represented 53% of the total volume of physical deliveries in 2010 compared to 45% in 2009. Liquidity on the PEG South remains lower than on the PEG North. In 2010 322 TWh of gas were supplied to the Gas Exchange Points (PEG), i.e. virtual points. Deliveries to the PEG hubs increased by over 22% compared to 2009, reaching 322TWh in 2010.

(2) On the organised markets the volumes treated in spot (intraday, day ahead and week end products) reached 13,778 GWh in 2010 (with 10,414 transactions), 4 times higher than the year before. This progress is even more significant for volumes treated in futures where activities progressed by 78% compared to 2009 reaching a trading volume of 27,347 GWh with 752 transactions.

(3) No information is disclosed regarding the transactions concluded strictly bilateral. Only information about trading through brokers is available. In 2010 on the OTC market volumes traded in spot (intraday, day-ahead and week end products) increased by 92% reaching 66.4 TWh (with a number of transactions of 23,816); volumes treated in forwards increased by 44% to 138 TWh (number of transactions amounted to 1,939).

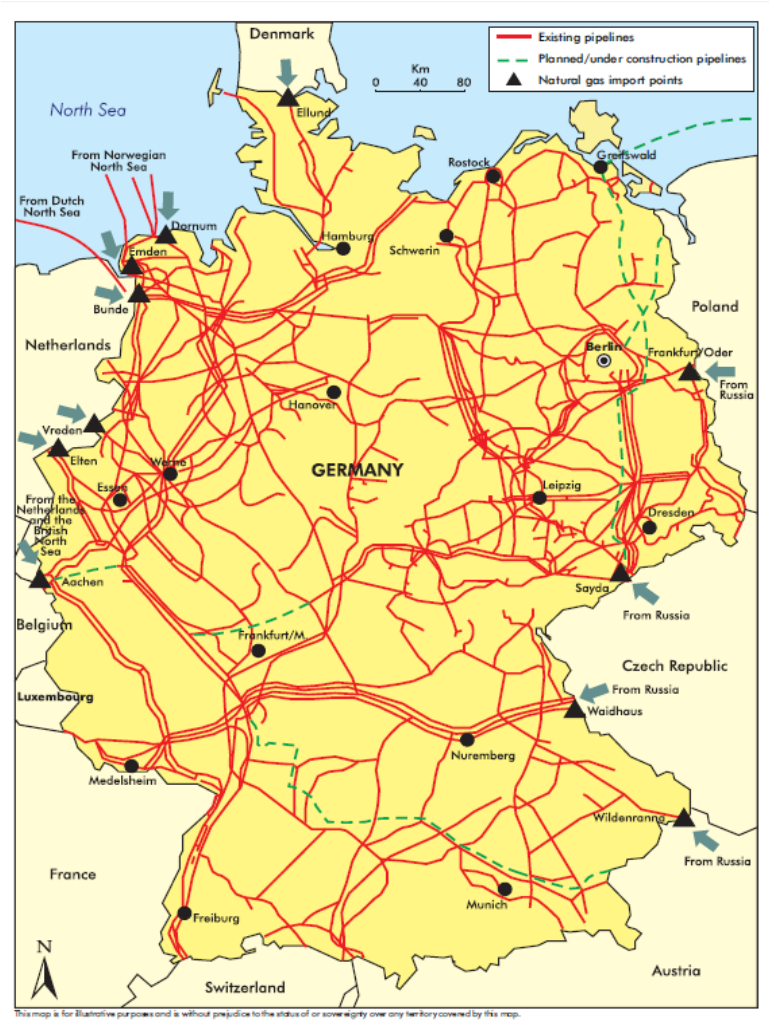
(4) Throughout 2010, 70 shippers were active on at least one PEG. This number has risen sharply over the previous year (+20). Among new arrivals, there are 3 suppliers of end customers and 14 shippers acting for their own need. 78 actors have traded gas at GRTgaz´s VTPs, including the Clearing House as counterparty for trades at the Exchange. 28 actors have traded at TIGF´s VTP.

In 2010 Powernext Gas Spot accounted 38 participants, while Powernext Gas Futures 20.

10 GERMANY

Network Topology[96]

The German gas transmission system has grown organically over the last decades and now shows a meshed system owned and operated by altogether 17 TSOs. The transmission system consists of meshed pipelines for domestic supply and large bulk transport pipelines (e.g. NETRA, TENP, MEGAL, MIDAL, WEDAL, OPAL and in future NEL) connecting important cross-border entry and exit points, storages and domestic load centers serving as the system's backbone.



Most important interconnection points are Emden and Dornum (direct lines from Norway), Lubmin (direct line from Russia), Mallnow (PL), Deutschneudorf, Olbernhau and Waidhaus (CZ), Oberkappel and Überackern (AT), Wallbach (CH), Medelsheim (FR), Eynatten/Raeren

[96] Information in this section is based mainly on Bundesnetzagentur, Monitoring Report 2011, ENTSOG; BDEW and individual TSO websites.

(BE), Zevenaar, Winterswijk and Bunde (NL).

The transmission system features separate systems for high- and low calorific gas. The L-gas is from (declining) domestic production as well as imported from the Netherlands. All other gas is H-gas.

Network topology		Notes
Network length high pressure (km)	112,000	(1)
Pressure range TSO	50	(2)
Import capacity (GWh/h)	200	(3)
Export capacity (GWh/h)	160	(4)
Storage (bcm)	20	(5)
LNG (bcm/year)	--	
TSOs (name)	17	(6)
DSOs (number)	~650	(7)

(1) Total length of the gas network (including DSOs) is approximately 475,000 km, of which the high-pressure network is 112,000 km. However, this includes high-pressure pipelines of DSOs. The by far largest TSO OGE reports 11,670 km of transmission pipelines, the sum of all transmission pipelines is reported by BNetzA as 46,428 km.

(2) Pressure regulation and metering stations are typically owned by DSOs.

(3) Germany has plenty of cross-border points where gas is imported. Most important are import points for Norwegian Gas at Emden and Dornum, the end point of the North Stream pipeline from Russia at Greifswald, cross-border points with Czech Republic and Austria, where also Russian gas is imported, and the entry point from the Netherlands where Dutch L-gas but also other gas is imported.

(4) Most important exit points are at the French and Swiss border. Also important exit points are at the Austrian, Belgian, Dutch and Danish border.

(5) There are 48 underground storages at 40 sites, partly cavern storage and partly porous storage, with together approximately 20 bcm working gas volume. Additional 23 storages with a working gas volume of another 17 bcm are currently planned.

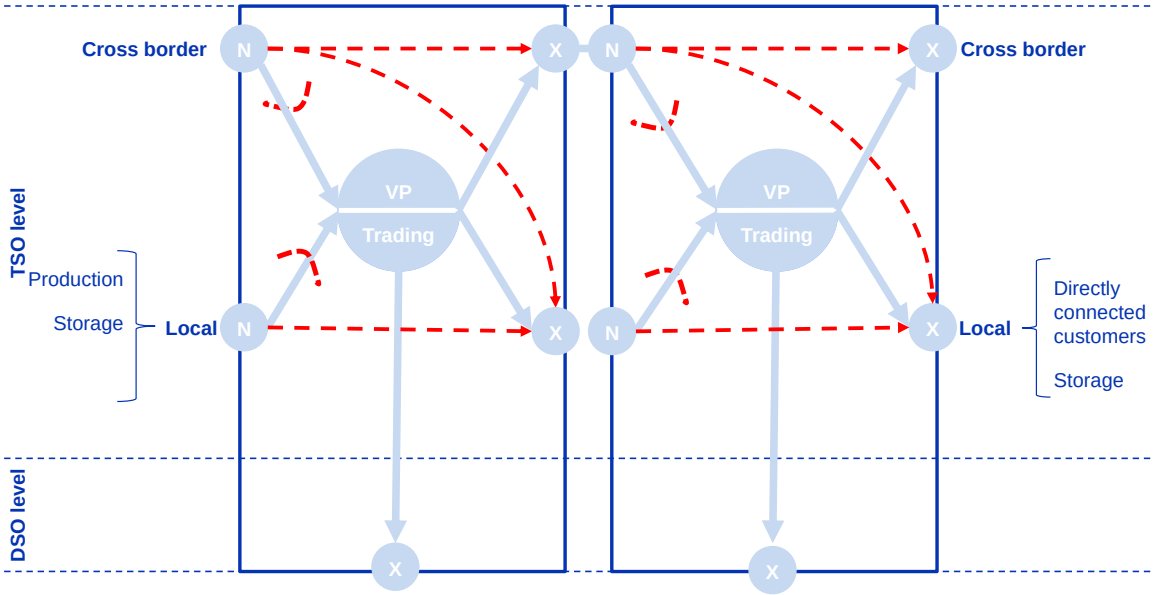
(6) GASCADE Gastransport GmbH, Gastransport Nord GmbH, Gasunie Deutschland Transport Services GmbH (GUD), Nowega GmbH, ONTRAS – VNG Gastransport GmbH, Jordgas Transport GmbH, bayernets GmbH, Fluxys TENP GmbH, Fluxys Deutschland GmbH, GRTgaz Deutschland GmbH, terranets bw GmbH, Lubmin-Brandov

Gastransport GmbH, Open Grid Europe GmbH (OGE), Thyssengas GmbH, OPAL NEL Transport GmbH, NEL Gastransport GmbH, Gasunie Ostseeanbindungsleitung GmbH.[97]

(7) As reported by the internet portal gasnetzbetreiber.de. In 2011 632 DSOs submitted filled in questionnaires to BNetzA, which equals a share 95% based on gas supply to final consumers.

Design of the Entry-Exit System[98]

The figure below gives the schematic representation of the entry-exit system in Germany as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
	Locational restrictions
	Limited allocability

Germany has two market areas, each with their own virtual trading point; GPL and NCG. Gas can be traded OTC, but also at the exchange EEX for both virtual points (exchange trading is limited to H-gas, conversion is offered by the market area operators). The entry-exit tariff system is implemented by all 17 TSOs, although some TSOs partly use capacity products with limited allocability in order to ensure firmness of transport. The OPAL pipeline (operated by OPAL NEL

[97] Gasunie-Ostseeanbindungsleitung GmbH just started operations on November 1, 2012. Its task is to market capacities on the NEL pipeline connecting Nordstream and UGS Rehden. NEL is still under construction but partly capacity is already made available.

[98] Information in this section is based mainly on Bundesnetzagentur, Monitoring Report 2011, ENTSOG; BDEW, individual TSO websites and fomer Trac-X and PRISMA website.

Transport GmbH and Lubmin-Brandov Gastransport GmbH) is exempted from open access requirements as long as gas is transited to the Czech Republic. Allegedly, an entry-exit model is applied, however, commercial conditions for this unregulated part of OPAL are not publicly available. Exit capacities on OPAL are regulated.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles[99]	Contractual arrangements						
	License	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader							
Shipper			3	4	3		
Supplier	1	1				2	
Contracting party		DSO	MO[100]	TSO	MO[101]	DSO	

(1) Market players who want to supply households should send a notification to the German regulatory authority BNetzA (article 5 of the energy law).

(2) Supplier framework agreement with the DSO: For exit to final small consumers on DSO level the shippers need to have an exit capacity contract which does not take the form of a point-specific exit capacity contract but of a supplier framework agreement with the DSO. A framework contract between a supplier and a DSO is required if final consumers on distribution levels are to be supplied. In cases where DSOs maintain an entry-exit system themselves, suppliers only require an exit contract where supply points are directly connected to that DSO. If gas is transported to distribution networks further downstream, no contract with the intermediate DSO is required.

[99] Shipping: injection, transportation and offtake of gas from the transmission system; Trading: sale of natural gas on the wholesale market; Supplying: sale of natural gas to final customers

[100] Market Area Operator

[101] Market Area Operator

Suppliers may not have capacity at cross-border or market area IPs, but still use the virtual points to trade gas, as they are eligible with their balancing contract to transport gas from the VTP up to the end user in the DSO network (for which he has a contract with a DSO but not a TSO).

All customers are eligible for supply changes, all suppliers can get into the necessary arrangements to supply gas in all DSO areas. For each distribution network there is a default supplier in the event a customer looses his original supplier. The default supplier is obliged to supply gas, but prices are not regulated and tend to be above competitive retail prices.

(3) Germany uses a balancing group model where shippers bring their entry and exit capacities into balancing groups. In order to become a shipper (apart from the required entry or exit capacity contracts in place with one or more TSOs or on distribution levels where the supplied consumer is connected) a market party needs a balancing agreement in place with the respective market area operator where market entrance will occur or the party has to become part of an already existing balancing group. All shippers have free access to the virtual points (subject to having a balancing contract), where title transfers between balancing groups take place. In addition pure paper trading is also possible at the virtual points. Usage of virtual points is subject to a fee of 0.11 €ct/MWh at NCG (0.25 €ct/MWh at GPL).

In other words, in Germany the access to VP is covered by a separate agreement, possible for the parties other than shippers and/ or suppliers (no pre-requisites): the parties interested in access to the VP have to conclude a balancing agreement. Such an approach beneficially affects the spot market and liquidity and has the potential to thereby increase the security of supply and decrease the prices for the domestic market of the relevant country.

(4) Capacity booking contract and registration at PRISMA, an online booking platform, offering shippers the possibility to book primary capacities directly from various European transmission system operators through one single tool.

Communication tests to ensure a correct nomination/allocation process are required. In some cases collateral can be requested (a justification is required, for instance the network user has previously defaulted payments or has a bad rating).

Tariff Structure and Capacity Products

The German TSOs operate under decoupled entry-exit models. However, there are minor differences in the implementation of entry-exit models between TSOs. Since 2007, the entry-exit model is obligatory for all TSOs. Direct transports from border to border (i.e. transit) were fully adapted for the entry-exit model; historical contracts have been fully adapted for the entry-exit

system. However, the virtual point or other physical points outside of a predefined point-specific link are not accessible or only accessible on interruptible basis for shippers using capacities with limited allocability. Capacities with limited allocability are offered by some TSOs in addition to (standard) freely allocable capacities.

Freely allocable capacities (i.e. the standard product) booked within a market area allow for transport of gas into the distribution level. There is no separate capacity booking required at the "city gate". This is taken care of by the DSO through an "internal order" based on the aggregated capacity demand of all exit capacities contracted at the DSO level. (Larger) DSOs with high-pressure transport pipelines offer exit capacity bookings according to the entry-exit system. DSOs further downstream of these DSOs also place "internal orders". All costs due to network charges paid to upstream network operators are rolled into exit tariffs or passed through to downstream network operators (where applicable).

Historical contracts have been integrated into the entry-exit system. During the implementation of entry-exit systems and the subsequent integration of market areas which took place, TSOs took measures to ensure the firmness of capacity already sold in the changed market environment. Apart from infrastructure investments, TSOs secured capacity firmness by using either restrictions of the free allocability or contracting load flow commitments.

Capacity is priced based on contracted capacities, there are no commodity fees. Since October 2011, auctions are used for most of the capacities (interruptible capacities, capacities points where final consumers are directly connected at the transmission level, storages, LNG terminals, production and biogas injection are allocated based on FCFS). For capacity auctions the regulated tariffs serve as reserve prices, the auction result is only a premium which is payable above the reserve price. Thus, in longer-term contracts the actual price applies (typically adjusted on annual basis) plus the auction premium. At first, the reserve price for daily auction was set at zero, but after the first experiences (with an obvious trend towards short-term capacity bookings) the regulated tariff also serves as reserve price for daily auctions since January 1st, 2013 in order to prevent shippers from booking capacity for free at uncongested network points.

At the beginning, TSOs implemented the entry-exit model differently in some parts. But since then industry agreements and regulatory provisions lead to very close convergence of models applied. However, some differences remain, for instance, whether tariffs are uniform or locationally differentiated, which discounts are granted for specific types of capacity products. The following description is focused on the German market model, specific details for each TSO are not provided.

As today's two market areas operate cross gas qualities, the conversion between H-gas and L-gas is possible within the existing system; nominating entries in one quality and exits in another. However, in such cases a conversion fee is levied by the market area operator. The system started with fairly high conversion fees, but recently reduced to 1.76 €/MWh in GPL and 0.7 €/MWh in NCG. The aim is to reduce the conversion to zero in the coming years. Due to only limited

availability of technical conversion capacity, the actual need for conversion (after netting flows) is covered by control energy deployment in opposite directions.

Tariff structure	Products					Tariff basis		Notes
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commo-dity	
Entry	F/ I[102]	F/ I	F/ I	F/ I	--	€/kWh/h	--	(1)
Exit	F/ I	F/ I	F/ I	F/ I	--	€/kWh/h	--	(1)
Storage points	F/ I	F/ I	F/ I	F/ I	--	€/kWh/h	--	(2)
Bundles	F/ I	F/ I	F/ I	F/ I	--	€/kWh/h	--	(3)

(1) Some TSOs apply a locationally differentiated tariff system (e.g. OGE), whereas others use uniform tariffs at all points (e.g. GUD) or with separate tariffs for entry and exit. Some TSOs always offer interruptible capacity, others only once firm capacity is (almost) sold out. In addition, some TSOs offer (or have offered in the past) products which include restrictions to free allocability (the virtual point or other physical points outside of a predefined point-specific link are not accessible (BZK) or only accessible on interruptible basis (DZK) or subject to certain (temperature) conditions (bFZK)). Some TSOs offer explicit backhaul and/or shorthaul tariffs at a discount varying around 50%. There is no premium on short-term capacities, the actual regulated tariffs is given as tariff for daily capacities. For longer terms, the daily price is multiplied linearly, with the annual price being the daily rate multiplied by 365 (or 366 respectively). Discounts for interruptible capacity vary around 30- 40% and discounts for capacities with restrictions of free allocability vary between 20- 30%. It is noteworthy that at least one TSO (Ontras) offers interruptible capacities at a discount of only 2%, reflecting a very low risk of interruptions.

(2) At storage points often special conditions apply; for instance, TSOs offering capacities at lower prices in order to reflect the network supporting function of storage. Some have fully integrated storage points within their normal tariff system without any discounts offered. Whereas seasonally varied tariffs generally are not applied in the tariff system, this is used by some TSOs at storage points.

(3) Capacity bundles are offered at several points or for several borders:

a. In general, all capacities at the market area border between GPL and NCG are bundled.

b. At PRISMA Primary bundled products are offered at the border between

[102] F = firm, I = interruptible

Belgium and NCG (by Belgian Fluxys and German OGE) and at the border between PEG Nord and NCG (by French GRTgaz and GRTgaz Deutschland). Belgium/NCG capacities are offered as firm day-ahead capacities. French/NCG capacities are offered on a monthly and day-ahead basis. Bundled capacities from NCG to PEG Nord are offered as firm, whereas capacities from PEG Nord to NCG are interruptible (the entry capacity into NCG is only interruptible).

c. Through capacity platform Gatrac, German TSOs Ontras and GRTgaz Deutschland together with Czech Net4Gas offer a firm day-ahead bundled product connecting the Czech virtual trading point with GPL and NCG.

d. For interconnection point Lasow, German Ontras and Polish Gasz-System plan bundled capacities to be sold for 2014 onwards on quarterly basis. Capacity auctions sarted in June 2013.

e. At PRISMA Primary, Dutch GTS and German GUD offer bundled capacities at Oude Statenzijl and for the German/Danish border (at Ellund), bundled capacities are offered by GUD and Danish ENDK

Reservation of capacities			**Notes**
Point	***Reason***	***Amount***	
Cross-border points	Short-term	15%+20%	(1)

(1) 20% of the available capacity is not to be sold more than two years in advance, additional 15% not sold more than 4 years in advance. The remaining 65% can be marketed long-term. In pracgice, the capacity share available for long-term contracts is marketed annually in March; only annual capacity contracts are available. Each year in June quarterly prodcuts for the next year are sold. Monthly capacities are only sold month-ahead. Respective auctions are fed with previously unsold capacities or capacities which become available on shorter notice.

In addition, in order to be able to provide more firm day-ahead capacities, renomination rights have been restricted, allowing a shipper to renominate only within defined limits. For instance, if a shipper nominates half of the contracted capacity at an entry point during his final nomination day-ahead, he’s not allowed to renominate the contracted capacity to its full extend at a later time.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	
Role of NRA	Methodology approval	(1)
Price control mechanism	Revenue-Cap / Auction	(2)
Tariff calculation methodology	Differs among TSOs	(3)
Entry/exit split	--	(4)
Capacity/commodity split	100/--	
National/cross-border distinction	Differs among TSOs	(5)
Locational or uniform tariffs	Differs among TSOs	(5)
Charging basis (booked capacity/other)	Booked capacity	

(1) BNetzA approves the tariff calculation methodology ex ante and has to be informed about resulting tariffs.

(2) The TSOs' allowed revenues are determined through an incentive based regulatory mechanism, basically identical for gas and power TSOs. Tariffs are derived based on the allowed tariff calculation methodology. For most capacity products, tariffs serve only as reserve prices for capacity auctions (with the actual tariff eventually being higher).

(3) Details on tariff calculation methodologies are rarely publicly available. Many TSOs seem to use a pretty uniform approach, however sometimes more sophisticated approaches based on an assumed distance from the virtual trading point are used.

(4) The general (and informal) target split used to be 50/50, but with market area integration bookable points have vanished for many TSOs (mostly smaller TSOs). For some TSOs this raised a problem in allocation (allowed revenues have become costs); for example, former cross-border entry points are now internalized within the market area. For many TSOs, this lead to a higher share of allowed revenues rolled into exit fees.

(5) The approach used differs among TSOs, and is strongly related to the tariff calculation method used. Some TSOs apply flat uniform tariffs with similar tariffs at all points, or only distinguishing between domestic and cross-border points. For instance GUD or Thyssengas, whereas OGE (the largest TSO) uses a zoned approach, with different tariffs for each zone; or similar, Ontras with three different exit zones

PRISMA Primary is the capacity trading platform for primary capacity. Also all capacities can be freely traded on the secondary market platform (PRISMA Secondary).

Capacity allocation		Notes
Capacity allocation mechanism	Auction/FCFS	(1)
In case of congestion	--	
In case of new capacity	--	

Priorities in capacity allocation		(2)
Customer type	--	
Duration	See notes	
Congestion management procedures	Auction/UIOLI	(3)

(1) Transmission capacity is auctioned on PRISMA Primary with exception to the following: interruptible capacities, exits to domestic consumers directly at transmission level, storage connection points, connection points with DSOs, LNG terminal connection points (this being a theoretical option), production and biogas injection. These capacities are allocated according to the FCFS principle, apart from capacities at the city gates which are booked by an internal order by DSO. Costs for these internally booked capacities are rolled into distribution network charges.

In the event open seasons are used, capacity is still afterwards allocated through the auction platform. Capacities are also available on PRISMA Secondary (German secondary market).

(2) Currently, 65% of the available capacities can be marketed for more than four years in advance, 15% are not allowed to be allocated for more than four years in advance and the remaining 20% are not to be allocated for more than two years in advance, this 20% share is allocated in the form of quarterly products.

(3) Auctions are applied for all cross-border points. In addition, short-term renomination rights are restricted (application of UIOLI), shippers can surrender capacities and there is a long-term UIOLI mechanism. The regulatory framework allows from a overbooking/buy-back mechanism, however, it is not applied in practice yet.

Balancing and Imbalance Settlement[103]

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	Yes	(1)
Tolerance provided	Individual tolerance on hourly basis	(2)
Number of tolerance levels	1	

[103] Based on Kooperationsvereinbarung zwischen den Betreibern von in Deutschland gelegenen Gasversorgungsnetzen, 29. Juni 2012 (http://www.bdew.de/internet.nsf/id/DE_Kooperationsvereinbaru-Gas) and websites of Gaspool and Netconnect Germany

Balancing gas procurement	Wholesale and balancing market	(3)
Imbalance settlement	Market based imbalance fee	
Imbalance fee	External price	(4)

(1) In Germany, on average, a ´structuring fee´ of 15% of the imbalance settlement price is charged for deviations from hourly schedules outside the given tolerance margins differentiated by consumer groups. These incentives for intraday profiling are relevant for customers with a load profile meter.

(2) As SLP customers do not occur imbalances by definition, tolerances only apply to metered customers: a 2% tolerance margin on hourly values applies to metered customers above 300 MWh/h load and a 15% tolerance margin on daily band applies to metered customers below 300 MWh/h load.

(3) The merit order list applied in Germany sets out the following order by the procurement of balancing gas: 1) wholesale market within the entry-exit system, 2) wholesale market in adjacent entry-exit system, 3) balancing platform, 4) other forms.

(4) Germany applies an imbalance fee set at the external price without any penalizing component.

Market area operators are responsible for procurement of physical control energy as well as commercial settlement with shippers (with balancing group responsible parties) afterwards. Imbalances are pooled within balancing groups.

Control energy is procured by open tenders of market area operators. For participation a prequalification is required. Market area operators procure several products; for instance a daily band, parking and lending (not including title transfer of gas) and rest-of-day. In addition, market area operators procure control energy on intra-day spot markets, contributing a large part to the trade volumes in these markets. Due to FG Balancing and the ongoing discussion of a Network Code Balancing, market area operators recently introduced a new target model for balancing energy procurement with clear focus on standardized short-term products, but also leaving the option to use non-standardized and long-term products, if and where necessary.

The German balancing system is identical in both market areas. The basic system applies daily balancing with daily settlement (settlement price is leaning on market prices, but includes a penalizing element to incentivize balanced shipper portfolios) and within-day obligations, however different user groups are distinguished:

- Standard load profile customers; exits are allocated as nominated, deviating volumes as settled at a later stage at non-penalizing prices, daily volumes spread equally over the day (daily band) and no tolerances for hourly deviations
- Metered customers >300 MWh/h (and smaller upon explicit demand); hourly values are nominated and allocated based on metered values, a +/- 2% tolerance margin applies on hourly values

- Other metered customers; daily volumes spread equally over the day (daily band), +/- 15% tolerance margin applies on hourly values

If hourly deviations occur, a structuring fee of 15% (on average, may vary between 5% to 25%) of the imbalance settlement price is levied for hourly deviations outside of the tolerance margins.

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	140.76	(1)
Import	946.2	(2)
Export	213.2	(2)
Consumption	850.7	(2)
Traded volumes	1,686	(3)

Based on 2010 data, the churn rate as calculated by BNetzA was 2.09 for H-gas and 1.26 for L-gas. More recent figures claim a churn rate of 3.5 for NCG and 2.5 for GPL.[104]

After a period of consolidation the number of TSOs has been reduced to 17 within two market areas, Gaspool (GPL) and Netconnect Germany (NCG). Each market area features a virtual trading point with increasing liquidity, although churn rates are still below 5, market signals seem to be increasingly robust. Gas can be traded OTC, but also at the exchange (EEX) for both virtual points.

While many of the contracts for traditional long-term imports used to be take-or-pay oil-indexed contracts, spot market roles have increased. As the economic crisis (and other factors) led to an oversupply of gas in Europe, spot prices were well below the reported import prices, leading to heavy losses for incumbent suppliers tied in traditional import contracts. This not only illustrated the robust nature of spot prices, but also increased spot market attractiveness. In the aftermath, many importers started to renegotiate price clauses with their suppliers.

The German gas market has numerous sources for gas. Apart from domestic production which represents roughly 10% of consumption, natural gas is mainly imported from Russian, Norwegian and Dutch sources. Minor shares are also imported from Great Britain, Denmark and through LNG terminals in neighbouring countries.

NCG currently reports 293 market participants at the virtual point, GPL reports 307. Considering that many participants are active at both trading points, that leaves around 400 participants of both points together. Trading volumes (and churn rates) have continuously increased due to the establishment of virtual points and implementation of the entry-exit model.

For both market areas, gas can be traded at the EEX (European Energy Exchange). Tradeable

[104] Ergebnisbericht, Kosten-Nutzen-Analyse einer Marktgebietszusammenlegung von GASPOOL und NetConnect Germany nach § 21 GasNZV, 2012

products reach from intra-day and day-ahead to monthly, quarterly, seasonal and annual futures. Recently, EEX published its intention to offer spread products between German and French markets in cooperation with French Powernext.

The share of supply of the three largest gas suppliers to final consumers was 29.5% (five largest amounted to 37.1%) in 2010.

Trading	TWH	Notes
Trading volume	1,686	(1)
Spot (EEX)	46.9	(2)
OTC	1,639	(3)
Other		
Participants (number)	~400	
Churn rate	1.8	(4)

(1) 2010 data as reported by BNetzA for all market areas still in existence. Almost 90% of trade occurred in the H-gas areas, showing a strong lack of liquidity in the L-gas areas. However, this problem disappeared since the former L-gas market areas are integrated into today's two remaining (cross-quality) market areas.

(2) 2010 figure, as reported by EEX, 2011 amounted to 58.6 TWh, of which 23.1 TWh was traded among spot markets and 35 TWh in futures. However, spot trading includes volumes for TTF (offered by EEX as well). 2010 spot trading value for NCG and GPL alone amounted to 15 TWh.

(3) Calculated as overall trading volume (reported by BNetzA) minus spot traded volume. In a 2010 market survey by BNetzA, reported trade volume amounted to 728 TWh traded OTC through brokers, the remainder is supposedly purely bilateral.

(4) Based on 2010 data, churn rate calculated by BNetzA was 2.09 for H-gas and 1.26 for L-gas. More recent figures claim a churn rate of 3.5 for NCG and 2.5 for GPL.[105]

Additional Comments

The 2012 version of the national network development plan foresees investements of approx. 2.2 billion € up to 2020, inter alia removing north-south bottlenecks in the network, which may also improve firmness of capacity. In the draft 2013 version (status May 2013), the TSOs recommend investments of up to 1.6 billion € up to 2023.

[105] Ergebnisbericht, Kosten-Nutzen-Analyse einer Marktgebietszusammenlegung von GASPOOL und NetConnect Germany nach § 21 GasNZV, 2012

11 GREECE

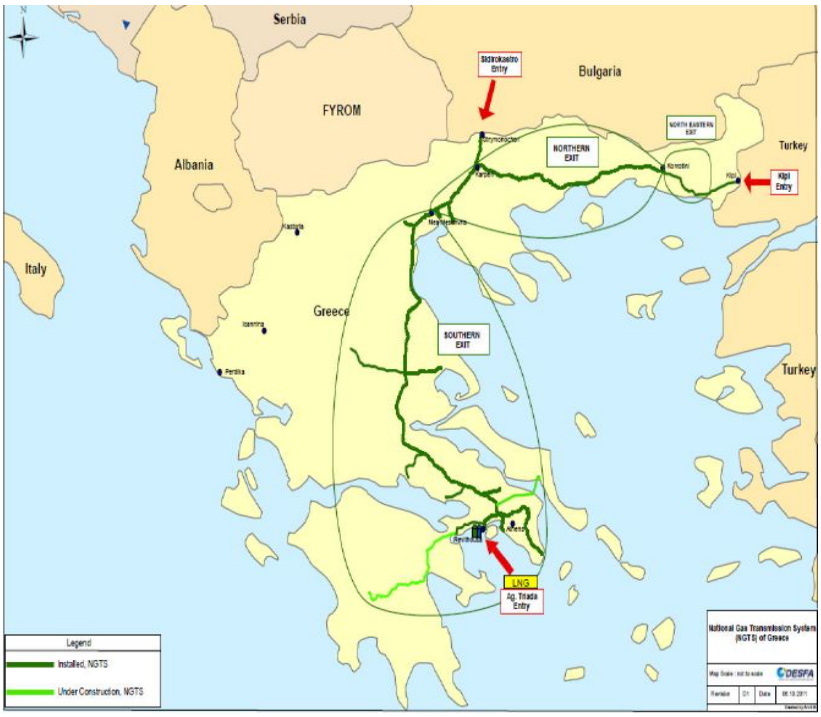
Network Topology[106]

The Greek National Natural Gas Transportation System transports natural gas from the entry points to consumers in continental Greece. The National Natural Gas System includes the main high pressure (70 bar) gas transmission pipeline from the Greek-Bulgarian borders to Attica, with a total length of 512 km. High pressure branches link the various regions of the country with the main pipeline, including the latest branch lines towards Western Thessaly and Evia, the construction of which began in 2007. The National Gas System also includes the liquefied natural gas terminal on the island of Revythousa.

There are three entry points for the natural gas transportation system. The first is at the Greek-Bulgarian border, where natural gas enters via a central pipeline from Russia and through the Bulgarian Gas Transmission System. The second entry point is at the Greek-Turkish border, where the National Natural Gas Transportation System interconnects with the corresponding Turkish transportation system. Lastly, the third natural gas entry point is located on the island of Revythousa in the Gulf of Pachi near Megara, where there are facilities to receive, store and gasify Liquefied Natural Gas (LNG).

The Public Gas Corporation, DEPA S.A., (state-owned by 65%), is the main importer and supplier of gas to the Greek market. DEPA S.A. has established three Gas Distribution Companies, called EPAs, operating in the three larger urban centers of Greece (Attiki, Thessaloniki, and Larissa-Volos). In 2007 following the market unbundling, the Greek TSO, DESFA, was established as a 100% subsidiary of DEPA S.A.

[106] Information in this section is based on RAE, 2011 National Report to the European Commission, and www.desfa.gr and www.depa.gr, and presentations from DEPA and DESFA



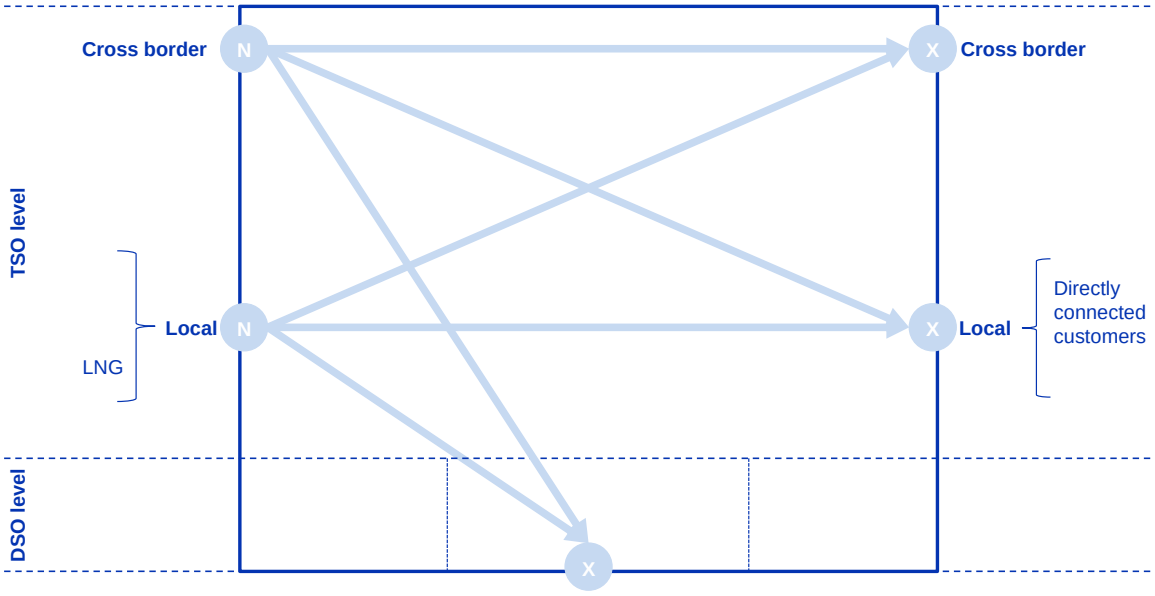
Network topology		Notes
Network length high pressure (km)	1,218	(1)
Pressure range TSO	70	(2)
Import capacity (mcm/d)	25	(3)
Export capacity (Nm³/d)	--	(4)
Storage (bcm)	--	
LNG (bcm/year)	1,155	(5)
TSOs (name)	DESFA	(6)
DSOs (number)	4 (DEPA S.A. plus 3 local DSOS)	

1. Total length of the gas network (including DSOs) is approximately 5,000 km. Pressure regulation and metering stations are owned by DESFA. Sidirokastro entry 109 GWh/day, Kipi Evros entry 30 GWh/day, Agia Triada entry 140 GWh/day. There are three Exit zones: the North Eastern zone, the Northern zone and the Southern zone.
2. Presently, the unloading capacity of the terminal is 7,250 m^3 LNG/hour. The current storage capacity of the terminal is implemented by two LNG tanks with useful value capacity of approximately 65,000 m^3 LNG per tank. Send out capacity is 1,000 m^3 LNG/hour. In 2011 the actual load factor/utilisation rate with reference to the technical capacity was 0.25.

3. DESFA owns and operates the Greek National Natural Gas System (NNGS), with full responsibilities regarding the provision of TPA services under non-discriminatory terms and the operation, maintenance and development of the natural gas system.

Design of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in Greece as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



The entry-exit does not (yet) have a virtual point. In the beginning of March 2013, DESFA started a trial period for the Electronic Transactions System for network users. The Electronic Trades Systems allows users of the transmission network to trade secondary capacity (not trading of gas volumes).

In Greece, there are three DSOs (not unbundled) which have the exclusive rights to supply small consumers in their area. The DSOs do book exit capacity from the transmission level into their own network. However, the DSOs cannot supply customers in areas other than their own.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader							
Shipper							
Supplier	1					(4)	
Contracting party	NRA (RAE)		TSO	TSO	TSO	DSO	

2

(1) For network user supplying either end consumers at the gas transmission level or at the distribution level a Gas Supply License is required. There are currently no costs involved for the process of obtaining a licence. The applicant of a license must meet the following requirement:

- Local office –applicants must either a) be constituted and have their seat in a Member State of the European Union, the European Economic Area, Energy Community or in third countries if such right is derived from a bilateral agreement between the third country and Greece or the European Union, or b) have established a branch in Greece.
- Financial information – the applicants have to provide financial information to the NRA. Financial collaterals do not need to be provided.
- Applicants should additionally provide a business plan, proof of technical capability, and proof of ability to secure gas supplies.

Network users not supplying end consumers or importing gas into Greece do not require a license. However, the network user should subscribe in the National Natural Gas System User's Registry in order to sign a standard transportation agreement with the TSO.

(2) Network users may obtain access to the transmission system by signing a Transmission Agreement with the TSO. Before a Transmission Agreement can be executed, the aspiring network user should:

- Submit an "Application Form for Natural Gas Transmission Services" as well as
- Accept the "Acceptance of Application Form for Natural Gas Transmission Services" which follows the former application form.
- Provide the TSO with an irrevocable Due Payment and Good Performance Letter

of Guarantee.

- Provide a duly validated copy of the Articles of Association of the aspiring network user.
- Provide duly validated copies of the legalising documentation of the aspiring network user, that is, for an S.A. the minutes of the General Assembly documenting the appointment of the acting Board of Directors and minutes of the Board of Directors concerning its establishment in a body, while for an Ltd, Minutes of the General Assembly documenting the appointment of the Manager(s) as well as a decision for the submission of the application and the signature of the Transmission Agreement, the appointment of a representative and full communication contact details for the needs of the Agreement.
    - Provide a certificate of the registration of the aspiring network user with the NGTS Users' Registry, or in case that this is not available due to the non issuance of the Users' Registry Regulation, a Solemn Declaration of the applicant documenting his capacity as an NGTS "User" in accordance with the provisions of the Law.
    - Provide a completed "Technical Data Sheet" with the desired capacities and a declaration that the submitted data is true.

(3) Non eligible end users in the DSO areas are supplied by unbundled DSOs having a monopoly in their respective area. There is no contractual interface between the supplying DSO and the non eligible end users. In case of eligible end-users in the DSO area the supplier has a contractual interface with the end consumers. An eligible end user is a customer with a consumption of more than 100 GWh/year. The DSOs however do book exit capacity from the transmission level into their own network. It is also noteworthy that DSOs are only able to supply customers in their own areas.

Tariff Structure and Capacity Products

The new entry-exit system, approved by RAE in the summer of 2012, defines that the required revenues related to the entry and exit points are based on the geographical location of relevant assets. Therefore, distance is implicitly taken into account in the calculation of transmission tariffs. However, shippers will not be charged according to distance, but according to the entry/exit bookings, starting February 1st, 2013.

Tariff structure	Products					Tariff basis		Notes
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commo-dity	
Entry	F/ I[107]	F / I	F/ I	F/ I	--	€/MWh/d/y	€/MWh	(1)
Domestic exit	F	F	F	F	--	€/MWh/d/	€/MWh	(1)
Border exit	F / I	F / I	F/ I	F/ I	--	€/MWh/d/y	€/MWh	(1)
			(2)	(2)				

(1) There are provisions for services regarding interruptible gas flows and backhaul flows specified in the amended Network Code, however the TSO has not been explicitly confronted to define backhaul discount levels. Exclusively for supplying to new customers, a trial tariff applies for the first six months at a given exit point for a specific customer starting with the month in which the first gas offtake takes place. This tariff is solely based on a commodity charge. For the year 2012, this 'trial charge' is set at 3.084 Euro/MWh.

(2) Tariff Coefficients for short-term services[108]

In accordance to the modification of the Ministerial Decree no 4955 / 27.03.06 for the Natural Gas Transmission Tariff and the LNG Re-gasification Tariff (Government Gazette B 747/31.05.2010), the following Tariff Coefficients for short-term services are defined:

Total Duration of the Agreement [days]	Tariff Coefficient [-]
1 - 90	2.3
91 - 180	1.85
181 – 364	1.6

However, starting February 1st, 2013, the tariff coefficients for short-term services were diminished and range from 1.00-1.79.

[107] F = firm, I = interruptible

[108] Information form the Greek gas TSO, www.desfa.gr

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	
Role of NRA	Approves tariffs and sets methodology	(1)
Price control mechanism	Allowed revenue	
Tariff calculation methodology	--	
Entry/exit split	50/50	
Capacity/commodity split	80/20	(2)
National/cross-border distinction	None	(3)
Locational or uniform tariffs	Locational	
Charging basis (booked capacity/other)	Used capacity	(4)

(1) The TSO submits its proposal regarding tariffs and tariff methodology to the NRA. The NRA can set the proposal for public consultation. The NRA sets the tariffs and tariff methodology taking into account the TSO proposal and the results of the public consultation.

(2) In the old postage stamp system, a 90/10 capacity/commodity split was applied. For the new entry-exit system, which has been approved and is in force since February 2013, a different capacity/commodity split will be applied (80/20).

(3) Transmission tariffs apply in the same way to both cross border and domestic flows.

(4) The network user pays for the booked capacity in advance. But at the end of the transmission contract each user pays the actually used capacity.

Capacity allocation		Notes
Capacity allocation mechanism	--	
In case of congestion	Expansion	(1)
In case of new capacity	Expansion	
Priorities in capacity allocation		
Customer type	--	
Duration	--	
Congestion management procedures	UIOLI, Expansion	(2)

(1) The network code only treats situations in which an aspiring network user submits a request for capacity with an amount which is more than the capacity currently available. In this case, the TSO will inform the regulator RAE and specifies the feasibility, cost and time associated with relieving congestion, in particular through the performance of additional maintenance or investment for the expansion of the Transmission Capacity at the relevant Entry or Exit Point

(2) Under the revised Code, all long-term users bear the obligation to dispose all their reserved, non-used capacity (for at least 12 consecutive months). Under certain conditions, they are alternatively permitted to lease reserved capacity to third parties.

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	Short-term	10%	(1)

(1) In order to prevent capacity accumulation, a series of measures regarding capacity reservation was adopted. According to the previous Code, it was allowed to reserve capacity at entry points not exceeding 15% of exit point capacity. This option is now withdrawn, whereas 10% of total system capacity at entry points will remain reserved for the exclusive use of short-term users.

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on daily basis	(1)
Number of tolerance levels	1	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Indexed fee	
Imbalance fee	External price + Multiplier	(2)

(1) In Greece, tolerances are set dynamically, namely tolerance levels are reduced to zero after a five-day sustained shipper´s imbalance.

(2) Shippers exceeding the tolerance level are charged by an additional +/- 5% on the imbalance price.

In 2011 the NNGS Code was amended because of the Framework Capacity Allocation Guidelines. The revised Code introduced the virtual delivery and off-take of natural gas to the entry/exit points (with the exception of the LNG terminal entry point).

Each shipper must balance its inputs and off-takes on a daily basis (balancing period). DESFA notifies shippers on their imbalance position at the end of each day. A tolerance level is set at

± 10% (subject to biannual review). If a supplier exceeds the tolerance levels, a penalty is imposed by DESFA (article 52 of the NNGS Code). If the supplier fails to balance its outputs and off-takes for five consecutive days, the tolerance level is decreased gradually to reach 0%. Due to the absence of a wholesale liquid market and limited storage facilities, DESFA is still responsible for intra-day balancing (in order to prevent balancing requirements to raise barriers to entrance in the gas market).

Market Environment and Trading[109]

The Greek gas market is a developing market. Natural gas has only been apart of the Greek energy mix since 1996. With a very high percentage of imports from a single supplier, no indigenous production and a late start compared to the rest of Europe, Greece was characterised as an emerging gas market and granted a derogation from the provisions of Directive 98/30 until November 2006.

By the end of 2009, DEPA S.A. was the sole importer and supplier of gas to the Greek market. DEPA S.A. remains the main natural gas importer and supplier of large customers (consumption over 100 GWh/year), power producers, and local distribution companies. Through three long-term contracts, they supply the internal market with imported gas from Russia, Algeria and Turkey.

Volumes	TWh/year	Notes
Indigenous production	0.1	
Import	52.6	
Export	0	
Consumption	51.3	
Traded volumes	--	(1)

(1) Greece has no gas producing capacity and its security of supply is exclusively relying on natural gas imported by DEPA S.A. from Russia, Turkey and Algeria pursuant to long-term supply contracts. DEPA S.A. consequently holds a dominant market share of approximately 80%. Therefore, there are no gas hub services or structures of organised wholesale trading at place.

The gas market is still organised on the basis of bilateral contracts between suppliers and eligible customers. No organised wholesale market exists yet.

The main development of 2010 regarding competition was the importation of natural gas by third

[109] RAE, 2011 National Report to the European Commission

parties, other than the incumbent, DEPA S.A. Two power generators and one large industrial consumer imported LNG quantities for their own consumption and trading, taking advantage of low LNG spot prices and supported by the recently completed regulatory framework. In fact, the entrance of new gas importers in the market decreased the market share of the incumbent at the wholesale level from 100% to 88.6%. Therefore, the HHI for 2010 stands at 7,910.[110]

The TSO is currently in the process of developing a platform for secondary trading of gas as well as a virtual trading point, where offers for the resale of gas and transfer of transmission capacity rights can be submitted and accepted.

Trading	Notes
Trading volume	--
Spot	--
OTC	--
Other	--
Participants (number)	--
Churn rate	--

Additional Comments

In July 2012 RAE published its No. 594/2012 decision to issue regulation on the Pricing of Natural Gas Transmission System (Official Gazette B 2093 / 07.05.12) in accordance with the provisions of article 88 of Law 4001/2011. The pricing methodology introduced by the Tariffs Regulation, which replaces that of UNHCR 4955/06 is fully compatible with the provisions of Directive 2009/73/EC and the European Regulation 715/2009.

The core principles of the new Pricing Rules are summarised as follows:

1. Pricing of reserved capacity is based on entry and exit points of the Transmission system (entry-exit system), regardless of the actual transportation route of the natural gas. Specifically, the National Natural Gas System is divided into three entry points and three exit zones.
2. The methodology of Price Control for the TSO is determined. The normalisation of invoices (Price Control Period) is set at twenty year period. Every four years a regular revision of tariffs will be held. The first Price Control Period is set for the twenty year period 2012-2031 and the first regular review will take place in 2015.
3. The regulation provides for the possibility of unscheduled Price Control Review in case significant changes are adopted before the regular revision.
4. A pricing methodology of reserved capacity on an interruptible basis is established, a key requirement for enabling virtual reverse flow.

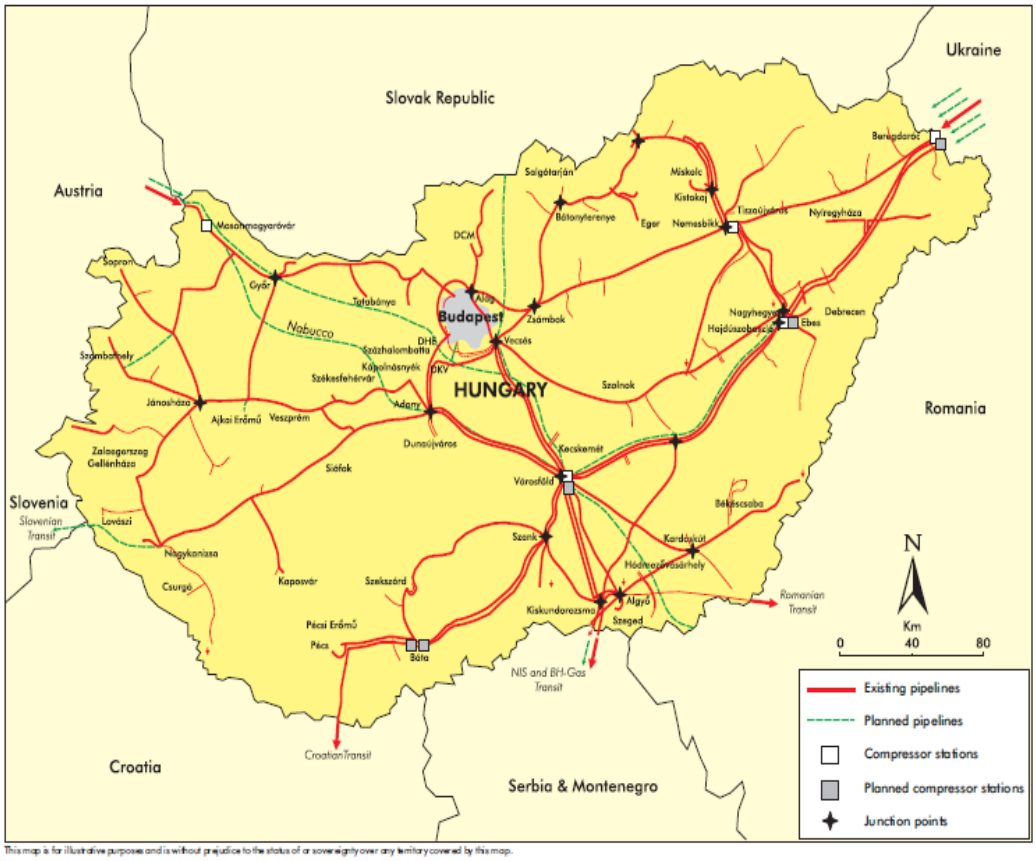
[110] 2011 National Report to the European Commission

Under Law 4001/2011 and the provisions of the Rules of Pricing, tariffs will come into effect on February 1st, 2013. Until then the usage charges of the Natural Gas System established within UNHCR 4955/06 are valid.

12 HUNGARY

Network Topology[111]
The Hungarian transmission grid is owned and operated by FGSZ, one of the two TSOs in Hungary. With the development of the new Hungary-Slovakia Interconnector Magyar Földgáz Tranzit Zrt., a natural gas transmission licensee obtained recently the licence of natural gas transmission and system operation and will operate as the new pipeline TSO. This requires adaptation of the Hungarian gas model accordingly. The elaboration of possible ways and discussions regarding the new model is in progress. There are 11 distribution licensees, however only 10 DSOs operate. As security of supply is a declared priority of the National Energy Strategy, Hungary is planning to enhance its import capacity as well as diversify import routes and sources. To that end, a new interconnector (14.4 mcm/d capacity) between Slovakia and Hungary is being planned. Commissioning and operation of the interconnector are expected in 2015. In order to diversify import sources Hungary is considering participating in three pipeline projects – Nabucco, South Stream and AGRI (Azerbaijan-Georgia-Romania Interconnection) – and a LNG terminal located in Croatia. Gas storage is crucial in Hungary due to the high dependence of the electricity sector on gas-fired power plants, also due to the high volumes of relatively inflexible residential demand.

[111] Information in this section is based on www.eon-hungaria.com, www.eh.gov.hu, Hungarian Energy and Public Utility Regulatory Authority, 2011, National report to the European commission and www.fgsz.hu



This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Network topology		Notes
Network length high pressure (km)	5,784	(1)
Pressure range TSO	38-75 bar	(2)
Import capacity (GWh/d)	667.7	(3)
Export capacity (GWhd)	350.4	
Storage (bcm)	5.13 bcm	(4)
LNG (bcm/year)	--	
TSOs (name)	FGSZ	(5)
DSOs (number)	11	(6)

(1) Hungary's gas transmission network consists of more than 5,700 km of high-pressure pipelines. The network includes six compressor stations.

(2) The transmission system has a typical operating pressure of 63 bar. At the border entry points, the minimum pressure ranges between 38- 40 bar, while the maximum between 63- 75 bar.

(3) Hungary has three entry points; Beregdaroc (at the border with Ukraine) amounting to 531.7 GWh/d, Mosonmagyarovar (at the border with Austria) reaching 136 GWh/d and an entry point from Croatia which is inactive yet. Hungary has three interconnectors; Serbia, Romania and Croatia. Kiskundorozsma exit

witnesses 124.7 GWh/d, Csanadpalota exit amounts to 45.3 GWh/d and Dravaszerdahely exit has 180.4 GWh/d

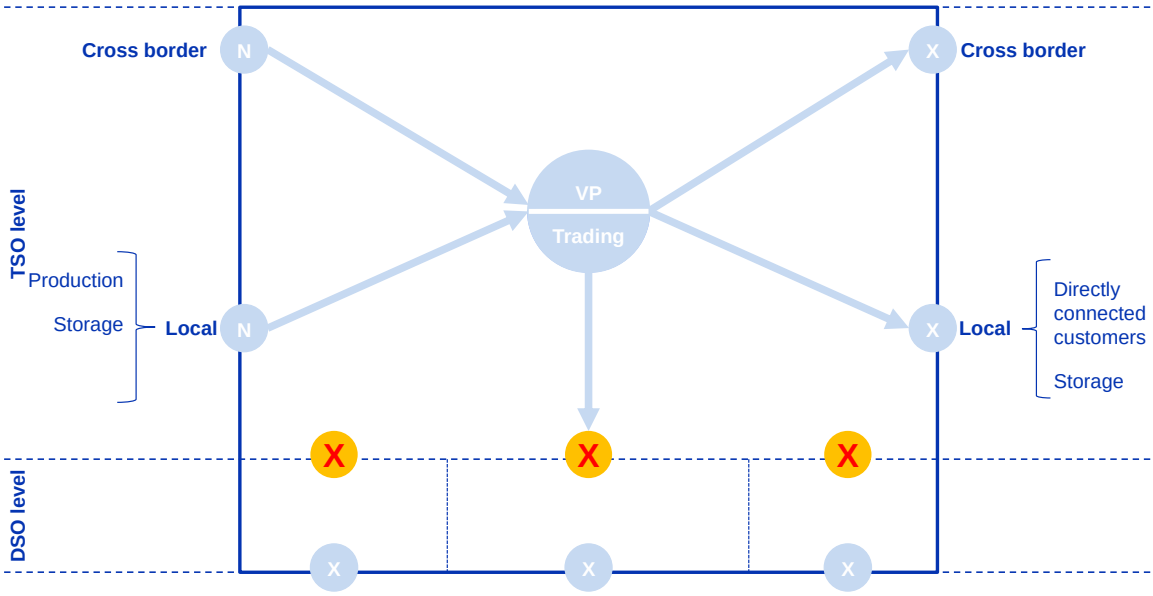
(4) Hungary`s natural gas storage capacity (5.13 bcm, or 44% of annual demand), plays an important role in assuring security of supply. In addition to the six commercial storage facilities (which may be accessed by third parties), since January 2010 Hungary has a strategic storage facility at Szöreg, with a working capacity of 1.2 bcm and a withdrawal rate of 20 mcm/d.

(5) The whole transmission system is owned and operated by FGSZ Zrt., currently the only TSO in the country. However, the new Hungary-Slovakia Interconnector might be operated by its developer as a new TSO.

(6) There are 11 distribution companies, five of which are regional companies supplying more than 100,000 customers: E.ON KÖGÀZ Zrt, E.ON DDGÀZ Zrt, TIGAZ, Fővárosi Gázművek Zrt. and Ègáz-Dégáz. In accordance with the EU Directive, the five large supply companies and natural gas distribution companies were legally unbundled in 2007.

Design of the Entry-Exit System[112]

The figure below gives the schematic representation of the entry-exit system in Hungary as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
X	The cut-off point for the entry-exit system and the gas balancing system is at the interfaces between the national gas network operated by the TSO and the regional distribution grids. Shippers are obliged to book capacity at each respective city gate point separately.

The table on the next page gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Only holders of a natural gas trader´s licence are entitled to trade on the market, there is no distinction between gas suppliers and shippers.

[112] Information in this section is based on Hungarian Energy and Public Utility Regulatory Authority, 2011, National report to the European commission; ACER answers to the DG ENER Questionnaire on Balancing to ACER and ENTSOG www.eon.hu, www.eh.gov.hu

Roles[113]	Contractual arrangements						
	License	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader	1	4	5	6	7		9
Shipper	(2)						
Supplier	3					8	
Contracting party	NRA	TSO	TSO[114]	TSO	TSO	DSO	TSO

(1) Limited trading license: The limited trading license, introduced in the end of 2012, entitles the market player to trade on on the organised natural gas market, to trade with another trader, to buy gas from producers and to reserve capacities but not to sell natural gas to end customers. The following requirements apply:

- Applicant shall be holding a natural gas trading license in one of the Member States, which are parties to the Agreement on the European Economic Area
- IT-system – the applicant has to provide proof of an adequate information system
- Business plan – the applicant has to submit a business plan for the following year
- Agreement with TSO – the applicant has to submit a cooperation agreement with the TSO.
- Financial guarantee – the applicant has to provide afinancial collateral to the authority.

(2) Transporting gas through the Hungarian transmission system (transit) is not subject to a license.

(3) For supplying gas to end consumers a full trading license is required.

(4) Cooperation agreement with the TSO on access to its IT and data traffic system.

(5) Contract on balancing services or Accession agreement to the Balancing Platform: Should the system user not be a member of the Balancing Platform (e.g. he has no accession agreement to the virtual point (MGP)) he is obliged to conclude a Balancing

[113] Shipping: injection, transportation and offtake of gas from the transmission system; Trading: sale of natural gas on the wholesale market; Supplying: sale of natural gas to final customers

[114] Or TSO in charge of system operation (relevant when in future new pipeline system is in operation

Service contract with the TSO for settling daily imbalances at the end of the gas day.

(6) Capacity booking contract and odorising contract

(7) The name of the virtual point is MGP. Traders and suppliers can use the virtual point by signing and accession agreement to the Balancing Platform. There are no charges for the use of the virtual point.

(8) Capacity booking contract. The following requirements apply:

- Financial guarantee - Shippers involved in capacity booking contracts are required to provide a bank guarantee to the TSO as security for the payment obligations arising from the contracts.
- Balancing service contract - Additionally, if the shipper is not a member of the Balancing Platform, a contract regarding balancing service with the TSO in parallel with the capacity booking contract is necessary.

(9) System operation contract - In the frame of the system operation contract the TSO carries out the following activities: coordination of the preparation of the network development plan; preparation of the Business and Commercial Code of the Hungarian natural gas system; compilation of the restriction plan; coordination of restriction in case of emergency; representation of the Hungarian natural gas system in international organizations.

We note that the situation in Hungary (offering separate contracts for each TSO service) is not common, and is rather an exception than a rule.

Tariff Structure and Capacity Products[115]

TSO FGSZ Zrt. operates an entry-exit transport tariff model with tariffs regulated by the Hungarian Energy and Public Utility Regulatory Authority. The network is considered as one market area and one balancing zone. Direct border-to-border transports are integrated into the entry-exit system and as such charged according to the entry-exit tariff system. All capacities associated with the long-term import contracts, realized before market opening in 2004 (with Panrusgaz of 9 bcm/year until 2015, with E.ON Ruhrgas of 0.5 bcm/year until 2015 and with Gaz de France of 0.6 bcm/year until 2012) are subject of regulated tariffs. There is only one transit contract realized before market opening where the transit fee was set in the long-term contract and therefore not regulated. There are no charges for wheeling and title tracking/transfer.

In addition to capacity charges based on booked capacity, a commodity charge for transported volumes applies at domestic and cross-border exits.

[115] Information in this section is based on www.fgsz.hu, Decree no. 535/2012., Hungarian Energy Office, 1 June 2012; KHEM decree no. 31/2009. (VI.25.), Impact Assessment for the Framework Guidelines on Harmonized transmission tariff structures, The Brattle Group, 6 August 2012, KHEM Decree no. 74/2009. (XII.7.)

Tariff structure	Products					Tariff basis		Notes
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commo-dity	
Entry	F/I/RF[116]	--	F/I/RF	F/I/RF	--	HUF/MJ/d	--	(1)
Domestic exit	F/I	--	F/I	F/I	--	HUF/MJ/h	HUF/GJ	(2)
Border exit	F/I/RF	--	F/I/RF	F/I/RF	--	HUF/MJ/h	HUF/GJ	(1)
	(3)		(4)	(5)	--	(6)	(7)	

(1) Currently cross-border capacities are not traded in bundles. The spread between the entry/exit charges of different entry/exit points is rather large. The highest entry tariff is 2.90 EUR/(MJ/h)/year,[117] while the lowest drops to 1.74 EUR/(MJ/h)/year. The highest exit tariff is 1.73 EUR/(MJ/h)/year, while the lowest falls to 0.33 EUR/(MJ/h)/year.[118]

(2) Shippers are obliged to book capacity at each respective city gate point separately and pay exit charges based on these contracted capacities. The complexity of this capacity booking regime creates an obstacle to new players entering the domestic market.

(3) The basic contract duration for transport capacity tariffs is one year. Contracts for multiple years (only whole years) as well as for months and days are available. Since July 1st, 2013 the tariffs are determined yearly by a decree of the Hungarian Energy and Public Utility Regulatory Authority.

The annual capacity charge is calculated based on the highest capacity booked in the winter period. If however, the highest capacity falls in the summer period, an additional charge of 5% of the annual transmission capacity charge for the positive difference between capacity contracted in summer and winter is charged. A 10% (50%, or 90%) discount on the firm annual capacity tariff applies to interruptions for a maximum period of 10 (30, or >30) days.

(4) A monthly capacity contract during the winter season is charged by 90% (20% in the summer season) of the annual transmission capacity tariff for the first month, and an additional 10% (5% respectively) for the second and third month in the same contract. The capacity is free of charge in the next (fourth etc.) remaining months.

For monthly interruptible contracts, a 10% (50%, 85%, or 90%) discount on the firm monthly capacity tariff applies to interruptions for a maximum period of 3 (10, 25, or >25 respectively) days.

[116] F = firm, I = interruptible, RF = reverse flow

[117] 811.44 HUF; average rate of exchange in 2011: 279.21 HUF/EUR

[118] 92.56 HUF; average rate of exchange in 2011: 279.21 HUF/EUR

(5) A daily capacity contract in the winter season is charged by 1/30 of 110% (of 50% during the summer season) of the annual transmission capacity tariff, for the first 40 days. Thereafter, daily capacity is free of charge.

Daily interruptible contracts are charged by 1/60 of 110% of the annual firm capacity charge in the winter (non-winter) period (1/60 of 50% charged in the summer period).

(6) From January 1st, 2013 there is a universal price regulation withouth any differentaiation among users. However, shippers supplying consumers eligible for universal supply may recover part of the capacity tariff.

(7) Besides capacity charges, shippers are also obliged to pay a volume charge calculated based on energy metered at delivery points (transmission system exit points) and allocated by the operator of the neighbouring connecting system. The volume charge is equal for everyone (0.12 EUR/GJ).[119] The volume charge calculation is based on variable cost elements, including compression and fuel gas.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	
Role of NRA	Determination	(1)
Price control mechanism	Revenue cap	(2)
Tariff calculation methodology	Locational	
Entry/exit split	77/23	
Capacity/commodity split	--	
National/cross-border distinction	Partly	(3)
Locational or uniform tariffs	Locational	
Charging basis (booked capacity/other)	Booked capacity	

(1) Tariff for system use is regulated by the decree of the Hungarian Energy and Public Regulatory Authority.

(2) The basic approach for regulation is a revenue cap incentive regulation with a four years regulatory period. The current regulatory period runs from January 1st, 2010 to December 31st, 2013. It is based on an extensive cost audit carried out by the regulator in 2009. Under the current regulatory period most elements were determined on a cost-based method. However, for the next regulatory period the regulator plans to include benchmarking methods in the determination of allowed cost.

(3) The interconnectors between Hungary and Romania, as well as Hungary and Serbia are not part of the RAB, thus not part of the above revenue cap regulation. The entry and exit tariffs of these interconnectors (and tariffs of interconnectors in general) are calculated based on the DCF model. However, the regulator can determine a new interconnector as

[119] 33.99 HUF/GJ, average rate of exchange in 2011: 279.21 HUF/EUR

an integral element of the RAB, and hence integrate it into the revenue cap regulation; nevertheless, this decision is made on a case-by-case basis. The capacity of interconnectors can be taken in account by calculation of volume charges in case it results in a decrease in volume charge of the Hungarian network system.

Capacity allocation		Notes
Capacity allocation mechanism	OSW	(1)
In case of congestion	Auction	(2)
In case of new capacity		
Priorities in capacity allocation		
Customer type	Universal service	(3)
Duration	Long-term	(4)
Congestion management procedures	Auction, UIOLI	(5)

(1) Free capacities are allocated according to the Open-Subscription-Window (OSW) principle.

(2) When congestion occurs (when capacity demands exceed the amount of free capacities), Pay as Bid auctions are organized to allocate capacity. This is often the case for the Baumgarten entry point.

(4) Shippers supplying customers entitled to universal service have priority.

(5) Shippers applying for long-term capacities in the system (booked in February each year) have priority over short-term capacity demands. Rolling monthly capacities can be booked one month ahead and rolling daily capacities one day ahead, also in an open-window-subscription procedure.

(6) If booked capacity is not nominated, the TSO has to offer available capacity to system users.

In the event there is no congestion capacity is allocated according to the first-come-first served (FCFS) principle, capacity bookings intended for universal service have first priority; secondly, long-term capacity requests are prioritized over short-term capacity requests.

Through the expected changes in the Hungarian regulation transmission capacities at border entry and exit points will generally be allocated in auctions. Yearly, (quarterly), and monthly capacities will be allocated based on the Ascending Clock algorithm, while Daily and (within-a-day) capacities based on the Uniform Price algorithm. The capacity allocation at domestic entry and exit points is still under discussion and open window subscription may remain as basic principle.

Capacity may be traded on the secondary market, however property rights stay with the original shipper and only capacity rights (e.g. right to nominate) are exchanged. Therefore, capacity charge must be paid by the original shipper.

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	Short-term	10%	
Exit points of great importance	Short-term/one year	10%	

Balancing and Imbalance Settlement[120]

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on daily basis	(1)
Number of tolerance levels	1	
Balancing gas procurement	Balancing market	
Imbalance settlement	Market based imbalance fee	
Imbalance fee	External price + Markup	

(1) A tolerance of 2% is granted to shippers.

The territory of Hungary is operating as a single balancing zone (excluding the DSOs, as each of them is responsible for their own system's hydraulic balance). The TSO is responsible for the daily balancing of the system. The imbalance charge consists of the commodity price plus the penalty element. The end-of-day imbalance position is fully cashed out for each network user at the commodity price which is the daily volume weighted average price of all title and locational transactions executed on the Balancing Platform. Additional imbalance penalty (HUF/MJ) set by the NRA applies for any imbalance quantity outside of a 2% tolerance.

In addition to balancing gas, secondary capacity can also be traded. Network users that joined the Balancing Platform settle their end-of-day imbalance position with the clearing house (CCP); network users outside the Balancing Platform settle their end-of-day imbalance position with the TSO. There are no WDOs in place.

[120] Information in this section is based on ACER answers to DG ENER Questionnaire on Balancing to ACER and ENTSOG, www.fgsz.hu

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	27.3	
Import	85.2	(1)
Export	20.5	(2)
Consumption	120.9	
Traded volumes	--	
Churn rate	--	

(1) Imports from Western Europe increased after 2008 as spot gas from this region had a significant advantage in price. 80% of the Hungarian natural gas consumption (approx. 9.404 TWh/year) is covered through import. 83% of the imported gas volumes come from Russia, 7% from France and 4% from Germany.

(2) The Hungarian transmission network is used to transport natural gas for Hungary's domestic consumption and for export. Around 12 to 15 bcm are transported annually, while around 4.25 bcm are reserved for export to neighbouring countries. Romanian deliveries started in 2010 and Croatian deliveries commenced in 2011.

Hungary has historically relied upon long-term import contracts. The current long-term supply contract of E.ON with Russia expires at the end of 2015. According to the government, its currently party to the second most expensive gas supply contract within the EU. The government has the intention to renew the contract at the most advantageous conditions possible in terms of both quantities and prices. Following the signature of letter of intent MVM Zrt and E.ON AG entered into an agreement on the acquisition of the local gas trading and storage units of E.ON AG. The transaction, which is subject to antitrust and regulatory approval, is expected to close in the second half of 2013.

Hungary is part of a key transport route for Russian gas to south-east Europe; natural gas is transported to Serbia and Bosnia Herzegovina.

There are two main approaches to wholesale trading in Hungary: OTC Border Point trading and trading on the virtual point (The Hungarian Balancing Point – MGP, run by the Balancing Platform) which makes trading of imbalances day-ahead, as well as within a day, possible by offering standardized products. The total yearly turnover of the Balancing Platform accounts for approximately 100 million GJ.

From January 1st, 2013 CEEGEX Ltd., a subsidiary of the HUPX (Hungarian Power Exchange Ltd.), has been operating an organized natural gas market. According to the latest modification in Natural Gas Act of 2008 the Balancing Platform, operated by the System Operator shall not be

integrated into CEEGEX.

CEEGEX will offer natural gas trading in continuous spot and long-term contracts for the delivery of natural gas in Hungary, OTC clearing facilities and other services. The following market segments will exist on CEEGEX: Continuous Traded Spot and Physical Futures Market (with delivery on the Hungarian system operated by FGSZ Ltd.), OTC Clearing, and the Storage Capacity Market. The natural gas producer, the natural gas trader, the consumer acting on their own behalf, the TSO and the one-stop capacity trader are allowed to enter into a trade on the CEEGEX organized gas market (when they fulfil the regulations). The CEEGEX Member has to pay a one-off entrance fee and an annual fee. In addition, traders are obliged to pay variable expenses, such as a transaction fee, a fee for the trading systems and a fee for order-cancellation.

CEEGEX expects, considering the long-term supply contract with Russia ends in 2015, the volume of gas traded through the exchange will increase notably.

Trading	Notes
Trading volume	--
Spot	--
OTC (GTF)	--
Other	--
Participants (number)	
Churn rate	--

13 IRELAND

Network Topology
Natural gas represents about 28% of total energy demand; natural gas demand is expected to grow in the coming decade despite increasing renewable generation, higher gas prices and increased energy efficiency. Ireland is supplied by natural gas from domestic sources (roughly 4%) and Great Britain (96% by means of the Moffat entry point). When the new gas field (Corrib) begins production, this will supply 40% of the annual gas demand for 5 to 6 years, but thereafter rapidly deplete. Therefore, in the absence of any additional gas supply sources, the Moffat entry point and the interconnector will revert to supplying approximately 96% of Ireland's gas demand after Corrib's decline.

Network topology		Notes
Network length high pressure (km)	2,149	(1)
Pressure range TSO (barg)	70-30	(2)
Import capacity (GWh/day)	353	(3)
Export capacity (GWh/day)	--	(4)
Storage (bcm)	0.2	(5)
LNG (bcm/year)	--	(6)
TSOs (name)	Gaslink	(7)
DSOs (number)	1	(8)
Balancing regime	Daily balancing	(9)

(1) The gas transmission network consists out of 2,149 km of high pressure pipelines covering the larger part of the Island in a ring-shaped fashion; it runs through the following counties: Dublin,Galway, Limerick and Cork. Network length of the onshore system is 1,630 km and another 110 km is located in Scotland; offshore pipeline length is 409 km. In addition, there are spurs to other cities and towns in Ireland. New towns are connected to the network based on a cost-benefit analysis. There is one compressor station located in Ireland, another two compressor stations are located in Scotland for the supply of gas to Ireland. Large customers are directly supplied via the transmission network, whereas residential customers are supplied via the distribution network. In total, over 650,000 consumers are supplied with natural gas. New towns are added to the network on a reasonably frequent basis following analysis and approval by the CER.

(2) Pressure range in the Irish onshore network ranges between 70 barg and 30 barg,[121] however, it's dependent on specific network points. The two subsea interconnectors can operate at pressures in excess of 140 barg.

(3) Ireland is supplied by natural gas from domestic sources (about 4%) and from Great Britain (96% by means of the Moffat entry point). Although a new gas field (Corrib) is anticipated to commence production in early 2015, the Moffat entry point and the interconnector will remain supplying approximately 93% of Ireland's gas demand. However, it is expected that Corrib production will provide 42% of all island demand for the first two years of production.

(4) Although Ireland does not export gas physically to other countries, it is possible to virtually export gas from Ireland to Great Britain through the Moffat Interconnector Point.

[121] CER & NIAUR, Joint Gas Capacity Statement 2011.

(5) In Kinsale, Ireland, there is one operational gas storage facility. The storage facility is a depleted gas field (South West Kinsale) and thus acts primarily as seasonal storage. There are plans for a marginal increase in storage capacity and delivery rate.

(6) Currently, Ireland does not have an LNG terminal, but plans are well advanced for an LNG terminal by Shannon LNG.

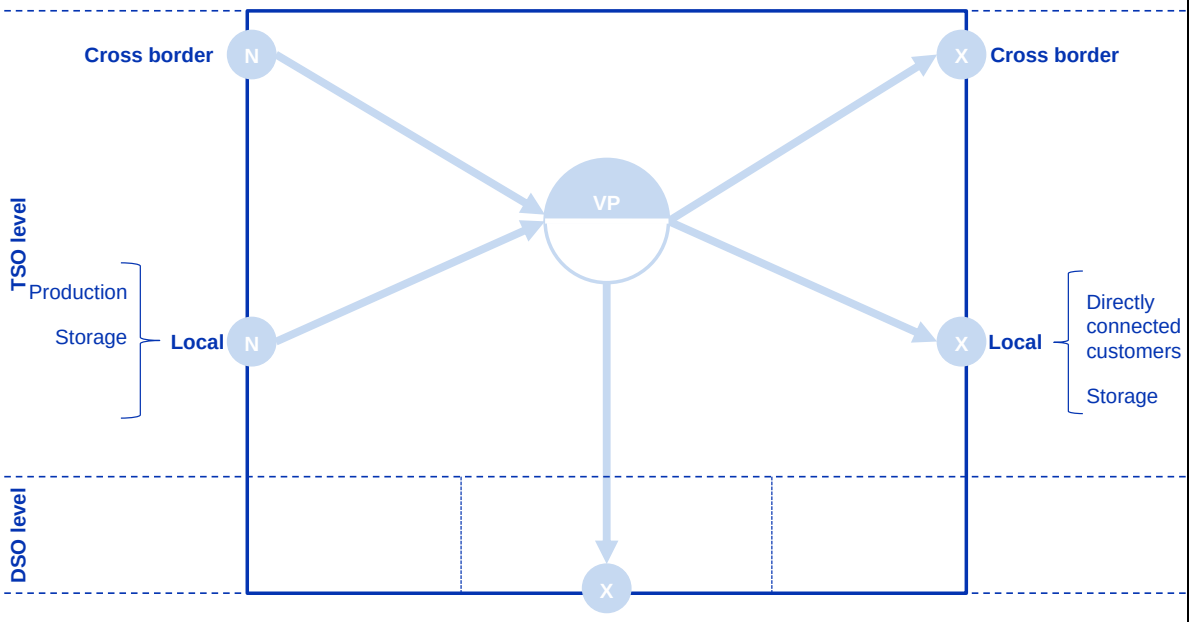
(7) The vertically integrated and state owned company Bord Gáis Éireann (BGÉ) in the form of its division Bord Gáis Networks (BGN) remains the owner of the natural gas transmission and distribution. The transmission system is operated by Gaslink, the only gas TSO in Ireland, and an independent subsidiary company of BGÉ. The Irish Government intends to sell the BGE supply company, thus it is likely the TSO will be fully unbundled from the vertically integrated unit.

(8) Besides the transmission system, Gaslink also operates the distribution system.

(9) Tolerances granted, cash-out based on NBP prices, DSOs included.

Design of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in Ireland as seen from the shipper's perspective. Chapter 1 of this document explains how the schematic representation should be interpreted.



In Ireland, there is a virtual point called the Irish Balancing Point (IBP). However, it is not possible to engage in exchange trading in Ireland.

Network users do not need to explicitly book exit capacity to the DSO level. Transmission Exit Capacity (from the transmission level to the distribution level) and Supply Point Capacity (from distribution level to end consumer) belonging to the end consumer is allocated automatically to the network user it is registered to. If a customer changes supplier (i.e. network user), both the Transmission Exit Capacity and Supply Point Capacity move with the end customer and thus are allocated to the new network user (i.e. the new suppler). There is no action as such on the network user once the customer is registered to them the capacity is allocated to them (i.e. the bill for that capacity is sent to that shipper).

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry-exit system. This table show the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

<table>
<tr><th rowspan="2">Roles</th><th colspan="7">Contractual arrangements</th></tr>
<tr><th>Licence</th><th>Framework agreement</th><th>Balancing</th><th>Capacity</th><th>Virtual Point</th><th>Distribution</th><th>Others</th></tr>
<tr><td>Trader</td><td rowspan="3">1</td><td rowspan="3">2</td><td rowspan="3"></td><td rowspan="3">3</td><td rowspan="3"></td><td></td><td></td></tr>
<tr><td>Shipper</td><td></td><td></td></tr>
<tr><td>Supplier</td><td>4</td><td></td></tr>
<tr><td>Contracting party</td><td>CER</td><td>TSO</td><td>TSO</td><td>TSO</td><td>N/A</td><td>DSO</td><td></td></tr>
</table>

(1) There is a single joined licence for suppliers, shippers, and traders. There a distinction between the different activities a market player may engage in. Possible activities (under the single licence) could be:

- Importing gas into the country
- Physically shipping gas through the gas transmission network.
- Trading gas on a physical hub or trading gas at virtual hub.
- Supplying gas to end consumers at gas transmission level
- Supplying gas to end consumers at distribution level.

The applicant has to meet the following requirements in order to obtain a licence:

- Local office – having a local office is not a requirement for the license. It is a

requirement for the Revenue Commissioners.

- IT-requirements: for supply licenses, applicants must be able to show that they have systems in place to correctly bill their customsers and provide standard customer care services.
- Financial information – A statement of the latest audited accounts for the last two years (where applicable, audited accounts fro the last two years of any party holding 20% or more of the shares of the applicant should also be provided.
- Other information:
  - Business plan – the applicant has to submit a business plan which specifies the forecast of costs, sales, revenue, source of finance.
  - Billing – details of proposals for billing and customer care management
  - Employees – estimate of the number of people to be employed.

(2) The aspiring network user needs to sign a Contractual Framework Agreement and other required ancillary agreement(s) in order to transport gas on the network.

- Furthermore, it may need to provide a financial security as well. Whether or not the aspiring network user is required to deposit a financial security to Gaslink is dependent on its credit rating. An exemption from providing a Security Cover is granted if the applicant has a credit rating higher than:
  - BBB by S&P, and/or
  - BBB or higher by Fitch, and/or
  - Baa2 or higher by Moody's.

  If the aspiring network user should have a security cover, the amount of this cover is based on 72 calendar days' worth of capacity charges, commodity charges and VAT as appropriate for use of the transmission and distribution system and provisions for Siteworks and/or NDM Change of Shipper Cover (to allow for overnight switching) and/or Large New Connections. Gaslink's Financial Security Policy specifies the details of calculating the associated amounts.
- Also, Bord Gais Networks will inform the aspiring network user about the detailed specific requirements of the technical and operational requirements and will provide training on the relevant IT systems.
- In addition, each aspiring network user must provide contact details at which it is contactable 24 hours a day in the event of an emergency. Contact details must include: single telephone number (and a back-up single landline telephone number), a single mobile telephone number (and a single back-up mobile telephone number), a single facsimile number (and a single back-up facsimile number), a single email address (and a single back-up email address) and the job title(s) of relevant personnel.

Balancing is included in the Code of Operations, which is accepted when signing the

framework agreement.

(3) For obtaining transmission capacity, a network user should submit a separate request for capacity booking to the TSO Gaslink. A network user may use (i.e. make sell or buy nominations) the Irish Balancing Point (i.e. the Irish virtual point) where:
- In case of a nomination to sell gas, the network user should hold a total entry capacity that is at least equal to the quantity nominated to sell on the IBP.
- In case of a nomination to buy gas, the network user should hold a total exit capacity that is at least equal to the quantity nominated to buy on the IBP.

We note that The access to VP comes with certain conditions: this is, for example, the case in Ireland where access to VP is an integral part of the E/E system access (see above). In this country a shipper may use the VP (e.g. make sell or buy nominations) only when satisfying specific requirements: in the case of receiving a nomination to sell gas, the shipper is to hold a total entry capacity that is at least equal to the quantity nominated to sell on the VP. In the case of receiving a nomination to buy gas, the shipper should hold a total exit capacity that is at least equal to the quantity nominated to buy on the VP.

(4) Network users interested in supplying gas to the non-daily metered market are obliged to sign an Operational Siteworks Services Agreement.

Tariff Structure and Capacity Products

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	Notes
Entry	F/(I)	--	F/(I)	F/(I)	F/(I)	€/kWh/d	€/kWh	(1/2)
Domestic exit	F/I	--	F/I	F/I	F/I	€/kWh/d	€/kWh	(3)
Border exit	--	--	--	VRF		--	--	(5)
Notes	(2)		(6)	(7)		(8)	(9)	

(1) For every entry and exit point the tariff consists of a capacity and a commodity charge. The capacity charges and the commodity charges differ per entry point and also for the exit zone. Therefore, there are three different charges applied in Ireland. Entry capacity is only offered as firm as there are currently no congestions in the system and thus no need for providing interruptible capacity. There is however a specific interruptible product in place at the storage entry point at Inch. Futhermore, nominations in excess of a Shipper's Active Entry or Exit Capacity may be accommodated by the TSO, and as such a 'de facto' interruptible product is offered at both Entry and Exit points

(2) Entry and Exit Capacity are made available to the network users for different durations:

multi-annual, annual, monthly, daily and within-day capacity products. Monthly, daily and within-day capacity products are referred to as Short Term Capacity products, whereas the remaining products are classified at Long Term Capacity products.

(3) Exit capacity is offered as several different products, dependent on the consumer category the network user wants to supply. First of all, there is the distinction between large (LDM) and 'regular' (DM) daily metered sites. Furthermore, exit capacity can be booked at non-daily metered sites. In addition, network users can nominate more capacity as contracted at exit points (as well as entry points); this can be regarded as interruptible capacity.[122]

(4) Gaslink offers a special type of entry capacity which can be booked at a second entry point to support entry capacity held at a first entry point. It is only available for use in certain circumstances when the capacity at the first entry point cannot be utilised. As such, this product can only be purchased if the network user has already purchased primary entry capacity or is in the process of doing so.

(5) Although the Irish transmission system has no physical cross-border exits it is possible to contract day-ahead virtual reverse flow on an interruptible basis at the Moffat entry point (thus in the exit direction).

(6) Tariffs of monthly capacity products are based on the yearly tariffs, but for each month a different monthly factor is applied. As such, the price of a monthly product during the summer period (May-September) is equal to 1% of the yearly tariff. For the winter months (January-February) the monthly factor is over 30% of the yearly tariff.

Month	Monthly factor
October	13.24%
November	13.24%
December	17.65%
January	30.88%
February	35.29%
March	26.47%
April	13.24%
May	1.00%
June	1.00%
July	1.00%
August	1.00%
September	1.00%

(7) Tariffs for daily capacity products are based on the yearly capacity price as well, but in this case a daily factor is applied. This daily factor ranges from 0.05% during the

[122] CER, National Report to the European Commission, 2012.

summer months to 2.35% in February.

Month	Daily factor
October	0.66%
November	0.66%
December	1.18%
January	2.06%
February	2.35%
March	1.76%
April	0.66%
May	0.05%
June	0.05%
July	0.05%
August	0.05%
September	0.05%

(8) Entry from GB has a capacity price of 291.301€/MWh/d/yr and for entry from the Inch system the capacity charge is 103.697 €/MWh/d/yr. The capacity charge for each exit point is 463.503 €/MWh/d/y. Capacity tariffs at the exit zone, for the delivery to domestic customers, is approximately ten-fold compared to the tariff of the Inch entry system and about twice the entry tariff at the interconnector system. The tariffs for entry to the system at Moffat have been based on the cost of the interconnecting pipelines. Entry from GB has a commodity charge of 0.127 €/MWh. Entry from the Inch system, supplying Irish gas, the commodity charge is 0.091 €/MWh. Lastly, for each exit point the commodity charge is 0.230 €/MWh. The commodity component of the exit tariff is about two to four times higher compared to both entry zones as well.

(9) In addition to these transmission products Gaslink also provides several services to the network user. A network user can trade all or part of its Primary Entry Capacity at an entry point to another network user at the same entry point. There is also the possibility for a network user to 'transfer' its Primary Entry Point Capacity from an original entry point to a New Entry Point, should a new entry point be introduced to the network system. One condition for such an entry point transfer is that it cannot be executed between different shippers (there are additional conditions on such transfers). Exit capacity can be transferred between two different network users at the same exit point or between different exit points. Exit capacity can also be transferred by the same network user at different exit points.

Tariff calculation and division of cost	Notes

Tariff model	Entry-exit	
Role of NRA	Approves tariffs	(1)
Price control mechanism	Revenue regulation	(2)
Tariff calculation methodology	Average cost pricing	(3)
Entry/exit split	Not explicit	(4)
Capacity/commodity split	90/10	(5)
National/cross-border distinction	No	(4)
Locational or uniform tariffs	Uniform at Exit	(5)
Charging basis	Contracted capacity and transported volume	

(1) Each year of the regulatory period the allowed revenue of BGN is updated and refined. The CER eventually approves the tariffs. The CER conducts five year reviews of the revenue earned by the gas network operators. In addition to this, there are annual tariff reviews.123

(2) Gaslink is subject to revenue regulation by the Commission for Energy Regulation (CER). The CER determines the level of revenue that Bord Gáis Networks (BGN) requires to cover the costs for the efficient operation of the network. The CER has recently (November 2012) determined the allowable revenue for BGN for the regulatory period running from October 1st, 2012 to September 30th, 2017. The regulatory asset base of Bord Gáis Networks as determined by the CER is based on indexed historic costs.124

(3) Tariffs are determined for each gas year, running from October 1st to September 30th and are based on a forecast of the expected capacity sales, used for setting the capacity tariffs, and expected gas demand, serving as a basis for the commodity tariffs, before the beginning of the gas year. This implies that currently the transmission tariffs are set using an average cost pricing approach, thus reflecting the average system costs.

(4) There is no explicit split between entry and exit tariffs. However, in a recent decision published by the CER, this will move to a pricing system based on long-run marginal costs (LRMC). Similar to the system in the UK, the revenues from entries and exits would be set at a 50:50 ratio (ignoring auction premiums).

(5) Both a capacity and a commodity component are part of the tariff. The capacity and commodity charges are set such that there is a capacity/commodity split of 90:10. However, besides the application of a capacity and a commodity charge as part of the tariff, network users are also invoiced for their part of the shrinkage gas used.

Capacity allocation	**Notes**

[123] CER, National Report to the EC, 2012.

[124] CER, TBU RAB Report, 2006.

Capacity allocation mechanism	FCFS	
In case of congestion	FCFS	(1)
In case of new capacity	Individually	(2)
Priorities in capacity allocation	--	
Congestion management procedures	Interruptible, short-term products, secondary trade	(3)

(1) Capacity is sold on a First Come First Served (FCFS) basis. The Irish transmission system currently has an excess of transmission capacity and therefore there is no congestion. This applies to both the interconnectors from the UK as well as the on-shore system, the latter because it is centrally planned.[125]

(2) Gaslink does not hold Open Seasons procedures in case of new connections, but each new connection is treated separately. Also, large new consumers connected to the network pay a (deep) connection charge in order not to affect the tariffs of the existing consumers. This connection charge is based on the actual construction costs.

(3) As there is no congestion, Gaslink does not apply specific congestion management procedures. However, Gaslink does offer interruptible and short-term products and facilitates secondary trade in transmission capacity.

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on daily basis	(1)
Number of tolerance levels	1	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Indexed fee	
Imbalance fee	External price + Multiplier	(2)

(1) Ireland has tolerance levels of 25% to 40% for certain exit points.

(2) Shippers with imbalances within the tolerance level are charged by the UK system average price, while in case of imbalances outside of the tolerance level a multiplier is

[125] National Report to the European Commission, CER, July 2012.

applied on the UK system average price.

In Ireland, there is a single balancing zone to which daily balancing is applied. Network users are cashed-out at the end of the day for any positive or negative imbalances. The network users are charged for their imbalance, within the first tier tolerance limits, at a market-based price (UK OCM System Average Price). Outside of these tolerance limits, the imbalance charge is based on the System Marginal Price as published by National Grid times 0.95 (positive imbalance) or 1.05 (negative imbalance).

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	3.7	(1)
Import	49.6	(2)
Export	0	
Consumption	53.2	
Traded volumes	--	

(1) In 2011 indigenous production accounted for around 7% of the total consumption.

(2) Ireland imports all of its gas from Great Britain via the Moffat entry point. Although a new gas field, Corrib, is anticipated to commence production, the Moffat entry point and the Interconnector will continue to supply approximately 96% of the Ireland's gas demand until production begins.[126] However, Corrib is expected to provide on average 42% of all island gas demand over the first two years of production (from 2016). It is expected that GB imports will rise again afterwards.

At the introduction of the entry-exit system in 2005, the Irish Balancing Point (IBP) was established. The IBP is a notional balancing point which allows shippers to exchange (transfer title) gas which has been entered in Gaslink's transmission system (entry-paid). The IBP does not permit financially settled trading.[127,128]

[126] Network Development Statement, Gaslink

[127] Gaslink, Code of Operations

[128] Gas Regulations 2012 Ireland, Arthur Cox

Trading	Notes
Trading volume	--
Exchange spot (TWh)	--
Exchange futures (TWh)	--
OTC (TWh)	--
Participants (number)	--
Exchange spot	--
Exchange futures	--
OTC (TWh)	--
Churn rate	--

14 ITALY

Network Topology

The Italian network is split into national grid and regional grid. The national grid comprises the import-export pipelines, pipes connected to storages and LNG plants, main national pipelines, compressor stations. The transmission system is operated by 10 TSOs. There are 229 DSOs in Italy.

Based on present planning, completion of the important infrastructure projects currently under construction or in the final stages of authorisation will increase import capacity significantly.

Network topology		Notes
Network length high pressure (km)	34,135	(1)
Pressure range TSO (barg)	>=5	(2)
Import capacity (MNm³/d)	320.4	(3)
Export capacity (MNm³/d)	27.58	(4)
Storage (bcm)	15.6	(5)
LNG (bcm/year)	39.4	(6)
TSOs (name)	10	(7)
DSOs (number)	229	(8)

(1) Total length of the gas transmission network is approximately 34,000 km. The Italian network is split into national grid (import-export pipelines, pipes connected to storages and LNG plants, main national pipelines, compressor stations) and regional grid (all the other pipes to flow gas vs. delivery point of the local network).

(2) Pressure regulation is done by the respective TSO. The metering stations at the interconnection points with foreign pipelines are the property of the respective TSO, while metering stations at city gate points are the property of the respective DSO. There is a negligible amount of pipelines (about 0.1% of total Italian network) with less than 5 bar of maximum pressure.

(3) Passo Gries entry 55.93 million Nm^3/day, Tarvisio entry 101.43 million Nm³/day, Mazara del Vallo entry 93.84 million Nm^3/day, Gorizia[129] entry 1.9 million Nm^3/day, Gela entry 29.95 million Nm³/day, Panigaglia LNG entry 12.32 million Nm^3/day, Cavarzere LNG

[129] Imports at Gorizia are "virtual" transaction resulting from lower physical exports.

entry 25.03 million Nm³/day.

(4) Tarvisio exit 17.06 million Nm^3/day, Passo Gries exit 4.74 million Nm^3/day[130], Gorizia exit 4.17 million Nm³/day, Bizzarone 1.14 million Nm^3/day, Republic of San Marino 0.47 million Nm^3/day.

(5) 10 storage facilities are currently active in Italy (8 managed by STOGIT and 2 managed by EDISON Stoccaggio). Starting from April 1st, 2012, out of the total Italian gas storage capacity, 4.6 bcm are reserved to strategic storage to deal with crises in the importation of gas, as prescribed by a decree of the Ministry of Economic Development.[131] The storage facilities are interconnected to the national network through two virtual entry and exit points (Stogit hub and Edison Stoccaggio hub).

One new gas storage facility is currently under construction (and planned to be in operation by 2013) by EDISON Stoccaggio, at the field at St. Potito-Cotignola (with a capacity of 915 M m^3 of working gas.

(6) 11% of imported gas arrives in Italy by ship. Three other major LNG projects (Toscana offshore (LI), Gioia Tauro (RC), Porto Empedocle (AG)) are currently in an advanced phase of the authorisation process. The Toscana Offshore has a capacity of 3.75 bcm and the start of operation is estimated by 2013. The authorisation procedure of the terminal of Gioia Tauro has been completed; the operation of the plant with a capacity of 12 bcm is expected by 2017. The terminal of Porto Empedocle will have a capacity of 8 bcm, and after a court injunction from the Agrigento Municipality will start the building process in 2013.[132]

(7) Out of the 10 TSOs in Italy 3 companies operate in the national network, while 9 companies in the regional networks (some operators manage both). The main operator is Snam Rete Gas by owning 32,010 km of transport pipelines.[133] Snam Rete Gas, the main TSO, owns and operates about 94% of the whole transportation grid.

(8) Only 34 operators (15% of companies operating in the sector) serve more than 100,000 customers, accounting overall for 82% of the volumes distributed in Italy. The principal operator is ENI, which controls 23.1% of the market (in terms of distributed volumes).[134]

[130] Backhaul capacity until 2015.

[131] Decree 29th March 2012 of the Ministry of Economic Development

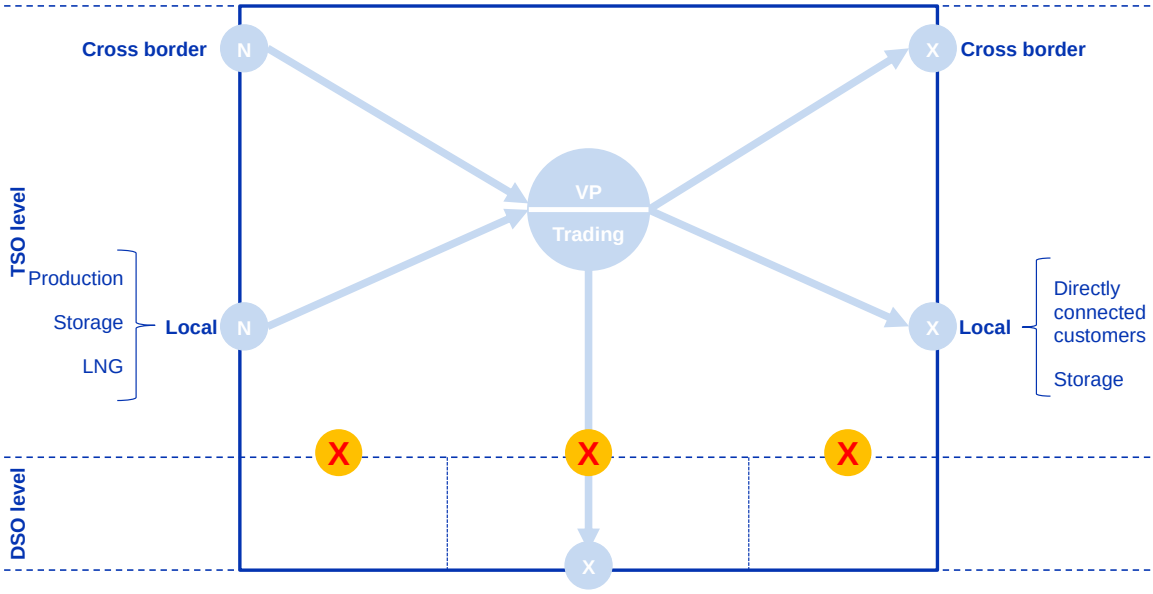
[132] Annual report, 31 March, Aeeg (in Italian), p. 146

[133] http://www.autorita.energia.it/allegati/relaz_ann/12/ra12_1.pdf

[134] http://www.autorita.energia.it/allegati/relaz_ann/12/ra12_1.pdf

Design of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in Italy as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
X	An explicit yearly capacity booking at the exit point from the TSO to the DSO is made by the shippers.

A full entry-exit system applies in Italy. There are two virtual storage hubs, one virtual trading point (PSV), a virtual gas exchange (M-GAS) and a trading platform (PB-GAS). The Italian tariff for the national transmission system is based on a full entry-exit capacity separately bookable, with no restriction. There are 62 entry points (5 interconnectors, 2 regas hubs, 2 storage hubs and 53 entry zones from national production fileds) and 13 exit zones (5 interconnectors, 2 storage hubs, and 6 exit zones). All gas entering the system goes through the virtual trading point PSV (Punto di Scambio Virtuale). However, only a rather small percentage of all previously mentioned gas is actually traded at the hub.[135]

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

[135] Continental European gas hubs: Are they fit for purpose?, Patrick Heather, The Oxford Institute for energy studies, June 2012

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader					3		
Shipper		2					
Supplier	1					4	
Contracting party	Ministry of Economic Development			TSO		DSO	

(1) The following licences are required:

- Shipping – A licence is not required for the actual physical shipping, but operators have to fulfill specific requirements defined by the regulator.
- Imports/supply – Shippers who intent to supply end customers need an authorisation released by the Italian Ministry of Economic Development. A licence issued by the Ministry of Economic Development is required for import contracts longer than one year. The applicant has to fulfill the following specific requirements:
  - Financial and technical requirements – The applicant must prove to have the financial and technical requirements needed to fulfill the import projects
  - Ability to secure gas supply – The applicant shall provide relevant information and guarantees on the origin of the gas to be imported and shall prove the reliability of the supply source and transport system.

We note that the latter requirement (ability to secure gas supply) is an additional one to the typical requirements, commonly associated with a license.

A licence is not required for trading gas on the virtual point or the hub.

Supplying gas to end customers both at transmission and distribution level is subject to a licence. The requirements for obtaining the licence are as follows:

- The applicants shall dispose of the appropriate gas volumes modulation capacity as required by his customers, including related storage capacities located in Italy.

(2) Parties are required to sign a framework agreement in order to participate at capacity

bookings. The following requirements are requested to enter in the framework contract and their respect is a condition for the finalization of the Transportation Contract by the TSO and the related capacity allocation:

a. Have signed import contract/s for access at Entry Points interconnected with foreign pipelines or for the other entry exit points to indicate the period of the relevant contracts behind the capacity contracts requests. Namely: exportation contract, storage contract, sale contract for redelivery points and purchase contract for national production;

b. Indicate the maximum and average daily quantity for each contract subscribed for Entry Points interconnected with foreign pipelines

c. Be authorized by the Ministry of Economic Development to import gas, in case of import contract longer than one year.

d. For import contracts shorter than one year, shippers must declare the country where gas is originated.

e. Be authorized by the Ministry of Economic Development in the case of sale of natural gas final costumer.

f. With regard to exit booking, the user should additionally have in place a selling contract with a final customer.

g. The possession of a credit rating or financial guarantees (equal to one third of the maximum annual capacity charges) to cover obligations deriving from the access to the service and (equal in value to 3% of the maximum annual capacity charges) to cover obligations deriving from the supply of the service. The obligations to be covered are: capacity charges, measurement charges and variable charges.

h. The possession of a financial guarantee to cover the potential exposure of the System in relation to the party.

We note that the requirements linked to a contract with a TSO contain additional elements to the typically applied ones: namely that the market parties wishing to become shippers need to have signed import contract/s for access at entry points interconnected with foreign pipelines or for the other entry exit points to indicate the period of the relevant contracts behind the capacity contracts requests.

(3) Snam Rete Gas offers its users and other companies the possibility to perform exchanges/transfers of the gas that is already in the gas transmission system at the virtual trading point (“ Punto di Scambio Virtuale” or “PSV”). A NRA licence is not needed for trading gas on a physical hub, but market players who want to execute a trade at the virtual point can make a request to Snam to operate at the Virtual Trading Point. Subscribers to the service of the virtual point need to sign a participation form. The

following parties can make use of the virtual point:

- Shippers – parties who have a transport contract with the TSO Snam Rete Gas
- Regassification companies – each terminal operator that intends to operate at the virtual trading point must have a transport contract with Snam Rete Gas. The terminal operator should indicate the names of the regasification service users to whom the regasified LNG amounts shall be re-delivered at the Virtual Trading Point. In order to do so the terminal operator must have the authorisation from its users to make transaction requests (which involves the counterparty's automatic acceptance)
- Other parties – also other parties can make use of the virtual point, but this party must indicate a so-called compensating party and have this Party's acceptance. If the net balance of the transactions of the Other parties is not zero, this value shall be allocated to to the compensating party's transmission balance.

  In other words, the access to VP in Italy is covered by a separate agreement, possible for the parties other than shippers and/ or suppliers (no pre-requisites). Such an approach beneficially affects the spot market and liquidity, and has the potential to thereby increaseing the security of supply and decreaseing the prices for the domestic market of the relevant country.

(4) With regard to exit booking to the domestic exit zone Snam Rete Gas´ Network Users who have a contract with the interconnected distribution Operator, in order to supply their end customers, they can book capacity at the relevant exit point, aligned with the underlying market demand they supply.

Tariff Structure and Capacity Products

A full entry-exit system applies in Italy. As cross-border transport is integrated into the overall tariff system, the same criteria apply to cross border and domestic flows. In addition to capacity charges based on booked capacity, a commodity charge for transported volumes applies at entry points.

Capacity booking is possible on annual, semi-annual, quarterly, monthly and daily basis; moreover cross border transmission entry capacity can be traded among shippers for a period less than one month.

Tariff structure	Products					Tariff basis		Notes
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commo-dity	
Entry border	F/ I[136]	F/I	F/ I	F/I[137]	--	EUR/cm/d	EUR/cm	(1)
Other entry	F	--	--	--	--	EUR/cm/d	EUR/cm	
Domestic exit	F	--	--	--	--	EUR/cm/d		
Border exit	F	--	--	--	--	EUR/cm/d		
			(2)			(3)		

(1) Long-term entry capacity booking is possible on an annual basis and up to maximum five years.

Interruptible capacity is charged based on the probability of interruption, from 80% up to 90% of the price of the firm product.

No explicit backhaul capacity booking is possible; however at all border transfer stations both entry and exit capacity can be booked on a firm basis.

(2) Monthly capacity is charged by 140% of 1/12 of the annual capacity tariff. For a three-month contract monthly capacity is charged by 120% of 1/12 of the annual capacity tariff, while by 110% for a six-month contract. No seasonal factors are applied.

(3) Distance is taken into account when calculating entry and exit charges. A shorthaul tariff component is applied for transports on the national transmission system of less than 15 km. In that case, the normal capacity charge is multiplied by (distance in km/15). No seasonal factors are applied.

[136] F = firm, I = interruptible

[137] Available at Tarvisio - Arnoldstein Interconnection Point.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	
Role of NRA	Approval	(1)
Price control mechanism	Revenue Cap Regulation/Rate of return regime	
Tariff calculation methodology	Method of least squares	
Entry/exit split	50/50	
Capacity/commodity split	Appr. 85/15[138]	(2)
National/cross-border distinction	If regional transmission grid is not used, a discount of 60% is applied on the commodity charge	(3)
Locational or uniform tariffs	Locational	
Charging basis (booked capacity/other)	Booked capacity Volume of gas to be transported	

(1) The TSO calculates the tariffs based on the methodology approved by the NRA and submits them for NRA approval ex ante.

(2) There is no fix ratio between the capacity and commodity charges; however in 2011 a capacity/commodity split of 85/15 has been applied. The capacity charge shall cover capital costs (depreciation and remuneration on invested capital) while the commodity charge shall cover the operating costs. Fuel gas is provided in kind by shippers.[139]

(3) The transmission tariff applies the same criteria to cross border and domestic flows. However, cross border flows do not require the use of the regional transmission grid and therefore the regional transmission grid charge is not applied.[140]

Capacity allocation		Notes
Capacity allocation mechanism	Open subscription window	
In case of congestion	Pro rata	(1)
In case of new capacity	Open subscription window	
Priorities in capacity allocation	Duration	(2)
Congestion management procedures	Interruptible UIOLI[141]; Capacity traded on secondary market	

(1) In case of congestion (when capacity demands exceed the amount of free capacities) capacities are allocated pro rata.

(2) Long-term capacity bookings have priority during the allocation of capacities, where capacity is first granted to long-term contracts with a take or pay clause signed before

[138] Regulation of gas transmission flows in the energy community, February 2011, ECRB

[139] Input for Initial Impact Assessment for draft FG for harmonised Gas Tariff structures, ACER, June 2012

[140] Input for Initial Impact Assessment for draft FG for harmonised Gas Tariff structures, ACER, June 2012

[141] According to Snam Rete Gas Network Code (chapter 5)

August 10th, 1998. Following annual capacity demands are prioritised over short-term bookings.[142,143]

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	No	
Number of tolerance levels	None	
Balancing gas procurement	Balancing market	
Imbalance settlement	Market based imbalance fee	(1)
Imbalance fee	External price	

(1) Imbalances fee results from the daily auction (where users and TSO buy and sell gas).

In 2011 the market based simplified balancing system (SBSM) was introduced. Snam Rete Gas, responsible for maintaining the short-term balance in the Italian natural gas system, acquires the necessary storage resources in the new, dedicated market (PB-GAS) to maintain a balance in the network. Balancing is practised on a daily basis over one national zone. A single price is defined for use in settling all imbalances. There are no margins of tolerance.

Market Environment and Trading

Volumes	TWh/year	notes
Indigenous production	89.4	(1)
Import	744.7	(2)
Export	1.3	
Consumption	824.6	
Traded volumes	60.6	

(1) According to an estimation by the Ministry of Economic Development, the recoverable domestic reserves (sure + likely) with the current rate of production will last for 13 years.[144]

[142] Grid Code of Snam Rete Gas

[143] http://www.autorita.energia.it/allegati/docs/02/137-02.pdf

(2) In 2011 the dependence of Italy from foreign production reached 92.4% of the total consumption. The five most important importers of gas in Italy are ENI with 28.1 bcm, Edison with 11.8 bcm, Enel Trade with 9.3 bcm, Sonatrach Gas Italia with 1.4 bcm and Singergie Italiane with 1.3 bcm.[145]

Nearly 75% of Italy´s gas imports in 2011 originate in non-EU countries. Most imported gas arrives in Italy through pipelines (89%). For many years Italy´s most important supplier has been (and still is) Algeria covering alone one-third of the country´s requirement. Gas arriving from Russia accounted for 28% of total gas imports. The remaining amount of imports are from Qatar (9%), Norway and the Netherlands (5%), Lybia (3%) and other EU countries (14%).

Import activity is based on long-term contracts; around 65% are for more than 20 years and a further 24% for duration of 5 to 20 years.[146]

Each gas supplier has an obligation to supply with regulated prices in the protected market. An analysis of AEEG shows that customers in the protected market pay higher prices than those in the liberalised market with similar consumption profiles.[147]

The PSV is a virtual trading point providing operators with commercial balancing tools. Transactions at the PSV are conducted under bilateral over-the-counter contracts. The PSV can be considered as a transition hub, similar to NCG, PEGs and GPL, as it has started to liberalise and offer trading products. However, the PSV has yet to show its full potential. Since its creation the PSV has been higher priced than the rest of the hubs. However, progresses towards an effective trading hub can be observed. The upgrade of the TAG pipeline and the start of day-ahead capacity auctions since March 1st, 2012 led to a price convergence of the PSV towards Baumgarten and other European hubs. Indeed the spread between the two hubs is now running at or close to the short term marginal cost of transportation, which is in order of 2 EUR/MWh. Given the PSV´s geographical location and potential importance in helping secure European security of physical gas supply, it has potential to eventually become a reference hub for southern Europe.[148]

The gas exchange in Italy has been recently established under the GME (Italian Power Exchange), the gas trading platform (PGAS), where monthly and yearly products are traded. It is composed of the segment Import with continuous trading and the segment Aliquote (for gas produced in Italy) where trading is conducted on an auction basis.[149]

[144] http://www.iclg.co.uk/practice-areas/gas-regulation/gas-regulation-2012/italy

[145] http://www.autorita.energia.it/allegati/relaz_ann/12/ra12_1.pdf

[146] http://www.autorita.energia.it/allegati/relaz_ann/12/ra12_1.pdf

[147] http://www.autorita.energia.it/allegati/relaz_ann/10/volI_cap3_en.pdf

[148] Continental European gas hubs: Are they fit for purpose?, Patrick Heather, The Oxford Institute for energy studies, June 2012

[149] Annual report to the European Commission on regulatory activities and the state of services in the electricity and gas sectors, 31 July 2011, Aeeg

The spot market, divided into MGP-GAS (Gas Day-Ahead market) with trading activities for the following gas-day and the MI-GAS (Intra-Day gas market) where gas for the same gas-day is traded, still suffers from a lack of liquidity. The prices on the exchange are highly consistent with those at the PSV.

Trading[150]	Twh	Notes
Trading volume	961.3	(1)
Spot (PGAS)	148	(2)
OTC (PSV)	459.2	(3)
Other	--	
Participants (number)	348	(4)
Churn rate	2.5	

(1) In 2011 the sales on the wholesale market increased by 12% with respect to 2010. A steady decline in the level of concentration can be observed in the market; the share of the top three companies (Eni, Edison and Synergies) dropped to 28.2% from 31.1% of 2010.

(2) In 2011, 125 transaction has been concluded on MGP-GAS with a total trading volume of 148 TWh and an average price of 27.68 EUR/MWh.

(3) In recent years the PSV has considerably increased in importance in terms of volumes traded and number of transactions. However, only a smaller part of all gas entering the Italian system is actually traded at the hub. In 2011, 112 participants have been active at the PSV, 27 of them were pure paper traders (e.g. non-users of the transmission system).

(4) In 2011 there were 40 pure wholesaler, 205 pure retailer and 103 companies operating both in the retail and wholesale market active in the Italian market. In 2011 PSV users amounted to 112.

[150] Annual report, 31 March, Aeeg (in Italian), p. 159-167

15 LATVIA

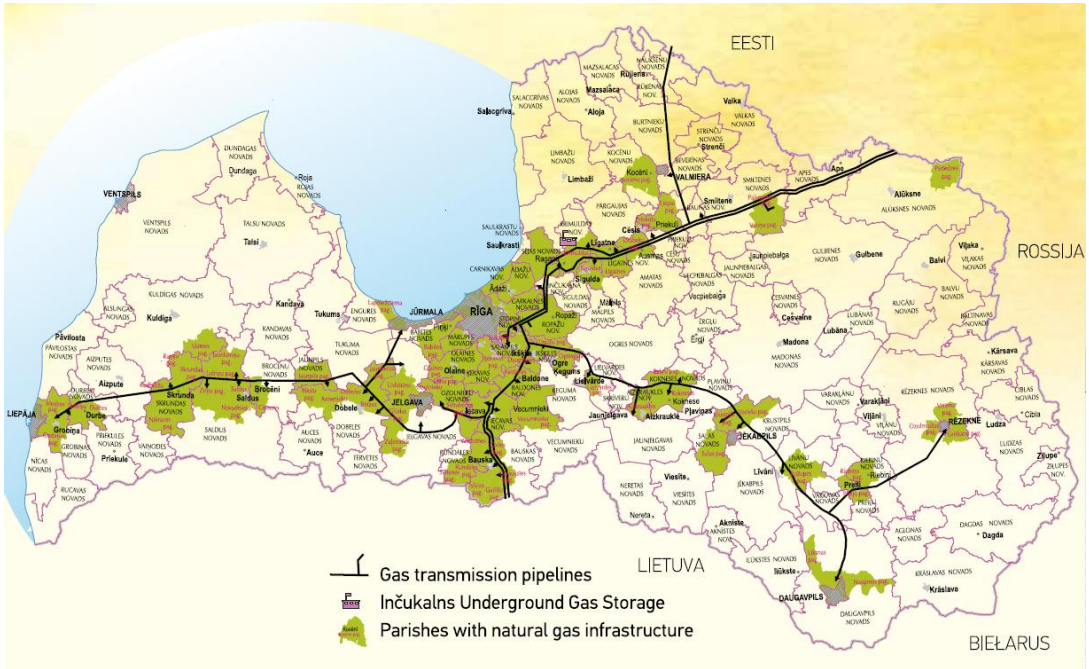
Network Topology

The topology of the Latvian gas transmission and distribution networks, operated by JSC Latvijas Gāze, is shown in the figure below. It consists of over 1,200 km of main transmission pipelines and almost four times as much distribution lines. Latvian regions (parishes) that are served through the distribution networks are indicated as green in the figure.

The system is supplied during the spring and summer with gas from Russia through the bi-directional Korneti metering station. At this location, two 700 mm pipelines cross the Latvian border, providing a maximum entry capacity of 15 million m^3 per day. Besides direct delivery to Latvian customers, a significant part of the imported flow is injected into a storage facility named Inčukalns, where it is stored for withdrawal in the heating season.

The UGS facility Inčukalns is located northeast of Riga and is the only UGS in the Baltic states. During winter it supplies gas not only to Latvia itself, but also to Estonia, back to Russia and if necessary to Lithuania (emergency cases only). There is no direct supply from Russia to Latvian customers during winter.

The transmission system is designed for annual consumptions of about two times the current levels in Latvia.



Source: website JSC Latvijas Gāze

Network topology		Notes
Network length high pressure (km)	1,239	(1)
Pressure range TSO	20-54 bar	(2)
Import capacity (GWh/d)	166	(3)
Export capacity (GWh/d)	99	
Storage (bcm)	4.47 BCM, of which 2.32 BCM active	(4)
NG (bcm/ye r)	--	(5)
TSOs (name)	JSC Latvijas Gāze	(6)
DSOs (number)	1	(7)

(1) Latvijas Gāze is the only gas transporter in Latvia. It owns the transmission network and the gas distribution network (4,832 km in 2011).

(2) The operating pressure for the transmission system ranges from 16 to 40 bar. However, the design pressure is 54 bar, but the system has not been used for pressure over 40 bar in the last 10 years. This is mainly due to the age of the network and a significant reduction in consumption. The operating pressure for the distribution system is divided into five pressure ranges: 0-0.05 (low. pr. distribution); 0.05-4 (medium pr. distribution); 4-6; 6-12 and 12-16 bar (high pressure distribution).[151]

(3) Based on data in the ENTSOG system development map (2011).

(4) Seasonal storage in a layer of porous sandstone. Active gas volume may potentially be increased to 3.2 billion m^3. Geological formations also allow for further construction of new storage facilities.

(5) Currently there is no LNG terminal in Latvia or any other Baltic state. The Baltic States together have previously agreed on co-operation towards a regional facility that could serve the entire Baltic region, however no final agreement has been reached. Lithuania has plans for a floating LNG terminal at the Klaipedas Sea Port, which could also supply gas to Latvia and Estonia. Latvia prefers a solution in which the Baltic countries build a large, common terminal on Latvian soil. Also, three locations are being considered for an LNG terminal in Estonia.

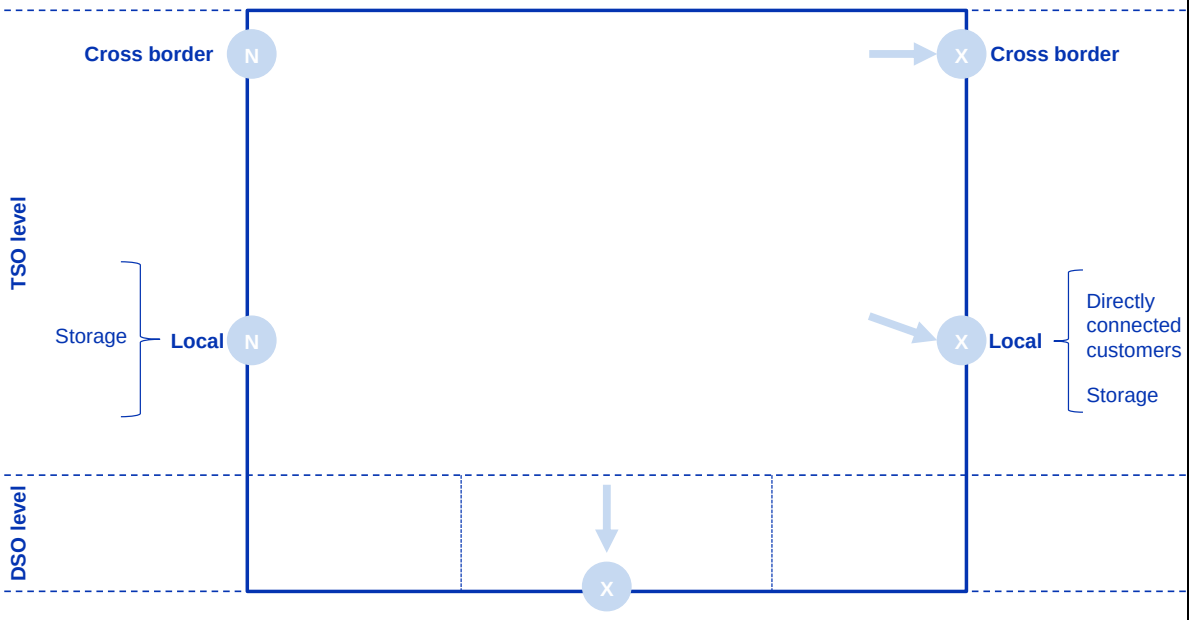
(6) JSC Latvijas Gāze shareholder structure: 47.2% E.On Ruhrgas International GmbH, 34% OJSC Gazprom, 16% LLC ITERA Latvija, and 2.8% others.

(7) JSC Latvijas Gāze is also the only DSO in Latvia.

[151] Source: correspondence with PUC

Design of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in Lativa as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



As the sole operator, Latvijas Gāze is system operator (TSO, DSO and storage) as well as importing and supplying gas to end consumers. No VTP or trading is possible. Besides connections to Estonia, Lithuania and Russia, the Latvian gas transportation system is not connected to other European markets. In turn, Estonia and Lithuania are only connected to the Russian system. Furthermore, there is only one supplier (Russia) in Latvia.

These circumstances hamper the process of joining the Baltic regional gas market with the European energy market. To this respect the Latvian Parliament, adopted on December 3rd, 2009, made a decision to postpone liberalisation of the gas market. This means that at the moment no third party access is granted by Latvian law.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader							
Shipper							
Supplier	1						
Contracting party	NRA						

(1) Latvijas Gāze is an integrated company (supply and gas transmission). The roles of trader, shipper and supplier are not distinguished. Latvijas Gāze operates under several licences issued by the NRA: in addition to a licence for the transmission and distribution of gas, also a trading licence and a storage licence.

Tariff Structure and Capacity Products

In Regulations for the Supply and Use of Natural Gas, art. 47, it is stated that: "The system operator shall sell natural gas to the user for the tariffs that have been approved in accordance with the Law On Regulators of Public Utilities and the Energy Law"[152].

Latvijas Gāze charges its customers for transmission, storage, distribution, sales service, commodity and also excise tax and VAT. The methodology to calculate tariffs are published on the website of the PUC. Transmission and storage tariffs are proportional to the consumption level and are identical for all consumers, independent of consumption volumes. Tariffs for distribution and sales service are differentiated based on annual (historical) consumption volume and are applied proportional to the consumption level. Cross-border tariffs are currently distance based.

[152] http://www.sprk.gov.lv/: Regulations for the Supply and Use of Natural Gas, art. 47

According to law, the tariffs should cover the costs of service. Therefore, the tariffs are based on historic costs (full cost recovery) and forecast consumption volumes. For capital costs, the regulator approves the rate of return for WACC calculation; the TSO determines regulated assets according to methodology (at historic value), as well as includes depreciation of regulated assets from financial accounting reports of the company.

The regulator approves the tariff method periodically, but the period of re-approval is not specified. Tariffs are reviewed when the TSO submits a tariff proposal or when the regulator requests the TSO to submit a tariff proposal.

In the figure below, an example of a monthly published tariff sheet is given for October 2012.[153] In this case, 230 LVL/1000 Nm^3 is the commodity component (the price of the gas), to which the tariffs of services (differentiated, if applicable) and taxes are added.

For consumers with high consumption volumes, the tariff (without excise and VAT) is 255.93 LVL/1000 Nm^3, consisting of commodity component 230 LVL/1000 Nm^3 and services of the gas company (total of transmission, storage, distribution and sales) of 25.93 LVL/1000 Nm^3.

For smaller consumer (e.g. with an annual consumption in last year between 25,000 Nm^3 and 126,000 Nm^3), the tariff (without excise and VAT) is 319.18 LVL/1000 Nm^3, consisting of commodity component 230 LVL/1000 Nm^3 and services of the gas company (total of transmission, storage, distribution and sales) of 89.18 LVL/1000 Nm^3.

Lietotājiem ar dabasgāzes patēriņu virs 25 tūkst.nm³ gadā
Piemērojamā dabasgāzes tirdzniecības cena 2012. gada oktobrī – 230 LVL/tūkst.nm³

Lietotāju grupas	Dabasgāzes patēriņa apjoms gadā (tūkst.nm³)	Ar SPRK padomes lēm. Nr.247 apstiprinātais dabasgāzes diferencētais tirdzniecības gala tarifs (LVL/tūkst.nm³)	Dabasgāzei, kuru ar akcīzes nodokli neapliek **		Dabasgāze izmantošanai par kurināmo			Dabasgāze izmantošanai par degvielu		
			PVN 21 % (LVL)	Dabasgāzes diferencētais tirdzniecības gala tarifs ar PVN (LVL/tūkst.nm³)	Akcīzes nodoklis dabasgāzes izmantošanai par kurināmo (LVL/tūkst.nm³)	PVN 21 % (LVL)	Dabasgāzes diferencētā tirdzniecības gala cena ar PVN (LVL/tūkst.nm³)	Akcīzes nodoklis dabasgāzes izmantošanai par degvielu (LVL/tūkst.nm³)	PVN 21 % (LVL)	Dabasgāzes diferencētā tirdzniecības gala cena ar PVN (LVL/tūkst.nm³)
3.	no 25 līdz 126	**319,18**	**67,03**	**386,21**	12,00	69,55	**400,73**	70,00	81,73	**470,91**
4.	no 126 līdz 1 260	**294,99**	**61,95**	**356,94**	12,00	64,47	**371,46**	70,00	76,65	**441,64**
5.	no 1 260 līdz 12 600	**281,10**	**59,03**	**340,13**	12,00	61,55	**354,65**	70,00	73,73	**424,83**
6.	no 12 600 līdz 20 000	**271,71**	**57,06**	**328,77**	12,00	59,58	**343,29**	70,00	71,76	**413,47**
7.	no 20 000 līdz 100 000	**264,85**	**55,62**	**320,47**	12,00	58,14	**334,99**	70,00	70,32	**405,17**
8.	virs 100 000	**255,93**	**53,75**	**309,68**	12,00	56,27	**324,20**	70,00	68,45	**394,38**

* Dabasgāzes normālkubikmetrs (nm³)
** Likuma „Par akcīzes nodokli" 6.¹ pants

[153] Source: http://www.lg.lv/uploads/filedir/File/Vestnesis/2012/2012.10._Tarifi.pdf.

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	Notes
Entry	--	--	--	--	--	--	--	--
Domestic exit	--	--	--	--	--	--	--	--
Border exit	--	--	--	--	--	--	--	--

Capacity allocation	Notes
Capacity allocation mechanism	--
In case of congestion	--
In case of new capacity	--
Priorities in capacity allocation	--
Customer type	--
Duration	--
Congestion management procedures	--

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	--	--	
Exit points	--	--	

Tariff calculation and division of cost	Notes
Tariff modelMonthly price for gas including transmission etc.	--
Role of NRA	Periodically approval of reference tariff
Price control mechanism	--
Tariff calculation methodology	--
Entry/exit split	--
Capacity/commodity split	--
National/cross-border distinction	No
Locational or uniform tariffs	Uniform
Charging basis (booked capacity/other)	Annual volume

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	No	
Number of tolerance levels	N/A	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Gas-in-kind compensation	
Imbalance fee	N/A	

The TSO, Latvijas Gāze, currently conducts the balancing for the entire network on a daily basis, mainly through the use of system linepack. Customers are not involved in the process. There is no distinction between transmission and distribution level.

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	0	
Import	18.2	(1)
Export	0	(2)
Consumption	16.7	
Traded volumes	--	

(1) Note this is only 'direct import from Russia', ergo excluding gas imported to store in Inčukalns UGS during the spring and summer.

(2) No direct exports are mentioned. However, Inčukalns UGS also supplies to Estonia, North-western Russia and if necessary to Lithuania (emergency cases only). In 2011 this amounted to 0.5 bcm to Estonia and 0.4 bcm to Russia.

Final consumption is supplied by imported gas from Russia. During spring and summer, a large share of the imported gas is stored in Inčukalns UGS, which supplies consumers during the rest of the year. In 2011, 1.1 bcm was supplied from the UGS.Currently JSC Latvijas Gāze is the only market party in Latvia that may trade and provide services related to natural gas. Besides connections to Estonia, Lithuania and Russia, the Latvian gas transportation system is not connected to other European markets. In turn, Estonia and Lithuania are only connected to the

Russian system. Furthermore, there is only one supplier (Russia) in Latvia.

Regulations for the Supply and Use of Natural Gas, art. 47: The system operator shall sell natural gas to the user for the tariffs that have been approved in accordance with the Law On Regulators of Public Utilities and the Energy Law. This results in a monthly updated table of fixed prices for gas including transmission and storage services for each category of customers. For cross-border transmission, a distance based component applies.

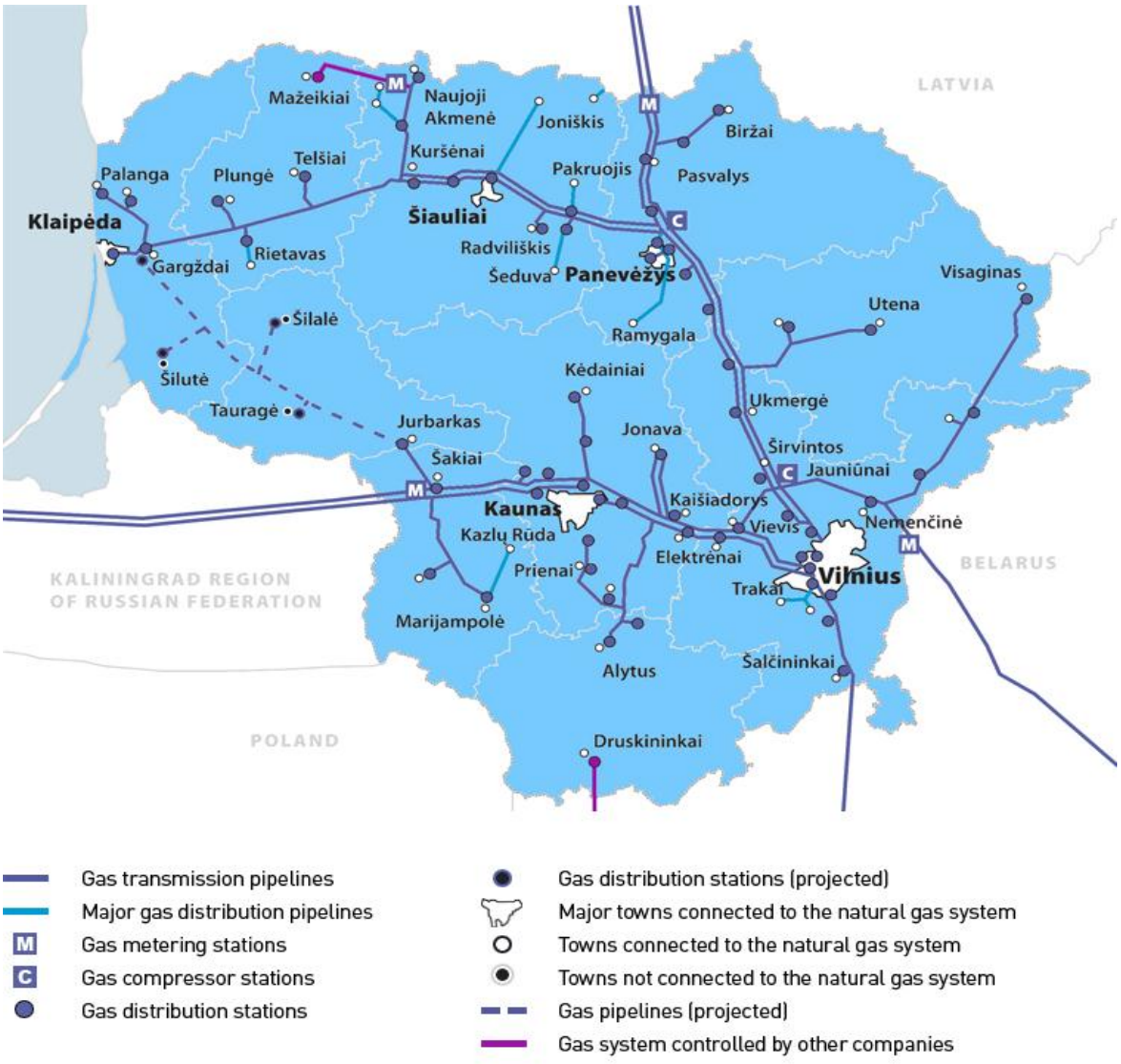
There is only one network user that serves 442,600 customers. The majority of these customers, 433,400 are domestic customers.

Trading	Notes
Trading volume	--
Exchange spot	--
Exchange future	--
OTC	--
Other	--
Participants (number)	--
Churn rate	--

16 LITHUANIA

Network Topology[154]

The Lithuanian gas transmission system was mostly constructed during the Soviet Union period, and its capacity is generally larger than the domestic demand requirements. Due to sufficient capacity, there is rarely congestion in the transport system. Lithuania is also a transit country for large volumes of Russian transit gas (destined for the Kaliningrad region).



[154] http://perdavimas.ldujos.lt/en/transmissionsystem/gastransmissionscheme

Network topology		Notes
Network length high pressure (km)	1,900	(1)
Pressure range TSO	Max. 54 bar	(2)
Import capacity (Nm³/d)	36.4 mcm/day[155]	(3)
Export capacity (Nm³/d)	15.7 mcm/ day[156]	(4)
Storage (bcm)	--	(5)
LNG (bcm/year)	--	(6)
TSOs (name)	Lietuvos dujos	(7)
DSOs (number)	6[157]	

(1) The Lithuanian national transmission system is over 1,900 km in length, with two gas compressor stations, three metering stations and 65 gas distribution stations.
Lithuania's natural gas transmission system is interconnected with the natural gas transmission systems of Belarus, Latvia and Russia. The largest volumes of natural gas are imported via the gas transmission pipeline from Belarus and are transported to customers of Lithuania and in transit to customers of the Kaliningrad Region, Russian Federation. Gas transportation via the Lithuania-Latvia cross-border gas interconnector is bi-directional.
With the construction of the Sakiai-Klaipeda Gas Transmission Pipeline complete, the gas transmission pipeline system is planned to be looped.

(2) The oldest operated pipilines in Lithuania have been in operation since1961. The largest pipe diameter is 1,200 mm. The design pressure of the largest part of the gas transmission system is 54 bar.

(3) Belarus- Lithuania 31.2 mcm/ day, Latvia- Lithiania 5.2 mcm/ day.[158]

(4) Lithuania- Latvia 5.2 mcm/ day, Lithiania- Russia (Kaliningrad) 10.5 mcm/ day.[159]

(5) There are plans to construct an underground gas storage facility (the Syderiai saline aquifer structure in Telšiai region) with the minimum useful volume of 500 mcm. It is projected that the facility is to be completed by the end of 2016.[160]

[155] Data of December 31, 2010 or December 31, 2011 (are identical), according to the National Control Commission for Prices and Energy. Normal cubic meters of gas are cubic meters measured at temperature of 20 °C

[156] Data of December 31, 2010 or December 31, 2011 (are identical), according to the National Control Commission for Prices and Energy. Normal cubic meters of gas are cubic meters measured at temperature of 20 °C

[157] http://www.regula.lt/en/activities/gas/licence-holders/

[158] According to the National Control Commission for Prices and Energy. Normal cubic meters of gas are cubic meters measured at temperature of 20 °C.

[159] According to the National Control Commission for Prices and Energy. Normal cubic meters of gas are cubic meters measured at temperature of 20 °C.

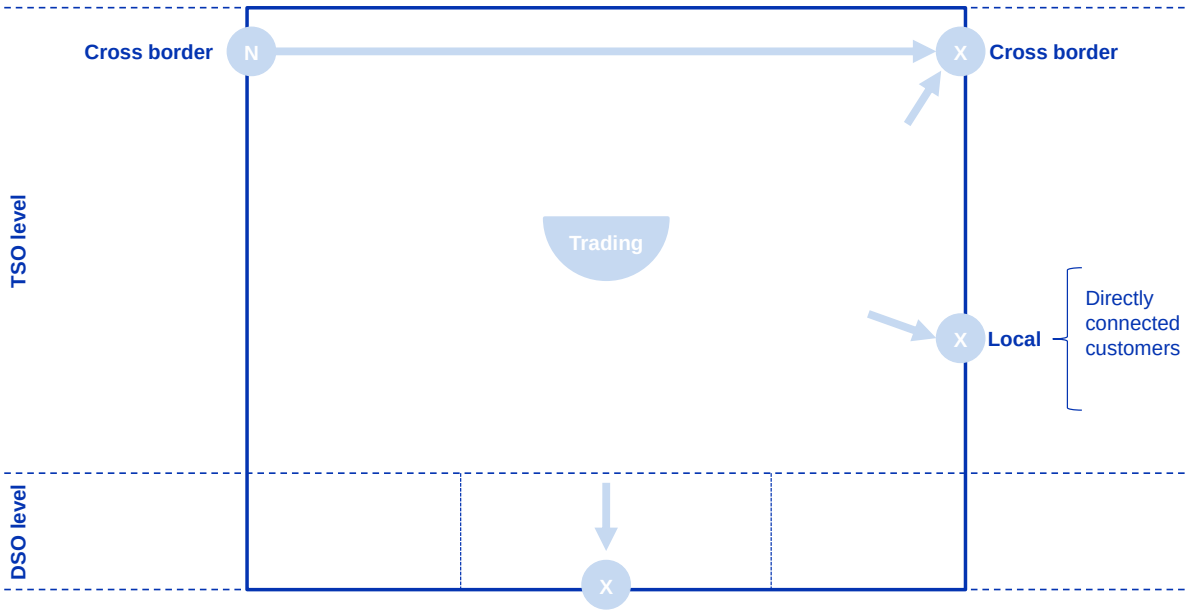
[160] NCC National Report 2011 to ERGEG, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Lithuania-EN_v2.PDF

(6) In 2010 the Government of Lithuania passed a decision on the construction of an LNG terminal in Klaipeda. The projected potential capacity of the terminal is 2- 3 bcm/ year, and the planned start of operations is 2014.[161]

(7) Currently the Lithuanian gas supply, transmission and distribution functions are concentrated in one company- Lietuvos Dujos AB. Lietuvos Dujos AB is one of four entities importing gas to Lithuania and its share makes up on average around 40% of total gas imports to Lithuania. The main business of Lietuvos Dujos AB covers natural gas purchase (import) and sales to its clients, transmission and distribution services and sustainable development of Lithuania's natural gas supply infrastructure (most of which are owned by the company). Lietuvos Dujos AB operates transmission and distribution pipelines, ~1.9 thousand km and ~8.1 thousand km respectively. It supplies gas to heat and power generating enterprises, industrial and agricultural enterprises and to commercial and residential natural gas consumers.[162]

Design of the Entry-Exit System[163]

The figure below gives the schematic representation of the entry-exit system in Lithuania as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



[161]NCC National Report 2011 to ERGEG, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Lithuania-EN_v2.PDF

[162]http://www.dujos.lt/index.php/about-us/business-profile/229

[163]EBRD, http://www.ebrd.com/downloads/legal/irc/countries/lithuania.pdf

As the sole operator, Lietuvos Dujos is system operator (TSO, DSO) as well as importing and supplying gas to end consumers. There is no VTP and limited trading is possible due to the rigid import contracts with Gazprom. Transit is from Russia to Russia (non-EU) and contracted under a different regime. The first gas exchange, Baltpool, began operations in Lithuania on March 1st, 2012. Wholesale trading of natural gas administered by Baltpool takes place on the commodities exchange by trading natural gas or transfer of right of acquisition of natural gas. Starting from January 2013, the second trading platform of natural gas operated by GET Baltic was established.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader							
Shipper	1	2					
Supplier							
Contracting party	NRA	TSO				NRA	

(1) An energy licence is required for transmission, distribution, storage, liquifaction, supply and market operatios in natural gas. Lithuanian gas import, supply, transmission and distribution are concentrated in one company- Lietuvos Dujos. The suppliers licence is also a prerequisite for shippers. You become a shipper by signing a contract (for capacity) with the TSO. Lietuvos Dujos AB is the dedicated supplier of last resort. The applicant has to meet the following requirements in order to obtain a licence:

- Local office – the applicant should be registered in Lithuania
- Technical – owning the required infrastructure (applicable for the license for gas transmission, liquefaction, storage, distribution)
- IT-systems – the applicant should have information systems in order to communicate with the network operator
- Financial requirements – the applicants financial strength indicator for the last 2 years should

be higher than the NRA sector value.

- Technical capabilities – the NRA does a management evaluation

(2) A shipper books capacity at Lietuvos Dujos. The following requirements apply for booking capacity:

- Proof of supply - A shipper has to prove, by show of contract, that he has or is able to purchase natural gas (where natural gas is not procured from AB Lietuvos Dujos). With this proof the TSO will assign and contract transmission capacity to the shipper. In the event the shipper fails to submit proof that he has procured the gas volumes which are to be transported to the delivery point, the TSO is entitled to refuse the transmission contract.
- Registration of immovable property/real estate - The shipper is also obliged to submit a certificate, issued by the state enterprise Centre of Registers, for the registration of the immovable property/real estate (documentary proof of the owner's legal entitlement to the immovable property item), or a copy of the rental agreement, registered with the state enterprise Centre of Registers (in case the party that will conclude the contract is not the owner of the immovable property item but has taken it on lease instead).[164]

Tariff Structure and Capacity Products[165]

Tariff structure	Products					Tariff basis		Notes
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	
Entry	--	--	--	--	--	--	--	--
Domestic exit	F / I[166]	--	F / I	F / I	--	LTL/ thousand m^3 / day / year	LTL/ thousand m^3	(1)
Border exit	F / I	--	F / I	F/ I	--	LTL/ thousand m^3 / day / year	LTL/ thousand m^3	(1)

(1) Since 2010, the short-term transmission service tariffs have been applied to concrete capacities booked for monthly or daily periods. During the validity term of a short-term contract, the system user may book monthly and daily capacities. The system user may book different monthly capacities for different months and different daily capacities for different days. The capacities booked for a concrete calendar month, in the course of the month, are

[164] http://perdavimas.ldujos.lt/en/transportation_services/transportation_service_contracts

[165] NCC National Report 2011 to ERGEG, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Lithuania-EN_v2.PDF

[166] F = firm, I = interruptible

not subject to any further changes.

Interruptible capacity is offered only when there is not sufficient firm capacity.[167]

Capacity nominations and re-nominations (for each gas day) can occur on a weekly and/or daily basis, after the conclusion of a natural gas transmission contract.[168] The 'show-of-contract' principle applies during the booking of capacities for respective periods, the system user shall be in possession of the gas volumes procured.[169]

The TSO is applying a regulated postage stamp tariff system for domestic gas transmission. The TSO may differentiate the tariffs by customer categories or groups, gas consumption volumes, gas pressure, capacity, duration, gas consumption purpose, gas supply reliability, etc.

Two types of contracts are offered by the TSO, long-term and short-term natural gas transmission contracts. Long-term contracts are offered to system users for a capacity periodof at least one year. The system users get firm capacity, which remains unchanged for the period of the contract. Short-term contracts are offered to system users for capacity period shorter than one year (from 1 day to 364 days).

Consistent with the type of the contract the system users have, a separate type of tariff applies. The tariffs for transmission service for the system users with a long-term contract depend on the annual volumes per delivery point and booked capacity and have a fixed component for capacity and a variable component for transmitted volume. The tariffs for transmission service for the system users with a short-term contract have a fixed and a variable component as well. The variable component is constant, and only changes according to the transported volumes (LTL/ 1,000 m^3). The fixed component is differentiated per monthly and daily capacity, as well as the respective month of the gas year (fixed component is largest in the colder months of the year).

The tariff for interruptible transmission service is also composed of two elements, fixed and variable.

The tariffs for overrun capacity have only a variable component (LTL/ 1,000 m^3). The tariffs for authorised used and unused capacity are season-dependent (largest in the colder months of the year). The tariff for unauthorised capacity overrun is season-independent.
Transport tariffs cover dispatching and balancing. The tariffs do not apply to gas transit, as it takes place from non-EU country to non-EU country (Kaliningrad region of Russia). Transit tariffs are calculated separately based on a point-to-point tariff system. The network is considered as one market area and one balancing zone.

[167]http://perdavimas.ldujos.lt/en/transportation_services/transportation_service_contracts

[168]http://perdavimas.ldujos.lt/en/capacityinfo/capacity_booking

[169]http://perdavimas.ldujos.lt/en/capacityinfo/capacity_booking

The TSO does not provide any other additional services such as mixing, inert gas injection, or line pack.

Tariff calculation and division of cost		Notes
Tariff model	Postage stamp[170]	
Role of NRA	Methodology setting	(1)
Price control mechanism	Price cap	(2)
Tariff calculation methodology	Average cost pricing	(3)
Entry/exit split	N/ A	
Capacity/commodity split	70/30	
National/cross-border distinction	None	
Locational or uniform tariffs	Uniform	
Charging basis (booked capacity/other)	Booked Capacity/ Physical Volume	

(1) NCC sets the tariff calculation methodology.

(2) The pricing system for transmission is based on the price caps.

(3) In the Lithuanian market the prices of transmission, distribution, storage, supply and liquefaction are regulated (even though there is no storage or liquefaction yet). The NCC sets annual basic costs for a five-year regulatory period, based on the costs of the last year before the regulatory period and their forecast for the forthcoming five years.[171] Annual price adjustments are applied, based on inflation, operational efficiency coefficients, changes in gas consumption volumes and other factors external to the provider.

Capacity allocation		Notes
Capacity allocation mechanism	FCFS	(1)
In case of congestion	FCFS	
In case of new capacity	FCFS	
Priorities in capacity allocation	Capacities requested 60 days in advance of the new calendar year	
Customer type	--	
Duration	--	
Congestion management procedures	Interruptible	(2)

[170]NCC National Report 2011 to ERGEG, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Lithuania-EN_v2.PDF

[171]NCC National Report 2011 to ERGEG, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Lithuania-EN_v2.PDF

(1) Allocation of free capacities is according to the first-come-first-served (FCFS) principle. First in the order of priority are the system users who have submitted their requests 60 days in advance of the new calendar year. The remaining system users receive capacity in the order of priority of their respective application request date.[172]

(2) The Lithuanian transmission system in principle does not experience overloads in domestic or international connections. Transmission capacity is available on firm basis; unused capacity can be purchased as interruptible.[173] Since there is sufficient capacity, there is almost no secondary trade in interruptible transmission capacities.[174]

Since there is sufficient capacity, there is almost no secondary trade in interruptible transmission capacities.[175]

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	--	--	(1)
Exit points	--	--	(1)

(1) No information available

[172]http://perdavimas.ldujos.lt/en/capacityinfo/mechanism_of_capacity_granting

[173]NCC National Report 2011 to ERGEG, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Lithuania-EN_v2.PDF

[174]NCC National Report 2011 to ERGEG, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Lithuania-EN_v2.PDF

[175]NCC National Report 2011 to ERGEG, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Lithuania-EN_v2.PDF

Balancing and Imbalance Settlement[176]

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on daily basis	
Number of tolerance levels	1	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Gas-in-kind compensation	
Imbalance fee	N/A	

The gas system in Lithuania is balanced on a daily basis, in line with gas quantities received, transferred and distributed. Imbalance tolerance level in October – April is equal to 5% of gas injected to the transmission system, and in May-September – 15% of gas injected to the transmission system. If an hourly consumption of gas by a system user at the place of delivery exceeds the contracted maximum permissible gas quantity, the TSO is entitled to limit gas supply.

Market Environment and Trading[177]

Volumes	TWh/year	Notes
Indigenous production	0	
Import	35.2	
Export	0	
Consumption	35.1	
Traded volumes	--	(1)

Lithuania does not have any own gas reserves, all the consumed gas comes from Russia. The gas is purchased under long-term bilateral purchase agreements.[178]

Lithuania also serves as a transit country for the Russian gas destined for Kaliningrad region. Natural gas transit to Kaliningrad region is based on a long-term agreement between

[176]NCC National Report 2011 to ERGEG, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Lithuania-EN_v2.PDF

[177]http://www.baltpool.lt/en/the-gas-market-in-lithuania

[178]http://www.baltpool.lt/en/the-gas-market-in-lithuania

Gazprom RAB and Lietuvos Dujos AB, signed in 1999 and valid until January 1st, 2016. Under the transit agreement, the transit transmission capacities reserved in 2010 amounted to 4.1 mcm/ day. 1.4 bcm of gas were actually transported as transit in 2010 (144.4 TWh/ year).[179]

(1) No information is available.

Lietuvos Dujos AB, which has not undergone legal unbundling yet, engages in natural gas import, transmission, distribution and supply to gas consumers of Lithuania, and owns the majority of the natural gas supply infrastructure in Lithuania. The market has been fully open since July 1st, 2007. However in practice there is no wholesale natural gas market, as natural gas comes largely from Russian Gazprom RAB, based on long-term purchase agreements. Before the establishment of a gas exchange, all trade of natural gas was carried out via concrete natural gas suppliers, with whom consumers had contracts. The gas exchange began operations in Lithuania on the March 1st, 2012.

As of January 1st, 2008, Lithuanian customers are paying prices equivalent to other western countries. There are 15 retail gas suppliers (only 5 in 2008), but Lithuanian customers were supplied by two main companies: Lietuvos Dujos AB and Dujotekana UAB. Lietuvos Dujos AB is the main natural gas supplier to household customers. Switching is hampered by quota limitations imposed by Gazprom. Its two largest industrial customers, a large chemical manufacturer and a combined heat and power plant, buy natural gas directly off the transmission line for their own needs.

Trading		Notes
Trading volume	--	(1)
Participants (number)	3/ 9	
Churn rate	--	

(1) The first gas exchange, Baltpool, began operations in Lithuania on March 1st, 2012. Wholesale trading of natural gas administered by Baltpool takes place on the commodities exchange by trading natural gas or transfer of right of acquisition of natural gas. Currently, three participants are listed at Baltpool.[180] Trade of both natural gas and transfer rights on the exchange is carried out through standardised products which can be traded for various periods: day, week, month, quarter or year.[181] So far, the trade on Baltpool has been limited.[182]

[179]NCC National Report 2011 to ERGEG, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Lithuania-EN_v2.PDF

[180]http://www.baltpool.lt/en/lithuanian-gas-exchange-participants

[181]http://www.baltpool.lt/en/who-we-are

[182]http://www.baltpool.lt/en/the-gas-market-trading-data

Starting from January 2013, the second trading platform of natural gas operated by GET Baltic was established. 9 participants are currently registered.[183] At the moment it seems like the trade on GET Baltic is more active than on the Baltpool. Since the trading platform has been opened only recently, it is too early to speak of yearly trading volumes and churn rates.

[183] http://www.getbaltic.lt/en/exchange/register_of_exchange_participants

17 LUXEMBOURG

Network Topology

The Luxembourgian gas transmission network is interconnected to the surrounding countries at four different entry points: at Pétange and Bras with Belgian operator Fluxys, at Esch with French TSO GRTgaz and at Remich in Germany with Open Grid Europe. At these points, it is only possible to import natural gas, so there are no exit points to neighbouring countries. The two interconnection points with the Belgian operator Fluxys are virtually combined into one entry point.

Network topology		Notes
Network length high pressure (km)	412	(1)
Pressure range TSO (bar)	4-80	(2)
Import capacity (GWh/d)	77	(3)
Export capacity (GWh/d)	0	
Storage (bcm)	0	
LNG (bcm/year)	0	
TSOs (name)	Creos Luxembourg SA	(4)
DSOs (number)	3	(5)

(1) The Luxembourgian gas transmission network is approximately 412 km in length, it has no compressor stations and connects to around 50 end consumers.

(2) No information on the pressure range in the system could be found

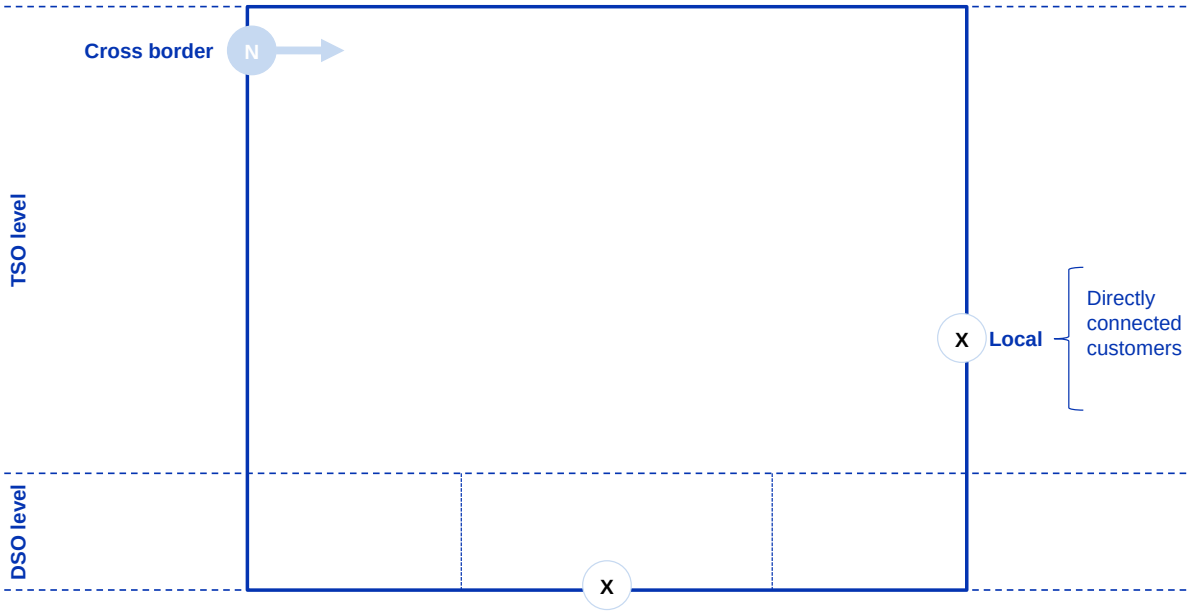
(3) The import capacity into Luxembourg is 77 GWh/day. Firm entry capacity is 110,000 Nm^3/h from Belgium and 150,000 Nm^3/h from Germany. Interruptible capacity also available on top.

(4) Creos Luxembourg SA is the only transmission system owner of the gas transmission network in Luxembourg. Creos Luxembourg is part of the Enovos group, the major energy supplier in Luxembourg. It has been functionally unbundled and only shares certain support departments with the group. Besides TSO, Creos Luxembourg also acts as a DSO.[184]

(5) There are three distribution companies in Luxembourg: Creos Luxembourg, SUDGAZ S.A. and Dudelange. These DSO's do not serve over 100,000 customers; thus, the obligation of legal separation is not applicable to them.[185]

Desing of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in Luxembourg as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



[184] ILR, National Report to the European Commission 2011, 2012.

[185] ILR, National Report to the European Commission 2011, 2012.

In Luxembourg, network users only need to reserve entry capacity and no exit capacity. Network users nominate flows at either a virtual exit point for directly connected industrial users or on a virtual exit point for the DSO system.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader							
Shipper	1	2	3	4			
Supplier						5	
Contracting party	The Ministry of Economy and Foreign Trade	TSO (Creos)	TSO	TSO		DSO	

(1) In Luxembourg, there is a single licence for any type of gas supply/shipping activities. The licence is named "Autorisation pour la fourniture de gaz naturel" (English: Gas Supply Licence). Network access is organised and supervised by a regulator, in this case the Luxembourg Institute of Regulation (ILR). The supply of natural gas is subject to the granting of prior authorisation as issued by the Minister of Economy and Foreign Trade under the Grand-Ducal Regulation of May 19th, 2003 concerning authorisations for gas supply natural. Under the provisions of this regulation, all suppliers of natural gas must be granted authorisation. Furthermore, it specifies the conditions that must be met by the applicant, such as:

- The applicant should guarantee that, for the provision of natural gas, the safety and security of the transport and distribution network is not endangered. It should therefore have appropriate means to ensure the balance between supply and demand and should comply with the specifications of natural gas;
- Public Service Obligations must be respected;
- The applicant should have the technical, economic and financial resources to perform the required functions. In addition, it has good repute, professional experience and

organisational capacity required to perform required functions.

(2) In the Law August 1st, 2007 different types of players are defined for use of the gas network: suppliers (i.e. users of the transmission services), injectors of gas and end consumers. The Framewrok Agreement ("Contrat Cadre Fournisseur") only applies to the suppliers as defined in this Law; these correspond to the three different roles that are defined in the table above. As such, this framework agreement does not involve connections between the transmission network and connected parties, the supply between the supplier and final end consumers, or injection of for example biogas (injection agreement). The following general conditions are defined in this Framework Agreement:

- The commitments and responsibilities of the TSO and the Supplier relating to the transmission services offered.
- Natural gas characteristics (quality, pressure, flow, etc.).
- Requirements relating to security of supply.
- Rules relating to the determination of the quantities of natural gas delivered to the network and its pricing and invoicing.
- The conditions for the exchange of capacity between different supplier (i.e. network users).
- The treatment of commercially sensitive information.

Furthermore, parties should be able to send nominations consistent with the recommendations Common Business Practice 2003-002-01 of EASEE-gas "Harmonisation of the Nomination and Matching Process" and contain information defined in the "Message Implementation Guidelines" of Edigas.

(3) For suppliers that want to inject or extract gas from the balancing point in Luxembourg a separate Balancing Contract needs to be signed between the TSO, as coordinator of the balancing point, and the supplier. The Balancing Contract aims to resolve technical and financial aspects related to balancing of the transmission of natural gas. As such, the Balancing Contract defines in particular the commitments and responsibility of the Coordinator of the Balancing Point (i.e. the TSO) and the Balance Responsible party (standard flexibility and/or additional flexibility).

(4) For contracting capacity, the network user should agree with the special conditions applicable to the framework agreement ("Conditions Particulières du Contrat Cadre Fournisseur").

For access to the DSO, a separate contract with the DSO ("Contract d'Accès au Reseau") is required.

Tariff structure and Methodology

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	Notes
Entry	F/I	--	F/I	--	--	€/Nm^3/h/yr	--	(1)
Domestic exit	--	--	--	--	--	--	--	(2)
Border exit	--	--	--	--	--	--	--	(3)
Notes			(4)					

(1) Creos only applies a capacity tariff for the entry points. The tariff for firm annual entry capacity is equal for all three entry points and is set at at 42.77 €/Nm^3/h/y from January 1st, 2013 onwards.

(2) Although Luxembourg has domestic exit points, network users are not required to book capacity on these points. Shippers only have to book capacity at the entry points and nominate the supply to one of the two virtual exit points: either PFD (Distribution Supply Point) or the PFI (Industrial Supply Point). The former is used to nominate supply quantities for end-consumers in the distribution networks, whereas the latter is used for nominating the supply to hourly-metered industrial sites.

(3) Luxembourg has no exit points to the surrounding countries.

(4) In the event that a network users contracts transport capacity on a monthly basis, the tariff for this monthly capacity subscription is a monthly percentage of annual capacity tariff and is different throughout the year depending on the month, as shown in the table below.

Month	Monthly factor
October	0.055
November	0.1025
December	0.1325
January	0.1325
February	0.1325
March	0.085
April	0.085
May	0.055
June	0.055
July	0.055
August	0.055
September	0.055

Reservation of capacities			Notes
Point	***Product***	***Amount***	
Entry points	Annual firm	60% for year t+2, 50%for year t+3, 40% for year t+4, 30% for year t+5, 20% for year t+6.	(1)

(1) Network users can purchase entry capacity during the Open Subscription Period (OSP). The OSP takes place during the each year (t) during the month of May and network users can subscribe for capacity for the years t+2 to t+6. The amount offered as firm annual capacities in each of these years is different. For the year t+2, 60% of the technical capacity is offered as firm annual capacity and for each successive year 10% less is offered (down to 20% in the year t+6). In the first half of the month of June in year t, the remainder of the capacities still available (so not sold in previous OSP's) are offered to the market. All other available capacities are offered on a monthly basis. Network users can purchase capacities three months ahead during the OSP for monthly capacities.

Capacity allocation		Notes
Capacity allocation mechanism	OSP + FCFS	(1)
In case of congestion	Pro-rate	(2)
In case of new capacity	Open season	(3)
Priorities in capacity allocation		
Customer type	Applicable to all network users, up to 2,000 m^3/h per entry point	(4)
Congestion management procedures	Interruptible capacity, Secondary market, UIOLI	(5)

(1) In the case where all capabilities have not been allocated at the end of the Open Subscription Period, the remaining capacities are allocated according to the principle of FCFS (First-Come-First-Served).

(2) When congestion occurs (when capacity demands exceed the amount of free capacities), Creos allocates the capacity according to the pro-rate pricinciple. However, each network may assign priority up to 2,000 m^3/h of firm capacity and this prioritised capacity is allocated first (minus the already existing multiannual capacity contracts) before the pro-rate principle is applied.

(3) The abovementioned allocation mechanisms can be supplemented by an Open Season for the allocation of new long-term capacity resulting from new investments. The specific terms of each Open Season will be communicated by Creos Luxembourg beforehand.

(4) As mentioned before, each network user has the right to prioritize up to 2,000 m^3/h at each

entry point. This prioritised capacity will be allocated to each network user in any case.

(5) In order to manage contractual congestion, Creos has implemented a Use-It-Or-Loose-It procedure (last resort mechanism). A network user that was unable to obtain the requested transmission capacity can alert Creos of this. Creos will send out a pre-notification alert to all network users that the UIOLI procedure can be initiated. If, after 15 days of the pre-notification alert, the requesting network user has been unable to obtain transmission capacity, it may request Creos to start the UIOLI procedure. Before starting the procedure, certain specific conditions have to be met, such as a lack of available firm and interruptible level 1 capacities on the secondary market and a minimum threshold of 500 m^3/h of unserved capacity.

Tariff calculation and division of cost		Notes
Tariff model	Postage stamp	
Role of NRA	Approves	(1)
Price control mechanism	Revenue cap	(2)
Tariff calculation methodology	Uniform	
Entry/exit split	--	(3)
Capacity/commodity split	--	(4)
National/cross-border distinction	--	(5)
Locational or uniform tariffs	Uniform	(6)
Charging basis (booked capacity/other)	Booked	

(1) The ILR laid down the principles applicable to the transmission system operator for the determination of the costs of the network and the way they should be transposed into a tariff structure in the new regulations (E12/06/ILR) of March 22nd, 2012. The regulations also specify the applied depreciation method (linear), the establishment of the regulatory asset base and the calculation of the return on capital.

(2) The Creos Luxembourg is regulated by revenue cap regulation. The regulatory period is four years and commences on January 1st, 2013 and ends on December 31st, 2016.[186]

(3) Creos Luxembourg only applies an entry fee as network users only need to book entry capacity.

(4) The tariff solely consists of a capacity fee.

(5) As mentioned before, there are no transit flows in Luxembourg.

(6) All entry points are priced the same.

[186] Institut Luxembourgeois de Régulation, Règlement E12/06/ILR du 22 mars 2012

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	Yes	(1)
Tolerance provided	Individual tolerance on hourly and daily basis	
Number of tolerance levels	2	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Indexed imbalance fee	
Imbalance fee	External price + Multiplier1/Multiplier2	(2)

(1) In Luxembourg the shipper is required to maintain a constant flow schedule during a gas day. The TSO, however, allows a flow variation of 50% of the average amount per hour nominated for a given gas day.

(2) Imbalances within the tolerance level are charged by 110%/90% of DJ ZIG, while in case of imbalances outside the tolerance level a multiplier of 1.5 or 0.7 is applied on DJ ZIG.

Creos Luxembourg applies daily balancing with hourly restrictions.[187] Network users or better Balance Responsible Parties (BRP) should submit hourly nominations to Creos. Creos has three tolerance zones:

- Daily Imbalance Tolerance (DIT)
- Hourly Imbalance Tolerance (HIT)
- Cumulated Imbalance Tolerance (CIT)

Each Balance Responsible Party should aim at minimizing the end of day imbalance (DIT). If there is a daily imbalance at the end of the day, the BRP is penalised for this imbalance. This penalty is based on the price of the gas purchased by Creos, which is artificially lowered or increased depending on the balance position of the BRP.

Secondly, the BRP is required to maintain a constant flow schedule during a gas day. However, Creos authorizes the BRP variations of the flow schedule by 50% of the average amount per hour nominated for a given gas day. This is called the tolerance zone (HIT).
Thirdly, the cumulative imbalance during the day may not exceed the CIT, which is a 3-5% (depending on the season, respectively winter or summer) difference between daily volumes for entry points and daily volumes at exit points.

[187] Institut Luxembourgeois de Régulation, Règlement E11/50/ILR du 12 août 2011

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	0	
Import	13.3	(1)
Export	0	
Consumption	13.3	
Traded volumes	--	

In Luxembourg there is no wholesale market and no virtual point. Natural gas is supplied by the surrounding countries and the market prices applied in these adjacent markets (Zeebrugge, TTF, NCG) are representative for the supply prices in Luxembourg.[188] In 2011 there were eight natural gas companies active in the retail market of Luxembourg; seven of these companies are active in the non-residential market and four companies are supplying residential customers.

Since Luxembourg has no domestic natural gas deposits, it is completely dependent on gas supplied by surrounding countries. In 2010 169 million m^3 was supplied by Belgium, 16 million m^3 originated from the Netherlands, 707 million m^3 was supplied by Norway and 327 million m^3 was supplied by the Russian Federation.[189]

Trading	Notes
Trading volume	--
Exchange spot (TWh)	--
Exchange futures (TWh)	--
OTC (TWh)	--
Participants (number)	--
Exchange spot	--
Exchange futures	--
OTC (TWh)	--
Churn rate	--

[188] ILR, National Report to the European Commission 2011, 2012.

[189] IEA, Natural gas information 2011.

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Network Topology

Network topology		Notes
Network length high pressure (km)	11,900	(1)
Pressure range TSO	16 – 80 bar	
Import capacity (bcm)	53	(2)
Export capacity (bcm)	117	(3)
Storage (bcm)	5.2	(4)
LNG (bcm/year)	12	(5)
TSOs (name)	GTS	
DSOs (number)	9	

(1) The Dutch high-pressure gas transmission network comprises 11,900 km of pipeline, 6,000 km of which are part of the medium-pressure (<40 bar) system. Gas is supplied to the grid from 53 entry points: 36 feeding points from Dutch gas fields and 17 feeding points from networks in neighbouring countries. The gas is delivered to Dutch customers (industry and domestic consumers through more than 1,000 gas receiving stations) and cross-border customers through 25 border stations. Thirteen compressor stations maintain the pressure in the network. The different types of gas are mixed at blending stations to safeguard the required qualities. Quality conversion has been socialised since July 1st, 2009, but the actual transport system is still divided into a high (H) and low (L) calorific system.

(2) Import capacity has been rather low initially due to the large amount of gas production. However, at the country borders at traditional export points, import capacity has been developed as well. Import capacity from Belgium (Zelzate) amounts to 11 bcm, of which 4.4 bcm is dedicated to the Zebra pipeline (not GTS). At the interconnection point Oude Statenzijl with Germany, import capacity is 12 bcm. In addition, some 30 bcm is available via Emden (north of Germany) where pipelines from Norway are coming in.

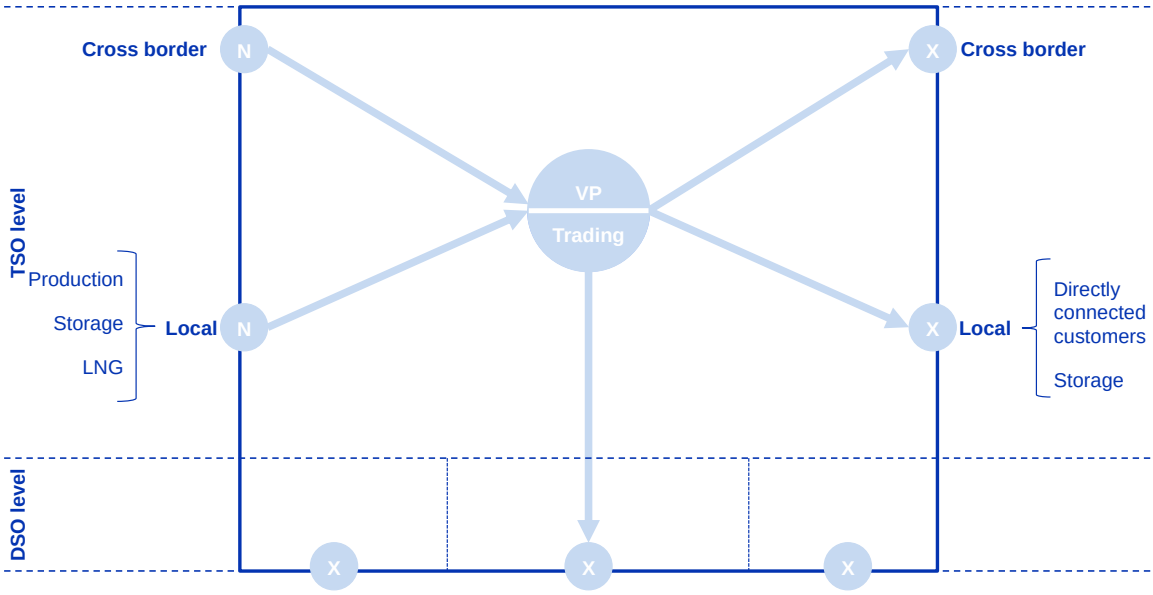
(3) The Netherlands gas export connections with Belgium (44 bcm, of which 23 bcm L-gas), Germany (59 bcm: 18 bcm in the north via Oude Statenzijl and 41 bcm at other border points) and via the BBL with the UK (13.5 bcm).

(4) The majority of gas storages in the Netherlands are depleted gas fields (Norg, Grijpskerk and Alkmaar). Some LNG peak shaving (0.078 bcm) and salt cavity (Zuidwending 0.18 bcm) storage is also available. When the Bergermeer storage, developed by TAQA (4 bcm – depleted gas field), becomes available, total Dutch gas storage capacity will grow to ~10 bcm.

(5) The GATE terminal in Rotterdam has been in operation since September 2011. The three LNG storage tanks have a capacity of 180,000 m^3 each. Throughput capacity (12 bcm) is contracted long term to Dong Energy, Econgas OMV International, RWE Supply & Trading, Eneco and E.ON Ruhrgas.

Design of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in The Netherlands as seen from the shipper's perspective. Chapter 1 of this document explains how the schematic representation should be interpreted.



GTS is operating a regulated and decoupled entry-exit tariff system for gas transmission within the Netherlands, as one market area and balancing zone. Import, export and transit of gas are an integrated part of this. The Title Transfer Facility (TTF) is a the virtual point within the network. Operational balancing of the regional grids is done by the DSOs but there is no imbalance settlement for suppliers or consumers at DSO level.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry-exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader		2/3/4			5		
Shipper							
Supplier	1					6	
Contracting party	NRA	TSO	TSO	TSO	TSO	DSO	

(1) Suppliers that want to deliver gas to domestic and other smaller gas consumer (connected to the DSO grid) require a supplier's licence by the regulator. The Gas Act does not specify detailed requirements, except for the overall statement that: the supplier should demonstrate that it is sufficiently creditworthy. The costs for obtaining this licence is € 1,199,-.

(2) The national TSO requires all users of the entry-exit system to get a shipper licence with them. The licence allows network users to transport gas after they have entered into a contract for transmission capacity. The licence A (LA) applies to all entry points and all exit points except those exits to DSOs. The licence B (LB) applies to all entry and exit points, including those to DSOs. In addition, the TSO provides an EWEX licence to end users with exit capacity directly connected to the TSO grid that want to source their gas at TTF. If a network user wants to transport gas from or to the virtual trading point TTF he requires an additional TTF registration (see comment no. 5 below). The users have to accept the general terms and conditions. They do so by signing a declaration of acceptance in which the shipper and EWEX declares to unconditionally accept the general terms and conditions. Bookings for specific entry and exit points are formalised in so-called contract data sheets (CDS). The contract data sheets refer to the general terms and conditions.

(3) All licensed shippers and traders (also pure traders who solely trade on the TTF) with a LA or LB licence are acknowledged responsible parties (=balancing parties). I.e. any network user implicitly also takes part in the balancing process (imbalance settlement.

(4) The applicant has to fulfill the following requirements in order to become a shipper:

- Appropriate IT-systems - One of the requirements for the shipper's licence (LA or

LB) is that the shippers must meet the electronic communications requirements for nominations, entry and exit programmes, portfolio imbalance signal and use of the bid price ladder. Thus via this system the shipper will be able to book entry and exit capacity.

- Acceptance of the general terms and conditions – the applicant has to accept the general terms and conditions in order to place a capacity booking.
- Creditworthiness – the applicant has to demonstrate sufficient credit worthiness. GTS sets an initial credit limit for each shipper, after performing a financial analysis of the company. The applicant must provide the 3 most recent annual accounts approved by an auditor for this purpose. The credit limit must always cover the exposure of the applicant. The exposure is determined by taking the sum of the following elements:
  - TTF reserves: €50,000 TTF reserves if the applicant wants to do business on the Virtual Trading Point TTF.
  - Exposure through the transmission capacity bookings. The exposure is based on the highest monthly transmission booking invoice multiply by 3. If it concerns a transmission booking of one or two months the multiplier is respectively 1 and 2.
  - Initial Imbalance exposure:. This is based on an estimate of the maximum volume of gas that the user can supply in a three-day period (gas that could physically flow through exit points and/or the TTF). The exposure is calculated by multiplying this volume with the year average neutral gas price of the previous calendar year.
  - Reserves for future transmission bookings e.g. for Open Seasons.

(5) TSO-admitted shippers and traders with a TTF registration (title transfer registration service) are permitted to trade on the TTF. A fixed monthly fee is charged for subscriptions. Apart from the subscription, the traded volume of energy is also subject to a variable fee. Before a shipper can contract the title transfer registration service its credit limit shall be decreased with an amount of €50,000. This credit provision is supplemental to the credit provisions in the gas conditions relating to other services.

(6) The cut-off point for the entry-exit system and the gas balancing system is at the interfaces between the national gas network operated by the TSO and the regional distribution grids operated by several DSOs. Suppliers need to have a capacity booking at the city gate (interface between TSO-DSO networks). The required exit capacity at the city gate is calculated by the TSO based on information provided by the DSO on the consumer groups behind the city gate (household, small industries, horticulture). The TSO and DSOs keep track of gas suppliers via a connection register. Based on this information the TSO calculated the required capacity and allocates it to the different suppliers active at the city gate exit point. Exit capacity at an exit point connected to a distribution network can only be contracted by the supplier after signing a declaration of

acceptance in advance. Balancing parties at those exits to the DSO nominate according to aggregated demand load data (either metered or via standard profiles) of their customer portfolio.

Each city gate has a specific tariff. There is no explicit contract for capacity with the DSO.

Besides the requirements as listed above at 4) the following additional conditions apply:

- The supplier should have an EAN-code, which can be applied for at EAN-Nederland http://www.gs1.nl (EAN = European Article Numbering. In this context an EAN-code is the identification code of a connection to the gasnetwork)
- The supplier should participate in the messaging with respect to the allocation

Tariff Structure and Capacity Products

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	Notes
Entry	F/I/RF[190]	--	F/I/RF	F/I/RF	--	€/m^3/h	--	(1)
Domestic exit	F	--	F	--	--	€/m^3/h	--	(2)
Border exit	F/I/RF	--	F/I/RF	F/I/RF	--	€/m^3/h	--	(1)
	(3)		(4)	(5)				

(1) The transmission tariff structure is charged on contracted capacities (i.e. prices are fixed at contract closure) in m^3(n; 35.17)/hour. There is no energy (or commodity) charge. Backhaul is only possible on an interruptible basis. The tariff for interruptible (and thus for backhaul) capacity is 85% and 70% of the firm forward tariff, representing a 0-5% chance and a 5-15% change of being interrupted (based on history) respectively. For backhaul flow there is an additional interruptible service with a tariff equal to 90% of the forwardtariff.

Since May 2012, GTS and Gasunie Deutschland (GUD) offer bundled capacity in a day-ahead auction. Firm bundled entry and exit capacity at Oude Statenzijl is offered in both directions and on a day ahead basis via the TRAC-X Primary platform. This cross border service replaced the EUCABO platform. In Germany TSOs offer their capacity via TRAC-X Primary. For GTS the auctioning of bundled border capacity via TRAC-X is new and serves as a pilot project for the full implementation of the European Network Codes at all GTS cross border points. These network codes are expected to enter into force later this year.

(2) For exit points from the national grid to the regional grid only firm capacity can be contracted. In order to maintain the 'system connection' between the national and regional

[190] F = firm, I = interruptible, RF = reverse flow

grids, a connection tariff is charged. This connection fee is a fixed fee per year. The fixed fee will be expressed as a capacity dependent tariff (m3 (n;35.17)/hour), based on the contracted capacity in the preceding year. The amount chargeable will be calculated in relation to the total contracted exit capacity. The exit tariff for one month is calculated by multiplying the annual tariff by a monthly fraction for industrial (large) gas use and a monthly fraction for residential (small) gas use. The monthly factors are published by GTS prior to each calendar year.

(3) The starting point for the entry and exit tariffs at the border is the annual tariff, which applies to flat bookings (a contract with a flat capacity profile) for a period of 12 consecutive months.

(4) Contracts may also be concluded for shorter periods of time, for example a single day, or month or several days or months (this is also required for profiled capacity or for an implicit quarter product). The monthly contract tariff depends on the season (winter, shoulder, and summer with respective factors of 0.3, 0.15, and 0.075). The tariff for 12 consecutive monthly contracts cannot be higher than the base tariff for one calendar year.

(5) Daily contract tariffs are 1/15 of the monthly tariff.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	
Role of NRA	Approval	(1)
Price control mechanism	--	(1)
Tariff calculation methodology	--	(2)
Entry/exit split	Not explicit	(3)
Capacity/commodity split	No, only capacity	
National/cross-border distinction	No	
Locational or uniform tariffs	Locational	
Charging basis (booked capacity/other)	Booked	

(1) For transport and balancing tasks of the TSO, NMa determines regulated tariffs for entry, exit, and connection. Regulated tariffs also apply for quality conversion and flexibility services, but these will not be discussed here.

The tariff structure (e.g. capacity based) is determined in the Tariff Code. The regulator NMa establishes the methods for determining gas transmission tariffs (Methodebesluit Transporttaak GTS 2010-2013), including the x-factor and the WACC. Based on this method, NMa decides on the level of the x-factor, while GTS calculates the tariffs and submits them for approval by NMa. On an annual basis, NMa approves the tariffs submitted by GTS. The latest 2013 tariffs were accepted by NMa. Here some basic information of tariff regulation will be included, though the determination of the allowed

revenues will not be elaborated. The particular items of interest are how allowed revenues are translated into individual tariffs, are tariffs differentiated by location and/or type of shipper/shipping and are any other objectives pursued which may lead away from actual cost reflectivity, e.g. locational incentives, etc.

(2) Tariffs are cost based (TOTEX), reflecting actual costs incurred by GTS. Tariffs should offer GTS the potential to pay back efficient investments and to realize a reasonable return. At the same time tariffs should give GTS an incentive to efficiently manage the national gas grid. The TSO receives compensation for both capital cost and operational cost.

(3) The regulated CPI-x method is applied to the weighted average tariff (over all entry and exit points, i.e. there is no entry / exit split). Individual tariffs may vary within a 5% range from the calculated tariff based on the average cpi-x.

Capacity allocation		Notes
Capacity allocation mechanism	FCFS	(1)
In case of congestion	Offering interruptible capacity	
In case of new capacity	Open season	
Priorities in capacity allocation		
Customer type	Peak supply to residential consumers	(2)
Duration	--	
Congestion management procedures	--	

(1) The main conditions for access to the network are laid down in the Network Code. In addition, GTS elaborated specific terms and conditions in the Transmission Service Conditions (TSC)

(2) According to the "Wettelijke taken LNB van algemeen belang" (statutory duties of the national gas transport network operator in the public interest), GTS is responsible for guaranteeing the peak supply of gas to residential consumers in the Netherlands on any given day when the average effective daily temperature in De Bilt (NL) is lower than -9°C. For this purpose GTS reserves entry and exit capacity. Costs are invoiced to the licenced gas supply companies (with a licence from the NMa to supply residential consumers).

Shippers may obtain additional flexibility by contracting the nomflex service from GTS, which offers the functionality of a gas storage facility.

Entry capacity, exit capacity, wheeling and nomflex are tradable services. GTS offers the transfer of services through two types of transfer: transfer of capacity rights (TOC) and transfer of usage rights (TOU). In case of TOC, all rights will be transferred from the seller to the buyer (the entire

contractual position including the usage rights). The capacity becomes part of the portfolio of the buying shipper. In the case of TOU, the selling shipper will retain its contractual position and all its rights related to the capacity; only the usage rights and all related agreements will be transferred from the seller to the buying shipper. A fixed fee applies per transfer which is charged to the selling party.

In addition, both APX and Trac-X operate platforms where capacity can be traded, based on the transfer of the usage rights. Transfers on these platforms must be registered by GTS in order to make day-ahead transfers possible.

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points Exit points	Peak supply to residential consumers	Determined by temperature	(1)

(1) GTS reserves entry and exit capacity for peak supply to residential customers in case of cold winter days. The amount is calculated according to the regular monthly calculation of capacity for exit points from the national grid to the regional grid (see note (3) above). The amount is determined by demand in excess of the maximum hourly load to residential consumers on days when the average effective daily temperature in De Bilt (NL) is lower than -9°C.

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	no	
Application of WDOs in daily balancing	Other	(1)
Tolerance provided	No	(2)
Number of tolerance levels	1	
Balancing gas procurement	Balancing market	
Imbalance settlement	Market based imbalance fee	
Imbalance fee	External price	(3)

(1) In Netherlands, a mixture of hourly and cumulative balancing is applied, and the system is based on a continuous balancing.

(2) No individual but a system-wide tolerance is provided, meaning that an imbalance action is taken by the TSO if the system is going outside a pre-defined operational band width.

(3) The Netherlands applies an imbalance fee set at the reference price without any

penalizing component in case the system is going outside a certain operational band with.

On April 1st, 2011 the current market based balancing regime was introduced. This balancing regime is without a fixed balancing period, a short or long position in a portfolio can remain without consequences for some time. The regime uses near real-time information provided to network users, which enables them to balance their portfolio and/or the system on a 24/7 basis. As long as the balance of the combined portfolios of all network users remains within the available linepack represented by the so-called green zone, GTS will not take balancing actions towards any of the users. If a balancing action is required, GTS will do this by using a balancing platform (bid price ladder) on which market players can offer to help restore the system balance for market-based prices.

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	746.1	
Import	213.1	
Export	517.2	
Consumption	443.4	(1)
Traded volumes	645.0	(2)

(1) Gross consumption in 2011 was 45.3 bcm, 8.8 bcm was used to produce electricity (CBS Statline).

(2) In 2011 the volume traded was 645 bcm (more than 14 times the domestic gas consumption), while physical gas supplied amounted to 38 bcm, resulting in a churn of 17.[191] Volume traded in 2012 was 735 bcm.

The TTF is the virtual trading point for gas already in the GTS system (entry-paid gas). TTF can serve as a virtual entry point in the portfolio of a shipper or trader who buys gas on the TTF, or as a virtual exit point in the portfolio of a shipper or trader who sells gas on the TTF. GTS registers the title transfers of gas via the TTF by means of a nomination. This is an electronic message stating the volumes of gas transferred, the period, and the purchasing and selling parties. GTS-admitted shippers and traders with a TTF subscription (title transfer registration service) are permitted to trade on the TTF. A fixed monthly fee is charged for subscriptions. Apart from the subscription, the traded volume of energy is also subject to a variable fee. The variable fee is based on a tariff per kWh for traded volumes up to 4 billion kWh per year and on another tariff for traded volumes exceeding 4 billion kWh. The tariff is charged to both buyer and seller on the TTF. The fixed fee for the title transfer registration service for a period of twelve consecutive gas

[191] GTS, Transport Insight 2012

months is €15,156 or €1,263 for a gas month. The tariff is €ct 0.001475 per traded kWh for the first 4,000,000,000 kWh traded per year, and €ct 0.000202 per traded kWh for any kWh over a total of 4,000,000,000 kWh traded per year.

These nominated TTF trades registered by GTS only account for some 25% (1,598 TWh in 2011) of total TTF traded volume. A large part consists of other brokered or bilateral trades (e.g. financial trades). This larger part of trading is not publicly registered, but information is provided by agencies such as LEBA and ICIS Heren.

The TTF also facilitates the operation of a gas exchange. The Dutch Minister of Economic Affairs has appointed ICE ENDEX as the Gas Exchange Operator. A gas exchange allows parties to buy or sell gas anonymously on the TTF. The gas exchange operator is responsible for bringing together the two parties (which should be members of ICE-ENDEX) and for the financial transaction. If a gas trade is handled via a gas exchange, the gas exchange operator will execute the TTF nomination on behalf of the party concerned, where the amount nominated is based on balance of all transactions between the gas exchange operator and mentioned party. A TTF subscription with GTS is required for shippers to trade on the TTF via the gas exchange. Thus, all trades on ICE ENDEX are nominated to GTS single-sided. Currently, ICE ENDEX has 43 registered trading members for gas in the Netherlands and in 2011 approximately 2% of total traded volume at TTF went through the exchange (4.2% in 2012).

Trading	TWh	Notes
Trading volume	6,282	(1)
Exchange spot	(Spot Gas NL, incl futures) ~150	
OTC	(nominated TTF) 1,598	
Other	(financial – brokered or bilateral) ~4,500	
Participants (number)	~130	
Churn rate	(nominated TTF) 4.3	

(1) The TTF continues to grow in terms of traded volumes, physical volumes and the number of traders. Traded volume in 2011 was 6,282 TWh (643 bcm), showing an impressive increase (doubling) compared to 2010 volumes. Moreover, liquidity increased in terms of a shift from annual contracts to more quarterly and monthly contracts. This improvement is primarily a result of the introduction of a new gas balancing regime as of April 1st, 2011. Market players are now able to buy and sell (balancing) gas directly on the TTF in stead of going through GTS.

Additional Comments
Further improvement of wholesale market liquidity remains an important issue for the Dutch regulator NMa. Therefore, market coupling is further being investigated (e.g. GTS started a pilot on explicit auctioning of border capacities with Germany), and integration of the bid price ladder for balancing purposes in the TTF within-day market is discussed (to improve liquidity for short term products). Issues during the tariff setting process: • In November 2006 the Dutch court (CBb) nullified the Method Decision for the period 2006-2009. The court ruled that a decision should be made on the tariffs of the services provided by the TSO and not on the total earnings of the TSO. • In December 2008 NMa took a new Method Decision for 2009 and further, i.e. leaving 2006-2008 'unregulated', after the Ministry of Economic Affairs published a new framework for tariff regulation. Competences between the Ministry and NMa were unclear. However, the NMa decision again was challenged in court (by EnergieNed and VEMW). The court (CBb) decided that continuity of regulation is important. As a result, and after consultations, NMa issued two sets of new Method Decisions on October 11th, 2011, one for the period 2010-2013 and the other retrospective for the period 2006-2009. • Moreover, the Ministry of Economic Affairs no longer plays a direct role in tariff regulation. The Ministry determined parameters of GTS's capital costs, but this role was transferred (back) to NMa by CBb. NMa and the Ministry e.g. had a dispute on the regulated asset base of the TSO (€ 6.38 billion was determined by the Ministry based on the amount paid by the State to Shell and Exxon to buy the national grid. The NMa assumed a value of € 4.84 billion).

19 POLAND

Network Topology

The Polish natural gas market is in the process of liberalisation. The national TSO, OGP Gaz-System S.A. (Gaz-System hereafter), has been appointed as the only TSO in Poland, operating both its own assets (i.e. transmission network) as well as the Polish part of the Yamal pipeline (the Transit Gas Pipeline System or TGPS), owned by SGT EuRoPol GAZ s.a.

Network topology		Notes
Network length high pressure (km) (incl. Yamal pipeline)	10,601	(1)
Pressure range TSO (bar)	Up to 84	(2)
Import capacity (GWh/day)	1, 409	(3)
Export capacity (GWh/day)	938	(4)
Storage (bcm)	1.8	(5)
LNG (bcm/year)	--	(6)
TSOs (name)	Gaz-System	(7)
DSOs (number)	40	(8)

(1) The gas system in Poland is separated between the transmission network and the transit gas

pipeline system TPGS (i.e. Yamal pipeline). Poland's domestic gas transmission network consists of 9,917 km of high-pressure pipelines. The network includes 14 compressor stations and has interconnectors with Germany (ONTRAS, GASCADE), Czech Republic (NET4GAS, Severomoravske Plynarenske), Belarus (Bieltransgaz) and Ukraine (UkrTransgaz). The network is used to transport natural gas for Poland's domestic consumption and for export to neighbouring countries. Around 15.6 bcm is transported annually. With the Yamal pipeline running on its territory, Poland is a large importer of Russian natural gas to Western Europe. The Yamal pipeline adds another 684 km of pipeline and has transported 27.7 bcm in 2011. The Yamal pipeline has two entry points and three exit points. In addition to the 14 compressor stations in the transmission network, the Yamal pipeline has another 5 compressor stations. Similar to some other countries in Europe, the Polish gas transmission systems deals with two different kinds of gas qualities (referred to as high-methane and low-methane).

(2) Information on pressure range not readily available

(3) In 2012 Poland had an import capacity of 1 409 GWh/day.

(4) In 2012 Poland had a total export capacity of 938 GWh/day. The export capacity without the Yamal transit system amounted to 4 GWh/day.

(5) There is currently 1.8 bcm of storage capacity in Poland. The planned expansion of gas storage operator capacity amounts to 3 bcm.

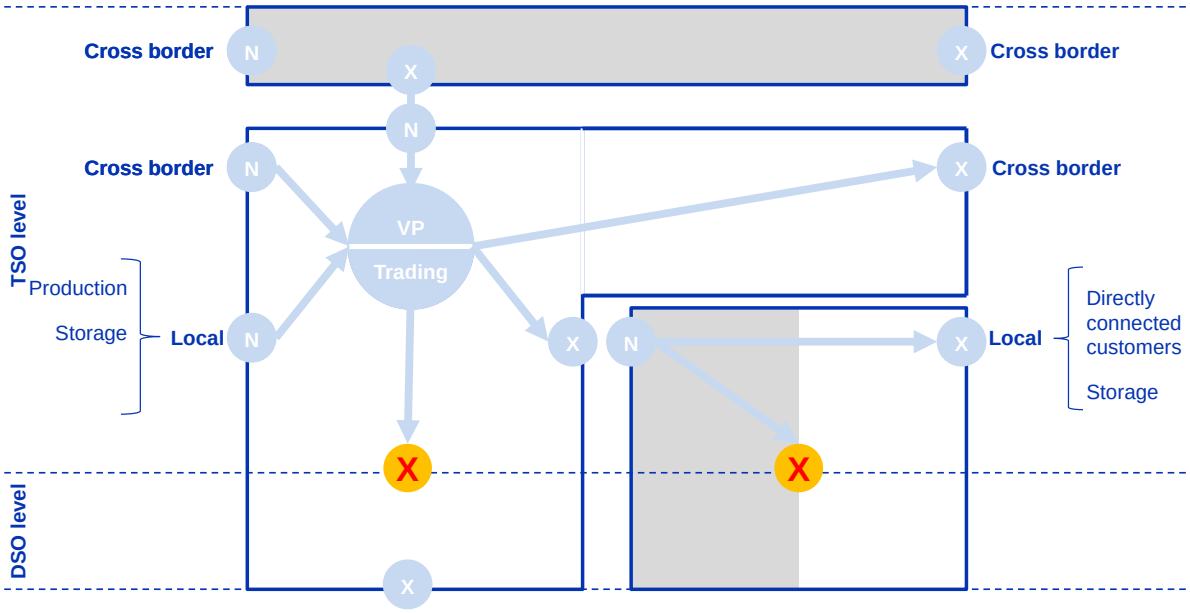
(6) Currently, Poland does not have an LNG terminal, but construction is ongoing to complete the first LNG terminal in the port of Świnoujście, close to the German border. The Polish gas transmission system operator, Gaz-System, is the owner of Polskie LNG S.A. (the company which was appointed to construct and operate the LNG terminal). The construction of the LNG terminal is scheduled to be completed around mid-2014 and will have a capacity of 6 bcm per year.

(7) The Polish transmission system is operated by Gaz-System. Gaz-System also operates, as an Independent System Operator, the Polish part of the Yamal pipeline, named TGPS, which supplies Russian gas to Poland and Western Europe. The other transmission assets are owned by Gaz-System, which is in turn owned by the Polish State Treasury. Currently, the Polish State Treasury is also still involved in undertakings regarding gas production and trade.

(8) In total, there are 40 DSOs in Poland. However, 34 of these DSOs serve less than 100,000 customers. The remaining six other DSOs were unbundled from PGNiG in 2007. Although these six DSOs are still affiliated to PGNiG, they are independent in terms of organisation and legal status.

Design of the Entry-Exit System

The figure below gives the schematic representation for the entry-exit system in Poland as seen from the shipper's perspective. Chapter 1 of this document explains how the schematic representation should be interpreted.



In principal, there are four different entry-exit zones in Poland, albeit that the zones specifically for low calorifc gas are a rather small part of the entire system. Besides these low calorific gas systems, there are the transmission system and the transit system which are both separate entry-exit systems; these latter two systems are connected to each other at two different interconnection points. For the transmission system, the TSO offers the possibility of using a virtual point, which recently also includes the possibility of using the services offered by the PolPx energy exchange. Balancing is separately managed in each of the systems.

Symbol	Explanation
X	The cut-off point of the entry-exit system is at the interface between the transmission and distribution levels.
	All zones have separate balancing mechanisms. In the low calorific gas systems, due to the lack of instruments (i.e. line-pack and storage) the TSO conducts only physical balancing to ensure system security.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry-exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader	1	2	3	4			
Shipper							
Supplier	1					5	
Contracting party	NRA (President of ERO)	TSO	TSO or Balancing Group Leader	TSO	TSO	DSO	

(1) In Poland, the following licenses are granted by the President of ERO:

- for trade in gaseous fuels (OPG),
- for foreign trade in natural gas (OGZ),
- for transmission of gaseous fuels (PPG),
- for distribution of gaseous fuels (DPG),
- for storage of gaseous fuels (MPG),
- for natural gas liquefaction and regasification of liquefied natural gas in installations for liquefied natural gas (SGZ).

In Poland there is a single license for both supply and trade (supply is considered as retail trading, trade- as wholesale trading).

Aspiring network user applying for a licence must meet certain conditions as specified in art. 33 sec. 1 of the Energy Law Act. Pursuant to this provision, the President of ERO grants a licence to an applicant who:

- has its registered offices or place of residence in the territory of an European Union member state, Swiss Confederation or a member state of the European Free Trade Agreement (EFTA) – a party to the European Economic Area agreement;
- has sufficient financial means to ensure the correct performance of its activity or is capable of documenting the ability to acquire the same;
- has the technical capabilities ensuring the correct performance of its activity;
- will guarantee that it will employ staff with the adequate professional qualifications referred to in art. 54 of the Energy Law Act;

Licences cannot be issued to parties that:

- are in the course of bankruptcy or insolvency proceedings;
- had their licence revoked within the last three years; or
- were convicted with a legally binding court verdict for a crime associated with the subject matter of the business activity specified in the Energy Law Act.

Licences for companies engaged in cross-border trading and gas importing needs to ensure the diversification of gas sources and energy security. The President of ERO grants the licence for foreign trade in natural gas to an applicant who:

- Has its own storage capacity.
    - The storage volume should equal to at least 30-day average of daily imports and the storage facility should be able to withdraw this amount in maximum 40 days.
    - A signed a preliminary agreement for the provision of storage services of mandatory reserves of natural gas also suffices.
    - Amendments to the Reserves Act adopted in 2011 allow this statutory storage reserves to be maintained in storages located outside Poland.
    - Additionally, if the maximum amount of natural gas import over the calendar year does not exceed 100 million cubic meters and the number of the company's customers does not exceed 100,000, exemptions from the obligation to maintain natural gas reserves are possible.
- Was exempted from the obligation to maintain mandatory reserves of natural gas.

An applicant failing to meet the conditions prescribed by the law faces the possibility of the licence being denied. Furthermore, granting the licence may depend on the submission of security on property by an applicant in order to satisfy any third party claims that may occur as a result of incorrect conduct of activities covered by the licence, including damage to the environment.

Aspiring network users have the obligation to pay a fee at the moment of submitting the application to issue the licence. The fee rates are as follows:

- for a promise to issue a consent (promise of licence) – PLN 98 (~ €23.6);
- for an extension of the validity term or change of conditions of the promise to issue a consent (promise of licence) – PLN 44 (~ €10.6);
- for issuing a consent (licence other than for foreign trade in natural gas) – PLN 616 (~ €148.4);
- for issuing a licence for conducting a business activity in the form of foreign trade in fuels and energy – PLN 4244 (~ €1022.3);
- for an extension of the validity term or change of conditions of the issued consent (licence) if: (1) it concerns an extension of the validity term or broadening of the scope of activity – 50% of the rate for issuing a consent (licence) i.e. PLN 308 (~ €74.2) for national trade in fuels and energy and PLN 2122 (~ €511.1) for foreign trade in fuels and energy; or (2) the change involves another type of activity – 100 % of the rate for issuing

a consent (licence) i.e. PLN 616 (~ €148.4).

Entrepreneurs, who have been granted the licence, are obliged to the calculation and payment of the annual fee to the state budget, which charges the cost of their operations. This fee is a ratio of revenue from the activities covered by the licence and the payment coefficient (0.0006) and may not be less than 200 PLN (~ €48.2) and not more than 1,000,000 PLN (~ €240,880.3).

It should be also noted that there are no licences for transit of gas via the territory of Poland from one country to another i.e. from Germany to Ukraine.

(2) The new Gaz-System's Transmission Network Code (TNC) which came into force on 1 January 2013 facilitates entrance on gas market for new entities by introducing changes to the methods of contracting transmission services. According to the new TNC each system user, benefitting from the transmission services, concludes currently only one "framework agreement" with Gaz-System, which forms the basis for submitting applications to the operator for the possibility of using entry or exit points selected by the system user. The framework agreement is reduced only to client registration (a.o. documents confirming the legal status of the activity carried out by the entity, power of attorney, tax certificate identification number, a certificate of REGON statistical number.) and submission of appropriate security measures. Furthermore, all hitherto agreements will be connected into one for each client, to ensure coherent and unified principles as well as joint balancing.

(3) A network user may participate in the balancing services market if it holds a licence for trade in gaseous fuel and has concluded an agreement with the TSO on participation in the balancing services market (it is a "Balancing Market Participant").

(4) In order to obtain capacity and access to the virtual point (both exchange and OTC), a network user needs to conclude a "Transmission Ability Allocation" with the TSO. Storage operators (SSO's) and Distribution System Operators (DSO's) need to sign a "Capacity Allocation"; however, in case they want access to the virtual point as well, they will need to conclude a similar Transmission Ability Allocation.
The capacity of the transmission system to or from a distribution area shall be only provided to the relevant DSO. Therefore, it needs to sign an inter-operator transmission contract (ITC) and a capacity allocation (PP).

Tariff Structure and Capacity Products

The separation between the transmission network and the TGPS means that transit flows are separated from the domestic gas flows. Furthermore, Gaz-System has published a network code for both systems. The network codes, to a large extent, are similar to each other and, although the systems are not integrated, their usage is charged in a similar way. For example, the multipliers for short-term contracts as described below are equal for both systems. However, the charge for interruptible contracts on the TGPS system is related to the actual number of days of interruption during the contract period; the network user is remunerated for this interruption by adjusting the

standard capacity charge linearly ex-post. Therefore, the pricing of interruptible capacity in the TGPS system is different from the way in which interruptible capacity is charged in the transmission network (where the multipliers as shown hereinafter are applied).

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	Notes
Entry	F/I/RF	F/I	F/I	F/I	--	PLN/m^3/h	--	(2)
Domestic exit	F/I	F/I	F/I	F/I	--	PLN/m^3/h	PLN/m^3	(4)
Border exit	F/I	F/I	F/I	F/I	--	PLN/m^3/h	PLN/m^3	
Notes	(1)	(3)	--	--	--	(5)	(6)	

(1) Consumer groups, or network users, are divided into different groups depending on their contracted capacity and whether they are connected to an UGS or not. For regular exits from the transmission system, the network users are divided into two groups. The first group consisting out of network users with contracted capacities of less than or equal to 5,000 m^3 per hour. The second group consists of network users with contracted capacities of more than 5,000 m^3 per hour. Capacity charges (for a standard transmission contract) are accordingly differentiated for these two consumer groups. Furthermore, tariffs differ per gas quality (low vs. high-methane) and whether the exit point is connected to an underground gas storage facility or not. There is no locational differentiation between tariffs.

(2) At an entry point, network users are billed according to a capacity charge and a fixed monthly subscription fee (used for recovering costs related to providing commercial services to the network user by the TSO). For exit points, a commodity charge dependent on the transmitted volume is applied as well. However, this commodity charge is not applicable for exit points connected to an underground storage facility.

As abovementioned, the capacity charge differs between the two consumer groups, but the commodity charge is equal for every network user (if applied). Furthermore, there is a distinction in the commodity tariff between network points dealing with high calorific gas and network points transporting low calorific gas. In addition to these transmission charges, a separate charge may be billed for odorisation activities.

(3) Besides quarterly, monthly and daily products, Gaz-System also offers semi-annual products. The prices for these short-term products (less than one year) are determined by multiplying the standard (annual) capacity charge by different multipliers. These multipliers (or factors) as applied by Gaz-System are shown in the table below.

Month	Semi-annual factor	Quarterly factor	Monthly factor	Daily factor
October	1.8	2.4	2.3	1/20 of the capacity charge applied in the associated calendar month
November			3.1	
December			3.5	
January		3.2	3.7	
February			3.8	
March			3.3	
April	1.0	1.2	2.4	
May			1.8	
June			1.5	
July		1.2	1.5	
August			1.5	
September			1.8	

(4) For interruptible products in the transmission network, the following multipliers are applied to the standard capacity charge. The multipliers are dependent on the level of the interruptible product, which is dependent on the number of days the service may be interrupted. Reverse-flow capacities are sold as an interruptible product with a level 4 certainty. The capacity charge applied is multiplied by the corresponding factor in the table below and additionally divided by two.

Interruptible product	# days of interruption during contract period	Ratio annual products	Ratio semi-annual products	Ratio quarterly, monthly, daily products
Level 1	30	0.94	0.90	--
Level 2	45	0.88	0.84	
Level 3	60	0.80	0.75	
Level 4	Contract duration	0.20	0.20	0.20

(5) Capacity charges range from 26.28 PLN/m3/h/yr (6.54 €/m3/h/yr) to 233.89 PLN/m3/h/yr (57.03 €/m3/h/yr)216 on the transmission system. For the TGPS system this ranges between 61.32 PLN/m3/h/yr (14.95 €/m3/h/yr) to 188.34 PLN/m3/h/yr (45.92 €/m3/h/yr).[192]

(6) The commodity charge for the transmission network is either 0.0199 PLN/m3 (0.0048 €/m3) for low-methane gas and 0.0197 PLN/m3 (0.0048 €/m3) for high-methane gas.[193,194]

[192] Gaz-System, Tariff for the Transmission of High-Methane Natural Gas of the Transit Gas Pipeline System, January 2012 (assuming exchange rate 0.24 €/PLN).

[193] Gaz-System, Tariffs for Gas Transmission Services No. 5, July 2011 (assuming exchange rate 0.24 €/PLN).

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	(1)
Role of NRA	Approves tariffs	
Price control mechanism	Revenue cap[195]	
Tariff calculation methodology	Average cost pricing[196]	
Entry/exit split	50/50	(2)
Capacity/commodity split	80/20	(3)
National/cross-border distinction	No	(4)
Locational or uniform tariffs	Uniform	(5)
Charging basis	Contracted capacity and transported volume	(6)

(1) Gaz-System applies an entry-exit model for the transmission network. There is also an entry-exit model on TGPS, but Gaz-System is only an operator on that network. The owner of that pipeline and tariff is EuRoPol GAZ s.a.

(2) The ratio of the revenues collected from capacity sold at entry points and exit points is set at 50/50.

(3) Furthermore, the ratio between the revenues collected from the capacity charge and the variable charge was set at 80/20.

(4) There is no distinction between the national exit points and exit points to neighbouring network operators. However, transit flows are explicitly separated from transmission services as there is a clear separation between the transmission network and the TGPS.

(5) There is no area division in the tariffs, but merely by gas quality and capacity booked.

(6) Capacity depends on contracted capacity. Commodity charges are applied to the transported volumes of natural gas.

Capacity allocation		Notes
Capacity allocation mechanism	Auctions	
In case of congestion	Auctions	(1)
In case of new capacity	Open season	(2)
Priorities in capacity allocation	DSO, LNG, SSO	(3)

[194] Gaz-System, Tariff for the Transmission of High-Methane Natural Gas of the Transit Gas Pipeline System, January 2012 (assuming exchange rate 0.24 €/PLN).

[195] Regulation of the Minister of Economy on detailed rules of structuring and calculating of tariffs and settlements in trade with fuel gas (retrieved from: http://en.gaz-system.pl/fileadmin/pliki/do_pobrania/en/080206_Rozporzadzenie_taryfowe_wersja_EN_aktualna.pdf)

[196] Ibid.

Congestion management procedures	UIOLI, interruptible	(4)

(1) For entry and exit points connected to neighbouring network operator and entry points of the Transit Gas Pipeline System (Yamal pipeline), capacity is allocated by auctions. Auctions are held for annual, semi-annual, quarterly and monthly products. Subsequent bidding rounds are hold when the total amount of capacity bid for is higher than the free capacity.

(2) For newly built capacity and expanded entry or exit capacity at interconnections, Gaz-System adopts an Open Season procedure for allocating capacity to interested network users. This Open Season procedure will be executed in accordance with the Guidelines of Good Practice on Open Seasons Procedures as published by ERGEG.

(3) Capacity allocation producers are different for the different types of entry and exit points. The types of entry and exit point are specified according to the nature of the connected facility:

a. For connection to an LNG terminal, the firm capacity is allocated first to the party that has concluded a regasification agreement with the LNG terminal and for the same quantities.

b. For an entry point from a domestic gas field, the party operating the gas field will allocate the quantities to the interested parties.

c. For an exit point to a directly connected customer, the directly connected customer shall have priority over other parties. When the connection is to a DSO, the DSO will allocate the exit capacity to the interested parties.

d. For entry and exit points connected to a storage facility, the capacity will be allocated exclusively to the storage operator of the specific facility.

(4) Gaz-System assessments on the utilisation of the reserved capacity are an ongoing event. If it turns out that no free capacity is available and some of the reserved capacity remains unused, Gaz-System will request to the network user that uses less than 80% of its capacity for a period of six consecutive months to handover the rights to this unused capacity. However, this procedure will be preceded by a consultation with the President of the Energy Regulatory Office.

Reservation of capacities			**Notes**
Point	***Product***	***Amount***	
Entry & exit points	Annual and semi-annua	90% of total capacity	
Entry & exit points	Quarterly, monthly and daily	10% of total capacity	(1)

(1) In line with ENTSOG's proposed network code on Capacity Allocation Mechanisms (NC CAM), Gaz-System offers at least 10% of the capacity as firm capacity with a duration of

less than or equal to one quarter.

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	no	
Application of WDOs in daily balancing	no	
Tolerance provided	Individual tolerance on daily basis	
Number of tolerance levels	2	(1)
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Administrated imbalance fee	(2)
Imbalance fee	External price + Multiplier	(3)

(1) Shippers are granted a daily imbalance limit of 5% and a top daily imbalance limit of 15%. Poland charges only the imbalances above the granted tolerance levels. The imbalances below the tolerance level are rolled over.

(2) Two different administrative imbalance fees are set for deviations below and above the top daily imbalance limit.

(3) Cumulative imbalances exceeding 3% of the average daily quantity at the end of the month are penalized by applying a multiplier of 0.2 on the gas reference price.

The aforementioned new Gaz-System TNC introduced a number of changes on the gas market in Poland, among others on balancing rules. According to the new Code, balancing is performed in energy units – kWh (so far only cubic meters have been used). There is only one imbalance limit called Daily Imbalance Limit (DLN) which is determined as 5 % of the quantity of gas delivered by the shipper for transmission at the entry points for a given gas day under the relevant transmission contract. At the end of each gas day TSO specifies the Daily Imbalance Quantity (DIN) for the given gas day as the difference between the quantities of gas that the shipper delivered at the entry points and the offtake from the transmission system at the exit points during any gas day, calculated separately for each transmission contract between the TSO and the shipper.

Market Environment and Trading

Volumes	TWh/year	Notes[197]
Indigenous production	49.8	(1)
Import	12.5	(2)
Export	35.2	
Consumption	165.9	
Traded volumes	Negligible	

(1) In 2010 PGNiG was responsible for around 98% of the Polish gas production.

(2) In 2011, Poland imported around 436,680 TJ/yr. The larger share of this was supplied by Gazprom Export under the Yamal contract.

The new Transmission Network Code of Gaz-System also introduced a virtual gas trading point to the high methane natural gas system, without a physical location in the transmission system. This enables gas trade of gas that is already in the transmission system.

The introduction of the virtual entry/exit point opened up the way to creating a gas exchange in Poland. The Polish power exchange (POLPX), launched in December 2012, enables gas trading on prices that correspond to the supply and demand equilibrium. Network users that want to trade on POLPX need to exchange transactions through a brokerage house and commodity brokerage house, which are members of POLPX and members of the Exchange Clearing House operated by Warsaw Commodity Clearing House (WCCH). For network users to become a member of POLPX themselves and to directly engage in trading activities, requires amending the Commodity Exchanges Act.

POLPX organizes both a spot market and a forward market. On the spot market it is possible to trade day-ahead gas for flat delivery during the next day. On the Commodity Forward Instruments Market, market participants can trade in monthly, quarterly and annual contracts on every session. Trading takes place in deliveries of gas in the same amount in all hours of the delivery period. The exchange price of each contract is expressed in PLN per MWh.

Finally, legislative works are ongoing in the Parliament to introduce the obligation of gas sale on the Polish gas exchange by entities with a significant market share. A decision on the obligatory gas volume has not been taken yet, however a level between 30% and 70% of gas injected to the grid is being discussed. The obligation aims at creating a liquid wholesale market and increasing competition, which in turn will enable the gas prices to be released from the obligation of approval by the President of Energy Regulatory Office.

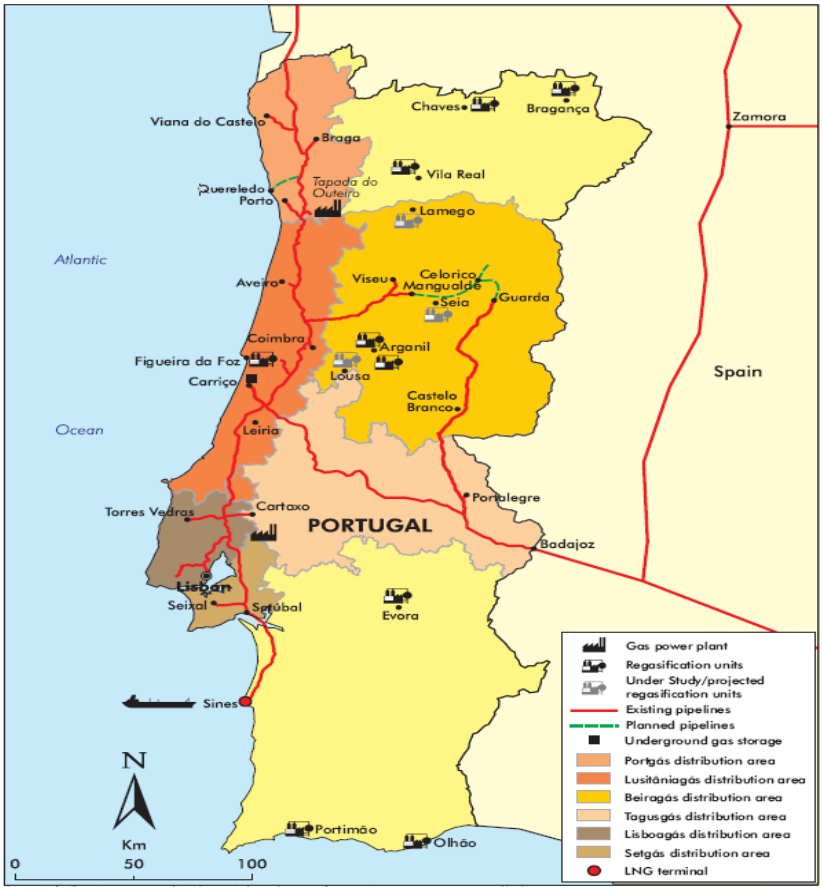
[197] Source of data: CEER National Indicators (2012) i.e. for the year 2011. Data originally provided in TWh/yr.

Trading		Notes
Trading volume	Negligible	(1)
Exchange spot (TWh)	--	
Exchange futures (TWh)	--	
OTC (TWh)	--	
Participants (number)	1	
Exchange spot	--	
Exchange future	--	
OTC (TWh)	--	
Churn rate	Unknown	

As explained above, the Polish wholesale market is dominated by PGNiG but the number of entities operating there is still growing.

20 PORTUGAL

Network Topology



Network topology		Notes[198]
Network length high pressure (km)	1,298	
Pressure range TSO	>20 bar	
Import capacity (GWh/d)	174	(1)
Export capacity (GWh/d)	95	(2)
Storage (bcm)	0. 179	(3)
LNG (bcm/year)	7.6	(4)
TSOs (name)	REN-Gasodutos, S.A.	(5)
DSOs (number)	12	(6)

[198] ERSE, 2011 National Report to the European Commission; and http://www.ren.pt/.

(1) The transmission network has two physical interconnection points (IP) with Spain, the main point at Campo Maior, in the east of Portugal, and another in the north, which plays a minor role in the supply of the Portuguese system. The current entry capacity of the Campo Maior IP is 134 GWh/day, while the entry capacity of the Valença do Minho IP is 40 GWh/day. Please note these are the summer capacities.

(2) The current exit capacity at the Campo Maior IP is 70 GWh/day and at the Valença do Minho IP is 25 GWh/day. Please note these are the summer capacities.

(3) The underground natural gas storage facility of Carriço consists of four underground caverns built in natural saline rock formations, using a single surface-level station. There are plans to construct five more underground caverns (at the same location) in addition to the four currently in use.

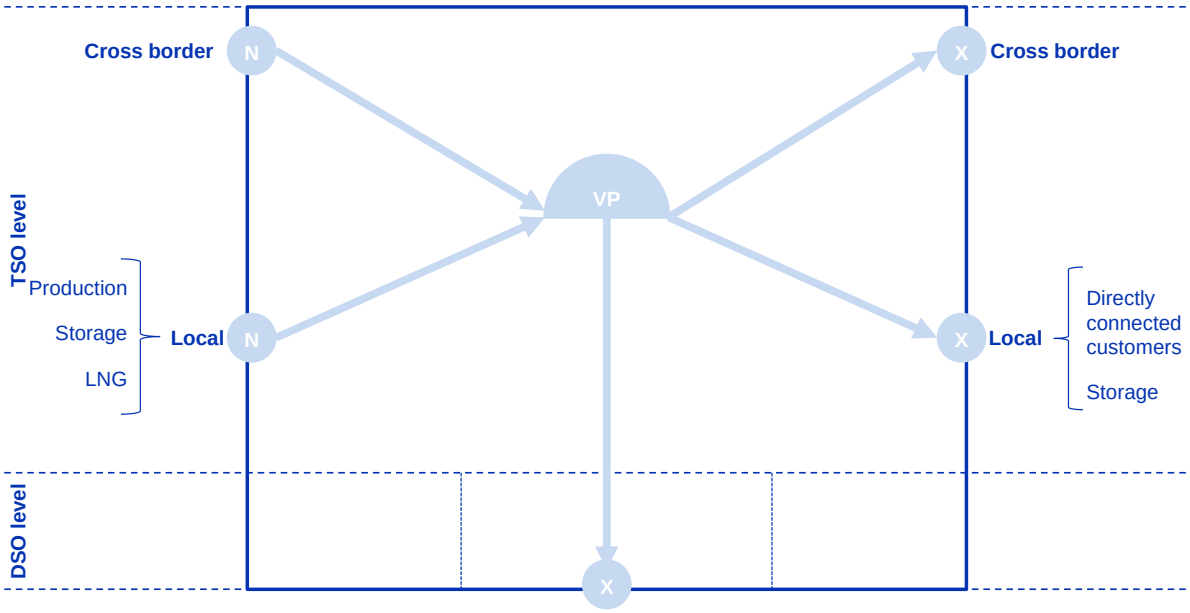
(4) Sines LNG terminal is located on the southern Atlantic coast. The operational start-up of this infrastructure occurred in early 2004, with 2 LNG tanks oferring a storage capacity of 240,000 m^3. As of May 2012, with the conclusion of the expansion project of the LNG Terminal, the storage capacity was enlarged up to 390,000 m^3 due to the construction of a new LNG tank, and regasification rates were also increased up to a nominal capacity of injection into the RNTGN of 900,000 Nm^3/h and a maximum capacity of injection of 1,350,000 Nm^3/h.

(5) REN is the transmission system operator, underground storage operator and LNG terminal operator and is fully unbundled (in legal and ownership terms) from any supply activities. Note: In Portugal there is one LNG reception, storage and regasification terminal operator (REN Atlantico), two underground storage operators (REN Armazenagem and Transgas Armazenagem), one transmission system operator (REN Gasodutos) and 12 distribution system operators.

(6) There are 12 DSOs, 7 are regional, some of wich accumulate with local distribution, and 5 are local distributors only.

Design of the Entry-Exit System

The figure below gives the schematic representation fo the entry-exit system in Portugal as seen from the shipper's perspective. Chapter 1 of this document explains how the schematic representation should be interpreted.



In the Portuguese system there is a fully decoupled entry/exit system. There is a single balancing area, including the transmission network, Sines LNG terminal and Carriço underground storage facility. The system also has a Virtual Interconnection Point (VIP), which is the commercial point where capacity is offered between Spain and Portugal (not to be confused with the Virtual Trading Point). In the context of the South Gas Regional Initiative Work Plan 2011-2014, Enagás and REN committed to develop a joint allocation procedure inspired on ENTSOG's Network Code on CAM to allocate bundled products on both sides of the border in a coordinated mechanism by 2012. The VIP was created recently in June 2012.[199]

[199] Enagas and REN (2012); "Procedures for the annual auction of yearly and monthly products of gas transmission capacity between Portugal and Spain – Information Memorandum"; June 2012.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry-exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader	1	2					
Shipper							
Supplier	1						
Contracting party	The directorate General for Energy and Geology (under ministry of Economics)	TSO and installation operators (REN SGPS, S.A.)					

(1) In Portugal, both registrations and licenses are used. Registrations apply for suppliers in the free market and licenses apply for last resort suppliers. For foreign suppliers that have active registers in their countries, the registration it is automatically recognized in Portugal. All licenses are issued by the Directorate General for Energy and Geology (Portuguese acronym DGEG). Licensees need to meet technical, legal and financial requirements. The license has no end date, but can be revoked if the license no longer complies with the set norms. DGEG charges a fee for the initial issue of the license, no further yearly costs are involved. The registration procedure is simpler and faster than the license procedure and is also conducted by DGEG.

(2) In Portugal, network users sign a framework contract with the TSO for access to and use of the gas infrastructure (LNG terminal, underground storage, transmission and 12 distribution networks). Amendments apply to the framework contract for specific infrastructure, for example when suppliers wish to supply clients in at distribution level. The type of amendment depends on the distributor to which the customer is connected. There are no explicit bookings at the city gate, these are calculated automatically. When a network user wants to contract capacity, the TSO is entitled to a guarantee/warranty provided by cash,

check, wire, electronic bank guarantee or insurance bond.

Tariff Structure and Capacity Products

The methodology for calculating the access tariffs of the Portuguese natural gas (sector regulated) infrastructures is approved by the regulator (ERSE), following a public consultation procedure.

The access tariffs includes three elements: 1) transmission network usage tariff, 2) distribution network usage tariff and 3) global use of the system tariff. Each regulated activity has legal unbundling providing for allowed revenues determination and tariff price calculation, independently. Thus, for each activity a specific tariff is determined. The access tariff is then computed by the sum of each price of each activity tariff.

All tariffs applied at nondistribution system exits are charged to network users. These comprise LNG terminal, underground storage, transmission network and the global use of the system tariffs. At exits to distribution systems the TSO charges the DSOs for the transmission network and global use of system tariffs, who in turn charge distribution network users together with the distribution network tariff.

Tariff structure	Products					Tariff basis		
	Annual	Quartery	Monthly	Daily	Within-day	Capacity	Commodity	Notes
Entry	VIP/F	--	VIP/F	F	--	€/kWh/d/m	--	(1)
Domestic exit	F	--	--	--	--	€/kWh/d/m	€/kWh	(1)
Border exit	VIP/F	--	VIP/F	F	--	€/kWh/d/m	--	(1), (2)
	(3)		(3)				(4)	

(1) An additional weekly product is also available for all entry and exit points, except at the VIP (Virtual Interconnection Point between Portugal and Spain). At the date this report was prepared the users pay for the capacity they use. However, to be in line with the NC CAM, ERSE underwent a public regulation revision in April 2013 that foresees that during 2013 a new system will be implemented by which users will pay for the booked capacity, and therefore annual, quarterly, monthly and daily products will be offered.

(2) Firm and interruptible products can potentially be offered to the market at the VIP. However, only firm is offered for exit to Spain at the VIP.

(3) The capacity element of the transmission use of the network to be applied by the natural gas transmission operator (in the context of the joint mechanisms of capacity allocation in the interconnections) for the interruptible products corresponds to 80% of the firm capacity tariff.

(4) The commodity charge (charged to DSOs) is differentiated by two time periods (peak and off-peak). Please note that the transmission network tariff (URT tariff) has two extra tariff options enabling the access of market players with time concentrated uses to the system: (i)

short duration URT tariff, applicable to suppliers and (ii) low-load-factor URT tariff, applicable to consumers. In the short duration URT tariff option, the capacity charge is completely converted to an energy charge applied to the flows in the transmission network, resulting in commodity charges higher than the basic tariff option. In the low-load-factor URT tariff option, the capacity charge is partially converted to an energy charge applied to the flows in the transmission network.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	
Role of NRA	Methodology approval & tariff setting	(1)
Price control mechanism	Cost plus / incentive based mechanism for OPEX	(2)
Tariff calculation methodology	Long run average incremental costs	(3)
Entry/exit split	26/74	(4)
Capacity/commodity split	90/10	(5)
National/cross-border distinction	No	(6)
Locational or uniform tariffs	Locational/Uniform	(7)
Charging basis (booked capacity/other)	Max daily energy nominated	(8)

(1) Once a year, a proposal for regulatory parameters, revenues and prices for the next gas year (or regulatory period) is subject to a formal hearing from the Tariff Council. After the formal opinion of the Tariff Council is considered, the final values for the allowed revenues and tariffs are published.

(2) In 2010 ERSE published the regulations for the new regulatory period 2010-2013. OPEX efficiency incentives were introduced at REN Gasodutos and REN Atlântico regarding the transmission network and the terminal for reception, storage and regasification. Operating costs were split by the regulator into fixed costs, where a revenue cap regulatory approach was taken, and variable costs, related to the processed energy and physical dimensions relevant to each infrastructure, with a price cap regulatory approach. Both will progress in coming years based on the change in the GDP deflator index (IPIB) minus an efficiency goal X. ERSE has set the value of X at 3.8% in 2010, and 0% in 2011 and 2012 for REN Gasodutos; 1% respectively for REN Atlântico. The regulatory methodology applied to the CAPEX for both companies (REN Gasodutos and REN Atlântico) is the cost plus. In the first year of the first regulatory period the assets were revaluated. Since 2008 until now the new investments are valuated at historical costs (book value).

(3) Gas transmission tariffs are determined based on the costs specific to the entry and exit points of the network. The incremental cost of capacity at entry points is calculated with the following methodology:
- A simplified model for the transmission network is designed (identifying entry points, exit

points and pipeline segment length)
- The maximum capacities of each entry point and exit point of the simplified model are defined and the investments required to meet the maximum capacity values are identified
- Annuities are calculated and allocated to each branch of the network, proportionally to its length
- The unit cost for each possible path is calculated (i.e. every possible combination of entry and exit points)
- As entry/exit tariffs should be independent from the contractual path, an incremental cost of each entry point and exit zone, independent of the contractual path, is obtained through solving an optimisation problem

(4) Prices at the entry points are equal to the incremental costs (as explained above), where 26% of the transmission costs is recovered. The remaining 74% are recovered at domestic exit points, which prices are based on long run average incremental costs. After the calculation of entry and exit tariffs, exit points to the distribution networks are aggregated into one exit zone, applying a unique exit price at these points. Similarly, exit points to high pressure consumers are aggregated in one exit zone.

(5) 90% of the revenues are recovered by the capacity charge and the remaining 10% by the commodity charge.

(6) The transmission tariff applies to cross-border and domestic flows in the same way and is charged at each entry and exit point of the national transmission network.

(7) Locational: the entry prices of the use of transmission network tariff (URT tariff) may differ from one entry point to another. Uniform: the exit prices of the URT tariff may differ from one exit point to another, but at this stage the same prices are applicable for all exits to distribution networks and high pressure consumers. The prices applicable to backhaul flows, exits to the LNG Terminal and IPs are zero.

(8) Capacity tariffs are charged based on the maximum daily energy nominated by the market player for each entry or exit point in the last 12 months.

Capacity allocation		Notes
Capacity allocation mechanism	On deadline; capacity goes with customer	(1)
In case of congestion	Auction	(2)
In case of new capacity	Open season	(3)
Priorities in capacity allocation	--	
Customer type	--	
Duration		
Congestion management procedures	Auction; UIOLI	

(1) Market players should be sequentially involved in scheduling until assignment takes place. Scheduling involves the process of periodical information whereby market players inform the TSO of the capacity they need over a given period of time. The regulatory framework foresees the existence of annual, monthly and weekly scheduling processes, regarding not only the transmission system but also the distribution grids, the LNG terminal and the underground storage infrastructures. The scheduling processes occur in Open Subscription Periods (OSP). Nominations are processes where traders demand capacity for the day-ahead and, therefore, reflect a more accurate forecast of consumption. The nomination also corresponds to an OSP.

Infrastructure operators (i.e. LNG operator and underground storage operators), together with the TSO who co-ordinates the activity of global technical management of the national natural gas system, allocate the scheduled and nominated capacities after the checking mechanisms have confirmed the global feasibility of all scheduling and nomination requests. If such feasibility is not confirmed, then the congestion management mechanism shall be applied. The capacity allocated in an OSP is firm. Nevertheless, in every OSP (except annual) market agents must always confirm their previous requests (schedules), otherwise they are subject to an implicit short-term use-it-or-lose-it procedure. Market players are free to trade among themselves the rights to use the capacity allocated in a prior process of scheduling, which corresponds to the secondary market for rights to use capacity.

(2) The congestion management mechanism applies whenever the scheduling and nomination requests of market players are not globally feasible. In these circumstances, points of the natural gas system where congestions are predictable are identified and capacity is allocated by means of capacity auctions. Whenever the capacity is allocated by means of an auction, the capacity rights can be traded by market agents in the secondary market.

(3) In 2010 South Gas Regional Initiative (Portugal, Spain and France) also focused its efforts on coordinated Open Seasons (OS), which are being used to promote investment and increase the interconnection capacity in the South region. In this region, two OS lead to a significant increase in the interconnection capacity between France and Spain through the reinforcement of existing interconnections (in Larrau and Biriatou) and the creation of a new gas line in the Eastern Pyrenees (MIDCAT).

Reservation of capacities			**Notes**
Point	***Reason***	***Amount***	
Entry points	Capacity reserved for Enagas	0.5 bcm/yr	(1)
Exit points	--	--	

(1) This was in place until the end of 2008.

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on daily basis	
Number of tolerance levels	1	(1)
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Indexed imbalance fee	
Imbalance fee	External price + Multiplier1/Multiplier2	

(1) Portugal charges only the imbalances above the granted tolerance level. The imbalances below the tolerance level are rolled over.

Although there is a single balancing area, the operators (i.e. LNG operator, underground storage operators and transmission system operator) and the technical system manager (REN Gasodutos) perform individual balancing procedures for their respective infrastructure system. Market players must manage the balance between natural gas supply and demand within the leeway margin resulting from the maximum and minimum stock allocated to each of them. The violation of maximum and minimum stock limits attributed to market players in the transmission network creates a situation of individual imbalance, which is subject to a penalty scheme approved by ERSE, and designated as the incentive mechanism to restore the individual balance. The penalties were established following a proposal made by the TSO within the scope of the technical management activity of the entire system. The application of penalties does not exempt market players from their obligation to correct their individual imbalances and maintain their stock within the established limits.

The balancing period is daily; there are tolerances applied for imbalances in the transmission network. These tolerances are applied proportionately to the results of the yearly OSP, concerning the domestic exit points of the transmission network (excluding the underground storage facility).

Whenever transmission network users are outside their tolerance margins they are subject to imbalance charges. These imbalance charges distinguish two situations: whether or not the network user with an imbalance position has gas in the system (LNG terminal and/or underground storage facilities). When he has gas available, the imbalance charge is based on the LNG terminal tariff (LNG Tariff) as follows:

- If the market agent has an excess of gas in the transmission network with an imbalance position (ip) smaller than 20% of its daily tolerance, the penalty is 1.3*LNG Tariff*ip;
- If the market agent has an excess of gas in the transmission network with an imbalance position (ip) greater than 20% and smaller than 50% of its daily tolerance, the penalty is

1.5*LNG Tariff*ip;

- If the market agent has an excess of gas in the transmission network with an imbalance position (ip) greater than 50% of its daily tolerance, the penalty is 10*LNG Tariff*ip;
- When the market agent has a lack of gas in the transmission network, the penalty is 1.1*LNG Tariff*ip.

In the second situation, when market agents have no gas in the system, the imbalance charge is 30% of the reference gas price (based on the Henry Hub and the National Balancing Point), to be paid on the imbalance position without prejudice of restoring the imbalance position.[200]

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	0	
Import	58.6	(1)
Export	0	
Consumption	57.7	
Traded volumes	--	

(1) The Portuguese gas market depends fully on its imports, with 44.8% and 55.2% coming from the Spanish interconnections and Sines LNG terminal, respectively. A large share (25%) of the imported gas is used in the power sector (1.3 bcm). The main sources of natural gas are Algeria, with transits through Morocco and Spain, and Nigeria, who is the main supplier of LNG to the Portuguese market. The first supply contract (take-or-pay) was signed in late 1993 between Sonatrach and Transgás (renamed Galp Gás Natural, SA in February 2007). Sonatrach must supply an annual quantity of around 2.5 bcm until 2020. In addition, three contracts for the acquisition of LNG have been signed with Nigerian LNG Limited each for a period of 20 years. The deliveries of quantities of LNG under these contracts began in 2000, 2002 and 2006.

6 market players have shipped gas into the E-E zone; 9 market players have taken gas out of the E-E area. Since July 2010, following a governmental decree, the regulated supply to medium commercial and industrial end-users has ended. A transitory regulated end-user tariff still exists for consumers with annual consumption above 10,000 m^3 who still have not chosen a market supplier. New consumers can not be supplied by regulated suppliers.

The Portuguese gas market distinguishes three main segments:

- Electricity production market, which includes the supplies of gas to the power generators:

[200] ERSE, 2011 National Report to the European Commission

Turbogás (CCGT at Tapada do Outeiro, near Oporto), EDP (CCGTs at Carregado, near Lisbon, and Lares, near Coimbra) and Endesa (CCGT at Pego, near Abrantes)

- Consumers supplied by regulated (last resort) suppliers, including household and small commercial consumers
- Consumers supplied on the free market, mainly large industrial consumers (even though all consumers are eligible).

Additional Comments

Gas market integration in South Europe

In the South Gas Regional Initiative Work Plan 2011-2014 the following priorities for the Iberian Natural Gas Market (MIBGAS) development were identified:

1. Approval by the regulators (ERSE and CNE) of a common Capacity Allocation Mechanism to be applied in the interconnections between Portugal and Spain (in place since June 2012).
2. Proposal for the harmonisation of the access tariffs applied in the interconnections between Spain and Portugal, towards the elimination of pancaking effects.
3. Proposal for the harmonisation of the balancing mechanisms between Portugal and Spain (expected in 2013-2014).
4. Development of hubs in the region and promotion of hub-to-hub trading.

ERSE and CNE submitted a proposal for the mutual recognition of licences to supply natural gas under MIBGAS to their governments.

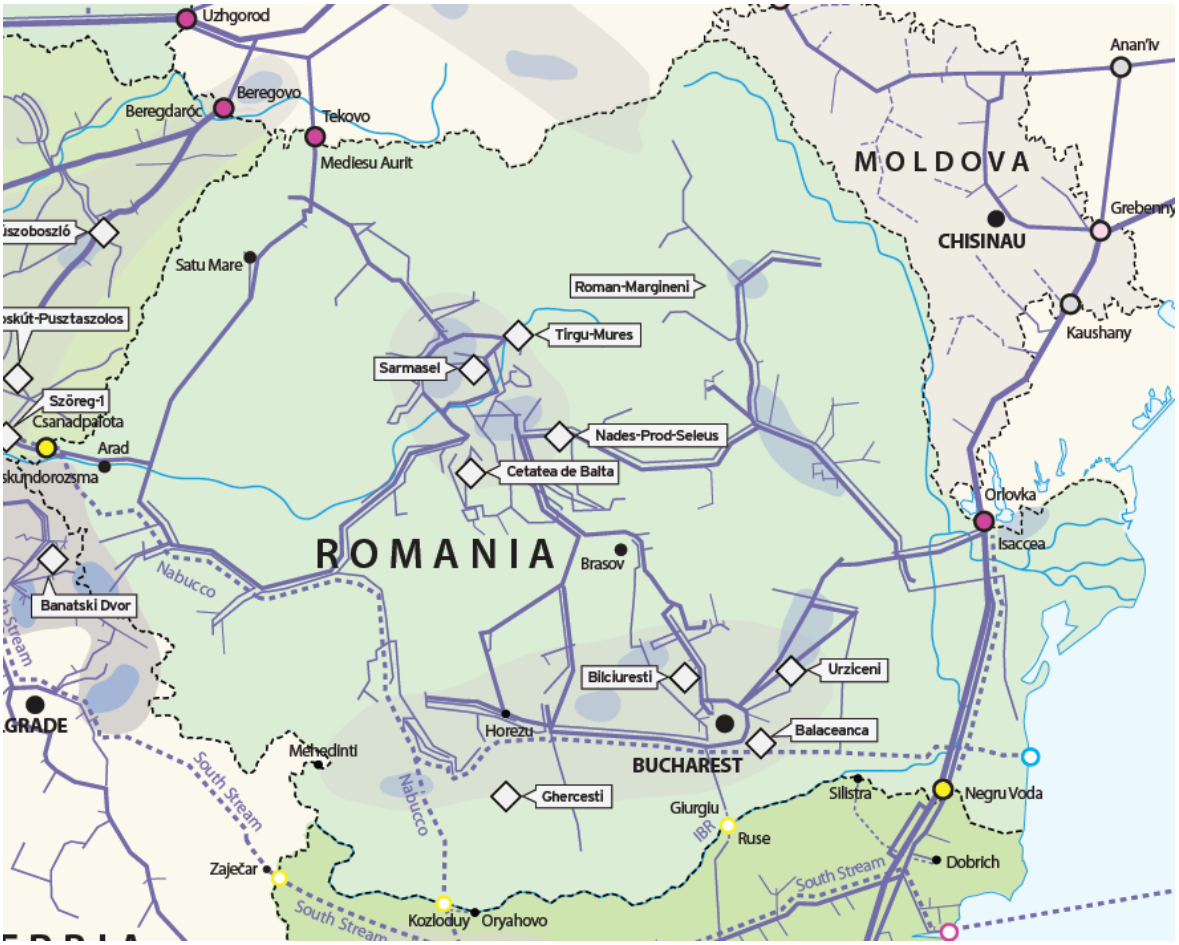
Regarding the harmonisation of the access tariffs, a public consultation document was produced with the characterisation of the current situation. It has been concluded that the Cross Border Tariff represents a barrier to market integration. ERSE and CNE recently finalised the document with the analysis of comments submitted by stakeholders. It presents the proposals of market agents regarding the elimination of Cross Border Tariffs between Portugal and Spain and the integration of the two markets.

ERSE and CNE committed to study possible models for the integration of the Spanish and Portuguese gas markets into an Iberian Natural Gas Hub (expected in 2013).

21 ROMANIA

Network Topology[201]

The Romanian gas transmission system is geared to the historic situation of the country: gas production in the country itself and imports from Russia via Ukraine (East-West flows). Romania is also a transit country for Russian gas through dedicated transit pipelines (in this case transit is treated separately, e.g. no TPA). Romania is also a planned location for the Nabucco pipeline.



[201]Transgaz, http://www.transgaz.ro/en/infra_nou.php?poz=333

Network topology		Notes
Network length high pressure (km)	13,336	(1)
Pressure range TSO	6- 35 bar[202]	(2)
Import capacity (Nm³/d)	39,4 mcm/ day[203]	(3)
Export (Transit) capacity (Nm³/d)	76.7 mcm/ day[204]	(4)
Storage (bcm)	3.135 bcm[205]	(5)
LNG (bcm/year)	--	
TSOs (name)	Transgaz	(6)
DSOs (number)	39	

(1) The Romania national transmission system is over 13,000 km in length, of which 553 km are transit pipelines. There are 5 compressor stations which have a combined power of 32 MW.

The Romanian network is interconnected at nine different points with the neighbouring countries. There is one interconnection with Hungary, three with Bulgaria (but at the same location: Negru Voda), and five (two different locations) with Ukraine.

(2) The pressure of Transgaz domestic system is between 6- 35 bar. The transit is carried out at a pressure of 54 bar.

(3) Ukraine- Romania 34.6 mcm/ day, Hungary- Romania 4.8 mcm/ day.[206]

(4) Romania- Bulgaria, Negru Voda exit.

(5) There are eight underground gas storage facilities with a combined working gas volume of 3.135bcm.[207] All eight storage facilities are depleted gas fields; there are no cavern or aquifer storages. Six storage facilities are owned and operated by Romgaz, the remaining two storage facilities are owned by Depomures and Amgaz.

(6) Transgaz is the technical operator of the national state-owned gas transmission system and it is responsible for its operation under quality, safety, efficiency and environmental conditions.

[202] Transgaz, http://www.transgaz.ro/en/infra_nou.php?poz=333

[203] Transgaz

[204] Transgaz

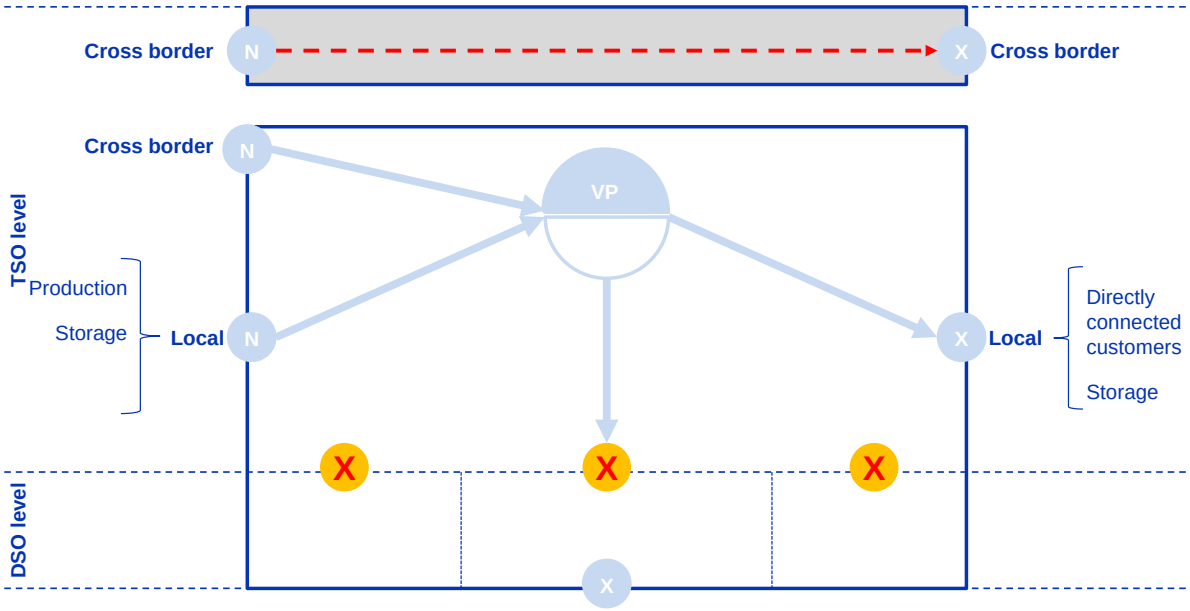
[205] Transgaz

[206] Transgaz

[207] Transgaz

Design of the Entry-Exit System

The figure below gives the schematic representation fo the network system in Romania as seen from the shipper's perspective. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
- - ▸	Locational restrictions: The transit of gas through the territory of Romania is taking place via dedicated pipelines, operated at a higher pressure (54 bar, compared to the Romanian domestic system of 6- 35 bar) and falling under the regime established by international agreements, according to which these transit pipelines were constructed. The pipelines have limited physical linkage to the Romanian national gas system.[208]
X	Additional (contractual) interfaces: The shippers need an additional contract with a DSO in order to deliver gas to end consumers: the interconnection points between transmission and distribution systems serve as exit points for TSO.[209]

It is envisaged that the E/ E tariff system will be implemented starting with July 1st, 2013 (currently postage stamp is applied). There is a single balancing zone, and currently there is no virtual trading point (planned to be implemented in 2013).

The table below gives an overview of the contractual arrangements which are in place for access to and use of the network system in Romania. This table show the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

[208] http://ec.europa.eu/energy/gas_electricity/doc/ro_energy_market_2011_en.pdf

[209] http://www.transgaz.ro/Downloads/Legislatie/CODUL_RETELEI_actualizat_la_04.04.2012_EN.pdf

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader	N/ A	2/3/4			N/A	5	
Shipper	1				N/A		
Supplier					N/A		
Contracting party	ANRE	TSO (Transgaz)	TSO	TSO	N/A	DSO	

(1) The Romanian market model distinguishes between shippers (network users), gas suppliers and gas importers. Gas suppliers and gas importers need a licence eliberated by ANRE in order to be active on the market. Importers are gas supply licence holders who own the imported gas and transfer it via cross-border entry points. Gas suppliers have contracts with their clients regarding the deliveries of gas. Both gas importers and gas suppliers can be the contractual clients of the shippers, for whom the shippers conclude the transmission contracts with the TSO. Only supply licences exist; no separate shipper licences are issued by ANRE- supplier licence is a pre-requisite for becoming a shipper.

Virtual trading point will be implemented during 2013: it will only be used for trading of gas, while the capacity transfer will take place on physical entry-exit points. It is expected that no separate licences will be necessary for trading: a supply licence will suffice.

(2) The latest version of Transgaz' Network Code entered into force as of the 1st of April 2012. The Network Code addresses the contractual relationship between shippers (defined as 'network users') and the TSO.

A supplier licence is a pre-requisite for becoming a shipper. In order to receive the transmission services from the TSO the shippers should sign a Gas Transmission Framework Contract (Annex 1 of the Network Code). In order to sign this agreement, the shippers should provide the TSO with the proof of the rating assigned by a financial institution/ rating agency. Alternatively, they can submit a financial guarantee issued by a financial institution (commercial bank), which the value should cover a minimum 5% of the commercial value of the capacity applied for. The financial guarantee may be established in cash, as guaranteed account (collateral deposit) and/ or as payment guarantee (letter of bank guarantee) issued by a jointly agreed bank. If the capacity booking tariff is increased by over 20%, the value of the original guarantee should be accordingly adjusted.

(3) Provisions regarding balancing are included in the Network Code, and are therefore accepted when signing the Gas Transmission Framework Contract.

(4) In principle the capacity is booked by the shipper by signing the Gas Transmission Framework Contract (Annex 1 of the Network Code). Capacity can only be booked under the following conditions:

- To meet contractual obligations of own client portfolios (exception is possible, but with a 'show-of-contract' 10 days before the period applied for; 'backpack principle' applies when the client changes suppliers);
- To execute storage contracts;
- For own consumption.

The shipper applies for capacity by filling in and sending the 'Application for Capacity Booking' form (Annex 3 of the Network Code), together with the draft transmission schedule, directly to the IT platform of the TSO.

In order to book capacity at import entry points from the production fields and underground storage facilities and at the exit points to the underground storage facilities, the shipper shall issue a 'Network User's Statement' (Annex 2 of the Network Code) to the TSO.

(5) For access to the DSO network, a separate contract with the DSO is required. The interconnection points between transmission and distribution systems serve as exit points for TSO.[210]

Tariff Structure and Capacity Products[211]

Currently in Romania the tariff system applied is postage stamp. The tariffs apply to domestic gas transport. The tariffs do not apply to gas transit, which takes place through the dedicated transit pipelines.

The postage stamp tariffs have a fixed component and a volume-related component, which is charged for system utilisation. There is no distinction made between local and cross-border entry/ exit points, except for the transit. A possibility exists to aggregate a number of entry/ exit points as a single entry/ exit point.

Currently transport tariffs do cover the ancillary services (namely dispatching and balancing). In 2012 ANRE issued an order regarding the settlement of balancing charges which will become applicable in April 2013.

[210] http://www.transgaz.ro/Downloads/Legislatie/CODUL_RETELEI_actualizat_la_04.04.2012_EN.pdf

[211] ANRE Order 22/ 2012: http://www.anre.ro/ordin.php?id=1004

The network is considered as one market area and one balancing zone. Capacity bookings based on entry/ exit physical points became available during the gas year 2012- 2013 (as of July 1st, 2012).[212] Balancing charges (capacity overrunning and capacity non-provision) apply as of April 1st, 2013. There are no charges foreseen for trading or capacity transfer. It is unclear whether or not this also means there are no subscription fees for the capacity transfer.

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commo-dity	Notes
Entry	F/ I[213]	--	F/ I	F/ I	--	ROL/MWh/h	ROL/MWh	(1)
Domestic exit	F / I	--	F / I	F / I	--	ROL/MWh/h	ROL/MWh	(1)
Border exit	F / I	--	F/ I	F/ I	--	ROL/MWh/h	ROL/MWh	(1)

(1) Firm capacity can be booked on the FCFS basis as follows:[214]

- Every year, between April 15th and May 15th, for one or multiple gas years
- At least six working days before the requested date of contract enters into force, for one or multiple gas days.

Currently there are no differential tariffs for the short-term services. Moreover, the TSO does not offer auxiliary services to the network users.[215]

The network users can nominate on a weekly basis (by 2 pm on Monday) every gas week n-1. The re-nominations are on a daily basis and can be made by 3 pm on the gas day n-1. Both nomination and re-nomination have to be accepted by the TSO.

Tariff calculation and division of cost		Notes
Tariff model	Postage stamp	
Role of NRA	Methodology approval	(1)
Price control mechanism	Revenue cap[216]	(2)
Tariff calculation methodology	Not explicit	(3)
Entry/exit split	--	
Capacity/commodity split	Not explicit	
National/cross-border distinction	None	
Locational or uniform tariffs	Uniform	
Charging basis (booked capacity/other)	Booked Capacity/ Physical Volume	(4)

(1) ANRE approves the tariff calculation methodology ex-ante.

[212]Transgaz, Network Code, April 4, 2012.

[213]F = firm, I = interruptible

[214]Transgaz, Network Code, April 4, 2012.

[215]http://www.transgaz.ro/en/_serv_oferite.php?poz=344

[216]http://www.transgaz.ro/Downloads/Tarif/Slide_tarif_2012_ENG.pdf

(2) The pricing system for transmission comprises a set of revenue cap tariffs, establishing overall regulated revenue covering one year of costs during the regulated period.[217]

(3) It is envisaged that for the determination of the E/E tariffs (to be implemented in 2013) the marginal cost pricing approach will be used. The fixed component for the capacity reservation at the entry/ exit points will be calculated individually per entry/ exit point and it will quantify the fixed costs related to the capacity development per point.[218] The volume-related component will quantify the costs related to the system utilisation, namely physical flows of natural gas from the transport system, including gas swaps, linepack and backhaul.[219]

(4) The current postage stamp tariffs have a fixed component and a volume-related component, charged for system utilisation. The E/ E tariffs will be established for individual entry and exit points where the capacity is booked.

Capacity allocation		Notes
Capacity allocation mechanism	FCFS	(1)
In case of congestion	Pro rata	
In case of new capacity	FCFS	
Priorities in capacity allocation	Capacities applied to meet public service obligations have priority	
Customer type	--	
Duration	--	
Congestion management procedures	Voluntary hand-over UIOLI	(2)

(1) Free capacity allocation is based on the first-come-first-served (FCFS) principle.

In the event of supply deficits, the gas quantities are allocated to the network users pro-rata, based on their approved nominations. In the event of supply excess, the gas quantities are allocated to the relevant network users at a level of the approved nominations, plus a margin of 2.5%. The delivered gas exceeding the level of the nomination plus the margin of 2.5% becomes the property of the TSO, at a pre-determined price.

(2) Transgaz applies two congestion management procedures: voluntary (or wilful) handover of capacity, and Use-It-Or-Loose-It. If a network user notifies Transgaz that it has been unable to contract capacity, Transgaz may start a UIOLI procedure. First, all existing network users

[217] ANRE National Report 2010, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Romania-EN.pdf

[218] Article 50 of the ANRE Order 22/2012: http://www.anre.ro/ordin.php?id=1004

[219] ANRE Order 22/ 2012: http://www.anre.ro/ordin.php?id=1004

are notified of this situation and may choose to voluntarily handover booked capacity without incurring additional costs. If this does not solve the problem, Transgaz may start a procedure in which it will assess the necessity of existing capacity bookings and may decide to remove some of this capacity and sell it to unserved network user.

In addition to these procedures, network users may exchange transmission capacity on a bilateral basis. The capacity may be fully or partially transferred; the partial capacity transfer period may span from the first day of approval by the TSO to the end of the gas year.

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	Interruptible capacity	--	(1)
Exit points	Interruptible capacity	--	(1)

(1) No information is available.

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on daily and weekly basis	
Number of tolerance levels	Several	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	N/A	
Imbalance fee	N/A	

The balancing regime in Romania includes both daily and aggregated weekly imbalance charges, which apply to each individual network user. The daily and aggregated weekly imbalance charges are calculated at the end of the month based on final allocations. The tolerance margins depend on final daily and weekly imbalances, as well as the total daily and weekly entry and exit point allocations (applicable starting whith April 2013).

The TSO provides the following tolerance levels for the transmission services with no specific charges:[220]

- 5- 7% (depending upon the type of the entry/exit points) for exceeding booked capacity

[220]http://www.transgaz.ro/en/_niveluri_flexibilitate.php?poz=353

- 3% for the absolute value of the non-observance of the approved nomination
- 2.5% for the absolute value of the final daily imbalance
- +/-2.5% for the final cumulative imbalance

Balancing	Notes
Daily imbalance	(1)
- 2.5%< Final daily imbalance ≤ 5% of the total allocation approved at the entry points	
- 5%< Final daily imbalance ≤ 15% of the total allocation approved at the entry points	
- Final daily imbalance ≥15% of the total allocation approved at the entry points	
Aggregated weekly imbalance	(2)
- 2.5% < Final aggregated imbalance < 5% of the total allocation approved at the entry points	
- 5% < Final aggregated imbalance < 8% of the total allocation approved at the entry points	
- 8%< Final aggregated imbalance < 12% of the total allocation approved at the entry points	
- 12%< Final aggregated imbalance < 15% of the total allocation approved at the entry points	
- Final aggregated imbalance >15% of the total allocation approved at the entry points	

(1) At the end of each gas day n, the TSO calculates the provisional daily imbalance related to gas day n-1 for each network user, based on the provisional allocations on gas day n-1. The provisional daily imbalance is for information purposes only; the final daily imbalance is calculated based on the final allocations related to the relevant gas day, within maximum 5 working days from the end of the month. The daily imbalance is applied regardless of whether the network user chooses to use ex-post gas exchange or not.

(2) At the end of each gas week the TSO calculates the provisional aggregated imbalance for each network user based on calculating the sum of the daily provisional imbalances of the relevant gas week. The provisional aggregated imbalance is for information purposes only; final aggregate imbalance is the total final daily imbalances related to each gas day of the relevant gas week.

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	112.0	(1)
Import	31.9	
Export	0	
Consumption	143.5	
Traded volumes	--	(2)

(1) The data reported by Eurostat shows a deviation of 9% compared to data provided by the national regulator (ANRE); Eurostat reported Gross Inland Consumption of 143.5 TWh/ year in 2011 (150.81 TWh/ year in 2011 reported by ANRE). Domestic production covers the largest part of Romanian gas demand (83% in 2010). The rest is imported from Russia (current import and extracted from storage).

(2) Virtual trading point will be implemented during 2013: it will be used only for trading of gas, while capacity transfer will take place in physical entry-exit points. No charges are planned for trade or capacity transfer. The network users will be able to exchange gas on a bilateral basis. Gas may be transferred both ex-ante and ex-post. No information is available on the churn rate and traded volumes.

Transmission, storage and distribution were unbundled (accounting, legal and functional) in 2007-2008. The gas market was opened for all customers in 2007.[221] The Romanian gas market consists of the competitive market (trading of gas between suppliers, and suppliers and customers making use of their eligibility) and the regulated market (based on framework contracts, including supply, transmission, distribution, and storage, with the exception of one dedicated pipeline). In the regulated market, prices and tariffs are set and approved by the national regulator.

Regulated prices are fixed by the regulator concerning supply to final customers; including public service obligations, gas transmission, gas storage, distribution. Transit by dedicated lines is falling under the regime established by international agreements, according to which they were constructed.

Market environment		Notes
National regulatory authority	ANRE[222]	(1)
Transmission tariff system	postage stamp	(2)
Market areas (number)	1	
Balancing zones (number)	1[223]	
Trading points (name)	GTF (Gas Transfer Facility)[224]	(3)
Exchanges (name)	--	(3)

[221]Romania was among 8 countries which have not transposed the Third Energy Package by 3 March 2011 (http://europa.eu/rapid/press-release_IP-12-181_en.htm?locale=fr). A new Gas and Electricity Law was adopted in July 2012 in order to transpose the Third Package (http://www.anre.ro/documente.php?id=476).
Also, in 2011 EC referred Romania to court for not complying with the Gas Regulation: EC considered that no interruptible reverse flow capacity ('backhaul') was offered at all interconnection points, and that the TSO did not entirely respect the EU transparency requirements (http://europa.eu/rapid/press-release_IP-11-1437_en.htm?locale=en).

[222] http://www.anre.ro/

[223] http://www.transgaz.ro/en/infra_nou.php?poz=333

[224]Transgaz, Network Code, April 4, 2012.

Network users (number)	42[225]	(4)
Gas suppliers (number)	76[226]	(5)
Universal service providers (USP´s)	Obligation to supply	(6)

(1) Autoritatea Nationala de Reglementare in domeniul Energiei.

(2) The E/ E tariff system will be implemented starting with July 1st, 2013. Currently, the tariff system applied is that of a postage stamp.

(3) Currently network users may exchange gas on a bilateral basis on entry-exit points (physical or virtual). Gas may be transferred before the gas day or after the gas day, but within 48 hours from the receipt of the notification sent by the TSO to the network user. The latter services can be used, but within certain boundaries, to exchange imbalances among network users. In addition, gas can be traded for a minimum of one gas day.

Romanian authorities plan to set up a natural gas trading exchange during 2013.[227]

(4) 42 network users were active in the gas year 2011- 2012.

(5) In 2010 there were 39 regulated market suppliers (3,030,462 consumers) and 37 competitive market suppliers (1,531 consumers).

(6) The gas suppliers operating on the regulated market have an obligation to supply with regulated prices.

Virtual trading point will be implemented during 2013: it will be used only for trading of gas, while capacity transfer will take place in physical entry-exit points. No charges are planned for trade or capacity transfer.

The network users may exchange gas on a bilateral basis. Gas may be transferred both ex-ante and ex-post.

The rules that apply to capacity trading on the secondary market in relation to the TSO are not regulated. The capacity may be totally or partially transferred on. Capacity transfer periods may span from the first day of approval by the TSO to the end of the gas year.

Romanian authorities plan to set up a natural gas trading exchange during 2013.[228]

[225]http://www.transgaz.ro/en/ecom_date_generale.php?poz=387

[226]ANRE National Report 2010, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National%20Reporting%202011/NR_En/C11_NR_Romania-EN.pdf

[227]http://www.zfenglish.com/companies/energy/romania-to-set-up-natural-gas-exchange-by-2013-9678299

[228]http://www.zfenglish.com/companies/energy/romania-to-set-up-natural-gas-exchange-by-2013-9678299

Trading		Notes
Trading volume	--	(1)
Participants (number)	--	
Churn rate	--	

No information is available.

Additional Information

It is envisaged that the regulated prices for the end consumers will be gradually eliminated as of December 1st, 2012 for non-household customers and as of July 1st, 2013 for household customers.[229]

[229]Romanian Electricity and Gas Law: http://www.anre.ro/documente.php?id=476

22 SLOVAKIA

Network Topology[230]

The Slovak transmission system has a key position among the gas transmission routes to the territory of the European Union and is based on gas flows from East to West consisting of four or five parallel pipelines with four entry/exit points. There are transport network interconnections with Ukraine, Czech Republic and Austria. Slovakia is a major transit country for Russian gas delivered to the Czech Republic, Germany, Austria, France, Italy, Hungary, Slovenia and Croatia. Total volume of transited gas in 2010 was 71.4 bcm; Slovakia is the largest transmission operator for Russian gas in the EU. Due to the country's high import dependence, investments in the infrastructure in order to diversify import routes are a primary concern.

Network topology		Notes
Network length high pressure (km)	2,270	(1)
Pressure range TSO (max., bar)	73	(2)
Import capacity (GWh/d)	3,140.8	(3)
Export capacity (GWh/d)	3,199	(4)
Storage (bcm)	2.8 bcm[231]	(5)
LNG (bcm/year)	--	
TSOs (name)	eustream	(6)
DSOs (number)	50	(7)

(1) Total length of the gas transmission network is approximately 2,270 km. Total length of the gas distribution network is approximately 33,000 km, including high pressure with the length 6,307 km..

The pipeline Nabucco is seen by the energy policy as a significant option for diversification of supply. The Slovak-Hungarian gas interconnector is among the highest priorities of the energy strategy. Moreover, the interconnection of the Polish and Slovak transmission network offers the opportunity for the Slovak market to receive gas supplies from non-conventional gas deposits.

(2) Pressure regulation and metering stations are owned by eustream.

(3) Velké Kapušany entry 2,548 GWh/d, Baumgarten entry 187.2 GWh/d, Lanžhot entry 405.6 GWh/d.

[230] Information in this section is based on www.eustream.sk; URSO Annual Report 2011

[231] Technical working capacity of the two gas storage operators (NAFTA and POZAGAS) as of 31 December 2011

(4) Lanžhot exit 780 GWh/d, Baumgarten exit 1,560 GWh/d, Velké Kapušany exit 859 GWh/d.

(5) In 2010 two storage facility operators, NAFTA a.s. and POZAGAS a.s., offered their storage capacity. The underground storage tank Dolní Bojanovice is solely used for the needs of physical balancing of the distribution network.

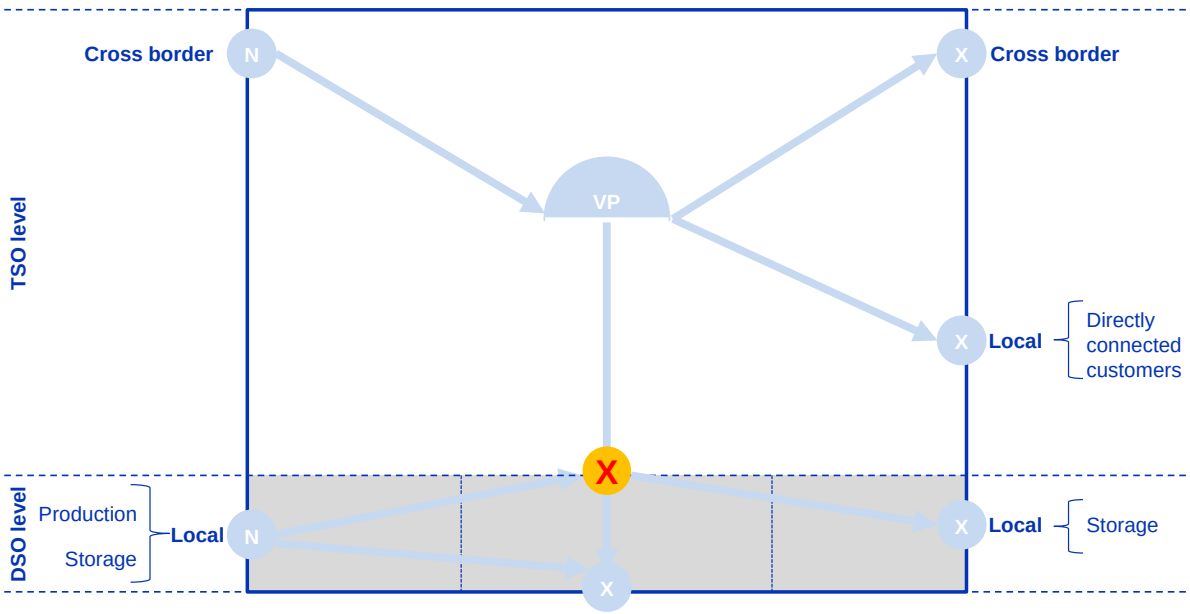
Completion of NAFTA's Gajary-Báden storage facility is expected to add about 500 million cm of natural gas storage capacity by 2014.

(6) The gas transport for Slovak network users and international transit is conducted by a sole transport network operator, eustream a.s, which is a 100% subsidiary of the gas transmission system owner Slovenský plynárenský priemysel, a.s.(SPP).

(7) There is one main DSO (SPP-distribúcia, a.s.) ensuring the distribution of more than 98% of the overall volume of distributed natural gas in Slovakia and 49 small local distribution networks on the restricted territory; the number of offtake points from the DS did not exceed 100,000. SPP-distribúcia has 1.5 million offtake points.

Design of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in Slovakia as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
X	Shippers supplying the Slovak market have to book capacity at the domestic point, which, as a virtual aggregated interconnection to and from domestic storage and distribution networks, is one of the four entry/exit points of the transmission system. Furthermore the production zone and storages is directly connected to the distribution system. On top of that, storages have also direct access to the transmission system, but with need to book respective capacity for the entry/exit domestic point.
	In Slovakia the DSO is not part of the balancing zone. Balancing of the distribution system is fully in competency of the Slovak DSO.

A fully decoupled entry-exit model is implemented for individual entry and exit transmission points with different rates. The entry and exit points of the transmission system consists of three border points and a domestic point (which is a virtual aggregated interconnection to and from domestic storage and distribution networks). Cross-border flows are an integrated part of the system. A virtual trading point was launched by the TSO within its entry/exit zone in early 2012; so far no gas exchange has been established in the country.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

The network users are shippers and gas suppliers who are not necessarily the same. In the Slovakian terminology, the shipper is a user of the transmission network based on the transmission contract, while a gas supplier supplies end consumers with natural gas and invoices them accordingly. This does not necessarily mean that a shipper is a supplier. However, in the majority of cases, the same player is both shipper and gas supplier.

<table>
<tr><th rowspan="2">Roles</th><th colspan="7">Contractual arrangements</th></tr>
<tr><th>Licence</th><th>Framework agreement</th><th>Balancing</th><th>Capacity</th><th>Virtual Point</th><th>Distribution</th><th>Others</th></tr>
<tr><td>Trader</td><td></td><td></td><td></td><td></td><td>5</td><td></td><td></td></tr>
<tr><td>Shipper</td><td></td><td rowspan="2">2</td><td rowspan="2" colspan="2">3/4</td><td rowspan="2">5</td><td></td><td></td></tr>
<tr><td>Supplier</td><td>1</td><td></td><td></td><td>6</td><td></td></tr>
<tr><td>Contracting party</td><td>NRA</td><td>TSO</td><td>TSO/DSO</td><td>TSO</td><td>TSO</td><td>DSO</td><td></td></tr>
</table>

(1) In Slovakia, only gas market participants delivering gas to final customers need a licence issued by the national regulator. Trading or shipping of gas is not subject to a licence.

(2) Customers have an option to conclude either standard transmission contract or framework agreement with the capacity booking done later on. Signature of a framework agreement is optional. Framework agreements are used mainly for the cases of the online capacity booking.

(3) Shippers as well as suppliers need to conclude transmission contracts with the TSO. The shippers and suppliers have to comply with the following requirements:

- Financial guarantee - Minimal amount of provided financial guarantee is always equal to two-month payment for gas transmission during the period of the highest booked transmission capacity or projected two-month payment for additional services such as Title Transfer Service, Day Ahead Capacity, Shorthaul, Bundled day ahead service. the TSO accepts in particular following instruments: a) bank guarantee, b) prepayment, c)

deposit account.

- Appropriate IT system
- Neighbouring network requirements: the shippers/suppliers need to prove that the operators of connected systems will provide for transport of gas to the entry point(s) and/or transport of gas from the exit point(s) of the TSO. Such prove can for example be a letter of the adjacent network operator, confirming, that the gas transport in connected network will be accomplished.

Companies providing universal services to households and small consumers have to fulfil specific requirements regarding service quality and the obligation to supply.

We note that in Slovakia in addition to typical TSO requirements, the market parties wishing to become shippers have to provide proof that the operators of connected networks will provide for the transportation of gas to the entry point(s) and transport of gas from the exit point(s) of the TSO.

(4) Transmission contracts and framework agreements include standard balancing provisions. Balancing of transmission in the TSO network is done on the TSO level, however balancing of the distribution is provided by the DSO. In case of supplier, there is also a need to conclude a distribution contract with the balancing provisions as well.

(5) The TSO offers title transfer services at the entry and exit points of the transmission system, as well as at the Slovakian virtual trading point (VTP), where multiple transfers of gas ownership are possible, not only between network users with booked transmission capacity, but also between gas traders registered by TSO. At the Slovak VTP the trading with natural gas is done on basis of the title transfer operations. Traders who want to be active at the VTP need to conclude a title transfer contract with the TSO. In case of shippers and suppliers the title transfer contract for VTP is optional. The title transfer service fee consists of two components; a fixed component (500 EUR for each calendar month to which contract on provision of title transfer service is related) and a variable component (0.10 EUR per 1,000 m3 of gas which are allocated via title transfer service). There is the same treatment of the physical traders and the paper traders. Conclusion of the title transfer contract with TSO is the only prerequisite to access the VTP in Slovakia.

In other words, in Slovakia the access to VP is covered by a separate agreement, possible for the parties other than shippers and/ or suppliers (no pre-requisites): in order to access the VP the aspiring market parties have to sign the 'title transfer (TT) contract' with the TSO, and to be able to do this the market parties do not have to be shippers. Such an approach beneficially affects the spot market and liquidity and has the potential to thereby increase the security of supply and decrease the prices for the domestic market of the relevant country.

(6) In Slovakia, gas market participants delivering gas to the final customers needs a distribution contract covering entry capacity to the distribution network as well as the distribution capacity for the exact offtake point. The domestic point is a standard entry/exit point connecting transmission and distribution networks. In order to transport gas from the

transmission system to the distribution area shippers have to book exit domestic capacity at the TSO and then entry capacity to the distribution network at the DSO. In order to deliver gas to the final customer within the distribution area, shippers have to book also the distribution capacity for the offtake point at the DSO.

Tariff structure and Capacity Products[232]

The TSO, Eustream, is operating a decoupled entry-exit tariff system for individual entry and exit transmission points with different rates. Cross-border flows are in line with the decoupled entry-exit system.

72 natural gas transport contracts with fixed transport capacity were fulfilled in 2010, out of which 2 long-term, 42 annual and 28 short-term contracts. In 2010 no natural gas transport contracts comprised interruptible capacity. In 2011 Eustream recorded more than fifty new, confirmed transmission capacity bookings (raising the number of active contracts to 100). Short-term, cross-border transactions between hubs located in Central Europe are becoming an increasingly significant part of Slovakia's contract portfolio.

Currently, no reservation of capacities exist (e.g. technical capacity reserved for short-term products). The allocation of capacities is done on a first-committed-first-served basis.

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commo-dity	Notes
Entry	F/ I[233]	--	F/ I	F/ I	--	EUR/m^3/d	--	(1)
Domestic exit	F	--	F	F	--	EUR/m^3/d	EUR/m^3	
Border exit	F / I	--	F/ I	F/ I	--	EUR/m^3/d	--	
	(2)		(3)	(4)	--			(5)

(1) A decree by the Regulatory Office for Network Industries determines initial tariff rates for each entry and exit capacity point. Transmission network users are included in one of four tariff groups dependant on the booked daily capacity of each entry and exit point. The classification of network users does not change in relation to the real volume of the transmitted gas. The specific entry/exit tariff for each network user is calculated based on the regulated initial tariff, the tariff group, the contracted daily capacity for the calendar year and the capacity type (long-term, annual, monthly and daily).

Interruptible capacity is only offered by the TSO if firm capacity is not available; its price is set to reflect the probability of interruption.

[232] Information in this section is based on www.eustream.sk, www.spp-distribucia.sk, www.eustream.sk, in particular on Tariffs for 2012 and Operational Order of eustream; National Report Regulatory Office for Network Industries, Slovak Republic, 31 July 2011 and URSO Annual Report 2011

[233] F = firm, I = interruptible

No explicit backhaul capacity booking are possible; however, both entry and exit capacity can be booked on a firm basis at all border transfer stations.

(2) A duration factor is applied by calculating the price of annual capacity of long-term booking, resulting in a price variation relative to the duration of gas transmissions (in years).

As of the January 1st, 2012, it is possible to book long-term capacity with a different starting date. Thus, the network user pays a proportionate part of the yearly payment in the first calendar year.

(3) The price of monthly capacity varies according to the duration of the gas transmission (in months) contract. Monthly contracts can be concluded for a period of gas transmission less than one year.

(4) The price of daily capacity varies according to the duration of the gas transmission (in days) contract. Daily contracts can be concluded for a period of gas transmissions less than 60 days.

(5) The transmission network users are obliged to provide the TSO gas for operational purposes of the transmission network for each entry/exit point to/from the transmission network. Its extent is determined as a multiplication of the real transported volume of gas at each entry/exit point.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	
Role of NRA	Approval	(1)
Price control mechanism	Price Cap Regulation	
Tariff calculation methodology	Locational	
Entry/exit split	48/52	
Capacity/commodity split	100/0	
National/cross-border distinction	None	(2)
Locational or uniform tariffs	Locational	(3)
Charging basis (booked capacity/other)	Booked capacity Transported volume	

(1) NRA approves the tariffs calculated by the TSO based on a methodology established in regulatory provisions.

(2) The same transmission tariffs are valid equally for Slovak and foreign users of the transport network.

(3) Tariffs are determined for individual entry and exit points.

Capacity allocation		Notes
Capacity allocation mechanism	FCFS	(1)
In case of congestion	Pro rata	
In case of new capacity	Open Season	
Priorities in capacity allocation		
Customer type	Internal	(2)
Duration	Long-term	(3)
Congestion management procedures	Capacity trading on secondary market, LUIOLI	(4)

(1) The allocation of capacities is done on a first-committed-first-served basis. In the event of congestion, capacity is allocated in proportion to the amount requested by each of the applicants.

(2) Transmission capacity requests for the internal market, in particular when resulting from a change of a supplier, have priority by capacity allocation.

(3) Long-term capacity bookings have priority over short-term requests when the priority is based on a term of duration; while contracts in force for more than 10 years are considered as equal.

(4) Trading activities with transport capacity in the secondary market are concluded through a bulletin board on the Eurostream website. Shippers can provide booked unused transmission capacity to another shipper only with a prior notification delivered to the TSO. Trading of transport capacities do not affect any rights and obligations of parties arising under the original capacity booking contract.

In case of continuous shortage of firm transmission capacity, the TSO may request shippers (who have made only insignificant use of their capacities for a period of at least 24 consecutive months) to offer these capacities to third parties.

Capacity can be traded on the secondary market only with a prior notification delivered to the TSO.

Balancing and Imbalance Settlement[234]

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	Yes	(1)
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on daily basis	
Number of tolerance levels	2	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Gas-in-kind compensation + financial settlement	(2)
Imbalance fee		

(1) In Slovakia the intake and off-take on DSO level are balances separately from the transmission system.

(2) In general shippers balance their imbalances in kind. Only the imbalances of the balancing account recorded 10 calendar days after the expiration of the transmission contract are settled financially.

The TSO, Eustream, operates a daily balancing system which is based on in-kind compensation of imbalances, with no tariffs for imbalances and no financial payments. In case the shipper does not balance its imbalances in-kind; a financial compensation is applied, which is calculated based on the balancing account of the shipper and the reference price at CEGH Baumgarten. There are no WDOs in place in Slovakia and the DSO is not part of the balancing zone.

The DSO is responsible for keeping the regional gas system in balance on a daily basis. Tools available are line-pack and storage, as the DSO is not allowed to buy balancing gas. There is no market based balancing. There are daily and cumulative tolerance levels, but only imbalances from the cumulative levels are penalised. However, imbalances are only charged to the shipper if their imbalance was in the same direction as the overall system imbalance. The basic tolerance level is 5% of daily contracted capacity. According to market rules, it is possible to transfer the responsibility for imbalances to other shippers, but it is not possible to trade (part of) the tolerance ex-ante or ex-post.

[234] Information in this section is based on ACER answers to the DG ENER Questionnaire on balancing; www.eustream.sk and KEMA, 2009, Study on Methodologies for Gas Transmission Network Tariffs and Gas Balancing Fees in Europe

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	1.3	
Import	62.8	(1)
Export	66 bcm	(2)
Consumption	59.9	
Traded volumes	--	

(1) In 2011 about 98% of domestic gas consumption was imported. The natural gas supply is mainly secured through a long-term contract between SPP and the Russian Gazprom Export. RWE, VNG, Shell and OMV cover 5% of the demand.

(2) Out of the overall volume of natural gas transport, 66 bcm has been exported to foreign consumers.

The short-term gas market in Slovakia comprises the day-ahead gas market, introduced in 2011, which allows shippers to book the one-day transmission capacity for the following gas day at the previous gas day.

The TSO offers bundled day-ahead capacity between the Czech Virtual Trading Point and the Slovak Virtual Trading Point and/or Hub Baumgarten located at border point Baumgarten based on an inter-TSO contract.

In order to facilitate cross-border trade Eustream has decided to link to the platform GATRAC, to the cross-border partnership of European transmission system operators NET4GAS, ONTRAS and GRTgaz.

Trading	Notes
Trading volume	--
Spot	--
OTC (GTF)	--
Other	--
Participants (number)	--
Churn rate	--

23 SLOVENIA

Network Topology

The Slovenian gas transmission network is interconnected to the systems of Italy, Austria and Croatia. It is supplied by Italy and Austria with gas for both transit as well as domestic consumption. The interconnection with Croatia is primarily utilised to flow gas in and out of the Croatian Okoli storage, which is used by Slovenia as well.

Network topology		Notes
Network length high pressure (km)	1,054	(1)
Pressure range TSO (barg)	67 - 24	(2)
Import capacity (GWh/day)	103	(3)
Export capacity (GWh/day)	53	(4)
Storage (bcm)	0	(5)
LNG (bcm/year)	0	
TSOs (name)	Plinovodi d.o.o	(6)
DSOs (number)	16	(7)

(1) The Slovenian gas transmission system has a length of 1,054 km (of which 845 km with a pressure above 16 bar) and has two compressor stations, one at Kidričevo and one at Ajdovščina.

(2) Pressure range of the Slovenian gas network is between 67 and 24 bar.

(3) Slovenia receives imports from Italy (28 GWh/day) and Austria (75 GWh/day).

(4) Slovenia has an export capacity to Croatia of 53 GWh/day.

(5) Slovenia has no storage facilities within the country, but its transmission network is connected to the Okoli storage facility in Croatia.

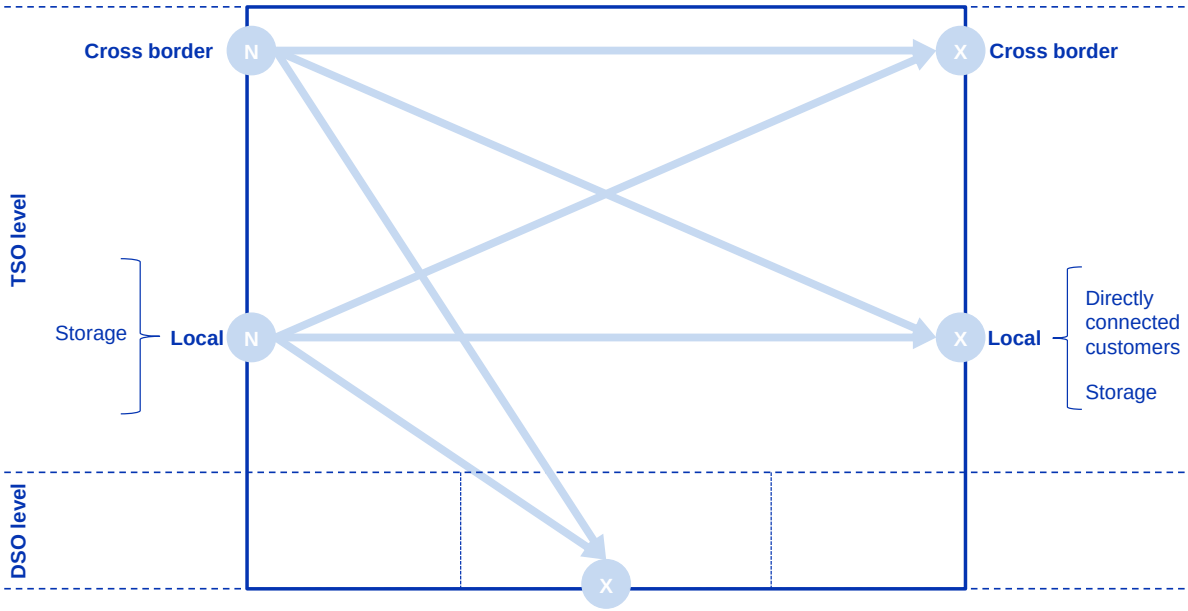
(6) Slovenia has one natural gas transmission system operator, Plinovodi d.o.o (Plinovodi). Plinovodi operates, expands and maintains the transmission network and assures that new customers are connected; Plinovodi is entirely owned by Geoplin d.o.o (Geoplin). Geoplin is the largest gas supplier in Slovenia, with a market share of approximately 70%. Therefore, Plinovodi operates under the ITO (Independent Transmission Operator) model.

(7) In 2011 130,152 customers, spread over 75 communities, were connected to the gas distribution network. As all distribution companies serve less than 100,000 customers, they are not required to legally unbundle. They are only obliged to hold to separate accounts for the two activities.[235]

[235] Energy Agency, Report on the Energy Sector in Slovenia for 2011, 2012.

Design of the Entry-Exit System

The figure below gives the schematic representation of the entry-exit system in Slovenia as seen from the shipper's perspective. Chapter 1 of this document explains how the schematic representation should be interpreted.



Although Plinovodi operates an entry-exit system, there is no virtual point in Slovenia. Hence, it is not possible to trade gas bilaterally with title transfer at a virtual point or using the services of an exchange.

Furhermore, in Slovenia, the majority of the DSO are integrated companies which take care of both the distribution of gas as well as the supply to end consumers. Therefore, the DSO books exit capacity. If there is a supplier who wants to supply the DSO network, the DSO must declare to the TSO that this supplier will be supplying gas to the DSO. At the end of the month, the DSO supplies the TSO with information on the volumes of gas supplied. As such the distribution level is not part of the balancing zone, but the quantities delivered at distribution level are taken into account to calculate the imbalance of each supplier, meaning that there is no imbalance settlements at distribution level.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry-exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader							
Shipper			2	3			
Supplier	1			4		(5)	
Contracting party	NRA (Energy Agency)		TSO or Balancing Group Leader	TSO		DSO	

(1) The current Energy Act in Articles 6 and 7 stipulates that, in order to provide an energy-related activity, it is necessary to obtain a licence issued by the Public Energy Agency of the Republic of Slovenia. In the Act, the following licences, all issued by the national regulator Energy Agency, can be provided (regarding the gas industry):

- Energy and transport fuels in networks
- System Operator
- Storage of gaseous, liquid and solid fuels
- Supply of electricity, gas or heat
- The organisation of the electricity market and natural gas
- Representation and mediation in the electricity or natural gas

Since Slovenia does not have a physical hub or a virtual point in the network the licences or agreements for the role of a trader are not applicable. Also the physical shipping of gas through the gas transmission network does not require a licence. Only supplying end consumers at gas transmission and distribution level requires a licence. The applicant has to fulfill the following requirements:

- Be appropriately registered (legal entity) or (in the case of a sole proprietor) has its energy-related activity notified in accordance with the Ordinance on the Implementation and Use of The Standard Classification of Activities;
- Have appropriately trained staff capable of carrying out the activities for which a licence application has been made;
- Have the appropriate funds, or can prove that it can obtain the funds needed for carrying

out the energy-related activity for which the applicant wishes to obtain a licence;

- Have not had an equivalent licence revoked in the ten years preceding the application for obtaining a licence;
- In the last five years have not been convicted of a criminal offence associated with any involvement with economic activities.

(2) Each network user should be part of a Balancing Group. The agreement between the Balancing Group Leader and the network user defines the leveling of the deviations of intake and offtake and charging. Plinovodi only concludes a Balancing Contract with the Balancing Group Leader.

(3) A network user can book capacities separately for each entry and/or exit point by concluding a transmission agreement. Before concluding a transmission agreement the applicant has submitted a request for transmission specifying a.o. the entry/exit point, duration, and quantity. The request is formalised by signing the transmission agreement. The transmission agreement is standardised for border entry points, border exit points and exit points inside Republic of Slovenia. By signing a transmission agreement network user and TSO Plinovodi agree to mutual rights and obligations that define the booked entry or exit capacity on the transmission system. Requirements for

The shipper has to fulfill the following requirements:

- Financial guarantee - Upon concluding the transmission agreement, the network user which has booked the exit capacity at the border exit point from the transmission network shall provide the TSO with an irrevocable and unconditional first-class bank guarantee, payable on first demand, for the insurance of contractual obligations. The bank guarantee shall account for a triple monthly fee of the network user's booking of transmission capacities in the first full calendar month of the booking validity. The network user is exempt from the aforementioned if its credit rating indicating at least 5A 1 grade (Bonitetna hiša I, d.o.o., or Dun & Bradstreet) or a comparable credit rating of another credit rating agency.[236]
- IT-communication: System operating instructions for natural gas transmission specify the method of communication between the network user and the transmission system operator (mainly for nominations of transportation of natural gas through transmission system).

(4) In addition to the requirements for shippers, who are supposed to only use interconnection points from one border point to another border point, suppliers need to sign an connection agreement in addition.

[236] Source: website Plinovodi d.o.o. – sample transmission agreement (http://www.plinovodi.si/en/access/transmission-agreement/)

(5) The DSOs are responsible for booking exit capacity and for supplying end consumers. If a supplier wants to supply gas to consumers in the DSO level, it has to arrange this with the DSO who will communicate this to the TSO. The DSO will subsequently notify the TSO of the volumes supplied.

Tariff Structure and Capacity Products

Plinovodi offers different kinds of capacity products. Entry capacity can be contracted for the duration of a year, a month, a single day or day ahead. For each of these durations, the capacity can either be offered as firm or interruptible.

From 1.1.2013 Slovenia applies the Entry-Exit access method. Tariffs has been prepared by the Plinovodi, according to the "Act determining the methodology for charging for the network charge for the gas transmission network",[237] the Official Gazette of the Republic of Slovenia, No. 61/12, 64/12. Energy Agency approved the proposed tariff and Plinovodi published new Entry-Exit tariff in the Official Gazette of the Republic of Slovenia "Act about the network charge for the gas transmission network[238] in 2013" No. 90/12.

Tariff structure	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within -day	Capacity	Commodity	Notes
Entry	F/I	--	F/I	F/I	--	€/m^3/d/y	€/m^3	(1)
Domestic exit	F/I	--	F/I	F/I	--	€/m^3/d/y	€/m^3	(2)
Border exit	F/I	--	F/I	F/I	--	€/m^3/d/y	€/m^3	
Notes			(3)	(4)		(5)	(6)	

(1) Plinovodi offers firm and interruptible capacity for each product. The capacity charge for the domestic exit zone ranges between 4.15 €/m^3/d/yr for customers with a capacity of more than 200,000 m^3/d to 6.7662 €/m^3/d/yr for customers with a capacity of less than 5,000 m^3/d. The capacity charge for entry points do not depend on booked capcatiy but are set differently for each point and ranges between 0,80 €/m^3/d/yr for entry point MMRP Šempeter to 1,1 €/m^3/d/yr for entry point MMRP Ceršak.

(2) Network users are reimbursed for the actual amount of capacity that is interrupted (on a daily basis). The discount they receive is actually 1.5 times as much as they paid for it, but capped at the total transmission price initially paid.

[237] http://www.uradni-list.si/1/content?id=109604#!/Akt-o-metodologiji-za-obracunavanje-omreznine-za-prenosni-sistem-zemeljskega-plina

[238] http://www.uradni-list.si/1/content?id=110627#!/Akt-o-dolocitvi-omreznine-za-prenosno-omrezje-zemeljskega-plina-za-leto-2013

(3) For contracts with duration of one month, different multipliers are applied that determine the price of these products in relation to the price of the standard annual products. These multipliers differ per month and are displayed in the table below.

Month	Monthly factor
October	0.079
November	0.200
December	0.233
January	0.233
February	0.233
March	0.200
April	0.100
May	0.079
June	0.079
July	0.079
August	0.079
September	0.079

(4) Similar to monthly products, factors are also applied to daily products. Again these multipliers differ each month of the year as shown in the table below.

Month	Daily factor
October	0.0064
November	0.0140
December	0.0166
January	0.0166
February	0.0166
March	0.0140
April	0.0084
May	0.0049
June	0.0049
July	0.0049
August	0.0049
September	0.0049

(5) In addition to these different factors, the transmission charge on exit points inside Slovenia is also differentiated per consumer group (on the basis of booked capacities). Plinovodi has specified seven of these tariff groups. The exit tariff is lower for consumers that have booked more capacity.

(6) Besides a capacity charge, Plinovodi also applies a metering charge, a fuel gas charge

(0.3528 €/m3) on all exit points and a fee for operating the Energy Agency of the Republic of Slovenia (0.00079 €/m3). The latter two are in fact commodity charges and are billed to the network user based on the transported quantities. The metering charge is a fixed charge and is invoiced on a monthly basis. Again the metering charge is differentiated per consumer group.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	(1)
Role of NRA	Approves tariffs and sets methodology[239]	(2)
Price control mechanism	Price cap[240]	(3)
Tariff calculation methodology	Uniform	(4)
Entry/exit split	--	
Capacity/commodity split	Not explicit	(5)
National/cross-border distinction	No	(6)
Locational or uniform tariffs	Border point locational, domestic exit uniform	(7)
Charging basis	Contracted capacity and transported volume	

(1) Plinovodi operates an entry-exit system with integrated transit and domestic flows.

(2) The Energy Agency regulates the network charge by determining the modes of setting and calculating the network charge. The Energy Agency issues the methodologies regarding the network charge in the form of general acts, and with the consent of the Government of the Republic of Slovenia. On the basis of issued methodologies the system operators of the transmission and distribution networks set the network charges and submit them to the Energy Agency for approval.[241]

(3) The Energy Agency uses a price cap methodology for setting the network tariffs.

(4) Within its entry-exit system, Plinovodi applies differentiated tariff for cross border entry and exit points. It applies a uniform tariff for domestic exit points.

(5) There is no explicit ratio between (the revenues from) the capacity charge and the commodity charge. The commodity charge is a mixture of recovering the expenditures for fuel gas and for the operation of the Energy Agency.

(6) As Plinovodi has implemented an entry-exit system, there is not differentiation between cross-border and national gas flows and their tariffication.

(7) The exit tariff applied to capacity for the supply of domestic consumer is uniform across

[239] http://www.agen-rs.si/en/informacija.asp?id_meta_type=30&id_informacija=688 & ACER

[240] http://www.ebrd.com/downloads/legal/irc/countries/slovenia.pdf

[241] http://www.agen-rs.si/en/informacija.asp?id_informacija=845&id_meta_type=30&type_informacij=

Slovenia. There is only a differentiation in tariffs based on the contracted capacity of the consumers.

Capacity allocation		Notes
Capacity allocation mechanism		
In case of congestion	Pro-rata	
In case of new capacity	Individually	
Priorities in capacity allocation	-	
Congestion management procedures	Short-term capacity, secondary market, UIOLI	(1)

(1) Although the Slovenian network suffers from contractual congestion on its dominant transit route, all requests for access to the transmission network were granted in 2011. In the event Plinovodi would receive requests topping the amount of transmission capacity still available, it would adopt a pro-rate principle for allocation transmission capacity.

In order to alleviate some of the contractual congestion, Plinovodi has the possibility to apply two different mechanisms. First, it may offer unused, but contracted, capacity as interruptible short-term capacity. In addition to this, the network users may use the secondary market, as described above, to trade the use of transmission capacity among them.

In addition, the contract for transmission capacity has a special article on the possibility to apply Use-It-Or-Loose-It (UIOLI). Specifics about the procedures related hereto are not disclosed.

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	--	--	
Exit points	--	--	

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on daily and monthly basis	
Number of tolerance levels		

Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Indexed imbalance fee	
Imbalance fee	External price + Multiplier1/Multiplier2	

Each network user is a part of a balance group. There are daily and monthly tolerances and they differ per month; during the winter months (January, February, November and December) the daily tolerances are 3%, in March and October they are 4% and during the remaining months the daily tolerances are set at 6%. The monthly (daily cumulative) tolerances are 15%, 30% and 40% respectively. Network users are charged for imbalances within the tolerance (1.15/0.91 times the gas price depending on a negative or positive imbalance) and outside the tolerance bands (1.51/0.74 times the gas price depending on a negative or positive imbalance).

The quantities of gas fed into the transmission system at entry points and off taken from exit points are subject of balancing. Therefore, the DSO's networks are not part of the balancing zone.

The Distribution System Operators have established balancing sub groups. Imbalances occurred at the distribution level are settled at the TSO level. As such the distribution level is not part of the balancing zone, but the quantities delivered at distribution level are taken into account to calculated the imbalance of each shipper, meaning that there is no imbalance settlements at distribution level.

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	0.02	(1)
Import	9.5	(2)
Export	0	
Consumption	9.5	
Traded volumes	--	

(1) In 2010 Plinovodi transported around 1.7 bcm; just over half of this volume was meant for domestic consumption (901 mcm), whereas the remainder (822 mcm) was used for the supply of gas to neighbouring countries as transit. Of the domestic consumption, approximately 184 mcm was used by households. Other consumers supplied via the distribution network accounted for 117 mcm. Consumers directly connected to the transmission network were supplied with 604 mcm in 2011.[242]

(2) With 48% of the transported natural gas, Russia supplied the bulk of the volumes to Slovenia in 2011. Algeria is the second supplier to the Slovenia gas market with 23%, closely followed by Austria with 22%. The remaining 7% was supplied by Italy and a handful of

[242] Report on the Energy Sector in Slovenia for 2011, Energy Agency, 2012.

other countries. In 2011 the volume of natural gas transported through the Slovenian transmission network decreased compared to previous years. Approximately 14% and 17% less natural gas was transported to domestic consumers and to neighbouring countries respectively in 2011.

There is no liquid wholesale market in Slovenia with a HHI of around 6,000. Most gas is imported under long-term contracts from Russia, Algeria and Austria; only 9% of the imports were concluded on the basis of short-term contracts. Of all the gas sold in Slovenia, about 4% was concluded under short-term contracts.[243]

The guidelines published by the Energy Agency on system balancing allow the system operator to provide the conditions for trade between balance groups; volumes can be traded before the accounting (ex-ante) and after the accounting (ex-post) of the volumes.[244]

Trading	Notes
Trading volume	--
Exchange spot (TWh)	--
Exchange futures (TWh)	--
OTC (TWh)	--
Participants (number)	--
Exchange spot	--
Exchange futures	--
OTC (TWh)	--
Churn rate	--

[243] Energy Agency, National Report to the European Commission 2011, 2012.

[244] http://www.agen-rs.si/dokumenti/30/2/2010/Smernice-za-obracun-odstopanj-29-04-2010_1447.pdf

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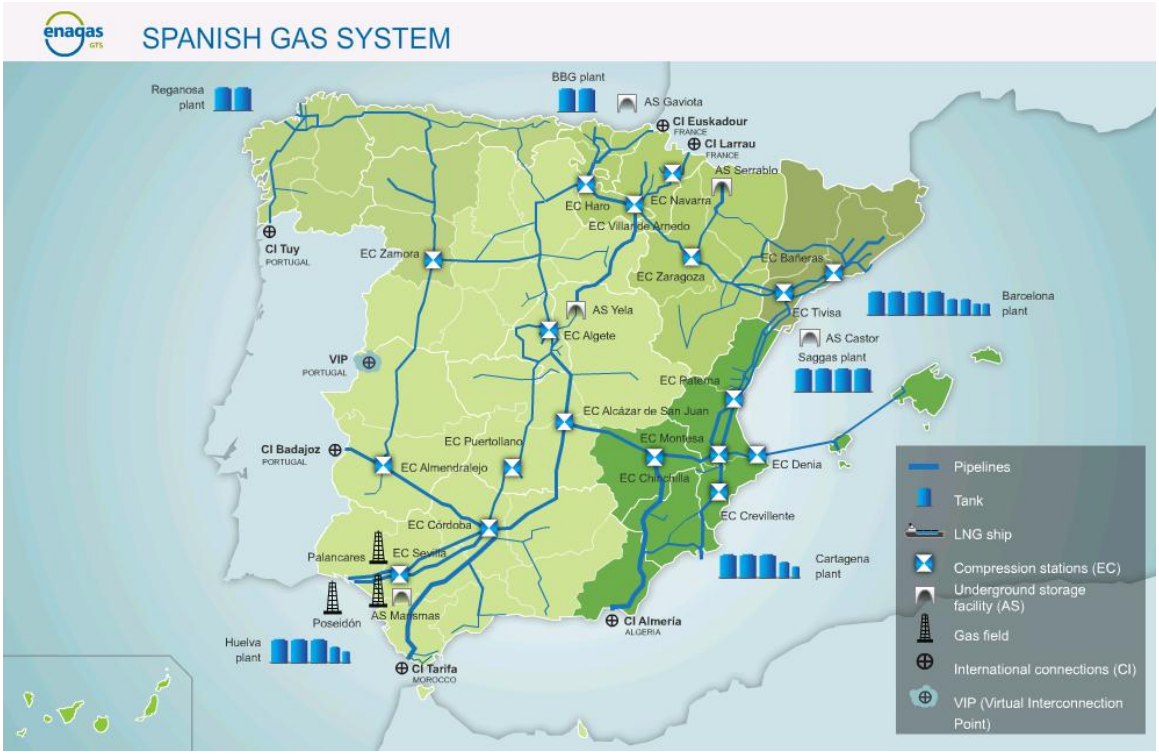
Network Topology[245]
The current Spanish gas transmission network consists of more than 10,000 km of transmission pipelines, and more than 60,000 km of distribution pipelines. The network is divided into a main and a secondary transmission network and a distribution network. The main network consists of the primary, high pressure transmission pipelines, with design pressures of 72-80 bar, and two pipelines at 200 bar (the Medgaz pipeline running between Algeria and Almeria and the pipeline from Denia to the Balearic Islands). The secondary network is formed by the transmission pipelines with design pressures between 16 and 60 bar. Furthermore, the transmission network comprises of 18 compressor stations, 49 transmission centers, over 430 regulation and/or metering stations and a control center. The transmission network is owned for 90% by Enagás and eight other companies own the remainder. The main transmission system is owned 100% by Enagás. Enagás is also the system operator (TSO) for the transmission network. For the period of 2008-2016 the Ministry of Energy has approved several network improvements (new pipelines Galicia-Madrid and Huelva-Almedralejo and duplication of the Ebro's axis, Algete-Burgos and Burgos-Haro). With completion of these new infrastructures, the main transmission system will be configured by three large transport South-North routes (Ruta de la Planta, Central and Levante), interconnected with three East-West routes (Ebro, Galicia-Algete, Alcázar-Montesa). This way the network is able to supply the large demand center of the system from any of the entry points of the system. Furthermore, the main natural gas system in Spain has: • Six regasification plants (LNG), located near Barcelona, Huelva, Cartagena, Bilbao, Sagunto, and Mugardos; • A new regasification plant in Asturias was recently finished, but is not in operation yet; • Two additional LNG plants in Tenerife and Gran Canaria are being planned, but construction has not yet commenced; • Three underground storage facilities at Serrablo, Gaviota and (recently started) and Marismas; • One UGS facility is currently injecting cushion gas at Yela; • Additional UGS facilities in Castor are under construction and • Two gas fields (Marismas and Poseidón).

[245] Information in this section is mainly based on www.cne.es, www.enagas.es and the Energy planning 2008-2012 approved by the Ministry of Energy, Tourism and Trade.

- Four international entry and exit connections of the main network with other EU countries (with France and Portugal, each at two locations)
- Two international entry connections of the main network two non-EU countries (Algeria and Morocco).

The distribution network consists of all the pipelines with pressures below 16 bar, including unique connection pipelines connecting individual customers with a transmission pipeline. The distribution network is operated by 20 DSOs. From these, Gas Natural Fenosa is the major player with 75% of the network. Second and third are Naturgas (~12%) and Madrileña Red de Gas (~10%) .

Please note that the historical development of the gas infrastructures in Spain has been influenced by the scarce national production of gas and by the geographical distance of Spain to the European (North Sea) and Russian gas fields. The development of the network has been influenced by the large extensions on the territory and the distribution of the population and industry (highly concentrated in the coast and in the Madrid area). Another important factor in the development of the network has been the construction of combined cycle power plants.



Network topology		Notes
Network length high pressure (km)	9290	(1)
Pressure range TSO	72-80 and 220	(2)
Import capacity (GWh/d)	826	(3)
Export capacity (GWh/d)	233	(4)
Storage (bcm)	4.367 bcm	(5)
LNG (bcm/year)	60.12	(6)
TSOs (name)	Enagás	(7)
DSOs (number)	20	

(1) Total gas network is 74,200km: Primary transmission 9,290 km, secondary transmission 2,060 km and distribution 62,850 km (Source: SEDIGAS)

(2) Most of the main transmission network is operated at 60-80 bar. Exceptions are the Medgaz pipeline and the pipeline running from Denia to the Balearic Islands, which are operated at 220 bar. The secondary transmission system is operated at 16-60 bar, the distributions system mainly at pressures below 16 bar.

(3) Entry capacities[246] at Larrau (F) 100 GWh/d, Virtual Interconnection Point (VIP = Tuy and Badajoz) 95 GWh/d, Tarifa (Morocco) 444 GWh/d and Almeria (Algeria) 266 GWh/d. Irún (F) 10 GWh/d[247]. Total import capacity thus 826 GWh/d. Please note these are the summer capacities.

(4) Exit capacities[248] at Larrau (F) 50 GWh/d, Virtual Interconnection Point (VIP = Tuy and Badajoz) 174 GWh/d[249]. Irún (F) 9 GWh/d. Total export capacity thus 233 GWh/d. Please note these are the summer capacities.

(5) Storage Working Gas Volume and Cushion gas - Extractable volume at Serrablo is 0.820 bcm, at Gaviota 1.547 bcm, at Marismas 0.062 bcm. The expected volume for Yela is 1.050 bcm. Total Storage WGV is thus 4.779 bcm (Castor included). The expected WGV for Castor is 1.300 bcm[250].

(6) LNG terminal capacities[251]: Barcelona 17.082 bcm/y, Cartagena 11.826 bcm/y, Huelva 11.826 bcm/y, Bilbao 7.008 bcm/y, Sagunto 8.760 bcm/y and Mugardos 3.616 bcm/y.

(7) Enagás is the owner of the 90% of the transmission network, 3 companies own the rest of the network. The main transmission system is owned 100% by Enagás.

(8) The distribution network is operated by 20 DSOs. From these, Gas Natural Fenosa is the major player with 75% of the network. Second and third largest players are Naturgas

[246] Source: www.enagas.es. Capacities as per 1-1-2013.

[247] Source: www.energy-regulators.eu, national report Spain. Capacity as per 31-12-2011.

[248] Same sources as entry capacities.

[249] Including capacity reserved to transport gas to Portugal, source CNE.

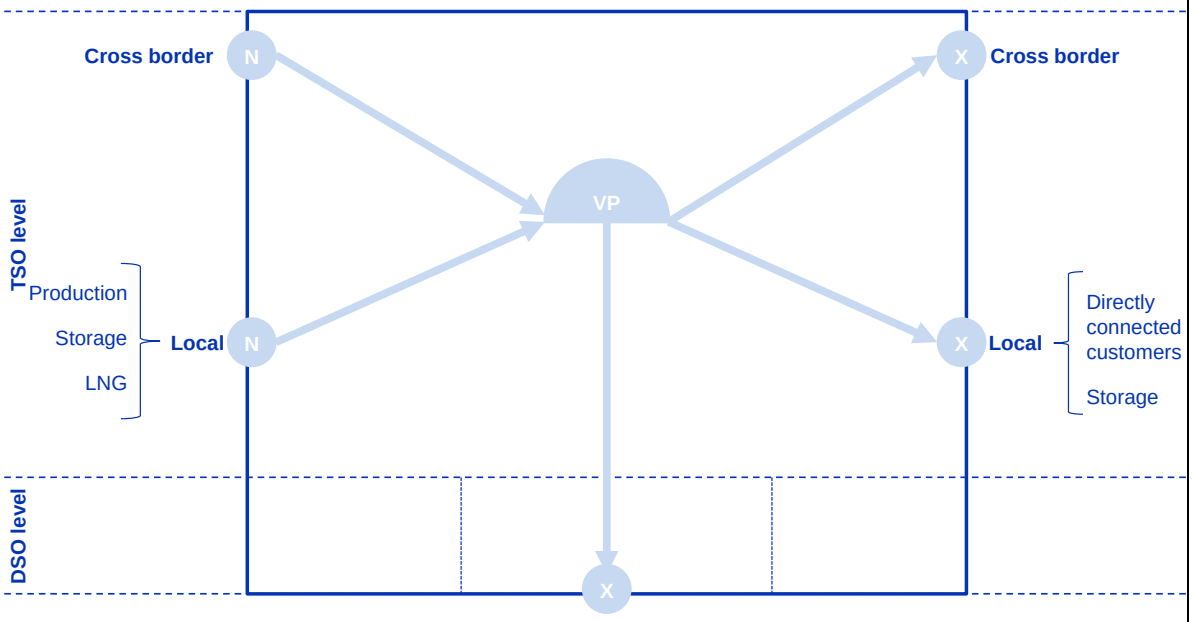
[250] Source CNE.

[251] Source: www.cne.es

(~12%) and Madrileña Red de Gas (~10%) .

Design of the Entry-Exit System[252]

The figure below gives the schematic representation of the entry-exit system in Spain as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Spain applies an entry-exit model with a single balancing area for the entire country. Gas can be traded at 8 locations: 6 LNG terminals, a virtual storage point (all UGS sites) and at the AOC: virtual balancing point. The system also has a Virtual Interconnection Point (VIP), which is the commercial point where capacity is offered between Spain and Portugal (not to be confused with a Virtual Trading Point). In the context of the South Gas Regional Initiative Work Plan 2011-2014, Enagás and REN committed to develop a joint allocation procedure inspired on ENTSOG's Network Code on CAM to allocate bundled products on both sides of the border in a coordinated mechanism by 2012.[253]

The capacity products offered by the Spanish TSO Enagás do not have locational restrictions in the sense that they have mandatory point-to-point relation. Though in case of congestion in the network the contracted capacity rights can be reduced. The conditions under which capacity can be reduced are specified in article 6.4 of Royal Decree 949/2001. In these situations the contracted capacity at specific points is reduced upon the orders of the technical manager of the

[252] Information in this section is mainly based on www.cne.es, 2011 and 2012 National Reports to the European Commission

[253] Enagas and REN (2012); "Procedures for the annual auction of yearly and monthly products of gas transmission capacity between Portugal and Spain – Information Memorandum"; June 2012.

gas transmission system. The interruption can only be carried out after the TSO declares the exceptional operating status level 1 or level 2. In general, the notice will be made 24 hours in advance (normal interruption). The period may be shortened if the technical manager of the gas transmission system declares the exceptional operating location level 2 (urgent interruption).

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader	1	4	2				
Shipper							
Supplier						3	
Contracting party	NRA	TSO	TSO	TSO	TSO	20 DSOs	

(1) In Spain, the format of licensing applied is notification: parties can become active on the market within one day, by providing a communication form to the NRA. There is also a single license for suppliers and traders: a priori there is no distinction in licensing for physical wholesale trading and sales to final natural gas customers (supply). However, wholesale traders without end-users supply activity can communicate this circumstance, in order to be exempted to requirements on consumer's protection (like the obligation to have a consumer's attention phone and e-mail service).

The procedure overview:
The NRA must be notified prior to trading gas, and a statement that the company meets all requirements for the trading activity must be submitted. The licence is then granted within one day (for EU applicants) or four months (non-EU applicants, may be conditional). The licence has no end date. Obtaining the licence is free of charge. More specifically applicants who want embark on gas marketing activities need to provide sufficient evidence compliance with the requirements set forth in Article 14 of Royal Decree 1434/2002 of 27 December, regulating transport activities, distribution,

marketing, supply and authorisation procedures for natural gas facilities[254]:

- Legal entity - The applicant should take the form of a companies or a comparable legal forms in the country of origin.
- Technical capability – The applicant must be able to prove sufficient technical capacity and human resources to operate in the Spanish gas system in accordance with the applicable regulations in the same and in particular with the provisions of ITC/3126/2005 Order approving Standards Technical Management System development and its protocols.
- Ensure gas supplies – The applicant must prove it has sufficient contracts with, or supply guarantees from, suppliers to cover the planned trading activities, ensuring the necessary diversification of supplies that they have the capacity to ensure supply of its customers at all times.
- EU/non-EU – As an exemption, the Spanish Government retains a veto possibility for gas trading companies from outside European Union, with not TPA reciprocity. In this case, the licence process takes about 4 month, including an opinion of the NRA (2 month) and the decision of the Ministry (2 month).
- Consumer communication – The applicant shall make a customer phone and email service available to its users.
- Guarantees – The applicant shall provide guarantees to the Government Depository an amount equivalent to its payment obligations provided during the billing period.

A specific licence and contract is needed for last resort supplier. This licence has one additional requirement, namely that a last resort supplier has to be legally unbundled from the normal supplying activity (so he can only offer the last resort contracts at the regulated price). This is the only different requirement. Note: Only five of the thirty-nine gas supply companies have registered to supply gas to end consumers that choose for this option at a special government-set rate.

We note differences between EU and non-EU supplier candidates in Spain (as described in the procedure overview above): EU aspiring suppliers and/or traders have to send a communication form to the NRA (single form) and will be able to engage in the respective activities within one day. On the other hand, the procedure for non-EU aspirant suppliers and/ or traders takes 4 months, and the government retains a veto possibility for market parties from non-EU countries where there is no TPA reciprocity with Spain.

We also note that next to the typical licensing requirements, Spain imposes additional ones, namely the proof of ability in securing gas supplies (as described in the procedure overview above): in spite of demonstrating sufficient supply sources, the

[254] Source: http://www.minetur.gob.es/energia/gas/Requisitos/Paginas/comercializador.aspx

market parties engaging in supply to end consumers should ensure the necessary diversification of supplies so that they can meet the supply demands of their consumers at all times.

In addition, the access to VP is covered by a separate agreement, only available to suppliers (pre-requisite). In Spain a supplier and/ or trader license is a pre-requisite for signing the transport agreement with the TSO which extends to the VP access: in other words, only market parties in possession of a NRA license can gain access to VP.

(2) For capacity booking by eligible customers, shippers and traders, a web based form is available at the website of the TSO Enagas (wwwenagas.es > Gas Transmission > Capacity Reservation Request). Please note that for both transmission as well as access to installations (e.g. LNG, UGS), separate contracts are needed. System balancing is executed according to the protocols in the Network Code. A distinction is made between user's total position and user's position in either of the individual systems (pipelines and LNG). The Network Code is not signed separately by suppliers contracting capacity. The terms of the Network Code are drafted by a working group including TSO, DSOs, suppliers and the regulator, and finally approved by the Spanish government. Trading companies obtain access to the trading and balancing platform automatically with their first TPA contract with the TSO. There are no separate costs involved in the access to the AOC (Virtual Point). Trading companies obtain the access to the ENAGAS trade and balancing platform automatically with his first TPA contract. A TPA contract is necessary to bill any imbalances and/or gas stored in the AOC at the end of the day. Using the AOC balancing platform is free of charge.

(3) The distribution companies provide access to their networks to suppliers, contracted for by standard type TPA contracts for exit points. Usually, the DSO rents the meter (or telemeter service) to the customer. This service is billed to the customer by the supplier.

A network user supplying gas to an end consumer at DSO level does not need to make an explicit contractual arrangement at the city gate. The supplier only needs to have a TPA contract with the DSO.

(4) The TSO Enagas also uses a type of contract which incorporates in a single document all general and particular conditions on which network access booking is being made. This is optional. In this alternative approach for new contracts the network user only need to sign a two pages long appendix indicating service to hire, facility, daily contracted capacity and duration of service. The substance of the contract (rights and obligations of the parties) is unchanged and conforms to the models as described under 3.

Tariff Structures and Capacity Products[255]

Royal Decree 949/2001 regulates third party access to gas installations (transportation and distribution installations, regasification plants and storage locations). Every year, before the 1st of January, the Ministry of Energy publishes the tariffs for network access for that year.

The tariff model includes both the transmission costs as well as the distribution costs. All entry points have the same tariff, and all exit points have the same tariff. There are two exceptions: the ship unloading tariffs at the LNG plants, which differ for each location, and the Cross-Border TPA tariff, which gives a discount over the domestic entry-exit tariffs.

The Royal Decree-Law 13/2012 of March 30th, determines that CNE is responsible for establishing the methodology to calculate gas access tariffs (transmission tariffs, distribution tariffs, regasification tariffs, LNG storage fees, tanker loading and ship unloading tariffs). On November 29th, 2012, the Board of CNE has launched a public consultation[256] on the methodology to set up natural gas access tariffs. The consultation is open for stakeholders' views on the preliminary methodological proposal (i.e., principles, constraints, rules for allocating costs, etc.) until January 31st, 2013.

Tariff structure	Products					Tariff basis		notes
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	
Entry	F / I	F / I	F / I	F / I	--	€/kWh/day/month	--	(1), (2)
Domestic exit	F / I	F	F	F	--	€/kWh/day/month	€/kWh	(2), (3)
Border exit	F / I	F / I	F / I	F / I	--	€/kWh/day/month	€/kWh	
	(4)		(5)	(6)				

(1) Interruptible capacity is only applied to network points at international connections when there is no firm contracted capacity. Also, the TSO must offer the non-physical backhaul capacity available as an interruptible.

(2) The charge for entry points consists of a uniform value for the reservation of capacity at any given entry points of the system. There is also interruptible capacity for the domestic supply. The Technical System Manager evaluates the interruptible capacity needs according to the forecast gas demand and available infrastructures, and offers it to the market.

(3) At exit points, both a capacity charge and a commodity charge are applied and these are charged independently of the exit location. Both charges depend on the pressure and the

[255] Information source: CNE and www.enagas.es

[256] http://www.cne.es/cne/contenido.jsp?id_nodo=550&&&keyword=&auditoria=F

annual consumption at the exit point. The charge for exit points includes both transmission (T_{rc}) and distribution costs (T_c , consisting of a fixed and a variable part), as it is paid at the consumer's delivery point. Consumers are divided in 3 different groups depending on their pressures ranges. Within each group, subgroups are defined depending on the consumption. For each subgroup, the Ministry of Industry, Energy and Commerce sets the values for T_c, based on the regulators' recommendations.

(4) Tariff charges are calculated on an annual basis, but short-term capacity contracts down to one single day are allowed. Daily and monthly capacity products are calculated by multiplying the capacity charge by a coefficient (the multiplied coefficients does not apply to the commodity charge).

(5) For a monthly contract, capacity is charged at a premium of 200% from October to March.

(6) For daily contracts, capacity is charged at the fix term of the TPA tariff multiplied by 0.1 from April to September, and multiplied by 0.06 from October to March.

According to the Act 34/1998 and Royal Decree 949/2001, the tariffs and fees are set following the next principles:

- Remunerate regulated activities. Access tariffs must be sufficient to recover the regulatory costs and to ensure a reasonable turnover.
- Allocate fairly the costs between different consumers according to their pressure category, consumption level and load factor the costs that can be attributed to each type of supply.
- Incentivise consumers to make efficient use of gas in order to foster enhanced utilisation of the system.

Tariff calculation and division of cost		**notes**
Tariff model	Entry-exit	
Role of NRA	Methodology approval	(1)
Price control mechanism	Revenue-cap	
Tariff calculation methodology	See explanation below	(2)
Entry/exit split		
Capacity/commodity split		
National/cross-border distinction		
Locational or uniform tariffs	Uniform	(3)
Charging basis (booked capacity/other)	Reserved capacity and allocated volumes	

(1) Directive 2009/73/EC has been recently transposed in Royal Decree 13/2012. This Royal Decree provides that CNE will establish a methodology for the calculation of the entry-exit tariffs for the basic access services. The tariff will have to take into account the costs

of the infrastructure in order to optimise its use. The tariffs could be differentiated by pressure levels, consumption characteristics and duration of the contracts. On 29th November, 2012, CNE published a public consultation on the methodology to set up natural gas access tariffs (transmission tariffs, distribution tariffs, regasification tariffs, LNG storage fee, tanker loading and ship unloading tariffs).

(2) The transmission remuneration is set at service cost, calculated from standardised costs for investments and operational costs. The standardised costs for investment are updated annually by means of an index that takes into account the variation of the Consumer Prices Index and Producer Prices Index. From the remuneration, the tariffs are calculated in order to cover this remuneration.

(3) All tariffs are uniform for the whole country. The only exception is the LNG unloading tariff, those tariffs are different depending on the plant.

Capacity requests for transmission and regasification plants are allocated on a "First come first served" basis.

For underground storage, capacity is allocated according to the gas sales of the gas companies, (equivalent of 20 days of the gas demand supplied). Yearly, the remaining spare capacity is auctioned.
For the interconnection between France and Spain (at Larrau), Enagás and TIGF agreed to new capacities in both directions (2009). The shippers' interest in new and existing (non-allocated) capacities was evaluated and the referred capacities were allocated through Open Subscription Periods (OSPs). This process was managed by Enagás and TIGF, and the respective NRA's. On November 12th, 2012, the Open Subscription Period for Short-Term Capacity (OSP STC 2012) was launched for the period between April 1^{st,} 2013 and March 31st, 2014.

For the interconnection between Spain and Portugal, Enagás is implementing for the first time a pilot Capacity Allocation Mechanism (CAM) process, a joint capacity allocation procedure based on the ENTSOG network code. As part of this pilot, a Virtual Interconnection Point (VIP) was created in June 2012 between Enagás and REN. Enagás will lead the joint capacity allocation process. To this end it has established a Coordinated Auction Office (CAO) from which it will manage and coordinate the process of allocating and assigning capacities, on behalf of all of the agents involved. For 2012, several dual auctions (for each direction one, carried out simultaneously and independently) were planned. The the results were rather low: the first auction for Firm Yearly Products (offered capacity 27.500 MWh/day) yielded no bids, whereas the first auctions for Firm Monthly Products could not be organised because of a lack of qualified

shippers[257]. As a result of this, the auctions for interruptible capacity products (Spain-Portugal) were cancelled.

For contracts of more than two years, the owner of the transmission, regasification, and storage facilities must publish each three months the contracted capacity and the available capacity in each facility. Enagás publishes daily contracted and available capacity. Reasons to deny access to a service may be lack of capacity, reciprocity with other countries or when there are economic difficulties in the execution of the contracts.

Capacity allocation		notes
Capacity allocation mechanism	First Come First Served	(1)(2)
In case of congestion	Market based mechanism to be approved by the Ministry	(3)
In case of new capacity	OS/OSPs and auctions	
Priorities in capacity allocation	--	
Customer type		
Duration		
Congestion management procedures	Long Term Use It or Lose it (LTUIOLI)	(4)

(1) General rule for the whole system, except access to underground storage, where an auction system is in place and international connections with OS/OSP or auction systems.

(2) 25% of the total entry capacity is allocated to contracts shorter than 2 years and 75% of the total entry capacity is allocated to contracts with a minimum duration of 2 years. Each shipper can not contract more than 50% of the capacity.

(3) In case of congestion, the Royal Decree 1766/2007, article 4, allows the Ministry of Industry to approve a market based mechanism to allocate the capacity.

(4) LTUIOLI, approved by Royal Decree 949/2001, Dispocición Adicional, which states that in order to prevent underuse and capacity hoarding, firm UIOLI measures can be applied by the TSO in two different situations. The first case refers to not used capacity during the first 6 months of a contract, the other to not used capacity in the last year. Both procedures have already been applied several times in the Spanish system.

[257] Every licensed shipper or eligible customer in Spain or Portugal has access to the qualification process. The requirements to act in the Spanish Gas Market are defined in Royal Decree 1434/2002. The licences are granted by the Ministery of Industry, Energy and Commerce.

Reservation of capacities			Notes
Point	***Reason***	***Amount***	
Entry points	Short-term capacities (less than 2 years)	25%	
	Long-term capacities (2 years or more)	75%	

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on daily basis	
Number of tolerance levels	1	
Balancing gas procurement	Other forms than wholesale or balancing market	
Imbalance settlement	Indexed imbalance fee	
Imbalance fee	External price + Multiplier1; Multiplier2	

In Spain, there is one balancing area. The balancing period is one day and network users receive a fixed and non-tradable tolerance band. Network users can trade at the Spanish balancing exchange points within the day to adjust their balance. System balancing is achieved through line pack and the use of underground storages and LNG facilities. Network users are considered to be in balance as long as their gas volumes are within the ranges established as tolerance margins. Network users are entitled to a tolerance band between 0 and 50% of the daily contracted entry capacity. This means that, for the entire contract duration, users have the right to 'store gas' in the network's virtual point AOC, up to a 0.5 day (50% of the contracted entry capacity). Users are not entitled to exceed this limit and have excess or lack of gas volume in the system. At the end of each gas day, the Technical System Manager calculates the balance position of each user, which serve as basis for imbalance charges. The imbalance charges regime is described in the Network Code, designed and periodically revised (and modified when considered necessary) with the collaboration of all the market's agents, and approved by Ministerial Order. The Network Code distinguishes five different types of imbalance, which are charged for the duration of the imbalance, among which:

- Excess gas in pipelines. Users with a balance between 0 and 0.5 day of the entry capacity are balanced. Users that have 'stored' more than this volume, pay a charge related to the LNG storage tariff for the excess gas volume, multiplied by a factor which is dependent on the excess gas volume:

- For excess gas volumes less than or equal to 0.2 days, the multiplier is 1.1;
- For excess gas volumes between 0.2 and 0.5 days, the multiplier is 1.5; and
- For excess gas volumes greater than of equal to 0.5 days, the multiplier is 10.

- Lack of gas in pipelines. Users that have extracted more gas than entered the system, have a negative position and pay a charge related to the variable term of the LNG storage tariff for the lacking gas volume, multiplied by a factor of 1.1.

- Excess of gas in LNG plants. Users with a volume of LNG stored higher than ten times the contracted regasification capacity have to pay a penalty for the excess of gas. The penalty for the excess is related to the LNG storage tariff multiplied by a factor that depends on the excess gas:
  - For a excess gas lower than or equal to 4 days, the multiplier is 2,5; and
  - For excess gas volumes higher than 4 days, the multiplier is 10.

- Lack of operative existences (gas in pipeline and LNG in tanks). When a user's total position (sum of positions in LNG and in the pipeline system) is positive, but the individual position in either the LNG tanks or in the pipeline system is negative, the charge for the lacking gas depends on the applicable system:
  - If the lack of gas is located at the LNG terminals, the user is charged with the LNG storage tariff for to the lacking gas volume, multiplied by 1.1.
  - If the lack of gas is in the pipeline network, the user is charged with the variable term of the LNG storage tariff for the lacking gas volume, multiplied by 1.1.

If there is no market price in Spain, the reference price is equal to the arithmetic average of the Henry Hub gas price and the National Balancing Point (NBP) gas price of the 7 preceding days.

Market Environment and Trading

Most of gas traded in the Spanish market is negotiated in bilateral OTC transactions, over an electronic trading platform developed by ENAGAS, called "MS-ATR". There are nearly 39 active traders in this platform.

There is not an organised secondary gas market which produces a market price reference for the Spanish gas market. The gas trading is mainly performed through bilateral contracts between retailers, over the electronic trading platform "MS-ATR". This platform was developed by Enagás, and there are 39 active traders in it. The volumes of each transaction must be declared in the MS-ATR and the MS-ATR system registrates the volumes and number of operations. The price of the operations is not registered. Use of the platform is free of charge.

Import contracts are mainly long term contracts (in 2010, 79% of the contracts were for at least 10 years, 19% between 1 and 10 years and only 2% for 1 year). In 2011, Gas Natural Fenosa was

the main supplier with a market share of 37%. The other three main shippers had 37.1%. In 2011 there were more than 13 business groups operating in the Spanish gas market.

According to CNE's report of 7th March[258], in the main part of the contracts between producers and suppliers, the gas price is linked to the oil price.

Market environment		notes
National regulatory authority	CNE	(1)
Transmission tariff system	E/E	
Market areas (number)	1	
Balancing zones (number)	1	(2)
Trading points (name)	8	(3)
Exchanges (name)	AOC	
Network users (number)	76	(4)
Gas suppliers (number)	39	(5)
Universal service providers (USP´s)	Obligation to supply, 5	(6)

(1) Comision Nacional de la Energía/National Energy Commission

(2) In Spain, there is one balancing zone.

(3) At the moment, gas is actively traded in Spain in the six LNG terminals, the virtual balancing point (so called AOC) and the virtual storage point comprising the Spanish underground storage sites.

(4) There are six main business groups that include approximately 76 shippers. Source:

(5) 80% of the retail market share is dominated by Gas Natural Fenosa, Iberdrola, Endesa, Naturgas, Cepsa, BP, GDF Suex and Galp.

(6) Small end consumers have the opportunity to choose between the free market and apply to contract "Last resource tariff". This tariff is set by the government and is offered by 5 different companies that have the mandate to supply gas at that tariff.

Volumes	TWh/year	notes
Indigenous production	0.6	
Import	399.0	(1)
Export	19.1	
Consumption	374.6	
Traded volumes	565.5	

(1) 60% LNG, 40% natural gas from pipelines. Principal suppliers are Algeria with 42.34%, Nigeria with 13.75%, Qatar with 12.91% and Norway with 11.34%.[259]

[258] Report by CNE to the European Commission: Informe sobre el sector Energético español (Report on the Spanish Energy sector, in Spanish only). 7 March 2012.

The overall churn rate is 1.5, churn rate for trades at LNG terminals is 1.9 and 0.7 for trading at the virtual point AOC (source: CNE National Report to European Commission 2012).

At the moment, gas is actively traded in Spain across the following exchanging points: the six LNG terminals, the virtual balancing point (AOC) and the virtual storage point comprising the three Spanish underground storage sites in operation.

Balancing point	Traded gas 2011 (TWh)	Production (TWh)	Churn Rate	Number of active traders	Market share of 3 main traders
Barcelona LNG Terminal	140.032	65.522	2,1	18	52%
Huelva LNG Terminal	128.421	54.300	2,4	14	49%
Bilbao LNG Terminal	80.136	38.432	2,1	8	71%
Cartagena LNG Terminal	51.474	39.370	1,3	13	73%
Mugardos LNG Terminal	42.392	17.719	2,4	6	80%
Sagunto LNG Terminal	38.160	42.963	0,9	5	94%
TOTAL LNG	**480.615**	**258.306**	**1,9**	**64**	**48%**
Underground storage	2.039			15	52%
Transmission balancing point (AOC)	82.805	114.460	0,7	32	39%
Total Spain	**565.459**	**372.766**	**1,5**	**39**	**45%**

Additional Comments

With respect to the integration of zones in the European Union, Spain belongs to the South Gas Regional Initiative, together with France and Portugal. Under this umbrella, a Work Plan was developed. One of the most important achievements is the infrastructures development and the harmonisation of the capacity allocation mechanisms. At present, this Initiative is working in congestion management.

Relative to tariffs, an analysis of cross border tariffs between Portugal and Spain has been carried out.

[259] CNE, National Report to the EC 2011, July 2012.

25 SWEDEN

Network Topology[260]

Sweden only has one pipeline connecting the country with the continent, the interconnector with Denmark (with one entry point and no exit point). Nowadays, reverse flow is technically possible on this pipeline, but due to low pressure and low volume of natural gas in the Swedish transmission network practically not possible. The actual available capacity of the Swedish transmission system is around 22 TWh/year. There are currently no transmission limitations in the grid, either nationally or in the import link from Denmark.

Network topology		Notes
Network length high pressure (km)	620	(1)
Pressure range TSO	48	(2)
Import capacity (GWh/d)	106.0	(3)
Export capacity (GWh/d)	0	
Storage (bcm)	0.01 bcm	(4)
LNG (bcm/year)	6 mcm/d	(5)
TSOs (name)	Swedegas AB, Svenska Kraftnät	(6)
DSOs (number)	5	(7)

(1) Total length of the gas network (including distribution pipelines) is approximately 3,360 km.

(2) Pressure regulation and metering stations are owned by the transmission system owner. The pressure in the natural gas system must remain within 46–68 bar.

(3) Dragor entry is 106.0 GWh/d .

(4) There is only one small storage facility in Sweden, owned by Swedegas AB, that can equalise consumption peaks. For seasonal equalisation of natural gas consumption Sweden has a storage agreement with Denmark.

(5) An LNG reception terminal is planned in Gothenburg, primarily in order to supply ships with LNG as a fuel. The plan includes a gasification plant with a possible capacity of around 200 MW, which is expected to be commissioned by 2015. An LNG receiving

[260] Information in this section is based on Input for Initial Impact Assessment for draft FG for harmonised Gas Tariff structures, ACER, June 2012; The Swedish electricity and natural gas markets 2011, Energy Markets Inspectorate; www.swedegas.se; Svenska Kraftnät Annual Report 2011 and IEA Statistics, Natural gas information, 2011

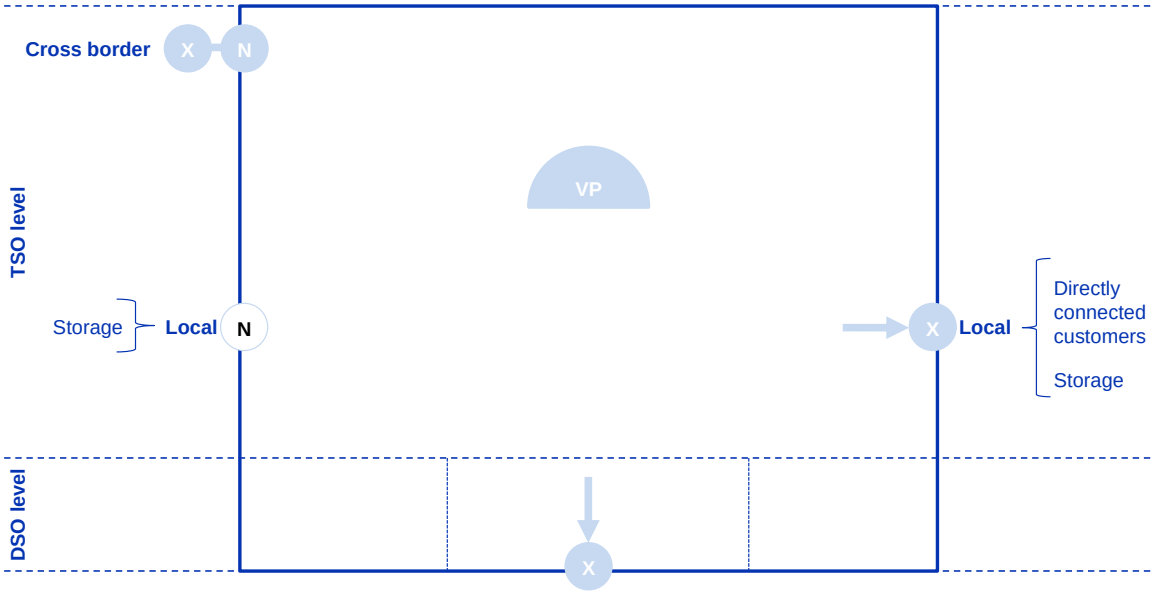
terminal in Nynäshamn, south of Stockholm, has been in operation since mid-2011. This port has a maximum capacity to supply 6 mcm/d. The facility is not connected to the gas transmission system in the south west of Sweden and is not subject to the provisions of third party access. Gas is pumped into storage tanks on trucks at a temperature of minus 162 degrees Celsius and either transported directly to customers or to a pipeline link where it can be fed into an existing gas grid. Sweden also plans to install two gasification plants for bio-fuel. A second LNG terminal is planned for 2013 in Lysekil on the Swedish west coast, adjacent to the existing Preem refinery, to be supplied with Norwegian gas.

(6) Swedish legislation allows more than one TSO (but not the ISO or ITO model). The responsibility for the balancing and operation of the Swedish gas transmission grid is today shared by two market players, Svenska Kraftnät and Swedegas AB. Svenska Kraftnät is responsible for the short-term balancing administration (including nomination, matching and allocation of gas), while Swedegas AB, owner of the entire natural gas transmission network, is responsible for the technical operation and the capacity allocation within the Swedish transmission grid and enlargement of the pipeline system. The transfer of system balancing administration from Svenska Kraftnät to Swedegas, expected to be accomplished during 2013, will result in a situation where only one certified and appointed legal entity is performing the entire TSO function, i.e. Swedegas AB.

(7) There are five DSOs, E.ON Gas Sverige AB, Göteborg Energi Gasnät AB, Kraftringen Nät AB, Varberg Energi AB and Öresundskraft AB.

Design of the Entry-Exit System Market Environment[261,262]

The figure below gives the schematic representation of the entry-exit system in Sweden as seen from the perspective of the shipper. Chapter 1 of this document explains how the schematic representation should be interpreted.



Symbol	Explanation
X N	The cross-border entry IP of Sweden is actually situated in the Danish transmission grid, therefore shippers booking and getting access to capacity on the IP in Denmark can thus supply customers in Sweden.
N	Swedegas AB operates a postage-stamp system

Swedegas AB operates a postage-stamp system with one cross-border entry point and no cross-border exit points. Sweden has a virtual point, however no actors traded gas in 2011. Sweden has no exit interconnection point. No actual reverse flow is possible on the only transmission pipeline connecting Sweden to an adjacent country, therefore no difference between cross-border and domestic networks is made.

[261] Information in this section is based on The Swedish electricity and natural gas markets 2011, Energy Markets Inspectorate

[262] Information in this section is based on ACER answers to the DG ENER Questionnaire on Balancing to ACER and ENTSOG; The Swedish electricity and natural gas markets 2011, Energy Markets Inspectorate; An overview of the Swedish natural gas market; Energy Market Inspectorate; www.swedegas.se and Input for Initial Impact Assessment for draft FG for harmonised Gas Tariff structures, ACER, June 2012

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

To be able to supply gas at an exit point the supplier must appoint a Balance Responsible Party responsible for balancing the consumption in this exit point. A gas supplier can also be a BRP. No proficiency check is done by the Swedish Energy Markets Inspectorate or any other authority before gas suppliers, foreign or domestic establish themselves on the Swedish natural gas market. An official register with the gas suppliers active in Sweden does not exist. Shippers booking and getting access to exit capacity on the IP in Denmark can thus supply customers in Sweden without any problem.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader							
Shipper			1	2	1		
Supplier							
Contracting party			(TSO)		(TSO)		

(1) We note that there in Sweden the gas transmission contract is recognized as the right to supply the end consumers: in this approach becoming a shipper with a TSO automatically provides the market party with the right to engage into supply and/ or trade as well. In other words, no separate license, notification or registration is required from the market parties wishing to engage in supply to end consumers except the gas transmission contract. In Sweden the shippers may supply end consumers after either signing a balancing agreement with Balance Responsible Party (BRP) or by becoming BRP themselves. Moreover, the same balancing agreement (or alternatively being a BRP) enables the market parties to access the VP.

Overview of the procedure:
The market party becomes a BRP by having a balance responsible agreement with the system balance responsible party (which is the TSO) in place. In case the market party does not become a BRP itself, it has to appoint a BRP at every of its end user offtake points. A

market party can become a BRP as well by signing a balance responsible agreement with the TSO.

As previously mentioned, apart from balancing, the balance responsible agreement also provides the BRP with access to the virtual trading point. In this case, the access to the VP is an integral part of the E/E system- the market parties only need one contract to access the VP.

Swedegas might set the following requirement when contracting services:

- Financial guarantee - if Swedegas has reason to doubt that the transmission customer will meet its payment obligations, it has the right to request an acceptable security or an advance payment.

(2) In the Swedish system not a shipper, but the DSOs and the end users directly connected to the transmission system book transmission capacity from the TSO Swedegas. An end user in the distribution system also books capacity from the DSO. At every end user offtake point there must be two parties appointed; the supplier appointed by the end user and the balance responsible party appointed by the supplier. Appointment information to the network owner to be provided by the supplier. It is possible for a supplier to act as a balance responsible party

Tariff structure and methodology[263]

In the Swedish system not the shipper, but the DSOs and the end users directly connected to the transmission system book transmission capacity from Swedegas. The base for the transmission capacity booking is either a year or the gas year divided in two parts: gas winter (October-April) and gas summer (May-September). Furthermore, the price for capacity depends on the way customers use their booked capacity during the booking period. Thus, there are no reference prices in the Swedish tariff system. Swedegas has recently published a revised tariff structure applicable from May 1st, 2013 with annual, seasonal and monthly products.

Tariff structure	Products					Tariff basis		Notes
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commo-dity	
Entry	--	--	--	--	--	SEK/M^3/h	--	(1)
Domestic exit	F/I[264]	--	--	--	--	SEK/M^3/h	--	

[263] Information in this section is based on Input for Initial Impact Assessment for draft FG for harmonised Gas Tariff structures, ACER, June 2012; Transit Contracts in EU Member States, Results of the ACER inquiry, 2012 Draft version (Final); www.swedegas.se; The Swedish electricity and natural gas markets 2011, Energy Markets Inspectorate

[264] F = firm, I = interruptible, RF = reverse flow

Border exit	--	--	--	--	--	--	--	(2)
	(3)						(4)	

(1) The Interconnection Point (IP) at Dragör, which is the sole border entry point of the Swedish transmission system, is actually situated in the Danish gas transmission grid, and having access to the exit point means automatically having access to the Swedish gas transmission grid. There is no separate entry capacity booking at the Swedish IP.

(2) Sweden has no exit interconnection point. No actual reverse flow is possible on the only transmission pipeline connecting Sweden to an adjacent country, therefore no difference between cross-border and domestic networks is made.

(3) The basic contract duration for transmission tariffs is one gas year. In addition, separate seasonal bookings for winter and summer half-years are possible. During winter months (October – April) an additional winter capacity fee per Nm^3 and hour applies. The fee is multiplied with a factor ranging between 0.59 (for October) and 1.00 (for February).

(4) An energy volume based fee applies only to cover public levies (´Myndighetsavgifter´ of 0.0025 SEK/$Nm^{3)}$.

Tariff calculation and division of cost		Notes
Tariff model	Postage-stamp	
Role of NRA	Approval	(1)
Price control mechanism	Ex-post regulation	
Tariff calculation methodology	Uniform	
Entry/exit split	0/100	(2)
Capacity/commodity split	None	(3)
National/cross-border distinction	None	(4)
Locational or uniform tariffs	Uniform	
Charging basis (booked capacity/other)	Booked capacity	

(1) NRA approves ex-ante the methods behind the tariffs and ex-post the tariff revenues. However, the regulator has proposed changes to the currently applied methods of approval. This legislation is expected to come into effect in 2014.

(2) According to the Swedish Natural Act the tariff applicable for a Swedish end user shall cover the cost for all Swedish gas networks from entry to the connection point of the end user. This restricts the possibility of having an entry IP tariff applicable to shippers. As the Swedish transmission network presently do not have any other entry points and no exit interconnection point, the breakdown of costs is 100% exit. There is an entry tariff published applicable to domestic biogas entry to the transmission system. When biogas in future enters the transmission system the entry/exit split will change accordingly.

(3) As the price for capacity will depend on the utilisation the resulting cost will correspond

to a 0/100 split for a zero utilisation and to a 100/0 split for a full utilisation.

(4) Since no actual reverse flow is possible in the only entry IP, a difference between costs related to cross-border and domestic networks has not been made.

As there is no separate entry capacity booking at the Swedish IP, no capacity allocation mechanism is in place at the border-entry point. Within the Swedish gas transmission grid the transmission capacity allocation is done by Swedegas to the capacity network users.
As the Swedish gas transmission grid contains a significant volume of unused capacity[265] there is no need for congestion management procedures.

Balancing and Imbalance Settlement[266]

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	Individual tolerance on daily basis	(1)
Number of tolerance levels	1	
Balancing gas procurement	Balancing market	
Imbalance settlement	Market based imbalance fee	
Imbalance fee	External price + Multiplier	(2)

(1) The tolerance provided is 25% of winter day consumption.

(2) Sweden charges only the imbalances outside the granted tolerance level to +/-135% of the external price. The imbalances below the tolerance level are rolled over.

Svenska Kraftnät is responsible for maintaining the short-term balance in the Swedish natural gas system. DSO level is part of the balancing zone. Sweden applies the balancing group model. There are currently four balancing responsible parties (BPRs). The basic imbalance settlement period is one day. The tolerance margin for imbalances corresponds to about 25% of a winter´s day consumption. Cumulated imbalances outside the margin leads the network user to buy or sell balance gas, which has a penalty charge amounting to +/- 35% of the neutral price set from trade with network users on a balancing platform. There are no WDOs in place. Because of the large line-pack volume and the model with balancing accounts for the network, users balancing actions are almost never needed in Sweden. If balancing actions are needed, the TSO asks for bids by

[265] The total import capacity is approx. 22 TWh/year, while the total consumption is approx. 15 TWh/year.

[266] Information in this section is based on Energy Market Inspectorate, 2011, National Report to the European Commission, ACER answers to the DG ENER Questionnaire on Balancing to ACER and ENTSOG and http://www.swedegas.se/vara_tjanster/tjanster

email to the network users (four companies). The bid unit is 500,000 kWh (minimum bid size).

Changes are expected in the Swedish balancing system. During 2013 the system balancing administration, currently accomplished by Svenska Kraftnät, will be transferred to Swedegas. Until that time, Svenska Kraftnät remains responsible for balancing services.

Market Environment and Trading[267]

Only 3.5% of the total Swedish energy needs are covered by natural gas (However in those areas in Sweden where natural gas is established it covers approximately 20% of the energy needs) The entire consumed volume of natural gas is imported from or via Denmark. The Swedish natural gas market is characterised by a small number of actors.

According to ACER answers on DG ENER Questionnaire on balancing there are four network users in Sweden. E.ON Sverige Gashandel Sverige AB and Dong Energy AB are the two companies selling natural gas on the Swedish wholesale market. There are no figures available on their respective market share in 2011. However there is no indication that there were major changes since 2006, when E.ON Gashandel Sverige AB was holding a market share of 48%. However, this figure, in which E.ON Gashandel Sverige AB has a significant market share, does not take into account that a part of this volume is sold to other companies in the E.ON Group, who in their turn have resold the natural gas to end-users.

In 2011, there were four active natural gas suppliers operating on the retail market twho share the market as follow: E.ON Gashandel Sverige AB (market share of 41 %), owned by E.ON AG, Dong Energy AB (22 %) principally owned by the Danish state, Göteborg Energi AB (22 %) owned by municipality of Gothenburg and Modity Energy Trading AB (15 %) owned in equal shares by Öresundskraft AB and Lunds Energikoncern AB.

Volumes	TWh/year	Notes
Indigenous production	0	(1)
Import	14.9	(2)
Export	0	(3)
Consumption	14.9	
Traded volumes	3.4	
Churn rate	470	

(1) Yearly appr. 0.2 bcm biogas is injected in the gas system in the south west of Sweden. There is no extraction of natural gas in Sweden.

(2) Import to the gas system in the south west of Sweden. The majority of imported volumes

[267] Information in this section is based on The Swedish electricity and natural gas markets 2011, Energy Markets Inspectorate

come from Denmark, while limited volumes of gas imports come from Germany via Denmark.

Since the Swedish transmission network has no exit point, export or transit of natural gas is not possible.

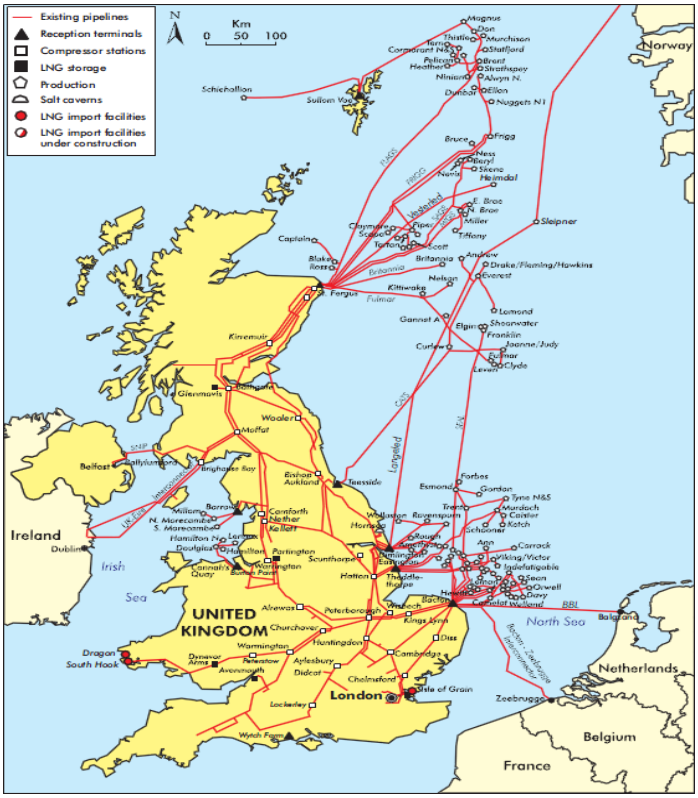
There is no obligation for natural gas companies to report agreements on gas supplies that have been concluded; therefore, no information has been disclosed.

26 UNITED KINGDOM

Network Topology

The gas market in the United Kingdom (UK) is the largest in Europe. In 2011, total gas demand was just under 1,000 TWh; the lowest since the start of the new millennium. Also, domestic production is in rapid decline as it was down over a fifth in 2011 (526 TWh) compared to 2010. This decline has been met by increasing imports of natural gas. In 2011, the highest ever imports of natural gas have been recorded topping domestic production. About half of these imports were supplied as Liquefied Natural Gas.[268]

Domestically produced gas and gas from Norway is predominantly fed into the system in the North of the UK (St. Fergus). In addition, the Interconnector and BBL pipelines supply gas from Belgium and the Netherlands respectively. In recent years, LNG terminals have come on-stream and have somewhat changed the historic North-South flow pattern in the UK. Furthermore, there are connections to the Republic of Ireland and Northern Ireland.



[268] DECC, "Digest of United Kingdom Energy Statistics 2012", 2012.

Network topology		Notes
Network length high pressure (km)	7,600	(1)
Pressure range TSO (bar)	Up to 94	
Import capacity (GWh/day)	2,695	(2)
Export capacity (GWh/day)	977	(3)
Storage (bcm)[269]	4.3	(4)
LNG (bcm/year)[270]	51.1	(5)
TSOs (name)	National Grid Gas plc	
DSOs (number)	8	(6)

(1) The National Transmission System, operated by National Grid Gas plc (NGG), is 7,600 km in length and has 23 compressor stations. Gas is fed into the pipeline system at nine different terminals; these terminals either receive gas from the UK Continental Shelf or from Belgium, the Netherlands or Norway. In addition, there are four LNG terminals which supply natural gas to the UK as well.

(2) Import capacity to the UK is 2,695 GWh/day; around 1,441 GWh/day are for supplies from Norway, 805 GWh/day from the Interconnector with Belgium and 449 GWh/day by the BBL pipeline connected to the Netherlands.

(3) Export capacity from the UK to other countries equals 977 GWh/day of which, with 624 GWh/day, export to Belgium is the main contributor. The remaining capacity of 353 GWh/day is for export to Ireland.

(4) There is 4.3 bcm of storage capacity in the UK, predominantly due to the Rough storage facility (3.3 bcm). Gas Storage Europe shows that there are plans for almost another 19 bcm of storage capacity.

(5) There are four LNG terminals (i.e. Isle of Grain, Teesside, Milford Haven – Dragon LNG and Milford Haven – South Hook) operational with a combined capacity of 51.1 bcm per year.

(6) There are eight gas distribution networks in the UK which are operated by five operators: Scotland Gas Networks, Southern Gas Networks, Northern Gas Networks, Wales & West Utilities, and National Grid Distribution. These gas distribution networks are themselves split into twelve smaller local distribution zones. Besides the distribution companies there are a number of smaller networks operated by Independent Gas Transporters which were mainly built to serve new housing.[271]

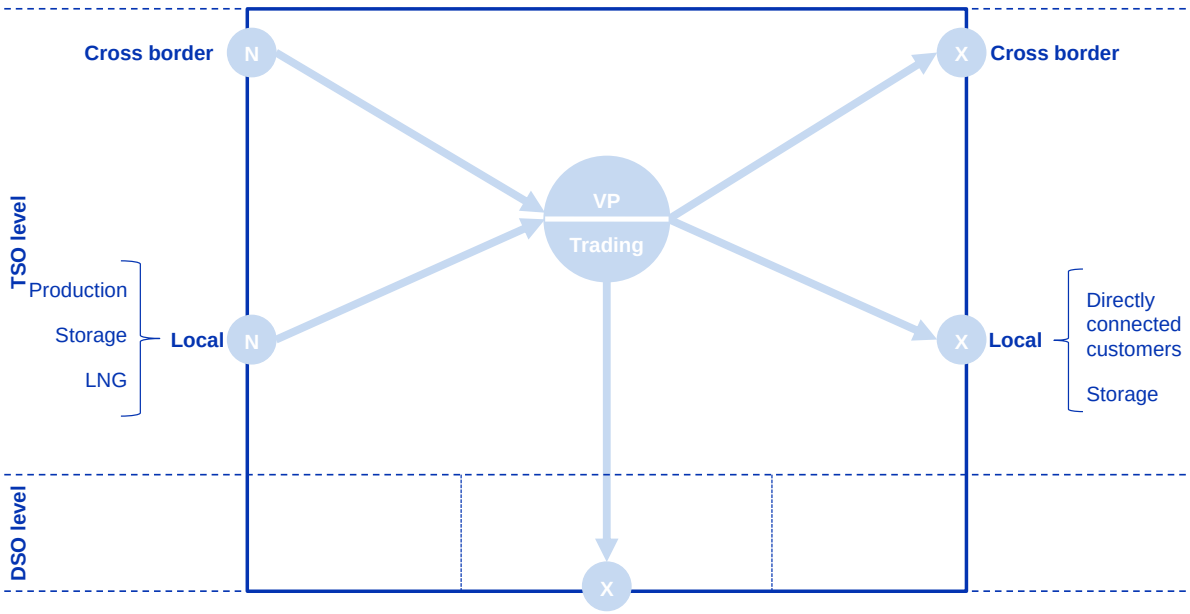
[269] GSE

[270] GLE

[271] ICLG, "Gas Regulations 2012", 2012

Design of the Entry-Exit System

The figure below gives the schematic representation fo the entry-exit system in the UK as seen from the shipper's perspective. Chapter 1 of this document explains how the schematic representation should be interpreted.



The schematic shows that the entry-exit system as implemented in the UK mirrors our model entry-exit system with no additional modifications.

The table below gives an overview of the contractual arrangements which are in place for access to and use of the entry-exit system. This table shows the contractual arrangements from the view of the shipper. Chapter 1 of this document further explains how the schematic representation should be interpreted.

Roles	Contractual arrangements						
	Licence	Framework agreement	Balancing	Capacity	Virtual Point	Distribution	Others
Trader	1	4			4		
Shipper	2			5			
Supplier	3					6	
Contracting party	Ofgem / GEMA issues licence	TSO	TSO	TSO	TSO	N/A	

(1) Gas traders who are not physically conveying gas on the Great Britain network but are only trading gas as a commodity at the National Balancing Point are not required to hold a gas shipper licence.

(2) Shipper Licence: Allows the licencee to arrange with a Gas Transporter (GT) for gas to be introduced into, conveyed through, or taken out of a pipeline system operated by that GT, either generally or for the purpose of the gas movement should be general or for purposes connected with the supply of gas to premises specified in the licence. Gas traders who are not physically conveying gas on the Great Britain network but are only trading gas as a commodity at the National Balancing Point are not required to hold a gas shipper licence. The application fee for a shipper licence is £350.

(3) Supplier Licence: Allows the licencee to supply to any premises gas, which has been conveyed to those premises through pipes. A gas supplier's licence can allow for supply to either domestic and non-domestic premises or to non-domestic premises only. The cost of the licensing procedure is either £350 or £450 depending on whether gas is transported to the premises by a Gas Transporter (£450) or not (£350).

(4) In order to become a shipper or a trader, the applying party must conclude a Framework Agreement (or Accession Agreement) with the TSO National Grid and therewith agree to be bound to the Uniform Network Code. The applicant concludes the same Framewrok Agreement for becoming a shipper in the DSO networks.

The UNC also specifies the requirements for balancing and trading arrangements.

An applicant wishing to become a shipper must fulfill the following requirements[272]:

- hold a Shipper licence
- submit a formal application and pay the administration fee of £4,300 + VAT.
- accede to Uniform Network Code
- obtain a copy of the UNC and associated documents
- have IXN equipment installed
- sign confidentiality agreement
- appoint authorised representatives (if required)
- communicate emergency contact details
- be assigned a Secured Credit Limit for Energy Balancing
- be assigned a Code Credit Limit for each Transporter (that the applicant intends to use).

(5) A shipper may request unutilised existing capacity or incremental or new capacity; in the latter case the shipper needs to signal their requirements for this incremental capacity by bidding in the Quarterly System Entry Capacity auctions. This incremental capacity may require 42 months before it is available to the shipper.

Exit capacity is sold on request of the shipper or the developer. It will trigger a 'physical system capability check' in which National Grid assesses if the existing capacity is sufficient to accommodate the requested amount. If not, it may take up to 38 months before the capacity can be provided. The shipper may be required to pay for a study, make a capital contribution and/or enter into an Advanced Reservation of Capacity Agreement (ARCA). With the ARCA-agreement, the applicant shows its intention to proceed with the reservation of exit capacity at an early stage as the agreement is supported by a firm financial commitment on the part of the applicant.

(6) Network users supplying end consumers at DSO level are not required to book exit capacity to the DSO; this is taken care of by the Distribution Network Operator (DN User).

[272] http://www1.xoserve.com/docs/ApplicantUserHandbook.pdf

Tariff Structure and Capacity Products

Tariff structure[273]	Products					Tariff basis		
	Annual	Quarterly	Monthly	Daily	Within-day	Capacity	Commodity	Notes
Entry	--	F	F	F/I/RF	F	p/kWh/d	p/kWh	(1)
Domestic exit	F	--	--	F	F	p/kWh/d	p/kWh	(2)
Border exit	F	--	--	F/I	F	p/kWh/d	p/kWh	
	(3)			(5)			(4)	

(1) System Entry capacity is auctioned as different capacity products, differing in duration. For each of the entry points, capacity is offered as a firm and interruptible product; however, interruptible products are only offered to capacity sold on a day-ahead basis. The six entry capacity products offered via auctioning are: quarterly (QSEC), monthly (MSEC), rolling monthly transfer and trade (RMTNTSEC), daily firm (DSEC), within day (WDDSEC) and daily interruptible (DISEC).

- QSEC: Auctions for quarterly entry capacity are held annually (March) and firm entry capacity is offered in quarterly strips from October Y+2 through September Y+16.
- AMSEC: AMSEC auctions are held annually in February. Firm entry capacity is made available in monthly strips from April Y through to September Y+1. The auction is held as a 'pay-as-bid' auction and there is a reserve price.
- RMTNTSEC: the rolling monthly capacity auctions are held on a monthly basis for month-ahead firm entry capacity. The users pay-as-bid and the auction is subject to a reserve price.
- DSEC: auctions for daily firm entry capacity are held at the day-ahead stage. Again, the auction is a 'pay-as-bid' auction and there is a discounted reserve price.
- WDDSEC: within-day capacity is offered as various times within day. Within day auctions are 'pay-as-bid', but there is no reserve price.
- DISEC: interruptible capacity is offered on a day-ahead basis with a zero reserve price.

Incremental entry capacity rights are obtainable through long term auctions (QSEC), but are subject to meeting an investment test threshold that will oblige the National Grid to release additional capacity.

(2) At exit points, National Grid offers the following capacity products:

- (Enduring) Annual NTS Exit (Flat) Capacity. This is exit capacity from the NTS for a flat daily flow for the periods of Y+1 to Y+3 (Annual), and for Y+4 to Y+6 (Enduring).

[273] F = firm, I = interruptible, RF = reverse flow

These products are released by means of application windows.

- For Daily Firm NTS Exit (Flat) Capacity, 'pay-as-bid' auctions with a minimum reserve price are held on a day-ahead basis. In addition to the day-ahead auctions, Daily Firm NTS Exit (Flat) Capacity is also sold in within-day auctions. Again, these auctions are 'pay-as-bid' and have a minimum reserve price. These auctions are held at 08:00, 14:00, 18:00, 22:00 and 01:00 hours or as a discretionary auction subject to a 1 hour notice period.
- Daily Off-Peak Daily NTS Exit (Flat) Capacity, which is an interruptible product, is made available on a day-ahead basis via auctions, but with a zero reserve price. Interruptible exit capacity is not available at NTS/LDZ offtakes.
- Firm exit capacity can be transferred from one network user to another at the same NTS Exit Point.

(3) Entry capacity in the day-ahead auctions is subject to a 33% discount on the reserve price whilst entry capacity on-the-day is subject to a zero reserve price.

(4) National Grid applies a commodity charge on both the entry and exit points of the TO and SO functions. The TO Entry commodity charge may be levied where an under-recovery of TO Entry revenue is forecast. The charge is levied on entry flows only at entry terminals (but not storage facilities) and would address only a forecast TO revenue under-recovery that does not arise from NTS Exit capacity charging. For the avoidance of doubt, the TO Entry commodity rate would be set to zero where forecast Entry TO revenue is at, or above, revenue target level. The TO Exit commodity charge offsets offset any under recovery arising from a shortfall between NTS Exit (Flat) capacity charges and TO Exit allowed revenue. The SO commodity charge is a uniform rate, independent of entry and exit points, and is levied on both NTS Entry and NTS Exit flows.

A further type of commodity charge is offered by National Grid as well. This commodity charge, called the NTS Optional Commodity Charge or shorthaul rate, may be chosen by a large daily metered site which is located nearby an entry terminal. This can serve as an alternative to the regular SO and TO commodity charges as these are not distance related and may thus result in a relatively high charge for a short transportation distance.

Charges are expressed and billed as pence per kWh for commodity charges and as pence per kWh per day for capacity charges.

In addition to the capacity and commodity charge, another charge may be billed. If gas is delivered to an exit point on the NTS (National Transmission System) at a lower pressure than that required, a compression charge is applied.

(5) Recently, National Grid and Gaslink (Irish TSO) offered the possibility for reverse virtual flow at the Moffat exit point. This product is offered via the DISEC auction. Besides,

interruptible reverse flow is also offered in the exit direction of the BBL pipeline.

Tariff calculation and division of cost		Notes
Tariff model	Entry-exit	(1)
Role of NRA	Approves tariff methodology, sets revenue	(2)
Price control mechanism	Revenue cap	(3)
Tariff calculation methodology	Long-run marginal cost pricing	(4)
Entry/exit split	50/50	(5)
Capacity/commodity split	Variable	
National/cross-border distinction	Not applicable	
Locational or uniform tariffs	Locational	(6)
Charging basis (booked capacity/other)	Booked capacity and on allocated gas volumes	

(1) National Grid applies an entry-exit model with nodal pricing.

(2) Ofgem approves the tariff methodology as submitted by National Grid and sets the allowed revenues which are input to the tariff calculation methodology.

(3) Each price control period Ofgem establishes cost allowances and efficiency targets; these elements are the basis for setting the allowed revenue which may be collected by NGG due to the transportation capacity and commodity charges. Any under or over recovery of the allowed revenue will be compensated in the next year of the regulatory period.

(4) NGG is responsible for devising a charging methodology. As such, NGG has developed a sophisticated long-run marginal cost pricing methodology in place for calculating capacity prices (reserve prices for auctioned entry capacity). This methodology is part of the Unified Network Code since 2010. Tariff changes may occur two times per year on April 1st and October 1st.

(5) The calculated revenue from entry and exit capacity is set at a split of approximately50%. Nevertheless, this is only a momentary snapshot and subject to changes in auction revenues and network utilisation.

(6) NGG applies a long-run marginal cost calculation to derive the entry and exit capacity charges for each network point and thus contain locational (efficiency) signals. As such, each network point has a unique tariff (or reserve price).

Capacity allocation		Notes
Capacity allocation mechanism	Auction/FCFS	(1)
In case of congestion	Auction (long-term)	
In case of new capacity	Long-term auctions (QSEC)	
Priorities in capacity allocation		
1. Customer type	--	
2. Duration	--	
Congestion management procedures	Interruptible capacity, reverse flow, secondary trade, UIOLI, incentives for early delivery of new capacity, constrain LNG supply	(2)

(1) National Grid uses auctions to allocate capacity to network users. Auctions are held for both entry and exit capacity. National Grid uses a first-come-first-serve procedure to allocate exit capacity which has been requested outside the annual application window.

(2) National grid applies a wide range of congestion management procedures. It offers interruptible capacity and virtual reverse flow and facilitates secondary trade in transmission capacity. In addition, Use-It-Or-Lose-It (UIOLI) is applied at both pipelines connecting the UK with continental Europe.

With respect to new capacity, National Grid has disincentives for the late delivery of new entry capacity as it must fund all of the cost of capacity congestion management associated with it (up to a cap of 4 million GBP per month or 36 GBP annually). A similar scheme exists for exit capacity.

Lastly, National Grid can also constrain the use of LNG in certain storage facilities such that network users that have booked capacity at these facilities are obliged to provide transmission support gas to the TSO in times of high demand.

Balancing and Imbalance Settlement

The table below lists the main features of the balancing system. Further background information is provided in the text below.

Aspects	Feature	Notes
Separate balancing on distribution level	No	
Application of WDOs in daily balancing	No	
Tolerance provided	No	

Number of tolerance levels	None	
Balancing gas procurement	Wholesale market	
Imbalance settlement	Market based imbalance fee	
Imbalance fee	External price	

Balancing is done on a daily basis. Network users can either be 'long' (i.e. inject more gas then they withdraw) or 'short' (i.e. withdraw more gas then they inject). Imbalances quantities are settled by the SMPsell or SMPbuy[274] prices for respectively long and short positions. These imbalance charges are based on the price (pence/kWh) of the residual balancing actions taken by National Grid.

The SMPsell price, received by the network users with a long position, is less than the average price of gas traded of that day and therefore the network users are incentivised to stay balanced. In contrast, the SMPbuy, which 'short' network users need to pay for the quantities they have under-delivered, is higher than the average price of gas traded that day; hence, the network users are thus again incentivised to remain balanced.

National Grid has no within-day obligations but there are certain restrictions on the rate of change of gas flows and notice periods that are required prior to a change in earlier rates. In addition, network users shall try to inject gas into the NTS at a flat profile as much as reasonably possible. However, there are no charges involved for either of these restrictions.

As the system operator, National Grid has the final responsibility for managing any residual system end of day imbalance and should ensure that system pressures are within safe limits. For this, National Grid primarily trades on the On the day Commodity Market (OCM) of the National Balancing Point (NBP). National Grid takes a balancing action on approximately 50% of the days in the year. These actions are only where shippers have not balanced their own positions and trades are priced roughly in line with market prices at the time. Network users do not receive any tolerances explicitly from National Grid.

Market Environment and Trading

Volumes	TWh/year	Notes
Indigenous production	526.7	
Import	584.4	(1)
Export	18.3	
Consumption	907.2	
Traded volumes	755	(2)
	526.7	

(1) The network of National Grid is interconnected with Belgium (IUK), the Netherlands (BBL), the Republic of Ireland (Interconnector 1 and 2) and Northern Ireland (S.N.I.P.S.).

[274] SMP stands for System Marginal Price

(2) Traded volumes as reported by DECC (755 TWh).

Trading		Notes
Trading volume		
Exchange spot (TWh)	138	(1)
Exchange futures (TWh)[275]	2042.37	(2)
OTC (TWh)[276]	4229.93	(3)
Participants (number)		
Exchange spot (APX)	76	
Exchange futures (ICE)	--	
OTC (TWh)	130	
Churn rate	~20	(4)

(1) In 2010 the total traded volume on the APX Gas UK (OCM) and APX Gas UK (NBP) exchanges totalled 138 TWh.[277]The volumes for exchange traded spot gas for first quarter of 2012 was approximately 32 TWh.[278]

(2) Exchange traded volumes of futures for first quarter of 2012. In 2010 the total traded volume on the Intercontinental Exchange (futures market) amounted to 1,079 bcm.[279]

(3) OTC volumes (excluding exchange traded gas) for first quarter of 2012.

(4) Churn rates of NBP saw a rise in the first quarter of 2012, when the churn rate was just over 21, compared to the fourth quarter of 2011 (almost 17). Overall, NBP is regarded as the most liquid gas hub in Europe, which is confirmed by the height of the churn rate compared to other European hubs.

[275] Based on: Heather, P., "Continental European Gas Hubs: Are they fit for purpose?", The Oxford Institute for Energy Studies, June 2012.

[276] Ibid.

[277] APXENDEX, "Annual Report 2011".

[278] Based on: Heather, P., "Continental European Gas Hubs: Are they fit for purpose?", The Oxford Institute for Energy Studies, June 2012.

[279] Ibid.