



CNE

The Spanish Wholesale Gas Market

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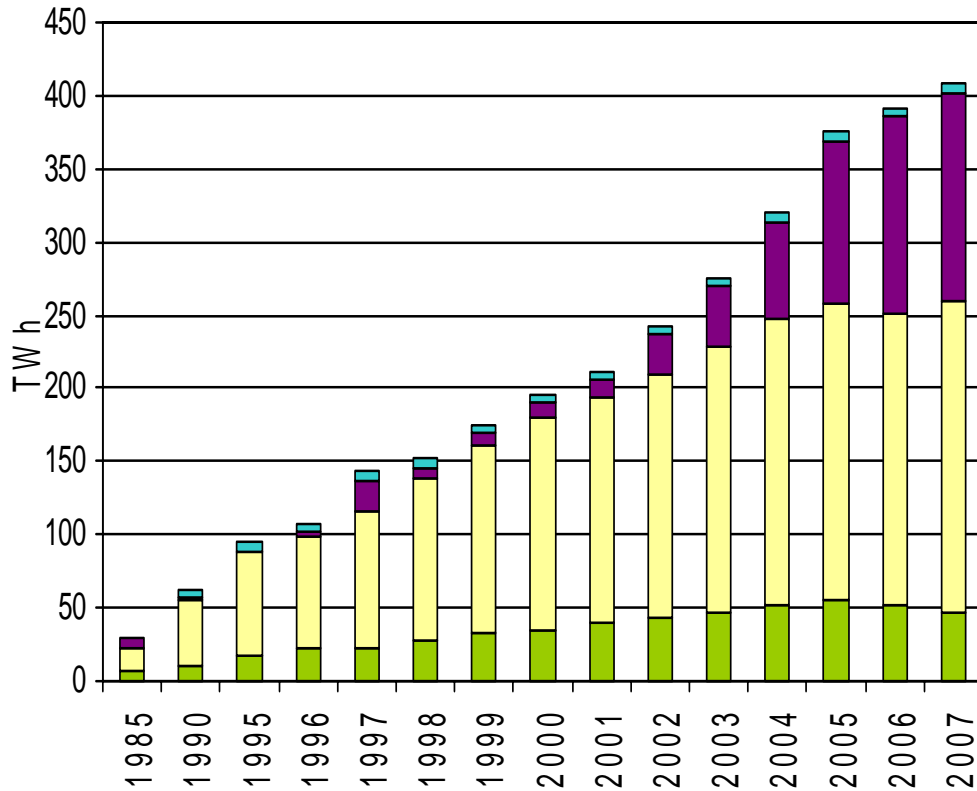
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National Energy Commission (Spain)

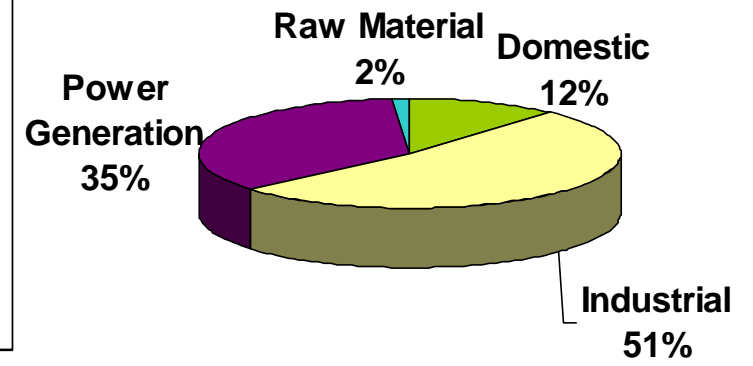
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2. Main liberalization measures in Spain
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Evolution of natural gas consumption in Spain

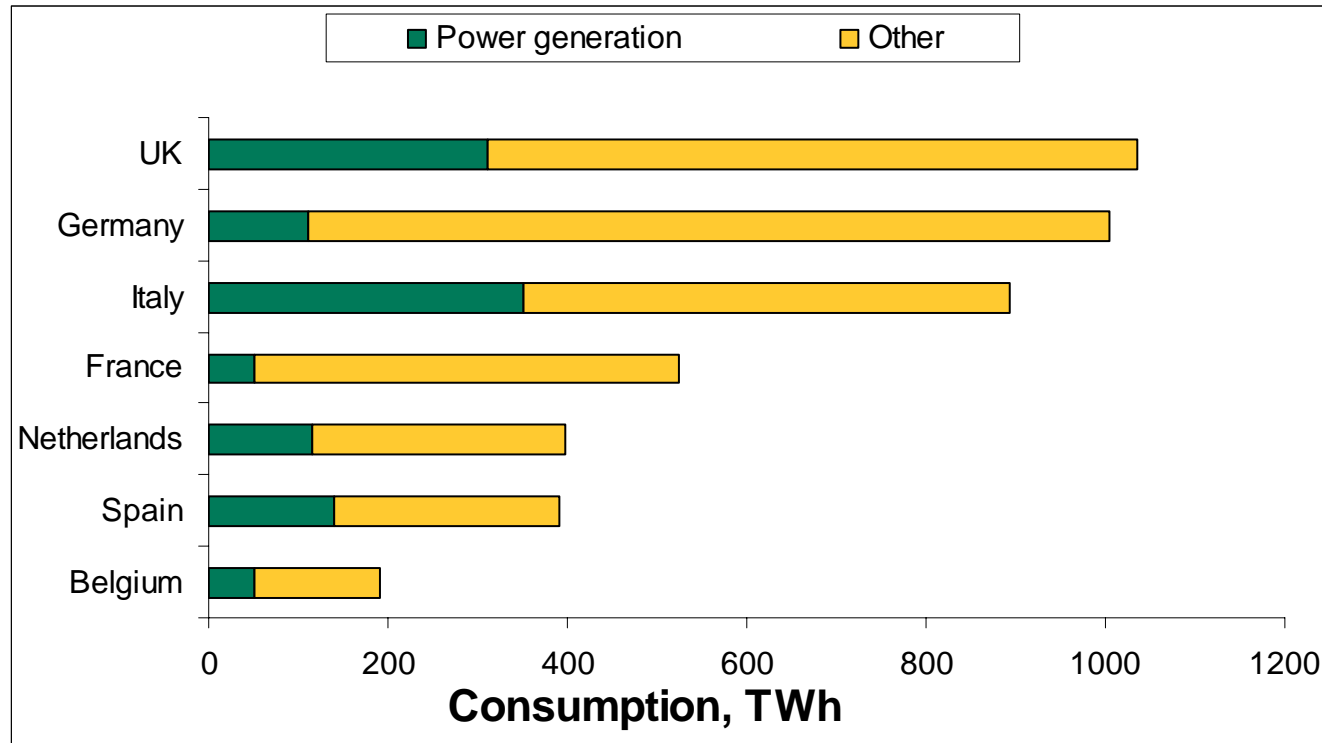


Market structure in 2007:



Consumption in Spain in 2007: 408 TWh
Total increase (last 5 years): 70 %
Prospect for 2012: (+ 4 % per year)

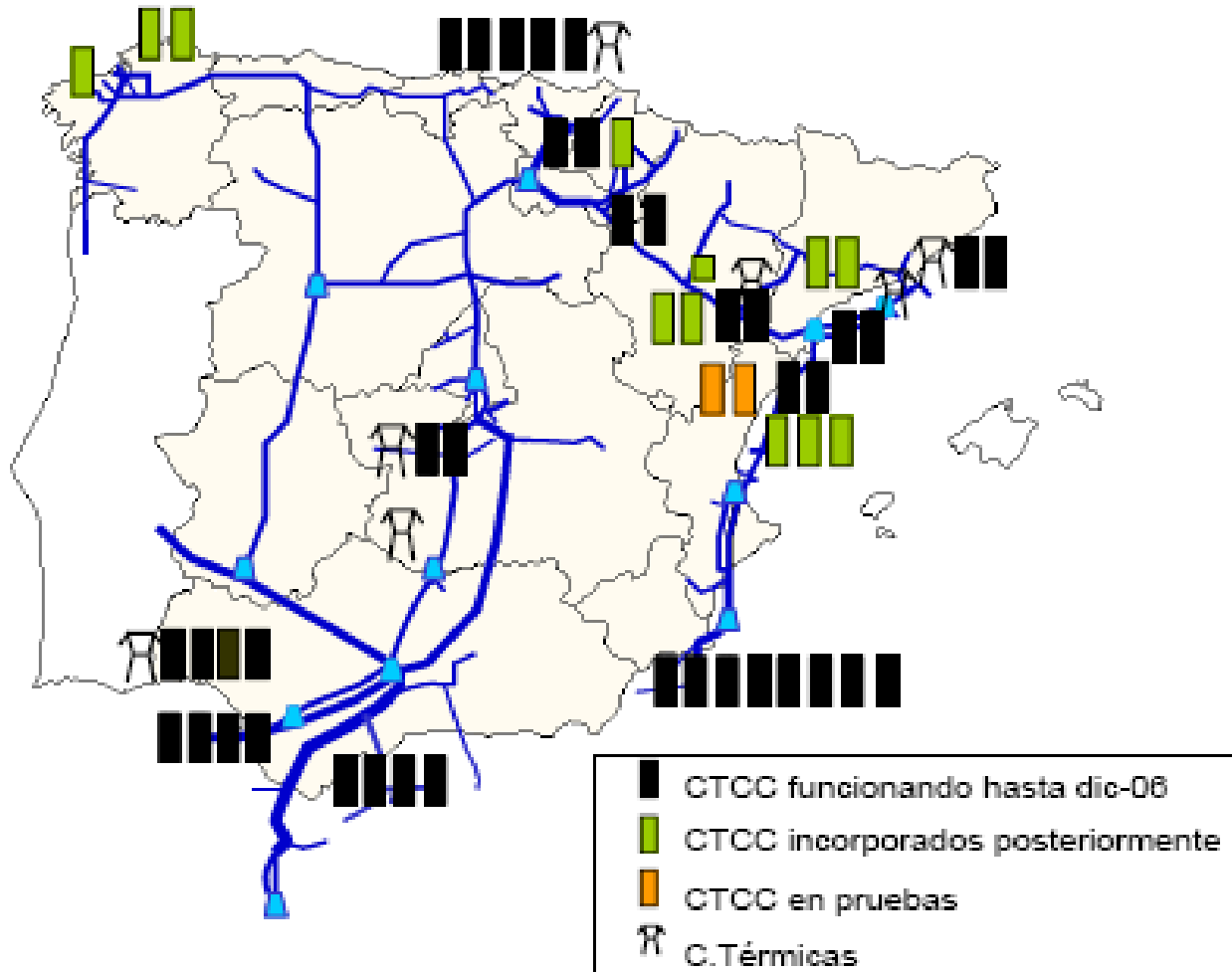
Gas consumption in Europe



Gas natural consumption:

- Average growth in Europe about 2% in the last five years
- Main demand driver is use of gas for power generation (UK, Italy and Spain)

Gas demand for power generation



Gas demand for power generation:

- Gas for power generation represented 35 % of gas demand in Spain in 2007
- Actually 53 CCGT installed with a total power of 23.000 MW (31-12-2007).
- Several more are in construction

Strong investment in gas infrastructures to meet gas demand and new interconnections



Entry capacity:

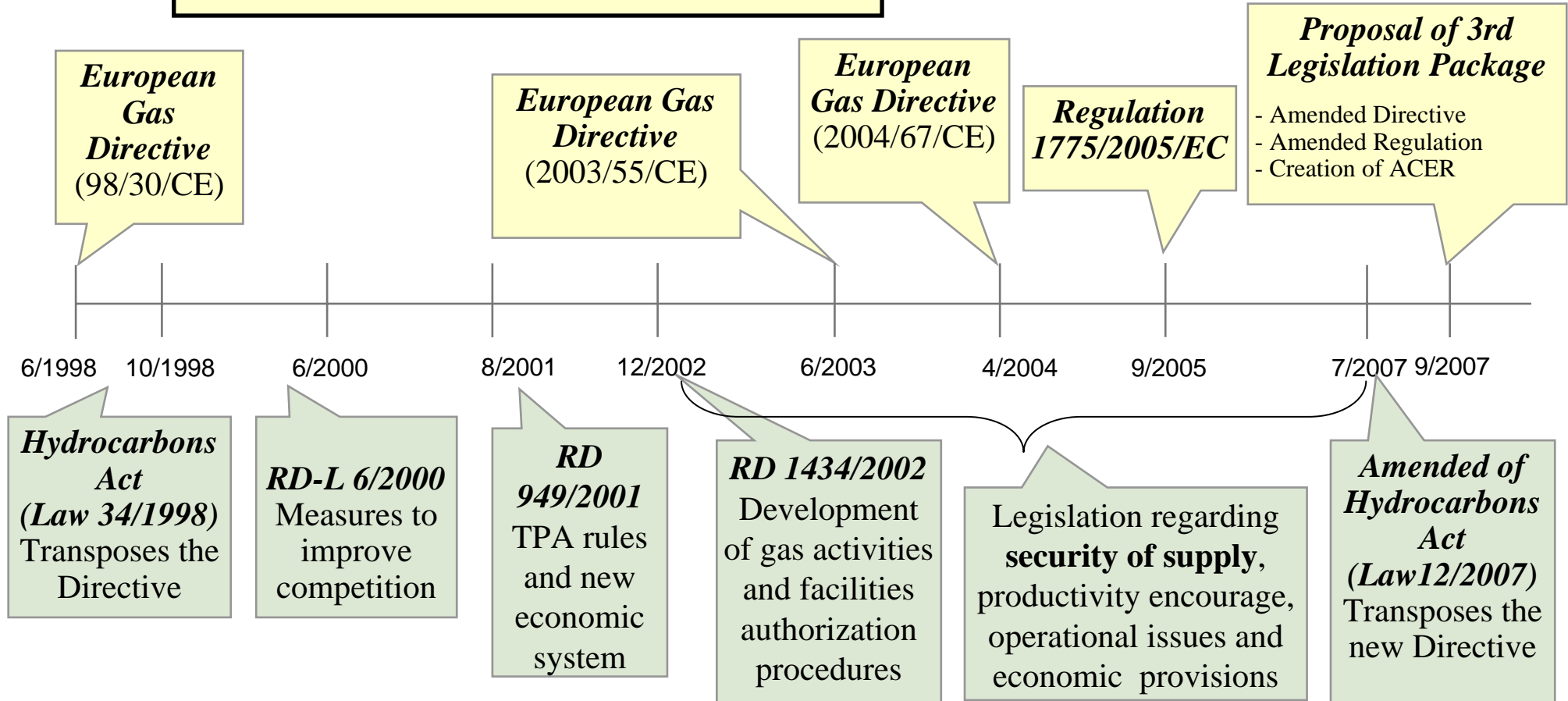
- **49 bcm** regasification capacity (6 LNG terminals)
- **12 bcm** Interconnection with Algeria – Morocco-Spain – Portugal
- **8 bcm** more under construction – Medgaz project: Algeria - Spain)
- **2,5 bcm** interconnection with France (only from France – Spain)

Players in the Spanish gas system

- LNG Operators: **6 LNG plants** ENAGAS (3- Barcelona, Cartagena, Huelva), BBG (1- Bilbao), SAGGAS (1- Sagunto) and REGANOSA (1- Mugaros)
- Storage System Operators: **2 UGS** operated by ENAGAS
- Transmission System Operators: **ENAGAS** (89% of transmission pipelines). Other companies: Gas Natural Transporte, Endesa Gas Transportista y Naturgas Energía Transporte
- Distributor System Operators: **5** distribution groups: Gas Natural (85 %), Naturgas Energía, Endesa, Unión Fenosa, Iberdrola
- Shipper/Traders: **32** trading companies registered, **17** of them actives in selling gas to final customers. Main traders are:
Gas Natural, Endesa, Unión Fenosa, Iberdrola, BP, Shell, Cepsa, Gaz de France, Naturgas (EDP), BBE.

The liberalization process. Main Legal Measures

EUROPEAN GAS LEGISLATION



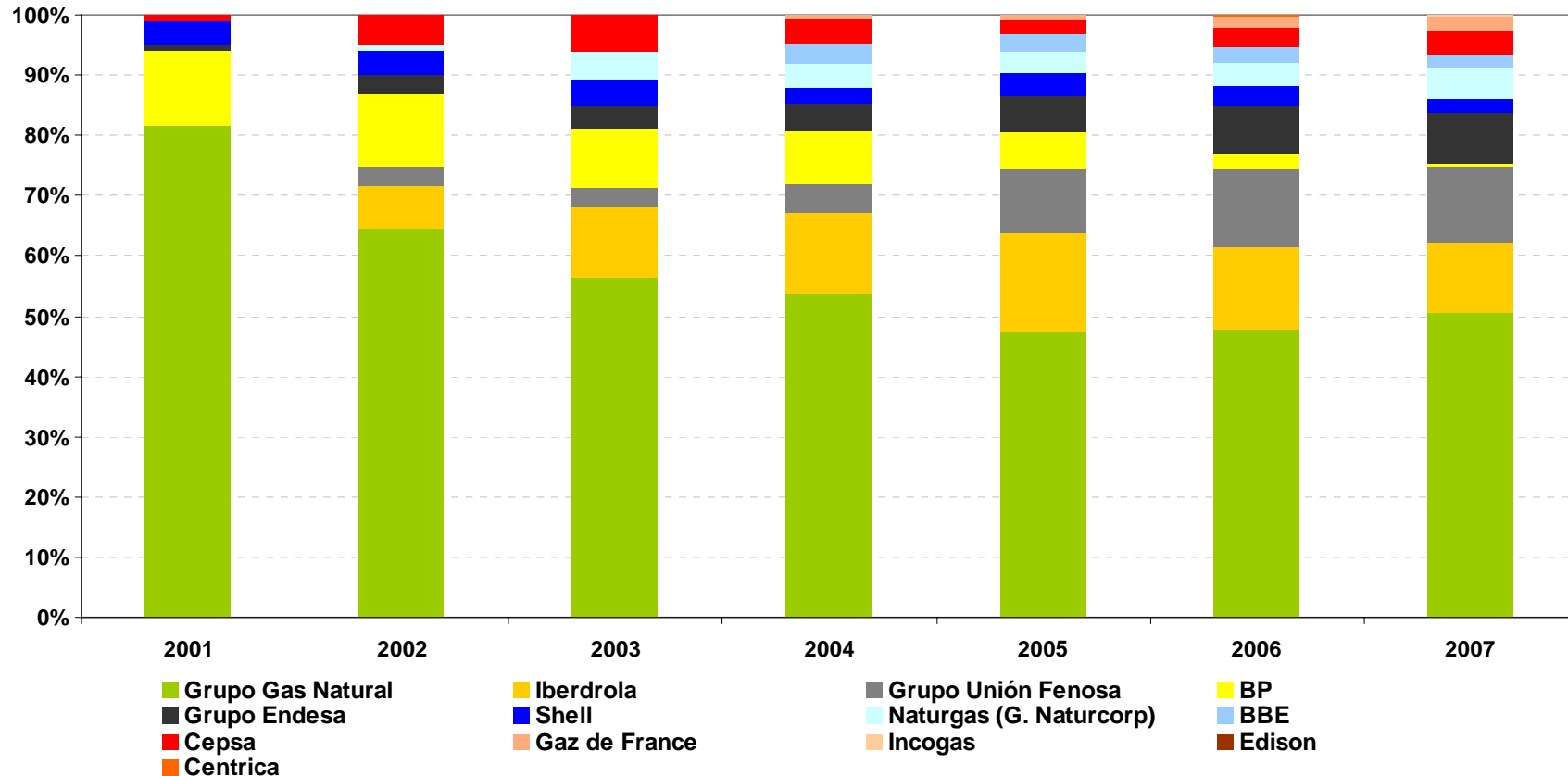
SPANISH GAS LEGISLATION

Positive development of the Spanish liberalization model

- Gas release program in 2002 to boost competition
- Ownership unbundling of the main TSO (ENAGAS). Strong investment in new infrastructures.
- Available LNG entry capacity allows access to international gas markets for new players
- Regulated access to gas infrastructures, including LNG regasification plants and basic underground storage.
- Entry – Exit contractual system (entry -exit tariff are postalized)
- A single virtual balancing point for all Spanish transport system (including several small TSO). Biggest single balancing zone in Europe by area covered
- Daily balancing period and width tolerance band. Principle of neutrality of penalties to TSO

Positive development of the Spanish gas market. Evolution of market shares

Evolution of market share by sales volume

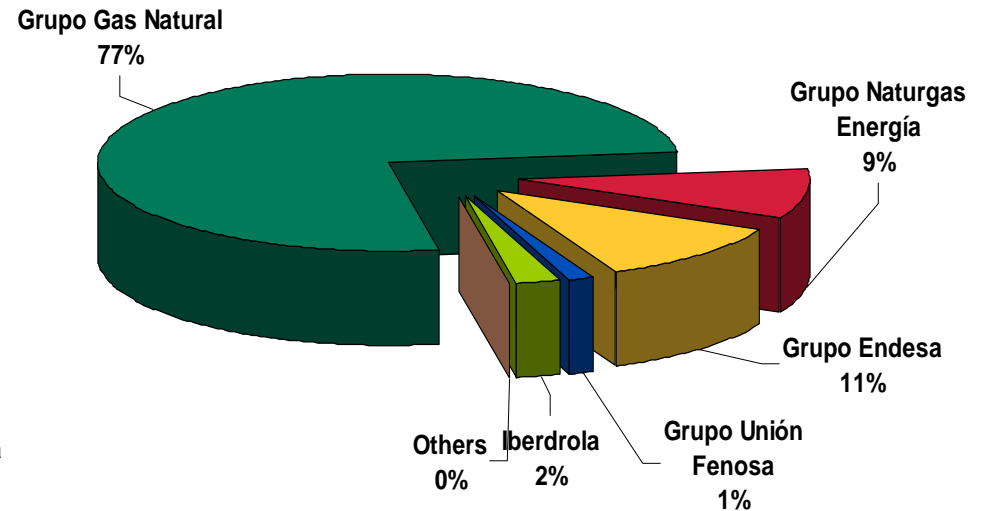
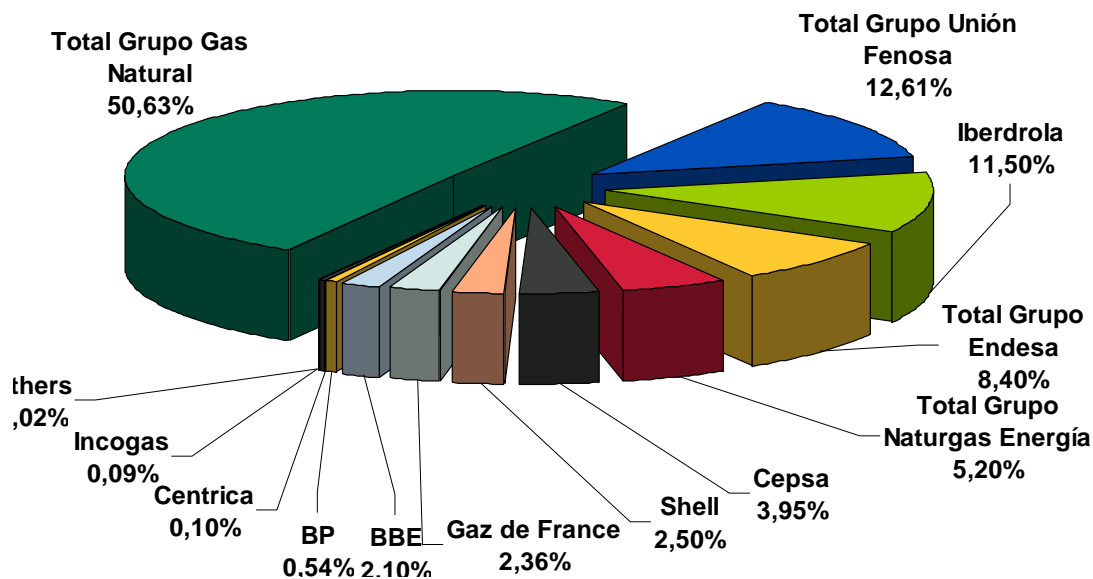


Industrial market has been opened since 1999. Residential market fully opened since 2003. Actually there are 17 active marketers in the gas market. New entrants have nearly 50% of market share.

Actual gas market structure in Spain

Total gas market: 408 GWh
(shares by volume of gas sales), in 2007

Residential market: 6,7 million clients
(shares by number of clients) in 2007

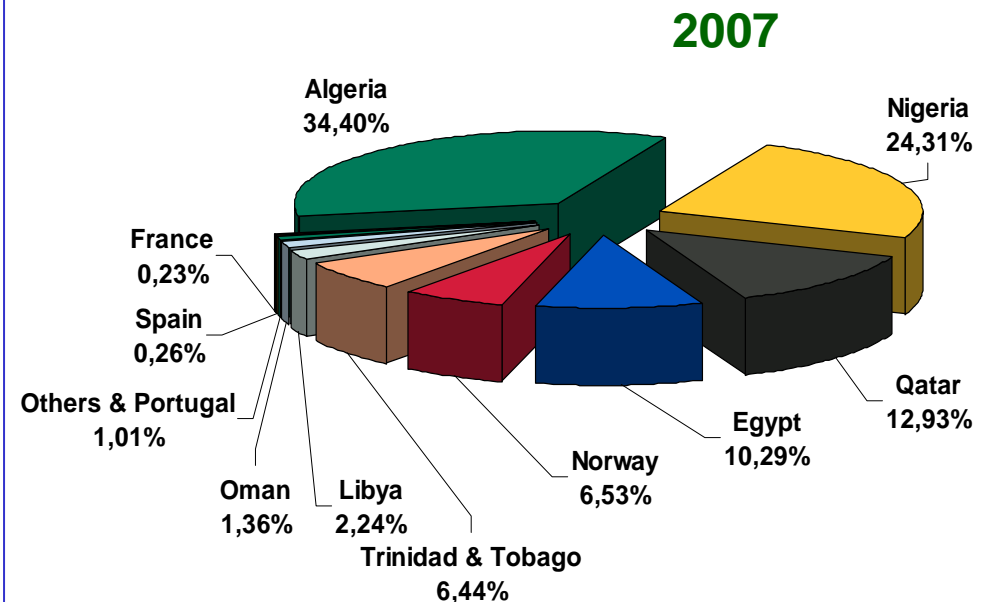


17 active shippers (32 registered) in the Spanish market. Strong competence

**5 active shippers in the residential market
Cumulative switching: 2,7 Millions of clients**

Spanish gas market: Diversification of supplies and LNG market

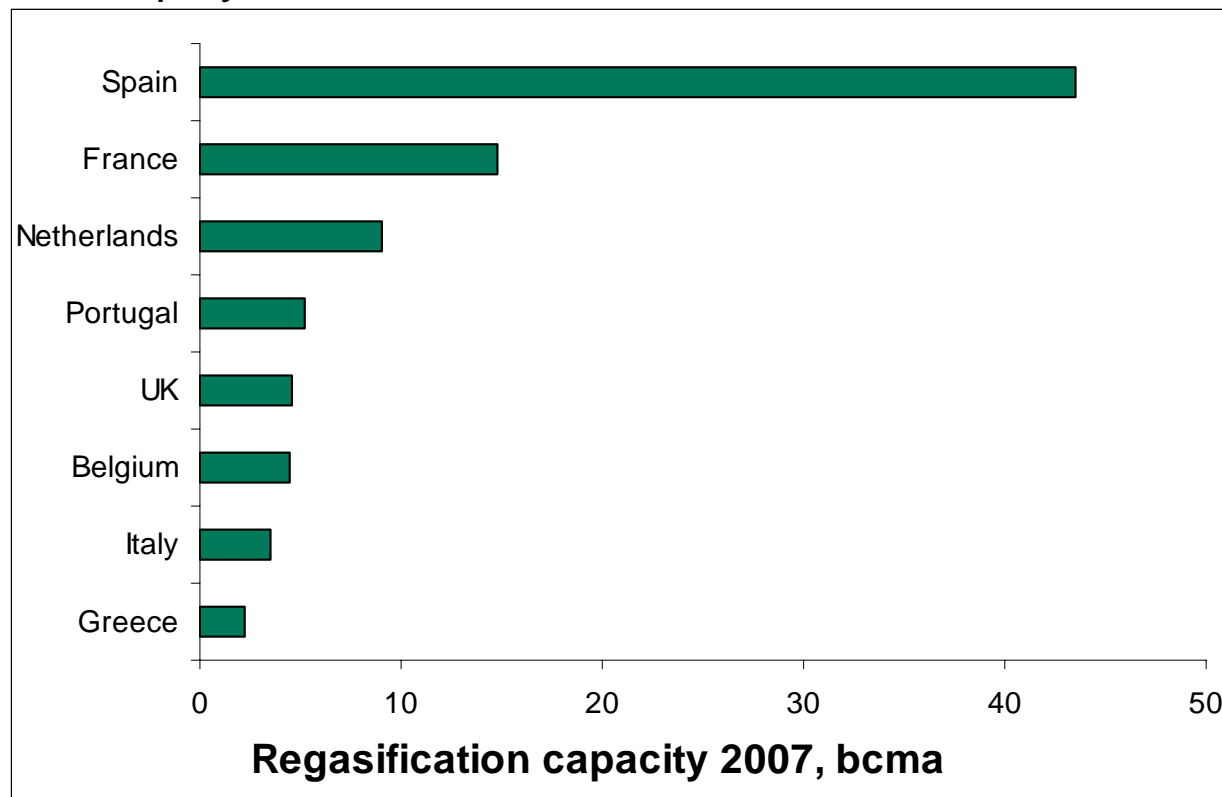
- Spain's physical isolation from the rest of Europe means it **imports 68 % of its gas as LNG.**
- **Spain is Europe's largest LNG importer and the third largest importer in the world.**
- **Diversity of supply: countries exporting LNG in the Atlantic basin** are Nigeria, Algeria, Egypt, Libya, Trinidad, Norway and Equatorial Guinea. Persian Gulf cargoes could be sent to Asia or to Europe.
- Many gas suppliers are active traders in the **Atlantic LNG arbitrage market.** The marginal price of gas in Spain is linked to the price that LNG cargoes could obtain in other markets, such as Henry Hub and NBP.
- The Spanish Gas Market can be a reference of LNG prices for Europe.



Diversity of supply. Spain receives natural gas from 10 different countries

Actual LNG regasification capacity in Europe

- In 2006, LNG represented a 23 % of gas imports into Europe.
- Spain has the highest operational regasification capacity in Europe (49,5 bcm)
- Spain has available LNG entry capacity. That allows access to international gas markets for new players



TPA regime and balancing arrangements have a significant impact on trading

Regulatory recommendations:

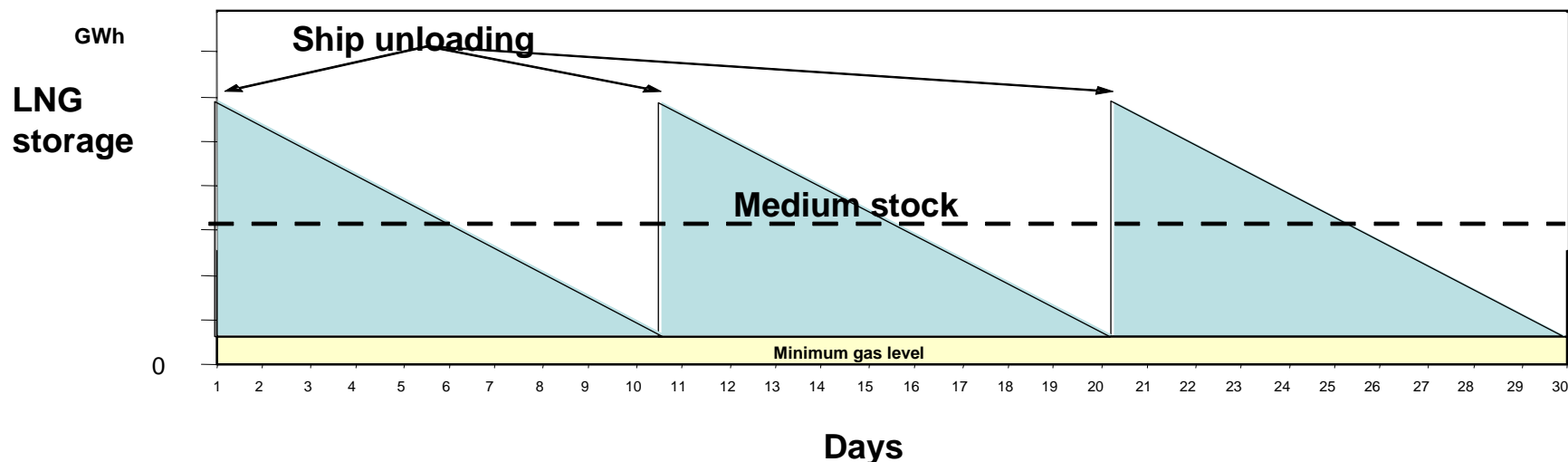
- **Entry /exit balancing regimes** allows creation of virtual balancing points and favours trade
- **Daily balancing regime.** Flexible balancing arrangements and low charges favours concurrence. Hourly balancing regime can boost gas trade, but difficult concurrence
- **Balancing penalties should be neutral to TSO** (specially for vertical integrated TSO)
- **Suppliers' access to storage and flexibility tools** of the gas system are fundamental for the success of natural gas liberalisation.
 - o Underground storage can cover daily and seasonal variations in gas demand.
 - o LNG storage covers variations derived from the **discontinuous supply from LNG carriers**. LNG regasification capacity is used to cover daily and weekly variations in gas demand.
 - o Pipeline linepack is used to cover flexibility requirements throughout the day.
- **Gas market** complements the gas system's flexibility tools, allowing suppliers modulate their gas stock levels in the system.

Characteristics of Spanish wholesale gas market

- 17 marketers actives. Nearly all marketers import his gas with LNG supplies
- Poor pipeline connection with other European markets. The market is isolated from the rest of Europe
- Spanish Wholesale Gas Market is strongly influenced by LNG supplies characteristics
 - LNG has an international market and could be diverted to other importing countries.
 - Each LNG terminal is used by 4 - 5 marketers. ENAGAS coordinates the logistic of ships (slot assignment) and LNG storage.
 - For LNG storage, there are penalties depending on the gas stock levels:
 - Booked “daily regasification capacity” includes 5 days of LNG storage free of charge
 - If the monthly average LNG stock level is above 8 days of the daily contracted capacity (adding stocks in all LNG plants), there is a big penalty
- There is a single balancing point (call **CDG**) for all transport system in Spain. The tolerance band is between 0 and 50 % of the daily contracted capacity (equivalent to ± 25 % tolerance band). Within-day nominations allowed until 11.30 h.

Characteristics of Spanish wholesale gas market

- LNG storage covers variations derived from the discontinuous supply from LNG carriers. LNG regasification capacity is used to cover daily and weekly variations in gas demand.
- The operation of the **daily OTC market** complements the gas system's flexibility tools, allowing suppliers to get the supply from LNG carriers and **modulate their gas stock levels** in the system.
- A small trader can bring a LNG cargo (150.000 m³ of LNG) every 15 days – 2 month. This trader have incentives to sell part of the gas just after unloading a LNG cargo, to avoid storage penalties. Gas trading facilitates logistic of LNG terminals.



Spanish Gas Hub

The Spanish OTC market

*In Spain, the wholesale gas market trading is organized at the **Spanish single balancing point (CDG)**, the **LNG terminals**, and the **underground storages**.*

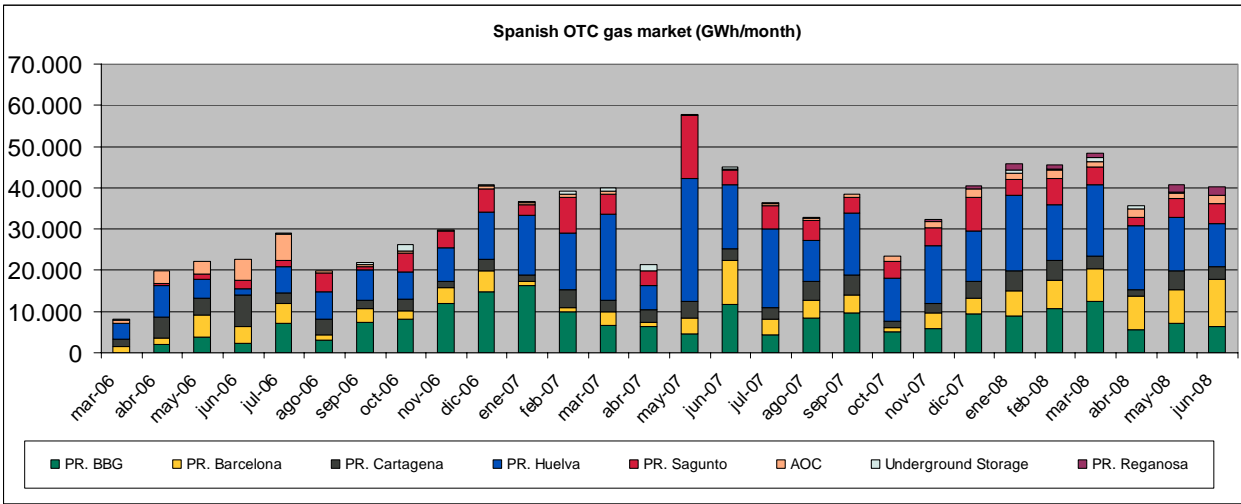
Gas trade is performed by bilateral agreements between the suppliers, in a similar way than spot LNG trading.

*The gas trade is registered in a **platform developed by ENAGAS**, named **MS-ATR**. Platform use is free of charge; clearing service is not included.*

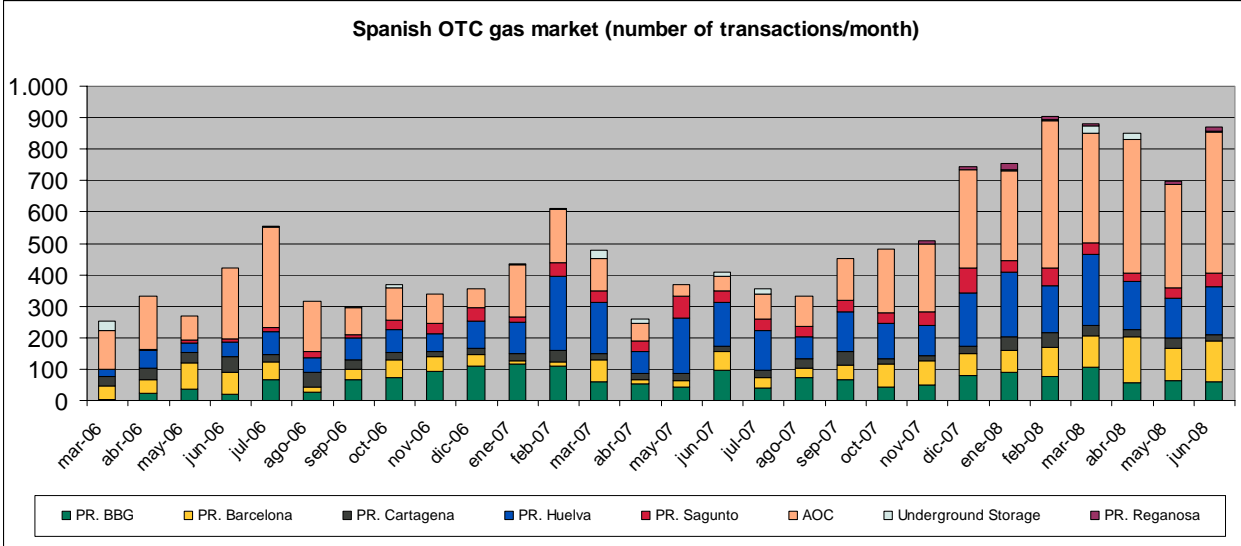
There has been a very significant increase in the volume of gas traded by suppliers in the daily OTC market in the Spanish gas system and it serves to show the positive development of the liberalisation model.

*The **volume of gas traded** in the Spanish gas system in 2007 has been 444 TWh and **represent a 109 % of the total gas consumption of Spain**. This volume is close to other European markets.*

Spanish Gas Hub. Volume of gas traded and number of transactions



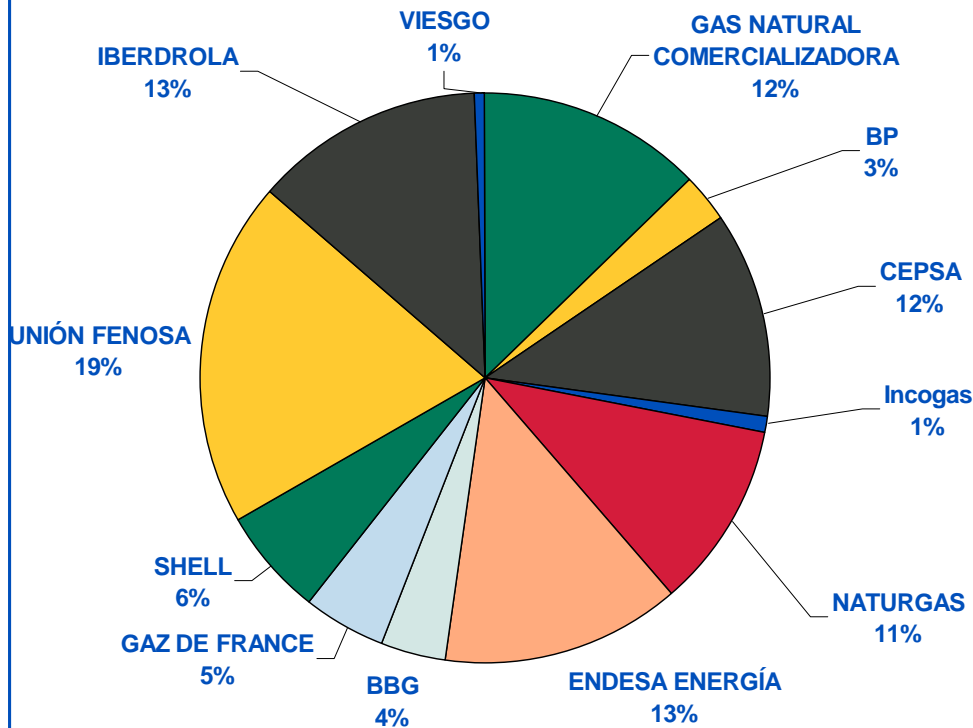
Most of volume of gas transactions is negotiated at the LNG terminals.



Most of transactions are negotiated at the CDG (although its volume is quite smaller), in order not to get into unbalances at the single balancing point).

Spanish Gas Hub. Participants

SHARE IN THE SPANISH OTC MARKET 2007



OTC transactions in the Spanish Gas hub are negotiated in the platform MS-ATR, developed by ENAGAS

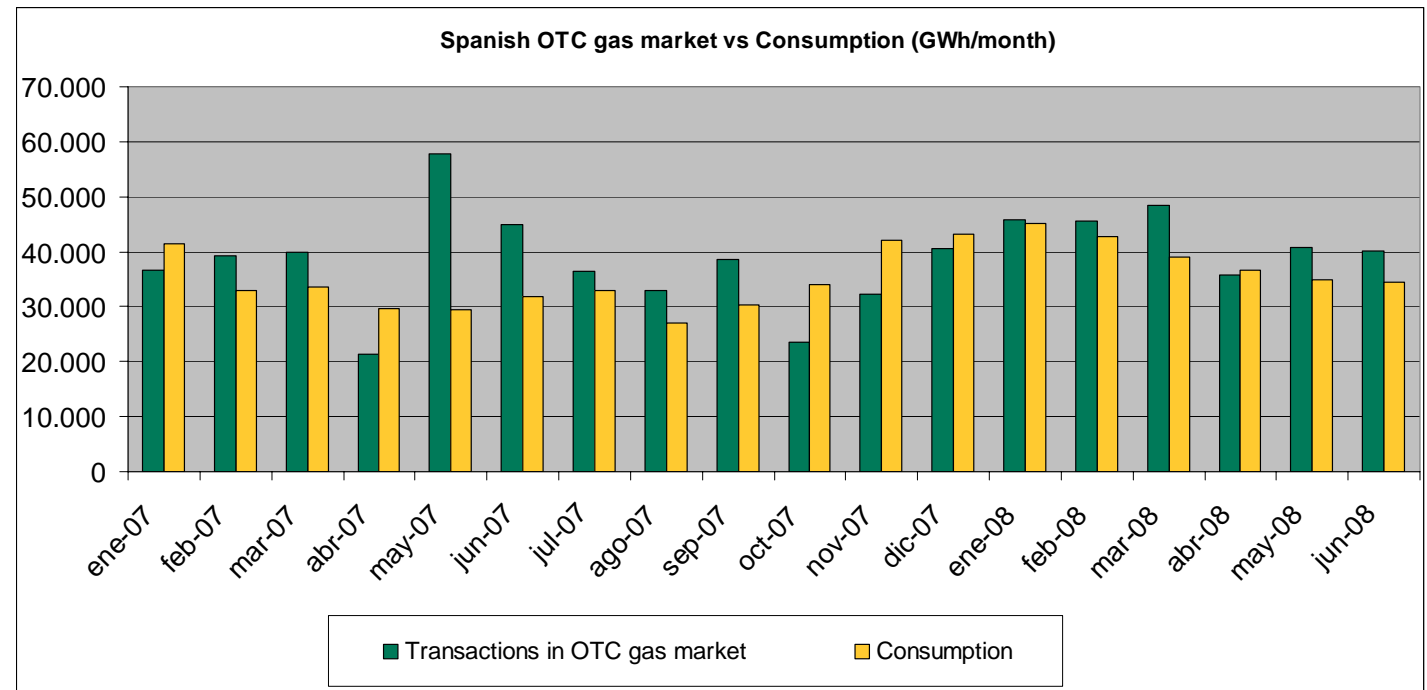


UNIÓN FENOSA is the largest company at the Spanish OTC Market, with a share of 19%. However, its share by volume of sales in 2007 was just of 13%.

Spanish Gas Hub. Gas Traded vs Gas Demand

The natural OTC gas market in Spain

The volume of gas traded in the Spanish OTC Gas Market in 2007 represents 109 % of the total gas consumption of Spain.



Main European gas Hubs

European gas trading in 2006

<i>Country</i>	<i>Gas traded 2006 (TWh)</i>	<i>Trading as % of total demand</i>
UK	10.242	990%
Italy	624	70%
Netherlands	568	143%
Belgium	500	263%
Spain	282 (444 TWh in 2007)	72% (109 % in 2007)

