ANALYSIS OF CROSS BORDER TRANSMISSION GAS TARIFFS BETWEEN PORTUGAL AND SPAIN

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1 INTRODUCTION

The Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC recognises that one of the important issues for the creation of a fully functional internal market is the setting of regulated tariffs. In that way, in recital 23 of the Directive establishes the need to adopt measures "*to ensure transparent and non-discriminatory tariffs for access to transport."* Additionally, recital 32 establishes that national regulatory authorities should be able to fix or approve tariffs, or the methodologies underlying the calculation of the tariffs, ensuring that transmission and distribution tariffs are non-discriminatory, cost-reflective and that there are no cross-subsidies between transmission, distribution, storage, LNG and supply activities.

Furthermore, in article 7, the Directive states that "*Member States as well as the regulatory authorities shall cooperate with each other for the purpose of integrating their national markets at one and more regional levels, as a first step towards the creation of a fully liberalised internal market.*". Therefore, as a general objective the Directive states that the regulatory authorities have to collaborate in "*eliminating restrictions on trade in natural gas between Member States, including developing appropriate cross-border transmission capacities to meet demand and enhancing the integration of national markets which may facilitate natural gas flow across the Community*".

The Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005 aims to set non-discriminatory rules for access conditions to natural gas transmission systems and facilitate the emergence of a well-functioning and transparent wholesale market. These objectives include the setting of harmonised principles for tariffs, or the methodologies underlying their calculation, for access to the network.

In relation to the access tariffs, in introductory note 7, the Regulation states that "*It is necessary to specify the criteria according to which tariffs for access to the network are determined, in order to ensure that they fully comply with the principle of non-discrimination and the needs of a well-functioning internal market and take fully into account the need for system integrity and reflect the actual costs incurred, insofar as such costs correspond to those of an efficient and structurally comparable network operator and are transparent, whilst including appropriate return on investments, and, where appropriate, taking account of the benchmarking of tariffs by the regulatory authorities.*"

Additionally, the 13 article of the Regulation establishes that the access tariffs, or the methodologies used to calculate them, shall be:

- Transparent, take into account the need for system integrity and its improvement and reflect the actual costs incurred.

- Applied in a non-discriminatory manner between network users (namely between domestic gas flows and cross border gas flows.
- Facilitate efficient gas trade and competition, while at the same time avoiding cross-subsidies between network users and providing incentives for investment and maintaining or creating interoperability for transmission networks.
- Set separately for every entry point into or exit point out of the transmission system.
- Not restrict market liquidity nor distort trade across borders of different transmission systems.

The construction of the European internal market is foreseen as gradual evolutionary process of aggregation of national markets into regional markets of gas and electricity. In the context of CEER and South Gas Regional Initiative (GRI-S) it is featuring the work plan for 2011-2014 the realization of a study on cross border access tariffs in gas interconnections between Spain and Portugal, with the aim of setting up a public consultation on tariff harmonization and identifying any other obstacles to the internal gas trading.

The tariff harmonization is a long term task, the different starting point in both systems must be taken into account in any regulatory proposal, as well as it is a part of a wider approach to market integration which includes other topics like the harmonization of capacity allocation mechanisms at the IP and of congestion management procedures. Together, these efforts shall produce short term results facilitating gas flows in the regional market and are pilot testing the new European framework guidelines and network codes. As such, they shall be developed simultaneously and in coherent way.

Stakeholders have identified other aspects that need to be addressed in regional market framework. Nevertheless, work on regional market integration shall move forward with the priorities now established, favouring the achievement of short term results.

The cross border tariff harmonization between Spain and Portugal shall take into account the European recommendations relating with this aspects, and especially, the results of the European Working Groups relating with the Gas Target Model, CAM, CMP, Balancing and Tariffs.

This document describes the Portuguese and Spanish gas systems and presents a study focused on the analysis of transmission tariff systems in Spain and Portugal, including the interconnections between both transmission systems. Conclusions of the study show the cross border tariffs (CBT) harmonization is an important topic for achieving the market integration in the Iberian gas market. Regulators would like to receive comments from the stakeholders on the way forward to harmonize cross border tariffs between Spain and Portugal taking into account the different regulation as well as tariff framework in both countries.

PARTICIPATION IN THE PUBLIC CONSULTATION

All comments from the stakeholders to the questions raised in this document should be sent in written form, in English (preferably), Spanish or Portuguese. Comments should be sent to ERSE or CNE until February, the 17th, 2012, through the following email addresses: cbtariffs@erse.pt or cbtariffs@cne.es.

If the comments are not to be publicly identified they must be explicitly marked as confidential.

2 CHARACTERIZATION OF NATURAL GAS SYSTEMS IN SPAIN AND PORTUGAL

The commercial gas flows in interconnections between Spain and Portugal are subject to the existence of available capacity and to the payment of regulated cross border transit tariffs. In both countries, tariffs are approved and published *ex-ante*, either by the government (Spain) or by the energy regulator (Portugal). In Portugal, the regulator approves the tariff methodology prior to its entry into force.

Market agents that trade gas in both transmission systems shall be registered in the transmission system operator (TSO) and are subject to some obligations, like programming in advance the gas flows to mobilize in each relevant point of the system, keeping adequate gas stock levels in gas infrastructures and paying tariffs for the use of system infrastructures and services and for unbalances.

Following, the natural gas systems and the network tariffs in Spain and Portugal are described for a better comprehension of the differences.

2.1 ANALYSIS OF THE NATURAL GAS SYSTEM IN SPAIN

2.1.1 SPANISH GAS MARKET IN 2010

The gas demand in 2010 was 413.964 GWh. The domestic production of Spanish fields is marginal and reaches only 1.201 GWh, 0,3% of Spanish gas demand in 2010. The rest of the gas demand in Spain is imported. While 76% of natural gas reached the national grid through LNG ships, the remaining 24% came via gas pipelines. The shipments unloaded from LNG ships continued at high levels and kept Spain among the most important LNG destinations in the world.

The imports basket of the Spanish gas system has been diversified in 2010, with Algeria standing out with a share of 30%, Nigeria (21%), Qatar (15%), Trinidad and Tobago (9%) and Egypt (8%).

Figure 2-1 - Imports basket of the Spanish gas system

Source: Enagás

Customers in Spain reached 7.162.319 by 2010. Nowadays, more than 70% of Spanish population lives in towns provided with natural gas supply. The total demand for natural gas in Spain reached 401 TWh in 2010. Most of gas was consumed at a pressure higher than 60 bar (44%). Power plants consumed 34% of total natural gas consumption.

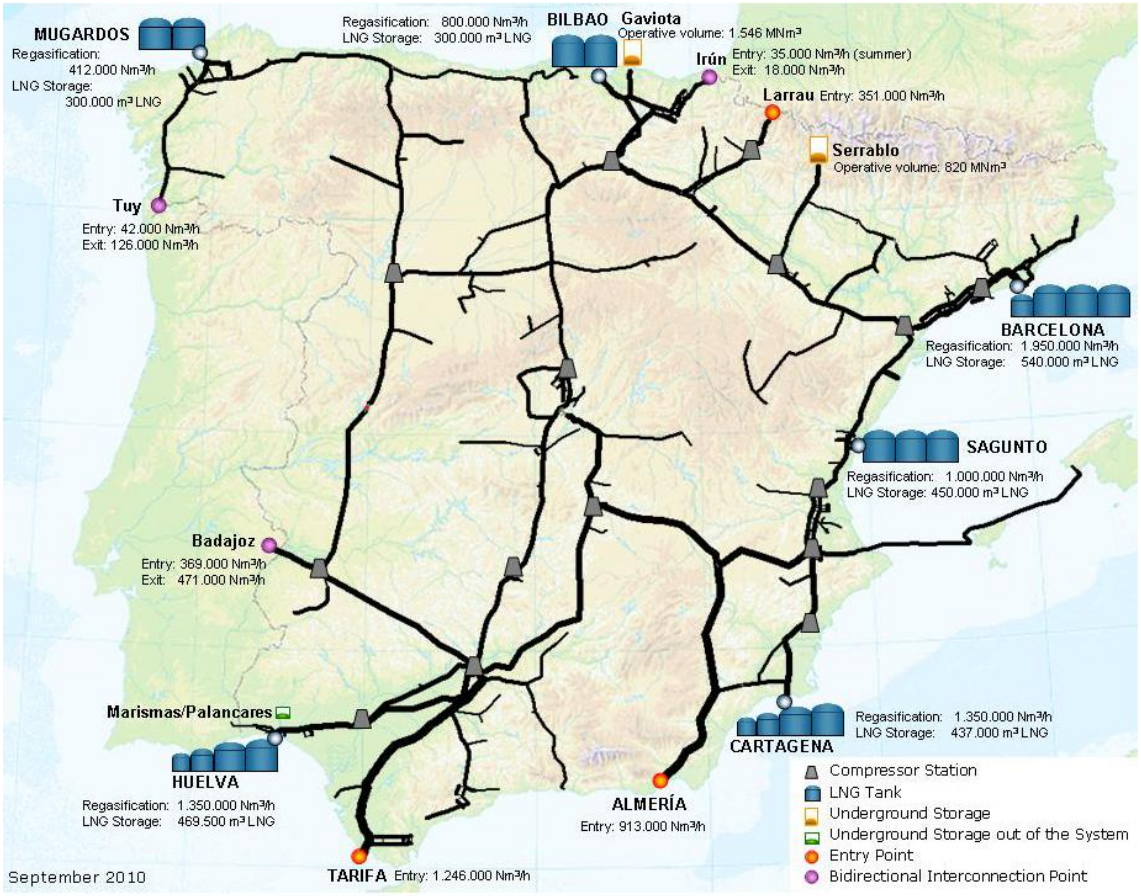
Table 2-1 - Natural gas consumption in 2010 in Spain

Pressure	Consumption 2010 (GWh)	%
P≥60	*175.422*	*44%*
16≤P<60	*44.962*	*11%*
4≤P<16	*96.289*	*24%*
P≤4	*72.312*	*18%*
LNG to industrial consumers	*12.024*	*3%*
TOTAL	***401.010***	***100%***

2.1.2 SPANISH GAS SYSTEM

The national network in Spain has a meshed structure. Currently, six LNG terminals are operative in the Spanish gas system, with 1.861 GWh/day of entry capacity. Spain also has several international gas pipeline connections to other countries: from Algeria through Morocco and Medgaz, to Portugal through Tuy and Campo Maior, and to France through Larrau and Irún.

Figure 2-2 - Spanish gas system



In Spain, gas network investments are planned by a Gas System Planning procedure, which is responsibility of the Government and counts with the participation of the Autonomous Communities, the Technical System Operator, transmission and distribution system operators and other actors, as well as the CNE.

Planning is indicative for all activities except the basic network gas pipelines, the global needs of regasification capacity and the hydrocarbons strategic reserve storage capacity, where the planning shall be on a mandatory and minimum enforceable basis.

2.1.3 THIRD PARTY ACCESS

Royal Decree 949/2001 regulates third party access to gas installations.

Agents wishing to exercise their right to access to regasification plants and storage facilities must send a formal capacity reservation request to the owners of those installations indicating their usage schedule and calendar.

Agents who are entitled to access and wish to exercise that right to gain access to transportation and distribution installations must send a formal request for capacity reservation to the owners of the installations to which the points of intake of natural gas into the transportation and distribution system are connected, indicating the off-take points from the same system, as well as the forecast usage dates.

In cases where the application entails simultaneous access to different installations belonging to the same owners, the applications may be processed together.

The National Energy Commission drew up standardized official application forms for access to gas system installations.

The owners of installations who have received an official access request must send to the technical manager of the system who will analyse the system's overall possibilities and to the owners of installations where the natural gas delivery points are connected, together with an assessment of the provision of the service by their own installations so that they can issue a report on the feasibility of the service requested. The report shall include the possible alternatives if the requested service provision is impossible.

The owner of the installation must give the applicant an answer, either accepting or rejecting the application filed and giving reasons for the decision. If the application is rejected, the decision must be notified to the Directorate General of Energy Policy and Mines and the National Energy Commission.

Once the access application has been accepted, the applicant may contract regasification, storage and transportation and distribution services either separately or jointly. In the case of access to regasification and storage installations, the contract must be entered into by the access applicant and the owners of the installations.

In the cases of access to transportation and distribution installations, the contract must be entered into by the access applicant and the owners of the installations where the intake point of the gas into the transportation and distribution system is located. An appendix shall be added to the contract for each owner of installations where the off-take points of the gas to the final consumer are located, to be signed by the owner of those installations and the applicant.

Access applications for the transmission network and regasification plants are dealt with in chronological order of receipt of the official request. However, in the case of underground storage, capacity is allocated proportionally to gas sales of each retailing company. Spare capacity, which has not been allocated, is auctioned in a yearly ascending clock auction.

2.1.4 BALANCING

There is one balancing area. Energy is traded at a virtual national balancing point. The balancing period is one day and there is a tolerance band. Network users can trade at the Spanish balancing point within the day to adjust their balance.

System balancing is achieved through linepack and the use of underground storage and LNG facilities. In addition, the system operator organises a daily auction mechanism to restore any deviations to an acceptable level.

Any net costs or revenues of the TSO are returned to network users through an adjustment of network charges in the next year.

Shippers are considered to be in balance as long as their gas volumes are within the ranges established as tolerance margins. There are 5 types of possible imbalances: excess / deficit of stock level in LNG tanks; excess / deficit stock level in storage for commercial operation and deficit stock level operational reserves (linepack).

- Network users are entitled to a tolerance band between 0 and 50% of the daily contracted capacity in the grid (equivalent to a ± 25 % tolerance band) and up to five days of the contracted capacity in case of LNG facilities
- The penalty on network imbalances outside the tolerance are as follows (T = 0.02098 €/MWh/day):
  - If the daily stock level is above 50% and below 70%, the penalty is 1.1 T
  - If the daily stock level is above 70% and below 100%, the penalty is 1.5 T
  - If the daily stock level is above 100%, the penalty is 15 T
  - If the daily stock level is below 0%, and the network user has a stock of LNG inside the Spanish system, the penalty is 1.1 T
  - If the daily stock level is below 0%, and the marketer does not have a stock of LNG inside the Spanish system, it must pay a daily fine equivalent of 15% of the reference price.
- 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.

2.1.5 COSTS RECOVERED BY THIRD-PARTY ACCESS TARIFFS IN SPAIN

Main costs in the Spanish gas system correspond to distribution, transmission, regasification and underground storage. However, other costs are recovered by third party access charges (SO retribution, CNE, efficiency plan, etc.).

In 2011, distribution activity is expected to reach 1.490 M€, which represents 49% of total regulated costs in the Spanish gas system.

The following table shows the foreseen costs in 2011 and the average cost per MWh.

Table 2-2 - Average foreseen cost of system in 2011 in Spain

	Cost 2011 (Order ITC/3354/2010)	%	Energy associated with the activity (GWh)		Average cost (€/MWh supplied)
Regasification	447 199	15%	285 200	(1)	1,57
Underground Storage	109 803	4%	20 647	(2)	5,32
Transmission	790 853	26%	422 099	(3)	1,87
Distribution	1 489 544	49%	180 013	(4)	8,27
Other costs	213 647	7%	416 015	(5)	0,51
System operation and other costs	73 047	2%	416 015	(5)	0,18
Cost recovery to previous year	140 600	5%	416 015	(5)	0,34

(1) Energy received at the Terminal

(2) Injecting and extracting energy

(3) Energy transmitted through the transmission network

(4) Energy transmitted through the distribution network.

(5) National end - user consumption

2.1.6 ACCESS TARIFF SYSTEM IN SPAIN

The Spanish Government is responsible for determining access tariffs to be applied for the use of infrastructures.

There are different regulated tariffs for LNG activities, underground storage and the use of transmission and distribution networks. Each regulated tariff is independent and the user pays exclusively for the use of the infrastructure which is using. All access tariffs in Spain are postal (that is, no geographical distinction is made), but the ship unloading toll at LNG plants, where different charges are applied depending on the plant.

According to the Act 34/1998 and Royal Decree 949/2001, the tariffs, tolls and fees are set following the next principles:

a) Remunerate regulated activities. Access tariffs must be sufficient to recover the regulatory costs.

b) Allocate fairly between different consumers according to their pressure category, consumption level and load factor the costs that can be attributed to each type of supply.

c) Incentivise consumers to make efficient use of gas in order to foster enhanced utilisation of the system.

Different access tariffs for the use of the Spanish gas system are explained below.

2.1.6.1 LNG TARIFFS

The regasification activity includes the following services: i) off-loading of vessels transportation to LNG tanks, ii) regasification or iii) loading of LNG tanks and iv) operational storage of LNG.

The contracting of the regasification toll shall give entitlement to contract the in-plant LNG storage service, additional to the one included in this toll for the capacity necessary to offload the vessels used to transport LNG with the limit being the maximum docking capacity.

Unloading vessels tariff (Ship unloading toll)

The ship unloading tariff service includes the right of use of the installations necessary for off-loading LNG from a ship to a regasification plant. This toll consists in a fix charge (€/ship) and a commodity charge (c€/kWh).

Depending on the geographical situation of each LNG terminal, different values for charges can be applied.

Regasification toll

The regasification service includes the right of use of the installations necessary for LNG regasification and includes a capacity charge (€/ contracted KWh/day, monthly) and a commodity charge (€/KWh)

Tanker loading toll

Tanker loading service includes the right of use of the installations necessary for loading tanker vehicles with LNG stored at the regasification plants for its subsequent transport to satellite regasification plants. This tariff include a fixed charge for loading (c€/ contracted kWh/day/month) and a commodity charge (c€/kWh)

LNG storage fee

The LNG storage service includes the right of use of the installations necessary for the storage of LNG in the regasification plants. The fee consists in a commodity charge (€/m3 GNL/day)

Table 2-3 - Regulated LNG tariff prices in 2011 in Spain

Services	Capacity charge (c€/kWh/day/month)	Fixed charge (€/ship)	Commodity charge (c€/kWh)	Commodity charge (c€/MWh/day)
Regasification toll	**1,7323**		**0,0103**	
LNG ship unloading				
Barcelona		**15 006**	**0,0031**	
Huelva		**30 013**	**0,0060**	
Cartagena		**30 013**	**0,0060**	
Sagunto		**30 013**	**0,0060**	
Mugardos		**15 006**	**0,0031**	
Bilbao		**15 006**	**0,0031**	
Tanker loading toll	**2,5444**		**0,0150**	
LNG storage fee				**2,8907**

2.1.6.2 UNDERGROUND GAS STORAGE FEE

The underground gas storage fee gives the right to use the natural gas storage facility and to use its natural gas injection and extraction installations in proportion to the contracted capacity. The capacity limitation on injecting and extracting gas shall not apply provided that there are technical possibilities of increasing them. The natural gas storage fee consists in a fixed component for the contracted storage capacity (€/kWh/month), a usage charge for the energy injected (€/kWh) and a usage charge for the energy extracted (€/kWh).

In addition, the Ministerial Order ITC/3862/2007 of 28 December established a yearly mechanism for the allocation of underground storage capacity for natural gas to their users for each annual period from the 1 April of the current year to the 31 March of the following one. This procedure directly allocates capacity to the users of underground storage according to their needs, in proportion to their supplies in the previous year, and introduces a market-based procedure for the allocation of the remaining capacity, consisting of an auction mechanism.

Table 2-4 - Regulated underground storage tariff prices in 2011 in Spain

	Fixed component (c€/kWh/month)	Usage charge (c€/kWh)	
		per energy injected	per energy extracted
Underground storage tariff prices	**0,0411**	**0,0244**	**0,0131**

2.1.6.3 TRANSMISSION AND DISTRIBUTION NETWORK ACCESS TARIFF

The tariff model applied in Spain is the entry-exit model with a single balancing area being uniform for the entire country.

The charge for entry points consists of a uniform value for reservation capacity at any given entry points of the system. For exit points of the transmission and distribution networks, two uniform charges are applied independently of the exit location: the reservation charge and the usage charge, both depend on the pressure and the annual consumption at the exit point. The charge for exit points includes both transmission and distribution costs, as it is paid at the consumer's delivery point.

Actually, there is differentiation of transmission tariffs in terms of local vs. cross-border service, firm vs. interruptible service and duration of contracts. The cross-border tariff, in 2011, has a 30% discount on the domestic entry and exit tariffs. Entry and exit points to the transport grid should be booked jointly and nominated with the same gas volume, so the gas "in transit" cannot be sold at the Spanish national balancing point.

Tariff charges are calculated on an annual basis, but short-term capacity contracts up to 1 day are allowed. Daily and monthly capacity products are calculated multiplying the capacity charge by a coefficient (commodity charge is the same).

For monthly TPA contracts, capacity is charged at a discount of 50% from April to September (during summer), and at a premium of 200% during the rest of the year. Commodity charge is the same all year, and equal to the annual TPA contracts.

For daily TPA contracts, capacity is also charged at a discount from April to September[1] (during summer), and at a premium the rest of the year.

[1] During this period, short term capacity (daily and monthly) for transmission and distribution can be booked on top of year long capacity contracts.

Exit Interruptible capacity is offered yearly to the market by the TSO in limited quantities (up to 150 GWh/day, equivalent to 8% of the Spanish peak gas demand, only to consumers larger than 10 GWh/year and 26 MWh/day) to customers connected to pipelines with congestion, in order to have a tool to manage the gas grid in case of disruptions or exceptional gas demand. The allocation as well as the booking of this interruptible capacity are monitored by the NRA. The usage charge of the transmission and distribution exit tariffs are reduced a 30% for interruptible capacity. That allows the TSO 5 days of interruption per year and a 50% reduction for interruptible capacity up to 10 days of interruption per year.

In Spain, there are not any explicit backhaul capacity bookings, but in the case that all firm capacity has been sold at the IP, the TSO must offer the non-physical backhaul capacity available. In this case, the reservation charge and the usage charge are set at 50% of the TPA daily capacity charge.

Table 2-5 - Regulated transmission network tariff entry prices in 2011 in Spain

	Fixed component (c€/kWh/day/month)
Capacity charge	0,9582

Table 2-6 - Regulated transmission and distribution network tariff exit prices in 2011 in Spain

Consumer type	Reservation charge (c€/kWh/day/month)	Fixed component per consumer (€/consumer/month)	Usage charge (c€/kWh)
Type 1 (Pressure > 60 bar)			
1.1 C[(1)] < 200.000 MWh	3,0528		0,0748
1.2 C < 1.000.000 MWh	2,7273		0,0603
1.3 C > 1.000.000 MWh	2,5314		0,0543
Type 2 (4 bar < Pressure ≤ 60 bar)			
2.1 C < 500 MWh	22,3530		0,1709
2.2 C < 5.000 MWh	6,0670		0,1363
2.3 C < 30.000 MWh	3,9724		0,1103
2.4 C < 100.000 MWh	3,6402		0,0990
2.5 C < 500.000 MWh	3,3466		0,0868
2.6 C > 500.000 MWh	3,0783		0,0753
Type 3 (Pressure ≤ 4 bar)			
3.1 C < 5 MWh		2,23	2,5451
3.2 C < 50 MWh		5,11	1,9380
3.3 C < 100 MWh		47,91	1,3818
3.4 C < 30.000 MWh		71,53	1,1075
3.5 C >30.000.000 MWh	5,2344		0,1356
International interconexion	1,7720		0,0380

(1) Annual consumption

2.1.7 PREVIOUS REMARKS TO HARMONIZATION TARIFFS

According to the best practices regulation principles, gas access tariffs should be established guaranteeing sufficient, efficient and transparent cost allocation. Therefore, access tariffs must integrate all access cost components in an additive way, avoiding cross subsidies among consumers and activities.

Currently, third party access gas tariffs in Spain follow the same structure of the regulated activities, since each infrastructure service cost has its own specific tariff, bearing nevertheless, some problems. It is worthy mention that in the first years of the market liberalization (2002-2003), there was a correspondence between cost and revenues for the different tariffs. However, in the following years, annual tariffs modifications applied among different services have been the same, although the evolution of each activity retribution level, related to the investments made, has been heterogeneous.

Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC, establish in relation with the tariffs that the NRA have the obligation, among others, to establish or approve, according to transparent criteria, transmission and distribution tariffs, or its methodologies, avoiding discrimination and cross subsidies among transmission, distribution, storage, LNG and supply activities.

In Spain, the Directive has not yet been transposed. The role of the CNE is limited to report or inform the legislative proposal of the Ministry of Industry, Energy and Trade.

Access tariffs in the interconnection are part of the global methodology for establishing access tariffs, in accordance with the general principles contained in the Directive 2009/73/EC and in Regulation (EC) Nº 715/2009. Thus, the CNE considers that, previously to the harmonization of cross border tariffs, a general access tariff methodology must be established, in order to guarantee the recovery all the regulatory costs.

Additionally, it is compulsory for the development of the market, the harmonisation of other elements that influence shipper's decisions. In particular, it is essential to harmonise several aspects related with the coordinated allocation of capacity and congestion management and other aspects linked with balancing (such as the flexibility given to the shippers using each system infrastructure, the availability of information on the balancing, the balancing penalties design that must be cost reflective, the responsibility of shippers and TSOs/GTS on the balancing and the role of the market)

2.2 ANALYSIS OF THE NATURAL GAS SYSTEM IN PORTUGAL

2.2.1 PORTUGUESE GAS MARKET IN 2010

The gas demand in 2010 was 57,8 TWh and the imports to the Portuguese system reached a total amount of 58,3 TWh.

Portuguese gas market depends fully on its imports, with 44,8% and 55,2% coming from the Spanish interconnections and Sines LNG terminal, respectively. 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 Portuguese gas market distinguishes three main segments:

- Electric market, which includes the supplies of gas to the power generators namely: 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) traders, including household and small commercial consumers. Since July 2010, following a governmental decree, the regulated supply to medium commercial and industrial end-users has ended[2].
- Consumers supplied on the free market, mainly the large industrial consumers (even though all consumers are eligible).

Table 2-7 - Portuguese natural gas market

	2010 [TWh]	**2009** [TWh]	Variation 2010-2009 [%]	Demand structure 2010 [%]
Electric power market	22,3	21,9	2	39
Large industrial consumers	26,0	19,9	31	45
Domestic, small and medium commercial consumers	9,5	8,8	8	16
TOTAL demand	57,8	50,6	14	100

Source: REN Gasodutos

2.2.2 PORTUGUESE GAS SYSTEM

The infrastructures included in the Portuguese gas system are the following:

- The National Natural Gas Transmission Network (RNTGN), with a total length of 1 296 kilometres. The transmission network has two interconnections with Spain, the main one at Campo Maior, in the east of Portugal, and another in the north, which plays a minor role in the supply of the

[2] A transitory regulated end-user tariff stills 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.

Portuguese system. The transmission network covers the Portuguese coastal area from Sines to the northern border and the central/interior of the national territory.

- Sines LNG terminal on the southern Atlantic coast.
- The underground storage of Carriço, near Leiria, composed of 4 salt cavities.
- Liquefied Natural Gas Satellite Plants, supplying part of the territory not covered by the transmission network.
- The National Natural Gas Distribution Grid (RNDGN), including medium and low pressure grids with a total length of 10 675 km[3].

The following picture represents the major infrastructures of the Portuguese gas system, namely the transmission network, the underground storage facility of Carriço and Sines LNG terminal.

[3] Network length in 2007 at working pressure under 20 bar (*Caracterização do sector do gás natural em Portugal*, ERSE, 2007).

Figure 2-3 - Map of the Portuguese Natural Gas System

Source: REN Gasodutos

The major investments for the Portuguese system are proposed by REN Gasodutos[4] and include the expansion of the transmission network, new LNG terminals and/or underground storage facilities and

[4] REN Gasodutos plays the role of transmission system operator, underground storage operator and LNG terminal operator and is fully unbundled (in legal and ownership terms) from any supply activities.

capacity reinforcement of the existing infrastructure. The plan should include the DSO's contributions, be harmonized with the Spanish TSO and should take into consideration the European Development Plan for gas. REN Gasodutos shall propose a Ten Year Investment Plan (TYIP), with a national basis, subjected to revisions every two years. The plan should be subjected to a public consultation and, subsequently, be assessed by ERSE. The government is responsible for the approval of the national TYIP.

2.2.3 THIRD PARTY ACCESS

The access to the National Natural Gas Transmission Network (RNTGN) is regulated based on transparent and non-discriminatory principles, according to the Directive no. 2009/73/EC of the European Parliament and Council, of the 13 July 2009, which established common rules for the single natural gas market and to the Regulation no. 715/2009/EC of the European Parliament and Council, of the 13 July 2009, on conditions for access to the natural gas transmission networks.

The regulatory framework approved in 2006 includes a mechanism for allocating available capacity and foresees the possible occurrence of congestions, defining the principles to be adopted in such situations. To avoid contractual congestions the allocation of capacity at the transmission network results from previous processes of scheduling, instead of reserved capacity rights established in access contracts (contracted capacity).

Scheduling involves processes of periodical information whereby market players (traders) inform the transmission system operators (TSO's) of the capacity they need to use over a given period of time. The regulatory framework currently in force 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.

Whenever the overall capacity demand, in a nomination or scheduling process, seems to be excessive comparing to the historical data, the TSO should explicitly apply a capacity goes with customer procedure for the domestic demand. Checking mechanisms have been linked to the scheduling and assignment processes with a view to verify the global feasibility of all scheduling requests made by the market players. Infrastructure operators, together with the TSO who co-ordinates the activity of global technical management of the national natural gas system[5], allocate the scheduled and nominated capacities after

[5] The national natural gas system includes the transmission system, the LNG import terminal and the natural gas underground storage facilities.

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 described below shall be triggered.

The capacity allocated in an OSP is firm. Nevertheless, in every OSP, except for the annual one, market agents must always confirm their previous requests (schedules) or else they are subjected to an implicit short term use-it-or-lose-it procedure.

The congestion management mechanism is triggered whenever the scheduling and nomination requests of market players are not globally feasible. In these circumstances identification is made of the points of the natural gas system where congestions are predictable 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.

2.2.4 BALANCING

In the Portuguese system there is a single balancing area, including the transmission network, Sines LNG terminal and Carriço underground storage facility. Nevertheless, the operators and the technical system manager perform individual balancing procedures for each infrastructure.

The balancing period is daily and there are tolerances applied for imbalances in the transmission network. These tolerances are applied proportionately to the results of the yearly OSP, concerning the exit points of the transmission network (excluding the underground storage facility).

Whenever the market agents are outside their tolerance window in the transmission network they are subjected to imbalance charges. These imbalance charges distinguish two situations, namely:

1. if a market agent is in an imbalance position in the transmission network, but has gas on the system (LNG terminal and/or underground storage facilities);
2. or, if a market agent does not have gas in the system.

In the first situation the imbalance charge is based on the LNG terminal tariff as follows:

- If the market agent has excess of gas in the transmission network with an imbalance position (ip) inferior to 20% of his daily tolerance, the penalty is 1.3 x LNG Tariff x ip;
- If the market agent has excess of gas in the transmission network with an imbalance position (ip) greater than 20% and inferior to 50% of his daily tolerance, the penalty is 1.5 x LNG Tariff x ip;
- If the market agent has excess of gas in the transmission network with an imbalance position (ip) greater than 50% of his daily tolerance, the penalty is 10 x LNG Tariff x ip;

- If the market agent has lack of gas in the transmission network, the penalty is 1,1 x LNG Tariff x ip;

In the second situation the imbalance charge is based on the market price in the Henry Hub and in the National Balancing Point (NBP), more precisely the gas price of the 7 preceding days. In this situation, a market agent must pay, each day, for his imbalance position 30% of the reference price stated above, without prejudice of restoring the imbalance position.

2.2.5 COSTS RECOVERED BY THIRD-PARTY ACCESS TARIFFS IN PORTUGAL

The access tariffs in Portugal applicable to end-users are additive, resulting from the sum of 3 activity tariffs, calculated separately: tariff for the global use of the system, tariff for the use of the distribution network and tariff for the use of the transmission network. Each of these activities is regulated independently.

With respect to the transmission tariff, only the exit prices are included in the access tariff to end-users. The entry prices for the transmission tariff are charged directly to shippers. Shippers also pay directly the tariffs for the LNG terminal and for underground storage.

The tariff for the global use of the system (UGS) recovers the costs of system operation (by the TSO), including the costs of the platform for supplier switching, and costs derived from other general purpose activities (like the regulatory authority). In the UGS tariff are also included costs for recovering past tariff deviations, derived from disruptive market occurrences (like the gradual extinction of the regulated end-user tariff).

The distribution network tariff is uniform in the country although there are several distribution network operators. There is a compensation mechanism which levels the tariff prices for every consumer, independently of which distribution network he is connected to.

The following table shows the regulated costs allowed for the gas year 2011-2012.

Table 2-8 - Allowed revenues for regulated activities included in the access tariffs for the gas year 2010-2011 in Portugal

Regulated activities	Allowed revenues 2010-2011 (4) [10^3 €]	Energy associated with the activity (4) [GWh]		Average cost 2010-2011 (4) [€/MWh]
LNG Regasification terminal	35 045	38 027	(1)	0,9
Underground storage	20 722	1 958	(2)	10,6
Transmission network	107 708	61 083	(3)	1,8
Distribution network	234 403	23 230	(3)	10,1
Other costs (Global System Use)	63 968			
System operation and other costs (inc. ERSE)	20 479	61 083	(3)	0,3
Cost recovery related to previous years (5)	43 489	33 867	(3)	1,3

(1) Energy received at the terminal
(2) Average stored energy (daily)
(3) End-user consumption (redrawals from the network)
(4) Forecasted values for the gas year 2010-2011
(5) These cost recovery is associated with industrial and residential consumers (excludes CCGTs)

Source: Proveitos permitidos do ano gás 2010-2011 das empresas reguladas do sector do gás natural, ERSE, 2010; Caracterização da procura de gás natural no ano gás 2010-2011, ERSE, 2010

2.2.6 ACCESS TARIFF SYSTEM IN PORTUGAL

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.

Then, 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 tariff prices are published, along with the supporting data and justifications.

The access tariffs include:

- LNG terminal usage tariff
- Underground storage usage tariff
- Transmission network usage tariff
- Distribution network usage tariff
- Global use of the system tariff

The methodologies for tariff calculation and allowed revenue determination are published in the Natural Gas Tariff Code which, in turn, follows the principals determined by the gas sector law[6], namely:

- Equal treatment and opportunities;
- Tariff homogeneity such that the tariff system applies universally to all consumers;
- Transparency in tariff determination;
- Absence of cross subsidies between activities and between consumers, through the matching of tariffs with costs and the adoption of additive tariffs;
- Transmission of adequate economic signals for an efficient use of the networks and infrastructures;
- Consumer protection regarding tariff evolution, allowing simultaneously for the economic and finance sanity of regulated activities, on the grounds of efficient management conditions;
- Promotion through incentives of the efficient performance of regulated activities;
- Promotion of energy efficiency and environment protection.

In this framework, each regulated activity has legal[7] 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 applicable.

LNG terminal tariff, underground storage tariff and entry prices of the transmission network tariff are charged directly to network users (shippers). The exit prices of the transmission network tariff, the global use of the system tariff and the distribution network tariff are charged to final consumers[8].

Next, each activity tariff is described in detail.

2.2.6.1 LNG TERMINAL TARIFF

The tariff for the use of the LNG terminal is composed of 3 parts (corresponding to 3 different functions): unloading of LNG, LNG storage and LNG regasification and emission to the transmission network.

These 3 services are charged to each user accordingly with its use of the infrastructure.

The tariff prices for these services are calculated so that, in line with the forecasted demand, the allowed revenues are met within the gas year and are based on the incremental cost structure.

[6] Decreto-Lei n.º 77/2011, of June, 20th.

[7] This is not the case with the transmission network management and system operation activities where accounting unbundling is applied.

[8] Nevertheless, the TPA tariff is charged to the supplier of each consumer, in his behalf.

TARIFF FOR THE SERVICE OF LNG UNLOADING AT THE SEA PORT

The tariff for LNG unloading has one energy price (commodity charge), in €/MWh.

TARIFF FOR THE SERVICE OF LNG STORAGE

The tariff for LNG storage is applied through a daily price of stored energy, in €/MWh/day.

TARIFF FOR THE SERVICE OF LNG REGASIFICATION AND EMISSION TO THE TRANSMISSION SYSTEM

The tariff for LNG regasification has 3 different prices:

- Used regasification capacity, through a monthly price applied to the maximum daily gas emission during a 12 month window, in €/(MWh/day).
- Commodity charge, in €/MWh
- LNG truck loading price, in €/loading operation.

In order to promote a flexible use of the terminal (short duration users), an alternative tariff option exists where the capacity price is charged through an aggravated commodity charge.

The prices for the tariff for the use of the LNG terminal are showed in the next table.

Table 2-9 - LNG terminal tariff prices applicable during the gas year 2010-2011 in Portugal

		LNG terminal tariff for the gas year 2010-2011 (regular option)			
Services	Prices	Used capacity €/(kWh/day)/month	Stored energy €/kWh/day	Processed energy €/kWh/day	LNG Truck loading €/loading operation
LNG ship unloading				0,00016535	
LNG storage			0,00003068		
Gas emission	to the grid	0,006453		0,00015292	
	to truck transport				127,43

		LNG terminal tariff for the gas year 2010-2011 (short duration option)			
Services	Prices	Used capacity €/(kWh/day)/month	Stored energy €/kWh/day	Processed energy €/kWh/day	LNG Truck loading €/loading operation
LNG ship unloading				0,00016535	
LNG storage			0,00003068		
Gas emission	to the grid	-		0,00153580	
	to truck transport				

Source: Despacho nr. 10 423/2010, of June, 22nd

2.2.6.2 UNDERGROUND GAS STORAGE TARIFF

The tariff for the use of the underground storage has 3 prices, corresponding to 3 different services: gas injection, gas emission to the transmission network and gas storage in salt cavities. Although there are salt cavities of different owners at the same site (Carriço), they share the surface infrastructures and the tariff price is the same.

The tariff prices for these services are calculated so that, in line with the forecasted demand, the allowed revenues are met within the gas year and are based on the incremental cost structure.

Losses and operational consumptions are charged to the underground storage users through deductions to their gas existences.

The gas injection and emission (off-take) tariff prices are commodity charges, in €/MWh.

The gas storage price is a daily price, in €/MWh/day.

Table 2-10 - Underground storage tariff prices applicable during the gas year 2010-2011 in Portugal

Underground storage tariff for the gas year 2010-2011		
Prices Services	Energy €/kWh	Stored energy €/kWh/day
Injection into storage	0,00020619	
Redrawal to the grid	0,00020619	
Storage		0,00002899

Source: Despacho nr. 10 423/2010, of June, 22nd

2.2.6.3 TRANSMISSION ACCESS TARIFF

The Portuguese tariff system is additive, meaning that each regulated activity of the gas sector has a separate corresponding tariff (activity tariff) and that each market player pays a bundled access tariff (third-party access tariff, TPA) given by the sum of each tariff price for every activity used by the market player.

Hence, the use of the transmission network (high pressure gas network, above 20 Bar) is charged through a specific Use of the Transmission Network Tariff (URT tariff). The URT tariff is charged to gas

flows through the transmission network and is applied in each entry and exit point of the national transmission network[9]. The transmission network tariff is a fully decoupled Entry/Exit tariff system.

THE USE OF THE TRANSMISSION NETWORK TARIFF

In each entry point of the transmission network the entry prices of the URT tariff are applied to gas nominations of each market agent (shippers, suppliers, large customers …). The entry prices of the URT tariff may differ from one entry point to another.

In each exit point of the transmission network the exit prices of the URT tariff are applied to gas nominations (either to final customers in the transmission network or to distribution network operators). Again, the exit prices of the URT tariff may differ from one exit point to another.

In the case of final customers connected to the transmission network (in high pressure) the exit prices of URT tariff are included in the access tariff charged by the network operator[10].

In each exit point from the transmission network to the distribution network, exit prices of the URT tariff are charged to distribution network operators. These distribution network operators charge the access tariffs to every customer connected to the medium and low pressure networks. The access tariff includes the cost of using the exit points of the transmission network.

Third-party access tariffs are charged to the customers or to their supplier (on their behalf) and include the Use of the System tariff, the Use of the Transmission Network tariff and the Use of the Distribution Network tariff (the latter only applies to customers connected to the distribution network).

The entry URT tariff is charged to market players directly by the transmission network operator, according to their daily gas nominations for each entry point of the network. In exit points of the network to interconnections and LNG terminals[11] the exit URT tariff is also charged to users directly by the transmission network operator, according to gas nominations.

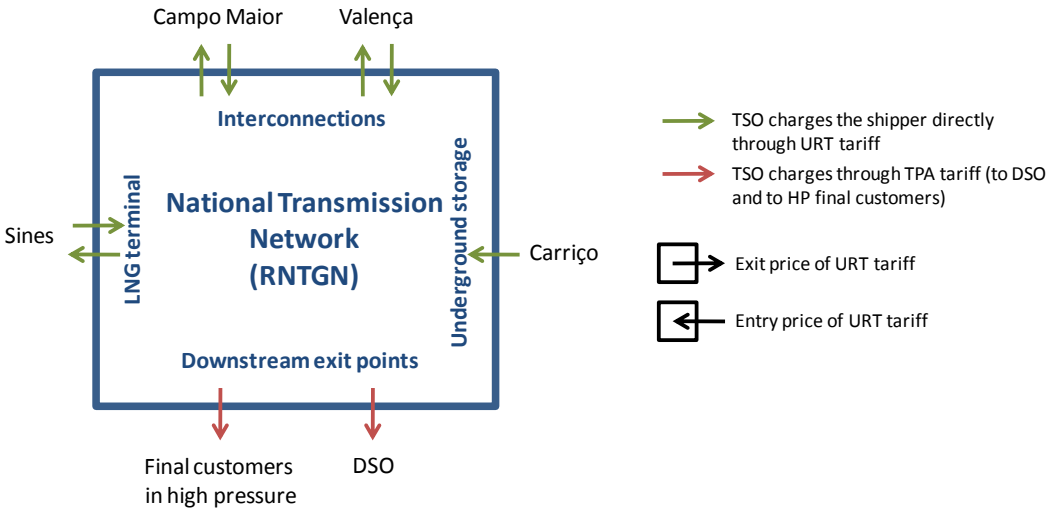
The gas delivery to final customers the URT tariff is charged through the bundled access tariff to final customers (or to their supplier, in their behalf) by the operator of the network where the customer is connected to, according to their measured consumption.

[9] The national gas transmission network includes the high pressure gas pipelines (working pressure above 20 bar) and it is owned and managed by the transmission network operator (REN Gasodutos S.A.).

[10] In addition to the URT tariff, the high pressure access tariff includes the Use of the System tariff (UGS tariff).

[11] An exit point of the transmission network to an LNG terminal is actually a virtual exit point (where gas nominations are possible under some commercial pre-conditions).

Figure 2-4 - Illustration of the application of use of gas transmission network tariff



The following components compose the Use of the Transmission Network tariff, which is charged monthly:

- Used capacity prices charged in each entry point, applied to the maximum daily energy nominated by the market player for each entry point, in the last 12 months, in €/(kWh/day)/month.
- Used capacity prices charged in each exit point, applied to the maximum daily energy nominated by the market player for each exit point, in the last 12 months, in €/(kWh/day)/month.
- Off-peak energy prices charged in each exit point, in €/kWh.
- Peak energy prices charged in each exit point, in €/kWh.

ENTRY-EXIT TARIFF CALCULATION METHODOLOGY AND THE CORRESPONDING TARIFF PRICES

In Portugal there is one balancing zone and the Portuguese transmission system has 4 entry points (two IPs with Spain, one LNG terminal and one underground storage facility) and several exit points to power plants, high pressure clients, distribution networks. The international connections with Spain and the LNG terminal are considered as entry and exit points.

The transmission tariff applies the same way to cross border and domestic flows and is charged at each entry and exit point of the national transmission network. Gas transmission tariffs are determined on the basis of the costs specific to the entry points and to the 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 (indentifying entry points, exit points and pipeline segments' 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 optimization problem.

Prices at the entry points are equal to these incremental costs, where 26% of the transmission costs are recovered. The remaining 74% are recovered at exit points, which prices are based on long run average incremental costs. After the calculation of entry and exit prices, 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.

The following table presents the entry URT tariff prices, for each of the 4 entry points of the transmission network. As it is apparent, prices can be different at each entry point.

Table 2-11 - Use of the transmission network tariff prices for entry points

USE OF THE TRANSMISSION NETWORK (entry points)	
International interconnections (Campo Maior)	
Used capacity in entry points EUR/(kWh/day)/month	0,008580
International interconnections (Valença)	
Used capacity in entry points EUR/(kWh/day)/month	0,008580
LNG terminal (Sines)	
Used capacity in entry points EUR/(kWh/day)/month	0,008580
Underground storage (Carriço)	
Used capacity in entry points EUR/(kWh/day)/month	0,000241

Note: Use of the Transmission Network tariff prices between July 2010 and June 2011.

The following table presents the exit URT tariff prices, according to the type of exit point of the transmission network.

Table 2-12 - Use of the transmission network tariff prices for exit points, included in TPA tariff (in the case of end-users)

USE OF THE TRANSMISSION NETWORK (exit points)	
International interconnections (Campo Maior)	
Used capacity in exit points EUR/(kWh/day)/month	0,009520
Peak energy (EUR/kWh)	0,00022493
Off-peak energy (EUR/kWh)	0,00001495
International interconnections (Valença)	
Used capacity in exit points EUR/(kWh/day)/month	0,009520
Peak energy (EUR/kWh)	0,00022493
Off-peak energy (EUR/kWh)	0,00001495
LNG terminal (Sines)	
Used capacity in exit points EUR/(kWh/day)/month	0,000000
Peak energy (EUR/kWh)	0,00000000
Off-peak energy (EUR/kWh)	0,00000000
Delivery points to end-users connected to the high pressure network	
Used capacity in exit points EUR/(kWh/day)/month	0,018377
Peak energy (EUR/kWh)	0,00022493
Off-peak energy (EUR/kWh)	0,00001495
Delivery points to the distribution networks	
Used capacity in exit points EUR/(kWh/day)/month	0,018377
Peak energy (EUR/kWh)	0,00022493
Off-peak energy (EUR/kWh)	0,00001495

Note: Use of the Transmission Network tariff prices between July 2010 and June 2011.

With the goal of achieving more tariff flexibility, and enabling the access to the gas system of market players with time concentrated uses, the URT tariff includes two extra tariff options: (i) short duration URT tariff and (ii) Low-load-factor URT tariff[12].

In the short duration URT tariff option, the used capacity price is totally converted to an energy price, applied to the flows in the transmission network, resulting in energy prices (commodity prices) higher than the basic tariff option.

[12] Applied to customers whose consumption has a very low load factor.

The following table presents the short duration URT tariff option prices, for each entry point.

Table 2-13 - Short duration entry transmission network tariff prices for each entry point

USE OF THE TRANSMISSION NETWORK - SHORT DURATION TARIFF (entry points)	
International interconnections (Campo Maior)	
Peak energy (EUR/kWh)	0,00257415
International interconnections (Valença)	
Peak energy (EUR/kWh)	0,00257415
LNG terminal (Sines)	
Peak energy (EUR/kWh)	0,00257415
Underground storage (Carriço)	
Peak energy (EUR/kWh)	0,00007222

Note: Use of the Transmission Network tariff prices between July 2010 and June 2011.

The following table presents the short duration URT tariff option prices, in exit points to interconnections and LNG terminal.

Table 2-14 - Short duration exit transmission network tariff prices for each exit point

USE OF THE TRANSMISSION NETWORK - SHORT DURATION TARIFF (exit points)	
International interconnections (Campo Maior)	
Peak energy (EUR/kWh)	0,00308086
Off-peak energy (EUR/kWh)	0,00001495
International interconnections (Valença)	
Peak energy (EUR/kWh)	0,00308086
Off-peak energy (EUR/kWh)	0,00001495
LNG terminal (Sines)	
Peak energy (EUR/kWh)	0,00000000
Off-peak energy (EUR/kWh)	0,00000000

Note: Use of the Transmission Network tariff prices between July 2010 and June 2011.

In the Low-load-factor URT tariff option, the used capacity price is partially converted to an energy price, applied to the flows in the transmission network.

The following table presents the Low-load-factor exit URT tariff option prices, for final customers connected to the transmission network.

Table 2-15 - Low-load-factor exit transmission network tariff prices for final customers connected to the transmission network, included in TPA tariff

USE OF THE TRANSMISSION NETWORK - LOW-LOAD-FACTOR TARIFF (exit points)	
Delivery points to end-users connected to the high pressure network	
Used capacity in exit points EUR/(kWh/day)/month	0,003675
Peak energy (EUR/kWh)	0,00310399
Off-peak energy (EUR/kWh)	0,00001495

Note: Use of the Transmission Network tariff prices between July 2010 and June 2011.

2.2.6.4 TPA EXIT TARIFFS

As described, the Access tariffs are charged to final customers according to their consumption measured at the consumption point.

Besides the Use of the Transmission Network tariff (the exit component), the access tariff includes the Use of the System tariff and the Use of the Distribution Network tariffs (in the case of customers connected to Medium Pressure and Low Pressure distribution networks).

The access tariffs have different price structure according to the size or pressure level of the supply. Above an yearly consumption of 100 000 m^3 (n) consumers have remote daily metering and the access tariff has 4 different prices: i) used capacity (in €/(kWh/day)/month), corresponding to the maximum metered daily consumption in a 12 month window; fixed term (in €/month); off-valley energy (in €/kWh), referring to consumption occurred between September and July; valley energy (in €/kWh), referring to consumption occurred during August. The prices vary with the pressure level and with the yearly consumption.

For smaller consumers, the access tariff price structure comprises only a fixed monthly term and an energy price, which vary with the yearly consumption.

In the tables below, the access tariff prices valid in Portugal for the gas year 2010-2011 are presented.

For high pressure network customers the access tariffs depend on whether they are electricity generators (ordinary regime generators) or not. The difference lies on the global use of the system tariff component. For industrial customers connected to the transmission, this tariff component includes cost recovery from

deviations in regulated supply activity in past years. The CCGT generators have never been covered by last resort regulated supply hence this cost (or surplus) does not apply to these customers.[13]

Table 2-16 - Access tariff prices to consumers connected to the transmission network in Portugal for the gas year 2010-2011

ACCESS TARIFFS FOR THE HIGH PRESSURE NETWORK			
Tariff Option	**Energy**		**Used Capacity**
	Off- valley	**Valley**	
	(€/kWh)	**(€/kWh)**	**(€/(kWh/day)/month)**
Daily	0,001805	0,001595	0,018377
Low-Load-Factor tariff	0,004684	0,001595	0,003675

ACCESS TARIFFS FOR THE HP NETWORK TO DELIVERIES TO ELECTRICITY GENERATORS			
Tariff Option	**Energy**		**Used Capacity**
	Off- valley	**Valley**	
	(€/kWh)	**(€/kWh)**	**(€/(kWh/day)/month)**
Daily	0,000555	0,000345	0,018377
Low-Load-Factor tariff	0,003434	0,000345	0,003675

Table 2-17 - Access tariff prices to consumers connected to the distribution network in Portugal for the gas year 2010-2011

ACCESS TARIFF FOR THE MEDIUM PRESSURE NETWORK					
Tariff Option	**(m^3/year)**	**Fixed tariff term**	**Energy**		**Used Capacity**
			Off-valley	**Valley**	
		(€/month)	**(€/kWh)**	**(€/kWh)**	**(€/(kWh/day)/month)**
Daily		333,00	0,003881	0,003289	0,044936
Low-Load-Factor tariff		333,00	0,009282	0,003289	0,008987
Monthly	10 000 - 100 000	374,76	0,011071	0,010479	
	≥ 100.001	464,55	0,006757	0,006165	

ACCESS TARIFF FOR THE LOW PRESSURE NETWORK > 10.000 m3 PER YEAR					
Tariff Option	**(m^3/year)**	**Fixed tariff term**	**Energy**		**Used Capacity**
			Off-valley	**Valley**	
		(€/month)	**(€/kWh)**	**(€/kWh)**	**(€/(kWh/day)/month)**
Daily		110,51	0,010762	0,003383	0,047639
Monthly	10 000 - 100 000	154,78	0,018384	0,011005	
	≥ 100.001	344,52	0,013430	0,006051	

[13] This tariff rule has been discussed publically by ERSE in the revision process of the Tariff Code, in 2009. The regulator's proposal to recover past years' deficits or surpluses of the regulated supply activity through the access tariffs was designed to allow an equal cost base for regulated last resort suppliers and market suppliers and to avoid market distortion because of this.

ACCESS TARIFF FOR THE LOW PRESSURE NETWORK < 10.000 m3 PER YEAR

Yearly consumption	(m^3/year)	Fixed tariff term	Energy
		(€/month)	(€/kWh)
Band 1	0 - 220	0,22	0,036687
Band 2	221 - 500	0,79	0,033696
Band 3	501 - 1 000	2,24	0,030256
Band 4	1 001 - 10 000	2,82	0,029608

Note: Access tariff prices between July 2010 and June 2011.

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3 ANALYSIS ON THE IMPACT OF CROSS-BORDER TRANSMISSION TARIFFS DEPENDING ON THE POINT OF ENTRY/EXIT AND CONSUMER TYPES

This section analyses cross-border transmission tariffs between Spain and Portugal, using two consumer types as case studies in order to evaluate the impact that these tariffs have on suppliers' costs. In particular, the focus is on the analysis of the cost difference observed between suppliers that use the interconnections between Spain and Portugal to supply its customers and the ones that do not.

Before making the decision to enter the market, a supplier will take into account the cost for the use of interconnections and also any other variable that may have an impact in its activity, such as balancing rules (system flexibility and imbalances' costs) or the country's regulatory/tariff framework. Suppliers also refer to the availability of capacity in the interconnections as a major obstacle to enter the Portuguese market.

With the goal of getting a broader perspective on the suppliers' and consumers costs and taking into account the differences existing in the transmission tariffs in Spain and Portugal (see chapter 2), the analysis includes the regasification and transmission tariffs.

A methodology based on case studies has been used. This option does not allow for a thorough description of the situation but it is sufficient to identify the relevant issues starting from some of the most significant examples.

3.1 CASE STUDIES' IDENTIFICATION

The methodology used in this analysis consists of comparing access tariff costs borne by consumers when their supplier procures gas directly in the country where the consumer is or in the neighbouring country. Two different consumer types were considered: CCGTs and industrial consumers. For each case study the consumption profile of the consumer and the deemed aggregate consumption profile of the supplier's portfolio were described.

Case studies also considered, as an option, the procurement of gas at an LNG facility thus incurring in regasification costs as well.

Hence, each consumer sees different transmission access tariff costs depending on the country his supplier is bringing the gas from.

The case studies are presented below:

Table 3-1 - Description of the case studies

			Origin			
			Spain		Portugal	
			W/o regasification	With regasification	W/o regasification	With regasification
Destiny	Spain	Industrial	Case 1	Case 2	Case 3	Case 4
		CCGT	Case 5	Case 6	Case 7	Case 8
	Portugal	Industrial	Case 9	Case 10	Case 11	Case 12
		CCGT	Case 13	Case 14	Case 15	Case 16

3.2 ACCESS TARIFF PAYMENTS

This section describes the regulated tariffs associated to the use of gas infrastructures considered in each case study.

The tariffs applicable in January, 2011, were used in the case studies, either for Spain[14] or Portugal[15].

PORTUGAL TO PORTUGAL CASE STUDIES

When the consumer is located in Portugal and the point of origin is also in Portugal:

a) If regasification costs are not considered, then the access cost for the consumer includes:

- The entry price of the transmission tariff[16] in Portugal (according to the point of entry into the Portuguese transmission system)
- The exit price of the transmission tariff in Portugal, included in the additive access tariff.
- The tariff for Global Use of the System (applicable to every consumer, either CCGT or industrial), included in the additive access tariff.

[14] Orden ITC/3354/2010, of December 29th, published in the Boletín Oficial del Estado n.º 316.

[15] Despacho n.º 10423/2010, of June 22th, published in the Diário da República n.º 119, Série II.

[16] The transmission tariff in Portugal is called Use of the Transmission Network tariff (URT) and has entry and exit prices. The entry prices are charged directly to the shippers and also the exit prices for cross border flows. The exit prices to high pressure end-users are charged through the access tariffs which also include the use of the system tariff (and, if it is the case, the distribution network tariff).

b) If the supplier introduces the gas through a regasification plant, the access cost includes:

- All the previous tariffs[17].
- The ship unloading price
- The regasification price
- The LNG storage price

SPAIN TO SPAIN CASE STUDIES

When the consumer is located in Spain and the point of origin is also in Spain:

a) If regasification costs are not considered, then the access cost for the consumer includes:

- The cost of entry in the transmission system (capacity reservation charge)
- The cost of exit out of the transmission system to the consumer (which depends on its pressure and consumption level)

b) If the supplier introduces the gas through a regasification plant, the access cost includes:

- All the previous tariffs[18].
- The ship unloading toll
- The regasification toll
- The LNG storage fee

SPAIN TO PORTUGAL CASE STUDIES

When the consumer is located in Portugal and the point of origin is Spain:

a) If regasification costs are not considered the access cost includes:

- The cost of entry in the Spanish transmission system (reduced capacity reservation charge for the interconnection)

[17] Being the point of entry into the transmission system the LNG terminal at Sines.

[18] Being the point of entry into the transmission system the LNG terminal.

- The cost of exit out of the Spanish transmission system according to the interconnection point of exit[19] (reduced charge for interconnection).
- The entry price of the transmission tariff in Portugal (according to the interconnection point of entry into the Portuguese transmission system)
- The exit price of the transmission tariff in Portugal, included in the additive access tariff.
- The tariff for Global Use of the System (applicable to every consumer, either CCGT or industrial), included in the additive access tariff.

b) If the supplier introduces the gas through a regasification plant, the access cost includes:

- All the previous tariffs[20].
- The ship unloading toll
- The regasification toll
- The LNG storage fee

PORTUGAL TO SPAIN CASE STUDIES

When the consumer is located in Spain and the point of origin is Portugal:

a) If regasification costs are not considered, the access cost includes:

- The entry price of the transmission tariff in Portugal (according to the point of entry into the Portuguese transmission system)
- The exit price of the transmission tariff in Portugal (according to the interconnection point of exit from the Portuguese transmission system)
- The cost of entry in the Spanish transmission system (according to the interconnection point of entry into the Spanish transmission system)
- The exit cost is cost of the exit out of the transmission system to the consumer (which depends on its pressure and consumption level).

b) If the supplier introduces the gas through a regasification plant, the access cost includes:

- All the previous tariffs[21].

[19] The cross-border tariff has a 30% discount on the domestic entry tariffs and exit tariffs

[20] Being the point of entry into the Spanish transmission system the LNG terminal.

[21] Being the point of entry into the Portuguese transmission system the LNG terminal.

- The ship unloading toll
- The regasification toll
- The LNG storage fee

3.3 DESCRIPTION OF THE REFERENCE SUPPLIER AND THE CONSUMER TYPES

Two consumer types, a combined-cycle gas turbine (CCGT) and an industrial consumer, are analyzed for the purpose of the study, based on their relevance in both Spanish and Portuguese gas systems. In particular, as shown in the initial sections of this document, industrial consumers account for 47% and 45% of total electricity consumption in Spain and Portugal respectively, while the CCGTs amount to 35% and 39% of total consumption in Spain and Portugal respectively.

The main characteristics of the reference supplier and the consumer types are described in the tables below. The characteristics of the supplier's portfolio are relevant to determine costs for using large infrastructures like the LNG terminal or the transmission network at entry points. In these points, the economies of scale of a large supplier affect the average cost of access for its customers.

Table 3-2 - Reference supplier

Regasification	Level
Ship size (GWh)	900
Ship size (m3)	145 796
Number of ships per month	3
Load factor (%)	58%
Contracted capacity (kWh/día)	153 046 764
Regasification annual use (MWh)	32 400 000

LNG storage	Level
LNG stored energy (MWh/day)	765 234
Numer of days of LNG storage (days)	5

Transport	Level
Load factor (%)	58%

Table 3-3 - Consumer type: Industrial consumer

Industrial consumer	Level
Annual gas consumption [MWh]	500 000
Contracted Capacity (kWh/day)	2 634 352
Load factor (%)	52%
Average day consumption ratio: week-day / weekend	1,53
Grid supply pressure [Bar]	80

Table 3-4 - Consumer type: CCGTs

CCGT	Level
Electric power output [MW]	400
Efficiency	52%
Annual usage at maximum output level [h/year]	2890
Load Factor	33%
Annual gas consumption [MWh]	2 223 077
Contracted Capacity (kWh/day)	18 461 538
Average day consumption ratio: week-day / weekend	1,53
Grid supply pressure [Bar]	80

3.4 CASE STUDIES' RESULTS AND ANALYSIS

The main results are shown in the following tables.

In all case studies, third party access cost is higher when the transmission system of the neighbour country is used. This is expected since the supplier must pay for the use of the transmission system in both countries.

Apart from the commodity gas price, end-user price of gas will depend on the supplier using or not the cross border interconnections, on using or not a regasification plant and on the consumer's load factor.

The cross border transmission costs are the major source for differences between two different supply strategies: using or not the interconnection for bringing gas into the market. It is also observed that the

increase in access costs when a supplier introduces gas through a neighbour country is higher when flowing from Spain to Portugal.

Tariff structures and methodologies are different at each side of the border. Cost allocation and the methodology for tariff calculation are both clearly defined in Portugal.

This result may be explained due to different tariff structures and costs recovered by access tariffs in both countries. It is important to notice the fact that in Spain the cross border tariff accounts for 70% of the lowest access tariff paid by a Spanish consumer when the gas is introduced through Spain. In Portugal, the entry transmission tariff does not have any discount on transmission tariffs while the exit tariff through the interconnection point presents a discount of 42% of the exit transmission tariff applied to high pressure consumers[22].

RESULTS WITHOUT REGASIFICATION COSTS

Not considering LNG regasification costs, supplying an industrial consumer in Spain bringing gas from Portugal is 1,33 €/MWh (2,03 €/MWh for CCGTs) more expensive than supplying him with gas in Spain. Supplying an industrial consumer in Portugal bringing gas from Spain is 1,94 €/MWh (2,89 €/MWh for CCGTs) more expensive (Table 3-5).

The impact of these price differences in end-user prices depends on total cost. For instance, lower load factors concur to higher average network costs. The cost difference from using the interconnection can represent a lower percentage of the end-user total price if the consumer pays a higher average total cost.

As can be seen in Table 3-5, access tariff payments (regarding the delivery point from the transmission network to the user installation) have no interference with the cost difference between the two supplier strategies considered.

[22] Not including the global use of the system tariff.

Table 3-5 - Detail of total access tariffs (supplier plus consumer) for the case studies when regasification costs are not considered

CCGT Unit.: €/MWh

Origin	Destiny	International transmission network (origin)		Transmission network of destiny		TOTAL	differential
		Entry	Exit	Entry	Exit		
ES	ES			0,54	3,07	3,61	
PT	ES	0,49	1,13	0,95	3,07	5,64	2,03
PT	PT			0,49	2,34	2,83	
ES	PT	0,38	2,15	0,86	2,34	5,72	2,89

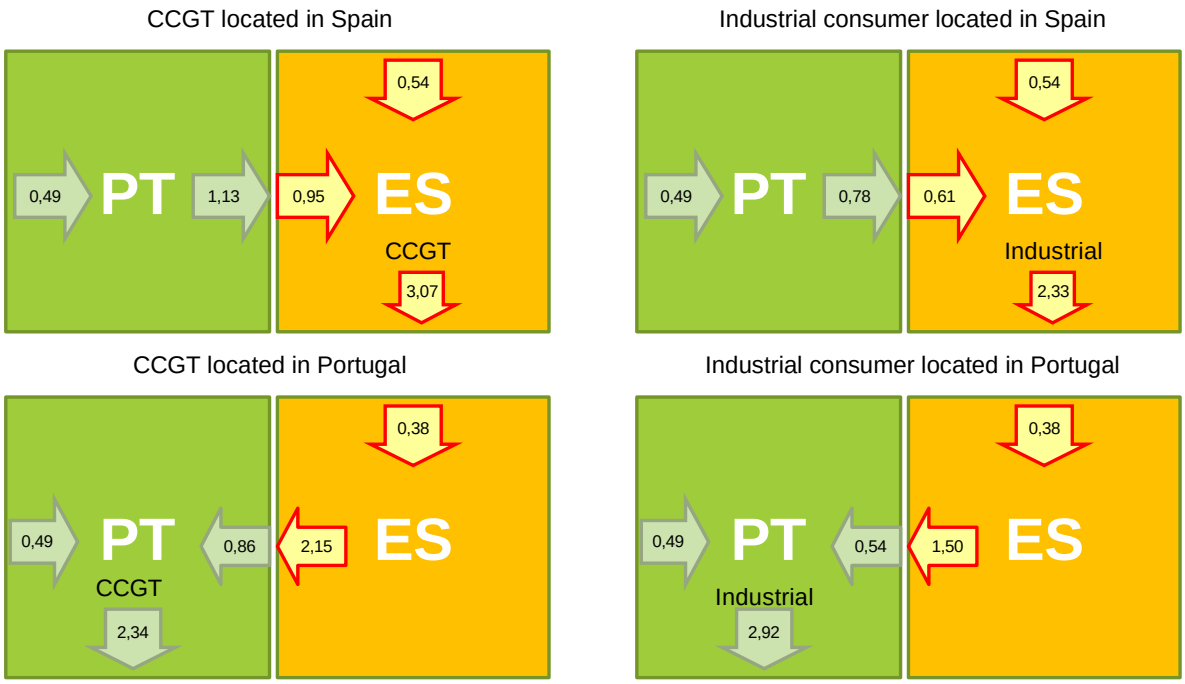
Industrial Unit.: €/MWh

Origin	Destiny	International transmission network (origin)		Transmission network of destiny		TOTAL	differential
		Entry	Exit	Entry	Exit		
ES	ES			0,54	2,33	2,87	
PT	ES	0,49	0,78	0,61	2,33	4,20	1,33
PT	PT			0,49	2,92	3,41	
ES	PT	0,38	1,50	0,54	2,92	5,35	1,94

Note: the consumer's profile is considered for the use of the interconnection

The next figure presents schematically the tariff payments incurred by suppliers and consumers for each of the 4 cases studied.

Figure 3-1 - Schematic view of the access tariff payments for the case studies when regasification costs are not considered



RESULTS WITH REGASIFICATION COST

If the supplier introduces the gas through a regasification plant, results can be analyzed considering the regasification costs in the country where the gas arrives to the Iberian market. Even though regasification costs are not the issue in the analysis of the cross border tariffs between Spain and Portugal, considering these costs gives a broader perspective on the impact of bringing gas to one country by using the interconnection.

Table 3-6 presents the results of the case studies considering the use of LNG terminals to supply the gas. The case studies consider the same hypothesis for the use of the transmission network than the previous cases and add the cost for the use of the LNG terminal. The supplier's portfolio was considered when computing the average cost of using the LNG terminal.

In the studied examples, LNG regasification has a higher average cost[23] in Spain which makes cost comparisons (between using the IP or not) a little different from the scenario without regasification costs.

Considering LNG regasification costs, supplying an industrial consumer in Spain bringing gas from Portugal is 0,91 €/MWh (1,61 €/MWh for CCGTs) more expensive than supplying him with gas in Spain. Supplying an industrial consumer in Portugal bringing gas from Spain is 2,36 €/MWh (3,31 €/MWh for CCGTs) more expensive (Table 3-6).

Notice that, as a result of introducing the regasification LNG tariff, the increase in access costs when the country of origin is the neighbour country is lower in Spain and higher in Portugal provided that regasification tariffs are lower in Portugal than in Spain. Because the supplier's portfolio was considered at the LNG terminal, there is no cost difference in regasification costs for industrial or CCGT case studies.

[23] Note that it is not the purpose of this study to compare overall regasification costs and no assumptions should be made on this subject based on the simple results of the case studies. The inclusion of LNG regasification costs in the case studies contributes to show a different picture when looking at costs of the supplier who has gas in the country of the consumer or the supplier who brings gas from the neighbouring country. It has been said that there may be other costs to be handled by suppliers that may contribute as well to different costs observed when gas is imported through the Portugal-Spain interconnection.

Table 3-6 - Detail of total access tariffs (supplier plus consumer) for the case studies when the gas is introduced through a regasification plant

CCGT Unit.: €/MWh

Origin	Destiny	Regasification Plant (origin)			International transmission network (origin)		Transmission network of destiny		TOTAL	differential
		Unloading	LNG storage	Regasification	Entry	Exit	Entry	Exit		
ES	ES	0,03	0,25	1,08			0,54	3,07	4,98	
PT	ES	0,17	0,26	0,52	0,49	1,13	0,95	3,07	6,59	1,61
PT	PT	0,17	0,26	0,52			0,49	2,34	3,78	
ES	PT	0,03	0,25	1,08	0,38	2,15	0,86	2,34	7,09	3,31

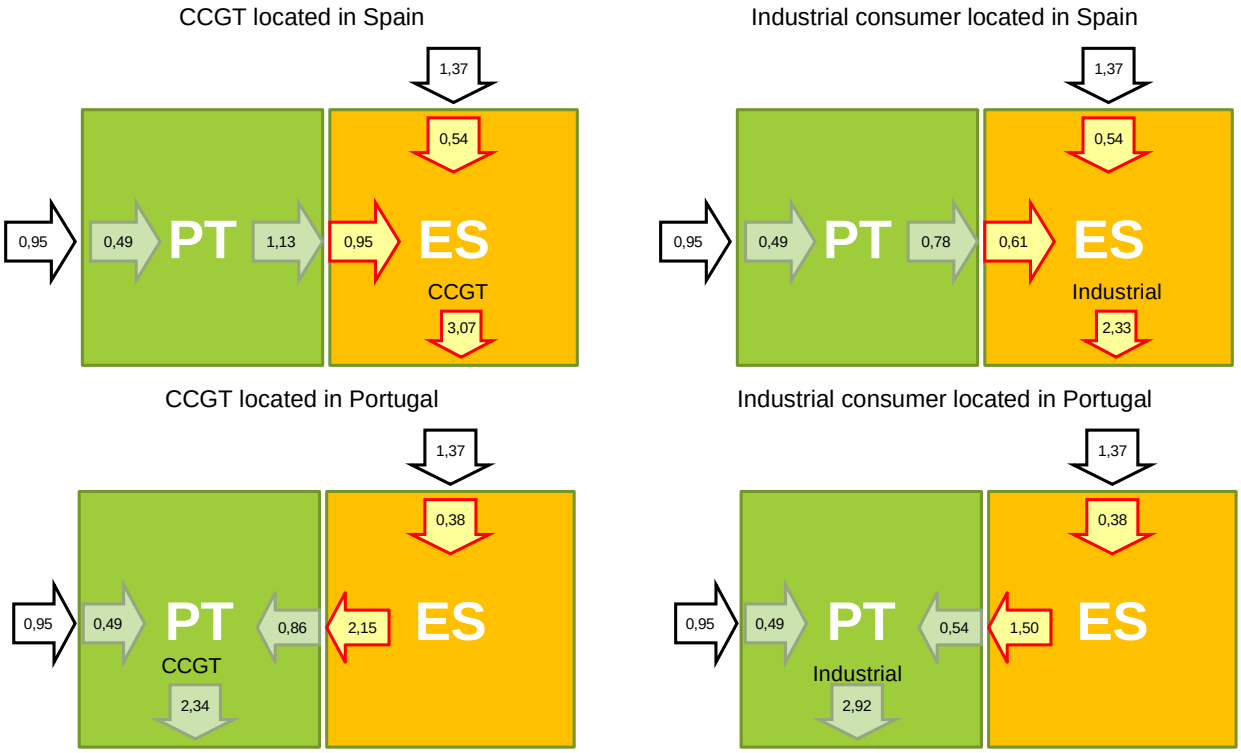
Industrial Unit.: €/MWh

Origin	Destiny	Regasification Plant (origin)			International transmission network (origin)		Transmission network of destiny		TOTAL	differential
		Unloading	LNG storage	Regasification	Entry	Exit	Entry	Exit		
ES	ES	0,03	0,25	1,08			0,54	2,33	4,24	
PT	ES	0,17	0,26	0,52	0,49	0,78	0,61	2,33	5,15	0,91
PT	PT	0,17	0,26	0,52			0,49	2,92	4,36	
ES	PT	0,03	0,25	1,08	0,38	1,50	0,54	2,92	6,71	2,36

Note: the consumer's profile is considered for the use of the interconnection

The next figure presents schematically the tariff payments incurred by suppliers and consumers for each of the 4 cases studied.

Figure 3-2 - Schematic view of the access tariff payments for the case studies when the gas is introduced through a regasification plant



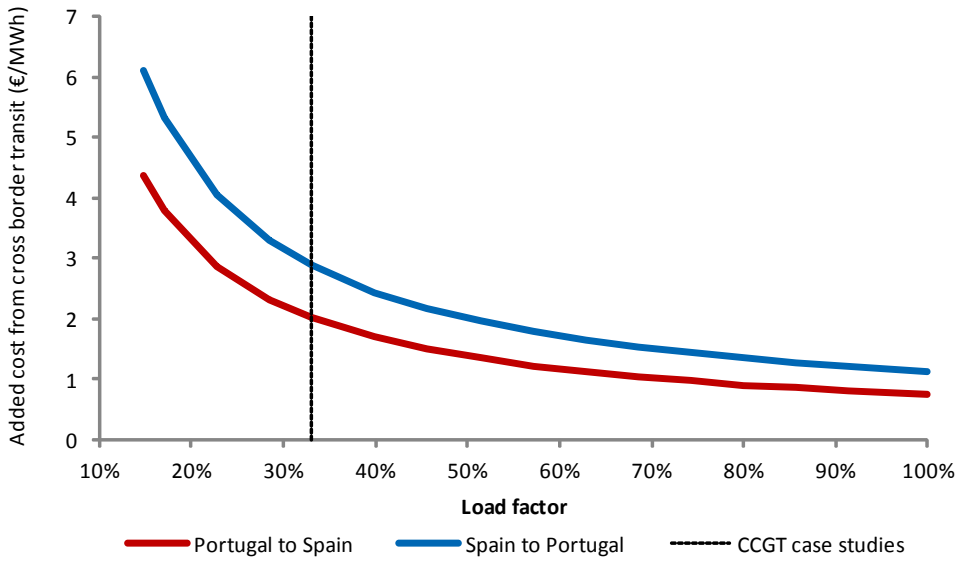
SENSITIVITY ANALYSIS WITH THE LOAD FACTOR

Payments for network tariffs depend greatly on the consumers' load factor, since capacity investments account for most of the costs. If one considers the consumer's profile in accessing the cost for cross border tariff payments, interconnection costs are higher the lower is the load factor of the consumer.

Since the consumer characteristics considered in the case studies were predetermined, a sensitivity analysis was made to this particular characteristic (load factor) and its implication in added transmission costs for supplying a consumer using the interconnection. The following figures show, for each consumer type, how the added transmission costs viewed by the supplier who uses the interconnection vary with consumers' load factor. The two series present the case a consumer located in Spain and Portugal. The vertical line marks the case studies' reference load factor.

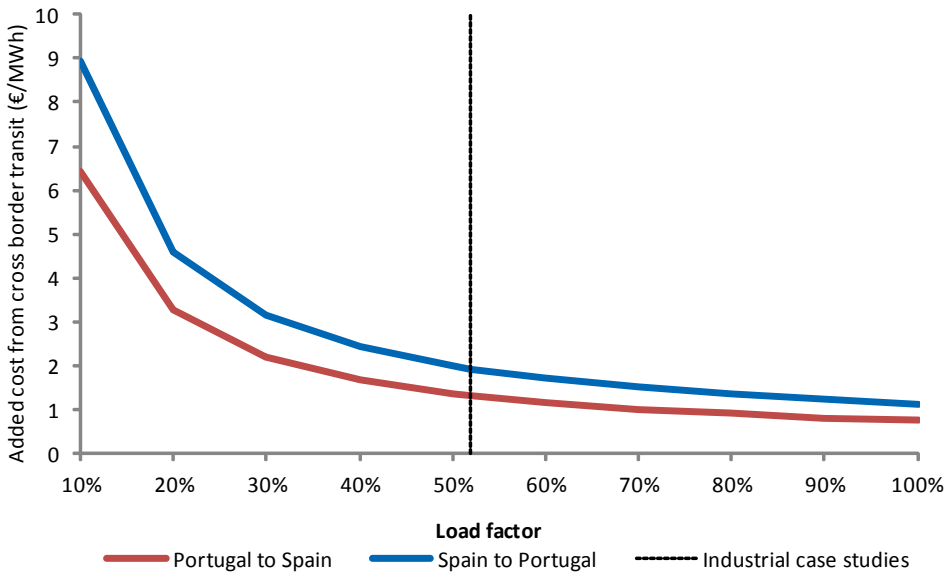
Notice that the absolute price differential is lower as high load factor consumers are considered. For instance, when the load factor is 50% and the point of entry of gas is the neighbouring country, the increase in total access tariff payments is approximately 1,38 €/MWh for an industrial consumer in Spain (1,35 €/MWh for a CCGT) and 2,0 €/MWh for an industrial consumer in Portugal (2,89 €/MWh for a CCGT).

Figure 3-3 - Added costs from cross border transit for a CCGT



Note: the consumer's profile is considered for the use of the interconnection
Regasification costs were not considered.

Figure 3-4 - Added costs from cross border transit for an industrial consumer



Note: the consumer's profile is considered for the use of the interconnection
Regasification costs were not considered.

SUMMARY OF THE RESULTS

The present study analyses the costs of entering the transmission system borne by market players in Portugal and Spain, for several examples of gas flows with different entry and exit points. The cases studied do not represent entirely the range of possible situations in the Iberian gas market but they point out some of the major issues that the transmission tariff systems are causing to suppliers who want to import gas in one country and sell the gas in the neighbouring country, compared with the suppliers that book entry – exit access in one single country.

Summarizing, access costs are higher when the transmission system of the neighbour country is used, partly due to the cost for the use of its transmission system and also because of the cross border tariffs are not harmonized in both systems.

A summary of the results is shown in the following table.

Table 3-7 - Cross border tariff payments borne by suppliers when bringing gas through the interconnection between Portugal and Spain

Unit.: €/MWh

		Cross border tariff payments for importing gas through the interconnection (€/MWh)	
Consumer location	**Consumer type**	**Without regasification costs**	**With regasification costs**
Spain	Industrial	1,3	0,9
Spain	CCGT	2,0	1,6
Portugal	Industrial	1,9	2,4
Portugal	CCGT	2,9	3,3

4 HARMONIZATION OF CROSS BORDER TRANSMISSION GAS TARIFFS IN MIBGAS

4.1 TARIFF PRINCIPLES

Given the current findings on the cross border tariffs in the MIBGAS, it is clear that further steps should be taken to strengthen the Iberian gas market.

The Gas Target Model, under discussion by CEER, aims to give an overview on the European gas market integration and a broader perspective on how the new European network codes (being discussed under ACER and ENTSO-G) can work together to implement such a market. This Gas Target Model assumes the timeline set by the European Commission, to have a functioning internal gas market by 2014. Regional markets are the stepping stones to achieve this goal. Hence, the integration of the Iberian gas market is aligned with these greater objectives while it is also the tool to strengthen the competition on the gas markets of Portugal and Spain.

The harmonization of cross border network tariffs between Portugal and Spain, along with the setting of harmonized capacity allocation mechanisms and congestion management procedures for the interconnections, are the next steps towards this market integration. And like so they were viewed by the stakeholders of the South regional gas market.

Since cross border tariffs (CBT) are a particular case of gas network tariffs, CBT should comply at least with the same principles recommended for the development of gas network tariffs. According to the Gas Directive 2009/73/CE, the European Gas Regulation 715/2009, the European Working Group for Tariffs and the recommendations by the Council of European Energy Regulators presented at the European Gas Regulatory Forum of Madrid, tariffs or charges for the use of the gas transmission network should comply with the following principles:

i. be cost reflective and based upon a robust modelling of network flows;
ii. facilitate efficient gas trade, market liquidity and gas-to-gas competition;
iii. ensure high levels of transparency;
iv. recover allowed revenues
v. provide effective and timely signals encouraging efficient long-term investment in transport infrastructure;
vi. take into account the specificities and market characteristics of different networks;
vii. provide a fair return on investment for the TSOs;
viii. comply with appropriate oversight;
ix. ensure that any differences in tariff conditions applied to different customers for similar services should reflect underlying costs.

COST RECOVERY AND COST REFLECTIVITY

Covering costs corresponds to ensuring that TSOs get the revenues they are allowed to according to the regulated asset base and the efficient operating costs.

Tariffs must be cost-reflective, taking into account that networks may be complex and meshed. Tariffs must be additive and avoid cross-subsidies between network users[24]. Cross subsidies for network users would distort competition, since some users would pay less than the costs of the service they enjoy to the detriment of other users who would pay more than the cost of their transportation service would actually require. Similarly tariffs should avoid any structural cross-subsidy between transit and domestic transport as well as between the supply subsidiary and the transport subsidiary of a vertically integrated gas undertaking.

FACILITATE EFFICIENT GAS TRADE, HUB DEVELOPMENT AND MARKET LIQUIDITY

Tariffs must allow the development of notional or virtual balancing points, where gas is traded independently of the origin of the gas. The gas bought at the balancing point must be able to be delivered to any exit point. The notional point can thus become a trading hub, which could also be used as a balancing point for network users' portfolios and for the TSO to source its balancing gas.

The separation of entry and exit point for capacity allocation is a key feature that contributes to improving tradability of gas, which in turn can help or facilitate the development of gas-to-gas competition and the development of hubs.

According to the gas target model proposed in CEER, different pictures all over Europe call for different approaches which are not mutually exclusive:

- If a country is capable of establishing a functioning market itself the establishment of one zone (or two zones, based on cost-benefit analysis) within this country is important (e.g. GB, Germany, France, Spain);
- If a country is not capable of establishing a functioning market itself (e.g. due to lack of liquidity or size), many other solutions can be applied:
  - Cross-border market areas (full merger) is one solution; or
  - Accession to a larger, already functioning market; or
  - Trading Regions – a single cross-border zone for wholesale markets with congestion-free interconnection to national end-user zones.

[24] For example, transmission tariffs shall not recover regulated costs such as distribution network costs, underground storage costs or LNG terminal costs.

Gas target model for Europe proposes (1) market areas organized as entry-exit zones with virtual hubs, (2) to reduce number of market areas to as few as technically and economically feasible, based on physical characteristics rather than boundaries and (3) to facilitate hub-to-hub trading.

NON DISCRIMINATORY

Since physical flows will deviate significantly from contractual flows in meshed networks, tariff systems must provide cost-reflective charges in order not to be potentially discriminatory. The separated booking of entry and exit capacity may have benefits in those systems where the "portfolio effect" is significant, since this separation allows shippers and new entrants to book capacity without specifying the contractual path followed by gas. "Portfolio effect" will be able to be reduced as larger as the market area become.

ENSURE HIGH LEVELS OF TRANSPARENCY

Tariffs should remain as simple and understandable as possible, so that, for example, potential entrants are easily able to calculate the likely charges they would face.

ADAPTABILITY TO THE SPECIFICITIES OF THE NETWORK

Any tariff regime must be adaptable to the specificities and market characteristics of different networks, taking into account a range of network "problems" like, for example, internal constraints in the network.

Tariffs can be used to signal congestion at specific entry and/or exit points, and therefore provide effective signals for efficient investment.

The principals described above shall give the guidance needed for the evolution of the transmission tariff systems in Portugal and Spain, aiming for the creation of a level playing field for all market agents which, in turn, will promote competition in the MIBGAS area. The cross border transmission tariffs are a very sensitive part of the market framework since they create a cost barrier between gas in both sides of the border. As was shown with the case studies, this cost barrier can be significant and seriously limit the market integration between Spanish and Portuguese gas systems.

4.2 HARMONIZATION OF CROSS BORDER TARIFFS

Several options can be considered to implement the harmonization of cross border tariffs.

Any process leading to market integration between Portugal and Spain should start by implementing independent entry-exit network tariffs ensuring that the entry price reflects the transmission network cost linked to the gas transport from the injection point to the virtual balancing point, in each country. In the

same way, the exit price would correspond to the cost of the gas transport from the virtual balancing point down to the consumer (in case of interconnection, from the virtual balancing point to the interconnection point), following in all cases the general principles previously stated. Thus, there would be one virtual balancing point in each country that serves as a reference to calculate entry and exit tariff prices[25].

In this first step, tariff structure at the IP (price variables, tariff products, backhaul incentives) could also be aligned between the two sides of the IP. Cross border tariffs would be maintained. Agents would pay for the cost derived from their gas supply in order to guarantee the regulated income to cover regulated costs in each transmission system.

Besides cross border tariff harmonization, market agents have put emphasis on resolving a number of issues in order to promote market integration, like[26]:

- Harmonizing capacity allocation mechanisms and, preferably, creating virtual interconnection points which reduce complexity in capacity booking and increment flexibility in supply strategies.
- Harmonizing congestion management procedures at the IP, namely freeing long term booked capacity not used by some shippers.
- Reducing transmission tariff prices at the IP as much as possible, and taking into account the recovery of transmission costs in both systems.
- Harmonizing the rules of balancing incentives given to shippers.

When looking into the near future, European energy policy (and the Gas Target Model) points to the construction of the European internal gas market through connecting a number of functioning regional markets (entry-exit zones). By 2014, these functioning markets should be up and running and regulators are mandated to identify and pursue the steps needed to implement such market conditions.

For the Iberian market, this would mean that a unique entry-exit zone should be implemented by TSOs, making possible for gas to be nominated at entry and exit points, freely, and traded at a market hub virtual point[27].

In this future scenario, cross border tariffs between Portugal and Spain shall not exist neither capacity booking at these IPs. TSOs should take the necessary balancing measures to ensure the feasibility of such entry-exit zone and cost reconciliation should be implemented so that the transmission system that

[25] Other methods for calculating the entry-exit prices, compatible with the one described are also possible as it is the case with matrix cost path methodology (see *Harmonized transmission tariff structures - Initial Impact Assessment*, ERGEG, 2011, draft Version 9).

[26] The harmonization topics are coherent with the draft Network Code on Capacity Allocation Mechanisms by ENTSO-G, CAP0140-11, June 2011.

[27] Minimum conditions for the existence of a functioning wholesale market include an yearly demand over 20 bcm and at least 3 different gas sources, as mentioned in CEER's paper "Vision for a European gas target model" (values mentioned as indication).

is crossed by gas flows (and who's network investments must allow for this to happen) can recover such costs from suppliers.

Several schemes can be designed to implement this, like inter-TSO compensation mechanisms[28] or cost shifting from the internal interconnections to transmission entry prices at the entry-exit zone[29].

In this Iberian market, shippers would nominate gas at entry and exit points of the unique entry-exit zone, trade gas at a virtual hub and develop balancing activities in each TSO balancing zone[30] (or in one common balancing zone[31]).

This long term market model is far away from the present stand point. Since the European gas target model and the framework guidelines are still developing within the 3rd Package framework, it would probably be wise to take small steps into a new market model, with short term impacts at cross border tariff level, while waiting for the clarification of all these new codes and guidelines.

A STEP-WISE APPROACH: FUTURE MODEL AND SHORT RUN GOALS

The Iberian market integration requires harmonization with respect to tariff methodologies, cost separation and market rules. It is also much demanding on TSOs since it deletes the interconnection capacity restriction at the IP. TSOs would have to step up the balancing activities to create a virtual unrestricted market environment in a transmission network with physical constraints.

Apart from defining a desired transmission tariff system that fosters Iberian market integration, one must assess the steps needed to implement it, namely identifying the major developments at regulatory and operational levels. The European target model for gas is still under discussion, as it is the package of framework guidelines deriving from the 3rd Package of the Energy Directives. This changing environment

[28] One way this compensation could be done is by calculating the entry and exit transmission tariff prices at the IP and use them to calculate the amount of revenue loss (which depend on actual IP usage). In the importing country, the revenue loss related to the non-application of the entry prices at the IP could be recovered on the exit prices of the transmission tariff (more precisely, exit points to consumers or distributors), in the commodity charge (along with overhead costs). In the exporting country, the revenue loss could be recovered through an inter-TSO payment that would have to ensure that both systems receive the payment as a result of the use of their infrastructures by agents of the other system (importing country) and ensure that each TSO receives the regulated income for their investments. The payment incurred by the TSO of the importing country would also be recovered through the exit prices of the transmission tariff (exit points to consumers or distributors), along with the revenue loss.

[29] The revenue loss by the exporting country related to the non-application of the exit prices at the IP could be recovered by scaling up (increasing) the other entry prices of the transmission tariff. In fact, doing that the TSO in the exporting country would collect extra revenues from the agents using its transmission network to supply the importing country. Therefore, the extra revenues collected from agents supplying the national market (by means of scaling up the entry prices) should be discounted to the exit prices affecting consumers. This way, the revenue transfer from the IP to the entry points of MIBGAS, would be neutral for the national consumers (in the exporting country).

[30] Trading region model foreseen in the Gas Target Model by CEER.

[31] Market area model described in The MECO-S Model by Jean-Michel Glachant.

may affect the consistency of the options taken in the present with the future developments of these codes and regulations.

The harmonization needed in any case, should constitute a big challenge to the regulators and TSO's as it has proven to be so far.

Due to that, it seems better to adopt a step-wise approach evolving and improving over time.

4.3 QUESTIONS FOR THE STAKEHOLDERS

CNE and ERSE seek comments from stakeholders on the way forward with the goal of setting a common proposal for cross border transmission tariffs harmonization. This consultation must take into account the South Gas Regional Initiative Work Plan for 2011-2014, in which cross border tariff harmonization topic is being developed in parallel with new proposals on harmonized capacity allocation mechanisms and congestion management procedures.

Stakeholders are asked to have in mind both the need for short term concrete positive developments in cross border trade between Portugal and Spain and also the market integration process and its goals in a longer term and the necessary steps to get those goals, taking to account the starting situation of the regulatory tariff framework in both countries.

Question 1: Would you agree with the analysis made on current market situation and on the major issues affecting cross border trade between Portugal and Spain?

Question 2: How do you think that transmission network costs should be allocated at cross border IP (both in Spain and Portugal), taking into account the defined principles (coherence, transparency, cost recovery and cost reflectiveness, etc) and the starting situation of the regulatory tariff framework in both countries?

Question 3: Which do you feel are the most important aspects where harmonization (apart from the cross border tariffs harmonization) can contribute significantly to short term market integration?

Question 4: How would you implement the proposed step-wise approach, aiming for a more integrated market in the longer term?

Question 5: Would you identify new issues you think are important to create a favourable cross border trade environment? How would you set the timing and prioritization for the discussion on these issues?