MedReg
Mediterranean Energy Regulators

MEDREG GAS WORKING GROUP

SECOND BENCHMARKING REPORT

Ref 000000

Barcelona, 27/11/2014

MEDREG is supported by the European Union

Tel +39 02 65565 563- Fax +39 02 65565 342 - Piazza Cavour 5, Milan 20121 (Italy) - www.medreg-regulators.org - info@medreg-regulators.org

Acknowledgements

This report was prepared by the MEDREG Gas Working Group (GAS WG) in the period November 2013-December 2014.

Main drafter: Seyit Ali Dastan (Energy Expert at EMRA, Turkey)

Co-drafters: Charis Tsalikidis (Electrical and Computer Engineer at RAE, Greece), Bardhi Hoxha and Veronica Lenzi (MEDREG Secretariat)

Data and comments were provided by the members of the GAS WG.

Table of Content

1. EXECUTIVE SUMMARY 5
2. INTRODUCTION 9
2.1. Purpose of the Paper 10
2.2. Methodology 10
3. MEDITERRANEAN GAS MARKETS 12
3.1. Mediterranean gas markets from global perspective 12
3.2. Gas Supply and Demand 15
3.2.1. Supply 15
3.2.2. Demand 17
4. GAS NETWORK INFRASTRUCTURE in the MEDITERRANEAN 21
4.1. Gas network facilities: Transmission, LNG and Storage 21
4.2. Gas network facilities: Distribution 30
5. LEGAL AND REGULATORY FRAMEWORK 32
5.1. Gas sector legislation 32
5.2. Establishment and powers of the gas market regulator 37
5.3. Ownership of facilities, unbundling requirements and Licenses 39
5.4. Access to natural gas facilities, TPA Tariffs, Capacity allocation and congestion management rules and Transparency 41
5.5. Promotion of competition in the natural gas sector 43
5.6. Security of Supply and Public Service Obligations 46
5.7. Investment needs and processes 48
5.7.1. Assessment of investment needs and incentives. Major infrastructure projects 49
5.7.2. Powers of the regulator on gas infrastructures 59
5.7.3. Experiences of regional and bilateral cooperation among regulators on investment issues 60
6. CONCLUSIONS 61
APPENDIXES 63
BIBLIOGRAPHY 119

List of Tables

Table 1 Country Responses to the questionnaires 11
Table 2 Gas Interconnection and LNG capacities 23
Table 3 LNG Terminals 25
Table 4 Storage Facilities 26
Table 5 Transmission System Operators 29
Table 6 Legislations and availability 32
Table 7 Assesment Needs and Major Infrastructure Projects 49

List of Graphs

Graph 1 Global Gas Consumption (BCM) 13
Graph 2 Gas Reserves Ratios 14
Graph 3 Gas Production Ratios 14
Graph 4 Gas Supply Ratios by Source Countries 15
Graph 5 Consumption by import type (LNG/Pipeline) 16
Graph 6 Gas Supplies by companies (bcm/year) 16
Graph 7 Consumption by countries (bcm) 17
Graph 8 Shares of Production and Imports 18
Graph 9 Shares of Consumption and Exports (bcm/y) 19
Graph 10 Gas consumption shares by sectors 19
Graph 11 Share of gas in power generation 20
Graph 12 Transmission lines (km) 24
Graph 13 Transmission Usage Ratio (m3/km) 25
Graph 14 Length of Distribution Lines (km) 30
Graph 15 Meters of the distribution lines pp 30

List of Maps

Map 1 Gas Networks 21

List of Appendixes

Appendix 1 Distribution Systems 63
Appendix 2 Portuguese Gas Distribution Market Structure 69
Appendix 3 Greek Transmission System 70
Appendix 4 Available and Allocated Capacities MSmc/h 73
Appendix 5 Gas Suppliers 75
Appendix 6 Establishment and powers of the gas market regulator 77
Appendix 7 Ownership of facilities, unbundling requirements and Licenses 86
Appendix 8 Access to natural gas facilities, TPA Tariffs, Capacity allocation and congestion management rules and trasparency 97
Appendix 9 Investment Needs and Processes 113

1. EXECUTIVE SUMMARY

The Second Benchmarking Report is on the agenda of the MEDREG Action Plan 2014-2016. The purpose of the paper is to provide an updated picture of gas markets, infrastructures and regulatory frameworks of Mediterranean countries. The updated picture would serve as tool to benchmark the countries in the region and highlight the potential risks against the harmonization of regulatory framework as well as creation of commercial, technical and legal level playing field among regional countries.

Market Related Conclusions

Global gas consumption has been on a rise. On the supply side, the latest developments in the shale-gas extraction methods will push to the production while the supply boom will find a dramatic counterpart in the demand considering concerns over climate change and nuclear energy production as well as the potential for usage of gas in transport as a replacement of oil. Both the European Union (EU) and Organization of Economic Co-operation and Development (OECD) consumption figures are on the rise as well. The pace of the world consumption figure is much faster than those of OECD and EU, which indicates that main consumption increase has been realized through the developing world. The total consumption in Mediterranean countries, on the other hand, also represents a steady increase but in a slower pace with the EU, OECD and world averages.

Mediterranean region has an advantage of proximity to the natural gas resources as well as of having favorable conditions for LNG trade. Regional countries are importing gas from eleven countries. Algeria is the main gas supplier of the region – both in LNG form and with submarine pipelines. Russia, out of the region, provides as much gas as Algeria does to the regional countries. Egypt, third biggest supplier, mainly consumes its own production while the exports dwindle to nil. Apart from Libya who exports a relatively small amount of gas, rest of the suppliers is located out of the Mediterranean.

Gas Supplier companies of the region mainly have national characteristics. Companies operating in different Mediterranean countries have only small shares in foreign markets. The market concentrations through the Mediterranean markets are still high and state-owned enterprises are keeping their sizes and strength. Spain and Italy achieved relatively greater supplier diversity in the region.

Natural gas consumption figures show a large diversity throughout the Mediterranean countries, from Italy which consumes almost 80 billion cubic meters (bcm) of gas annually to Bosnia and Herzegovina consuming a quarter bcm annually. This variation presents different roles of natural gas among regional countries. Four of the regional countries don't even have access to gas: Albania, Montenegro, Malta and Cyprus.

Only three gas importing countries are able to balance their imports by indigenous production: Israel, Tunisia and Croatia. On the other hand, Jordan, Italy, Turkey and France have negligible gas production in the face of the gas they imported. Spain,

Portugal, Greece, Slovenia, Morocco and Bosnia and Herzegovina have no gas production at all.

Among the three exporters of the regional countries, they can distinguish each other in quite divergent figures of consumption to export ratios. While Egypt consumes all of the gas it produces, Libya exports almost all of its production. Algeria, on the other hand has largely balances its own consumption with the exports.

A great amount of natural gas is consumed for residential and commercial purposes. While almost half of the gas is allocated to the residential/commercial sectors, the other half is nearly equally shared by power generation and industry. The high level of residential consumption is not expected considering the warm climate of the region.

Infrastructure Related Conclusions

The trade potential among Mediterranean countries is not fully utilized. Among others, lack of infrastructure investments is the main barrier ahead of developing deeper commercial ties. Nevertheless, through the course of the last decade new interconnections have paved way for trade while planned projects herald greater enmeshed networks.

Algeria appears as the network hub of the region with submarine interconnections to Spain and Italy; and direct gas supply to Morocco and Tunisia. With the two LNG terminals, Algeria has also developed unrivalled LNG trade through the region. Other main gas producing countries, Libya and Egypt has weakly interconnected in the region. Libya is solely connected to Italy and Egypt has interconnections with Israel and Jordan with small capacities.

Among the gas importing countries, there are four separately connected regions. While in the western Mediterranean, Portugal, Spain and France are connected to each other, in the central Mediterranean, Italy is connected to the Balkan countries: Slovenia and Croatia. In the region, Bosnia and Herzegovina does not have an interconnection with the Mediterranean countries. In the east, there are two isolated areas. One of them is Turco-Greek region, connected to each other without further connection to other regional countries. The other one is mainly set around the Arab Gas pipeline connecting Egypt with Jordan, Syria and Lebanon in addition to the direct gas pipeline between Egypt and Israel.

Transmission System Operators are mainly state-owned companies which are unbundled from trading activities. But there are exceptions: Portuguese TSO is privately owned and Turkish BOTAS is not unbundled from trading businesses.

An indication of the development level of gas usage in the residential areas is the length of distribution networks. France has the highest level of investments in the distribution business. Considering the populations of the countries, Croatia and France

appears to have the most developed distribution networks while Greece and Turkey has still room for improvement.

Legal and Regulatory framework related conclusions

The vast majority of MEDREG countries post all the relative legislation online, for all interested parties. This information is available on the ministries and/or regulators web pages. All legislation is posted on each national language of each country. However due to the increasing international aspect of energy regulation, many MEDREG countries post the legislation either on English language or French language as well.

Almost all MEDREG countries have established an independent and robust Regulatory Agency. A common element of MEDREG NRAs is the relative short lifetime they all have, since most of them were established in the 2000s. However, among NRAs there is indeed diversity in powers framework, duties and responsibilities. Common ground of the above is that most NRAs hold powers of monitoring the market and competition, provide for consumer protection, engage in secondary or even primary legislation, hold dispute solving powers, approve national development plans, they recommend or set the tariff methodologies, they have license issuing capabilities, they provide TPA exemptions, sanctions are under their jurisdiction and also many of them act as advisory bodies on energy and gas matters.

Ownership of facilities follows a two-fold road. On one hand we have MEDREG countries where infrastructures belong to state owned companies and on the other hand we have infrastructures that are owned by TSOs or major energy conglomerates. The common trend is that national gas transmission systems and LNG terminals to be owned and/or run by the respective certified national TSO. In most countries the legislation foresees various types of licenses. These are usually granted by the regulator and cover the areas of gas supply and trading, operation of NGS, operation of LNG terminals, operation of storage facilities and gas distribution. Unbundling is now the usual practice among MEDREG members. Some members have established either legal, functional, corporate, account, or managing unbundling to companies that are involved in more than one gas services and activities (supply, transmission, distribution).

Regulated Third Party Access is by far the most common among MEDREG countries. NRAs through regulated access and regulated tariffs attempt to secure free and non-discriminatory access to natural gas facilities. NRAs usually are responsible for TPA tariff methodology either by setting it or by approving a TSO proposal. Regulators aim to put into place TPA tariffs that are cost reflective and provide incentives. In the framework of regulated TPA regimes, many MEDREG states also apply capacity allocation and congestion management mechanisms. Furthermore anti-hoarding regimes are quite common, usually Use it or lose it, or Use it or buy it. As far as transparency on the gas market, NRAs are actively pursuing it by establishing online publication of data, having general conditions and terms for supply contracts,

promoting public consultations. Additionally EU members are preparing for the implementation of REMIT.

Wholesale and retail completion is a common target among MEDREG countries. In spite of that, there are countries that still lack such element in their gas market. The majority however is pursuing an open and competitive gas market.

In some member states the government is in charge of monitoring security of supply while in others the regulatory authority is responsible for security of supply. Some NRAs issue national development plans monitoring the development of infrastructure and others monitor the strategic storage. Monitoring security of supply is an important aspect of regulatory duties among MEDREG countries. In some counties however the government is responsible for monitoring security of supply. Most member states have introduced legislative steps to establish security of supply. Effective and timely infrastructure development is common tool to secure the supply of natural gas. Other countries aim at diversification of sources and even fuel mix diversification. Others have strategic gas storage installations.

Public Service Obligations (PSOs) exist in MEDREG countries. They are in the form of tariffs for vulnerable customers, or of last resort service.

Assessment of investment needs, in MEDREG countries, can be done by the governments or by the respective TSOs and approved by NRAs or can be responsibility of regulators as well. In many cases the regulator approves a national gas development plan, drafted by the TSO, which a certain application period usually ten years. In some cases the role of the regulator can reach the granting of incentives for new infrastructure such as exemptions from TPA, grants or other financial incentives, reducing of investment and regulatory risk and regulated rates of return.

There are many infrastructure projects, like TAP, under way in the MEDREG region. Certain PCIs are implemented in MEDREG countries. Major projects are LNG terminals and both onshore and offshore pipelines, intercrossing more than one country.

Most MEDREG regulators are responsible of approving investment plans submitted to them by TSO or government agencies and also responsible for authorizing investments. Regulator role also includes the monitoring of the investment implementation and development progress. In same case the regulator can assume initiative and impose an obligation on TSO to invest in new gas infrastructures. While in other cases the regulator may include additional costs of investments to regulated access tariffs.

Cooperation between NRAs is a fundamental element of the 3rd Energy Package. Furthermore, MEDREG carries out its activities through a well-structured and effective internal cooperation process among NRAs, with the objective to implement the conditions for the establishment of a future Mediterranean Energy Community, based

on a bottom-up approach. To this end MEDREG countries, practiced regional and bilateral cooperation, that covered and expanded on investment issues. This cooperation paves the way for an even closer and more fruitful cooperation among MEDREG countries that could enhance security of supply in the region, reduce investment risk, promote common interest projects, diversify sources and secure financial and technical support.

2. INTRODUCTION

The Association of Mediterranean Energy Regulators (MEDREG) was founded in 2007 with a view to fostering market integration and infrastructure investments, as well as aiming to consumer protection and enhanced energy cooperation through Mediterranean countries. Its members include Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Jordan, Libya, Malta, Montenegro, Morocco, Palestinian Authority, Portugal, Slovenia, Spain, Tunisia and Turkey.

While the institutional foundations of Mediterranean initiatives vary, MEDREG covers a unique area in terms of promoting a transparent, stable and harmonized regulatory framework in the fields of electricity and gas markets. The Gas Working Group (WG) focusing on gas, for its part, has been fulfilling this task since the establishment of the Association. Some tasks and achievements covered by MEDREG include the following (publicly available in the MEDREG website):

- Benchmarking assessment (2009)
- Status review on transparency in the Mediterranean region and monitoring of the MEDREG guidelines of good practice (GGP) on transparency (2011)
- Status review on Third-Party Access in the Mediterranean region (2011)
- Status Review on Gas Network Infrastructure and SoS (2013)
- Guidelines of Good Practice on Third Party Access in the Mediterranean region (2013)

Based on a bottom-up approach, the Gas Working Group keeps carrying out its activities through a well-structured and effective internal cooperation process. One of its main activities is studying the present and future infrastructure needs from the technical, economic and financial perspectives to reach to the objectives of the establishment of a regional integrated gas market and the improvement of the security of supply within the region. Besides, it works on the unbundling of supply, transmission, storage and distribution activities in the gas market. The Gas WG also tries to increase the transparency of market information and services, study methodologies for non-discriminatory TPA to gas infrastructure, increase cooperation among member

countries on price regulation and tariff methodologies; and study better measures for security of supply. Based on these goals the planned actions for the coming terms are as follows:

- Study on infrastructures needs and possible projects of common interests, as well as preparation of gas infrastructure map of the Mediterranean region (2014-2015)
- Monitoring of compliance with GGP on TPA in the Mediterranean region (2014-2015)
- Status review on transparency in the Mediterranean region and monitoring of the MEDREG guidelines of good practice (GGP) on transparency (2014-2015)
- Assessment of competition indicators and market prices within MEDREG countries (2014-2015)
- Assessment of the current status of gas markets, of sector regulation in the MEDREG countries, and its expected evolution ('benchmarking report'), to be continuously updated according to the needs and evolution of gas (and, more broadly, energy) regulation in the member countries (2nd half of 2014)

  The Second Benchmarking Report is a scheduled task of the Gas WG in 2014 as it is outlined in the approved action plans of MEDREG.

2.1. PURPOSE OF THE PAPER

As it is noted above, the Second Benchmarking Report is on the agenda of the MEDREG Action Plan 2014-2016. The purpose of the paper is to provide an updated picture of gas markets, infrastructures and regulatory frameworks of Mediterranean countries. The updated picture would serve as tool to benchmark the countries in the region and highlight the potential risks against the harmonization of regulatory framework as well as creation of commercial, technical and legal level playing field among regional countries.

2.2. METHODOLOGY

The data of the report is mainly based on the questionnaires filled by the MEDREG member countries. The questionnaire structure is discussed and determined during the 13th Gas WG in Lisbon on 30th of October, 2013. The Gas WG Chair (Turkey) has assumed the prime responsibility in the coordination of the report preparation. The questionnaire is shared with the MEDREG contact officers in early February 2014 and they were collected during March 2014 to May 2014. During 14th Gas WG and 15th Gas WG held in Milan the progress of the report was shared and discussed by the Gas WG members.

Table 1 Country Responses to the questionnaires

Members	1th BR	2nd Br
Spain	√	√
Croatia	√	√
France	√	√
Jordan	√	√
Turkey	√	√
Algeria	√	√
Malta	√	√
Portugal	√	√
Bosnia and Herzegovina	√	√
Greece	√	√
Italy	√	√
Israel	√	x
Tunisia	√	x
Morocco	√	x

Egypt	x	x

The questionnaires are not the only source for the report. Since some countries did not respond to our call for filling in the questionnaires and some of the questionnaires lack certain answers we also had to make a review of external data. The BP Statistics 2013 report was heavily referred while getting data not provided by the member countries. For some other information, especially the infrastructure-related ones, we benefitted from the Status Review on Infrastructure and Security of Supply (MEDREG, 2012).

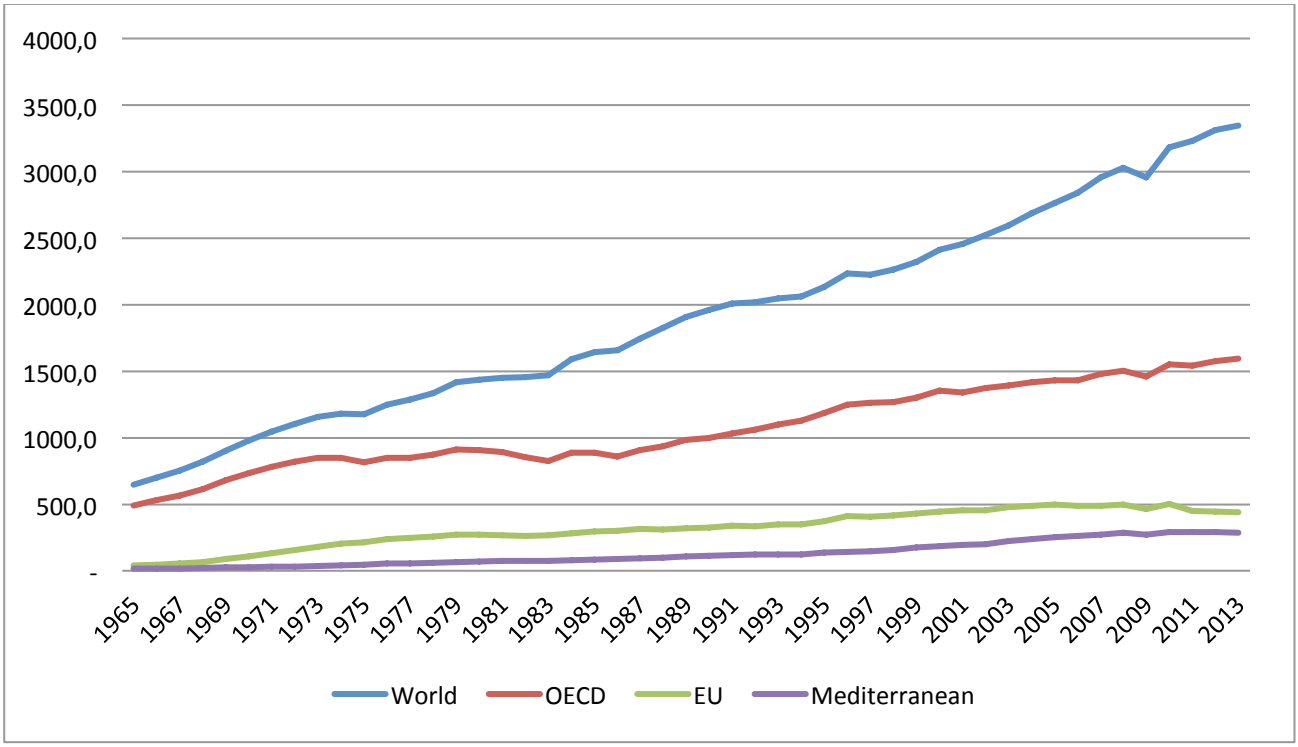
A great part of the Report is drafted by Energy Market Regulatory Authority (EMRA) of Turkey. During the preparation and in the final approval stage other countries commented and make contribution. The Greek Regulatory Authority for Energy (RAE) also joined at the final stage in the process and drafted the 5th Chapter of the Report.

3. MEDITERRANEAN GAS MARKETS

3.1. MEDITERRANEAN GAS MARKETS FROM GLOBAL PERSPECTIVE

Global gas consumption has been on a rise as it reported in the International Energy Agency (IEA) study (2011). Projecting a bright future for the gas, IEA estimated a bolstered gas supply as well as a mounting demand to the gas in coming years. On the supply side, the latest developments in the shale-gas extraction methods will push to the production. The supply boom will find a dramatic counterpart in the demand considering concerns over climate change and nuclear energy production as well as the potential for usage of gas in transport as a replacement of oil.

Graph 1 Global Gas Consumption (BCM)

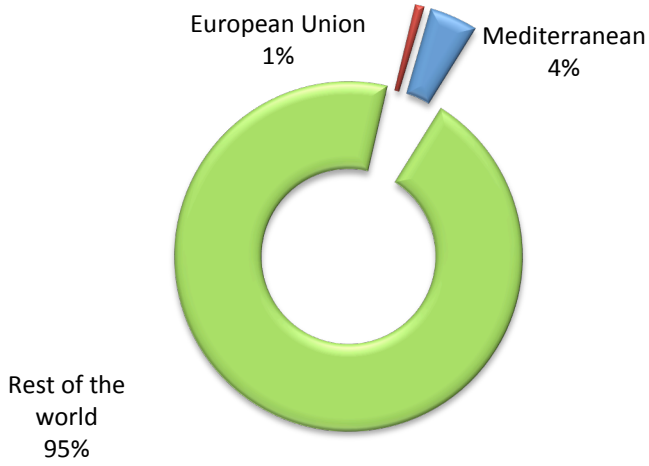


Source: BP (2014)

The Graph 1 shows the drastic increase in gas consumption as of its first commercial usage since mid-20th century. Today, global gas consumption has reached around 3500 bcm and estimates forecast even more. The increase in gas usage is not local or temporal. Both the EU and OECD consumption figures are on the rise as well.

However, the slope of the world consumption figure is much steeper than those of OECD and EU, which indicates that main consumption increase has been realized through the developing world. The total consumption in Mediterranean countries, on the other hand, also represents a steady increase but in a slower pace with the EU, OECD and world averages.

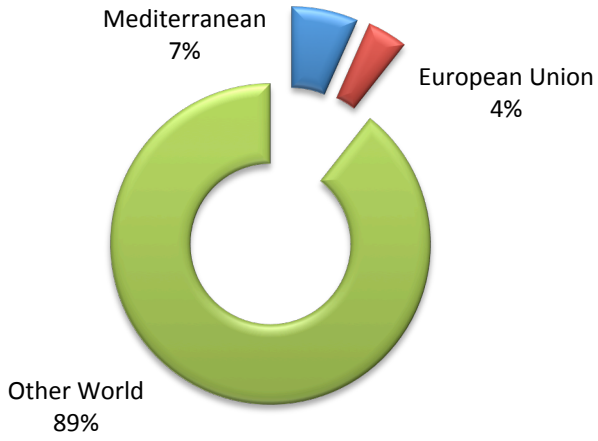
Graph 2 Gas Reserves Ratios



Source: BP (2014)

As to the gas reserves, the proven reserves of (non-EU) Mediterranean countries is around 9 tcm which is 5 percent of the global amounts. While the total proven reserves of European countries are much below than the reserves of Mediterranean countries, the figure of the region appears mediocre comparing countries having more than 30 tcm of reserves alone like Russia and Iran.

Graph 3 Gas Production Ratios



Source: BP (2014)

Gas production ratios of (non-EU) Mediterranean and Europe, on the other hand, are higher than gas reserves ratio, indication that exploitation of reserves in the region is

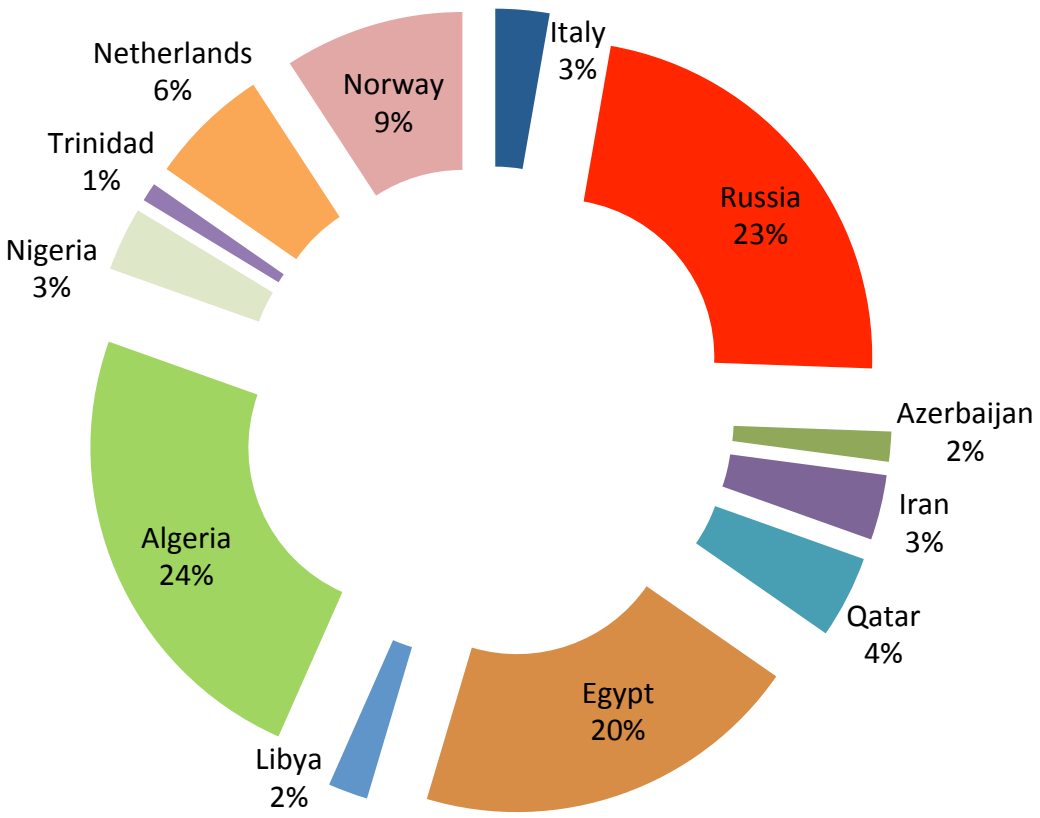
higher than world averages. This could be a sign of non –efficient usage of gas especially in gas producer countries, discussed below.

3.2. GAS SUPPLY AND DEMAND

3.2.1. SUPPLY

Mediterranean region has an advantage of proximity to the natural gas resources as well as of having favorable conditions for LNG trade. Regional countries are importing gas from eleven countries: Via pipeline from Russia, Azerbaijan, Iran, Egypt, Libya, Algeria, the Netherlands and Norway; and via LNG from Trinidad & Tobago, Nigeria and Algeria. Algeria is the main gas supplier of the region – both in LNG form and with submarine pipelines. Russia, out of the region, provides as much gas as Algeria does to the regional countries. Egypt, third biggest supplier, mainly consumes its own production while the exports dwindle to nil. Apart from Libya who exports a relatively small amount of gas, rest of the suppliers is located out of the Mediterranean.

Graph 4 Gas Supply Ratios by Source Countries

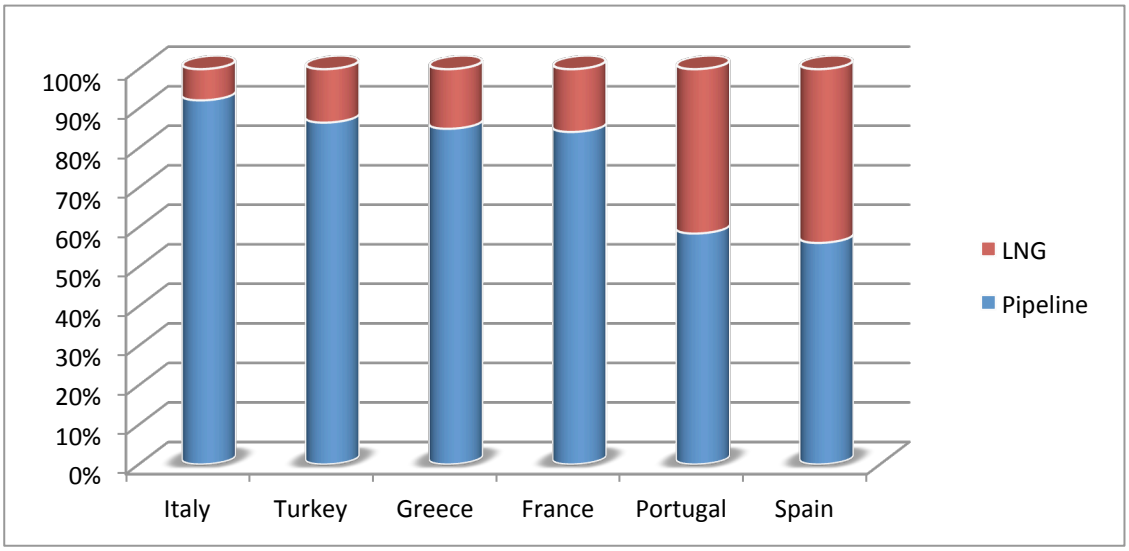


Source: MEDREG Survey and BP (2014)

In the Graph 6, one can distinguish imports by forms of sources. Six of the regional countries own LNG regasification facilities: Italy, Turkey, Greece, France, Portugal and

Spain. Among these six, Portugal and Spain has been able to largely diversify import sources by LNG facilities. The imported amounts of these two countries cover almost half of the total consumption. For the rest of other LNG importer countries the LNG covers less than 20 percent of consumption.

Graph 5 Consumption by import type (LNG/Pipeline)

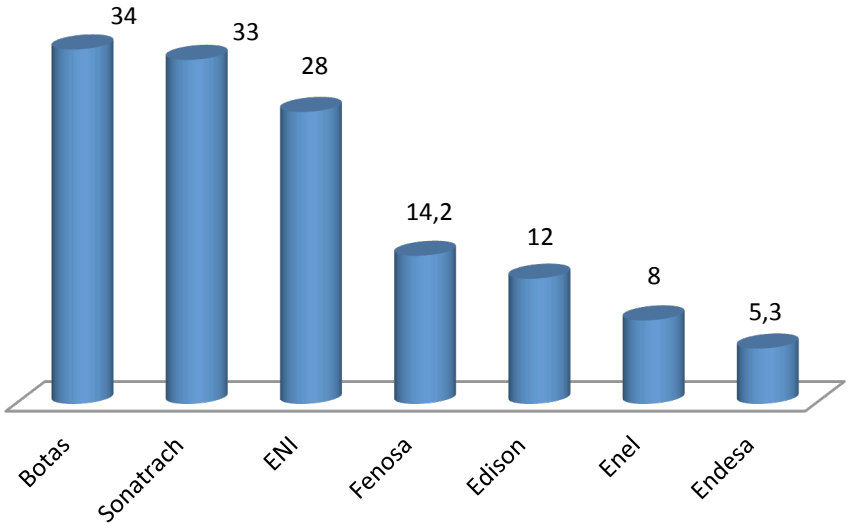


Source: MEDREG Survey and BP (2014)

Finally, the graph 7 lists the main suppliers (over 5 bcm/year) of the natural gas by companies to final customers. The state-owned Turkish company BOTAS is the largest company in terms of sales to final customers. While BOTAS operates only in Turkey, Sonatrach, the Algerian state-owned gas company, operates not in Algeria but also in Italy and Spain. ENI, Edison and Enel are operating in Italy while Fenosa and Endesa sale gas mainly in Spanish gas market. These companies are all common in operating in countries consuming big amount of natural gas. The exceptions in this graph are Egyptian and French gas markets from where no data is provided[1]. Further details in terms of market shares of companies are listed in Appendix V. The market concentration ratios are generally high in the region. The least concentrated gas markets exist in Spain and Italy which achieved relatively more open markets. In France, the three biggest shippers represent a market share of 83.6% of available gas.

Graph 6 Gas Supplies by companies (bcm/year)

[1] The shares of gas companies in French supply market are not reported in 2009 questionnaires due to confidentiality; while Egypt hasn't yet established a regulatory body for gas markets to provide an official response.

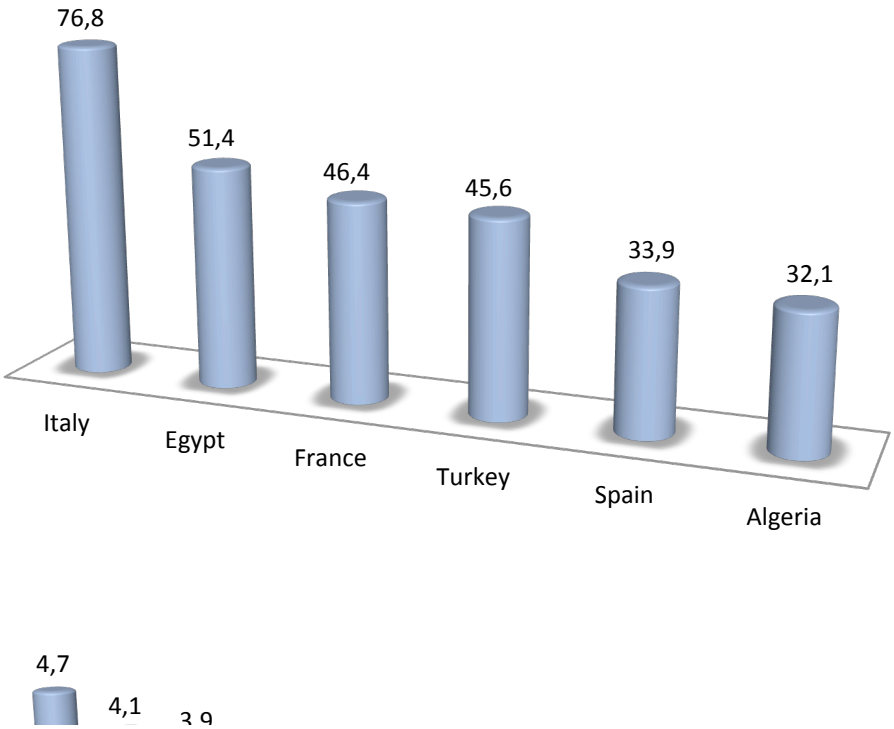


Source: MEDREG Survey

3.2.2. DEMAND

Natural gas consumption figures show a large diversity throughout the Mediterranean countries, from Italy which consumes almost 80 bcm of gas annually to Bosnia and Herzegovina consuming a quarter bcm annually. This variation presents different roles of natural gas among regional countries. Four of the regional countries don't even have access to gas: Albania, Montenegro, Malta and Cyprus.

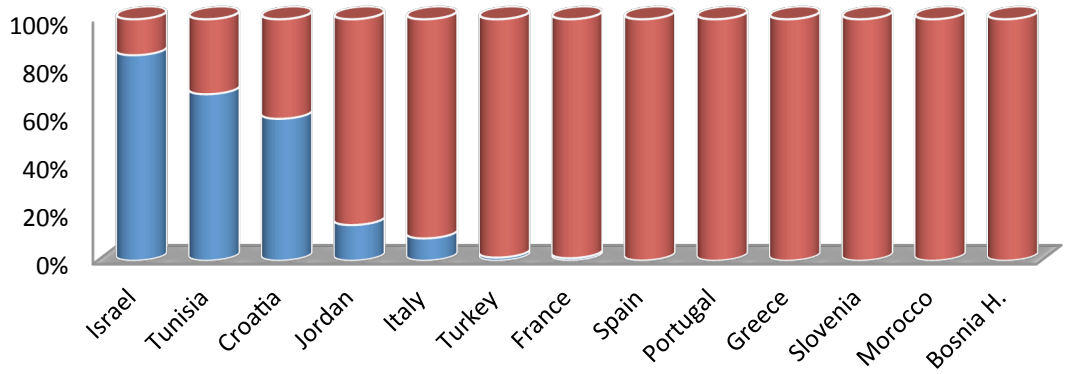
Graph 7 Consumption by countries (bcm)



Source: MEDREG Survey and BP (2014)

Italy is by far the leader of the region in terms of natural gas consumption amount. With the amount of 78 bcm it surpasses the closest consumption amount by 30 bcm. Egypt, France and Turkey come after Italy with the consumptions of more than 40 bcm. Spain and Algeria can also be categorized as the bigger consumers as their annual amounts pass 30 bcm annually. These countries are followed by Israel, Portugal, Tunisia, Greece and Croatia having between 3 to 5 bcm of gas consumption. Jordan, Slovenia, Morocco, Libya and Bosnia and Herzegovina consume less than 1 bcm annually. The consumption figure in Jordan is not the normal situation. There has been a fall in consumption recently due to the incidents of attack on the gas pipeline inside Egyptian territory

Graph 8 Shares of Production and Imports

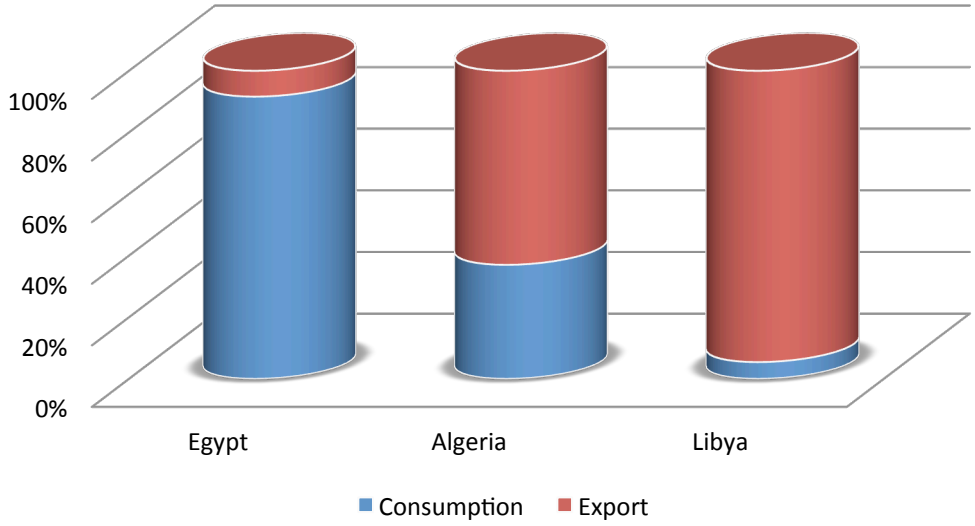


Source: MEDREG Survey and BP (2014)

In the Graph 8 visible the production shares of gas importing countries in their total consumption. As the graph clearly pictures, only three gas importing countries are able to balance their imports by indigenous production: Israel, Tunisia and Croatia. On the

other hand, Jordan, Italy, Turkey and France have negligible gas production in the face of the gas they imported. Spain, Portugal, Greece, Slovenia, Morocco and Bosnia and Herzegovina have no gas production at all.

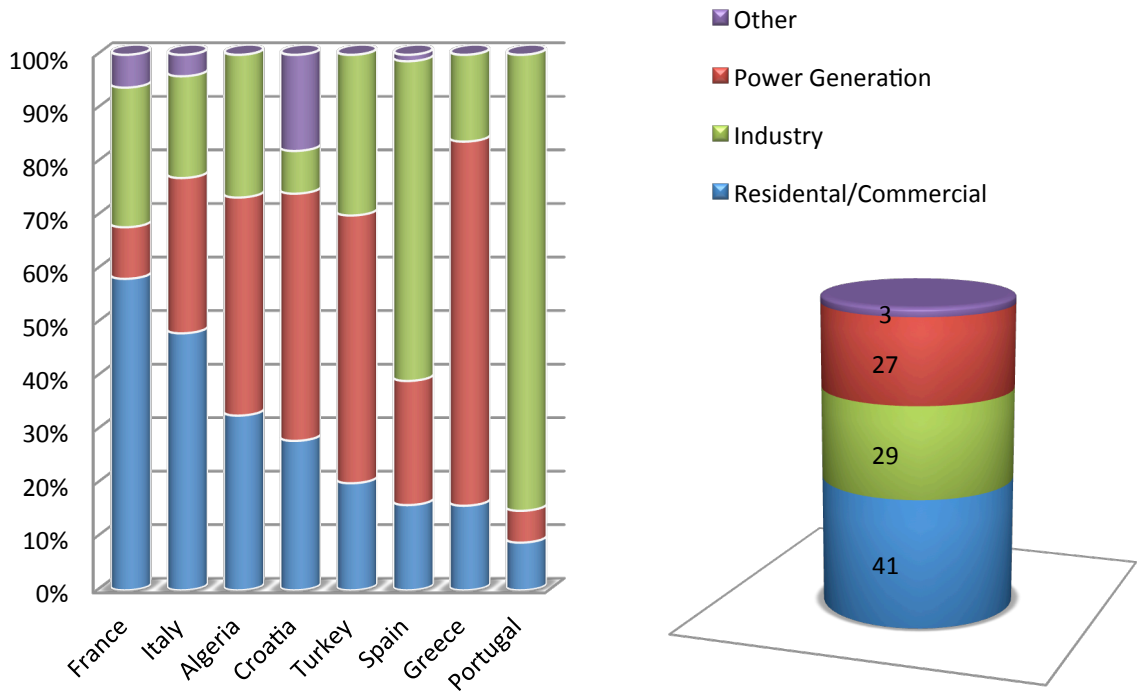
Graph 9 Shares of Consumption and Exports (bcm/y)



Source: MEDREG Countries and BP (2014)

The shares of consumption and exports show the other dimension of the issue. Among the three exporters of the regional countries, they can distinguish each other in quite divergent figures of consumption to export ratios. While Egypt consumes all of the gas it produces, Libya exports almost all of its production. Algeria, on the other hand has largely balances its own consumption with the exports.

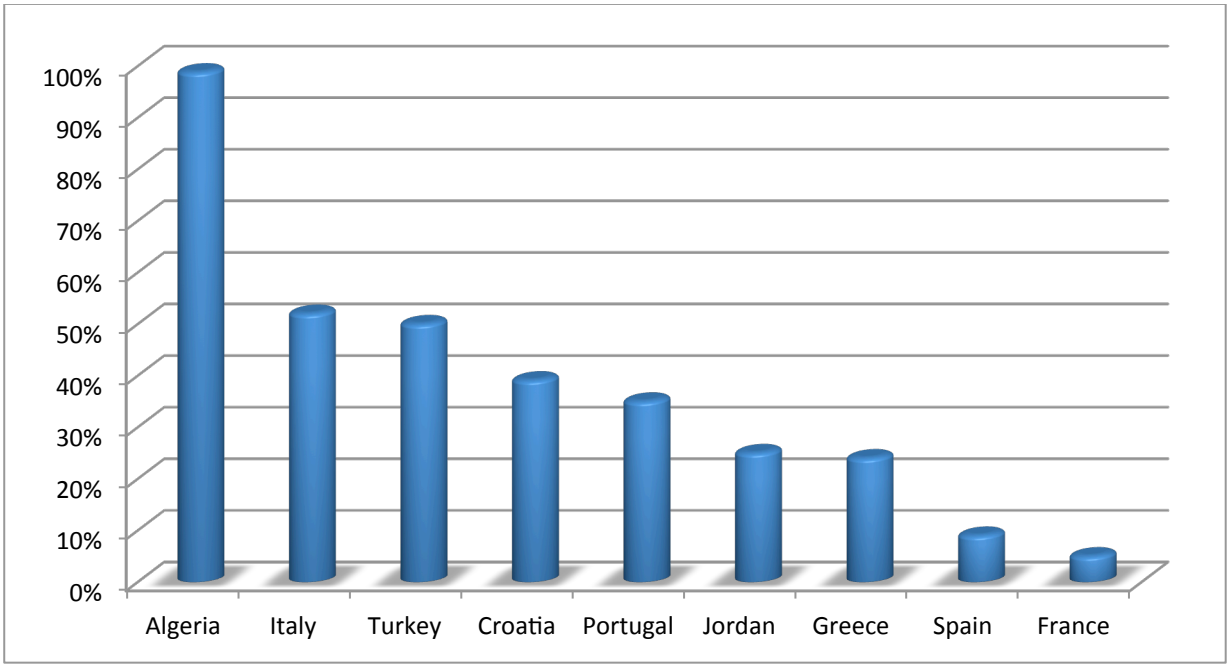
Graph 10 Gas consumption shares by sectors



Source: MEDREG Survey

When it comes to the branching of the gas consumption among different sectors, one can see that a great amount of natural gas is consumed for residential and commercial purposes. While around forty percent of the gas is allocated to the residential/commercial sectors, the other half is nearly equally shared by power generation and industry. The high level of residential consumption is not expected considering the warm climate of the region. Among the big gas consumers, France and Italy have the greatest share in the residential consumption. Regarding the other two big consumers, Turkey and Spain, consumes gas mainly in power generation and industry respectively. For Algeria, the picture is more reasonable as the gas indigenously produced and the seasonal gas consumption does not exist. The sectorial consumption shares in Turkey do not fit to the conventional pattern of gas consumption which is heavily dependent on imported gas. The share of gas consumption is high in Turkey although it has no indigenous production and the residential consumption covers only one fifth of total amount despite harsh winter climate. This finding is also partially valid for Greece. Another noteworthy figure belongs to France whose gas consumption share in power generation remains only ten percent of total consumption. This may be explainable by France's mixture of power generation- especially the role of nuclear plants.

Graph 11 Share of gas in power generation



Source: MEDREG Survey

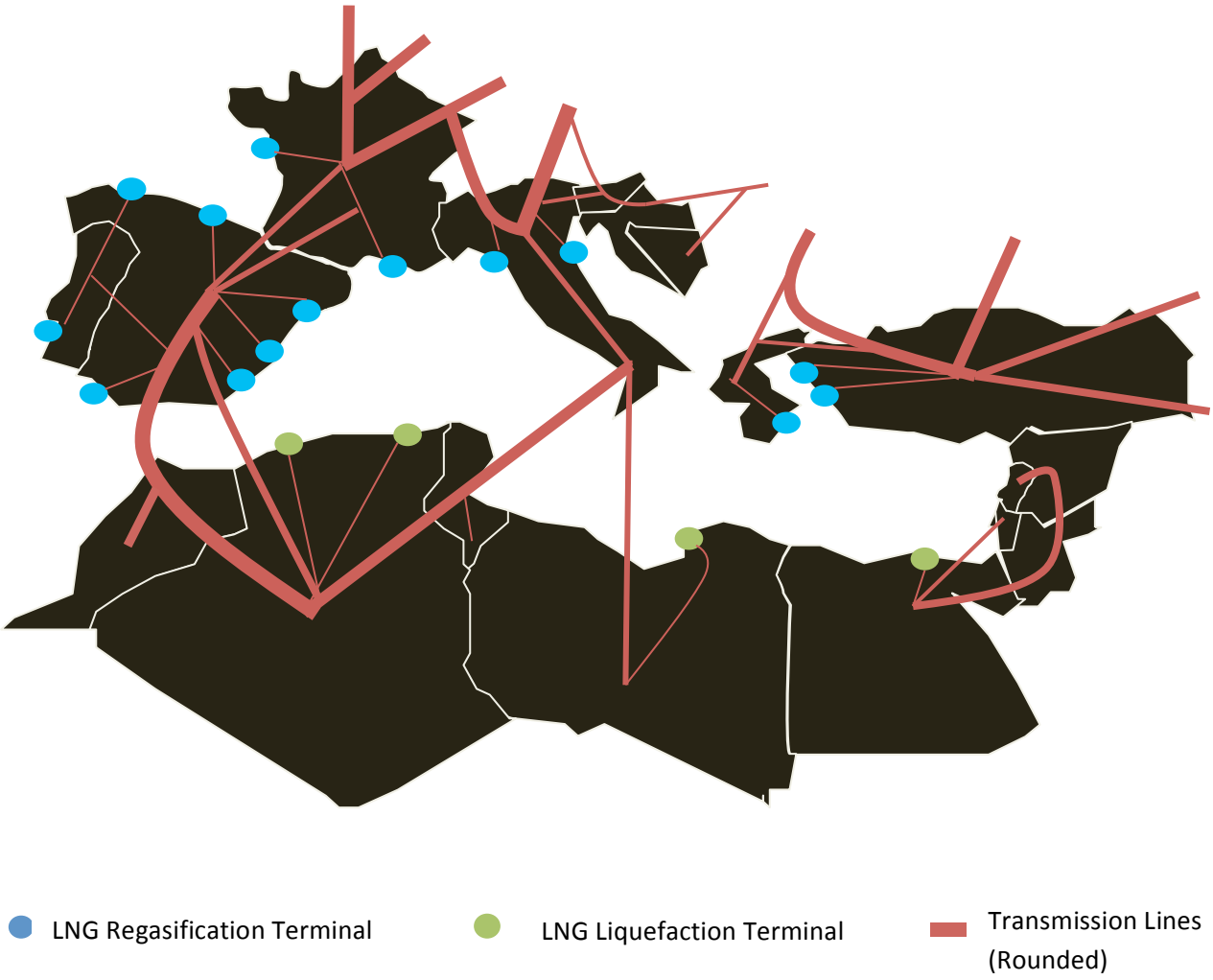
The Graph 11 pictures other side of the story: the share of natural gas in power generation. In the graph the mirror images of Algeria and France are visible. While the first consumes its own resources, the latter is strongly dependent on imported amounts.

4. GAS NETWORK INFRASTRUCTURE IN THE MEDITERRANEAN

4.1. GAS NETWORK FACILITIES: TRANSMISSION, LNG AND STORAGE

As it is outlined in the previous sections, the trade potential among Mediterranean countries is not fully utilized. Among others, lack of infrastructure investments is the main barrier ahead of developing deeper commercial ties. Nevertheless, through the course of the last decade new interconnections have paved way for trade while planned projects herald greater enmeshed networks.

Map 1 Gas Networks



Source: MEDREG (2012)

The current interconnections are visible in the Map 1. Algeria appears as the main gas supplier of the region with submarine interconnections to Spain and Italy; and direct gas supply to Morocco and Tunisia. With two LNG terminals, Algeria has also developed unrivalled LNG trade through the region. Other main gas producing countries, Libya and Egypt has weakly interconnected in the region. Libya is solely connected to Italy and Egypt has interconnections with Israel and Jordan with small capacities.

Among the gas importing countries, there are four separately connected regions. While in the western Mediterranean, Portugal, Spain and France are connected to each other, in the central Mediterranean, Italy is connected to the Balkan countries: Slovenia and Croatia. In the region, Bosnia and Herzegovina does not have an interconnection with the Mediterranean countries. In the east, there are two isolated areas. One of them are Greece and Turkey, connected to each other without further connection to other regional countries. The other one is mainly set around the Arab Gas pipeline connecting Egypt with Jordan, Syria and Lebanon in addition to the direct gas pipeline between Egypt and Israel.

Table 2 Gas Interconnection and LNG capacities

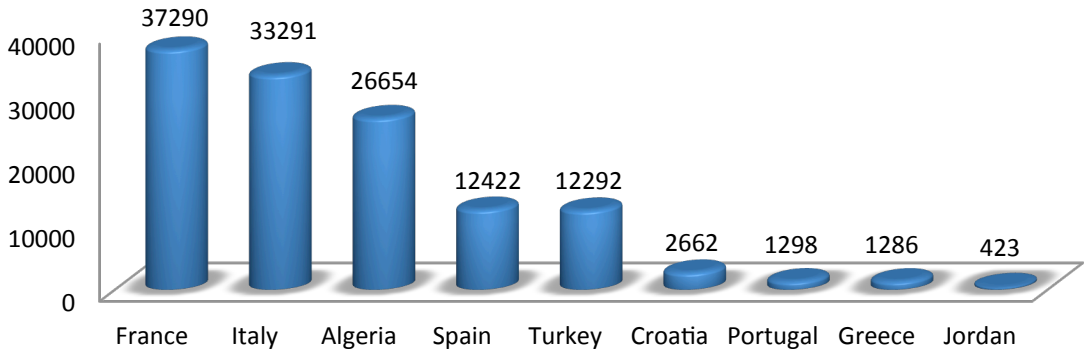
Country	Border/LNG	Name of the point	GWh/d		
Italy	Border Entry	Passo Gries	*637*	3210,9	**3648,4**
		Tarvisio	*1136*		
		Gorizia	*28*		
		Mazara Del Vallo	*1088*		
		Gela	*323*		
	LNG	Panigaglia	*147*	437,5	
		Porto Levante	*291*		
France	Border Entry	Taisnieres (H)	*590*	2015	**2795**
		Taisnieres (B)	*230*		
		Obergailbach	*620*		
		Biriatou	*5*		
		Dunkirk	*570*		
	LNG	Montoir De Bratagne	*370*	780	
		Fos Tonkin / Cavaou	*410*		
Spain	Border Entry	*Tarifa*	*4444*	915	**2830**
		Almería	*266*		
		Badajoz	*70*		
		Tuy	*25*		
		Irún	*10*		
		Larrau	*50*		
	LNG	Barcelona	*544*	1915,4	
		Sagunto	*279*		
		Cartagena	*377*		
		Huelva	*377*		
		Mugardos	*115*		
		Bilbao	*223*		
Turkey	Border Entry	Malkoçlar	*547*	1554,2	**1960,198**
		Durusu	*504*		
		Gürbulak	*304*		
		Turkgözü	*199*		
	LNG	Aliağa	*171*	406,0	
		M. Ereğlisi	*235*		
Portugal	Border Entry	Valenço do Minho	*23*	145,2	**331,7**
		Compo Maior	*122*		
	LNG	Sines	*187*	186,5	
Greece	Border Entry	Kipi	*30*	139	**286,5**

		Kula	*109*		
	LNG	Revythoussa	*148*	147,5	
Croatia	Border Entry	Zabok	*46,7*	224,5	**224,5**
		Donji Miholjac	*178*		
Slovenia		Sempeter	*28*	27,9	**103**
	Border Entry	Ceršak	*75*	75	
Bosnia and H.	Border Entry	Sepak	*25,2*	25,2	**25,2**
Syria	Border Entry	Rehab	*292*	292	**292**
Jordan	Border Entry	Aqaba	*292*	292	**292**
Israel	Border Entry	Ashqelon	*204*	204	**204**
Tunisia	Border Entry	Qued es Saf Saf	*794*	794	**794**
Morocco	Border Entry	Morocco	*330*	330	**330**

Source: MEDREG (2012) and ENTSOG

Table 2-4 provides details of interconnection and LNG terminal capacities as well as storage facilities. While Italy has the highest interconnection capacity, the diversification of routes is the highest in Spain with 6 interconnection points and 6 LNG terminals. France and Turkey also have multiple interconnections and LNG terminals allowing supply diversity and security of supply. Portugal and Greece, having lesser gas consumption, have three different entry points to their respective markets. Rest of the regional countries has less than 3 interconnections.

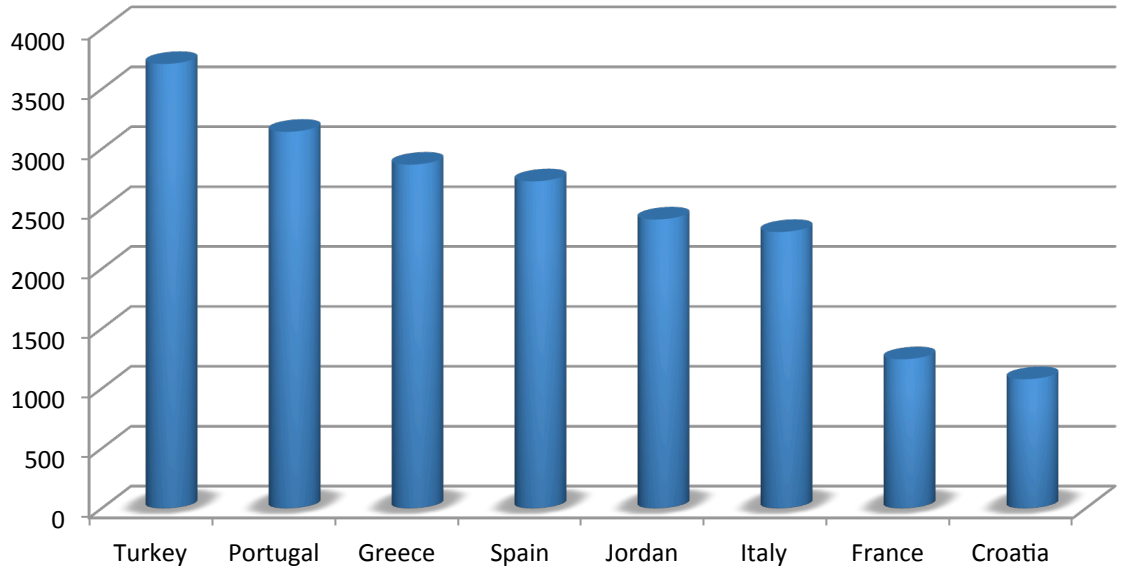
Graph 12 Transmission lines (km)



Source: MEDREG Survey

The capacity of entry points to the gas network does not suffice to explain the technical sophistication of a gas market. The length of transmission lines also gives some idea on the overall transport capacity of gas network. In the graph 12 ranked the length of transmission lines of certain regional countries which are topped by France. The length of transmission lines largely puns parallel to the country's gas consumption.

Graph 13 Transmission Usage Ratio (m3/km)



Source: MEDREG Survey

The graph 13 shows the usage ratio of transmission networks which is calculated by the total annual consumption divided by the length of transmission lines. Accordingly, France and Croatia have around 1000 m3/km which can be interpreted as the adequacy of transmission networks. On the other hand the ratio is around 3000 in Portugal and Greece, and over 3500 in Turkey indicating necessity for greater investments in the transmission networks.

Table 3 LNG Terminals

Country	LNG terminal	Tank storage capacity [mc]	Send-out capacity [Smc/h]	Terminal owner	Terminal operator
Portugal	Sines	390.000	900.000	REN Atlântico	REN Atlântico
Greece	Revithousa	130.000	580.573		
France	Montoir	360.000	1.141.553	Elengy	Elengy
	Fos Tonkin	15.000	627.854	Elengy	Elengy
	Fos Cavaou	330.000	941.781	Fosmax LNG	Elengy
Spain	*Barcelona*	840.000	1.950.000	ENAGAS	ENAGAS

	Cartagena	587.000	1.350.000	ENAGAS	ENAGAS
	Huelva	610.000	1.350.000	ENAGAS	ENAGAS
	Bilbao	300.000	800.000	BBG	BBG
	Sagunto	600.000	1.000.000	SAGGAS	SAGGAS
	Murgardos	300.000	412.800	REGANOSA	REGANOSA
Turkey	Marmara	255.000	918.750	BOTAS	BOTAS
	Aliaga	280.000	671.300	Egegaz	Egegaz

Source: MEDREG Survey

Table 4 Storage Facilities

Country	Storage site	Working gas [MSmc]	Max withdrawal capacity [Smc/h]	Location in the country	Type	Storage owner	Storage operator
Portugal	Carriço (5 salt caverns)	150,8	300.000	Leiria	Salt cavity	3 from REN Armazenagem; 2 from Transgás armazenagem	REN Armazenagem(only one surface facilities)
Croatia	Okoli	553	240.000	Northern /central part	Depleted field	Podzemno skladište plina d.o.o.*	Podzemno skladište plina d.o.o.
France	Sediane B	939,85	724.467	North Zone	Aquifer	Storengy	Storengy
	Sediane Nord	1052,63	826.284	North Zone	Aquifer	Storengy	Storengy
	Serene Littoral	1890,98	877.193	North Zone	Aquifer	Storengy	Storengy
	Serene Nord	1691,73	536.497	North Zone	Aquifer	Storengy	Storengy
	Saline	911,65		South	Saline	Storengy	Storengy

			1.911.028	Zone			
	Serene Sud	2218,05	1.026.003	South Zone	Aquifer	Storengy	Storengy
	Lussagnet and Izaute	2537,59	1.335.370	South-West	Aquifer	TIGF	TIGF
Spain	Serrablo	820	6.800.000	Huesca	Depleted gas field	Enagas	Enagas
	Gaviota	1547	5.700.000	Vizcaya	Depleted gas field	Enagas	Enagas
	Yela	1050	15.000.000	Guadalajara	Aquifer	Enagas	Enagas
	Marismas	686	5.000.000	Huelva	Depleted gas field	Gas Natural Fenosa	Gas Natural Fenosa
Turkey	Silivri	2661	833.333	Northwestern region	Depleted reservoir	TPAO	TPAO

* Storage system operator Podzemno skladište plina d.o.o. is owned by TSO Plinacro d.o.o.

Source: MEDREG Survey

To begin with the TSO regime of regional countries, the Portuguese REN Gasodutos, S.A. is a private company and is the only company that holds the natural gas transmission concession, by way of the high-pressure grid. Pursuant to its obligations as transmission system operator, REN Gasodutos must separate its activities, i.e. natural gas transmission, (National System of Natural Gas) SNGN Global Technical Management and Access to the National System of Natural Gas Transmission (RNTGN). In Portugal, in context of the natural gas transmission activity, the TSO shall operate the natural gas transmission infra-structures in appropriate technical and economic conditions – including LNG transport by road to supply customers connected to the local natural gas distribution systems. To this effect the TSO shall, in the framework of its natural gas transmission activity, propose the planning and promote the development of RNTGN infra-structures so as to equip the national natural gas system with the appropriate technical capacity, thus contributing to the security of supply. Also it is the TSO's responsibility to ensure the operation, technical integrity and maintenance of the transmission system. The TSO shall also be responsible for allowing all market players to access such infra-structures in a transparent non-discriminatory way. In the framework of the SNGN Global Technical Management activity, the TSO is the SNGN Global Technical Manager and performs Settlement of Accounts functions. The SNGN Global Technical Manager is in charge of coordinating operations of the SNGN infra-structure and of the infra-structure connected to this system. The Settlement of Accounts function is in charge of sharing and balancing associated with the use of infra-structures, as well as determining the existing stocks of

market players in the said infra-structures. The Supplier-Switching Logistic Operator function is, for the time being, performed by the TSO in the framework of the Global Technical Management of the System, until the legal regime governing the exercise of such activity is defined. Thus the TSO is responsible for the supplier-switching process according to the applicable legislation. On the other hand, In the framework of the SNGN Global Technical Management activity, the transmission system operator is in charge of contracting the access to the RNTGN infra-structures – as regards deliveries to customers connected to the transmission system. As a final note on the Portuguese transmission system operator, REN – Redes Energéticas Nacionais, SGPS, S.A. is the only shareholder of the company REN Gasodutos, S.A.

In Greece, there is one TSO, DESFA SA (owned 100% by DEPA which is a state owned natural company by 65%, while another 35% belongs to petroleum company HELPE SA) DESFA was established in February 2007. DESFA is the owner and operator of the transmission system (680km transmission lines) and of the LNG terminal on Revythoussa Island. A detailed information regarding the technical characteristics of Greek transmission network is provided in Appendix III.

In Algeria, the Sonatrach is a state-owned company. It operates crude oil, condensate, LPG and gas pipelines in the country. The gas pipelines carry gas from different production fields to LNG plants and supply the domestic market through the transmission system owned and operated by GRTG. Two other pipelines are dedicated to gas export: (Pedro Duran Farell from Algeria to Spain via Morocco and Enrico Mattei from Algeria to Italy via Tunisia. As to the Société Algérienne de Trasport du Gaz (GRTG), it is a subsidiary of the state-owned company Sonelgaz. It operates the national gas transmission network. The pipelines carry the gas from the intake points (from Sonatrach network System) to the delivery points of clients (power plants, industry and distribution networks).

In Jordan, the Jordanian Egyptian Fajr company for natural gas transmission and supply (Fajr) implemented the Arab gas pipe line (second phase) on build, own, operate and transfer basis (BOOT) under the License Agreement signed with the Government of Jordan represented by Ministry of Energy and Mineral Resources , on 25th, January 2004, by this agreement Fajr will purchase gas from Egypt at delivery point at Aqaba; built, operate & maintain the gas transmissions system in Jordan; and supply gas to power stations & industrial customers in Jordan.

There are two transportation system operators (TSO) in France: GRTgaz and TIGF. GRTgaz is owned by GDF Suez (75%) and various state-controlled entities (25%); it operates on two balancing zones (North and South). TIGF is owned by Snam, EDF and GIC (acquisition completed in 2013); it operates on TIGF zone, in the South-West of France. The TSOs own the natural gas transmission system and are responsible for the commercialization of transportation services. Their mission is to provide an entirely even-handed service to all operators wishing to enter the French market and to foster genuine competition between natural gas producers / suppliers.

Table 5 Transmission System Operators

Country	Infrastructure operator	Length of the transmission network (km)	Location in the country	Volumes transported in 2013 [bcm]
Portugal	REN Gasodutos	1298	coastline and center	4081
Greece	DEFRA	1286	Countrywide	3,700
Croatia	Plinacro d.o.o.	2662	Northern, central, western and southern part	3,019
Algeria	Sonatrach (*)	10 754	From South to East, Center and West	105,9
	Société Algérienne de Transport du Gaz (GRTG)	15900	All over the country	27,4
Jordan	FAJR company	423	From Aqaba city(south of Jordan) till Jordanian Syrian borders(north of Jordan)	0.867
France	GRTgaz	32250	All over France except in the South West	637
	TIGF	5040	South West France	113
Italy	Snam Rete Gas Spa	32245	SRG covers all the national territory (excepted Sardinia, not yet covered by natural gas service).	69,09
	Società Gasdotti Italia	1046	Are located in the Central and Southern Italy	1,8
Spain	*Enagas*	11976		
Turkey	BOTAS	12,282	Country-wide	45,9

* Including Algerian side of three transcontinental gas pipelines : Pedro Duran Farell (Algeria-Spain via Morocco) and Enrico Mattei (Algeria-Italy via Tunisia) and Medgaz (Algeria-Spain)

Source: MEDREG Survey

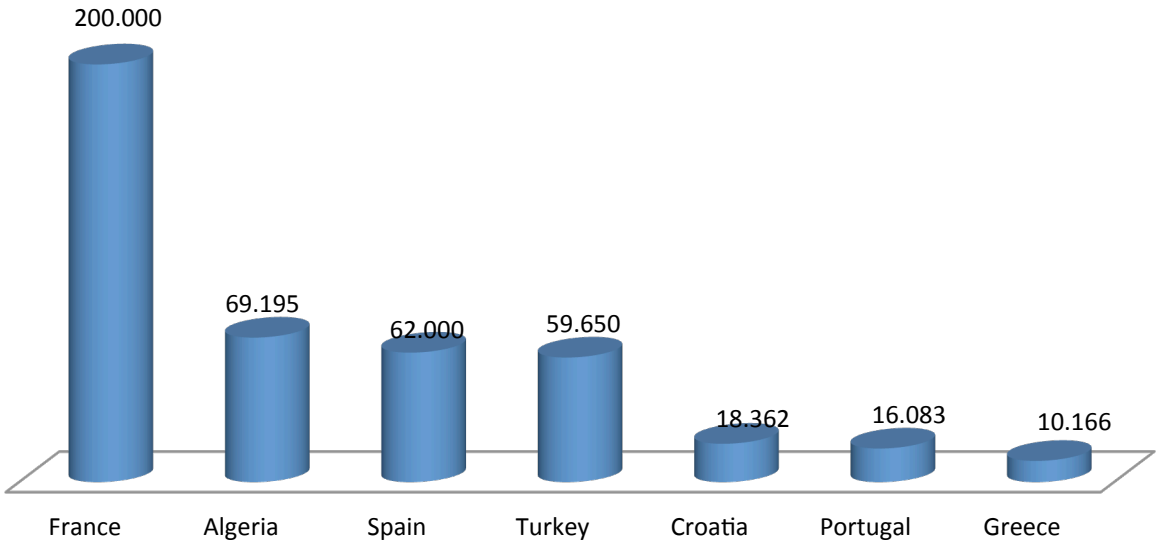
In Spain the transmission system operator is ENAGAS. It is the only system operator and the main gas transmission company in Spain with 76,99%* of the transmission grid. ENAGAS is followed by the group of companies Gas Natural (9,36%)*, group of companies NUBIA 2000 (8,08%)*, Naturgas (3,59%)* and other (1,97%)*. Shareholders of

ENAGAS include Oman Oil (5%), Kutxa Bank (5%), SEPI (5%) and the rest is open to the market.

4.2. GAS NETWORK FACILITIES: DISTRIBUTION

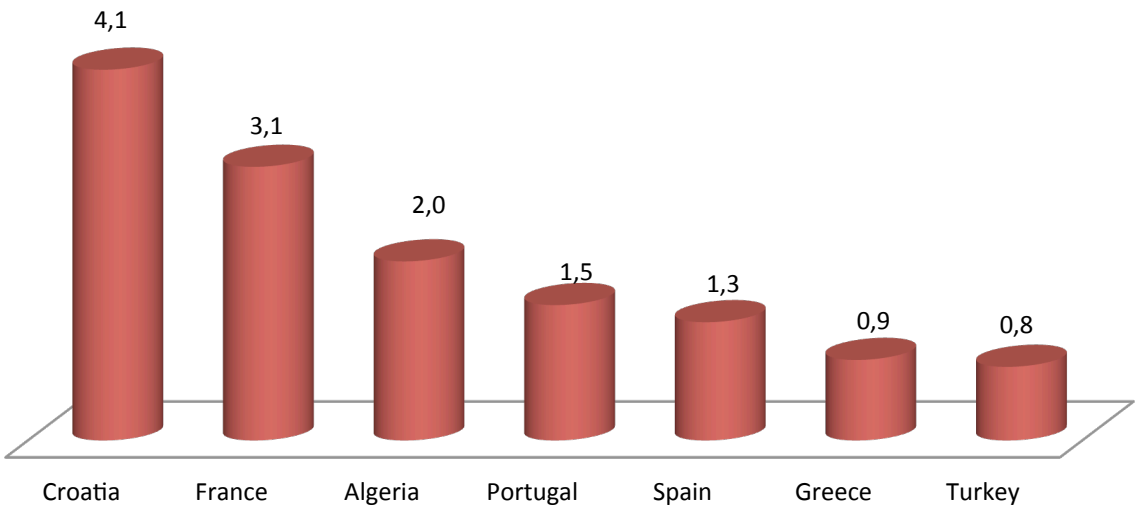
An indication of the development level of gas usage in the residential areas is the length of distribution networks. As the graph 14 shows France has of the highest level of investments in the distribution business. Algeria, Spain and Turkey, with around 60.000 kms distribution lines come after France. Croatia, Portugal and Greece, having lesser population only have around 18000 and 10000 kms long lines respectively.

Graph 14 Length of Distribution Lines (km)



Source: MEDREG Survey

Graph 15 Meters of the distribution lines pp



While taking into consideration the population of these countries, the graph 15 ranks the countries in terms of distribution lines per person. This ratio has also relevance with the urbanization forms of each countries as well as country specific conditions; it gives an idea of the extent of providing natural gas to the residential customers and also redresses the variance in the graph 14 notwithstanding. In this respect, Croatia and France appears to have the most developed distribution networks while Greece and Turkey has still room for improvement. Detailed information on the owners and size of distribution companies can be found in the Appendix I.

To provide detailed information on distribution companies: The Portuguese distribution companies are all privately owned. Some of the distribution companies have concessions for distributing natural gas. Some others are granted licenses for distributing natural gas at local level. All of them are inherently licensed as last resort suppliers. In Portugal, natural gas distribution system operators shall propose the planning, construction and management of their system, so as to allow access without discrimination of third-parties and efficiently manage the infra-structures and ensure the maintenance of distribution systems. In the framework of the SNGN Global Technical Management, natural gas distribution system operators shall also co-ordinate the functioning of their systems among themselves, so as to make sure that natural gas is conveyed from the points of admission to the points of delivery.

In Greece, there is one small distribution network owned by DEPA and three operational local distribution networks (EPA) and three more planned to operate in the future. All based on regional characteristics. There are 3 local distribution companies in operation called “EPA” (3 EPAs: EPA Attiki for Attica area, EPA Thessaloniki for Thessaloniki area and EPA Thessalia for Thessaly area). Each EPA operates under an exclusive 30-year license to develop and operate the gas distribution system and supply consumers with consumption less than 10 M Nm3 all within its area. A 49% shares and the management of each EPA are on a private investor who got the

concession after tendering. The remaining 51% of the shares is owned by DEPA SA. DEPA SA holds exclusive rights of developing distribution networks in the rest of Greece, which may be granted to future EPAs. For the time being DEPA is the exclusive supplier of large gas consumers (i.e. those with annual consumption in excess of 9.5 mnSm3) and of the EPAs. There are three more local distribution companies but still not in operation, these are: EPA Central Macedonia, EPA Eastern Macedonia and Thrace and EPA Stereas Elladas.

5. LEGAL AND REGULATORY FRAMEWORK

5.1. GAS SECTOR LEGISLATION

MEDREG countries, in vast majority, make the relative legislation available for all interested parties. The legislation is usually posted on websites either of the NRAs, or of the Ministries. Many MEDREG countries publish the above information in either native and English language or French language as well. In detail, 7 MEDREG countries display the legislation in English, while 3 countries post a French version of the documents.

The following table summarizes the main legislation related to the gas sector in each country, as well as the website where it is posted and the languages in which it is available.

Table 6 Legislations and availability

Country	Primary and Secondary legislation - Availability	Languages
Albania	Primary Legislation - Law Nr 9946 dated June 30, 2008 (Natural Gas) - Law Nr 7746 dated 28 July 1993 (HC exploration and production as amended) Secondary Legislation - In process of development. Availability: (www.ere.gov.al)	Albanian English
Algeria	-Law 02-01 and its application texts. -Law 05-07 (amended in 2006 and2013) and its application texts. Availability: www.mem-algeria.org www.creg.gov.dz	Arabic French

Country	Primary and Secondary legislation - Availability	Languages
	www.joradp.dz	
Bosnia and Herz.	- Law on Gas in RS, Decree on Organization and Regulation of Gas Sector in FBIH www.reers.ba/site/actual_legislation_energy_sector/442/energy_sector.aspx	National lang. English
Croatia	Primary legislation: - The Law on Regulation of Energy Activities ("Official Gazette", No. 120/12); - The Law on Energy ("Official Gazette", No. 120/12); - Gas Market Act (“Official Gazette”, No. 28/13 and 14/14) Secondary legislation: General Conditions of Gas Supply ("Official Gazette", No. 158/13); - Network Rules of Gas Distribution System ("Official Gazette", No. 158/13); - Network Rules of Transportation System ("Official Gazette", No. 12/13); - Terms of Usage Gas Storage System ("Official Gazette", No. 12/13); - Rulebook of the Gas Market Organization ("Official Gazette" No. 12/13 and 2/14); - Methodology of Determining the Amount of Tariff Items for Gas distribution (Official Gazette" No. 104/13); - Methodology for Determining the Amount of Tariff Items for Gas Transportation (Official Gazette" No. 85/13; 158/13); - Methodology for Determining the Amount of Tariff Items for Public Service Gas Supply and a Supply of Last Resort (Official Gazette" No. 38/14); - Methodology for Determining the Price of Non-standard Services for Gas Transport, Gas Distribution, Gas Storage and Public Service Gas Supply (Official Gazette" No. 158/13), - Methodology for Determining the Price of Balancing Energy of the Gas System (Official Gazette" No. 158/13), - Methodology for Determining the Amount of the Tariff Items for Gas Storage (Official Gazette" No. 22/14). Availability: www.hera.hr	National lang.
Cyprus	Primary Legislation - Law Regulating the Natural Gas Market, number N.183(I)/2004 (in Greek only) Laws for the amendment of the Law regulating the Natural Gas Market of 2004, number N.103(I)/2006 and N.199(I)/2007 Secondary Legislation - Regulation of 2006 on regulating the NG market (FEES)	Greek Not in English

Country	Primary and Secondary legislation - Availability	Languages
	- Regulation of 2006 on regulating the NG market (ISSUE OF LICENCES) - Regulation of 2006 on regulating the NG market (INVESTIGATION PROCEDURES) Availability: www.cera.org.cy	
France	Directive 2003/55/EC of 26 June 2003 replacing the directive of 1998 Regulation 1775/2005 of 28 September 2005 on conditions for access to the natural gas transmission networks Law 2003-8 of 3 January 2003 transposing the 1998 directive (gas) Laws 2004-803 of 9 August 2004, 2005-781 of 13 July 2005 and 2006-1537 of 7 December 2006 transposing the 2003 directives Law n° 2010-1488 of 7 December 2010 Law n° 2011-12 of 5 January 2011 transposing the 2009 directives Law n°2013-312 of 15 April 2013 Availability: www.cre.fr/en/documents/reglementation/directives_et_lois	French Partially in English
Greece	According to the Gas Law, the regulator (RAE) is responsible for monitoring and regulating the gas market. RAE was established in 2000 under law 2773/1999. Primary Legislation: The central piece of primary legislation governing the gas sector in Greece today is the Law 4001/2011 which transposed Directives 2009/72/EC and 2009/73/EC. Secondary Legislation: As to the basic secondary legislation, the access regime established in the law is based on (a) a Network Code regulating the operation, maintenance and expansion of the NGS as well as the provision of TPA services, (b) standard TPA contracts and (c) published regulated tariffs and Tariff Methodology. Licenses are issued through a decision of the Minister of Environment, Energy and Climate change, following RAE's opinion. Large part of the Laws is available in the English language, at the website of Ministry of Environment, Energy and Climate change. A version of the	Greek English

Country	Primary and Secondary legislation - Availability	Languages
	Operations Code, the Tariff Methodology, the Tariffs and the standard gas transportation contract as well as the contract for the use of the Revythoussa LNG Terminal are available in English at www.desfa.gr.	
Israel	- Natural Gas Industry Act (2002) and Gas Safety Act (1989 – safety issues) Availability: www.mni.gov.il	
Italy	- Legislative decree n. 164, of 23 May 2000 (Letta Decree) and Law n. 239, of 23 August 2004 (Marzano Law) - Secondary legislation issued by the Ministry - AEEGSI Deliberations - Legislative decree 93/2011 of third European Energy Package fulfillment Availability: Law n. 481 of November 14th 1995 on *"Norms governing competition and the regulation of public utilities. The institution of regulatory bodies for public utilities"* is available at: http://www.autorita.energia.it/inglese/about/legge_istitutiva.htm.	Italian Not in English
Jordan	- Applicable government legislation Availability: www.lob.gove.jo and www.memr.gov.jo	Arabic, Not in English
Malta	Natural Gas Market Regulations (S.L.423.21) Natural Gas Supply (Safeguard of Security) Regulations (S.L.423.26) Petroleum for the Inland (Wholesale) Fuel Market Regulations (S.L.423.28) Availability: http://docs.justice.gov.mt/lom/Legislation/English/SubLeg/423/21.pdf http://docs.justice.gov.mt/lom/Legislation/English/SubLeg/423/21.pdf http://docs.justice.gov.mt/lom/Legislation/English/SubLeg/423/28.pdf	National lang. English
Montenegro	Inexistence of a Natural Gas Market yet	
Morocco	Natural gas code in development	
Portugal	Primary legislation: Decree-Law n.º 30/2006, of 15 February; Decree-Law n.º 140/2006, of 26 July, republished by Decree-Law n.º 230/2012 and 231/2012, of 26 October. The directive nº 2009/73/CE from the European Parliament and Council was completely transposed to Portuguese legal frame by the mentioned laws above.	Portuguese Not in English

Country	Primary and Secondary legislation - Availability	Languages
	Secondary legislation: Approved by ERSE: Regulation nº 139-A/2013, of 16 April which approves Quality Service Code; Regulation nº 139-B/2013, of 16 April which approves Operation and Infrastructure Code (supplemented by Directive nº 16/2002, of 6 August) Regulation nº 139-C/2013, of 16 April which approves Grid Access and Infrastructure Code (supplemented by Directive nº 15/2012, of 3 September); Regulation nº 139-D/2013, which approves Commercial Trading Code and Regulation nº 139-E/2013, of 16 April which approves Tariffs Code. Availability: www.erse.pt	
Spain	The primary legislation governing the gas sector is the Hydrocarbons Act (Law 34/1998), as amended by Law 12/2007 transposing Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC. As regards secondary legislation, the most relevant regulations are Royal Decree 949/2001regulating third party access to gas facilities and establishing a natural gas integrated economic system and Royal Decree 1434/2002 which regulates the activities of transmission, distribution and supply of natural gas Availability: The basic and secondary legislation is publicly available at the CNMC´s web page (www.cnmc.es), however attention should be paid to the last updates/ versions of legislation. For the time being, the legal texts are not available in English.	Spanish English
Tunisia	- Décret – Loi n°85-9 du 14 septembre 1985, ratifié par la loi n°85-93 du 22 novembre 1985 et instituant des dispositions spéciales concernant la recherche et la production des hydrocarbures liquides et gazeux, - La loi n°87-9 du 6 mars 1987, modifiant la loi n°85-9 portant modification du décret –loi n°85-9 du 14 septembre 1985, - Loi n99-93 du 17 Août 1999, portant promulgation du code des hydrocarbures, - Décret n°2000-713 du 5 Août 2000 fixant la composition et le fonctionnement du comité consultatif des hydrocarbures, - Décret n°2000-946 du 02 mai 2000 fixant les coordonnées géographiques et les numéros des sommets des périmètres élémentaires constituant les titres des hydrocarbures, - Décret n°2000-1027 du 15 mai 2000, fixant le prix du gaz commercial	National lang. French Not in English

Country	Primary and Secondary legislation - Availability	Languages
	écoulé sur le marché local par les titulaires de concessions d'exploitation d'hydrocarbures, - Décret n°2000-1322 du 13 juin 2000, fixant les modalités de calcul et d'application du rapport "R" relatif à la détermination des taux de redevance proportionnelle à la production des hydrocarbures et l'impôt sur les bénéfices.	
Turkey	By-law on License, Tariffs, Internal Installations, Certificate, Transmission Network Operation, Distribution and Consumer Services, on Facilities and Communications and Board Decisions.http://www.emra.org.tr/index.php/naturalgas-market/legislation http://www.epdk.org.tr/index.php/dogalgaz-piyasasi/mevzuat?id=50	National lang. English

5.2. ESTABLISHMENT AND POWERS OF THE GAS MARKET REGULATOR

All the member countries that responded to the questionnaire have an independent regulatory agency, with one exception, of Jordan, where regulatory duties are performed by the ministry of Energy and Mineral Resources. Most of the authorities were established in the 2000's, with few exceptions of Italy and Spain.

As expected, each regulatory authority enjoys different degrees of independency and holds varying amount of powers and duties. Common regulatory responsibilities, among MEDREG countries are: tariff determination and approval, drafting of legislation, various certifications (TSOs), dispute solving, general monitoring of the market, license granting and national energy planning.

In Spain the National Authority for Markets and Competition (CNMC) is regulatory authority. It was set up in 2013 (the former regulator the National Energy Commission was set up in 1998 and was merged with other national authorities to create CNMC in 2013).

The general objective of the CNMC is to guarantee the existence of effective competition and to assure the proper functioning of markets and economic sectors, to the benefit of consumers and end users. The Act 3/2013 sets up that some specific tasks (which are defined as administrative work or activities with limited interest for the objectives of the new Commission) that were previously performed by the merging NRAs, shall now be assumed by the respective Ministries.

Greek RAE is an independent administrative authority established on the basis of the provisions of Law 2773/1999, which aimed to the harmonization of the Hellenic Legal

order to the provisions of Directive 96/92/EC for the liberalization of the electricity market. In 2011, a new law (Law 4001/2011) assigned to RAE the competencies foreseen in the EU Third Energy Package for both electricity and gas. RAE is also the Competent Authority for the Security of Gas Supply as foreseen by Regulation 984/2010**.** Law 4001/2011, which aimed to the harmonization of the Hellenic legal order to the provisions of Directive 2009/72/EC concerning common rules for the internal market in electricity and 2009/73/EC concerning common rules for the internal market in natural gas, defines the current legal status of RAE.

The Croatian Energy Regulatory Agency (HERA) was established in July 2005, as the successor to the Croatian Energy Regulatory Council (established in 2001.). The legislation establishing the regulatory authority is the Law on Regulation of Energy Activities ("Official Gazette", No. 120/12), The Law on Energy ("Official Gazette", No. 120/12). HERA is responsible for issuing licenses, adopting tariff methodologies, issuing secondary legislation, approval of tariffs, approval of investment plans, market monitoring etc. HERA is an independent regulatory agency. There is no other body intervening in the gas market regulation.

In Algeria the Electricity and Gas Regulation Commission (CREG) was established on January 24th, 2005. CREG is in charge of the gas distribution for the national market. Its duties are: Issuing of licenses, determination of tariff methodologies, determination of licenses and issuing secondary legislation. Hydrocarbon Regulation Authority (ARH), established in November 14th, 2005 is in charge of regulating oil and gas (downstream). Its duties are issuing of licenses, determination of tariff methodologies, determination of licenses and issuing secondary legislation. The National Agency for Hydrocarbon Resources Valorization (ALNAFT) is the institution in charge of the upstream level of the gas supply chain.

In the case of Jordan the body in charge of gas market regulation is the Ministry of Energy & Mineral Resources (MEMR), established in 1985. According to the license agreement signed on 25/1/2004 between MEMR & Fajr Company, MEMR will be the body of the regulatory of the gas market until establishing separate body for this purpose, the tariff methodology set by the contracts approved by the licensor (MEMR). There is no other body intervening in the gas market regulation.

The French CRE was established in 2000 for electricity regulation, extended in 2003 to natural gas regulation. CRE is entitled to a very wide right of access to information held or drafted by both players on the natural gas and electricity markets and by the authorities. In addition, it may open inquiries conducted by authorized agents, who may gather information from documents and on the spot under conditions that comply with the adversary principle and, in certain cases, after authorization by the judicial authority. After due process proceedings resulting in a formal notice, CRE may have to impose penalties in the event of violation of legislative or regulatory rules or resulting from its decisions. CRE may also impose penalties, without prior notice, in the event of non-compliance with its decisions regarding the settlement of disputes. The penalty

decisions may be contested before the Conseil d'Etat (French Council of State, acting as the highest administrative court).

The Malta Resources Authority, established in 2000, the legislation establishing the regulatory authority is Chapter 423, of Malta Resources Authority Act.

In Italy AEEGSI (Autorità per l'Energia Elettrica e il Gas) was set up on 4 December 1996; it is fully operational since 23 April 1997 (date of publication of its Internal Rules governing its organization, functioning and accounting). Law n. 481 of November 14th 1995 "Norms governing competition and the regulation of public utilities. The institution of regulatory bodies for public utilities" is the legislation establishing the regulatory authority.

In Portugal the independent authority in charge of gas market regulation was established in 2002. The legislation establishing the regulatory authority is the Decree-Law 97/2002, 12 of April, republished by Decree-Law n.º 84/2013, of 25 June. Its powers are as follows: Guaranteeing the existence of conditions which permit the demand for natural gas to be satisfied in an efficient manner. Guaranteeing the concessionary entities and licensed entities the existence of conditions that permit them, within the ambit of an adequate and efficient management, to obtain the economic and financial equilibrium necessary to fulfill the obligations foreseen in the concession contract and in the respective.

The Turkish independent Regulatory Authority, EMRA, was established at 2001. Legislation establishing the regulatory authority: Law No.4628 and 4646. Its powers are: issuing licenses and certificates, setting tariffs for networks, issuing secondary legislation, monitoring market activities, settling disputes, defining obligations for market player, settling customer complaints, auditing.

5.3. OWNERSHIP OF FACILITIES, UNBUNDLING REQUIREMENTS AND LICENSES

In MEDREG countries, gas infrastructure is usually owned by state owned or state ruled companies. However there are cases that transmission networks, LNG terminals, interconnectors are owned by major energy private companies or by TSOs.

Licenses are very often required in general. Most countries issue licenses to import, supply, or trade gas. Licenses are also needed to build and exert regulated activities (i.e. transmission, distribution, LNG and storage). These licenses are either granted by the NRAs or by the government itself.

Unbundling of activities is a common goal for the majority of MEDREG states. Currently there is at least legal and accounting unbundling. Several countries seek to achieve full operational unbundling.

In Italy the legal unbundling regime was adopted with the legislative decree n. 164, of 23 may 2000 and Legislative Decree 93/2001 of fulfilment of the European Energy Market. Transmission: Snam Rete Gas is by far the most important TSO in Italy. Entry points are all controlled by Snam Rete Gas. It is worth noticing that all international interconnectors are partially and in different ways controlled by the Italian incumbent ENI. LNG facilities: GNL Italia is at present the only LNG operator in Italy. It owns and operates the LNG terminal of Panigaglia and Rovigo. GNL Italia is entirely controlled by SRG and is part of the Eni Group. Storage facilities: the two storage operators are Stogit (entirely controlled by Eni S.p.A.) and Edison Stoccaggi (which owns two storage facilities and has a management contract with Edison S.p.A.).

Jordanian National Petroleum Company is the concession holder in Risha gas Field(North - East of Jordan near Jordanian-Iraqi borders). Jordanian Egyptian Fajr Company for Natural Gas Transmission and Supply (Fajr) is the owner of the Jordan Gas transmission pipeline.

In Greece all transmission networks are ownership of DESFA S.A. LNG Revythousa Terminal is also ownership of DESFA S.A. All gas infrastructures belonging to DESFA is regulated. The Trans Adriatic Pipeline (TAP) has been exempted from article 9, 32 and 41(6), (8) and (10) of Directive 2009/73/EC. The promoters of another proposed pipeline, the Interconnector Bulgaria-Greece (IGB) have also applied for an exemption from the same provisions of the gas directive.

In the case of the Croatian Transmission network (including entry points and international interconnectors) is operated by Plinacro d.o.o., and it is 100 % state owned company. Underground gas storage Okoli is owned and operated by Podzemno skladište plina d.o.o. All gas infrastructure, i.e. transmission, distribution, storage and LNG (in future) systems are subject to regulated Third Party Access (TPA), according to provisions of the Gas Market Act ("Official Gazette", No. 28/13) which is in line with Directive 2009/73/EC.

French main transmission system operators are: Gaz de France-Réseau de Transport de Gaz (GRTgaz); Total Infrastructures Gaz France (TIGF). Main distribution system operators are: Gaz de France-Réseau de Distribution (GRDF) and 24 local distribution companies. Third Party Access to storage facilities is negotiated.

In Portugal National Natural Gas System - SNGN's organization relies on the operation of the natural gas public system, consisting of: Terminal for LNG reception, storage and re-gasification, Underground Natural Gas Storage Facilities, National System of Natural Gas Transmission (RNTGN), National System of Natural Gas Distribution (RNDGN). This infra-structure is operated by means of public-service concessions – or by means of public-service licenses, in the case of local autonomous distribution grids.

Regarding Spanish transmission pipelines, at the moment Enagas is the only system operator and the main gas transmission company in Spain with 76,99% of the

transmission grid. ENAGAS is followed by the group of companies Gas Natural (9,36%), group of companies NUBIA 2000 (8,08%), Naturgas (3,59%) and other (1,97%).

In Turkey, transmission system, entry points, international interconnectors is owned by the state-owned company, BOTAS. LNG facilities are owned by BOTAS and private LNG operator EGEGAZ. The sole underground storage facility is operated by state-owned company, TPAO. All infrastructures are open to TPA.

5.4. ACCESS TO NATURAL GAS FACILITIES, TPA TARIFFS, CAPACITY ALLOCATION AND CONGESTION MANAGEMENT RULES AND TRANSPARENCY

The common trend among MEDREG countries is that the TPA regime to the gas infrastructures is regulated. The r-TPA most members implement, targets a free and non-discriminatory access to natural gas facilities. Capacity allocation mechanisms (CAM) and congestion management procedures (CMP) are introduced to the legislation of MEDREG countries. Some members enforce the provisions of the European NC of CAM. Popular anti-hoarding mechanisms are UIOLI and UBI procedures. Most TPA tariffs are indeed regulated by MEDREG NRAs, in order to facilitate open and free access to natural gas infrastructure.

Below there is a table summarizing the status on access to natural gas facilities, the TPA tariffs, the various CAM&CMP mechanisms in place, and the in force transparency requirements.

In Algeria access to national gas transmission network is regulated. The rules ensuring free and non-discriminatory access are set in the secondary legislation. The technical and economic rules are set in an Executive Decree and the Grid Code. - The Ministry of Energy is responsible for the elaboration of the legislation. The regulator (CREG) is responsible for approval of general access contracting conditions and monitoring their application.

According to the Croatian Gas Market Act an access to the transmission system, distribution system, gas storage system and LNG (in future) facility is enabled by application of regulated third party access, and access to upstream pipeline networks shall be enabled by application of negotiated third party access. The regulated third party access is based on the published tariff system, or the methodology and tariff items for gas transmission, gas distribution, gas storage and the use of the LNG facility, which is applied objectively and without discrimination for all gas market participants. Network rules are adopted by each system operator for their energy activity upon approval given by HERA. Anti-hoarding mechanisms will be included in Network Rules of Transportation System.

In Jordan locally producer of the natural gas shall be permitted to transport their natural gas to end users via through Arab Gas pipe line facilities by agreement between the vendors of locally produced natural gas and Fajr company but subject to the approval by gas industry regulator.

In the case of Portugal all the access is on a regulated basis, with regulated tariffs, based on a Entry-Exit from Entry downstream to end-users.

In Spain, consumers and traders can access these facilities according to the Royal Decree 949/2001 paying the corresponding regulated access tariffs, which are cost-reflective. These users have some duties and rights. Among the duties, they have to inform the CNMC and the Ministry on the volume of activity; they must have at their disposal metering equipment; confidentiality; keep updated insurance contracts; follow the technical instructions given by the owner of facilities; and comply with the technical specifications of the gas incorporated into the grid.

Access to the transmission system, LNG terminals and storage facilities is regulated. The owners of these facilities are obliged to grant third party access. At present, transmission, regasification and storage facilities operators must publish a quarterly report on contracted and available capacity in each of their facilities, wherein they must distinguish between capacity assigned to access contracts with duration greater or equal to two years, and access contracts with duration of less than two years. In particular, operators of input points currently in operation publish on their websites this information for a timeframe of 10 years, broken down by quarters for the first four years and in annual figures for the remaining period. Currently, the regasification plants have available capacity to contract. New incumbents can buy LNG at the international LNG market (producing countries) and deliver to the Spanish market, without restrictions.

In France there is regulated access to transmission networks and LNG terminals. CRE defines the tariff methodology for the use of transport and distribution networks and LNG terminals. CRE also approves tariff evolutions. The law sets a maximum period of 2 months between CRE's tariff proposal and the Government's approval or refusal: the Government can ask for a new proposal if energy policy principles were not taken into account. CRE controls that these tariffs are applied in transparent and non-discriminatory terms for all infrastructures' users. The gas transmission network is divided into three entry/exit zones (GRTgaz North, GRTgaz South and TIGF zone). In France also there is Negotiated access to storage facilities. The terms and conditions of access to storage capacities are negotiated between the different parties in transparent and non-discriminatory terms. Thus, tariffs and general conditions for the use of storage facilities are fixed by the operators.

The CRE has no direct authority over storage tariffs but monitors access conditions to storage facilities. The Dispute Settlement Committee (Cordis) is entitled to settle disputes regarding access to these facilities.

In the case of Greece, The access regime established in the law is based on (a) a Network Code regulating the operation, maintenance and expansion of the NGS as well as the provision of TPA services, (b) standard TPA contracts and (c) published regulated tariffs and Tariff Methodology.

Necessary investments are explicitly identified by the TSO, who is required to draft a 10 year Development Plan on an annual basis. Furthermore, in the framework of the default regime, independent sponsors can submit an application for an (administrative) authorization to construct a new infrastructure. Referring to the role of the regulator with respect to investment in existing or new facilities, there are particular provisions in the Gas Law (see also above): The regulator approves the development plan of the National Gas System and grants licenses for new infrastructures from independent sponsors.

Access to natural gas facilities is regulated for conditions and tariffs by the Italian NRA, AEEGSISI. TSOs and facility operators are responsible for the elaboration of network codes according to the principles set by the regulator. These codes are subject to the approval of AEEGSI. Use it or lose it is applied in the LNG regasification terminals and at the entry points of the national network. In particular, LNG terminals regulation introduces the obligation for the user to offer the market the capacity previously booked under pluri-annual contracts, in case he didn't use it in a year.

In Turkey All facilities have regulated TPA and tariffs.

5.5. PROMOTION OF COMPETITION IN THE NATURAL GAS SECTOR

Wholesale and retail completion is a common target among MEDREG countries. In spite of that, there are countries that still lack such element in their gas market. The majority however is pursuing an open and competitive gas market.

In Algeria, the Legislation dealing with eligibility conditions and eligibility thresholds setting is public since October 7th 2007. This threshold is based upon customer consumption level. This is set about 14,7 Mscm. Currently there 29 – industrial and commercial – eligible customers.

In Croatia, although competition is formally in place (the market opening has been prescribed by Gas Market Act), as all gas customers (households and non-households) have been eligible to choose a gas supplier since 2008, however retail competition has been very low in the commercial and industrial sector while in residential sector switching rate is negligible. HERA in an effort to to reduce market dominance, conducts Market Inquiries and based on its results, can adopt measures to reduce market dominance. Those measures are anticipated and included in formula for gas supply of household customers, and it is prescribed by Methodology for Determining the Amount

of Tariff Items for Public Service Gas Supply and a Supply of Last Resort (Official Gazette" No. 38/14).

In Greece, since November 2009, eligible Customers are the following: (a)The electricity production license holders who use Natural Gas to generate electricity, (b) Non-Household Customers located outside the three existing and three to be distribution companies as well as non-Household Customers located in the aforementioned regions, on condition that their annual gas consumption exceeds 100000 MWh GCV or if they are supplied with natural gas in order to compress it and make it suitable for use by vehicle motors, (c)The household customers not located in the areas to the three existing and three to be distribution companies, and (d)All customers located in the areas to the three existing distribution companies after the expiration on the concession licenses (2030) and also for quantities of gas above those. However since currently there is no competition in wholesale or retail activities, a government initiative and relative legislation are under way, to open up the EPAs monopoly rights and thus expand the eligibility base.

In Jordan currently there is no competition. However the gas industry regulator may require the company Fajr to unbundle its activities after the exclusivity period ends. In Malta there is no competition and it is not foreseen to introduce it in the future scenarios analyzed.

In Portugal, since 1st of January 2010, all customers are eligible. The wholesale competition is foreseen, therefore ERSE plans and acts upon the end of regulated tariffs to end customers, regulated swap mechanisms for agents, audits for the same level of access to market information, provision of information to the market (quarterly), integration with the Spanish market, namely through the use of platform PRISMA to allocate capacity in virtual interconnection points of the region, the harmonization of the congestion management procedures, the establishment that the recognition of a supplier by one country determines the automatic recognition by the other.

In Turkey wholesale competition is in place since 2008. Eligibility threshold is set by EMRA every year. For the year 2014, in the distribution areas that began supply more than five years ago all industrial customers are eligible customers and the threshold is 100.000 cubic meters for residential customers. The threshold is 15 million cubic meters for all consumers in the new distribution areas. In order to reduce market dominance, certain measures are in place. Such as: BOTAS, the former monopolist supplier, following the promulgation date of the Natural Gas Market Law, cannot execute a new natural gas purchase contract until its imports fall down to the twenty percent of the national consumption. Every year starting from the end of the preparation term, until the aggregate of annual import amount falls down to twenty percent of annual consumption amount, a tender shall be made by BOTAS for the transfer, in held which other import license holder companies desiring the transfer in part or in whole together with all their rights and obligations of the existing natural gas purchase or sale contracts, shall participate.

A consent shall be given by BOTAS to the legal entity which has won the tender for the transfer, which shall be effective upon execution of a new contract for the amount to be transferred between the relevant legal entity and seller party of the contract. In case such legal entity cannot execute a contract with the seller party, transfer through sale may be realized provided that the import company shall agree to perform all cross border liabilities of BOTAS and the natural gas price shall not be less than the natural gas price determined by bilateral agreements. The Build Operate and the Build Operate Transfer model power plants which executed contracts with respect to which a Treasury guarantee has been issued, must prove to the Board that they, acting as a prudent operator, purchase the natural gas from the most economical source and reflect the decrease in the purchase cost of natural gas, in a manner to provide a decrease in the electricity sale price provided that a waiver from the Treasury guarantees shall be given by applying to the Undersecretariat of Treasury. The amounts transferred by BOTAS in each calendar year cannot be less than ten percent of total natural gas amount which is to be purchased as guaranteed on the effectiveness date of this Law.

In France, the market is fully open since 1st of July 2007. The three dominant market operators are GDF Suez, ENI and Tégaz. The market share of the three companies in the whole retail market is 76%. France enjoys particularly high switching rates of 5% and 6.5% in the residential and non-residential sector respectively.

In Italy, complete retail competition is in place since 1st January 2003, according to the Letta Decree. The Letta Decree introduced the following market share limitations for gas sectors operators: 50% of retail market (for the period 2003-2010), 75% for inflow in the national network of natural gas imported or produced in Italy (for the period 2002-2010); this limitation is intended to decline of 2% each year, up to 61% in 2010. Following the opening of some investigations, the Italian competition authority AGCM has introduced some gas release obligations for the Eni Group.

In the case of Spain, All Spanish customers (including residential sector) have been eligible since January 1st 2003. The regulation set the liberalization calendar and it gradually lowers the threshold to become eligible customer: From three million in August 2000, one million in January 2002 and fully aperture in January 1st 2003. This calendar was followed by a set of regulatory measures. The core is Royal Decree 949/2001, which established the basics rights and requirements for TPA access and set the economic framework for all markets players, including a TPA tariff. The other milestone was the Royal Decree 1434/2002, which regulated the activities of transmission, distribution and supply of natural gas. CNMC monitoring duties includes the overseeing of the level and effectiveness of market opening and competition at wholesale and retail markets or/and the occurrence of restrictive contractual practices, monitoring the supplier switching and the “Supplier Switching Office” (OCSUM) activities in compliance with existing regulations and enforcing respect to contractual freedom with regard to interruptible supply contracts as well as with regard to long-term

contracts provided that they are compatible with Community law and consistent with Community policies.

CNMC has the power to carry out investigations and to impose measures to promote effective competition. Every year the Regulator approves the lists of main operators (five biggest operators) and dominant operators (operators with market share over 10%) which are or can be submitted to specific restrictions or limitations. A road map exists to develop a gas hub in the Spanish Gas System in order to promote competitiveness, transparency, and reducing the lack of transparency of the current OTC market.

5.6. SECURITY OF SUPPLY AND PUBLIC SERVICE OBLIGATIONS

Monitoring security of supply is an important aspect of regulatory duties for MEDREG countries. In some counties however the government is responsible for monitoring security of supply. Most member states have introduced legislative steps to establish security of supply. Effective and timely infrastructure development is common tool to secure the supply of natural gas. Other countries aim at diversification of sources and even fuel mix diversification. While others have in place strategic gas storage installations.

PSOs exist in MEDREG countries. They are in the form of tariffs for vulnerable customers, or of last resort service.

In Algeria, the regulator (CREG) is responsible for issuing a national 10-year gas supply indicative program, approved by the Minister of Energy. ALNAFT (National agency for hydrocarbon resources valorization) is responsible for the monitoring of the gas security of supply on the basis of the indicative program. In order to improve the security of supply, the Algerian regulator has to draw up an updated 10-year plan that takes in consideration the developed gas reserves, the domestic market's gas needs, the gas requirements for enhancing the recovery and the quantities of gas available for export. Additionally transmission operators are obliged to develop their network on the basis of the 10-year gas supply program. There is also a prohibition of gas flaring. Exceptional gas flaring authorizations are delivered after a specific tax payment by operators.

In Croatia the Ministry of Economy is responsible for monitoring security of supply. The national gas market Act includes measures to improve and safeguard security of supply. As far as public service obligations, according to Gas Market Act ("Official Gazette", No. 28/13) the regulated activities that are performed as a public service are: a) gas transmission, b) gas distribution, c) organization of the gas market, d) gas supply in the public service and guaranteed supply of gas, e) gas storage, and f) LNG facility operation.

As far as Greece, According to the Gas Law, the regulator (RAE) is responsible for monitoring security of supply and for that purpose, the authority is responsible for collecting data from market players, as well as monitoring infrastructure development, existing supply contracts etc. The regulator publishes an annual report regarding security of supply which comments and recommendations of the regulator regarding the issue. This report is published no later than 31st of July and is submitted to the Minister of Environment, Energy and Climate Change and the European Commission. RAE also provides its opinion prior to the approval of the Contingency plan approved by the Minister, and also defines the security of supply stamp due per unit, as well as the upper limit of the security of supply account. On the t topic of PSOs, According to national legislation, the last resort service is a PSO.

Additionally to this, the Ministry of Energy and Climate Change may issue a report stating the need, the nature and the purpose of further PSOs. Prior to that report, the ministry is entitled to ask the regulators point of view on those matters. The market participants that may provide PSOs are selected after a ministerial call for expression of interest, based on a regulators proposal. The main selection criterion for a supplier to be assigned the provision of PSOs is the ability to offer the services requested with the minimum cost and the maximum social welfare benefit. A presidential decree sets the maximum cost per consumer or producer to be paid for PSOs, estimated by a specific methodology approved by the regulator. This methodology and the factors accompanying it are set by the regulator and published to the Government's Gazette. No formal PSO selection process has been launched yet.

In Jordan, the agency in charge of monitoring security of supply is MEMR. The aim is to diversify natural gas sources to improve the security of supply.

In Portugal, security of supply regarding long term supply sources and technical rules are monitored by the Government (long term basis). Regarding the security of supply under operation day by day, this is guaranteed by the System Operator. Under existing law, the security of supply is guaranteed by the following measures: Security storage is mandatory being respective energy volumes set by law (reserve); Different supply sources should exist rather than a single one, Long term agreements should be entered into in order to improve security of supply; Interruptible regimes for big consumers should be created, Cooperation measures with neighbor countries should be executed. Regarding reserve, each trader (shipper) must have a minimum storage volume enough to 15 days of non-stoppable supply regarding gas fired electric generation needs and 20 days for the remaining consumption needs. Those reserves can be met by storage in underground storage facilities, LNG facilities as well as the volume being transported in ships expected to arrive ion relevant time. Public service obligations are the following: Security, continuity and quality of supply; Guaranty of connection to network, as establish in primary and secondary law (ex: Commercial Code); Consumer's protection, in special to prices and tariffs, Environment protection and energy efficiency promotion.

When it comes to security of supply, in Turkey, the Ministry of Energy and Natural Resources and EMRA are responsible. Their main act is to define and monitor storage obligations.

In France, the Ministry of Ecology, Sustainable Development and Energy is in charge of monitoring the security of supply. Its main obligation is to determine the strategic gas storage. In matter of gas supply, the only public service obligation mentioned in the law is the tariff for vulnerable customers. Moreover, another obligation can be qualified as a public service obligation. This is the obligation for incumbent suppliers to supply at regulated prices. Regulated prices are offered by the incumbent suppliers: GDF Suez, Tegaz and local suppliers.

The Italian Ministry of Economic Development is responsible of monitoring of security of supply. The Ministry has defined a procedure in order to face emergency related to critical climatic condition (i.e. in the case of cold winter). Under these procedure shippers can be asked to maximize their gas input in the network and to interrupt the supply to interruptible customer. The Ministry can also ask to minimize the consumption of gas to the thermoelectric consumers, and ask to the domestic customers to reduce the hour and the degrees of heating.

In Spain an important tool for guaranteeing SoS is the Gas System Planning procedure, which is responsibility of the Government. In this procedure, the Autonomous Communities, the Technical System Manager, other system agents, transmission operators, distributors and marketers, and CNMC also participate.

As far as measures to improve the security of supply The Spanish regulation establishes for all agents the following obligations: The obligation of maintaining all the year minimum security stocks of gas of 20 days the firm sales to final consumers. On October the security gas stocks must be 20 days (preparing for winter peak). Supplies used for the consumption of installations with alternative fuels, and under certain circumstances, are exempted from this requirement. The obligation of diversifying supplies, so that the proportion thereof deriving from the main country supplying Spain (actually Algeria) should not exceed 50%. With a view to facilitating the entry of new companies to the market and given that supplies for agents with small market shares may be an obstacle to the development of their business, application of the diversification obligation has been limited to those agents that import more than 7% of the Spanish total gas supply. As a complement of the Planning document already mentioned, the National Energy Commission performs a study, updated on an annual basis, analyzing electrical demand and the coverage thereof, in the short term, under a five-year timescale. This report, consist in a detailed analysis of foreseen demand and supply, and the adequacy of infrastructures to assure that demand will be covered over the next five years.

5.7. INVESTMENT NEEDS AND PROCESSES

5.7.1. ASSESSMENT OF INVESTMENT NEEDS AND INCENTIVES. MAJOR INFRASTRUCTURE PROJECTS

Assessment of investment needs, in MEDREG countries, can be done by the governments or by the respective TSOs and approved by NRAs or can be responsibility of regulators as well. In many cases the regulator approves a national gas development plan, drafted by the TSO, which a certain application period usually ten years. In some cases the role of the regulator can reach the granting of incentives for new infrastructure such as exemptions from TPA, grants or other financial incentives, reducing of investment and regulatory risk and regulated rates of return.

There are many infrastructure projects under way in the MEDREG region. Certain PCIs are implemented in MEDREG countries. Major projects are LNG terminals and both onshore and offshore pipelines, intercrossing more than one country.

Table 6 summarizes the investment regimes of MEDREG countries and lists the major infrastructure projects.

Table 7 Assesment Needs and Major Infrastructure Projects

Country	Assessment of Investment needs and incentives	Major infrastructure projects
Algeria	Assessment of investment needs is carried out by the gas transmission company with the contribution of the other operators. Investment plans are approved by CREG. As an incentive for investments is considered the participation of the government in the infrastructure investments regarding transmission, distribution and connection through national gas supply program.	To overcome the increasing national gas demand for the next decade (2013-2023), some necessary new infrastructure projects have been decided and/or launched. The total additional length of the transmission pipelines in project is 11 554 km.
Croatia	According to the Gas Market Act ("Official Gazette", No. 28/13, 14/14)	LNG RV (island Krk): LNG terminal based on a migration concept: 1st Phase: - LNG RV – installation of receipt of LNGRV, with the

Country	Assessment of Investment needs and incentives	Major infrastructure projects
	gas transmission system operator's duty is to elaborate a ten-year system development plan and deliver it to the HERA for approval. The approval process includes public consultation where all existing or potential transmission system users are consulted about the ten-year transmission system development plan through a public debate lasting 15 days. Furthermore, in the consultation process HERA may request adequate proof from potential transmission system users, and verifies whether the ten-year transmission system development plan covers all investment needs recognized in the consultation process. Also, gas distribution and gas storage system operators are obliged to deliver to HERA their investment plan prepared for the regulatory period in the process of tariff approval. All system operators are also obliged to deliver to HERA on yearly basis the report on implementation of the system development plans.	correspondent annual send-out capacity of 1-2 BCM/year; 2nd Phase: - FSU – storing LNG on a vessel, - onshore regasification – a segment of the future LNG terminal, with a correspondent annual send-out capacity of 2-3 BCM/year; 3rd Phase: LNG terminal onshore, with a correspondent annual send-out capacity of 4-6 BCM/year. Gas pipeline Zlobin – Bosiljevo – Sisak – Kozarac – Slobodnica (Croatia): Construction of new, upgrade and extension of existing pipelines with a total distance of 308 km, namely: Zlobin – Bosiljevo pipeline – 58 km; Bosiljevo – Sisak pipeline - 100 km; Sisak – Kozarac pipeline – 22 km; Kozarac – Slobodnica pipeline – 128 km. The daily capacity is of 30 MCM/day. LNG evacuation pipeline Omišalj – Zlobin (CRO) – Rupa (SLO): Onshore and offshore pipeline with a total length of 103 km and a daily capacity of 46 MCM/day. Gas pipeline Omišalj (CRO) – Casal Borsetti (ITA): New onshore pipeline with a total length of 220 km (146 km to the epicontinental zone border on the Croatian part and 74 km on Italian side) and a daily capacity of 46 MCM/day. PCI Interconnection Croatia – Slovenia: Bosiljevo – Karlovac – Lučko – Zabok (CRO) – Rogatec (SLO): Construction of new sections, upgrade and extension of the pipeline interconnection between Croatia and Slovenia on a distance of 150 km (onshore) and with a daily capacity of 15 MCM/day. PCI Ionian Adriatic Pipeline: Fieri (ALB) – Split (CRO): New pipeline mainly onshore, but also partly offshore with a total length of 540 km (250 km in Croatia, 110 km in Montenegro, and 180 km in Albania) and with a daily capacity of 14

Country	Assessment of Investment needs and incentives	Major infrastructure projects
	Planned investments should be technically justified and economically efficient and provide the appropriate level of security of gas supply. Allowed costs of investments are included in the determined amounts of tariff items for the regulatory period, and it is based on Methodologies of determining the amount of tariff items for transmission, distribution and storage of gas. Related to the exemption, new major gas infrastructure, i.e. interconnectors, storage and LNG facilities, may upon request, be exempted by HERA from the application of the third party access right, according to the provisions of the Gas Market Act ("Official Gazette", No. 23/13, 14/14), which is in line with Directive 2009/73/EC.	MCM/day. Upgrade of gas storage Okoli: northwestern part of Croatia: This upgrade will increase a withdrawal capacity of the gas from the storage facility.
Greece	Necessary investments are explicitly identified by the TSO, who is required to draft a 10 year Development Plan on a periodical rolling basis. Furthermore, independent sponsors can submit an	Interconnection Greece – Bulgaria [currently known as IGB] between Komotini (Greece) – Stara Zagora (Bulgaria). It will be a new onshore pipeline with a length of 185 km and a daily capacity of approximately 13.7 MCM/day. The power of the compressor station(s) is of approximately 20 MW. (completion in 2015)

Country	Assessment of Investment needs and incentives	Major infrastructure projects
	application for an (administrative) authorization to own and operate a new infrastructure. Exemption from third party access for part or the total of the independent natural gas systems can be considered as an investment incentive. The relevant exemption may be requested in the case of an independent natural gas system (new infrastructure not forming a part of the National Gas System) : According to the relevant provision of the national Gas Law, a request for exemption from third party access for part or the total of the independent natural gas systems is submitted together with the application for granting a relevant license and is granted by decision of the Minister of Environment, Energy and Climate Change following RAE's consenting opinion for a specified time period in accordance with the procedure and the preconditions provided in the provisions of Articles 36 of Directive 2009/73/EC concerning common rules	Independent Natural Gas System LNG Greece. New offshore LNG FSRU near Alexandroupolis (mooring position 17.6 km) and a system of subsea and onshore pipeline with a length of 29 km (4 km onshore and 25 km offshore), with a daily capacity of 16.8 MCM/day (2015) Aegean LNG import terminal. New floating LNG terminal in the Northern Greek region of Macedonia in the Bay of Kavala, with an annual send-out capacity of 3-5 BCM/year, a LNG storage capacity of 170.000 CM LNG (2016) Permanent reverse flow at Greek – Bulgarian border between Kula (Bulgaria) – Sidirokastro (Greece). The project consists in interventions on the already existing transmission pipelines and above ground installations in BG and EL and, in addition, construction of new above ground installations (end of 2014) South Kavala storage in Greece. New underground storage facility in depleted gas field, connected via a 34 km pipeline (of which 32 km offshore) to the National Natural Gas System (NNGS) operated by DESFA. The facility is planned to have the following technical characteristics: Working Gas Volume 360 MCM; Withdraw capacity 4 MCM/day; Injection capacity 5 MCM/day; Cycling rate 2 times/year (2018). The Trans Adriatic pipeline (TAP) with initial capacity of 10bcm/year with the possibility to increase up to 20 bcm. The terms and conditions for accessing the TAP pipeline have been set in a Joint Opinion issued by the regulators of Italy, Greece and Albania under article 36 of Directive 2009/73/EC (Exemption Decision). The first 10 bcm have been allocated to the suppliers/shippers nominated by the Shah Deniz Consortium to transport gas from Azerbaijan to

Country	Assessment of Investment needs and incentives	Major infrastructure projects
	for the internal market in natural gas which was transposed into the national Law system with the Law 4001/2011. That was the case with TAP pipeline, which applied for, and was granted an exemption, among others, for TPA access. In addition, according to the legislative framework, the TSO is allowed to receive revenue for the projects carried out by the TSO and are included in the national TYND. The allowed revenue consists of the investment cost incurred by a project, plus an annual return on investment decided by RAE, and it is received by transmission system users through Tariffs. In addition, all projects with the exception of the upgrading of LNG terminal in Revythoussa, are on the EU list of projects of common interest (PCI). The referred list of PCIs will be identified by the European Commission in accordance with the EU Regulation, No 347/2013 "On guidelines for trans-European energy infrastructure as regards the Union list of projects of common interest" and	Europe. The additional 10 bcm (minus approx. 1.5 bcma set aside for short term contracts) will be allocated through market tests. The binding phase of the first market test commenced in March 2014 and is anticipated to end by October 2014. If the whole of the additional capacity up to 20 bcm is not allocated during the Market Test currently running, additional Market Tests will take place biannually starting no later than the Commercial Operations Date. TAP is an independent project with private funding and has been exempted from articles 9, 32 and 41(6), (8) and (10) of Directive 2009/73/EC according to the procedure of article 36 of the same directive Following its completion, gas will flow from the eastern Greek-Turkish border to Italy through Greece and Albania. According to the exemption decision, exit points to Greece and Albania are also foreseen. The sub-sea part of IGI (Interconnection between Greece and Italy) will have an annual technical capacity of up to 10.5 bcm, the sponsors have received an exemption for 8.4 bcma. Regarding the onshore part this will be under full TPA regime and will form part of the National Gas System, exact technical details are not available. Uncertainties towards the realization of the project exist due to the selection of TAP as the route to transport gas from the Azeri fields to Italy in June 2013.

Country	Assessment of Investment needs and incentives	Major infrastructure projects
	therefore, will be eligible for EU financial assistance (grants and loans).	
Jordan	Assessment of investment needs is succeed through investment opportunities and through request of proposal. Incentive of investments is provided through Jordan Promotion law.	Jordan LNG Project: MEMR has signed a lease agreement with Golar to provide FSRU. The construction of LNG terminal started by the beginning of 2014. LNG will be provided through tendering process.
Malta	As the need for assessment of investment arises the Government itself or the Authority can commission a study, through a call for tender, on investments required. Regulation 25 of the Natural gas market regulations provide that the Authority upon request and on a case-by-case basis may decide to exempt investors in major new gas infrastructure, such as interconnectors, LNG and storage facilities from the obligation to provide third party access	G103: Connection of Malta to the European Gas Network (approved in the first list of PCI). New pipeline of 150 km from an offshore Floating Storage and Re-gasification Unit/FSRU (MT) to Sicily (IT) 4.4 MCM/day and 12 km from FSRU to Delimara (MT) with a daily capacity of 1.1 MCM/day. Liquefied Natural Gas receiving, storage, and re-gasification facilities located Malta (Marsaxlokk) The project consist of a floating Storage Unit (FSU) located in the vicinity of Delimara Power Station, the main Power Station in Malta located in Marsaxlokk. The FSU will be designed for the receiving and storage of liquefied natural gas with LNG storage capacity of 125,000m3 and a re-gasification facility to be built onshore. The natural gas will be used to run a new CCGT which will be built by the same consortium as the LNG facility and also to run part of the existing generation plant at Delimara Power Station.
Portugal	As far as assessment of investment needs, according to legislation the government is responsible for drawing up a supervisory report in order	No new major infrastructure in project.

Country	Assessment of Investment needs and incentives	Major infrastructure projects
	to identify ant special needs regarding security of supply or special investment need. These are to be included afterwards in the planning stage. Currently there are not any kinds of specific incentives for the investment. However, the methodologies applied (a type of cost plus regulation) reduce regulatory risk by ensuring that the return on investments is close to the rate of return set by the regulator for the regulatory assets during the regulatory period. These rates of return are defined to be equal to the estimate cost of capital of the regulated activities. The method adopted for setting the cost of capital is the method (CAPM) Capital Asset Pricing Model. The regulation methods are established in the regulations of ERSE.	
Turkey	Assessment of investment needs is based on Expressed concern by shippers.	Trans Anatolian Pipeline (TANAP): 6 BCM to Turkey, 10 BCM to Europe. Tuz Gölü (Salt Lake) Underground Storage Facility.
France	In France, there is no prescribed tool in law to	Arc de Dierrey (GRTgaz): Necessary for several projects in the North (Dunkerque LNG terminal,

Country	Assessment of Investment needs and incentives	Major infrastructure projects
	identify potential investments. The forecasted investments are included in annual and ten year development plans. These programs are presented by TSOs. The CRE approves annual TSOs' investment programs. Ten year programs are given for information only. The regulation framework for the TSOs in France is set with various incentives: - A bonus on investment remuneration is set as an incentive for investment projects aiming at increasing interconnection capacities or merging balancing zones; - A 50/50 sharing with the market of additional revenues (under or beyond tariffs forecasts) as an incentive to optimize capacity and services offered to the market; - Sharing of additional productivity gains with the market (RPI-X methodology) as an incentive to optimize operational expenses; - Financial incentives	Merger of the North and South zones, Exit capacity increase at Oltingue, Reverse capacity at Obergailbach, etc.) Developments to merge GRTgaz North and South zones (Val de Saone). ERIDAN. Gascogne-Midi. Reverse capacity from CH to FR at Oltingue. Reverse capacity from France to Belgium at Veurne. Reverse capacity from France to Germany at Obergailbach. Etrez /Manosque Gas Storage (Storengy): Extension of the existing salt cavity storage facilities. Hauterives Storage Project: Development of a new salt cavity storage. Dunkerque LNG Terminal. Fos Cavaou LNG Terminal Expansion: Expand the LNG terminal capacity from 8.25 to 16.5 bcm/y. Fos Tonkin LNG expansion. Montoir LNG Terminal expansion. Fos Faster LNG Terminal.

Country	Assessment of Investment needs and incentives	Major infrastructure projects
	(bonus or penalty) in order to improve quality of service on the basis of specific indicators.	
Italy	In Italy, no tools for assessment of investments are prescribed in the law. The planning for the development of the system is under the responsibility of the Ministry. No plan has been defined up to now. As far as investment incentives for all gas infrastructures the present regulatory regime provides for: partial or total exemptions from regulated TPA and, for the share of capacity concerned with TPA, incentivizing tariffs, differentiated according to the importance of the investment.	TAP, Trans Adriatic Pipeline (Greece – Albany – Italy). GALSI. IGI-POSEIDON. Interconnector Slovenia-Italia. Tauerngasleitung –Tarvisio. Cugno le macine (MT): Exemption granted; issued a decree granting the Ministry of Economic Development and the Environment in consultation with the Basilicata Region (August 2012). Serra Pizzuta (MT). Palazzo Moroni (AP). Bagnolo Mella (BS). Sinarca (CB). San Benedetto (AP). Romanegro (CR). Poggiofiorito (TE). LNG terminals: Livorno offshore, Falconara Marittima (AN), Api Nòva Energia. Gioia Tauro (RC), Porto Empedocle /AG), Brindisi, Zaule, Rada di Augusto, Porto Venere (SP), Monfalcone, Rosignano (LI), Porto Recanati (AN), Taranto.
Spain	In Spain for the identification of necessary or possible investments, open seasons procedures for international interconnections are in place. Additionally there is a Planning process done by the Government. The government can grant	Pipelines: Red Basica de Gasoductos LNG terminals: Bilbao, Tenerife, Gran Canaria. Compression Station: E.C. Euskadour

Country	Assessment of Investment needs and incentives	Major infrastructure projects
	exemptions from TPA in order to achieve incentive for investments.	

5.7.2. POWERS OF THE REGULATOR ON GAS INFRASTRUCTURES.

Most MEDREG regulators are responsible of approving investment plans submitted to them by TSO or government agencies and also responsible for authorizing investments. Regulator role also includes the monitoring of the investment implementation and development progress. In same case the regulator can assume initiative and impose an obligation on TSO to invest in new gas infrastructures. While in other cases the regulator may include additional costs of investments to regulated access tariffs.

The Algerian regulator is following up the decisions implementation by the operators.

In Croatia, when the decision to invest has been taken the transmission system operator must deliver each year a report to HERA about realization of the planned investments based on the Network Development Plan. As approved investments are included in the RAB for each regulatory period HERA monitors the implementation of approved investments and if any significant changes occur HERA or TSO can initiate a tariff revision process.

It is inferred by law that the Greek regulator may impose an obligation on TSOs to invest in new gas infrastructures: The gas law assigns to the TSO the responsibility to develop the System. By its neglecting to do so, the TSO is violating the law, for which it may be sanctioned by the Regulator, who monitors the exercise of activities of and observance of legal obligations of all Natural Gas Systems Operators.

In Jordan the regulator is responsible for tendering process, follow up and monitoring. The regulator may, according to the License Agreement, impose to the TSO to provide a periodic market survey.

In Malta, the regulator may license operations and monitor the market. The regulator may impose an obligation on other entities, such as the system operator, to identify the need for investments. The regulator may impose an obligation on TSOs to invest in new gas infrastructures.

In the case of Portugal, once the investment has been licensed and has become an asset for the operator, the regulator includes the related cost it has accepted into the tariff system. The option to impose the obligations on other entities, such as the system operator, belong to the government, but the regulator can draw up reports identifying special needs regarding investments or any other issue regarding infrastructure, competition or quality of service issues.

In Turkey the regulator's role is mainly to monitor and audit. The regulator may indirectly impose an obligation on TSOs to invest in new gas infrastructures, through the approval procedure of the investment plan and also through the monitoring of compliance with all laws, regulations, policies and procedures relating to the natural gas market.

After approving investments, the French regulator CRE calculates the additional costs to be included in tariffs for access to infrastructures that are regulated (i.e. gas transmission and distribution networks and LNG terminals). This tariff framework is meant to foster investments for start-up of projects necessary to improved French gas market operation.

In Italy the regulator plays an Advisory role to the Ministry of Economic Development for the decision of granting exemptions from TPA to new infrastructural projects; as well as setting up of rules for Open Season Procedures, once the above said exemption has been granted.

The role of the Spanish regulator is mainly to monitor investment plans of the transmission system operators, particularly regarding the consistency with the Community-wide network development plan, such assessment may include recommendations to amend those investment plans. There is no executive role for the CNMC. Gas System Planning is mandatory for basic network (the Plan is responsibility of the Government).

5.7.3. EXPERIENCES OF REGIONAL AND BILATERAL COOPERATION AMONG REGULATORS ON INVESTMENT ISSUES.

Cooperation between NRAs is a fundamental element of the 3rd Energy Package. Furthermore, MEDREG carries out its activities through a well-structured and effective internal cooperation process among NRAs, with the objective to implement the conditions for the establishment of a future Mediterranean Energy Community, based on a bottom-up approach. To this end MEDREG countries, practiced regional and bilateral cooperation, that covered and expanded on investment issues. This cooperation paves the way for an even closer and more fruitful cooperation among MEDREG countries that could enhance security of supply in the region, reduce investment risk, promote common interest projects, diversify sources and secure financial and technical support.

In Croatia, HERA has cooperated with regulatory authorities of the neighboring countries on investment issues related to the Projects of Common Interest (PCI). From the HERA's point of view, such cooperation was helpful.

The Greek NRA, RAE, established an ongoing fruitful cooperation with the Italian and Albanian Regulators concerning the project of TAP pipeline, and with the Bulgarian Regulator concerning the project IGB pipeline.

As far as Jordan, there is a governmental cooperation between Arab gas pipeline countries (Jordan, Egypt, Syria and Lebanon).

In Italy, the AEEGSI experience in international collaboration on gas related issues is represented by its involvement, together with RAE (the Greek regulatory authority), in the definition of the rules for the access and operation of the Poseidon gas pipeline

(interconnection Greece-Italy jointly realized by the Italian company Edison and the Greek DEPA).

The French regulator, CRE leads the ACER task force on gas infrastructure. CRE is a member of South and North-West Gas Regional Initiatives. Additionally coordinated open seasons were conducted with Belgium (Taisnières and Veurne) and Spain (Larrau and Biriatou). Furthermore non coordinated open seasons were conducted with Germany and Switzerland. Cooperation took place on project design, capacity offer and allocation and investment decision.

The South Gas Regional Initiative (SGRI) is led by the Spanish Regulator (CNMC) and aims to integrate Portugal, Southern France and Spain into one gas regional market. The SGRI contributes to both the European security of energy supply and diversification of energy sources. This region is one of the main entries for the natural gas coming from the north of Africa, and for the LNG coming from a variety of origins. Interconnection capacity, interoperability and transparency issues are the three key priorities of the SGRI.

Among the achievements reached so far by the SGRI are the following:

- The increase of the interconnection capacity between France and Spain is going to be a reality after two coordinated Open Seasons procedures to foster new investment. By 2015, the interconnection capacity between France and Spain will be 7.5 bcm in the flow sense from Spain to France, and 5.5 bcm from France to Spain.
- The coordinated capacity has already been offered in the interconnection between Spain and France through Open Subscription Procedures, as linked capacity among different balancing zones.
- A coordinated auction has taken place to allocate capacity at the Spanish-Portuguese border in order to harmonize the CAMs according to the principles established in the Framework Guidelines and Network Codes.
- The new transparency requirements established in the Regulation 715/2009/EC applying to all infrastructure operators have been supervised in the three countries.

Finally, studies on the legal changes that are required in Portugal and Spain to implement a common trading licensing process and on tariffs on both sides of Spanish-Portuguese in order to promote tariff harmonization have been developed.

6. CONCLUSIONS

As the gas consumption levels throughout the Mediterranean countries have been steadily increasing, the need to further enhance the intra-regional trading is becoming a greater necessity. Natural gas is a heavily network-bound energy commodity. That is, without necessary infrastructure investments, traded amounts remain limited across

countries. Although recent investments have paved some way for this goal, there is still a lot to improve.

Increasing intra-regional trade and expanding the gas network infrastructure cannot be fully assured without legal harmonization. While there are efforts to that effect, a regulatory variety through the region still exists. These varieties are valid in terms of ownership status of gas companies, market shares of former incumbents, market entry conditions as well as the role of regulatory bodies. The developments in the fields of regulatory harmonization are in a slow pace.

APPENDIXES

Appendix 1 Distribution Systems

Country	Company	Km	Volume (Mwh)
Greece	EPA Attiki	3.216	
	EPA Thessalia	784	
	EPA Thessaloniki	1.083	
	Total	5.083	
Croatia	BROD-PLIN d.o.o., Slavonski Brod	471	31.963.854
	ČAPLIN d.o.o., Čazma	173	2.282.078
	DARKOM DISTRIBUCIJA PLINA d.o.o., Daruvar	148	10.277.905
	DUKOM PLIN d.o.o., Dugo Selo	250	12.127.268
	ELEKTROMETAL-DISTRIBUCIJA PLINA d.o.o., Bjelovar	494	25.661.525
	ENERGO d.o.o., Rijeka	282	26.455.600
	ENERGO METAN d.o.o., Samobor	168	14.492.674
	EVN Croatia Plin	21	169.046
	GRADSKA PLINARA KRAPINA d.o.o., Krapina	457	8.248.358
	GRADSKA PLINARA ZAGREB d.o.o., Zagreb	3.709	417.765.569
	HEP-PLIN d.o.o., Osijek	2.464	134.660.020
	HUMPLIN d.o.o., Hum na Sutli	217	3.868.786
	IVAPLIN d.o.o., Ivanić Grad	318	10.380.839
	IVKOM-PLIN d.o.o., Ivanec	163	6.966.986
	KOMUNALIJE-PLIN d.o.o., Đurđevac	293	6.886.381
	KOMUS d.o.o. - u stečaju, Donja Stubica	404	12.364.185
	KOPRIVNICA PLIN d.o.o., Koprivnica	445	37.660.230
	MEĐIMURJE-PLIN d.o.o., Čakovec	1.023	55.178.715
	MONTCOGIM-PLINARA d.o.o., Sv. Nedjelja	370	34.174.493
	MOSLAVINA PLIN d.o.o., Kutina	342	13.540.415
	PAKRAC-PLIN d.o.o., Pakrac	190	4.681.097
	PAPUK PLIN d.o.o., Orahovica	123	8.115.730
	PLIN d.o.o., Garešnica	114	3.779.619
	PLIN KONJŠČINA d.o.o., Konjščina	331	6.676.956

	PLIN PROJEKT d.o.o., Nova Gradiška	469	15.928.469
	PLIN VRBOVEC d.o.o., Vrbovec	354	11.797.759
	PLIN VTC d.o.o., Virovitica	324	15.878.090
	PLINARA d.o.o., Pula*	161	13.854.044
	PLINARA ISTOČNE SLAVONIJE d.o.o, Vinkovci	1.030	40.042.104
	PLINKOM d.o.o., Pitomača	115	3.436.459
	PRVO PLINARSKO DRUŠTVO d.o.o., Vukovar	589	16.316.527
	RADNIK-PLIN d.o.o., Križevci	117	6.806.374
	TERMOPLIN d.d., Varaždin	1.229	95.496.695
	ZAGORSKI METALAC d.o.o., Zabok	424	17.323.774
	ZELENJAK PLIN d.o.o., Klanjec	310	3.496.524
	ZELINA-PLIN d.o.o., Sv. I. Zelina	270	6.382.396
Algeria	Société Algérienne de Distribution de l'Electricité et du Gaz d'Alger (SDA)	6417	1160
	Société Algérienne de Distribution de l'Electricité et du Gaz d'Alger (SDA)	15975	2052
	Société Algérienne de Distribution de l'Electricité et du Gaz d'Alger (SDA)	25438	5307
	Société Algérienne de Distribution de l'Electricité et du Gaz d'Alger (SDA)	15924	2909
France	GrDF	194 600	301 693 000
	Réseau GDS	1 760	4 747 078
	Régaz-Bordeaux	3 315	4 623 473
	GEG	270	930 583
	Vialis	791	869 575
	Gaz de Barr	300	521530
	Gédia	383	422196
	Caleo	207	311056
	Veolia Eau	127	302200
Turkey	Agdaş Adapazarı Gaz Dağıtım A.Ş.	2.173	
	Akmercan Batıkar Doğal Gaz Dağıtım San. Ve Tic. Ltd. Şti.	135	
	Akmercan Delta Doğalgaz Dağıtım San. Ve Tic. Ltd. Şti.	185	

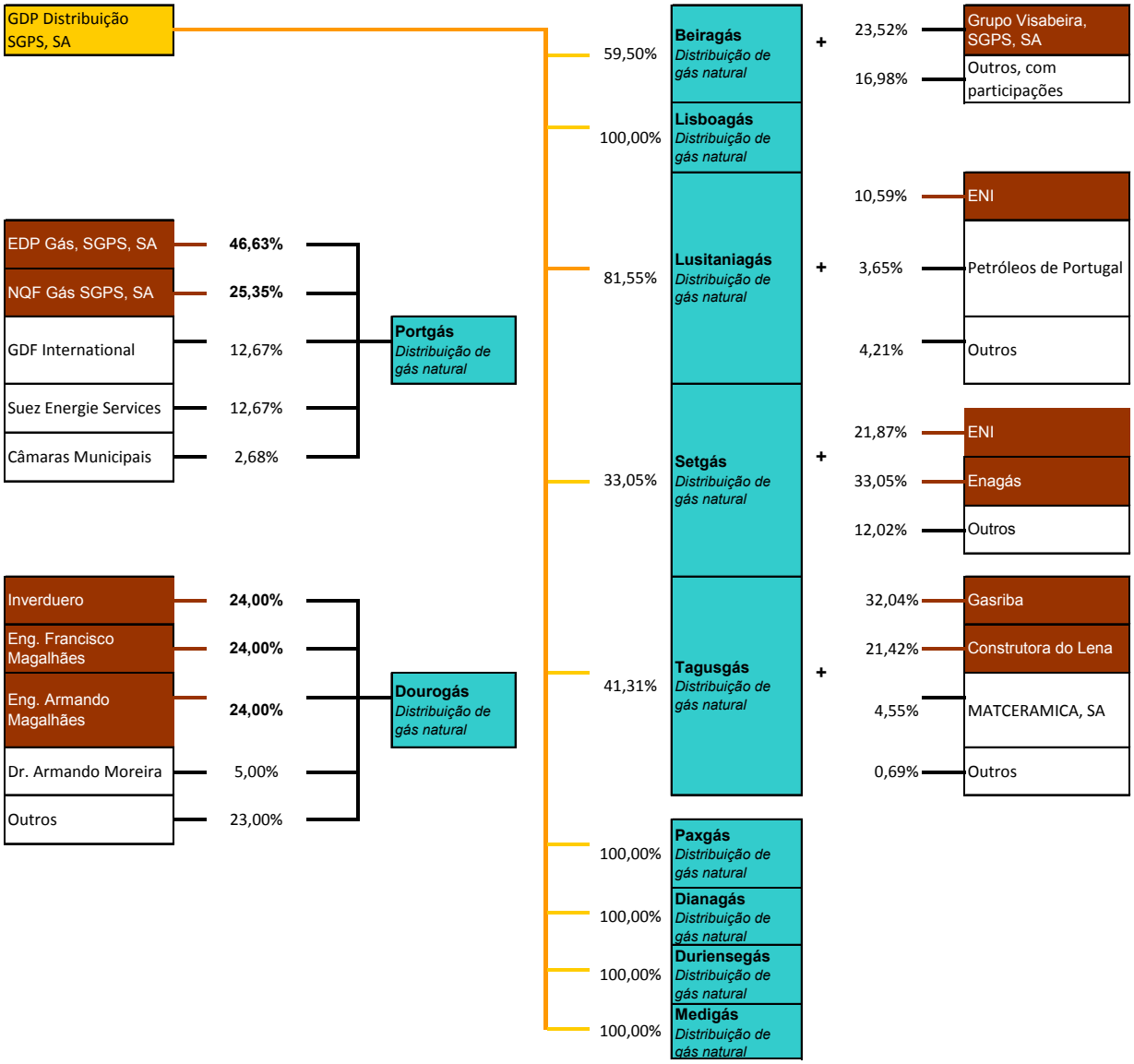
	Akmercan Gepa Doğal Gaz Dağıtım San. Ve Tic. Ltd. Şti.	173	
	Akmercangaz Doğal Gaz Dağıtım San. Ve Tic. Ltd. Şti.	601	
	Aksa Afyon Doğal Gaz Dağıtım A.Ş.	408	
	Aksa Balıkesir Doğal Gaz Dağıtım A.Ş.	636	
	Aksa Bandırma Doğal Gaz Dağıtım A.Ş.	206	
	Aksa Çanakkale Doğal Gaz Dağıtım A.Ş.	474	
	Aksa Düzce Ereğli Doğal Gaz Dağıtım A.Ş.	1.033	
	Aksa Elazığ Doğalgaz Dağıtım A.Ş.	416	
	Aksa Gaz Dağıtım A.Ş.	1.634	
	Aksa Gemlik Doğal Gaz Dağıtım A.Ş.	132	
	Aksa Gümüşhane Bayburt Doğalgaz Dağıtım A.Ş.	145	
	Aksa Karadeniz Doğal Gaz Dağıtım A.Ş.	310	
	Aksa Malatya Doğal Gaz Dağıtım A.Ş.	776	
	Aksa Manisa Doğal Gaz Dağıtım A.Ş.	586	
	Aksa Mustafakemalpaşa Susurluk Karacabey Doğal Gaz Dağıtım A.Ş.	342	
	Aksa Ordu Giresun Doğal Gaz Dağıtım A.Ş.	295	

	Aksa Sivas Doğal Gaz Dağıtım A.Ş.	652	
	Aksa Şanlıurfa Doğal Gaz Dağıtım Ltd. Şti.	361	
	Aksa Tokat Amasya Doğal Gaz Dağıtım A.Ş.	678	
	Aksa Trakya Doğal Gaz Dağıtım A.Ş.	196	
	Aksa Van Doğal Gaz Dağıtım A.Ş.	264	
	Aksaray Doğalgaz Dağıtım A.Ş.	388	
	Armadaş Arsan Maraş Doğal Gaz Dağıtım A.Ş.	751	
	Armagaz Arsan Marmara Doğalgaz Dağıtım A.Ş.	744	
	Aydın Doğal Gaz Dağıtım A.Ş.	188	
	Bahçeşehir Gaz Dağıtım A.Ş.	71	
	Başkent Doğalgaz Dağıtım A.Ş.	6.789	
	Bilecik Bolu Doğalgaz Dağıtım A.Ş.	642	
	Bursa Şehiriçi Doğal Gaz Dağıtım Tic. Ve Taah. A.Ş.	3.727	
	Çinigaz Doğal Gaz Dağıtım San. Ve Tic. A.Ş.	895	
	Çordaş Çorlu Doğalgaz Dağıtım A.Ş.	509	
	Çorum Doğal Gaz Dağıtım San. Ve Tic. A.Ş.	538	
	Diyarbakır Doğal Gaz Dağıtım A.Ş.	480	
	Erzingaz Doğal Gaz Dağıtım A.Ş.	222	

	Esgaz Eskişehir Şehiriçi Doğal Gaz Dağıtım Tic. Ve Taah. A.Ş.	1.282	
	Gazdaş Gaziantep Doğal Gaz Dağıtım A.Ş.	1.977	
	Gaznet Şehir Doğal Gaz Dağıtım A.Ş.	1.601	
	İgdaş İstanbul Gaz Dağıtım San. Ve Tic. A.Ş.	16.179	
	İnegöl Gaz Dağıtım San. Ve Tic. A.Ş.	418	
	İzgaz İzmit Gaz Dağıtım San. Ve Tic. A.Ş.	2.561	
	İzmirgaz Şehir İçi Doğalgaz Dağıtım Tic. Ve Taah. A.Ş.	2.273	
	Kapadokya Doğal Gaz Dağıtım A.Ş.	557	
	Karaman Doğal Gaz Dağıtım Ltd. Şti.	315	
	Kargaz Doğal Gaz Dağıtım San. Ve Tic. A.Ş.	834	
	Kargaz Kars Ardahan Doğal Gaz Dağıtım Paz. Taah. San. Ve Tic. Ltd. Şti.	252	
	Kayserigaz Kayseri Doğalgaz Dağıtım Paz. Ve Tic. A.Ş.	1.709	
	Kentgaz Denizli Doğalgaz Dağıtım A.Ş.	1.125	
	Kırgaz Kırıkkale-Kırşehir Doğal Gaz Dağıtım Paz. Ve Tic. A.Ş.	1.148	
	Kızılcahamam Doğalgaz Dağıtım A.Ş.	56	
	Netgaz Şehir Doğal Gaz Dağıtım	213	

	A.Ş.		
	Olimpos Doğal Gaz Dağıtım A.Ş.	460	
	Palen Enerji Doğal Gaz Dağıtım End. Ve Tic. A.Ş.	452	
	Palgaz Doğal Gaz Dağıtım San. Ve Tic. A.Ş.	1.176	
	Polgaz Polatlı Doğal Gaz Dağıtım A.Ş.	251	
	Samgaz Doğal Gaz Dağıtım A.Ş.	806	
	Selçuk Doğal Gaz Dağıtım A.Ş.	193	
	Siirt Batman Doğal Gaz Dağıtım A.Ş.	162	
	Sürmeli Doğal Gaz Dağıtım San. Ve Tic. A.Ş.	541	
	Torosgaz Isparta Burdur Doğalgaz Dağıtım A.Ş.	856	
	Trakya Bölgesi Doğal Gaz Dağıtım A.Ş.	2.104	
	Udaş Uşak Doğalgaz Dağıtım San. Ve Tic. A.Ş.	444	
Spain	Gas Natural	43.400	
	Naturgas	9.300	
	Endesa	4.340	
	Madrileña red de gas	3.720	
	Union Fenosa Gas Distribucion	1.240	

Appendix 2 Portuguese Gas Distribution Market Structure



Appendix 3 Greek Transmission System

Greek Transmission network - I				
Transmission network	Length (km)	Location in the country	Infrastructure owner	Infrastructure operator
The main high pressure pipeline	512	From the Bulgarian border to Attica- Athens	DESFA	DESFA
1a) First Part	100	From the Bulgarian border to new Mesimvria	DESFA	DESFA
1b) Second Part	412	From New Mesimvria to Attica - Athens	DESFA	DESFA
2) The high pressure branches				
2 (i)First part	272	Karperi – Komotini - Alexandroupoli	DESFA	DESFA
2 (ii) Second part	35	Thessaloniki branches	DESFA	DESFA
2 (iii)Third part	11	Trikala Imathias – Platy branch	DESFA	DESFA
2 (iv) Fourth part	40	Ambelia – Volos	DESFA	DESFA
2 (v)Fifth part	20	Assopos - Inofyta	DESFA	DESFA
2 (vi)Sixth part	24	Patima – Keratsini	DESFA	DESFA
2 (vii) Seventh part	100	Patima - Lavrio	DESFA	DESFA
2 (viii)Eight (new) part	50	Komotini - Evros	DESFA	DESFA
2 (ix) Ninth part	28	Alexandroupoli - Kipoi	DESFA	DESFA

Peloponnese until Megalopoli	167,84	Korinthos (Agioi Theodoroi) , Argos, Nafplion, Tripoli and Megalopoli	DESFA	DESFA
From NNGTS to Thisvi	26,3	Thisvi (ELPEdison Energy power plant)	DESFA	DESFA

Greek Transmission network - II								
Transmission network	Pipe diameter (inch)		Operating pressure (bar)		Compressor stations			
					Number		Capacity (MW)	
	Min	Max	Min	Max	Existing	Forecasted	Existing	Forecasted
The main high pressure pipeline	30''	36''	20	70	yes	0	7.7+7.7	0
1a) First part	36''	36''	20	70	Yes 1 on duty + one on standby	0	7.7+7.7	0
1b) Second part	30''	30''	20	70	no	1	....	...
2 The main high pressure branches								
2(i) First branch	24''	24''	20	70	no	2-3	0	2x 4.5 or 3 x 9.7
2(ii) Second branch	24''	24''						

2 (iii) Third branch	10''	10''						
2(iv) Fourth branch	10''	10''						
2(v) Fifth branch	10''	10''						
2(vi) Sixth branch	24''	30''						
2(vii) Seventh branch	30''	30''	40	40				
2(viii) Eight branch	36''	36''						
Peloponnese	30''	20''						
Thisvi	20'	20'						

Appendix 4 Available and Allocated Capacities MSmc/h

Country	Entry/exit point	Used as Entry, Exit or both	Border	Capacity	Allocated capacity	Available capacity	Allocated /available capacity
Portugal	Campo Maior	Entry point	Spain	0,497	0,284	0,213	1,33
	Valença do Minho	Entry point	Spain	0,08	0,035	0,045	0,78
	Total			0,577	0,319	0,258	
Greece	Sidirokastro	Entry point	Bulgaria	0,51	0,36	0,15	2,20
	LNG Terminal (Revithousa)	Entry point	LNG	0,55	0,10	0,45	0,23
	Kipoi	Entry point	Turkey	0,23	0,10	0,13	0,73
	Total			1,29	0,5566	0,7289	
Croatia	Rogatec	Entry	Slovenia	0,21	0,21	0	-
	Dravaszerdahely*	Entry	Hungary	0,3	0,015	0,285	0,05
	Total			0,51	0,21	0,3	0,7
Algeria		Exit Point	Tunisia	3,79			
		Exit Point	Morocco	1,3			
		Exit Point	Spain	0,09			
France	*Dunkerque*	Entry	Belgium	19,68	19,31	0,37	52,69
	Obergailbach	Both (entry)	Germany	21,27	18,21	3,05	5,96
		Both (reverse flow)	Germany	4,29	0,68	3,61	0,19
	Taisnières H	Both (entry)	Belgium	19,76	13,49	6,27	2,15
		Both (reverse flow)	Belgium	6,86	4,85	2,01	2,41
	Taisnières B	Entry	Belgium	7,89	7,72	0,17	45,61
	Oltingue	Both (exit)	Switzerland	7,65	7,65	0,00	-
		Both (reverse flow)	Switzerland	1,54	0,00	1,54	0,00
	Larrau	Both (Entry)	Spain	4,50	3,66	0,85	4,32
		Both (Exit)	Spain	5,10	5,10	0,00	-

	Biriatou	Both (Entry)	Spain	0,25	0,03	0,23	0,13
		Both (Exit)	Spain	0,20	0,20	0,00	-
Spain	*Tarifa*	Entry	Morocco		94.471,00	129.868,00	73%
	Almeria	Entry	Algeria		40811	97166	47%
	Larrau	Both (entry) Import	France		36667	36600	100%
	Larrau	Both (exit)	France		8461	21080	40%
		Export					
	Irun	Both (entry)	France		2047	2140	96%
		Import					
	Irun	Both (exit)	France		1464	2686	55%
		Export					
	Badajoz	Both (entry) Import	Portugal		6218	19250	32%
	Badajoz	Both (exit)	Portugal		12414	16470	75%
		Export					
	Tuy	Both (entry) Import	Portugal		0	9150	-
	Tuy	Both (exit)	Portugal		5229	12820	41%
		Export					
	Total						
Turkey	Durusu	Entry	Russia	1,96	1,96	0	-
	Gurbulak	Entry	Iran	1,21	1,21	0	-
	Malkoclar	Entry	Bulgaria	2,13	2,13	0	-
	Turkgozu	Entry	Azerbaijan	0,79	0,79	0	-
	Ipsala	Exit	Greece	0,03	0,03	0	-

Appendix 5 Gas Suppliers

Country	Supplier	Amount (bcm)
Portugal	Galp Gas Natural	4,0
	ENDESA	0,1
Greece	DEPA	3,7
	Other Greek	0,0
Croatia	Prirodni plin d.o.o.	2,3
	Prvo Plinarsko Društvo d.o.o.	0,3
	Crodux Plin d.o.o.	0,1
Algeria	Sonatrach	
Jordan	Fajr	1,0
Italy	ENI	28
	EDISON	12
	Enel Trade	8
	Vitol	1,5
	Sinergie Italiane	1,5
	ENOI	1,0
	Gdf SUEZ Italia	0,9
	Premium Gas	0,8
	Gdf Suez	0,8
	Shell	0,7
	Spigas	0,6
	Hera Trading	0,5
	Compagnia	0,5
	Axpo	0,5
	Sonatrach	0,4
	BP	0,5
	Energetic	0,5
	Begas	0,4
	Gunvor	0,4
	Worldenergy	0,4
Spain	Fenosa	14,2
	ENDESA	5,2
	UF Gas Commercializadora	4,1
	Cepsa	2,3
	Grupo EDP	2,0

	Grupo Iberdrola	1,9
	BP	0,7
	BBE	0,7
	GDF Suez	0,6
	EON	0,6
	Galp	0,5
	Sonatrach	0,3
	Shell	0,3
	Energya	0,2
Turkey	BOTAS	35,4
	Enerco	2,5
	Bosphorus	2,5
	Akfel	2,2
	Batı Hatti	1
	Kibar	2
	Avrasya	0,5
	Shell	0,25

Appendix 6 Establishment and powers of the gas market regulator

Spain	The National Authority for Markets and Competition (CNMC) is regulatory authority. It was set up in 2013 (the former regulator the National Energy Commission was set up in 1998 and was merged with other national authorities to create CNMC in 2013). The general objective of the CNMC is to guarantee the existence of effective competition and to assure the proper functioning of markets and economic sectors, to the benefit of consumers and end users. The Act 3/2013 sets up that some specific tasks (which are defined as administrative work or activities with limited interest for the objectives of the new Commission) that were previously performed by the merging NRAs, shall now be assumed by the respective Ministries. The functions of CNMC on energy issues can be summarized as follow: • Legal related functions. • To participate through proposal or analysis in the drafting of legislation (basic and developments) • To participate through proposal or analysis in determining tariffs • Development of the legislation when the law states so by issuing the so called “Circular” in the Official Journal • To participate in the national energy planning. • Establishment by “Circular” the methodology for calculating the access tariffs to transmission, regasification and storage facilities belonging to the main network, balancing service and access to international interconnections. • Certification of TSOs and monitoring of the compliance with the certification requirements. • Solving disputes • To solve Third Party Access Disputes in the electricity, gas and liquid hydrocarbons sectors • To solve disputes related to the technical and economic management of the electricity and gas sectors • To act as an arbitration body if agreed by all the parties involved in the dispute Monitoring: • Management and assignment of interconnection capacity • Time taking by transmission and distribution undertakings to make connections and repairs

	• Congestion management mechanisms • Access conditions to storage facilities • Information published by TSO and DSO on interconnections, use of networks and capacity assignment. • Effective unbundling of activities and ensure functional separation and separate accounts in order to avoid cross-subsidies among activities. • Compliance with TSOs and DSOs. • Level of transparency, competition and degree of opening market both in wholesale and retail markets. • Switching procedures • Information on energy sources provided to consumers. • Supervision that auctions are carried out in a competitive, transparent and non-discriminatory way. • Investment plans of the transmission system operators, particularly regarding the consistency with the Community-wide network development investment plans. Such assessment may include recommendations to amend those investment plans. • Ensure respecting contractual freedom with regard to interruptible supply contracts and with regard to long-term contracts • the compliance with network security and reliability rules • ensure that transporters and distributors fulfilled with the obligations set out by the Spanish regulation and for the accurate application of European regulation. • Level of prices and supply conditions to end consumers • Technical cooperation among national and foreigners TSOs • Determination of list of main and dominant operators yearly. The Ministry for Industry, Energy and Trade is the other body intervening in the gas market regulation.
Greece	RAE is an independent administrative authority established on the basis of the provisions of Law 2773/1999, which aimed to the harmonisation of the Hellenic Legal order to the provisions of Directive 96/92/EC for the liberalization of the electricity market. In 2011, a new law (Law 4001/2011) assigned to RAE the competencies foreseen in the EU Third Energy Package for both electricity and gas. RAE is also the Competent Authority for the Security of Gas Supply as foreseen by Regulation 984/2010**.** Law 4001/2011, which aimed to the harmonisation of the Hellenic legal order to the provisions of Directive 2009/72/EC concerning common rules for the internal market in electricity and 2009/73/EC concerning common rules for the internal market in natural gas, defines the current legal status of RAE. As far as the energy markets in general are concerned, the main duties and responsibilities assigned to RAE relate to the following subjects: • Monitoring the operation of all sectors of the energy market (Electricity,

	Natural Gas, Oil Products, Renewable Energy Sources, Cogeneration of Electricity and Heat etc.). RAE monitors in particular the level of transparency and competition in the energy markets, the management and allocation of interconnection capacity, the time taken by network operators for connections of users and repairs to the networks, the publication of all appropriate information by the networks operators, the terms and tariffs for access to the networks, the unbundling of accounts, and the security of supply. • Collection and processing of information from companies in the energy sector, while respecting the principles of confidentiality. • Reporting every two years on security of supply both for electricity and natural gas. A report is published and submitted both to the Minister of Environment, Energy and Climate Change and the Commission. • Participates in the pre-parliamentary legislative process through recommendation to the Minister of Environment, Energy and Climate Change of the appropriate measures related to compliance with competition rules and to the overall protection of the consumers in the energy market. • Monitoring of the activities undertaken by licensees and access to information by interested parties. • Imposition of financial sanctions, namely fines, to the violators of the primary and secondary energy legislation. • Arbitral resolution of disputes between parties on electricity and natural gas legislation. • Dispute settlement, with respect to complaints against electricity transmission or distribution system operators and the owner of the electricity network, as well as against Natural Gas System and Distribution Operators, on infringements of primary and secondary electricity and natural gas legislation. • Cooperation with other countries' Regulatory Authorities, International Organisations and the European Commission. • Reporting on an annual basis to the European Commission on market dominance, predatory and anticompetitive behaviour, on the basis of the appropriate information submitted by the Competition Authority. As far as natural gas is concerned, non-exhaustive list of RAE's responsibilities is listed below: • RAE is responsible for supervising and monitoring the compliance of the three until now) concession licensees for the distribution of natural gas approval of 5-year development plans, ex-post control of supply and connection charges, ex-post control for revenue cap violations and subsequent setting of tariffs and supervision of licensee and customer relationship).

	• RAE approves the Transmission System tariffs, the tariff for the use of the Revythoussa LNG Terminal and the Tariff Methodology. • Approves the 10 Year Network Development plan of the gas TSO • Approves the Operation Codes of the National Natural Gas System, as well as of Independent Natural Gas Systems, as well as appropriate methodologies and details for the implementation of such Operation Codes. RAE also approves other pieces of secondary legislation eg related to natural gas supply and licensing. • Decides on the exemption applications for new infrastructure There is no other body intervening in the gas market regulation. However, RAE is obliged to comply with the legality principle. Its decisions, when not solely advisory, are subject to judicial review by the competent Administrative Courts. RAE publishes and submits to the Parliament, via the Minister of Environment, Energy and Climate change, on an annual basis, a report giving detailed information about its functioning and acts.
Croatia	The Croatian Energy Regulatory Agency (HERA) was established in July 2005, as the successor to the Croatian Energy Regulatory Council (established in 2001.). The legislation establishing the regulatory authority is the Law on Regulation of Energy Activities ("Official Gazette", No. 120/12), The Law on Energy ("Official Gazette", No. 120/12). HERA is responsible for issuing licenses, adopting tariff methodologies, issuing secondary legislation, approval of tariffs, approval of investment plans, market monitoring etc. HERA is an independent regulatory agency. There is no other body intervening in the gas market regulation.
Algeria	The Electricity and Gas Regulation Commission (CREG), established on January 24th, 2005. CREG is in charge of the gas distribution for the national market. Its duties are: Issuing of licenses, determination of tariff methodologies, determination of licenses and issuing secondary legislation. Hydrocarbon Regulation Authority (ARH), established in November 14th, 2005 is in charge of regulating oil and gas (downstream). Its duties are issuing of licenses, determination of tariff methodologies, determination of licenses and issuing secondary legislation. The National Agency for Hydrocarbon Resources Valorization (ALNAFT) is the institution in charge of the upstream level of the gas supply chain.
Jordan	The body in charge of gas market regulation is the Ministry of Energy & Mineral Resources (MEMR), established in 1985. According to the license agreement signed on 25/1/2004 between MEMR & Fajr company, MEMR will be the body of the regulatory of the gas market until establishing separate body for this purpose , the tariff methodology set by the contracts approved by the licensor (MEMR). There is no other body intervening in the gas market

	regulation.
France	CRE was established in 2000 for electricity regulation, extended in 2003 to natural gas regulation. CRE's Powers of decision, approval and recommendation: • Establishes the tariff calculation methodology for the transmission and distribution networks (electricity, gas and LNG) • Approves the rules proposed by the TSO relating to the dispatch mechanism • Approves TSO's and DSO's annual investment programmes • Grants temporary TPA exemptions and gives its recommendation on exemptions provided for by decree of State Council • Approval of the application rules, the account perimeters and the account unbundling principles • Operators certification (ITO or OU models) : decision is taken by CRE after the formal opinion of the European Commission is taken into account Monitoring powers: • Network operators compliance with code of good practices • Balancing • Application of unbundling rules • Execution of TSO investment programme • TPA refusals and contracts • Competition • Transactions on electricity and gas organized markets • Cross-border exchanges Information and power of inquiry: CRE is entitled to a very wide right of access to information held or drafted by both players on the natural gas and electricity markets and by the authorities. In addition, it may open inquiries conducted by authorized agents, who may gather information from documents and on the spot under conditions that comply with the adversary principle and, in certain cases, after authorization by the judicial authority. Sanctioning power: After due process proceedings resulting in a formal notice, CRE may have to impose penalties in the event of violation of legislative or regulatory rules or resulting from its decisions, regarding in particular: • The access or use of public electricity grids, transmission and natural gas distribution facilities or LNG; • The principles of account unbundling; • The rules of making accounts available. CRE may also impose penalties, without prior notice, in the event of non-compliance with its decisions regarding the settlement of disputes. The penalty

	decisions may be contested before the Conseil d'Etat (French Council of State, acting as the highest administrative court). Advisory powers: Many decrees and draft ministerial orders are submitted to CRE for recommendation: • either by an express measure (rate measures, purchase terms of electricity produced as part of the purchase obligation, specifications of the public transmission system operator, development outline of the public electricity transmission grid, refusal of direct lines, exemptions from rates and commercials terms for the use of natural gas facilities or LNG facilities, etc.); • or by a general measure (recommendation on all texts relating to the access or use of public electricity grids, natural gas facilities and LNG facilities) Moreover the minister for energy consults CRE when a request for a temporary exemption from third party access obligations to an LNG or natural gas storage facility or interconnection facility with a gas transmission network situated within another Member State of the European Community, is referred to the minister.
Malta	The Malta Resources Authority, established in 2000, the legislation establishing the regulatory authority is Chapter 423, of Malta Resources Authority Act The Act states the the Malts Resources Authority shall have the following functions: (a) to regulate, monitor and keep under review all practices, operations and activities relating to energy, water and mineral resources; (b) to grant any licence, permit or other authorisation, for the carrying out of any operation or activity relating to energy, water and mineral resources; (c) to regulate and secure interconnectivity for the production, transmission and distribution of the services or products regulated by or under this Act; (d) to ensure fair competition in all such practices, operations and activities; (e) to establish minimum quality and security standards for any of the said practices, operations and activities and to regulate such measures as may be necessary to ensure public and private safety; (f) to secure and regulate the development and maintenance of efficient systems in order to satisfy, as economically as possible, all reasonable demands for the provision of the resources regulated by or under this Act; (g) to carry out studies, research or investigation on any matter relating to the resources regulated by or under this Act; (h) to provide information and issue guidelines to the public and to commercial and other entities on matters relating to the said resources; (i) to regulate the price structure for any activity regulated by this Act and

	where appropriate to establish the mechanisms whereby the price to be charged for the acquisition, production, manufacture, sale, storage and distribution thereof is determined; (j) to establish the minimum qualifications to be possessed by any person who is engaged or employed in any activity regulated by or under this Act; (k) to establish measures for the protection of the environment and to promote the efficient use of resources in the practices, operations and activities regulated by or under this Act; (l) to ensure that international obligations entered into by the Government relative to the matters regulated by or under this Act are complied with; (m) to advise the Minister on the formulation of policy in relation to matters regulated by this Act, and in particular in relation to such international obligations; (n) otherwise to advise the Minister on any matter connected with its functions under this Act; (o) to formulate and implement the policies and strategies with short-term and long-term objectives, in relation to the activities regulated by this Act; (p) promote the interests of consumers and other users in Malta, particularly vulnerable consumers, especially in respect of the prices charged for, and the quality and variety of the services and, or products regulated by or under this Act; (q) to determine disputes in relation to matters regulated by or under this Act; (r) to perform such other functions as may from time to time be assigned to it by the Minister. The Minister for Energy and water conservation is also intervening in the gas market regulation.
Italy	AEEGSI (Autorità per l'Energia Elettrica e il Gas) was set up on 4 December 1996; it is fully operational since 23 April 1997 (date of publication of its Internal Rules governing its organization, functioning and accounting). Law n. 481 of November 14th 1995 "Norms governing competition and the regulation of public utilities. The institution of regulatory bodies for public utilities" is the legislation establishing the regulatory authority. In order to pursue its two main objectives (promoting competition and efficiency in energy markets and ensuring adequate service quality standards), AEEGSI has the following regulatory powers: - setting of tariffs for the regulated sectors; - definition of service quality standards and automatic refund mechanisms for consumers in cases where standards are not met; - definition of the technical and economic conditions governing access and interconnections to the networks; - reporting to the Italian Competition authority (AGCM) any suspected infringement of the Italian antitrust law (Law 287 of 10 October

	1990) by companies operating in the energy sectors; - issuing guidelines on accounting and administrative unbundling of the activities composing the energy sectors; - monitoring and controlling the conditions under which services are provided, with powers to demand documentation and data and carry out inspections; - assessing complaints, appeals and reports by users; - settlement and arbitration of disputes between users and service providers; - Publishing and circulating information on the supply of the services to provide transparency and competitive supply conditions. Advisory powers: - AEEGSI formulates observations and recommendations to the Government and Parliament regarding the market structure and the adoption and implementation of the European Directives. - AEEGSI makes observations and recommendations to the Government and Parliament with regard to licenses or authorizations, and to the Ministry of Industry with regard to licensing, convention and authorization schemes AEEGSI, as an independent authority, makes its own decisions under the terms of its funding law, procedures and regulations and enjoys a high degree of autonomy from the government in its judgments and evaluations. The Ministry of the economic development (Ministry of Industry) has responsibilities related to the development of the gas system and to the security of the system.
Portugal	The independent authority in charge of gas market regulation was established in 2002. The legislation establishing the regulatory authority is the Decree-Law 97/2002, 12 of April, republished by Decree-Law n.º 84/2013, of 25 June. Its powers are as follows: • Guaranteeing the existence of conditions which permit the demand for natural gas to be satisfied in an efficient manner. • Guaranteeing the concessionary entities and licensed entities the existence of conditions that permit them, within the ambit of an adequate and efficient management, to obtain the economic and financial equilibrium necessary to fulfill the obligations foreseen in the concession contract and in the respective licenses. In the pursuit of its attributes, ERSE has the following generic competences: • The preparation and publishing of regulations. • The supervising of the application of the regulations and their

	fulfillment. • The approval of access tariffs and prices. • Supervising the retail gas market concerning prices and commercial conditions applied to consumers • Ruling about matters that are the object of regulation powers. • Issuing considered opinions to the Parliament and administration. It also has advisory powers. The other body intervening in the gas market regulation is Directorate-general of Energy and Geology (www.dgeg.pt).
Turkey	The independent Regulatory Authority, EMRA, was established at 2001. Legislation establishing the regulatory authority: Law No.4628 and 4646 Powers: • issuing licenses and certificates • setting tariffs for networks • issuing secondary legislation • monitoring market activities • settling disputes • defining obligations for market player • settling customer complaints • auditing

Appendix 7 Ownership of facilities, unbundling requirements and Licenses

Country	Ownership facilities	Licenses	Unbundling
Italy	In Italy the legal unbundling regime was adopted with the legislative decree n. 164, of 23 may 2000 and Legislative Decree 93/2001 of fulfilment of the European Energy Market. Transmission: Snam Rete Gas is by far the most important TSO in Italy. Entry points are all controlled by Snam Rete Gas. It is worth noticing that all international interconnectors are partially and in different ways controlled by the Italian incumbent ENI. LNG facilities: GNL Italia is at present the only LNG operator in Italy. It owns and operates the LNG terminal of Panigaglia and Rovigo. GNL Italia is	Type of issued Licenses: Authorization to import gas from non EU countries (a), Permit for the exploration of hydrocarbon fields (a), Concession for the development and exploitation of hydrocarbon fields (a), Concession for the development and exploitation of storage sites (a), Concession for the distribution service (b). For licenses previously marked as (a), the responsible body is the Ministry of Economic Development; condition and procedures for the issuance of licences, permits and concessions are defined with decrees of the same Ministry. For licenses previously marked as (b), the responsible body is the competent municipality. The concession for the distribution service is granted on the basis of a tender procedure. AEEGSI can suggest amendments, suspensions and revocations of licenses and defines the quality standards of the distribution service. Procedures and condition for the authorization for the import of natural gas from non EU countries are defined in the decree of the Ministry 27/4/2001. Concession for the development and exploitation of hydrocarbon and storage fields are granted by the Ministry as well. In order to obtain the concession, the applicant must submit a project and obtain a positive evaluation of its environmental impact. Concession for the distribution service are awarded by the municipality following a competitive procedure, open to all the interested parties.	The Letta Decree introduces the following distinction of gas market activities: production and import, transport and dispatching, storage, distribution, selling According to the Letta Decree, since 1st January 2002 the activities of natural gas transport and dispatching are subject to corporate unbundling from all other gas sector activities, except for storage activities. The latter are subject to account and managing unbundling from transport and dispatching and to corporate unbundling from all other gas sector activities. AEEGSI Deliberation n. 11/07 introduces account and functional unbundling requirements for energy companies in the gas sector. Law n. 481 of November 14th 1995, article 2.12, letter f)

Country	Ownership facilities	Licenses	Unbundling
	entirely controlled by SRG and is part of the Eni Group. Storage facilities: the two storage operators are Stogit (entirely controlled by Eni S.p.A.) and Edison Stoccaggi (which owns two storage facilities and has a management contract with Edison S.p.A.).	The authorization for the import of natural gas from non UE countries, as well as the concession for the development and exploitation of hydrocarbon fields and storage sites are administrative decisions, they can contain prescription regarding the development of the infrastructure and the exploitation modality. Concession for the distribution service is a contractual document that contains the responsibilities and the duties of the distribution undertaking.	gives AEEGSISI the task of issuing “directives for the separation of accounts and administration and check the costs of the individual services”.

Country	Ownership facilities	Licenses	Unbundling
Jordan	National Petroleum Company is the concession holder in Risha gas Field(North - East of Jordan near Jordanian-Iraqi borders). Jordanian Egyptian Fajr Company for Natural Gas Transmission and Supply (Fajr) is the owner of the Jordan Gas transmission pipeline.	There is a Licenses agreement between Fajr company & the government of Jordan signed on 25/1/2004. The body responsible for licenses is the Ministry of Energy and Mineral Resources (MEMR). License agreements should be approved by the council of ministers.	By 2022, Fajr company will unbundle its activities into two companies one for transport which own The Pipe Line & The other for selling gas to consumers . The gas industry regulator may require the company to unbundle its activities after the exclusivity period.

Country	Ownership facilities	Licenses	Unbundling
Greece	All transmission networks are ownership of DESFA S.A. LNG Revythousa Terminal is also ownership of DESFA S.A. All gas infrastructure belonging to DESFA is regulated. The Trans Adriatic Pipeline (TAP) has been exempted from article 9, 32 and 41(6), (8) and (10) of Directive 2009/73/EC. The promoters of another proposed pipeline, the Interconnector Bulgaria-Greece(IGB) have also applied for an exemption from the same provisions of the gas directive.	The Gas Law provides for the following license types to be issued by the regulator: Gas supply licenses, for supplying gas to eligible and non-eligible customers RAE has issued so far 10 of these licenses. License for owing an independent gas infrastructure (INGS license, refers to an infrastructure owned by a third party distinct from the national TSO). One such license has been issued (an off-shore LNG terminal) License for the operation of an INGS Gas distribution licenses : for the time being only 3 distribution licenses have been granted by the government to 3 distribution companies.	The national natural gas transmission operator was established in the form of a new company 100% subsidiary of DEPA SA in February 2007. The newly formed DESFA S.A. became the owner of the high pressure network and the Revythoussa terminal and was assigned full competences regarding the operation, maintenance and expansion of the NNGS as well as the provision of TPA services under non-discriminatory terms. DESFA is legally unbundled from the incumbent DEPA S.A. and holds full ownership of the NGS assets. Notably, the functional unbundling of DESFA form the incumbent DEPA is secured by the provisions of the Gas Law stipulating among others that the Board of Directors is appointed though Ministerial Decision, whereas a formal Code of Conduct is approved by RAE and published in the National Gazette. Additionally, the law provides for a Compliance Code which specify the obligations of the staff and management of DESFA so as to avoid any discriminatory behaviour regarding TPA, while DESFA publish and submit periodically a report regarding the observance of that Code to the Regulator, who shall evaluate annually the extent of independence of the NNGSO and may propose measures for further enhancing it. RAE has approved the certification of DESFA has an ITO last year (2012) however the whole certification process is now under update and review due to the foreseen acquisition of DESFA by the Azeri company SOCAR. The Local Distribution Companies (EPA), offer bundled service of

			gas supply and distribution to end-user customers and according to existing legislation are only subject to accounting unbundling.

Country	Ownership facilities	Licenses	Unbundling
Croatia	Transmission network (including entry points and international interconnectors) is operated by Plinacro d.o.o., and it is 100 % state owned company. Underground gas storage Okoli is owned and operated by Podzemno skladište plina d.o.o. All gas infrastructure, i.e. transmission, distribution, storage and LNG (in future) systems are subject to regulated Third Party Access (TPA), according to provisions of the Gas Market Act ("Official Gazette", No. 28/13) which is in line with Directive 2009/73/EC.	There are licenses for performing energy activities. Croatian Energy Regulatory Agency is responsible for license issuing. Rulebook on Licenses for Performing Energy Activities ("Official Gazette", No. 117/07) is issued by the Ministry of Economy. License is approved by administrative decision and it can be an affirmative or negative decision by the authorized body (HERA).	Pursuant to the Gas Market Act ("Official Gazette", No. 28/13) the market activities are: gas production, natural gas production, gas trading, supply of gas to final customers (households can choose to be supplied under regulated or market conditions). Existing unbundling: Unbundling of accounts – all activities Ownership unbundling – gas transmission Legal unbundling – gas distribution (part of companies) The legal separation of the companies that carry out individual energy activities in the gas sector has been completed. Also, the rules on accounting unbundling were adopted in 2013, whereby the specified separation of accounts is monitored by HERA to prevent cross-subsidizing among generation, transmission, distribution and supply of gas. HERA also certificates that TSO fulfils the requirements regarding its division and independence, the financial, material, technological and personnel requirements, as well as other conditions prescribed by Gas Market Act.

Country	Ownership facilities	Licenses	Unbundling
France	Main transmission system operators are: Gaz de France-Réseau de Transport de Gaz (GRTgaz); Total Infrastructures Gaz France (TIGF). Main distribution system operators are: Gaz de France-Réseau de Distribution (GRDF) and 24 local distribution companies. Third Party Access to storage facilities is negotiated.	Licenses are issued by the Ministry of Ecology, Sustainable Development and Energy.	According to European directives transposed into French legislation as mentioned above, transmission and distribution system operators with more than 100,000 customers are fully legally unbundled. GRT Gaz is certified under the ITO model. As TIGF changed shareholders, it is currently being recertified. CRE has powers regarding the account unbundling of integrated operators' activities: it approves the application rules, the account perimeters and the account unbundling principles.

Country	Ownership facilities	Licenses	Unbundling
Malta	NA	No licenses have been issued and no requests have been made. Granting, suspension and revocation of licences are covered by Regulations 3,4,5 and 6 of the Natural Gas Market Regulations (S.L.423.21), and Regulations 8,9,13,14,15 and 21 of	The Natural Gas Market Regulations (S.L.423.21) regulate the production, transmission, distribution, supply, purchase or storage of natural gas, including LNG. Importation is regulated through the Petroleum for the Inland (Wholesale) Fuel Market Regulations (S.L.423.28). Regulation 13 of the above mentioned Natural Gas Market Regulations provide the unbundling requirements with respect to operators of LNG storage facilities and Regulation 17 covers the unbundling requirements for distribution system operators.

		the Petroleum for the Inland (Wholesale) Fuel Market Regulations(S.L.423.28). The authorization (licence) issued by the Malta Resources Authority give the application the possibility of operating in a sector / operation identified. The authorization (licence) is bound by a certain set of conditions.	Regulation 21 of the above mentioned Natural Gas Market Regulations requires that natural gas undertakings, whatever their system of ownership or legal format, keep separate accounts for each of their distribution, LNG and storage activities as they would be required to do if the activities in question were carried out by separate undertakings, with a view to avoiding discrimination, cross-subsidisation and distortion of competition. This requirement is in addition to the obligation to comply with the requirements of the Companies Act regarding the publishing of their audited accounts. In addition, the auditing of the published account must verify that that the obligation to avoid discrimination and cross-subsidies.

Country	Ownership facilities	Licenses	Unbundling
Portugal	National Natural Gas System - SNGN's organization relies on the operation of the natural gas public system, consisting of: Terminal for LNG reception, storage and re-gasification, Underground Natural Gas Storage Facilities, National System of Natural Gas Transmission (RNTGN), National System of Natural Gas Distribution (RNDGN). This infra-structure is operated by means of public-service concessions – or by means of public-service licenses, in the case of local autonomous distribution grids. The following operators develop activities subject to ERSE regulation, in the framework of the respective concession contracts and licenses: REN Atlântico, terminal de GNL, SA. REN Atlântico, terminal de GNL is a company that holds the LNG	There are three types of licenses: Concession Contract; Public service licenses (regional and local) and private licenses. Only public service licenses and concession contracts are regulated. The rights and obligations of concession contracts and public service licenses are similar and exclusive. Directorate-General of Energy and Geology is the	Decree-Law no. 30/2006, of the 15 February emended and republished by Decree-Law nº 230/2012,established the general principles concerning the organization and functioning of the National Natural Gas System (SNGN) in Portugal. This law required the unbundling of activities developed in natural gas sector, at legal and account terms and as regards their assets. The legal framework of National Natural Gas System – SNGN, has

	reception, storage and re-gasification concession. In this context it develops the activity of LNG Reception, Storage and Re-gasification. REN Armazenagem, SA and Transgás Armazenagem, SA. REN Armazenagem and Transgás Armazenagem are companies that hold the natural gas underground storage concessions, developing the activity of Natural Gas Underground Storage. REN Gasodutos, SA. REN Gasodutos is a company that holds the natural gas transmission concession, by way of the high-pressure grid. Pursuant to its obligations as transmission system operator (TSO), REN Gasodutos must separate its activities, i.e. natural gas transmission, SNGN Global Technical Management and Access to the National System of Natural Gas Transmission (RNTGN). Beiragás, SA, Lisboagás, SA, Lusitaniagás, SA, Portgás, SA, Setgás, SA; Tagusgás, SA, Dourogás, SA, Duriensegás, SA, Dianagás, SA; Paxgás, SA e Medigás, SA. Portgás, Lusitaniagás, Beiragás, Tagusgás, Lisboagás and Setgás are natural gas distribution system operators with concessions for distributing natural gas. Dourogás, Duriensegás, Dianagás, Paxgás and Medigás are natural gas distribution system operators with licenses for distributing natural gas at local level. All of them are inherently licensed as last resort suppliers. Galp Gás Natural, SA. In February 2007 Transgás, SA	responsible body for issue the licenses (all three types). The Decree-Law n.º 30/2006 and DL 230/2012 establish the transportation network (high pressure) and other infrastructural concession contracts are granting through open invitation, except if the appoint entity is under state domain. The concession contract is valid for 40 years. This Decree-Law, establish that distribution licenses are granted through contractual agreements, for 20 years. Revocation/expiring: the licenses can be revoked if the any part do not comply all obligations and duties established in concession contract, in special the public service obligations.	<u>set the following activities:</u> • Reception, storage and regasification of natural gas. • Underground storage of natural gas. • Natural gas transmission. • Natural gas distribution. • Natural gas supply. • Natural gas supplier-switching logistic operation. Decree-Law no. 140/2006, of the 26 July emended by DL nº 231/2012 establishes the legal framework for each unbundled activity and to the organization of natural gas markets. In 2006 the assets assigned to the activities of LNG reception, storage and re-gasification, underground storage of natural gas (partially) and natural gas transmissions were transferred from the Galp Group to the REN Group. As the latter has no interests in the remaining activities of the SNGN, this transfer ensures compliance with the principles of the Directive. Also the

	was renamed, henceforth becoming Galp Gás Natural, SA. With its new name, the company became the holder of long-term take-or-pay natural gas supply contracts, signed before Directive no. 2003/55/CE, of the European Parliament and Council, dated 26 June 2003, entered into force. In this framework Galp Gás Natural, SA develops the activity of SNGN supply. The SNGN supplier shall sell natural gas received by virtue of the referred to long-term take-or-pay natural gas supply contracts. As a priority, such sales will be made to the Last Resort Wholesale Supplier. Transgás, SA. In February 2007 Transgás Indústria was renamed, henceforth becoming Transgás, SA. From then on it became the holder of the last resort wholesale supply license, under its new name. In the framework of its last resort wholesale supplier license, Transgás, SA develops natural gas buying-and-selling activities aimed at supplying Last Resort Suppliers and Last Resort Corporate Customers Supply.	Without prejudice of appealing to courts, the revocation operates by registered communication to the defaulted part. The licenses expiry in the end of the limit time established. For resolution of dispute settlement between the utility and the state, concerning concession contract and licenses, can be formed arbitral trial.	natural gas codes published by ERSE since 2006 strengthen the principles of activity unbundling. The unbundling of activities developed in the natural gas sector occurred in accordance with Decree-Law no. 30/2006, of the 15 February 2006, and Decree-Law no. 140/2006, of the 26 July 2006, emended by DL nº 230/2012 and 231/2012. These Decrees were complemented with Regulations and Directives from ERSE. Currently there are no unbundling processes ongoing or foreseen.

Country	Ownership facilities	Licenses	Unbundling
Spain	Regarding transmission pipelines, at the moment Enagas is the only system	Licenses issuing: - Trading and supply activities. No license is issued. To develop	Transmission system operator unbundling requirements The Hydrocarbons Act designated one company, ENAGAS, which was already the owner of the majority of transmission infrastructures, to be the independent transmission system operator. Royal Decree–Law 6/2009, modifying article 67 of the Hydrocarbons Act 34/1998, consolidated ENAGAS, the independent

<table>
<tr>
<td></td>
<td>operator and the main gas transmission company in Spain with 76,99% of the transmission grid. ENAGAS is followed by the group of companies Gas Natural (9,36%), group of companies NUBIA 2000 (8,08%), Naturgas (3,59%) and other (1,97%).
In the table below, it can be found information about LNG terminals:
<table>
<tr><th>LNG terminal</th><th>Terminal owner</th></tr>
<tr><td>Barcelona</td><td>ENAGAS</td></tr>
<tr><td>Cartagena</td><td>ENAGAS</td></tr>
<tr><td>Huelva</td><td>ENAGAS</td></tr>
<tr><td>Bilbao</td><td>BBG</td></tr>
<tr><td>Sagunto</td><td>SAGGAS</td></tr>
</table>
</td>
<td>supply activities, the agent is required providing a “responsible statement” in which declares to comply with the requirements established in the regulation to develop supply activities (legal, technical and economic requirements).
- Licenses for transmission network facilities are issued by the Ministry of Industry, Energy and Trade.
- Licenses for distribution network facilities are issued by Autonomous</td>
<td>transmission system operator, as the sole owner of the main network of primary transmission of natural gas (for new infrastructures).
On top of the general legal and functional unbundling requirements between regulated and unregulated activities within a group, there are further functional unbundling and accounting separation requirements applicable to ENAGAS. Furthermore, in order to guarantee TSO’s independence, the law limits share capital ownership and voting rights in ENAGAS. Thus a single person or society cannot, directly or indirectly, own more than 5% share capital or use more than 3% of voting rights. For gas companies the limit drops to 1% of voting rights. There is also an aggregate limit of 40% share capital for gas companies. These limits do not apply to State ownership.
As for the functional unbundling requirements, in order to separate operation of the system from transport, the 2007 Act, amending former 20th Additional Provision of the Hydrocarbons Acts, requested ENAGAS to create a unit integrated within the same company to be entrusted with the operation of the System. This unit had to implement accounting and functional unbundling for other activities (transport) and its workforce had to sign a code of conduct to guarantee its independence from all other activities. However, in 2011, Law 12/2011 has modified the Hydrocarbons Act and has required ENAGAS to transfer the operation of the transmission system and the actual transport (with the ownership of the assets) into two different companies within the group. Existing equity limits will be applicable to the holding company that owns 100% of those companies.
ENAGAS reports in his web page the agreements adopted in the Shareholders' General Meeting celebrated on March 30, 2012, amongst them the agreements in relation to the segregation of the activities of transport and technical management of the system in fulfilment of the legal mandate imposed in the Law</td>
</tr>
</table>

	Murgardos REGANOSA Regarding underground storage, Storage site / Storage owner Serrablo / Enagas Gaviota / Enagas Yela / Enagas Marismas / Gas Natural Fenosa International interconnectors: ENAGAS is the owner of all international interconnection facilities.	Communities.	12/2011, of May 27. Concretely ENAGAS approved the project of segregation of the company in two new companies, namely, ENAGAS TRANSPORTS, S.A.U. and ENAGAS GTS, S.A.U., the first one shall be responsible of the function of transmission and the second one of technical management of the gas system (i.e. system operation). The Royal Decree-Law 13/2012 establishes that the independent system operator shall keep separate accounts for every managed company, specifying those revenues and expenses attributable to the mentioned management. Unbundling of distribution system operators The Spanish Hydrocarbons Act 34/1998 establishes the current unbundling regulatory framework for natural gas and the legal, functional and accounting unbundling requirements. Law 12/2007 amended article 63 of the Hydrocarbons Act, so as to adapt it to articles 9 and 13 of Directive 2003/55/EC. This article establishes the legal and functional unbundling requirements applicable to all regulated activities including distribution and transport. The Royal Decree-Law 13/2012 amends the article 63 of the Hydrocarbon Act again to adapt it to article 26 of Directive 2009/73/EC. The new wording establishes further unbundling requirements such as those persons responsible for the management of the distribution undertakings cannot participate in company structures of the natural gas undertaking responsible, directly or indirectly, for the day-to-day operation of transmission and vice versa. Moreover, where the distribution undertaking is part of a vertically integrated undertaking, it is required that the distribution undertaking shall not, in their communication and branding, create confusion in respect of the separate identity of the supply branch of the vertically integrated undertaking. The Royal Decree-Law 13/2012, of 31 March, introduced a new function for CNMC, consisting of monitoring of the functional unbundling among the activities of transmission, regasification, distribution, storage and supply in

			the gas sector. CNMC has among its functions and duties, monitoring effective unbundling of activities and ensure functional separation and separate accounts in order to avoid cross-subsidies among activities.

Country	Ownership facilities	Licenses	Unbundling
Turkey	Transmission system, entry points, international interconnectors is owned by the state-owned company, BOTAS. LNG facilities are owned by BOTAS and private LNG operator EGEGAZ. The sole underground storage facility is operated by state-owned company, TPAO All infrastructures are open to TPA.	Licenses for: Import, Wholesale, Transmission, Distribution, CNG, Storage, Export of gas. EMRA grants licenses. License is an authorization issued by the Board, for each market activity, to legal entities in order for them to operate in the market. Legal entities wishing to engage in natural gas market activities shall be obligated to obtain licenses from the Authority.	Legal entities engaged in wholesale of natural gas cannot involve in transmission or distribution activities within or out of the system According to the NGML, the vertically integrated legal entity BOTAS shall be restructured into a horizontally integrated legal entity after 2009. Among the legal entities to be formed as a result of restructuring, only the company which has the gas purchase and sale contracts and which will perform import activities shall represent BOTAS and shall be called BOTAS. Among the companies to be formed as a result of restructuring, the companies, other than the one involved in transmission activities, shall be privatized within two years. The unbundling of accounts of BOTAS regarding the transmission, storage, sales and import activities, is already realized, but the legal unbundling is not realized yet. Regulatory Authority ensures the implementation of the unbundling requirements, in non-compliance Regulatory Authority can issue penalty and fines.

Appendix 8 Access to natural gas facilities, TPA Tariffs, Capacity allocation and congestion management rules and trasparency

Country	Access to NG facilities	TPA tariffs	CAM&CMP mechanisms	Transparency Requirements
Algeria	Access to national gas transmission network is regulated. The rules ensuring free and non-discriminatory access are set in the secondary legislation. The technical and economic rules are set in an Executive Decree and the Grid Code. - The Ministry of Energy is responsible for the elaboration of the legislation. - The regulator (CREG) is responsible for approval of general access contracting conditions and monitoring their application.	Postage stamp TPA tariffs are in place. The regulator (CREG) is responsible for transmission network and end-user tariffs and ARH for the wholesale gas tariffs for the domestic market. Tariffs methodology is approved by the Ministry of Energy. Tariffs are designed on the basis of methods of use of networks, over-costs induced by public service obligations, indirect services and transition costs. Tariffs are transparent and non-discriminatory. Network access tariffs are uniform all over the country for transmission system. Tariffs are set according to the following Decrees : -No. 07-391 relative to natural gas price determination procedures for domestic market -No. 05-182 relative to tariffs regulation and activities remuneration for electricity and gas transmission, distribution and commercialisation.	Not yet a market in place	Not yet a market in place

Country	Access to NG facilities	TPA tariffs	CAM&CMP mechanisms	Transparency Requirements

Croatia	According to the Gas Market Act an access to the transmission system, distribution system, gas storage system and LNG (in future) facility is enabled by application of regulated third party access, and access to upstream pipeline networks shall be enabled by application of negotiated third party access. The regulated third party access is based on the published tariff system, or the methodology and tariff items for gas transmission, gas distribution, gas storage and the use of the LNG facility, which is applied objectively and without discrimination for all gas market participants. Network rules are adopted by each system operator for their energy activity upon approval given by HERA.	Methodology for Determining the Amount of Tariff Items for Gas Transportation (Official Gazette" No. 85/13; 158/13) 2. Methodology of Determining the Amount of Tariff Items for Gas Distribution (Official Gazette" No. 104/13) 3. Methodology for Determining the Amount of Tariff Items for Public Service Gas Supply and a Supply of Last Resort (Official Gazette" No. 158/13; 2/14) 4. Methodology for Determining the Amount of the Tariff Items for Gas Storage (Official Gazette" No. 22/14) Methodologies used for establishing tariffs are based on justifiable business expenses, maintenance expenses, replacement, facility construction or reconstruction and environmental protection, including a reasonable deadline for the recovery of funds invested in energy facilities, machines and networks. Allowed revenue of the energy subject should cover business expenses generated during the energy activity, as well as ensure return on regulated assets.	Capacity allocation and congestion management is prescribed by Network Rules of Transportation System ("Official Gazette", No. 12/13).	Responsibilities and obligations of all participants in the gas market concerning transparency are prescribed by General Conditions of Gas Supply ("Official Gazette", No. 158/13), which is in line with the Regulation (EC) No 715/2009. Accordingly, all required data for regular gas market functioning must be published on web-site of each gas market participant (TSO, distributers, suppliers, gas storage operator, etc.).

	Anti-hoarding mechanisms will be included in Network Rules of Transportation System.			

Country	Access to NG facilities	TPA tariffs	CAM&CMP mechanisms	Transparency Requirements
Jordan	Locally producer of the natural gas shall be permitted to transport their natural gas to end users via through Arab Gas pipe line facilities by agreement between the vendors of locally produced natural gas and Fajr company but subject to the approval by gas industry regulator.	Not applicable yet	Natural gas is used in power stations so far.	na

Country	Access to NG facilities	TPA tariffs	CAM&CMP mechanisms	Transparency Requirements
Malta	na	Regulation 22 (Third Party Access) of the Natural Gas Market Regulations requires that the tariffs for third party access to the distribution system and LNG facilities or the methodologies under lying their calculation are approved by the Authority prior to their entry into force. The Authority is obliged to publish such tariffs and methodologies prior to their entry into force. Regulation 23(Access To Storage) of the Natural Gas Market Regulations provides that the Authority may choose either negotiated access or regulated	na	na

		access for the organization of access to storage facilities and line pack when technically and, or economically necessary for providing efficient access to the system for the supply of customers, as well as for the organization of access to ancillary services. Those procedures shall operate in accordance with objective, transparent and non-discriminatory criteria.		

Country	Access to NG facilities	TPA tariffs	CAM&CMP mechanisms	Transparency Requirements
Portugal	All the access is on a regulated basis, with regulated tariffs, based on a Entry-Exit from Entry downstream to end-users.	In the first gas-year 2007-2008, ERSE's regulation covered the definition of the following tariffs: Use of Transmission System, Use of LNG Reception, Storage and Re-gasification Terminal and Use of Underground Storage. In the second gas-year, i.e. 2008-2009, ERSE extended its regulation to the activities of Natural Gas Distribution and Natural Gas Last Resort Supply, establishing the Use of Distribution System Tariff, Last Resort Energy and Supply Tariffs and the Last Resort End-Users tariffs. The Global Use of System tariff makes it possible to recover income generated by the global system management activity, which includes not only the system's operation – including costs inherent to the	For interconnection points the capacity is allocated according to the CAM Network Code (Commission Regulation 984/2013 of 14 October 2013 establishing a Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems and supplementing Regulation (EC) 715/2009 of the European Parliament and of the Council). From 2012 onwards, the capacity at the Spanish-Portuguese border has been gradually allocated according to the rules established in the CAM NC as part of an early implementation process as	All the national (primary and secondary) legislation establish transparency obligations to all the operators in the market. The materialization of this principle can be observed in multiple issues like: general conditions of infra-structural contracts; general conditions of supply contracts, grid connections rules, binding public consultations

		system coordination activity developed in infra-structures of the national natural gas system (namely the amounts of gas used to ensure the system's intraday operation), costs originated by the Supplier-Switching Logistic Operation activity and ERSE's costs related with the natural gas sector – but also a few costs of energy policy or general economic interest – including costs forecasted for the Plan for Promoting Efficiency in Natural Gas Use. The Transmission Use of System tariff makes it possible to recover income generated by the natural gas transmission activity – including its operation, development and maintenance of the natural gas transmission systems. The Use of LNG Reception, Storage and Re-gasification Terminal tariff makes it possible to recover income from the activity of LNG reception, storage and re-gasification, which includes the operation, development and maintenance of the LNG terminal. This tariff has three parcels, corresponding to the services of LNG reception, LNG storage and LNG re-gasification. The Use of Underground Storage tariff makes it	agreed among the Agency for the Cooperation of Energy Regulators (ACER), both National Regulatory Authorities (NRAs) and both Transmission System Operators (TSOs), which precedes a final stage of full binding with CAM NC provisions in November 2015. In 2013 the method of capacity allocation was changed for the national natural gas system's (LNG terminal, underground storage and transmission system points). Since October 2013 the allocation of capacity at the national natural gas system's (beside interconnection points) infra-structures results from processes of annual, quarterly, monthly and daily scheduling and assignment regarding the transmission system and distribution grids, the LNG terminal and the underground storage infra-structures.	concerning all the subjects which belong to ERSE, discloser of prices and tariffs charged by suppliers, etc.,

		possible to recover income from the activity of natural gas underground storage, which includes the operation, development and maintenance of underground storage. As from the third gas-year the three last tariffs will also include the costs related with the promotion of the environment and the income from capacity allocation at the infra-structures in situations of congestion.	Portugal is in a process of approval of the CMP mechanisms foreseen in the EU regulation (EU Guidelines on Congestion Management Procedures for Gas, Amendment to Annex I to Regulation (EC) N.º 715/2009, published in the Official Journal of the EU on 24th August 2012).	

Country	Access to NG facilities	TPA tariffs	CAM&CMP mechanisms	Transparency Requirements
Spain	Consumers and traders can access these facilities according to the Royal Decree 949/2001 paying the corresponding regulated access tariffs, which are cost-reflective. These users have some duties and rights. Among the duties, they have to inform the CNMC and the Ministry on the volume of activity; they must have at their disposal	By publishing Ministerial Orders, the Government determines the rates, tolls and fees of natural gas. These are the single applicable prices for the entire country. The CNMC shall participate, either by making a proposal or report, in the process of creating projects for determining the rates, tolls and remuneration of energy activities and shall determine through efficient, transparency, objectivity and non-discriminatory criteria, the methodology for calculating the access tariffs to transmission, distribution, regasification, storage and tank truck fill-up as well as the methodology for the determination of an entry-exit tariff system. Currently, the methodologies are under	Market players must provide their annual, quarterly, monthly and daily forecasts to ENAGAS. Daily nominations for inputs and monthly ones for unloading of ships of LNG are contractually binding. ENAGAS must publish in its	CNMC is the supervisory body as regards transparency in the gas (and electricity) market

	metering equipments; confidentiality; keep updated insurance contracts; follow the technical instructions given by the owner of facilities; and comply with the technical specifications of the gas incorporated into the grid. Access to the transmission system, LNG terminals and storage facilities is regulated. The owners of these facilities are obliged to grant third party access. At present, transmission, regasification and storage facilities operators must publish a quarterly report on contracted and available capacity in each of their facilities, wherein they must distinguish between capacity assigned to access contracts with duration greater or equal to two	development and are envisaged to be approved throughout the 2014. The proposal of review has to take into account the following principles: Additive tariffs. The tariff has to include the access tariffs and the best forecast of the energy costs. Cost reflective (incomes enough to cover expenses) Recovery of the regulated activities costs by the access tariff Efficient allocation of the access cost among customers To undertake the studies necessary to underpin the reports on the Ministerial Order projects on the sale rates, tolls, levies and remuneration in the gas industry, the CNMC gathers the necessary information from the different actors in the industry. To calculate the income of the system, information is gathered from suppliers on projections for invoicing variables – number of customers, capacity contracted and customer consumption – both in the regulated market and in the deregulated market, broken down by tariff groups. This information is gathered both for the end of the year in progress and for yearly rate forecasts. Forecasts provided by companies are compared to available information by the CNMC for settlements of regulated activities in natural gas. In like manner, individualised information is requested on the	web page monthly information on unloading of ships, gas to be unloaded and free unloading slots. Demand and operational information is also available, together with capacity. The regulatory measures that eliminated the contractual congestion consisted essentially of the posting of a bond when transport capacity is reserved, and the loss of reserved capacity in case of continuous under-use or when congestion might cause a denial of	

	years, and access contracts with duration of less than two years. In particular, operators of input points currently in operation publish on their websites this information for a timeframe of 10 years, broken down by quarters for the first four years and in annual figures for the remaining period. Currently, the regasification plants have available capacity to contract. New incumbents can buy LNG at the international LNG market (producing countries) and deliver to the Spanish market, without restrictions.	forecasts of major consumers of gas such as combined cycles, electrical plans and supplies under the interruptible sale rate. For transport, storage and regasification, remuneration for new facilities is set at service cost, calculated at standard levels. Operating costs are remunerated at standard levels. Further, the standard levels of investment and operating costs are updated through an IPH-X formula, where IPH takes into account the variation of the CPI (Consumer Prices Index) and PPI (Producer Prices Index). Nevertheless, remuneration of each distribution company is set according to a revenue cap formula, the basis of which was established in 2002 The Ministry of Industry, Energy and Trade is responsible for the approval or determination of tariffs and CNMC is responsible for the approval of the methodology for the determination of access tariffs to transmission, distribution, regasification, storage and tank truck fill-up, balancing services as well as the methodology for the determination of an entry-exit tariff system.	access to other actors (UIOLI). These measures were established by the Royal Decree 1434/2002 of 27 December, which modified Royal Decree 949/2001 of 3 August. Recently, CNMC has issued a “Circular” developing the congestion management mechanisms for international interconnection pipelines in line with 715/2009 Regulation.	

Country	Access to NG facilities	TPA tariffs	CAM&CMP mechanisms	Transparency Requirements

France	**Regulated access to transmission networks and LNG terminals** CRE defines the tariff methodology for the use of transport and distribution networks and LNG terminals. CRE also approves tariff evolutions. The law sets a maximum period of 2 months between CRE's tariff proposal and the Government's approval or refusal: the Government can ask for a new proposal if energy policy principles	<u>TPA tariffs for transmission operators</u> CRE is in charge of tariff setting, on the basis of TSOs operational charges, TSOs investments forecasts and market needs. The current tariffs ("ATRT 5") came into force on April 1st, 2013. The French tariff transmission system is based on a full entry-exit capacity separately bookable, with no restriction. There is one virtual hub per balancing zone, with a strategy of enlargement of the balancing zones. Since January 2009, there are three balancing zones (two TSOs) on the French network: GRTgaz Nord, GRTgaz South and TIGF. The French system is also based on a distinction between the costs necessary for the reinforcement of the core part of the main transmission grid and those necessary for the creation of additional capacity at interconnection points. The costs of the core part of the main transmission grid are shared among all entry point under the equalization principle. The national legal and regulatory framework defines the main categories of costs to be taken into account by CRE. These costs include operating charges and capital charges (composed of depreciation of equipment and return on fixed capital). The calculation of these two costs is based on the Regulated Asset Base (RAB), which takes into account the investment projections of	<u>The mechanisms used in France for the allocation of capacity are:</u> Existing Capacity :The entry into force of the European network code Capacity Allocation Mechanisms (CAM) by 2015, with regard to the allocation rules of gas transmission capacities, will bring about widespread capacity allocation via auctions at interconnection points. In order to prepare this coming change, it was necessary to modify the "first come, first served" allocation method used in the past for available multi-annual capacities over the transitional period. Multi-annual capacities cannot be sold more than 15 years ahead and start on the first day of the gas year (October 1st).	Transparency requirements are defined in CRE decision of June 28, 2011 (http://www.cre.fr/documents/deliberations/approbation/reglement-gaz-transparence-des-grt) The two TSOs shall publish all the information requested for capacities at entry and exit points, at connections between balancing zones and at interfaces with LNG terminals. They publish among other

	were not taken into account. CRE controls that these tariffs are applied in transparent and non-discriminatory terms for all infrastructures' users. The gas transmission network is divided into three entry/exit zones (GRTgaz North, GRTgaz South and TIGF zone). **Negotiated access to storage facilities** The terms and conditions of access to storage capacities are negotiated	the operators. TPA tariffs for distribution operators The current tariffs came into force on July 1st, 2012 for GrDF, and July 1st, 2013 for other local distribution companies. Tariffs for the use of distribution networks have a single structure with four basic pricing options and one "proximity" tariff. At each delivery point, the shipper can choose his tariff option. Each tariff is applied on a delivery point. TPA tariffs for the use of LNG terminals The current tariffs ("ATTM4") came into force on April 1st, 2013. Three distinct regasification services are proposed in this tariff: A continuous service: This service concerns shippers unloading an average of at least ten cargos per year at a terminal. The terminal operator provides a continuous output over a contractual period. The physical output must be as regular as possible for the user, depending, however, on the overall unloading programme of the terminal. 'Band' service: This service concerns shippers unloading an average of no more than one cargo a month at a terminal. Each cargo is released in the form of a constant band, for a 30 days period as from the end of unloading.	Capacity to be developed: Investment decisions for major infrastructures development or extension were made through open seasons. CRE is in charge of observing that open seasons are led in a transparent and non-discriminatory way. The congestion management procedures adopted in France are: Short term interruptible UIOLI (now Use it and Buy it – UBI): This procedure enabled a shipper to request additional capacities beyond its subscriptions (firm and interruptible). Requested additional capacities could be allocated (completely or partially) if another shipper did not use all its capacities for a given day. From April 1st, 2013, onwards, this mechanism was replaced by	the following operational data: Daily consumption and daily consumption forecasts (for D-1, D and D+1) per balancing zone; Exchanges at gas exchange points per balancing zone; Flows at interconnections of the two networks.

	between the different parties in transparent and non-discriminatory terms. Thus, tariffs and general conditions for the use of storage facilities are fixed by the operators. The CRE has no direct authority over storage tariffs but monitors access conditions to storage facilities. The Dispute Settlement Committee (Cordis) is entitled to settle disputes regarding access to these facilities.	'Spot' service: This service concerns the unloading of cargoes over a given month m subscribed after the 20th day of month m-1. The subscription is made on the basis of available slots in the monthly programme on the booking date. Each cargo is released in the form of a constant band, for a 30 days period as from the end date of unloading.	a Use-it-and-Buy-it (UBI) system. The allocated capacity which is not used and the unsold capacity are proposed to all shippers. - Long term UIOLI: GRTgaz and TIGF can implement long term UIOLI procedures.	

Country	Access to NG facilities	TPA tariffs	CAM&CMP mechanisms	Transparency Requirements
Greece	The access regime established in the law is based on (a) a Network Code regulating the operation, maintenance and expansion of the NGS as well as the provision of TPA services, (b) standard TPA contracts and (c) published regulated tariffs and Tariff Methodology. Necessary investments are explicitly identified by the TSO, who is required to draft a 10 year Development Plan on an annual basis. Furthermore, in the framework of the default regime, independent sponsors can submit an application for an (administrative) authorization to construct a new infrastructure. Referring to the role of the regulator with respect to investment in	The tariff setting methodology for TPA to both the transmission system and the LNG terminal has been defined in the Tariff Regulation, approved by RAE in July of 2012. . The Tariff Regulation is foreseen in Law 4001/2011. Current tariffs for TPA to the transmission system and the LNG facility were proposed by the TSO are based on the Tariff Methodology and have been approved by RAE. The methodology for the calculation of the current tariffs is based on a rate-of-return regulation approach. For each year over a certain period, the annual required revenue of the TSO is calculated taking into account both capital charges and operating expenditures. Tariffs for both the transmission system and LNG terminal comprise of a capacity charge and a commodity charge. The transmission tariffs refer to booking and use of pipeline capacity, while LNG tariffs refer to booking and use of vaporization	According to the provisions of the Gas Law, the Network Code includes all necessary congestion management and capacity allocation rules, in accordance with the provisions of both the Gas Directive and the Gas Regulation.	At the end of 2011, the EU adopted new stringent rules on wholesale energy trading (REMIT). The main objective is to prevent use of insider information and other forms of market abuse which distort wholesale energy prices and normally mean that businesses and consumers pay more for their energy than they need. For the first time energy trading will be screened at EU level to uncover abuses. This screening will be done by ACER. National authorities in Member States will put in place penalties to help stop and prevent market manipulation. Under REMIT requirements are also the transparency

	existing or new facilities, there are particular provisions in the Gas Law (see also above): The regulator approves the development plan of the National Gas System and grants licenses for new infrastructures from independent sponsors.	capacity and –implicitly- to the respective LNG reception services and temporary storage. The tariffs follow the postage stamp system.		requirements provided for by national legislation.

Country	Access to NG facilities	TPA tariffs	CAM&CMP mechanisms	Transparency Requirements
Italy	Access to natural gas facilities is regulated for conditions and tariffs by AEEGSISI. TSOs and facility operators are responsible for the elaboration of network codes according to the principles set by the regulator. These codes are subject to the approval of	Transmission tariffs, LNG regasification tariffs and storage tariffs are cost based, with a split capacity/commodity equal to 70% in the case of transmission and 80% in the case of LNG terminals. Storage tariffs are equal for all the operators and an adjustment mechanism	Regulator set access rules to Transmission, Storage and regasification infrastructure. Transmission: Infra annual, annual or multiannual allocation (max duration: 5 years allocated two years in advance). For the allocation, the following priority order is followed: parties in long-term import contracts underwritten before August 1998, for the average daily quantity corresponding to the ACQ (annual contractual quantity), parties in long-term import contracts underwritten before August 1998, for the average daily quantity corresponding to the ACQ, parties in yearly import contracts, and parties in item 1 and 2 for the allowable capacity not satisfied, up to DCQ, parties in other import contracts (e.g.: spot imports);	Operators are asked to publish on their web site all the information needed for a non discriminatory access to the system (among the other: available and allocated capacity,

	AEEGSI. Use it or lose it is applied in the LNG regasification terminals and at the entry points of the national network. In particular, LNG terminals regulation introduces the obligation for the user to offer the market the capacity previously booked under pluri-annual contracts, in case he didn't use it in a year.	is put in place in order to compensate revenues among operators. Transmission tariffs are entry-exit. For the distribution tariffs two systems can be chosen by the company: a parametric scheme based on the extension of the distribution network or a cost based mechanism.	Pro rata allocation in case of congestion in each of the categories. Storage: annual allocation. Priority given to: strategic reserves, domestic production, suppliers with reference to the amount of domestic market owned. The amount to be reserved to the single operator in relation to his market is determined by the Regulator. Pro rata allocation in case of congestion. LNG: priority order (the same of transmission priority order). The maximum duration of long term contracts is 5 years. Strong provisions of UIOLI. Pro rata allocation in case of congestion in each of the categories.	condition of the service, tariffs).

Country	Access to NG facilities	TPA tariffs	CAM&CMP mechanisms	Transparency Requirements
Italy	Access to natural gas facilities is regulated for conditions and tariffs by AEEGSISI. TSOs and facility operators are	Transmission tariffs, LNG regasification tariffs and storage tariffs are cost based, with a split capacity/commodity	Regulator set access rules to Transmission, Storage and regasification infrastructure. Transmission: Infra annual, annual or multiannual allocation (max duration: 5 years allocated two years in advance). For the allocation, the following priority order is followed: parties in long-term import contracts	Operators are asked to publish on their web site all the information needed for a

	responsible for the elaboration of network codes according to the principles set by the regulator. These codes are subject to the approval of AEEGSI. Use it or lose it is applied in the LNG regasification terminals and at the entry points of the national network. In particular, LNG terminals regulation introduces the obligation for the user to offer the market the capacity previously booked under pluri-annual contracts, in case he didn't use it in a year.	equal to 70% in the case of transmission and 80% in the case of LNG terminals. Storage tariffs are equal for all the operators and an adjustment mechanism is put in place in order to compensate revenues among operators. Transmission tariffs are entry-exit. For the distribution tariffs two systems can be chosen by the company: a parametric scheme based on the extension of the distribution network or a cost based mechanism.	underwritten before August 1998, for the average daily quantity corresponding to the ACQ (annual contractual quantity), parties in long-term import contracts underwritten before August 1998, for the average daily quantity corresponding to the ACQ, parties in yearly import contracts, and parties in item 1 and 2 for the allowable capacity not satisfied, up to DCQ, parties in other import contracts (e.g.: spot imports); Pro rata allocation in case of congestion in each of the categories. Storage: annual allocation. Priority given to: strategic reserves, domestic production, suppliers with reference to the amount of domestic market owned. The amount to be reserved to the single operator in relation to his market is determined by the Regulator. Pro rata allocation in case of congestion. LNG: priority order (the same of transmission priority order). The maximum duration of long term contracts is 5 years. Strong provisions of UIOLI. Pro rata allocation in case of congestion in each of the categories.	non discriminatory access to the system (among the other: available and allocated capacity, condition of the service, tariffs).

Country	Access to NG	TPA tariffs	CAM&CMP	Transparency

	facilities		mechanisms	Requirements
Turkey	All facilities have regulated TPA and tariffs	All tariffs are regulated in accordance with the By-law on Tariffs by EMRA. Connection Tariffs (Fixed for all distribution firms), Transmission Tariffs (Entry-exit), Storage Tariffs (Income ceiling), Wholesale Tariffs (Determined freely between parties since 2008), Distribution Tariffs (Income ceiling).	Capacity allocation is made pro-rata	

Appendix 9 Investment Needs and Processes

Country	Which body is responsible for:			Regulator's role.
	Determining the need to invest	**Approving investment plans**	**Authorizing investments**	
Algeria	Transmission system operator (GRTG) for its network development needs. Transmission system operators for appropriate network development needs. Distribution operators for the distribution network development.	CREG for National gas transmission and distribution plans. ARH for the upstream gas transmission system operator (Sonatrach).	Same authorities as before mentioned and the Ministry of Energy for the gas distribution.	Following up the decisions implementation by the operators.
Croatia	Based on Energy Development Strategy the Government of Republic of Croatia creates the necessary framework within the Law on Energy ("Official Gazette", No. 120/12), while operator of transmission system proposes a 10-year Network Development Plan.	HERA	HERA	When the decision to invest has been taken the transmission system operator must deliver each year a report to HERA about realization of the planned investments based on the Network Development Plan. As approved investments are included in the RAB for each

Country	Which body is responsible for:			Regulator's role.
	Determining the need to invest	**Approving investment plans**	**Authorizing investments**	
				regulatory period HERA monitors the implementation of approved investments and if any significant changes occur HERA or TSO can initiate a tariff revision process.
Greece	The role of the NRA in identifying necessary investments may be seen as indirect, through its annual security of supply report addressed to the European Commission.	RAE approved the 10-year Development Plan drafted by the TSO. The regulator monitors the implementation on a yearly basis.	The regulator may impose an obligation on other entities, such as the system operator, to identify the need for investments.	It is inferred by law that the Regulator may impose an obligation on TSOs to invest in new gas infrastructures: The gas law assigns to the TSO the responsibility to develop the System. By its neglecting to do so, the TSO is violating the law, for which it may be sanctioned by the Regulator, who monitors the exercise of activities of and observance of legal obligations of all Natural Gas Systems Operators.
Jordan	MEMR	MEMR	MEMR	The regulator is responsible for tendering process, follow up and

Country	Which body is responsible for:			Regulator's role.
	Determining the need to invest	**Approving investment plans**	**Authorizing investments**	
				monitoring. The regulator may aaccording to the License Agreement to impose to the TSO to provide a periodic market survey.
Malta	The Ministry for Energy and Water Conservation.	The Malta Resources Authority	The Malta Resources Authority	The regulator may license operations and monitor the market. The regulator may impose an obligation on other entities, such as the system operator, to identify the need for investments. The regulator may impose an obligation on TSOs to invest in new gas infrastructures.
Portugal	The Government is responsible for the general approval of the investment planning of all infrastructures, following a joint proposal by all infrastructure operators and after consultation to the	Following general planning approved by the government, each infrastructure operator send the budget for the next three years to the regulator in order for this to approve the related costs to be recovered	As for the planning, the government is responsible for the authorization and licensing of every new infrastructure.	Once the investment has been licensed and has become an asset for the operator, the regulator includes the related cost it has accepted into the tariff system. The option to impose the obligations on other entities, such

Country	Which body is responsible for:			Regulator's role.
	Determining the need to invest	**Approving investment plans**	**Authorizing investments**	
	regulator.	by tariffs.		as the system operator, belong to the government, but the regulator can draw up reports identifying special needs regarding investments or any other issue regarding infrastructure, competition or quality of service issues
Turkey	The government	EMRA	EMRA	The regulator's role is mainly to monitor and audit. The regulator may indirectly impose an obligation on TSOs to invest in new gas infrastructures, through the approval procedure of the investment plan and also through the monitoring of compliance with all laws, regulations, policies and procedures relating to the natural gas market.
France	In France, there is no prescribed tool in law to	The CRE is the recipient of the investment program of system		After approving investments, the CRE calculates the additional

Country	Which body is responsible for:			Regulator's role.
	Determining the need to invest	**Approving investment plans**	**Authorizing investments**	
	identify potential investments. The forecasted investments are included in annual and ten year development plans. These programs are presented by TSOs. The CRE approves annual TSOs' investment programs. Ten year programs are given for information only.	operators or managers: it receives information about projects to develop the transmission or distribution system of natural gas. These projects are drawn up by operators and are about the state of their investment program. The Law of 7 December 2006 extended CRE's power to approve gas TSOs' investment programs.		costs to be included in tariffs for access to infrastructures that are regulated (i.e. gas transmission and distribution networks and LNG terminals). This tariff framework is meant to foster investments for start-up of projects necessary to improved French gas market operation.
Italy	No AEEG role	No AEEG role	No AEEG role	Advisory role to the Ministry of Economic Development for the decision of granting exemptions from TPA to new infrastructural projects Setting up of rules for Open Season Procedures, once the above said exemption has been granted.

Country	Which body is responsible for:			Regulator's role.
	Determining the need to invest	**Approving investment plans**	**Authorizing investments**	
Spain	In Spain, gas network investments are planned by means of a Gas 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 CNMC. The document deals, inter alia, with the following areas: - Demand forecast for natural gas over the stipulated period (ten years). - Forecast of the high pressure natural gas transportation network development and total LNG regasification capacity required to supply gas to the gas system, under a set of optimization criteria on a nation-wide basis. - Definition of priority gasification areas, network expansion and execution stages, with the aim of assuring uniform development in the gas system. - Forecasts relating to gas storage facilities and LNG terminals. It assures gas system stability and regular and continuous gas supplies. - Environmental protection criteria are also established. The new projects for increasing entry capacity over the next three years are specified in the Planning Document 2012-2020.			The role of the regulator is mainly to monitor investment plans of the transmission system operators, particularly regarding the consistency with the Community-wide network development plan, such assessment may include recommendations to amend those investment plans. There is no executive role for the CNMC. Gas System Planning is mandatory for basic network (the Plan is responsibility of the Government).

BIBLIOGRAPHY

BP (2014). "*Statistical Review of World Energy 2014*" **http://www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy.html**

IEA (2012). *"Are we entering a golden age of gas?."* http://www.iea.org/media/weowebsite/2011/WEO2011_GoldenAgeofGasReport.pdf

ENTSOG. http://www.entsog.eu/

MEDREG (2012). *"Status Review on Gas Network Infrastructure and Security of Supply in the MEDREG Region*", Doc Med12-13GA-3.3d, June. http://www.medreg-regulators.org/PublicationsNews/Gas.aspx