entsog

european network
of transmission system operators
for gas

European Ten Year Network Development Plan

2010 - 2019

23 December 2009
Ref. 09ENTSOG-02

Attachment A
Capacity Development, Demand and Supply Scenarios by Country

ENTSOG • rue Ducale 83 • 1000 Brussels • T +32 2 209 05 00 • F +32 2 209 05 01 • info@entsog.eu • www.entsog.eu

Table of contents

© Image courtesy of OMV Gas

A.1 Introduction

The information in this attachment has been provided by the ministries or TSOs listed in the cover document on the basis of the following information and data request.

Existing Network and Capacity Development

A description of the existing network, current processes for investments and current publications. A description and a table with capacity figures for the capacity development from 2010 to 2019 for capacities for which the final investment decision has been taken. A description of possible projects, planned or running Open Seasons (individual or co-ordinated).

National Production Deliverability

TSOs were asked to provide the expected maximum aggregated deliverability for the winters 2009/2010 to 2018/2019 taking expected depletion into account.

Storage Deliverability

TSOs were asked to provide the expected maximum national aggregated deliverability taking into account possible decreases in deliverability during the winter period because of reductions in storage working gas. Should sufficient information on such reductions to be expected during winter not be available to the TSO, he was asked to provide 70% of the maximum daily withdrawal capacity. New storages were only to be included if the final investment decision both on the storage development and the entry capacity development has been taken.

Demand Scenarios

TSOs were asked to provide a description of the demand scenario applied by the TSO or another relevant body in the respective country. In case neither the TSO nor another relevant body develops and publishes a scenario fitted for the purposes of this Network Development Plan, the TSO was asked to derive an appropriate scenario on the basis of relevant publicly available information and its expertise on the relationship between yearly consumption and peak day consumption in the respective country. The figures should be restricted to national consumption and should not include any exit flows to other countries (e.g. via cross-border IPs or interconnectors). The demand scenario figures were to be determined neglecting whether or not final investment decisions on the development of the respective exit capacities (e.g. for specific gas fired power plants) have been taken.

Supply Scenario(s)

TSOs were asked to provide a description of supply scenarios applied by the TSO or another relevant body in the respective country. The supply scenario figures were to be determined neglecting whether or not final investment decisions on the development of the respective entry capacities have been taken and may therefore be different from those in the preceding sections.

A.2 Albania

A.2.1 Description of the Existing Network

The Ionian Adriatic Gas Pipeline.
Length (km):
About 400 km (Albanian Section about 170 km).

LNG Terminal on the Fieri District seaside ("Trans European Energy BV" sh.a.)
Offshore length (km):
Underwater pipeline Albania – Italy, about 130km

The Trans Adriatic Gas Pipeline.
The TAP Project total length (km);
About 520 kilometers, (201 km in Albanian territory and 115 kilometers offshore Albania – Italy).

A.2.2 Current Processes for Investment, Current Publications

Albanian Gas Market

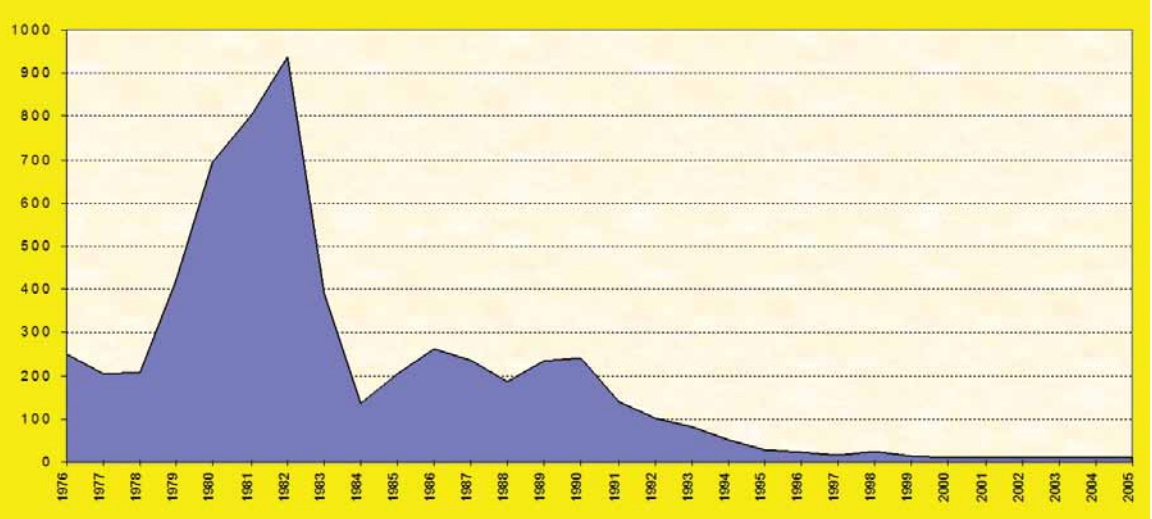
Albania has huge oil in place reserves but natural gas reserves have been almost exploited and recoverable reserves seem very limited. The commercial production and consumption of natural gas in Albania commenced in the 1960s.

The commercial production and consumption of natural gas in Albania started in 1960. Until the end of 2008, about 3.5 billion c. m. of natural gas were extracted from these gas fields and about 9.8 billion c. m. of associated gas were extracted from the oilfields resulting in a total of 13.3 billion c. m. of gas.

Actually the year gas production is about 10 million c.m. (about 0, 01 billion Nm3).

Albania's known gas fields are centred in the coastal region to the north west of the main oil-producing region. Gas is also produced as associated gas from the oil fields.

Gas production peaked at around 0,95 billion Nm3 in 1982, but subsequently declined sharply.
In 1990 gas production was around 0,24 billion Nm3, but this had declined to around 0,04 billion Nm3 by 1998, which is sufficient to meet only around 1-2% of Albania's energy demand.



Gas production in Albania 1980-2008 period. (billion cubic meters)

However, onshore infrastructure is severely limited to the producing regions such as around Kucove and Patos. There is a total of around 400 km of pipelines under the administration of the state owned company "Albpetrol"S. A., some of which is non-operational, and in recent years the system has recently been practically completely out of use due to the low level of gas availability.

The Albanian gas industry is starved of gas and it is a government priority to connect Albania to the international gas network.

Development of national gas resources.

Linking Albania with the international gas network according to the best option (Eurasia Gas Corridor). Development of regional underground gas storage reservoirs.

Development of the LNG re-gasification Terminals.

Preparation of the necessary legal framework in the field of gas supply, based on the law no. 9946, date 30.06.2008, "On the Natural Gas Sector", (Legal and Technical Gas Regulation on gas market in Albania, and Investment framework reliability)

Management of the Albanian gas market. Restructuring the existing system for gas transmission in Albania.

Use of natural gas for the production of electrical energy with gas fired thermal power stations

Albanian Petroleum Sector is governed by three major laws:

- "The Petroleum Law (Exploration and Production)" No.7746, dated 28. 07.1993
- The Law "On Refining, Transportation and Trading of Oil, Gas and their By-products", No.8450, dated 24. 02. 1999, covering respectively the upstream and downstream activities.
- The law no. 9946, date 30.06.2008, "On the Natural Gas Sector",

A.2.3 Capacity Development in the Reporting Period, Investment Decisions Taken

The gas reserves in the identified oilfields and of the natural gas in our country are calculated to be 3.630 billion m3N. They belong to the natural gas fields and oil fields and of the gas in the form of liquid gas or condensed in the oil, or separate gas in the gas caps of some resource fields.

- Albanian gas market, supply and demand are deeply out of balance. The demand is unusually high, whereas the supply is incapable of satisfying it.
- Local indigenous gas resources can not contribute significantly to the national primary energy balance. The gas system is practically out of use.
- Daily gas production is used mainly by ARMO company and state owned company Albpetrol, to fulfill part of their own technological demands.
- The GoA is preparing a specific plan for the development of gas sector and gas market in the country.
- In this plan are addressed a lot of issues from legal, regulatory and institutional to the gas infrastructure and gas supply of the country.
- The "National Strategy of Energy, revised", forecast for the gas consumption on 2020 will be about 1.5 to 1.8 bcm.
- The priority consumers will be:
  - First priority, power generation sector and industrial consumers,
  - Second priority, householding and service sectors, which will use the natural gas for heating,
  - Third priority, householding sector for using of natural gas for cooking and hot water,.

A.2.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

In the frame for diversification of energy sources and energy sector development, the GoA is very interested on regional gas infrastructure development, first of all for the introduction of Natural Gas in Albania and the connection of the country with regional and international gas network.

- We are working together with foreign partners in both directions, gas pipeline and LNG options.

Albania is part of Regional Gasification Study, financed by the WB and KfW.

Albania is supporting the concept of gas ring in Western Balkan (Energy Community Gas Ring), proposed by the conclusions of that study

Strategy for the Development of the Gas Sector in Albania

- Linking Albania with the international gas network according to the best option (Eurasia Gas Corridor and Energy Community Gas Ring)
- Development of LNG Terminals and regional underground gas storage reservoirs
- Preparation of the necessary Albanian legislation for the gas sector in compliance with European legal framework (Regulatory and Investment framework reliability)
- Development of national gas resources
- Restructuring the existing system for gas transmission in Albania
- Management of the Albanian gas market
- Use of natural gas as an alternative e energy source and for the production of electrical energy with gas fired thermal power stations

The Ionian Adriatic Gas Pipeline.

On September 2007 an inter-ministerial declaration is signed in Zagreb, Croatia, between Albania, Monte Negro and Croatia, for the Ionian Adriatic gas Pipeline project. On January 2009, Bosnia & Herzegovina is joint on this Declaration.

- Length (km): About 400 km (Albanian Section about 170 km).
- Diameter (mm/inch): 700/28.
- Maximal Operating Pressure (bar): 80

LNG Terminal on the Fieri District seaside ("Trans European Energy BV" sh.a.)

Based on study "On the opportunities to construct LNG terminals in Albania and on the establishment of the relevant infrastructure in the Fier district coastline", adopted by the Council of Ministers' Decision No. 731, dated November 11, 2006, several projects presented by the companies ASG POWER and TRANS EUROPEAN ENERGY on the construction

of Terminals for the LNG re-gasification in the Adriatic Sea seacoast (Fier District) were reviewed, as well as the Swiss company EGL project on the East-West gas pipeline (Trans Adriatic Pipeline), passing through Albania which will benefit from a LNG terminal built in the same area.
The Contract of the Permit to the company "Trans European Energy BV" sh.a. for construction of the LNG Terminal on the Fieri District seaside, is signed on 02 December 2008, in Tirana. This Contrakt of Permit is approved by the Decission of the Council of Ministers no. 112, date 21.01.2009.

- The National Council of Territory Regulation (KRRTRSH) with the Decision no. 1, date 01.03.2007, has approved the area for construction of LNG Terminals on the seaside of the Fieri Region.
- The LNG Terminal will have the capacity about 8 BCM/year, equal to more than 6 million ton natural gas per year.
- The pressure of the pipe will be 120 bar (g) and the temperature about 1°C.
- The LNG Terminal will be capable to unloads ships with capacity up to 140.000 m3. On the plant will be instalated two cryogenic storage tanks with net capacity 140.000 m3, each of them.

The Trans Adriatic Gas Pipeline.

The Contract of the Permit is under negotiation with the TAP company.

The Trans Adriatic Pipeline will have a total length of about 520 kilometers, (201 km in Albania), including 115 kilometers offshore, on the Adriatic Sea bed. TAP's highest elevation point will be 1800 meters in Albania's mountains, while its lowest part offshore will be at 820 meters of depth.

The onshore part of the pipeline will have a diameter of 48 inches (1.2 meters), designed for a gas-flow pressure of 100 Bar, while the diameter of its offshore segment will be 36 inches (0.9 meters.).

The thickness of the steel pipe's walls will be 22 millimeters for the offshore part, with 36 millimeters for the offshore part. The pipeline's total weight will be 220 000 metric tons, or an average of about 423 tons per kilometer.

TAP will initially have a capacity of 10 billion cubic meters (bcm)/year, providing enough energy for as many as 3 million households. The pipeline's transport capacity can be expanded to 20 bcm/year.

Two compressor stations, one near Thessaloniki, in Greece, and the other one on the Albanian coast, will be used to ensure gas transportation through the pipeline. A third compressor station will be installed later on the Greek-Albanian border to attain the maximum throughput of 20 bcm/year.
National Council of Territory Regulation (KRRTRSH) with the Decision no. 1, date 14.08.2008, has approved the trace of TAP project on the Albanian Territory and the linking with the Underground Gas Storage on the Dumre Region.

Referring to these proposal projects, the possible international cross-border points, will be:

- Greece – Albania cross-border point for the TAP Project, in the Korça Region;
- Monte Negro – Albania cross-border point for the IAP Project, in the Shkodra Region;

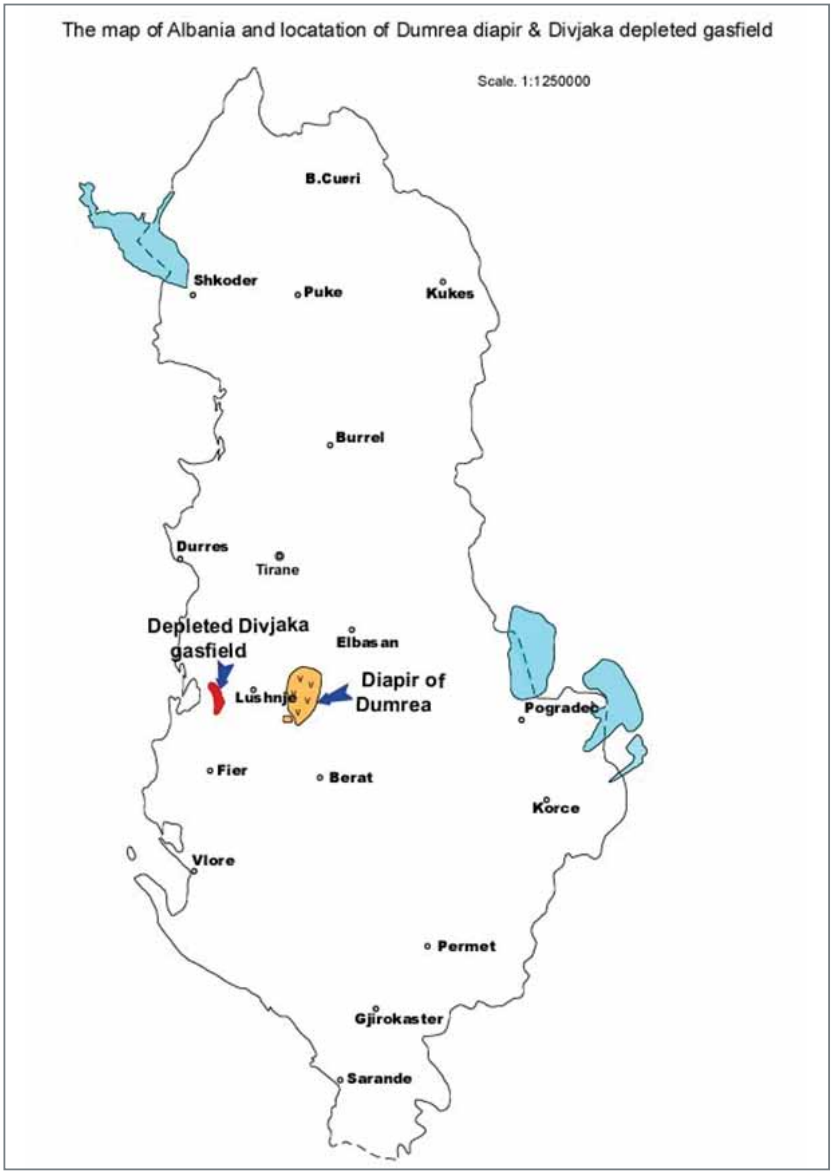
Referring to these proposal projects, the possible LNG entry points will be on the seaside of the Fieri Region (Adriatic Sea).

Referring to these proposal projects, main Interconnection Point within the Albania, will be the Interconnection Point between TAP Project, IAP Project and LNG Project, which will be an aggregated zone transit point near the city of Fieri.

A.2.5 Development of National Production and Storage Deliverability

Underground Gas Storage in Albania

- Natural reservoirs constitute a very important element in gas transmission systems to cover peak demands and to balance the seasonal variations.
- Albania has several suitable sites for gas storage, including, a salt dome in Dumrea (up to 2 bcm) and the depleted Divjaka gas field (up to 1 bcm).
- Based on a preliminary feasibility study, presented on the 3rd Gas Forum in Ljubljana, the possible UGS at Dumre Salt Dome could have the cheapest cost for gas storage (76$/Mcm)
- Is possible the cooperation between Albania and Greece for using of UGS In Dumrea Salt Dome.
- By connecting these gas storage into regional gas network (including Energy Community Ring), Albania could provide regional storage facilities for other Balkan countries.
- Therefore the design of underground gas deposits is a project of regional interest and with a particular importance for Albania.



Location of possible underground gas storage. Dumrea Salt Dome and Divjaka Depleted Gas Field

A.2.6 National Demand Scenario(s)

Albanian Gas Demand.

Albania will have a gas market for industrial consumers and for the production of electrical energy. Prediction for the year 2015 is 1.2 bil. c.m. and for 2030 1.6 to 2.0 bil. c. m.

The natural gas demand forecast provided herein considers this time horizon giving priority to the following candidate sectors:

- 1st priority: Power sector and industrial uses;
- 2nd priority: Residential and tertiary sector space heating;
- 3rd priority: Residential cooking and hot water uses.

A.3 Austria

A.3.1 Description of the Existing Network

In Baumgarten (Lower Austria), one of the most important natural gas hubs of Europe, primarily Russian natural gas but also Norwegian natural gas as well as gas from other countries is supplied and further transported over several pipelines in various directions with a total length of approximately 2,000 kilometres to centres of consumption in Austria and other European countries. This pipeline intersection consists of four stations, to which natural gas is delivered, measured, inspected and compressed for further transportation.

From Baumgarten the Trans-Austria-Gas-Pipeline (TAG) runs southerly, West-Austria-Gasleitung (WAG) runs westerly and the Hungaria-Austria-Gas-Pipeline (HAG) as well as the Kittsee-Petrzalka-Gas-Pipeline (KIP) run in a south-easterly direction. The Penta-West-Gas-Pipeline (PW) and the Southeast-Pipeline (SOL) complete the transit pipeline network operated by OMV Gas GmbH. In order to optimally manage the transit gas flow for our customers, this modern transit pipeline system consists of a system of branch and transfer stations.

The Trans-Austria-Gas-Pipeline (TAG) and the Southeast-Pipeline supply Italy, Slovenia and Croatia. The Hungaria-Austria-Gas-Pipeline (HAG) in the east supply Hungary, the Kittsee-Petrzalka-Gas-Pipeline (KIP) supply Slovakia. The West-Austria-Gasleitung (WAG) and the Penta-West Gas-Pipeline (PW) transmit natural gas to Germany and France and from West to East to Central Europe via Austria.
Besides their usage for the purpose of supplying the neighbouring countries the Trans-Austria-Gas-Pipeline (TAG) as well as the West-Austria-Gasleitung (WAG) are also used to supply the Austrian domestic market.

Natural gas with a volume of approximately 57 billion Nm^3 is transported through these pipelines each year. OMV Gas GmbH operates one of the most modern dispatching centres in Europe to cope with this enormous volume. The dispatching centre maintains ongoing contact with other dispatching centres in Milan, Essen, Berlin, Kassel, Paris, Moscow, Nitra and Stavanger.

OMV Gas GmbH is both the marketing TSO of primary capacity and the Operator of the Hungaria-Austria-Gas-Pipeline (HAG), the Kittsee-Petrzalka-Gas-Pipeline (KIP), the Southeast-Pipeline (SOL) and the Penta-West Gas-Pipeline (PW).

TAG GmbH for the Trans-Austria-Gas-Pipeline (TAG) and BOG GmbH for the West-Austria-Gasleitung (WAG) carry out the activities of marketing and contracting of primary capacity, together with capacity development decisions on these pipelines. OMV Gas GmbH is the Operator for both pipelines on their behalf.

For further information please refer to the respective websites:

(www.taggmbh.at
www.bog-gmbh.at

A.3.2 Current Processes for Investment, Current Publications

OMV Gas GmbH and BOG GmbH are publishing a "long term report" online via their respective Online Capacity Booking OCB® containing the following information on capacity:

OMV Gas GmbH:

- Future
  - Design Capacity
  - Available Capacity
  - Contracted Capacity
    - Firm
    - Interruptible

- Past
  - Design Capacity
  - Designed Capacity
    - Firm
    - Interruptible

BOG GmbH:

- Future
  - Design Capacity
  - Available Capacity
    - Firm
    - Interruptible
    - Day Ahead
  - Contracted Capacity
    - Firm
    - Interruptible

- Past
  - Design Capacity
  - Used Capacity
    - Firm
    - Interruptible

The online long term report is based on existing capacities as well as approved investments in capacity (under construction, final investment decision taken) and is updated at least whenever new information becomes available. The term of the publication of said report is not limited and is definable upon customers' choice.

TAG GmbH is publishing a "long term report" on its website containing the information listed below:

- Future
  - Nominal Capacity
  - Committed Capacity
    - Firm
    - Interruptible
  - Available Capacity
    - Firm
    - Interruptible

- Past
  - Nominal Capacity
  - Committed Capacity
  - Used Capacity

None of the three Austrian TSO publishes information on demand nor on supply as they do neither make forecasts on demand nor on supply scenarios. The person/bodies to address in order to receive this kind of information are on the one hand the market participants (customers) and on the other hand the Austrian Gas Grid Management (AGGM) in its function as Manager of the Control Area East at least as far as the Austrian Gas Market is concerned.

A.3.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Domestic Transport and Transit East/West – WAG Plus 600

In order to further increase capacities in the West-Austria-Gasleitung (WAG) it was decided to invest in further compressor stations as well as in loops of the pipeline. WAG has three compressor stations at Baumgarten, Kirchberg and Rainbach and can be operated bidirectionally. WAG currently has a technical capacity over its entire length of 245 km of approx. 1 million Nm^3/h (0°C) in East-West direction and approx. 700 000 Nm^3/h (0°C) in West-East direction. The hydraulic conditions in the area of the AT-DE border allow BOG to offer in addition "short-distance cross border capacities" branching to/from Penta-West. A similar possibility exists between the SK/AT border and the Baumgarten station.

The last phase of this expansion works is being completed in the form of a loop which is being laid parallel to the existing West-Austria-Gasleitung. BOG plans completion of this last construction phase for 2011 and has run a corresponding Booking Season in 2008. Simultaneously the capacity of the Penta-West, which branches from the WAG at Oberkappel, will be increased by OMV Gas GmbH.

Domestic Transport and Transit East/West – Penta West – reverse flow

The Penta-West-Gas-Pipeline (PW) currently available for transportation services running from the WAG off take point near Oberkappel at the German/Austrian Border to the Austrian/German Border near Überackern will offer the market transportation services in reverse flow direction starting at the 1 April 2011. After going into operation there will be another possibility to transmit natural gas from West to East via an alternative route using the Penta-West-Gas-Pipeline and the West-Austria-Gasleitung (WAG) to Central Europe as well as to supply the Austrian domestic market using this additional possibility.

Domestic Transportation and Transit North/South – TAG Expansion

In order to further increase the capacities in the Trans-Austria-Gas-Pipeline (TAG), it was decided to invest in the construction of two additional compressor stations one in Eggendorf and one in Weitendorf. Simultaneously the existing compressor stations of Baumgarten, Grafendorf, Ruden and Arnoldstein will be extended.

The compressor station in Eggendorf has been set in operation in October 2008. The compressor in Weitendorf has followed as planned by 1 October 2009.

The influence on capacity increase of the above described investments is documented in the table below:

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
AT-DE: Oberkappel	27	31[1]	31	31	31	31	31	31	31	31
AT-DE: Burghausen/ Überackern	10	20	20	20	20	20	20	20	20	20
AT-IT: Tarvisio	105	105	105	105	105	105	105	105	105	105
AT-SI: Murfeld/Cersak	10	10	10	10	10	10	10	10	10	10
AT-HU: Mosonmagyarovar	14	14	14	14	14	14	14	14	14	14
AT-SK: Baumgarten	0[2]	17	17	17	17	17	17	17	17	17
AT-SK: Petrzalka	2	2	2	2	2	2	2	2	2	2
DE-AT: Oberkappel	23	23	23	23	23	23	23	23	23	23
DE-AT: Kiefersfelden	2	2	2	2	2	2	2	2	2	2
IT-AT: Tarvisio	0	0	0	0	0	0	0	0	0	0
SK-AT: Baumgarten	200	200	200	200	200	200	200	200	200	200
DE-AT: Burghausen/ Überackern	0	[3]10	10	10	10	10	10	10	10	10

1 Starting with 1 April 2011

2 At the moment physical reverse flow is not possible between the Baumgarten station and SK/AT border.

3 Starting with 1 April 2011

A.3.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

For the time being the following projects are reviewed in Austria:

- **OMV Gas GmbH**: Upgrading the Baumgarten metering and compressor station for bi-directional use
- **TAG GmbH**: Upgrading the TAG pipeline system for bi-directional use (Option 1, Option 2 and Option 3)

For further project details please refer directly to the *"GTE+ reverse flow study: Technical solutions"* published on 21 July 2009.

Transit East/West and West/East

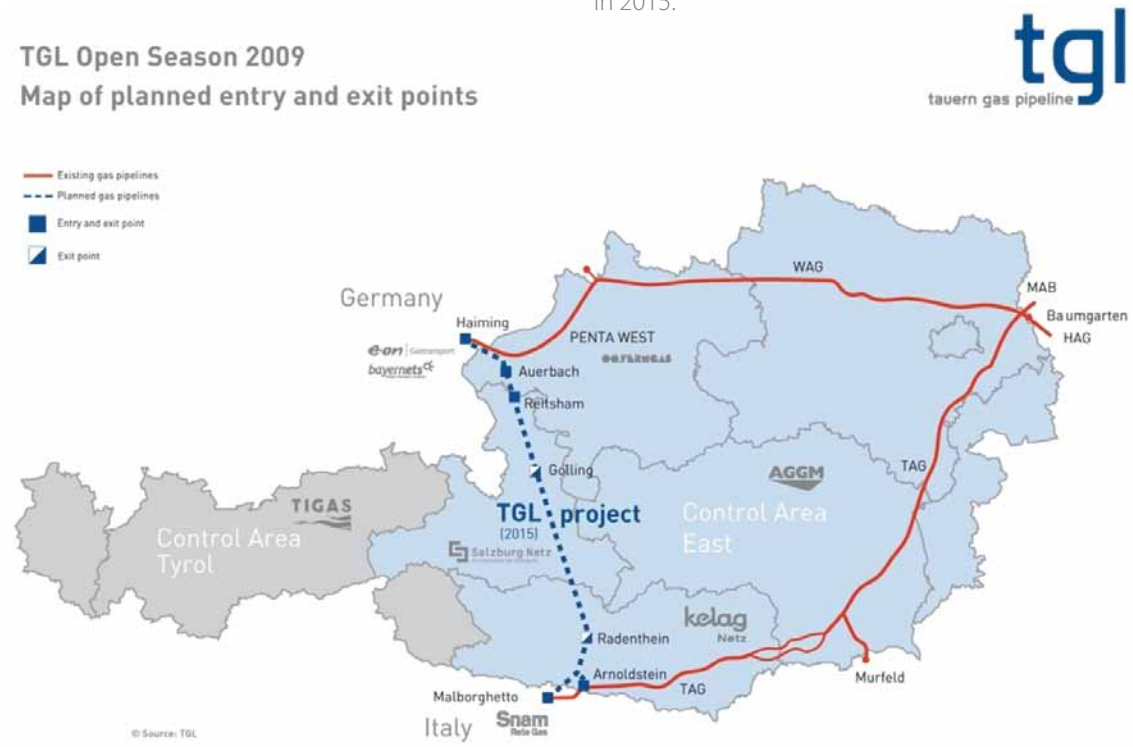
BOG is currently assessing a potential expansion after having carried out an Open Season at the end of 2008.

Domestic Transportation and Transit North/South – Tauern Gas Pipeline (TGL)

The planned Tauern Gas Pipeline (TGL), an interconnector pipeline project allowing continuous gas transmission between the German/Austrian Border at Haiming (IP Burghausen/Überackern) in Bavaria and the Austrian/Italian Border at Malborghetto/Tarvisio (IP Tarvisio) in Italy, will be able to transport natural gas with a volume of approximately 11.4 billion Nm^3/year in both the northerly and southerly direction across the Austrian Alps. An extension to Slovenia is also possible.

The project's northern Interconnection Point at Haiming (IP Burghausen/Überackern) in Germany will also allow for the use of the Penta-West-Gas-Pipeline (PW) in reverse flow. A connecting line to Trans-Austria-Gas-Pipeline (TAG) in Arnoldstein together with several other entry and exit points in Austria will be used to supply the Austrian domestic market.

The feasibility study for the Tauern Gas Pipeline (TGL) is partly funded by the European Commission. As part of the study, Tauerngasleitung GmbH is currently offering long-term transportation capacities by a procedure called "TGL Open Season 2009", which will allow the feasibility study to be completed in the first months of 2010. The decision on whether the pipeline project goes ahead will be taken thereafter. Construction is scheduled to start in 2010. The pipeline is expected to be ready for commissioning in 2015.



As a recognised part of the Trans-European Networks (TEN) the Tauern Gas Pipeline will be an important link in the future integrated European gas grid.

For further information about the project visit www.tauerngasleitung.at.

A.3.5 Development of National Production and Storage Deliverability

No figures concerning the development of the national production in Austria are publicly available. Therefore the average of the national production for the past 4 years as published by the Austrian regulator on their website (www.e-control.at) has been calculated and kept constant during the reference period of the Ten Year Network Development Plan.

The figures for the development of storage deliverability have been taken from the websites of the respective storage operators, namely OMV Gas GmbH (www.omv.com) and RAG Rohöl-Aufsuchungs AG (www.rohoel.at).

According to the General Terms and Conditions of OMV Gas GmbH, contractually agreed withdrawal rates are guaranteed for as long as at least 20% of the Working Gas Volume booked by customer is actually stored. Therefore the numbers stated below indicate 80% of the maximum deliverability published by OMV Gas GmbH.

According to the General Terms and Conditions of RAG, contractually agreed withdrawal rates are guaranteed for as long as at least 15% of the Working Gas Volume booked by customers is actually stored. Therefore the numbers stated below indicate 85% of the maximum deliverability published by RAG Rohöl-Aufsuchungs AG.

The figures mentioned below are excluding the storage facility Haidach as this storage is connected to the German grid exclusively.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
5	5	5	5	5	5	5	5	5	5
Development of Storage Deliverability (Mio. Nm^3/day)									
33	33	32	32	32	32	32	32	32	32

A.3.6 National Demand Scenario(s)

The figures for the development of the National Demand Scenarios have been taken from the long term planning published on the website of the Austrian Gas Grid Management AG (www.aggm.at) and approved by the Austrian regulator.

The Peak Day Demand figure is based on the highest demand of the coldest winter day in January 2006 taking also into consideration the overall yearly development of the planned national demand scenarios.

The Yearly Consumption figure is the result of the aggregated demand reported by distribution system operators, the Balance Group Manager, the producers and storage operators of the Control Area East taking also into consideration received applications for network access.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
55	58	59	71	76	79	81	83	84	86
Yearly Consumption (Billion Nm^3/year)									
9	9	9	11	11	11	12	12	12	13
Yearly Consumption (Billion kWh/year)									
100	100	100	122	122	122	133	133	133	144

A.3.7 Supply Scenario(s)

No supply data as requested in the table below is available for Austria. AGGM is surveying supply data for the Austrian Gas Market exclusively in the course of its long term planning but as long as the surveyed supply is equal or exceeding the surveyed demand for Austria it is not foreseen to publish said data. Therefore the available infrastructure (investment decision has been taken) being able to supply the market has been taken into consideration as substitution for commodity supply data. By doing so the figures delivered in the tables A.2.3 and A.2.5 have been added up and provided in the table below. Due to the lack of relevant information no differentiation between "peak day" and "yearly" scenarios is possible to provide, i.e. "yearly" figures are "peak day" figures times 365 days.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm³/day)									
-	-	-	-	-	-	-	-	-	-
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm³/day)									
225[1]	235	235	235	235	235	235	235	235	235
Maximum peak day supply via LNG terminals (Mio. Nm³/day)									
-	-	-	-	-	-	-	-	-	-
Peak day national production deliverability (Mio. Nm³/day)									
5	5	5	5	5	5	5	5	5	5
Peak day storage deliverability (Mio. Nm³/day)									
33	33	32	32	32	32	32	32	32	32

[1] Capacities of Austrian entry points delivered in the table A.2.3 have been added up

Yearly Supply Scenario (Billion Nm³/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm³/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated quantities via EU internal cross-border pipelines (Billion Nm³/year)									
82	86	86	86	86	86	86	86	86	86
Aggregated quantities via LNG terminals (Billion Nm³/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated national production (Billion Nm³/year)									
2	2	2	2	2	2	2	2	2	2

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
911	955	955	955	955	955	955	955	955	955
Aggregated quantities via LNG terminals (Billion kWh/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated national production (Billion kWh/year)									
22	22	22	22	22	22	22	22	22	22

A.4 Belgium

A.4.1 Description of the Existing Network

Fluxys is the independent operator of both the natural gas transport, transit grid and storage infrastructure in Belgium. The company also operates the Zeebrugge LNG terminal and the Zeebrugge Hub, one of the leading international short-term gas markets in continental Europe. Driven by its first-mover approach, Fluxys has developed its infrastructure into the veritable crossroads for international gas flows in Western Europe.

The Fluxys grid has 18 entry points, opening the Belgian grid to natural gas flows from the United Kingdom, Norway, the Netherlands, Russia and all LNG producing countries.
The Fluxys grid also serves as the crossroads for transit flows of natural gas to the Netherlands, Germany, Luxembourg, France and Southern Europe.

The Fluxys network has 3,800 kilometres of pipelines. It is used both to transport natural gas for consumption in Belgium and for transit to gas exchange locations at the border for redelivery to other end users markets. Every year, Fluxys transports around 17 billion cubic metres of natural gas for consumption in Belgium. Around 80 billion cubic metres per year are reserved in the long term for transit through the grid.

A.4.2 Current Processes for Investment, Current Publications

Investment in all core activities

The indicative investment programme for 2008-2017 includes infrastructure projects in transport, transit, storage as well as LNG terminalling and requires spending of €2.8 billion. The projects jointly represent an increase of €1.1 billion compared with the investment programme for 2007-2016. This rise is mainly due to new projects covering both transit and transport being added to the programme such as the new north/south Winksele-Blaregnies axis, extending the enhancement of the east/west axis to Zomergem and the additional compressor facilities in Winksele. The recalculation of the cost price as the result of inflation of prices for materials and implementation also pushed up the investment programme budget. The potential second capacity enhancement of the LNG terminal in Zeebrugge is not yet included in the indicative investment programme.

A.4.3 Capacity Development in the Reporting Period, Investment Decisions Taken

1. Capacity enhancement of underground storage at Loenhout

Enhancement finalized in 2011

In 2007, Fluxys started work on increasing capacity at the Loenhout underground storage facility. The aim, over a period of four years (2008-2011), is to gradually increase the workable storage capacity by 15% from 600 to 700 million cubic metres. In addition, the flexibility in operating the storage facility will be boosted by increasing send-out capacity from 500,000 to 625,000 cubic metres per hour and injection capacity from 250,000 to 325,000 cubic metres per hour.

2. New capacity on east/west axis

Market consultation in 2005-2006

The RTR2 project results from a market consultation which was held in 2005-2006 and led to contracts with 16 shippers for additional transit flows in both directions along the East/West Zeebrugge-Zelzate/Eynatten axis. In order to offer this additional capacity, Fluxys will build a second pipeline between Eynatten and Opwijk (VTN2) along the existing Zeebrugge-Zelzate/Eynatten (VTN) transmission axis, an investment which is worth over €300 million.

Commissioning planned for end 2010

Permitting procedures to build the RTR2 pipeline are underway. The commissioning of the pipeline is planned for end 2010.

Synergy transit/transport

The RTR2 project does not only respond to specific demand for additional transit capacity along the East/West axis but also creates major synergies with projects to reinforce national transport capacity in order to cover demand growth in Belgium and optimize competition on the gas market.

The RTR2 project is one of the priority TEN-E projects listed by the European Commission. Indeed, every transit flow supports security of supply and the diversification of sources for both Europe and Belgium. Fluxys' use of the same infrastructure to ensure transit of natural gas to other countries and transport into the Belgian market also creates operational economies of scale to the benefit of both activities.

3. Overview of Firm capacity per interconnection point

See table on next page.

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BE-FR: Blaregnies (L) / Taisnières (L)	35	35	35	35	35	35	35	35	35	35
BE-FR: Blaregnies Segeo (H) / Taisnières (H)	23	23	23	23	23	23	23	23	23	23
BE-FR: Blaregnies Troll (H) / Taisnières (H)	38	38	38	38	38	38	38	38	38	38
BE-DE: Eynatten/Raeren (EGT & RWE TNG & ENI Deutschland)	15	23	23	23	23	23	23	23	23	23
BE-DE: Eynatten/Raeren (WGT)	23	23	23	23	23	23	23	23	23	23
BE-LU CREOS (Bras + Pétange)	4	4	4	4	4	4	4	4	4	4
BE-NL: Zelzate (Zebra)	14	14	14	14	14	14	14	14	14	14
BE-NL: Zelzate (GTS)	14	14	14	14	14	14	14	14	14	14
NL-BE: Zelzate (GTS)	0	29	29	29	29	29	29	29	29	29
BE-UK: Zeebrugge IZT	65	65	65	65	65	65	65	65	65	65
DE-BE: Eynatten/Raeren (EGT & RWE TNG)	20	30	30	30	30	30	30	30	30	30
DE-BE: Eynatten/Raeren (WGT)	30	30	30	30	30	30	30	30	30	30
NL-BE: Obbicht/Dilsen	5	5	5	5	5	5	5	5	5	5
NL-BE: 's Gravenvoeren	36	36	36	36	36	36	36	36	36	36
NL-BE: Zandvliet H-gas	9	9	9	9	9	9	9	9	9	9
NL-BE: Zandvliet L-gas & Hilvarenbeek/Poppel	90	90	90	90	90	90	90	90	90	90
UK-BE: Zeebrugge IZT	87	87	87	87	87	87	87	87	87	87
Import										
NO-BE: Zeebrugge ZPT	62	62	62	62	62	62	62	62	62	62
LNG										
Zeebrugge LNG	38	38	38	38	38	38	38	38	38	38

A.4.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

a/ New capacity on north/south axis

In mid-December Fluxys finalised its market consultation for new cross-border north/south capacity conducted in coordination with adjacent grid operators. A total of 14 grid users concluded long-term contracts for new capacity from Zeebrugge, 's-Gravenvoeren (Belgian-Dutch border) or Eynatten (Belgian-German border) to Blaregnies (Franco-Belgian border). Coordinated marketing and development of this new capacity will stimulate the development of the natural gas market in Europe.

The first phase of the market consultation was launched in April 2007 and prompted a great deal of interest. This interest was subsequently confirmed during the binding phase of the process which started in September 2008. 14 grid users submitted requests for capacity for periods of at least 10 years and all grid users' requests were allocated. An overall hourly capacity of 1.13 million cubic metres has been allocated in the direction of France, which is equivalent to almost 10 billion cubic metres a year.

Bearing in mind permitting procedures and the scale of investment required among other things, the new capacity could be commissioned in late 2013. Marketing of this additional capacity is supervised by the respective regulators.

b/ The LNG terminal at Zeebrugge: possible second enhancement project

Considering the rising importance of LNG in Europe's security of supply, Fluxys LNG launched in late 2007 an international market survey to assess the level of demand for additional capacity at the Zeebrugge LNG terminal. Several parties have expressed interest in the project.

Memorandum of Understanding. Fluxys LNG is to launch the detailed study into building a second jetty at the Zeebrugge liquefied natural gas terminal, the aim being to enable regasification ships to moor. For its part, Exmar is prepared to book long-term capacity with Fluxys LNG. The two companies have signed a Memorandum of Understanding setting out their agreement.

World first. Following the introduction of the service for loading LNG ships last year, the novelty of offering the possibility to receive regasification ships would once more extend the scope of services on offer at the terminal. Zeebrugge would also be the first LNG terminal in the world allowing both standard LNG ships and regasification ships to moor. The fact that Fluxys' ambitious investment programme anticipates a significant increase in downstream transmission capacity is an asset for the market as well.

Feasibility study to begin with. Reception of regasification ships at the terminal requires a second jetty in the LNG-dock as well as a pipeline and ancillary infrastructure allowing injection of natural gas into the Fluxys transmission network. In the first phase, Fluxys LNG – in close cooperation with the Brugge Port Authority (MBZ) and the proper government bodies – is to study the technical and economic feasibility of the project, the safety and nautical aspects, and other factors. Exmar will contribute its experience gained in other countries to the study.

Exmar: pioneer in regasification ships. Standard ships carrying liquefied natural gas (LNG) unload their cargo into storage tanks at a terminal. The LNG is then regasified and injected into the grid. Regasification ships also transport LNG, but they regasify it on board and then inject the gas directly into the grid. Exmar is a pioneer in this kind of ship and has three regasification ships in its fleet. Four other regasification ships are currently under construction and will be delivered by mid-2010.

Result of market consultation. The Memorandum of Understanding with Exmar results from the market consultation launched in late 2007. Fluxys LNG is also in consultations with other interested customers. Since relatively little time is needed to implement facilities to receive regasification ships, Fluxys LNG is considering a multi-stage approach to the capacity enhancements that might follow from the market consultation. The infrastructure for receiving regasification ships could be developed in the first phase, with the other infrastructure following in a later phase.

c/ Research into possible underground storage in the Limburg section of the Campines region

Research continues in Limburg

In collaboration with the Flemish Institute for Technological Research (VITO) and the Limburg Investment Company (LRM), Fluxys is looking into

potential sites for underground gas storage in the Kempen region of Limburg province. In the second half of 2008 the seismic research by VITO geologists revealed the possibility of structures to be present. In order to confirm the characteristics of the subsoil and to analyze possible storage structures, Fluxys and VITO jointly took the decision in principle to carry out an exploratory drilling. The drilling is planned for 2010.

A.4.5 Development of National Production and Storage Deliverability

The firm withdrawal capacity offered to the market is for the Loenhout underground storage plant equals 400.000m^3(n)/h until 2010 afterwards it is increased to 525.000 m^3(n)/h. For the Peak Shaving Plant of Dudzele the firm capacity remains constant at 360.000m^3(n)/h. The assumption for the figures in the table below is that 100% of the Firm Withdrawal Capacity will be available at the peak winter day as offered to the market.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
0	0	0	0	0	0	0	0	0	0
Development of Storage Deliverability (Mio. Nm^3/day)									
18	21	21	21	21	21	21	21	21	21

A.4.6 National Demand Scenario(s)

The evolution of the demand is one aspect in the development of the Investment plan and is coordinated together with the Belgian Ministry and the Regulator. The figures published in the table below are based on the following criteria:

- The figures are daily peak consumption figures and are aggregated for all types of clients as well as for the 2 types of gas, L and H-gas.
- For the consumption of the households the growth hypothesis is based on the CREG document "Indicative supply plan (het indicatieve bevoorradingsplan)" published in 2004. The starting point for the forecast of this customer group is the consumption of the winter 2007/2008 extrapolated to -11°C. These extrapolated consumptions are afterwards multiplied by the provincial growth scenarios as determined in the CREG document.
- For the industrial clients and the power plants, the growth is based on the known and realistic potential projects in the 5 coming years. For the last 5 years, the growth of consumption for this group is determined by a constant increase of 288.000 m^3(n)/d, as mentioned in the CREG document.
- Since the hypotheses are based on the assumptions described above, they do not take into account the recent evolutions caused by the financial and economic crisis and neither by the recent European policy with respect to the 20/20/20 programs, that can influence very much the future gas demand due to the requirement for increased energy efficiency and switches between fuels driven of the willingness to reduce CO2 emissions.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
136	144	150	154	172	176	177	179	181	182
Yearly Consumption (Billion Nm^3/year)									
18	20	21	21	25	25	25	26	26	26
Yearly Consumption (Billion kWh/year)									
205	220	231	238	279	285	287	290	292	293

A.4.7 Supply Scenario(s)

Fluxys is not in the position to provide these demanded data, this supply scenario is the business of the producers, shippers and traders.

A.5 Bosnia and Herzegovina

A.5.1 Description of the Existing Network

The existing gas transmission system in Bosnia and Herzegovina with max. working pressure 50 bar and 16 inch diameter comprises a transmission pipeline from Zvornik to Sarajevo by length of 137 km and from Semizovac to Zenica by length of 54 km.

The border take-over station for the consumers in Bosnia and Herzegovina is at Zvornik.

The present capacity to the take-over station at Zvornik amounts to about 750 million cubic meters/ year at the current contractual delivery pressure of 26 bar. The parameters specified above provide very low line-pack in gas pipeline.

A borderline between the two Entities, the Federation of Bosnia and Herzegovina and the Republika Srpska, is at the city of Kladanj.

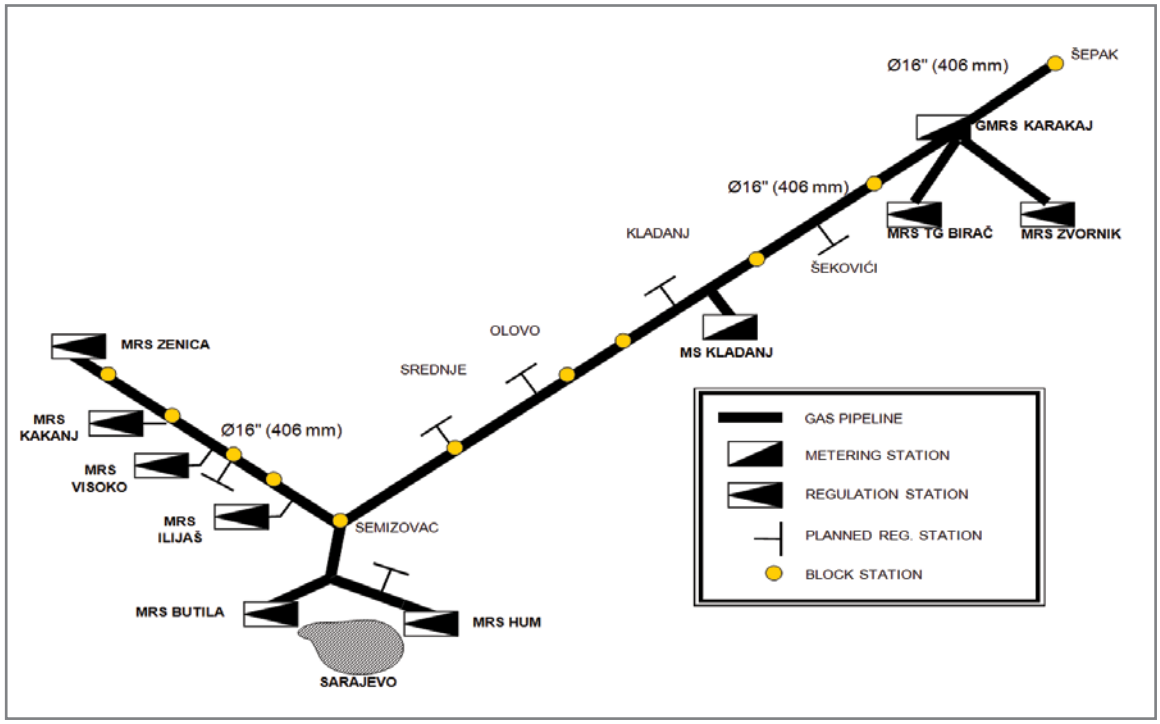
Note: In future versions of the above map the the whole length of Gas Ring will be taken into consideration. It means to show extension from Sarajevo via Zenica to Bosanski Brod as a new interconnection point at the north part of the country. Please see the figure of BiH/FBiH - Natural gas sector development projects under the chapter A.5.4.

Proprietary relations

- BH-GAS SARAJEVO – gaspipelines Kladanj – Sarajevo and Semizovac – Zenica - about 140 km (The 100% owner of BH-Gas is the Goverment of the Federation of Bosnia and Herzegovina)

- GASPROMET PALE – gaspipeline Šepak – Karakaj – about 22 km – and Karakaj - Zvornik – about 5 km – The 100% owner of Gaspromet is the Goverment of Republika Srpska.

- SARAJEVOGAS LUKAVICA – gaspipeline from Karakaj to entity border (Kladanj) – about 40 km (Privatisation is finished – the property of Private investment funds and physical persons)



Natural Gas Transmission System Scheme and Main Gas Metering and Regulation Station

A.5.2 Current Processes for Investment, Current Publications

A.5.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Capacity (Mio. Nm^3/day)	**Year**									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
RS-BA: Zvornik	1	1	1	2	2	2	2	2	2	2

A.5.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

Planned projects of transmission gas pipelines construction								
No.	**Project title**	**Project level**	**Project Priority**	**Length**	**Diameter**	**Pressure**	**Capacity**	**Investment**
PTG1.	Main / transmission gas pipeline Bijeljina – Novi Grad with branches to Šamac, Doboj, Brod, Gradiška and Kozarska Dubica	Entity / State	High priority	268 km	16 inch	50 bar	1,1 BCM	115 Million EUR
PTG2.	Main / transmission gas pipeline Šepak – Janja – Bijeljina with branches to Ugljevik	Entity / State	High priority	27 km	16 inch	50 bar	0,2 BCM	15 Million EUR
PTG3.	Gas pipeline Sarajevo – Pale	Entity / State	Middleterm	24 km	16 inch	16 bar	0,1 BCM	10 Million EUR
PTG4.	Gas pipeline Zvornik – Vlasenica	Entity / State	Middleterm	13,2 km	16 inch	16 bar	0,1 BCM	5 Million EUR
Note: PTG3 – Zenica – Travnik (Lašva region) Phase I – Investment decision has been taken by the Loan of EBRD (Assesment of investment is approx. 19 Million EUR). Construction Phase is expected in the midlle of 2010 year.								

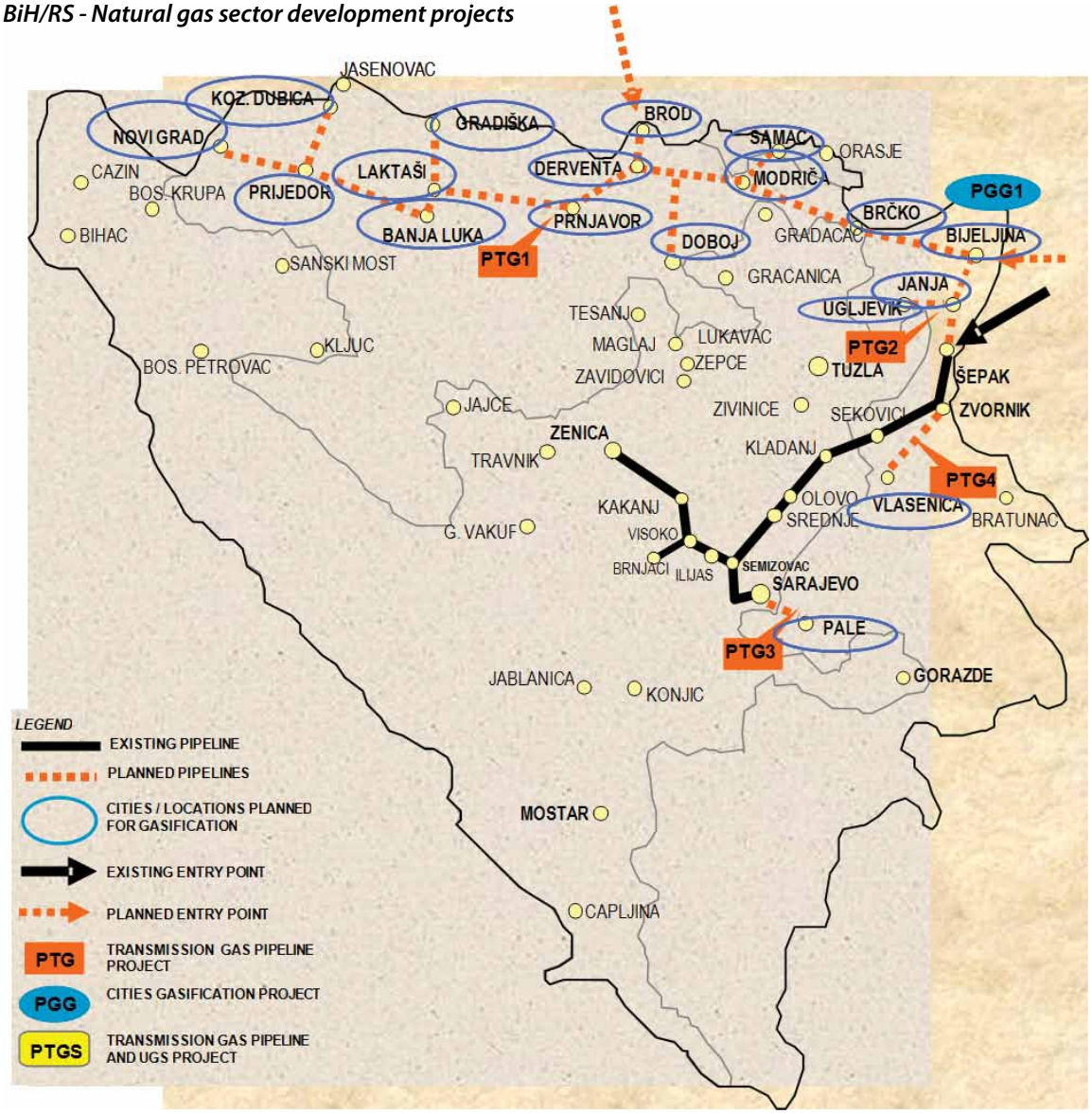
Planned projects of construction of UGS with connecting gas pipeline										
No	***Project title***	***Project level***	***Project priority***	***Storage characteristics***		***Gas pipeline characteristics***		***Investment***		
								Storage		***Connecting gas pipeline***
PTGS6.	**Underground natural gas storage in the salt mine Tetima with connecting gas pipelie Kladanj – Tuzla - Tetima**	**Regional / State**	**Longterm**	**Number of storage caverns:**	**4**	**Length**	**55 km**	**Variant I***	**42 Million EUR**	**19 Million EUR**
				Usefull cavern volume:	**124 000 m³**					
				Cavern axial distance:	**180 m**	**Diameter**	**16 inch**	**Variant II****	**44 Million EUR**	
				Max/Min pressure in the cavern:	**126 / 25 bar**					
				Cavern diameter:	**50 m**	**Pressure**	**50 bar**	**Variant III*****	**35 Million EUR**	
				Minimal usefull volume of storage:	**60 MCM**					

* Underground storage in a function of seasonal leveling and of satisfaction of peak demands

** Underground storage in an accidental-strategic function

*** The project will be realized in phases what means investment in two underground caverns. That means the project will be realized as in I Variant but without two production lines for two caverns and without two compressors.

BiH/RS - Natural gas sector development projects



A.5.5 Development of National Production and Storage Deliverability

Bosnia and Herzegovina has no national production of natural gas. Also in B&H there is no natural gas storage. There is a planned project for construction of natural gas storage in the Salt mine near Tuzla as described above.

A.5.6 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm³/day)									
1	1	1	2	2	2	2	2	2	2
Yearly Consumption (Billion Nm³/year)									
0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
Yearly Consumption (Billion kWh/year)									

Above mentioned demand scenarios including the projected demand - consumption for the existing and new transmission systems (BiH natural gas development projects describe in point A.5.4.).

A.5.7 Supply Scenario(s)

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm³/day)									
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm³/day)									
			0.08	0.7	2	2	2	2	3
Maximum peak day supply via LNG terminals (Mio. Nm³/day)									
Peak day national production deliverability (Mio. Nm³/day)									
Peak day storage deliverability (Mio. Nm³/day)									

Note: Taking into consideration that the Republic of Croatia will be EU Member very soon, we assumed new connection trough internal cross border pipelines such as: nort-west point Tr.Rastela and north point Bosanski Brod.

Yearly Supply Scenario (Billion Nm³/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm³/year)									
Aggregated quantities via EU internal cross-border pipelines (Billion Nm³/year)									
-	-	-	0.01	0.1	0.4	0.5	0.6	0.6	0.6
Aggregated quantities via LNG terminals (Billion Nm³/year)									
Aggregated national production (Billion Nm³/year)									

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
-	-	-	0.09	1	4	4	5	5	5
Aggregated quantities via LNG terminals (Billion kWh/year)									
Aggregated national production (Billion kWh/year)									

A.6 Bulgaria

A.6.1 Description of the Existing Network

Gas transmission network in Bulgaria:

for natural gas transmission within the territory of the country

- 1700 km of high pressure gas pipelines, from 12 to 54 bar;
- 3 compressor stations with total installed capacity 52 MW.

Transit network in Bulgaria:

for natural gas transmission through the territory of Bulgaria to countries from the Balkan region

- 945 km of gas pipelines (40-48"- 750 km; 20-28" - 195 km);
- 6 compressor stations with total installed capacity 240 MW.

Underground gas storage:

- One within the territory of Bulgaria;
- Working gas volume – 450 (590) mcm.
- 1 compressor station – 8 MW.

Yearly transported volumes (bcm):

Year	Delivered to the domestic market	Transited
2007	3.11	16.02
2008	3.10	15.54
2009	2.8 (expected)	13.5 (expected)

Overview of international cross-border points:

Interconnection Points
RO - BG: Negru Voda
BG - GR: Sidirokastron (former Kula)
BG - TK: Malkoclar
BG - MK: Zidilovo

- Aggregated entry and exit capacities from/to storages : Injection /production - 3,2 Mcm per day
- Aggregated entry capacities from national production : No national production in 2009
- Main Interconnection Points within the country: There are no Interconnection Points within the country.
- Number of shippers in your system: 1 shipper – "Bulgargaz" EAD
- Financial investment levels – planned and previous level of investment in Euros:

  - Currently, Bulgartransgaz is executing two projects for domestic transmission grid expansion in cooperation with KIDSF/ EBRD. Bulgartransgaz own funds are EUR 8 million, KIDSF/ EBRD - EUR 20 million.
  - There are expected investments in relation to the security of supply – expanding of Chiren UGS capacity and new interconnections with Romania and Greece. The estimation for Chiren UGS extension project amounts EUR 250 million, and jointly for the new interconnections – EUR 130 - 150 million.

It is possible to be executed a conversion of Galata gas field into second Bulgarian underground gas storage. This is expected after 2010 with estimated value of EUR 300 million. Currently Bulgartransgaz is not owner and operator of Galata field.

A.6.2 Current Processes for Investment, Current Publications

Outline of the investment processes:

Big investment projects with international participation are part of the Bulgarian Energy Holding responsibilities and not a matter of Bulgartransgaz decision making.
Currently, Bulgartransgaz is executing two projects for domestic transmission grid expansion in cooperation with KIDSF/ EBRD.

Description of current external publications:

No long term report published.

A.6.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RO-BG: Negru Voda	58	58	58	58	58	58	58	58	58	58
RO-BG:Interconnector	0	0	0	4	4	4	4	4	4	4
BG-TK: Malkochlar	43	43	43	43	43	43	43	43	43	43
BG-GR Interconnector	0	0	0	0	8	8	8	8	8	8
BG-GR: Sidirokastron	12	12	12	12	12	12	12	12	12	12
BG-MK: Zidilovo	2	2	2	2	2	2	2	2	2	2

Description of the projects of European significance:

Projects of international/European significance are the Interconnector BG-RO, Interconnector BG-GR, The South Stream and Nabucco.

A.6.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

New Bulgarian interconnections with Romania and Greece are expected as well as studies and implementation of reverse flows with Romania, Greece and Turkey:

Interconnection to Greece

Construction of high pressure gas pipeline link between Haskovo (Bulgaria) and Komotini, (Greece) to connect Bulgarian gas network with ITG (Italy – Turkey – Greece) pipeline.

- Gas pipeline route: Dimitrovgrad – Haskovo – Kardjali – Momchilgrad – Komotini
- Gas source: mainly Azerbaijan
- Total length of the pipeline route: 150 km.
- Length of the pipeline route within the territory of Bulgaria: 125 км.
- Expected maximum transportation capacity: ≈ 3.0 Bcm/year
- Expected comissioning: 2014
- Estimated value: EUR 100 – 120 million

Interconnection to Romania

- Work on building an Interconnector "Rousse-Giurgiu":
- Source of natural gas: Russia / Romania / Western Europe
- Gas pipeline route length: ≈ 25 km
- Length of the pipeline route within the territory of Bulgaria: ≈ 17 км.
- Maximum transportation capacity yearly: ≈ 1.5 Bcm/year
- Estimated value: € 30 million
- Expected commissioning: 2012

The countries will analyze in the future the possibility for additional intersystem links between the Romanian and the Bulgarian gas transportation systems.

A.6.5 Development of National Production and Storage Deliverability

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm³/day) *									
0	0	0	0	0	0	0	0	0	0
Development of Storage Deliverability (Mio. Nm³/day)									
3	3	3	3	3	7**	7	7	7	7

* **Remark:** There is a new gas field discovered in Northern Bulgaria called "Deventsi". The preliminary estimations are for total amount of 6.6 bcm of natural gas. The future work on the development of the field is still not clear. Bulgartransgaz is not owner and operator of the field.

** **Remark:** There is ongoing project for Chiren Underground Gas Storage expansion. It is envisaged that until 2013 the maximum withdrawal daily capacity will reach almost 10 million cubic meters. Reduction of 70% of the expected maximum national deliverability of Chiren UGS applied.

A.6.6 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm³/day)									
15	15	15	15	15	15	15	15	15	15
Yearly Consumption (Billion Nm³/year)									
3	3	3	3	3	3	3	3	3	3
Yearly Consumption (Billion kWh/year)									
30	30	30	30	30	30	30	30	30	30

Remark: No big changes in the national demand scenarios during the period expected. Only slight and stepwise rise of the internal demand in relation to the two new internal pipelines co-financed with EBRD after 2012.

A.6.7 Supply Scenario(s)

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm³/day)*									
21	21	21	21	21	21	21	21	21	21
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm³/day)**									
0	0	0	4	11	11	11	11	11	11
Maximum peak day supply via LNG terminals (Mio. Nm³/day)									
There are no existing LNG terminals and expected projects in Bulgaria.									
Peak day national production deliverability (Mio. Nm³/day)***									
0	0	0	0	0	0	0	0	0	0
Peak day storage deliverability (Mio. Nm³/day)									
4	4	4	4	4	10	10	10	10	10

* The data presented doesn't include BG-RO Interconnector and BG-GR Interconnector.
** Data presented for BG-RO Interconnector and BG-GR Interconnector.
*** Possible change if "Deventsi" gas field starts production.
The development of the field is still not clear. Bulgartransgaz is not owner and operator of the field.

Yearly Supply Scenario (Billion Nm³/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm³/year)*									
8	8	8	8	8	8	8	8	8	8
Aggregated quantities via EU internal cross-border pipelines (Billion Nm³/year)**									
0	0	0	1	4	4	4	4	4	4
Aggregated quantities via LNG terminals (Billion Nm³/year)									
There are no existing LNG terminals and expected projects in Bulgaria.									
Aggregated national production (Billion Nm³/year)***									
0	0	0	0	0	0	0	0	0	0

* The data presented doesn't include BG-RO Interconnector and BG-GR Interconnector.
** Data presented for BG-RO Interconnector and BG-GR Interconnector.
*** Possible change if "Deventsi" gas field starts production. The development of the field is still not clear. Bulgartransgaz is not owner and operator of the field.

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)*									
0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)**									
0	0	0	0.01	0.04	0.04	0.04	0.04	0.04	0.04
Aggregated quantities via LNG terminals (Billion kWh/year)									
There are no existing LNG terminals and expected projects in Bulgaria.									
Aggregated national production (Billion kWh/year)***									
0	0	0	0	0	0	0	0	0	0

* The data presented doesn't include BG-RO Interconnector and BG-GR Interconnector.
** Data presented for BG-RO Interconnector and BG-GR Interconnector.
*** Possible change if "Deventsi" gas field starts production. The development of the field is still not clear. Bulgartransgaz is not owner and operator of the field.

A.7 Croatia

A.7.1 Description of the Existing Network

From 2001. Plinacro Ltd is the Croatian transmission system operator. On March 11, 2002 Plinacro became a 100 percent state-owned company. Plinacro is in charge of development, construction, maintenance and supervision of the whole gas transmission system and of other activities necessary for the technical functioning of the system.

At the beginning of 2008, Plinacro operates 2085 km of high pressure gas pipelines, 1659 km of which are 50-bar system and 426 km of 75-bar system, 19 entry and 151 exit measuring-reduction stations with 245 measuring lines and a state-of-the-art National Dispatching Centre. Maximum capacity of the system an hour is 860.000 m^3, and the total capacity is 5,4 x 10^9 m^3.

Total transported natural gas volume in 2008 was 3,256 x 10^9 m^3/y.

Structure of natural gas transmission per source (2007) – import 35%; domestic production 65%.

A.7.2 Current Processes for Investment, Current Publications

The Plan of Development, Construction and Modernisation of the Gas Transmission System of the Republic of Croatia from 2002 to 2011 was made on the basis of the Strategy of Energy Development of the Republic of Croatia, approved by the Croatian Parliament in 2002.

Plinacro, as the investor and the bearer of development, construction and modernisation of the gas transmission system, successfully completed the first investment phase of this Plan, from 2002-2006. During that period 480 km of new pipelines were constructed and put into operation, as well as completion and start-up of the new National Dispatching Centre.

According to the Amendments to the Plan of Development, Construction and Modernisation of the Gas Transmission System of the Republic of Croatia, second development-investment phase 2007-2011, revision 1, investments in natural gas transmission system (approved by Ministry of Economy, Labour and Entrepreneurship) are 444 mil EUR.

This investment will bring to Croatia new 735 km of high pressure pipelines and interconnections, and thus greatly increase the capacity on a long-term basis.

A.7.3 Capacity Development in the Reporting Period, Investment Decisions Taken

At the beginning of 2008, very intensive activities occurred at the key object – construction of the gas transmission system of Lika and Dalmatia (Bosiljevo-Split 292 km) and the main gas pipeline Slobodnica - Donji Miholjac (80 km) (connection to Hungary).

Gas transmission system of Lika and Dalmatia - first section of that pipeline is already constructed, and until the end of 2011 the whole pipeline from Bosiljevo to Split will be finished. This construction will significantly extend the gas transmission network of Croatia. Total capacity will be up to 7,5 bcm/y.

Interconnection Croatia – Hungary is one of Plinacro priorities. This interconnection , including storage capacities, could be used for connection to the potential Nabucco project in the direction north-south, and as well to same of the announced projects which might pass the Croatian territory (South Stream, Blue Stream, PEGP, Adria LNG), so these capacity might also be used in reverse gas supply direction, from Croatia to Hungary. The total transmission-transit capacity would be 6,5 bcm/y. Joint development agreement between Croatian and Hungarian TSOs was signed in March 2009.

The following capacity development figures were provided by Plinacro.

Capacity (Mio. Nm^3/day)	**Year**									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
SI-HR: Rogatec	5	5	5	5	5	5	5	5	5	5
SI-HR: Rogatec II					14	14	14	14	14	14
HU-HR: Donji Miholjac			18	18	18	18	18	18	18	18
ME-HR: Dubrovnik				21	21	21	21	21	21	21

A.7.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

Due to exceptional significance of international development projects for the purpose of long-term reliability of natural gas supply for the Croatian market, and also the possibility of transit for the neighbouring countries, Plinacro pays special attention to planning and implementation of new supply directions and international connections – interconnections.

Croatian international development projects are:

Ionian-Adriatic Pipeline (IAP) opens a new transmission and transit supply direction from Caspian region, Iran and a part of Russia, to supply regional markets of Albania, Montenegro, Bosnia and Herzegovina and Croatia, and the European Union as well. Intergovernmental declaration among Albania, Montenegro and Croatia, as well as MoU between Plinacro and Swiss company EGL was sign. Feasibility study is underway.

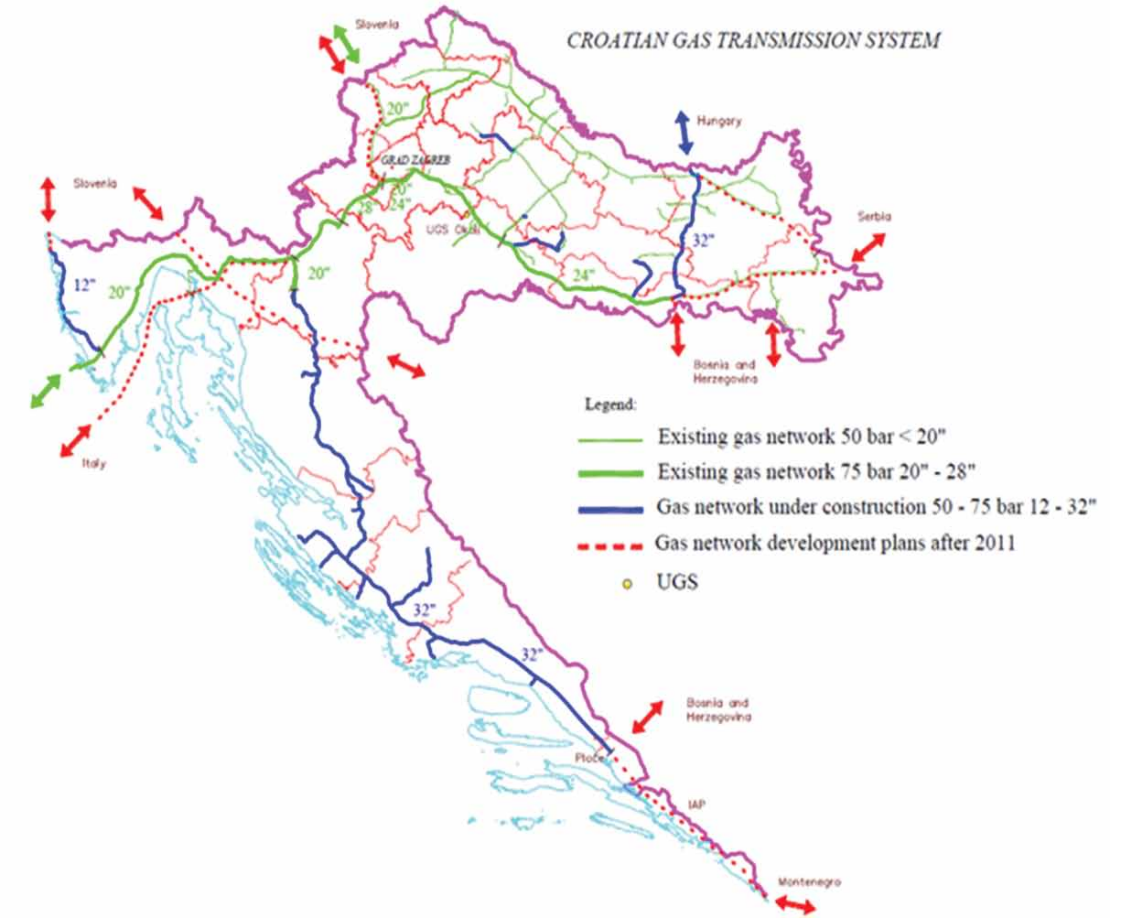
Adria LNG - In the project of the construction of the terminal for LNG on the territory of the Republic of Croatia, Plinacro participates from 2006, particularly in the segment related to the construction and operation of the evacuation gas pipelines, which is the main activity of the Company.

Interconnection **Croatia – Bosnia and Herzegovina** –four possible interconnections between the Bosnian and Herzegovinian and Croatian gas transmission system are anticipated, on directions: Slobodnica – Slavonski Brod – Bosanski Brod; Županja – Orašje; Ličke Jesenice – Bihać; Ploče – Mostar.

Interconnection **Croatia – Slovenia** – few possible routes - LNG evacuation pipelines, Rogatec – Zabok, Umag - Kopar

Interconnection **Croatia – Serbia** – possible route Sotin – Novo bačko selo

Interconnection **Croatia – Italy** - through proposed off shore pipeline Omišalj – Casal Borsetti



A.7.5 Development of National Production and Storage Deliverability

By acquiring the company Underground gas storage Ltd. (Podzemno skladište plina d.o.o.) from INA Plc., Plinacro has taken over the management and organisation of natural gas storage in the underground storage Okoli and acquired the status of gas storage system operator, i.e. the status of a mixed operator.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)(1)									
7	7	6	7	7	6	6	6	6	6
Development of Storage Deliverability (Mio. Nm^3/day)									
4	4	4	4	4	4	4	4	4	4
(1) Interpolated approximate data based on the Strategy / Green book, Ministry of economy, labor and entrepreneurship, page 77 (http://www.energetska-strategija.hr/doc/zelena_knjiga.pdf)									

A.7.6 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
Yearly Consumption (Billion Nm^3/year)									
4	5	5	5	5	6	6	6	6	6
Yearly Consumption (Billion kWh/year)									
47	48	54	56	57	59	60	61	62	62

A.8 Czech Republic

A.8.1 Description of the Existing Network

RWE Transgas Net

RWE Transgas Net, Ltd is a gas transmission system operator in the Czech Republic and responsible for:

- international natural gas transmission across the Czech Republic to western Europe;
- Inland gas transmission to meet the Czech Republic's needs.

The Company was established on the basis of the requirements laid down in a European Union directive and an amendment to the Energy Act, on January 1, 2006.
Company's website is www.rwe-transgasnet.cz.

The RWE Transgas Net transit system is comprised of very high-pressure gas pipelines operated under nominal pressures ranging from 6.1 MPa to 8.4 MPa, and with nominal diameters ranging from 800 to 1,400 mm. RWE Transgas Net operates 2,460 km of transit pipelines and 1,190 km of intrastate pipelines in the Czech Republic, including five compressor stations with a total installed capacity of 297 MW. The pipeline system was built in several phases and the oldest pipelines were commissioned in 1971.

Apart from the transmission of gas for the domestic market in the Czech Republic, RWE Transgas Net system is also a transit system transporting gas for the final use in Western European countries (such as Germany or France).

Natural gas is received and delivered at the entry and exit points from the Czech Republic, i.e. its volume and quality are metered at the border delivery stations. The entry points into the transit system are border transfer stations at Lanžhot and Hora Svaté Kateřiny in the Czech Republic, and at Olbernhau in Germany, while the exit points from the transit system are the border transfer stations at Waidhaus and Hora Svaté Kateřiny (Deutschneudorf and Olbernhau).

The Intrastate Pipeline System is interconnected with transit pipelines through delivery stations. It consists of gas pipelines in the total length of 1 183 km with the nominal pipeline diameters of DN 80 to DN 700 and nominal pressures of 4 MPa, 5.35 MPa and 6.1 MPa. 85 % of the pipelines have been constructed for the nominal pressure of 6.1 MPa.

The RWE Transgas Net intrastate system and the systems of regional distribution companies are

connected to the transit system through 20 intrastate delivery stations. Six of these stations are used for the supply of gas to the Transgas Net intrastate system and the remaining 14 are used for the direct supply of natural gas to the distribution systems of regional companies.

Natural gas is supplied from the RWE Transgas Net intrastate system into the distribution systems of regional distribution companies and to other direct customers through additional 75 delivery stations. Commercial gas volume metering equipment is installed at all delivery stations. Gas quality (gross calorific value) is measured at 15 nodal points of the system.

Length of grid in km operate by RWE Transgas Net	3,650 km of pipelines, nominal pressures 6.1 - 8.4 MPa
Yearly transported volumes in bn Nm³	26.24 bn Nm³ (2008)
Overview of international cross-border points	Lanžhot (Slovakia) Waidhaus (Germany) Deutschneudorf (Germany) Olbernhau (Germany) All IPs above are the EU internal cross-border points.
Aggregated entry and exit capacities to/from storages	Entry capacity: 32.99 Mio Nm³/d Exit capacity: 40.60 Mio. Nm³/d
Aggregated entry capacities from national production	110.4 Mio. Nm³ in 2008
Number of transit shippers	3 in 2008

A.8.2 Current Processes for Investment, Current Publications

a) Current Processes for Investments

The investment program of RWE Transgas Net company consists of two main project types: (i) extension projects and (ii) projects to modernize the existing transmission system. As a rule, not only the technological aspect of a given project, but also the safety, environmental impact, reliability and security of supply are taken into consideration.

The biggest extension projects are preparing works of new pipeline projects and connecting of 4 new distribution systems. RWE Transgas Net also preserves its assets; at this time there the largest projects are Reconstructions of MCS (Metering and Control Systems) and Innovation of dispatching control.

b) Current Publications

RWE Transgas Net company prepares regularly five-year investment plans as well as long-term investment activities plans for, in particular, the Ministry of Industry and Trade, and yearly for the Energy Regulatory Office.

RWE Transgas Net publishes on website Transmission capacity availability, Monthly and Historical capacity use, Long-term forecasts of available capacities (10 years overview), Allocation regimes, Scheduled shutdowns of gas transmission system and other. All the above mentioned information is reviewed on a regular basis and changes published as soon as possible. The scenarios of the demand and supply development are analyzed especially by the market participants and other institutions; TSO does not publish such data.

A.8.3 Capacity Development in the Reporting Period, Investment Decisions Taken

RWE Transgas Net plays an important role in the transit of Russian gas into Western Europe. After the realization of North Stream project a large redirection of gas flow through the Central Europe is expected. As the result, more capacity would be needed in the direction Olbernhau – Waidhaus.

The project of the Gazelle pipeline is under preparation works this time. It comprises 170 - 235 km of pipeline DN1400 at 80-100 bar, investment ~400 Mio EUR.

More on: www.rwe-transgasnet.cz/gazelle/

Development of total firm capacities is presented in the following table.

Capacity* (Mio. Nm³/day)	Year									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
SK-CZ: Lanžhot	171	171	171	171	171	171	171	171	171	171
CZ-SK: Lanžhot	33	33	33	33	33	33	33	33	33	33
DE-CZ: Waidhaus	22	22	22	22	22	22	22	22	22	22
CZ-DE: Waidhaus	100	100	100	100	100	100	100	100	100	100
DE-CZ: Deutschneudorf	25	25	25	25	25	25	25	25	25	25
CZ-DE: Deutschneudorf	32	32	32	32	32	32	32	32	32	32
DE-CZ: Olbernhau	24	24	24	24	24	24	24	24	24	24
CZ-DE: Olbernhau	30	30	30	30	30	30	30	30	30	30

* excluding the Gazelle pipeline (because of delay of up-stream projects)

A.8.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

A result of the Market Survey made in June 2007, is a preliminary request for transmission of up to 105 mcm/day along the Olbernhau - Waidhaus route, from year 2011. A result of another Market Survey for transmission to/from Poland in the area of Český Těšín (north-east part of Czech Republic) is a preliminary request for transmission of 1 mcm/day. The public Open Season for interconnection to Poland was successfully finalized in October 2009, the results are evaluated now.

Further projects considered by RWE Transgas Net company are the strengthening of reverse flows in the West – East direction and the possible connection of the Czech transmission system to Baumgarten junction point.

Presently, the first drafts of the above mentioned projects are being designed, the feasibility studies together with other preparatory works which will create a basis for the final decision.

A.8.5 Development of National Production and Storage Deliverability

a) National Gas Production

In Czech Republic there are no large indigenous natural gas resources. Natural gas deposits that are used by the producers in the Czech Republic, account for less than one per cent of the country's demand and this amount is fully consumed by customers in Czech Republic.

The above mentioned resources mainly include natural gas production in southern Moravia and the so-called drained gas from hard coal mines in northern Moravia. To meet domestic demand, the remaining natural gas needs to be imported; most of it comes from Russia (approximately 75%), while a lesser part comes from Norway (25%).

b) National Gas Storage

Underground gas storages in the Czech Republic serve primarily for the balancing of differences between the supplies volume and natural gas consumption. They are designed mainly for the storing of gas in the summer and gas withdrawal in the winter period, when the consumption is higher than the contracted maximum gas supply.

For the needs of the Czech Republic, the gas is stored in 7 underground storages, 6 seasonal and 1 peak storage. 6 storages are operated by RWE Gas Storage: Lobodice (the oldest and the only aquifer storage, originally constructed to store the coal gas surpluses), Dolní Dunajovice, Štramberk, Třanovice, Tvrdonice and Háje, Háje being the only peak cavern underground storage in the Czech Republic.

The total capacity of RWE Gas Storage underground storages is 2.321 bcm. Other underground gas storages are owned by Moravské naftové doly company (Uhřice with the capacity of 180 mcm) and SPP Bohemia company (Dolní Bojanovice with the capacity of 576 mcm, presently used only for Slovakia).

Among the European Union states, the Czech Republic has high storage capacity in relation to consumption (approx. 3.1 bcm of natural gas is stored before each winter). This capacity of underground storages can cover up to one third of common yearly consumption of the whole of the Czech Republic.

The capacity of all the underground storages of natural gas in the Czech Republic should increase by 4.3 bcm by 2013 and cover almost one half of the national yearly consumption. The present capacity of the storages exceeds 3 bcm. The most projects are under preparation, in the phase of feasibility study etc. to increase the capacity of the underground storages in the Czech Republic.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm³/day)[1]									
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Development of Storage Deliverability (Mio. Nm³/day)[2]									
36	43	44	48	49	50	51	51	51	51

[1] In Czech Republic there are only few producers of natural gas and there aren't published any forecast data of production. National production in Czech Republic covers only about 1% of national consumption.
[2] The 70% of the maximum daily withdrawal capacity form storages were used; all above mentioned storage deliverabilities are planned but are not finally approved for implementation.

A.8.6 National Demand Scenario(s)

The scenario of natural gas demand in the Czech Republic has been taken over from the data of the Ministry of Industry and Trade and the Gas Balancing Centre. Detailed assumptions (such as increase of GDP, taxation in the energy sector, energy commodities prices etc.) for the below stated development scenario are not stated.

The scenario is based on the integration of the Czech Republic in the EU; however, the scenario is rather pessimistic in some items as concerns some of the solutions of the future energy situation in the Czech Republic.

As the reference temperature for creating of Peak day demand in Czech Republic was used - 12°C, in the table below.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm³/day)									
65	66	71	71	71	71	71	71	71	71
Yearly Consumption (Billion Nm³/year)[3]									
9	9	9	10	11	12	12	12	12	13
Yearly Consumption (Billion kWh/year)[3]									
98	99	99	100	119	121	124	127	129	132

[3] Data source: Gas Balancing Centre and Ministry of Industry and Trade of Czech Republic.

A.8.7 Supply Scenario(s)

Czech TSO - RWE Transgas Net neither prepares any Peak Day Supply Scenarios nor has such data available. Elaboration of supply scenarios is possibly carried out by shippers and should lie within shippers' authority.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
N/A									
Peak day national production deliverability (Mio. Nm^3/day)									
N/A									
Peak day storage deliverability (Mio. Nm^3/day)									
N/A									

Czech TSO - RWE Transgas Net neither prepares any Yearly Supply Scenarios nor has such data available. Elaboration of supply scenarios is possibly carried out by shippers and should lie within shippers' authority.

Possible supply scenario could be based on public data about supply contracts available for Czech Republic on websites of Gazprom Export and Statoil, as in the following tables. The last three years there are lower figures because of time limited contracts.

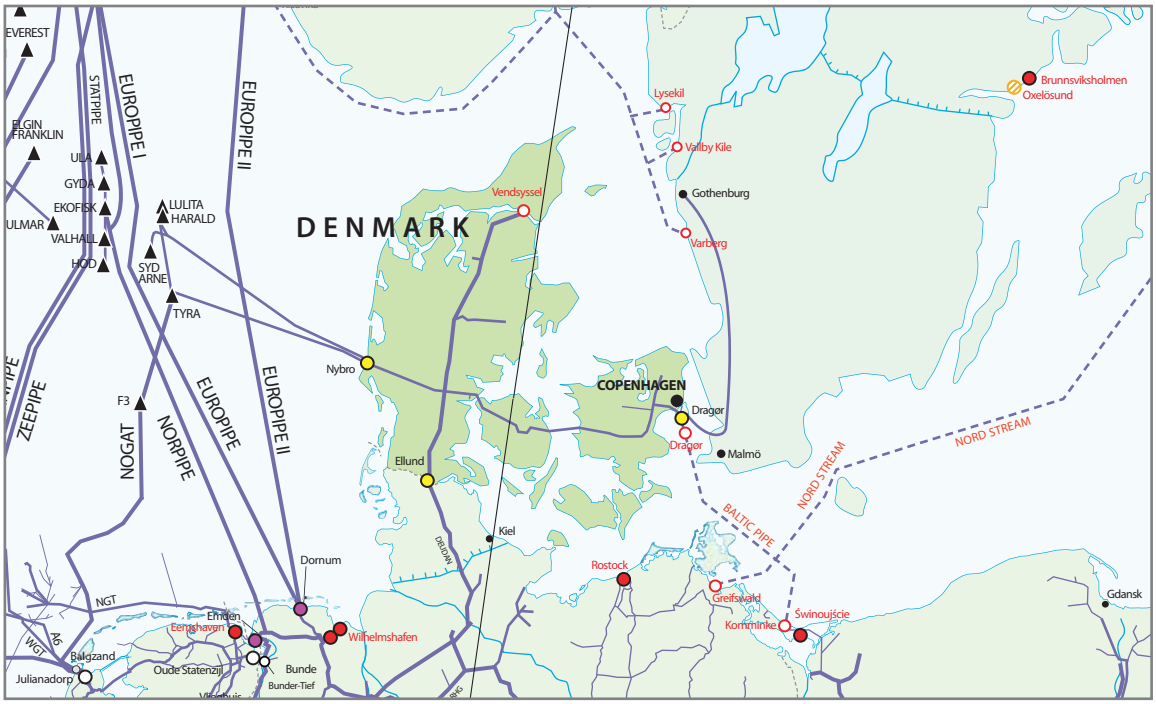
Yearly Supply Scenario (Billion Nm^3/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via EU internal cross-border pipelines (Billion Nm^3/year) [4]									
12	12	12	12	12	12	12	11	9	9
Aggregated national production (Billion Nm^3/year)									
N/A									

[4] Data source: Gazprom Export and Statoil.

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year) [4]									
125	125	125	125	125	125	125	120	90	90
Aggregated national production (Billion kWh/year)									
N/A									

[4] Data source: Gazprom Export and Statoil.

A.9 Denmark



A.9.1 Description of the Existing Network

Energinet.dk owns the gas transmission grid and the 400 kV electricity transmission grid and is co-owner of the international connections between Denmark and the Nordic countries and Germany. Furthermore, the company has at its disposal the 132 kV and 150 kV electricity grids and has access to natural gas storage facilities.

Energinet.dk's two wholly owned subsidiaries – Eltransmission.dk A/S and Gastransmission.dk A/S – operate and maintain the electricity and gas transmission grids.

Energinet.dk (http://www.energinet.dk) is an independent public undertaking owned by the Danish state as represented by the Danish Ministry of Climate and Energy. Energinet.dk has its own Supervisory Board. The company was established pursuant to the Danish Act on Energinet Danmark from December 2004.

Energinet.dk's finances must balance. Most of the turnover is collected in the form of tariffs which must be approved by the Danish Energy Regulatory Body. The financial regulation of the company is determined by a government order from July 2005. The company generates an annual gross turnover of approx. 8 billion Danish kroner. The legal framework for Energinet.dk is provided by Act on Energinet Danmark. An unauthorised translation can be seen here: http://www.energinet.dk/NR/rdonlyres/276B7459-243C-4A83-BE5F-0FCFFC1BC0CF/0/Act_on_Energinetdk.pdf.

Energinet.dk is the sole TSO in Denmark and 100% state ownership unbundled from any stakeholder interests.

The Danish gas transmission system consists of upstream pipelines in the Danish part of the North Sea and of onshore transmission pipelines. The transmission pipelines go north-south (Aalborg-Ellund) and west-east (Nybro-Dragør), and the distribution pipelines are made up of a grid of pipeline systems to the consumers. Moreover, the natural gas transmission system consists of a gas treatment plant (Nybro) and two underground gas storage facilities (Stenlille and Lille Torup).

The natural gas from the Danish section of the North Sea is transported through two offshore pipelines from the Tyra and Syd Arne fields to the shore north of Esbjerg at a maximum pressure of 138 bar. On shore, the natural gas passes through a gas treatment plant

in Nybro. Here, the quality of the gas is checked and measured, and pressure is reduced to the maximum pressure for land pipelines of 80 bar. The plant can also reduce the content of impurities such as heavy hydrocarbons and remove any sulphur if necessary for the gas to comply with the agreed specifications. If the gas is to be cleaned, only reduced volumes can be supplied (about 50%).

Energinet.dk's gas facilities consist of 860 km large-dimensioned gas pipelines of steel, 42 meter and regulator stations and 4 metering stations.

	2008	2007
Gas (GWh)		
Transmission in the grid	91,570	80,679
Imports (from Germany)	8,686	11,098
Exports (to Sweden and Germany)	47,450	36,889
Consumption in Danmark	44,120	43,791
Gas (bcm = 12.222)		
Transmission in the grid	7,5	6,6
Imports (from Germany)	0,7	0,9
Exports (to Sweden and Germany)	3,9	3,0
Consumption in Danmark	3,6	3,6

The exit capacity stated in Ellund is the physical capacity. It is possible to nominate exit volumes that are larger than the physical capacity if the net nomination does not exceed the physical capacity.

Table :
Capacity in normal situations compared with maximum, actual daily volumes for the past three winters

Point		Capacity Million Nm3/ day	Max. flow 2005/2006 Million Nm3/ day	Max. flow 2006/2007 Million Nm3/ day	Max. flow 2007/2008 Million Nm3/ day
Nybro	Entry (internal capacity from national offshore production fields)	32.4 [2)]	24.9	23.8	24.8
Lille Torup storage facility	Withdrawal	8.0 [3)]	5.3	5.7	5.5
Stenlille storage facility	Withdrawal	8.0	6.3	5.2	6.3
Exit zone Denmark	Exit	25.5	20.8	20.0	19.5
Ellund	Entry/Exit	0/8.3	0/7.2	0/8.2	0/8.3
Dragør Border	Exit	8.6 [1)]	4.9	4.9	5.6

The two underground gas storages has working capacity of 440 mio. m^3 (Lille Torup) and 610 mio. m^3 (Stenlille). DONG Storage expands Stenlille withdrawal rate up to 9.5 mio. m^3 per day.

The current asset base in gas transmission is valued at approx MEUR 650. Planned investments are considered in the scope of BEUR 1.

A.9.2 Current Processes for Investment, Current Publications

Investments are planned and carried through by the TSO financed by lending capital. Energinet.dk as sole transmission licensee is making investments according to legally set obligations to secure national supply, safe operation of the gas grid and with a view to societal benefits. Energinet.dk as a self-sustainable non-profit corporation has no own economic incentives to invest.

Investments are approved by the Danish Energy Authority and the Ministry of Energy, but is not subject to regulatory approval by the Danish Energy Regulatory Authority.

Following a two-decade long dormant period of operating existing pipelines, the Danish transmission system is facing first significant investments in recent time due to declining national production requiring new additional import capacity in border points to Norway, Germany or Poland. During the long operation period, there were no fixed procedures for investments as they were not relevant. The new investments considered by Energinet.dk are consequently the first in the company short-spanned history and procedures are established in the process.

Energinet.dk has chosen to rely on Open Season procedures to establish demand for and location of new investments through long-term contracts reaching from 10 to 15 years. If shippers will commit contractually to the business case related to the infrastructure concerned, Energinet.dk will undertake the construction.

The Open Season 2009 is co-ordinated with Norway (Skanled and GassCo), Sweden (Swedegas), Poland (Baltic Pipe and Gaz System) and Germany (Deudan and Gasunie Deutschland).

The means to commit the shippers is long-term capacity reservation agreements. If such agreements are consistent with market requirements, the open season could in theory determine the appropriate dimensions of new infrastructure on an open and non-discriminatory basis. Energinet.dk requests from the market players the expression of long-term interest in the form of bids for 10-year contracts. The Open Season procedure will result in input to Energinet.dk's decision process on expansion of the gas transmission network. But this input will be supplemented with Energinet.dk's own analyses of the need for capacity in order to meet the obligations on security of supply, market functioning and development of the transmission grid, as stipulated in national legislation.

Summary table
Used in Open Season Model paper

Point/project		Implementation			Current capacity Announced by Energinet.dk						New capacity Capacity in point			
		EIA & ESPOO approval	Con-struc-tion	Opera-tion	Interruptible		Firm			Volume*	Marginal new firm			
Project no.	Route/location	Status	Year	Year	Level 1 Nm3/h	Level 2 Nm3/h	Nm3/h	Current KWh/h1	New quality KWh/h2	bcm/y	Nm3/ hour	kWh/h2	mcm/d	bcm/y
A	**Entry Sæby** (from planned Skanled)						KWh/Nm3	12,222	11		KWh/Nm3	11		
Pipeline (a)	**Sæby-Ll.Torup**	Expected	2009	2013										
Pipeline (b)	**Ll.Torup-Egtved**	Expected	2009	2013										
Total			**2009**	**2013**	**0**	**0**	**0**	**0**	**0**	**0,0**	**540.000**	**5.940.000**	**13**	**4,7**
B2	**Entry Avedøre** (from Baltic Pipe)				Conditioned by compressors in Niechorz & Goleniow, Poland									
Pipeline (i)	**Baltic Pipe-Avedøre**	Expected	2009	2013										
Compressor (e)	**Avedøre**	Obtained	2009	2013										
Total			**2009**	**2013**	**0**	**0**	**0**	**0**	**0**	**0,0**	**375.000**	**4.125.000**	**9**	**3,3**
B1	**Exit Avedøre** (to planned Baltic Pipe)													
Pipeline (i)	**Baltic Pipe-Avedøre**	Expected	2009	2013										
Compressor (c)	**Egtved**	Obtained	2009	2013										
Compressor (d)	**Langeskov**	Obtained	2009	2013										
Compressor (e)	**Avedøre**	Obtained	2009	2013										
Total			**2009**	**2013**	**0**	**0**	**0**	**0**	**0**	**0,0**	**375.000**	**4.125.000**	**9**	**3,3**
Total[1]	[1] Conditioned by reduced capacity at other points in the system										**480.000**	**5.280.000**	**12**	**4,2**

Table: Points included in OS 2009 listed with existing capacities and potential new firm Capacity

Summary table
Used in Open Season Model paper

Point/project		Implementation			Current capacity Announced by Energinet.dk						New capacity Capacity in point			
		EIA & ESPOO approval	Con-struc-tion	Opera-tion	Interruptible		Firm			Volume*	Marginal new firm			
Project no.	Route/location	Status	Year	Year	Level 1 Nm3/h	Level 2 Nm3/h	Nm3/h	Current KWh/h1	New quality KWh/h2	bcm/y	Nm3/ hour	kWh/h2	mcm/d	bcm/y
C1.a	**Exit Dragør** (to existing Swedish transmission system)													
Compressor (d)	**Langeskov**	Obtained	2009	2013										
Compressor (f)	**Dragør**		2011	2015										
Total, step 1			2009	2015	36.000	74.000	250.000	3.055.500	2.750.000	1,1	125.000	1.375.000	3	1,1
Meter Station	**Expansion, Dragør MS**		2011	2015										
Compressor (d)	**Langeskov**	Obtained	2009	2013										
Compressor (f)	**Dragør**		2011	2015										
Compressor (c)	**Egtved**		2009	2013										
Total, step 2[1]			**2009**	**2015**	**36.000**	**74.000**	**250.000**	**3.055.500**	**2.750.000**	**1**	**250.000**	**2.750.000**	**6**	**2,2**
	[1] Conditioned by reduced capacity at other points in the system, i.e. if Baltic Pipe is constructed current capacity is reduced to 125,000 Nm3/h													
C1.b	**Exit Dragør** (to existing Swedish transmission system)													
Meter Station	**Expansion, Dragør MS**		2011	2015										
Compressor (d)	**Langeskov**	Obtained	2009	2013										
Compressor (f)	**Dragør**		2011	2015										
Compressor (c)	**Egtved**		2009	2013										
Total[1]			**2009**	**2015**	**36.000**	**74.000**	**125.000**	**1.527.750**	**1.375.000**	**1**	**250.000**	**2.750.000**	**6**	**2,2**
	[1] Conditioned by reduced capacity at other points in the system, i.e. if Baltic Pipe is constructed current capacity is reduced to 125,000 Nm3/h													
C2	**Entry Dragør** (from Swedish transmission system)													
Compressor (f)	**Dragør**	Not initiated	2011	2015										
Total			**2011**	**2015**	**25.000**	**0**	**0**	**0**	**0**	**0,0**	**200.000**	**2.200.000**	**5**	**1,8**

Summary table
Used in Open Season Model paper

Point/project		Implementation			Current capacity Announced by Energinet.dk						New capacity Capacity in point			
		EIA & ESPOO approval	Con-struc-tion	Opera-tion	Interruptible		Firm			Volume*	Marginal new firm			
Project no.	Route/location	Status	Year	Year	Level 1 Nm3/h	Level 2 Nm3/h	Nm3/h	Current KWh/h1	New quality KWh/h2	bcm/y	Nm3/ hour	kWh/h2	mcm/d	bcm/y
D1 (DK/D)	**Entry Ellund** (from existing DEUDAN)													
Compressor (g)	**Ellund (DK/D)**[1]	Existing	-	-										
Total, step 1			**2009**	**2013**	**150.000**	**194.000**	**0**	**0**	**0**	**0,0**	**435.000**	**4.785.000**	**10**	**3,8**
Pipeline (h)	**Ellund-Egtved**	Not initiated	2009	2015*	*Could be possible from 2014									
Compressor (g) - step 2														
Total, step 2			**2009**	**2015**	**150.000**	**194.000**	**0**	**0**	**0**	**0,0**	**700.000**	**7.700.000**	**17**	**6,1**
Compressor (d)	**Langeskov**	Not initiated	2009	2015*	*Could be possible from 2014									
Total, step 3			**2009**	**2015**	**150.000**	**194.000**	**0**	**0**	**0**	**0,0**	**1.000.000**	**11.000.000**	**24**	**8,8**
	[1] Could be located on either side of Danish-German border													
D1 (DK)	**Entry Ellund** (from existing DEUDAN)													
Compressor (g)	**Ellund (DK)**	Not initiated	2009	2013										
Total, step 1		**Obtained**	**2009**	**2013**	**150.000**	**194.000**	**0**			**0,0**	**435.000**	**4.785.000**	**10**	**3,8**
Pipeline (h)	**Ellund-Egtved**		2009	2013										
Compressor (g) - step 2														
Total, step 2		**Not initiated**	**2009**	**2013**	**150.000**	**194.000**	**0**			**0,0**	**700.000**	**7.700.000**	**17**	**6,1**
Compressor (d)	**Langeskov**	Obtained	2009	2013										
Total, step 3			**2009**	**2013**	**150.000**	**194.000**	**0**			**0,0**	**1.000.000**	**11.000.000**	**24**	**8,8**
Deles op i to projekter (kompressor + dobbelt rør- gælder også for 3a)														

Summary table Used in Open Season Model paper														
Point/project		**Implementation**			**Current capacity** **Announced by Energinet.dk**						**New capacity** **Capacity in point**			
		EIA & ESPOO approval	**Con-struc-tion**	**Opera-tion**	**Interruptible**		**Firm**			**Volume***	**Marginal new firm**			
Project no.	**Route/location**	**Status**	**Year**	**Year**	**Level 1 Nm3/h**	**Level 2 Nm3/h**	**Nm3/h**	**Current KWh/h1**	**New quality KWh/h2**	**bcm/y**	**Nm3/ hour**	**kWh/h2**	**mcm/d**	**bcm/y**
D2	**Exit Ellund** (to existing DEUDAN)													
Pipeline (h)	**Egtved – Ellund**	Not initiated	2011	2015										
Compressor		Not initiated	2011	2015										
Total			**2011**	**2015**	**56.000**	**50.000**	**344.000**	**4.204.368**	**3.784.000**	**2,5**	**344.000**	**3.784.000**	**8**	**3,0**
E	**Entry Nybro**													
Pipeline	**Not planned**	Not initiated	2011	2015										
Compressor	**Not planned**	Not initiated	2011	2015										
Total[1]			**2009**	**2013**			**1.350.000**	**16.499.700**	**14.850.000**	**7,9**	**0**	**0**	**0**	**0,0**
[1] Available production capacity from Danish North Sea is expected to decline reducing the commercially available capacity in Ellund from 2015 latest														
-	**UGS Stenlille**													
2008							335.000	4.094.370	3.685.000					
2015														
-	**UGS Lille Torup**													
2008							335.000	4.094.370	3.685.000					
2015														
-	**Exit DK Zonen**													
2008							1.200.000	14.666.400		4,3	0	0	0	0,0

Description of current external publications

a) Plan for security of Natural Gas supply

Energinet.dk publishes a yearly plan for security of natural gas supply.

The latest available in English is from 2008: (http://www.energinet.dk/NR/rdonlyres/6FC591FB-FC25-4D23-A516-A7577E9E0198/0/Planforsecurityofnaturalgassupply2008.pdf)

The plans include forecast of demand and supply for the coming year and for the coming 10 years. The plans treat security of supply in both the transmission system and the distribution system, and the information in generated in cooperation with the distribution companies in Denmark.

b) Open Season material

In connection with the ongoing Open Season process Energinet.dk has published a model paper and other documents describing the investment possibilities as described earlier.

These can be found on the homepage. (http://www.energinet.dk/en/menu/Market/Gas+market/Open+Season+2009/Open+Season+2009.htm)

A.9.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Denmark is involved in two offshore interconnector projects under planning:

- **Skanled** (starting in Kaarstoe, Norway, connecting to Southern-Central Norway to Sweden and to the Danish transmission grid in Saeby in Northern Jutland);
- **Baltic Pipe** (connecting Poland and Copenhagen, Denmark through the Baltic Sea).

Investment decisions on both projects are determined through initial bookings and shipper participation in national Open Seasons in Poland and Denmark.

Suspension of Skanled and results of Open Season 2009 Phase 1

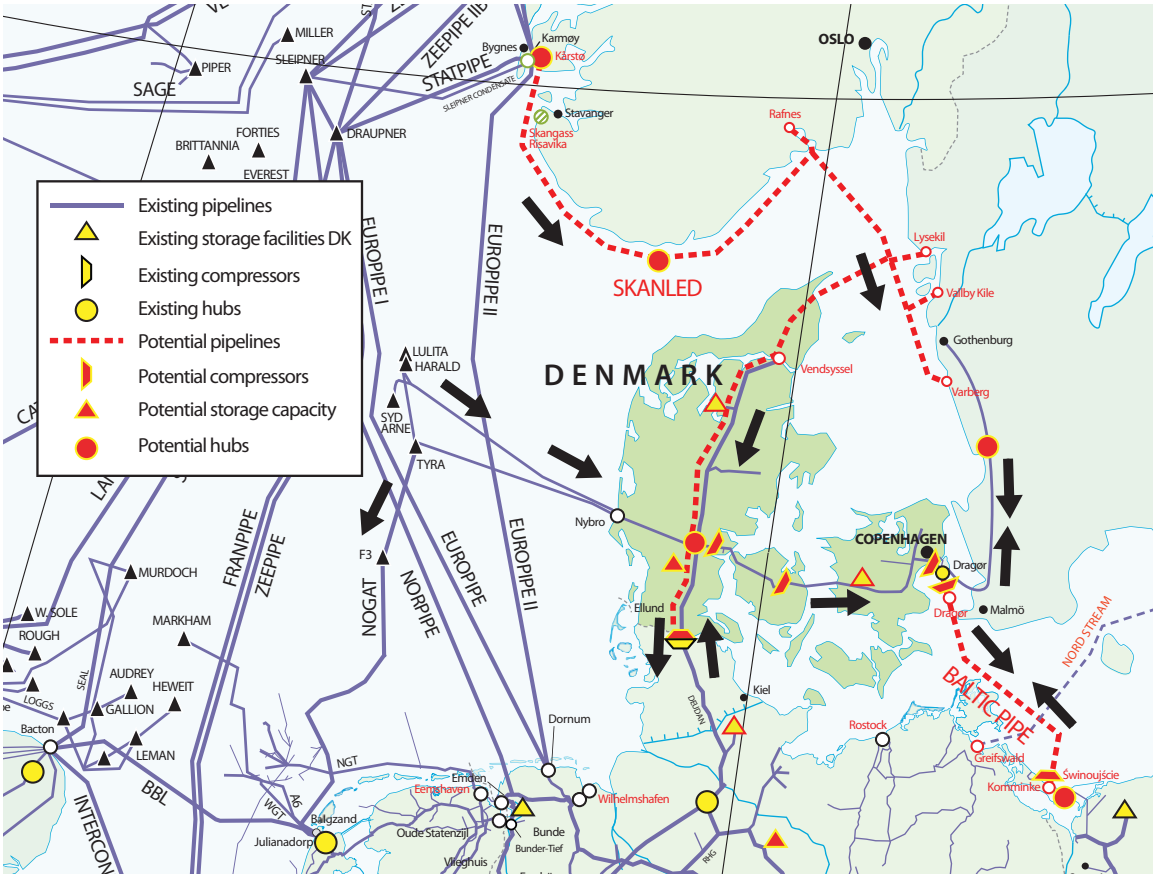
On 29 April 2009, the Skanled partners decided to suspend further project activities stating increased commercial risk combined with the global economic developments that have given an uncertain view on future gas demand.

Deadline for bids in phase 1 was on 30 April 2009. When the deadline expired, Energinet.dk had received seven non-binding bids in phase one of its Open Season process. Energinet.dk is currently conducting a preliminary assessment of the non-binding bids from phase one of the Open Season process. In July or August this year, the bidders will be notified of the results of the first bidding round so that phase two, which involves binding bids, can be initiated.

The preliminary non-binding bids are sufficient to warrant an expansion of the capacity from the Danish-German border and northwards. This means that investments along this route also qualify for inclusion in the second phase.

It has not yet been clarified how the bids from phase one and the scrapping of the Skanled project, which was announced on 29 April 2009, will affect:

- Energinet.dk's plans of looping the pipeline from Egtved to Lille Torup;
- Polish-owned Gaz System's plans to build a pipeline from Avedøre to Poland (Baltic Pipe);
- Energinet.dk's plans to reinforce the pipeline to Sweden and Avedøre.



Capacity development table and reference point for capacity figures

Energinet.dk is in process of conducting Open Season 2009 to determine the required new capacity expansions in border points to replace declining domestic production. At the time of submitting the present information, Open Season is in process of completing second anf final round and no form investment decisions have been made.

However, it is indicated that new capacity that the Ellund Interconnection Point with German systems will be offered before year 2014. The exact level of capacity and its division on short- and long-term products is yet to be decided with a public announcement planned within the end of 2009.

The potential development in new and total capacity in shown in the table below.

Table: Points included in OS 2009 listed with existing capacities and potential new firm Capacity).

Capacity (Mio. Nm³/day)	**Year**									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
DK-DE: Ellund										
Import										
DE-DK: Ellund										

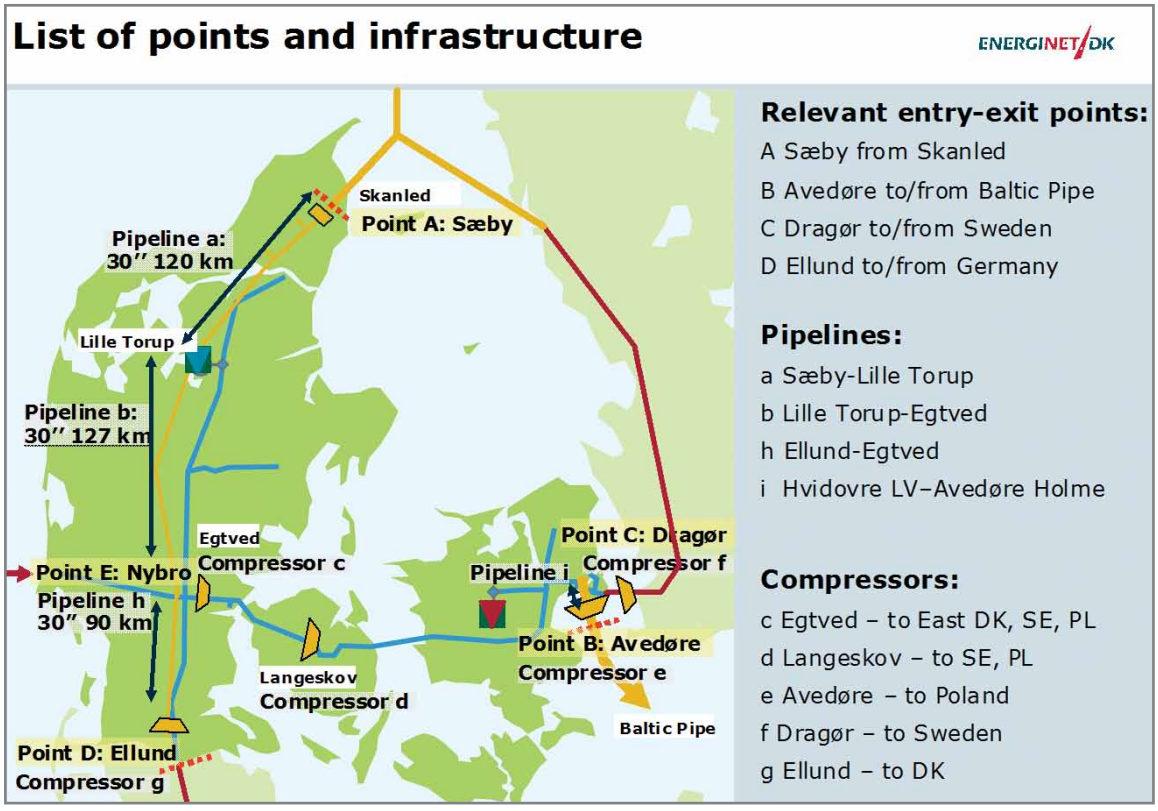
Note to table: Energinet.dk has yet to determine the overall and individual expansion in border points. Preliminary results of Open Season 2009 leaves only Ellund IP qualified for expansion. The appropriate level of investments are decided on parallel Open Seasons in Danish and German systems.

A.9.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

Energinet.dk Gastransmission has identified the following entry and transit-exit points as relevant in regard to the first phase of OS 2009 (in alphabetical order):

1. **Entry Avedøre**
   (from Poland/Baltic Pipe (Gaz System));
2. **Entry Dragør**
   (from Sweden/Swedegas and Svenska Kraftnät)
3. **Entry Ellund**
   (from Germany/DEUDAN (Gasunie Deutschland, DONG Pipelines and E.On Gastransport));
4. **Entry Sæby**
   (from Norway/Skanled (Gassco));
5. **Exit Avedøre Poland/Baltic Pipe**
   (Gaz System);
6. **Exit Dragør**
   (Sweden/Swedegas and Svenska Kraftnät)
7. **Exit Ellund**
   (to Germany/DEUDAN (Gasunie Deutschland, DONG Pipelines and E.On Gastransport))

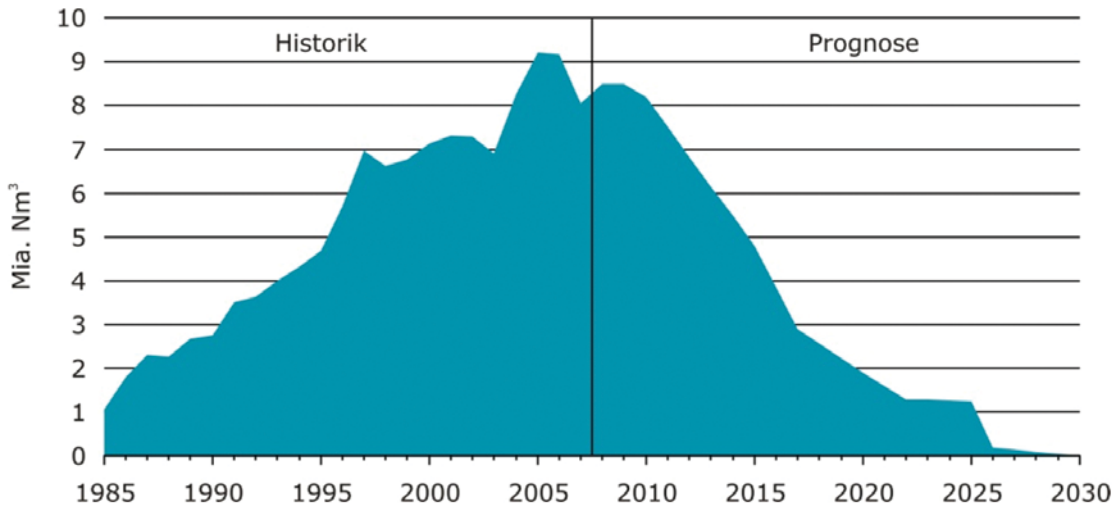
The present open season procedure only addresses capacity in the transmission system to and from the Danish transmission system. Storage points are not included in the open season procedure as the prime drivers for investments in the storage points will be intrinsically linked to expansion of the injection and withdrawal rates in the storage facilities.



A.9.5 Development of National Production and Storage Deliverability

The Danish North Sea constitutes the only present supply source to the natural gas markets of Denmark and Sweden, just as considerable volumes are exported to Germany and the Netherlands. Production has peaked from where it is soon expected to decline below market demand.

If Energinet.dk in co-operation with transmission system operators in adjacent systems does not undertake co-ordinated measures to secure physical expansion of the pipeline systems that connects to new supply sources, the gas market is necessarily delimited to decline gradually following the production forecast profile shown in the figure below.



Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm³/day)									
22	20	17	16	15	13	11	8	7	7
Development of Storage Deliverability (Mio. Nm³/day)									
18	18	18	18	18	18	18	18	18	18

A.9.6 National Demand Scenario(s)

The latest Danish demand forecast from the Energy Agency is based on the 2008 political agreement. Demand scenarios (minimum and maximum B) as well as the flow scenarios are only conducted for 2015 and 2025.
The sudden suspension of Skanled project and subsequent postponement of connections to Poland came after submitting the national demand scenarios.

New demand scenarios are under preparation in Energinet.dk and will be published under the Open Season section of our company website.

Volume:

Year		2015		2025	
		Minimum solution	**Main alternative**	**Minimum solution**	**Main alternative**
Natural gas type	Supply	Danish and German gas	Danish, German and Norwegian gas	German gas	German and Norwegian gas
Point/Zone		**Billion Nm3/ year**	**Billion Nm3/ year**	**Billion Nm3/ year**	**Billion Nm3/ year**
Exit zone Denmark	Exit	3.4	3.5	3.0	3.0
Dragør	Exit	1.2	0.6	1.3	0.7
Baltic Pipe	Exit	-	3.0	-	1.0
Ellund	Exit	0	0	0	0
Total	**Exit**	**4.6**	**7.1**	**4.3**	**4.7**
Ellund	Entry	2.3	2.6	4.3	2.6
Nybro	Entry	2.3	2.4	0	0
Skanled	Entry	-	2.1	-	2.1
Total	**Entry**	**4.6**	**7.1**	**4.3**	**4.7**

Capacity:

Year		2015		2025	
		Minimum solution	**Main alternative**	**Minimum solution**	**Main alternative**
Natural gas type		Danish and German gas	Danish, German and Norwegian gas	German gas	German and Norwegian gas
Point/Zone		**Million Nm3/day**	**Million Nm3/day**	**Million Nm3/day**	**Million Nm3/day**
Exit zone Denmark	Exit	18.3	19.0	16.2	16.6
Dragør	Exit	6.7	3.5	7.0	3.6
Baltic Pipe	Exit	-	9.2	-	3.1
Ellund	Exit	0	0	0	0
Total	**Exit**	**25.0**	**31.7**	**23.2**	**23.3**
Ellund	Entry	7.0	8.0	12.9	8.0
Nybro	Entry	7.0	7.4	0	0
Skanled	Entry	-	6.3	-	6.3
Lille Torup	Withdrawal	8.0	9.5	8.0	9.5
Stenlille	Withdrawal	8.0	9.5	8.0	9.5
Total	**Entry**	**30.0**	**40.7**	**28.9**	**33.3**
Excess capacity	**Entry**	**5.0**	**9.0**	**5.7**	**10.0**

National Demand Scenario(s)									
Year									
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Peak Day Demand (Mio. Nm^3/day)									
26	26	26	26	26	26	26	26	26	26
Yearly Consumption (Billion Nm^3/year)									
4	4	4	4	4	4	3	3	3	3
Yearly Consumption (Billion kWh/year)									
49	49	49	49	49	49	37	37	37	37

Note: Domestic gas production has an average GCV of 12,222 kWh/m^3. Future imports from Germany are likely to be 11 kWh/m^3. Conversion factor applied in the table is 12,222 kWh/m^3.

A.10 Finland


Hammerfest
Teriberka
Murmansk
Kandalaksha
Belomorsk
Medvezhyegorsk
Petrozavodsk
FINLAND
Tampere
Imatra
Vyborg
Primorsk
Baltic LNG
Turku
HELSINKI
St.Petersburg
STOCKHOLM
TALLINN
Narva
ESTONIA
NORD STREAM

A.10.1 Description of the Existing Network

Gasum Oy was founded in 1994. Gasum's present ownership structure is Fortum (Finland) 31%, OAO Gazprom (Russia) 25%, Finnish state 24% and E.ON Ruhrgas (Germany) 20%.

As a TSO Gasum is responsible for operating, maintaining and extending the natural gas transmission pipeline in Finland. At year-end 2008, the natural gas transmission pipeline was 1,140 km long and had 200 delivery points. The operating pressure of the system is 54 bar.

The natural gas transmission system includes underground steel pipes, valves, 9 compressor units and modern SCADA-system to monitor and control the gas transmission system and register the gas volumes and composition. The Imatra measurement station uses ultrasound flow meter for metering the Russian natural gas arriving in Finland. The main control centre is situated in Kouvola.

Gasum has launched the Expansion 2010 project to extend and develop the Finnish natural gas transmission network. Project includes 2 new parallel pipelines, new pipeline to serve Helsinki metropolitan area and basic repair of the oldest parts of the main pipeline.

A.10.2 Current Processes for Investment, Current Publications

There are no publications concerning investments

A.10.3 Capacity Development in the Reporting Period, Investment Decisions Taken

There are no decision taken to increase the capacity in the reporting period.

Capacity (Mio. Nm^3/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Import										
RU-FI: Imatra	25	25	25	25	25	25	25	25	25	25

A.10.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

A.10.5 Development of National Production and Storage Deliverability

There are no plans concerning production or storage in Finland. A small scale liquefaction plant is under construction.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Development of Storage Deliverability (Mio. Nm^3/day)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil

A.10.6 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
22	22	22	22	22	24	24	24	24	24
Yearly Consumption (Billion Nm^3/year)									
5	5	5	5	5	5	5	5	5	5
Yearly Consumption (Billion kWh/year)									
52	52	52	52	52	55	55	55	55	55

A.10.7 Supply Scenario(s)

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm^3/day)									
22	22	22	22	22	24	24	24	24	24
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Maximum peak day supply via LNG terminals (Mio. Nm^3/day)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Peak day national production deliverability (Mio. Nm^3/day)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Peak day storage deliverability (Mio. Nm^3/day)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil

Yearly Supply Scenario (Billion Nm^3/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm^3/year)									
5	5	5	5	5	5	5	5	5	5
Aggregated quantities via EU internal cross-border pipelines (Billion Nm^3/year)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Aggregated quantities via LNG terminals (Billion Nm^3/year)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Aggregated national production (Billion Nm^3/year)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
52	52	52	52	52	55	55	55	55	55
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Aggregated quantities via LNG terminals (Billion kWh/year)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
Aggregated national production (Billion kWh/year)									
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil

A.11 Former Yugoslav Republic of Macedonia

A.11.1 Description of the Existing Network

The transport gas pipeline begins from the entry in the Republic of Macedonia and the Border Station located at Zidilovo on the Macedonian-Bulgarian border, through the distribution gas pipelines and the City Gates stations and the city gas pipelines to the outlet measuring and regulation stations of the direct consumers, including also the metering and regulating stations.

At the high pressure gas pipeline are built pig launching and receipt station, eight valve block stations on the main and eight valve block stations on the distribution gas pipelines, as well as a valve block station for interconnection with the gas pipelines of the neighboring countries.

The high pressure gas pipeline is designed for a physical capacity of 800 million nm^3 annually at an operating pressure of 40 bar. The maximal pressure at the entry of the Border Station is 54 bar. The operating pressure in the city gas pipelines ranges from 8 bar to 12 bars, while the outlet pressure of the metering and regulating stations, as a rule, is equal or higher than 3 bar.

A.11.2 Current Processes for Investment, Current Publications

A.11.3 Capacity Development in the Reporting Period, Investment Decisions Taken

The Macedonian government prepares a feasibility study for further gas pipeline development. More exact data will be available in few months.

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BG-MK: Zidilovo	0.8	1	2	2	2	2	2	2	2	2

A.11.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

A.11.5 Development of National Production and Storage Deliverability

There is no national production. Construction of a storage is not foreseen in next decade.

A.11.6 National Demand Scenario(s)

Demand is based on continuous operation of Gas Turbine Power Plant, Skopje District Heating Plants, as well as bigger industrial consumers like Steel Works, ELEM, Pipe Factory, Brewery, etc.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm³/day)									
2	3	3	3	3	3	3	3	3	3
Yearly Consumption (Billion Nm³/year)									
0.4	0.5	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Yearly Consumption (Billion kWh/year)									
4	5	7	7	7	7	7	7	7	7
1 Nm³ = 9,33 kWh									

A.12 France

A.12.1 Description of the Existing Network

GRTgaz and **TIGF** are the two operators of the gas transmission system in France.

GRTgaz operates and markets the natural gas transmission system in France, with the exception of South-West France, where the system is operated by TIGF.

GRTgaz

GRTgaz is a private limited company, created on January 1, 2005 in application of European directives on the European electricity and gas market.
Its Website is : www.grtgaz.com.

GRTgaz operates 32,717 km of steel pipelines and 26 compressor stations, but does not operates natural gas storage or LNG terminal. GRTgaz has 2,663 employees.

Today, GRTgaz has 50 shippers as customers.

GRTgaz's profile :

- 31,717 km (2007) of high-pressure pipelines (maximum allowable operating pressures of 67,7 to 95 bar)
- 667 bn kWh, i.e. 58.5 billion m3 of gas carried in 2007
- Main entry points : Dunkerque (Norway), Taisnères (Belgium), Obergailbach (Germany), Montoir (LNG terminal), Fos (LNG terminal) and TIGF (South West of France)
- Total firm entry capacity (end of 2008): 2730 GWh/d
- Main exit Points : Oltingue (Swizerland , Italy), TIGF (South West of France)
- Total firm exit capacity(end of 2008): 548 GWh/d
- Total entry capacity from storage (2008): 2692 GWh/d
- Investment in 2007: €372 million
- Planned investment in 2008: €600 million

TIGF

TIGF is a private limited company, a subsidiary of the industrial group Total SA. It was created on January 1, 2005 in application of European electricity and gas market.
Its Website is: www.tigf.fr

TIGF operates 4,900 km of steel pipelines and 4 compressor stations, and operates natural gas storage. TIGF has 350 employees.

TIGF conducts its business independently, with a permanent policy of non-discrimination among the different natural gas suppliers. Today, TIGF has 16 shippers as customers.
TIGF's profile:

- 4,900 km of high-pressure natural gas pipelines
- 102 TWh of gas carried yearly
- Entry points: Biriatou (Spain), Larrau (Spain), GRTgaz Sud (France).
- Total firm entry capacity : 304 GWh/d
- Exit Points: Biriatou (Spain), Larrau (Spain), GRTgaz Sud (France).
- Total firm exit capacity : 117 GWh/d
- Total Storage capacity : 26 TWh
- Investment in 2007 : €100 million

A.12.2 Current Processes for Investment, Current Publications

The investment programmes of GRTgaz and TIGF are submitted annually to the French Energy Regulatory Commission (CRE) for approval and the financial plan is approved by each TSO's Board of Directors.

Every year, each TSO publishes a prospective study on the development of the natural gas transmission system over the next 10 years. The last one can be found with the following links :

- **GRTgaz:** http://www.grtgaz.com/en/home/major-projects/projects-in-study/10-year-development/
- **TIGF:** http://www.tigf.fr/pageLibre0001089b.htm

In these prospective studies, the TSOs seek to:

- meet the market's expressed need for new natural gas entry capacity, which requires significant upgrades to the transmission system,
- maintain the reliability of the transmission system and bring it into line with new safety and environmental regulations,
- meet its public service obligations,
- connect new users to the transmission system, in particular power stations for wich more than 11 projects are currently underway (connection contracts signed).

A.12.3 Capacity Development in the Reporting Period, Investment Decisions Taken

GRTgaz

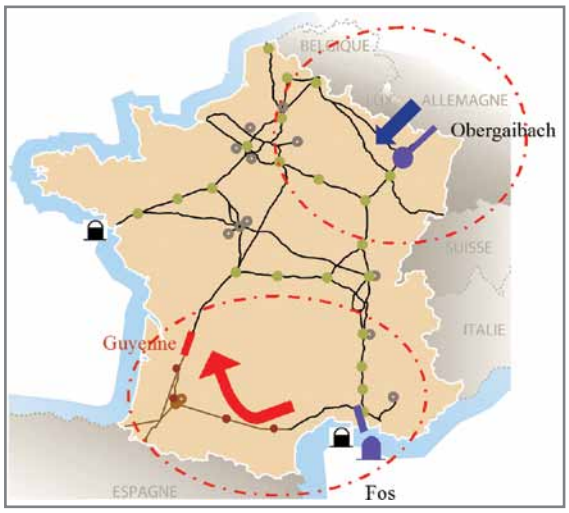
Development of entry capacity at Obergailbach

In 2005, GRTgaz undertook a market consultation in order to gauge the need for new entry capacity at Obergailbach.

The outcome of this consultation prompted GRTgaz to plan a two-stage process for the development of entry capacity :

- the first stage increased firm capacity by 120 GWh per day at the end of 2008. This took frim capacity up to 550 GWh per day;
- the second stage will increase firm entry capacity up to 620 GWh per day by the end of 2009.

In addition, at the beginning of 2008, E.ON Gastransport began a consultation on all the entry and exit points on its system, in particular the Medelscheim/Obergaibach interconnexion point. GRTGaz would have been able to develop additional capacity of around 100 GWh per day at Obergailbach by 2013, if such project had been confirmed by E.On Gastransport, which had not been the case to date.



Developments prompted by the Fos Cavaou LNG terminal

The new Fos Cavaou terminal has now been fully connected to the transmission system. It required a new large-diameter pipeline to be laid between Fos and the Saint-Martin-de-Crau compressor station. At the same time, the Saint-Martin-de-Crau interconnexion has been completly upgraded to maintain flows under all conditions.

GRTgaz and TIGF also reinforced the core system, with GRTgaz focusing on the Guyenne pipeline. On GRTgaz's side, this work was completed at the end of 2008.

TIGF

The reinforcement of the Guyenne branch represents an investment of around 250 million euros over the period 2006-2008. It will be put into service in the last quarter of 2008 and will allow:

- the entry capacity into the TIGF zone from the GRTgaz network to increase by 90 GWh/d in the summer, a period in which congestion is noted, and the exit capacity from the TIGF zone to the GRTgaz Sud zone to increase by around 70 GWh/d,
- TIGF to provide GRTgaz with a transportation capacity of 150 GWh/d from Cruzy to Castillon so as to develop the hosting capacity of the GRTgaz Sud zone to allow the connection of the Fos Cavaou regasification terminal.

Furthermore, work carried out with ENAGAS since 2005 has revealed the stages necessary to increase interconnection capacities between the Spanish and the French networks. On the basis of this work, a development plan was published on February 6 2007 as part of ERGEG's southern regional initiative. The network reinforcement projects which have already been given the go-ahead, together with marginal investment in the TIGF network ('Lacal reversibility') will provide, for the first time, the market with a firm entry capacity into France at the Franco-Spanish interconnection point at Larrau. In 2009, capacity will stand at 50 GWh/day and, as from 2010; the interconnection capacity will be increased to 100 GWh/day in both directions.

The achievement of all these projects will increase the capacity as shown in the following table:

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BE-FR: Blaregnies(H) / Taisnières(H)	52	52	52	52	52	52	52	52	52	52
BE-FR: Blaregnies (L)/ Taisnières (L)	23	23	23	23	23	23	23	23	23	23
DE-FR: Medelsheim/ Obergailbach	56	56	56	56	56	56	56	56	56	56
FR-CH: Oltingue	20	20	20	20	20	20	20	20	20	20
ES-FR: Biriatou	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
FR-ES: Biriatou	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
ES-FR: Larrau	0	3	3	9	9	9	9	9	9	9
FR-ES: Larrau	9	9	9	9	9	9	9	9	9	9
Import										
NO-FR: Dunkerque	50	50	50	50	50	50	50	50	50	50
LNG										
Fos	35	35	35	35	35	35	35	35	35	35
Montoir de Bretagne	32	32	32	32	32	32	32	32	32	32
National Inter-T²SO IP										
Link BZ N_S	20	20	20	20	20	20	20	20	20	20
Link BZ S_N	10	20	20	20	20	20	20	20	20	20
Link GRTgaz_TIGF	28	28	28	28	28	28	28	28	28	28
Link GRTgaz_TIGF	7	7	7	7	7	7	7	7	7	7

A.12.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

GRTgaz

In its 10-year development statement published in October 2009, GRTgaz confirms the continuing momentum of infrastructure development on France's gas transmission system identified in the 2008. This Development statement is an outcome of the continuing work and discussions with the market players, the adjacent operators and the institutional representatives.

The projects described in this chapter are not decided yet. Their final investment decisions mainly depend on external decisions and GRTgaz accepts no liability with regard to their implementation or non-implementation.

a) Development in the North zone

LNG terminal projects

On the North zone, three LNG terminal projects have emerged in 2006/2007 :

- a new terminal at Dunkerque, with a stated capacity of 9 bcm per year, to 13 bcm per year;
- a new terminal at Antifer, with a stated capacity of 9 bcm per year, possibly expanding to 18 bcm per year, declared of public interest project by a prefectural order of June 18, 2009;
- a possible expansion of the capacity of the Montoir-de-Bretagne terminal.

Public debates have already been held on the Dunkerque and Antifer projects, and the reports have been published by the National Commission for Public Debate.

In order to anticipate the development needs on the transmission system, GRTgaz began close discussions with their promoters from the start. The aim is to synchronise the work and to meet the needs of shippers by ensuring that transmission capacity keeps pace with real levels of development in regasification capacity. These consultations culminated in the signature of design agreements with certain LNG terminal project operators and the establishment of agreements on the sale of transmission and regasification capacity.

Development of capacity at Taisnières

In 2007, Fluxys and GRTgaz began a coordinated market consultation to identify the need for further transmission capacity from northern Belgium to France.

The binding phase of this consultation was held at the end of 2008 and confirmed strong interest among shippers for new capacity on these links between markets located at the heart of Europe. This demand is about 300 GWh per day greater than the long-term entry capacity available at Taisnières, which confirms the need for GRTgaz to develop new capacity on that interconnection point.

The final decision on these investments in France now depends on confirmation of investments in Belgium, so as to guarantee a perfect coordination of capacity developmement at the interconnection point.

b) Development in the South zone

LNG terminal projects

On the South zone, two LNG terminal projects have emerged in 2006/2007 :

- a new terminal at Le Verdon, with capacity of 9 bcm per year, possibly expanding to 15 bcm per year;
- a new terminal at Fos, with a stated capacity of 8 to 15 bcm per year.

These projects are still in their upstream phases and GRTgaz is continuing to work with the promoters on the connection terms.

Development of capacity with the TIGF network and Spain

Demand from the market and regulators to reinforce the interconnection between Spain and France, in both directions, has been confirmed and a market consultation process concerning capacity market design has been carried out by the regulators (CRE and CNE) at the end of 2008. According with the results of this market consultation, different capacity products are proposed to the market in the Open Season that has been launched on July 2009. Two development projects have been presented by Enagas, Naturgas, TIGF and GRTgaz in the South-GRI:

- Optimization and build up of existing interconnection point: Western Corridor,
- Creation of a new interconnection point (Perthus): Eastern Corridor.

The consultation entails the proposal of a global, two stage process of commercialisation.

In the first stage:

- Commercialisation of the capacity available in 2013 on the GRTgaz South – GRTgaz North interconnexion, as well as the GRTgaz South – TIGF and TIGF – Spain interconnections (in both directions);
- In a non binding consultation, shippers are asked to express their interest in additional capacity on the same interconnections in 2015, as well as on a new interconnection between GRTgaz South and Spain and between GRTgaz North and GRTgaz South.

The results of this first stage have confirmed the great interest of the market in the development of this interconnection, mainly in the direction Spain to France. So Larrau interconnection will be developped for 2013 and the binding consultation for additional capacities in 2015 will be launched in 2010.

- Detailed results of this first stage can be found on the ERGEG website: (link: http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_INITIATIVES/GRI/South/Meetings1/SG_meetings/10supthsup%20South%20SG)

c) Development of the capacity between GRTgaz's North and South zones

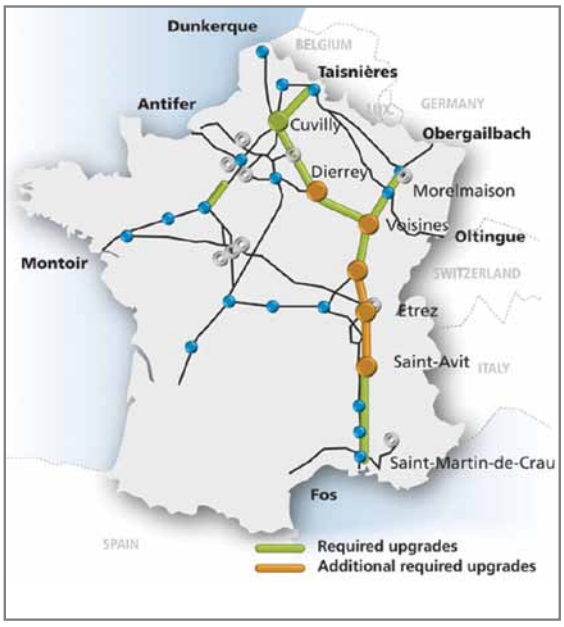
Because of physical limitations linked to historical design of the transmission system, the GRTgaz transmission system was divided into 4 entry/exit zones which have been reduced to two zones on the 1st of January 2009 (North and South zones) after having done the investment needed to merge three zones in northern France.

GRTgaz began marketing the available capacity between its North and South balancing zones at the start of 2008. This process showed that shipper demand was greater than the capacity on offer.

The investment needed to increase capacity on the North-South link is significant and depends on the achievement of the other projects, mainly in the core system. These results have been presented to the market on June 2008 in order to open discussions on that subject and have been updated within the framework of the consultation process set up in France at the end of 2008.

Creating somme 200 GWh per day of additional capacity would broadly double transmission capacity on an axis from Lille to Marseille at an estimated cost of around €1.7 billion. The main investments required are shown on the following map:

In order to merge GRTgaz's two zones, an additional investment of around €700 million would be required to complete the looping of the Lille-Marseille axis:



This subject was explored and discussed within one of the groups set up under the consultation system established in France at the end of 2008. The results established at these discussions, confirmed by referral to CRE (French regulator), were used by the

latter in its July 2, 2009 ruling to set the objectives for the GRTgaz North-South link. The capacity created in 2013 on this link will be sold by the end of 2009, and the need for additional link capacity will be assessed through the market consultation conducted in mid 2009.

d) Development in the core system

With regard to the management of the North and South zones, the system upgrades required for the development of the entry and exit points are not confined to the parts of the system immediately adjacent to those interconnexions points. The required upgrades also extend to the core system, because of the need to be able to handle a very wide variety of scenarios. Indeed, without the development of core system capacity, bottlenecks would appear with the new entry capacity, depriving the new supplies of sufficient outlets and rectricting their range of influence.

In the North balancing zone, with the development of the interconnections, it will become possible to supply this zone exclusively with the LNG terminals located in the West coast or solely with gas from borders with Germany and Belgium. This situation puts pressure on the core system, since it is required to carry maximum flows in both directions.

Moreover, the growth in CCGT plants also affects the core system by generating highly concentrated exit flows to those areas, with particularly intraday load matching.

The planned increase of entry, exit and link capacity, as desrcided in the previous paragraphs, raises considerable demand for core system reinforcement wich are described in the following map:

TIGF

a) Development of entry/exit capacities

To enhance further the fluidity of the market and allow a larger number of players access to the TIGF zone, TIGF is studying the possibility of reinforcing the Lacal-Guyenne axis to fulfill its maximum potential.

These capacities could be used for international south-north and north-south transmissions to extend access to surplus storage capacities in the TIGF zone. If these projects were to go ahead, there would be far greater competition between suppliers in the south of France and Spain.

The key aspects of the investment projects for such reinforcement were presented in the ERGEG report of February 6 2007 (www.tigf.fr/pageLibre000108cb.htm). They are based on a coordinated vision of the development of the GRTgaz, ENAGAS and TIGF networks.

These projects are presented below.

Phases 2 and 3 of the Guyenne branch reinforcement project

They would bring the capacity sold by TIGF to GRTgaz (in the summer) to 265 GWh/day and would include:

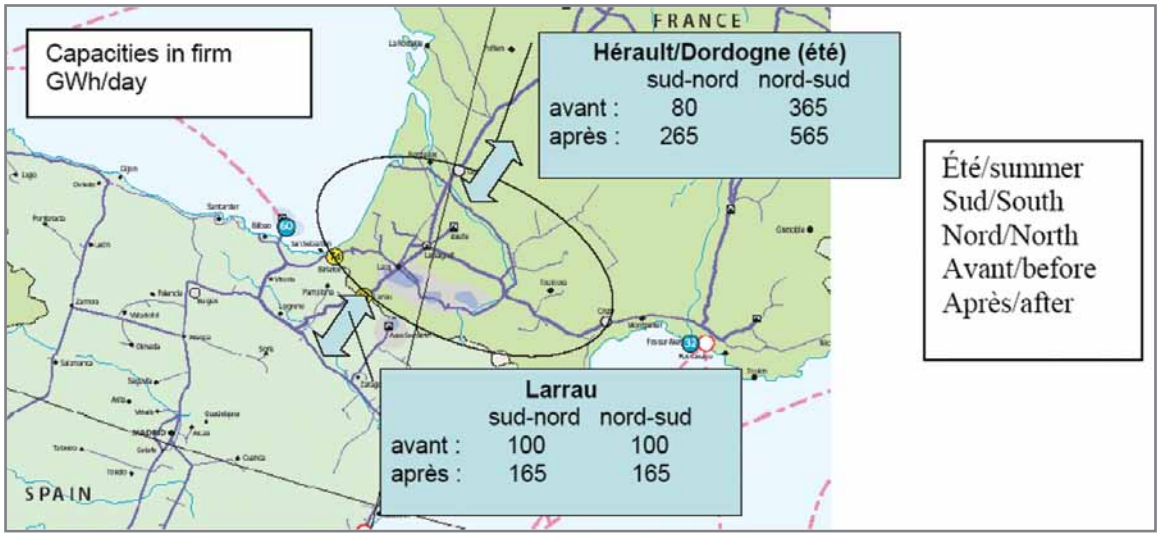
- a 60-km pipeline connecting Captieux and Lussagnet with a nominal diameter of 800 mm and a maximum service pressure of 86 bars,
- Additional compression pressure on the sites of Lussagnet and Sauveterre de Guyenne.

These transportation capacity development stages have been studied in coordination with GRTgaz and could be undertaken between now and 2011.

b) Core network reinforcement investments

To bring the Franco-Spanish interconnection capacity at Larrau up to its maximum capacity, namely, 165 GWh/day, additional compression power has to be installed on the Mont station and the Lussagnet-Lacq gas pipeline has to be reinforced. These investments are being studied by TIGF in coordination with ENAGAS and could be put into service in 2011.

The map below shows the capacities at the interconnection points before and after the investments have been made along the Western corridor.



Demand from the market and regulators to reinforce the interconnection between Spain and France, in both directions, has been confirmed and a market consultation process will be carried out by CNE and CRE and it's planned to take place at the end of 2008 and an Open Season will be hold at the beginning of 2009. This consultation will deal with the Western corridor, and the Eastern corridor as well.

A.12.5 Development of National Production and Storage Deliverability

On the GRTgaz's zone, all the underground storages of natural gas are operated by Storengy. Twelve underground storage facilities are combined on the basis of their performance and geographical location into Storage Groups. (See www.storengy.com/en for more information)

On the TIGF's zone, the storage is operated also by TIGF as an integrated company.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
2	1	1	1	1	1	1	0.4	0.4	0.4
Development of Storage Deliverability (Mio. Nm^3/day)*									
245	256	262	270	271	272	274	275	277	277

* The table above only includes new storage capacities where the final investment decision has been taken. The figures are the maximal gas withdrawal after 55% associated working volume has been withdrawn.

A.12.6 National Demand Scenario(s)

In France, in accordance with the public service obligations in the gas sector, GRTgaz and TIGF have to ensure the continuity of transmission in the following circumstances:

- a cold winter such as it occurs statistically every 50 years,
- a period of extremely low temperatures lasting a maximum of three days, as it occurs statistically every 50 years.

In order to fulfil these obligations, GRTgaz and TIGF are required to maintain and develop a transmission system extensive enough for its transmission and delivery capacities. For this purpose, GRTgaz and TIGF establish forecasts of the gas demand taking into account:

- Analysis of the last year consumptions and determination of peak day demands,
- Consultations with local distribution system operators and with the consumers directly connected to the transmission system,
- Consolidations through macroeconomic factors applied on a market segmentation defined by customer type (residential, tertiary, industry and power generation sectors).

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day) *									
385	393	400	408	412	417	419	419	421	421
Yearly Consumption (Billion Nm^3/year)									
48	49	50	51	52	52	52	53	53	53
Yearly Consumption (Billion kWh/year)									
535	551	562	572	583	593	597	602	603	604
* 1-in-50 peak-day demand									

A.12.7 Supply Scenario(s)

GRTgaz Peak Day Supply Scenario

GRTgaz works to meet shippers capacity requirements and thereby to contribuate to developping the European market. In France, developments of entry and exit capacities are decided or under consideration, in particular linked with LNG terminal projects and with the development of interconnections with Belgium and Spain (see Chapter A.12.4).

In its 10-year development statement published in 2009, GRTgaz uses probabilities of implementation of the projects to establish its global investment forecast. Using those probabilities of implementation, the evolution of the peak day entry flows in the GRTgaz zones would be :

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm^3/day)									
50	50	50	50	50	50	50	50	50	50
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
138	138	138	153	182	198	198	198	198	198
Maximum peak day supply via LNG terminals (Mio. Nm^3/day)									
67	67	67	67	67	121	121	126	126	126
Peak day national production deliverability (Mio. Nm^3/day)									
0	0	0	0	0	0	0	0	0	0
Peak day storage deliverability (Mio. Nm^3/day)									
210	220	225	230	230	250	255	270	270	270

TIGF Peak Day Supply Scenario

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm^3/day)									
-	-	-	-	-	-	-	-	-	-
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
6	6	6	10	10	10	10	10	10	10
Maximum peak day supply via LNG terminals (Mio. Nm^3/day)									
-	-	-	-	-	-	-	-	-	-
Peak day national production deliverability (Mio. Nm^3/day)									
2	1	1	1	-	-	-	-	-	-
Peak day storage deliverability (Mio. Nm^3/day)									
37	39	41	43	45	47	47	47	47	47

GRTgaz Yearly Supply Scenario

The figures below are determined from the peak day supply using a factor of 330:

Yearly Supply Scenario (Billion Nm^3/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm^3/year)									
17	17	17	17	17	17	17	17	17	17
Aggregated quantities via EU internal cross-border pipelines (Billion Nm^3/year)									
45	45	45	50	60	60	65	65	65	65
Aggregated quantities via LNG terminals (Billion Nm^3/year)									
22	22	22	23	23	40	40	42	42	42
Aggregated national production (Billion Nm^3/year)									
0	0	0	0	0	0	0	0	0	0

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
188	188	188	188	188	188	188	188	188	188
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
502	502	502	559	672	672	732	732	732	732
Aggregated quantities via LNG terminals (Billion kWh/year)									
257	257	257	261	261	463	463	483	483	483
Aggregated national production (Billion kWh/year)									
0	0	0	0	0	0	0	0	0	0

TIGF Yearly Supply Scenario

Yearly Supply Scenario (Billion Nm^3/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm^3/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated quantities via EU internal cross-border pipelines (Billion Nm^3/year)									
2	2	2	3	3	3	3	3	3	3
Aggregated quantities via LNG terminals (Billion Nm^3/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated national production (Billion Nm^3/year)									
0.06	0.06	0.05	0.05	-	-	-	-	-	-

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
18	18	18	30	30	30	30	30	30	30
Aggregated quantities via LNG terminals (Billion kWh/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated national production (Billion kWh/year)									
7	6	6	5	-	-	-	-	-	-

A.13 Germany


TYRA
F3
NOGAT
NORPIPE
EUROPIPE
EUROPIPE II
Nybro
COPENHAGEN
Dragør
Malmö
NORD STREAM
BALTIC PIPE
Ellund
Kiel
DELDAN
Dornum
Rostock
Greifswald
Świnoujście
Kommunke
NGT
A6
Emden
Eemshaven
Wilhelmshafen
Balgzand
Oude Statenzijl
Bunde
Bunder-Tief
Vlieghuis
Emsbüren
RMG
Steinitz
Szczecin
Amsterdam
NETRA
Rotterdam
Winterswijk
Ochtrup
MIDAL
Hannover
BERLIN
Mallnow
Gorzów
Zevenaar
Dülmen
WEDAL
Kienbaum
EUROPOL
Hilvarenbeek
Groß Köris
Werne-Stockum
Essen
Poppel
Dortmund
Zielona Góra
Obbicht
Düsseldorf
Kassel
Dilsen
Bocholtz
Leipzig
Lasów
Eynatten
Aachen
Broichweiden
Verlautenheide
Raeren
Lichtenbusch
Reckrod
Olbernhau
Deutsch Neudorf
Hora Svaté Kateřiny
Bras
LUX.
Petange
Remich
Lampertheim
MEGAL
Kouřim
PRAGUE
Waidhaus
Medelsheim
Obergailbach
GERMANY
Veselí nad Lužnicí
Host
Oberkappel
WAG
Überackern
München
Linz
Burghausen
Penta West
Wallbach
Oltingue
Rodersdorf
Kiefersfelden
Salzburg
LIECHT.
Innsbruck
BERN
Geneva
AUSTRIA
Graz
Arnoldstein
Weitendorf
Murfeld
Griespass
Passo Gries
Tarvisio
Klagenfurt
TAG II
TAG I
Ceršak
Trento
SLOVENIA
Rogatec

A.13.1 Description of the Existing Network

Please refer to the following descriptions of the several German TSO companies and GTE members for further information on the German network:

DONG Energy Pipelines GmbH

DONG Energy Pipelines GmbH is a subsidiary of the Danish energy company DONG Energy A/S. DONG Energy Pipelines GmbH operates a high pressure supra-regional gas transportation system from the European interconnection point Ellund at the Danish/German border into and out of the Market Area GASPOOL where DONG Energy Pipelines GmbH grants its customers fully flexible entry and exit capacities for the transportation of natural gas.

More information is available on the website
www.dongenergy-pipelines.de

Length of grid in km on the national grid level (not regional and town utility level):	2009: 111 km high pressure grid
Yearly transported volumes in bn kWh	1.075 bn kWh
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross border points, LNG entry points)	Ellund (H-gas DK)

E.ON Gastransport GmbH

With an ultramodern, efficient pipeline system and comprehensive technical services, backed up by competent, experienced staff, E.ON Gastransport GmbH offers and arranges innovative, forward-looking gas transportation and storage solutions for its customers.

As one of Europe's leading natural gas transmission companies, E.ON Gastransport GmbH offers its customers the following technical services:

Gas transportation on the pipeline system operated by E.ON Gastransport and on the E.ON Gas Grid system

Handling of trading at the virtual trading points of E.ON Gastransport.

The website provides all interested with extensive and transparent information:
www.eon-gastransport.com

Length of grid in km on the national grid level (not regional and town utility level)	2008: 11611 km high pressure grid
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	Oberkappel (AT) Wallbach (CH) Eynatten/Raeren (BE) Oude Statenzijl (NL) Oude Statenzijl 2 (NL) Medelsheim (FR) Remich (LUX) Ellund (DK) Vreden (NL) Bocholtz (NL) Emden NPT (NO) Dornum (NO) Emden EPT (NO) Elten (NL) Waidhaus (CZ) Mittelbrunn TENP (IT)
Aggregated entry and exit capacities from/to storages	Entry from Storage: 1042 GWh/d

Eni Gas Transport Deutschland S.p.A.

The website provides all interested with extensive and transparent information: www.enid.it.

Length in km	2007: 1009 km high pressure
Yearly transported volumes to downstream grids	2007: 7,995 mio nm^3 / anno
Overwiew of international cross-border points and their chracteristics (EU import points, EU export points)	Bocholtz (NL) Eynatten (BE) Wallbach (CH - I)

System Description

The TENP Pipeline was planned at the beginning of the 70's as the German part of the import pipeline system that had to supply Dutch gas to Italy.

The TENP pipeline system consists of two lines, the first of the two (36"-38") is working since 1974 and the second (40") has been completed in 2006. Part of this second line has been working from 1978.

The pipeline runs across the German territory for about 500 kilometres, from **Bocholtz**, at the Dutch border, where the TENP pipeline system is connected to the Dutch network operated by Gas Transport Services b.v.(GTS), to the Swiss border, close to **Wallbach**, where the TENP pipeline system is interconnected with the Transitgas pipeline system.

The physical direction of the gas flow is from North to South.

The system includes four compression stations located at **Stolberg**, **Mittelbrunn**, **Schwarzach** and **Hügelheim**.
Since 2007 the TENP system includes a share of the pipeline running from Stolberg to the Belgian border at **Raeren/Eynatten**, where the TENP system is connected to the Belgian network operated by Fluxys.

More detailed information can be found in the table **TENP System Description**.

EWE NETZ GmbH, Oldenburg

EWE NETZ operates high- medium- and low-pressure natural gas grids in the regions West and East in Germany. The only cross-border import point is Oude/Statenzijl for L-gas in the West region. The region West covers the federal state of Lower Saxony (Ems-Weser-Elbe region).

Until 1 April 2009, EWE NETZ used to operate the Market Area "Verbundnetz Ems-Weser Elbe" and was balancing group network operator within the West region.

As from 1 April 2009 EWE NETZ GmbH, Erdgas Münster Transport GmbH & Co. KG and Gasunie Deutschland Transport Services GmbH have merged their L-gas market areas to the new market area "L-Gas 1". The partners formed the joint subsidiary Aequamus GmbH in Bremen and have mandated it as balancing group network operator for the new market area.

There are two storage facilities connected to the Transmission System of EWE NETZ in the West region. The Transmission System is supplied from Oude Statenzijl as well as from adjacent Transmission Grids of Gasunie Deutschland Transport Services GmbH and Erdgas Münster Transport GmbH & Co. KG. EWE NETZ does not have further cross-border import or export points in the West region other regions.

Selected gas grid features West region (2008):

Length of high-pressure grid	3 011 km
Length of medium- and low-pressure grid (including local distribution and household connections)	37 531 km
Annual quantity	33 925 m kWh
International cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	Import : Oude/Statenzijl L-Gas (NL - DE) : 76 199 760 kWh/d Export: No export points
Aggregated entry and exit capacities from/to storage facilites	Entry: 285 120 000 kWh/d (2008) Exit: 98 604 000 kWh/d (2008)

Further grid and company information can be obtained both in German and English on www.ewe-netz.de. Information on balancing group management in the Market Area L-Gas1 can be obtained on www.aequamus.de.

Gasunie Deutschland Transport Services GmbH

Gasunie Deutschland is a subsidiary of N.V. Nederlandse Gasunie with headquarters in Hannover as of 1 July 2008. It is now the first independent gas infrastructure company in Germany. Gasunie Deutschland operates an efficient pipeline network of around 3,100 kilometres. Because of its geographical location in the North of Germany, Gasunie's transport network takes on the function of a turntable in the European natural gas transit system, from North to South and from East to West. In developing its network and services Gasunie Deutschland seeks close dialogue with its customers. (www.gasunie.de)

Length of grid in km on the national grid level (not regional and town utility level)	3112 km (2008) High pressure grid
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	Ellund (H-gas DK) Oude Statenzijl H (H-gas NL) Oude Statenzijl H (H-gas NL) Emden-NPT (H-gas Norway) Emden-EPT (H-gas Norway) Oude Statenzijl L (L-gas NL)
Aggregated entry and exit capacities from/ to storages	Entry Capacity: 378 GWh/d Exit Capacity: 300 GWh/d
Aggregated entry capacities from national production	457 GWh/d

GRTgaz Deutschland GmbH

GRTgaz Deutschland GmbH (GRTgaz D) operates the part of the MEGAL pipeline system that belongs to GDF SUEZ S.A., which is one of the major pipelines for the import of Russian natural gas to Western Europe. With date of 1 October 2006, GRTgaz D has additionally adopted the function of balancing group operator for the whole market area of GRTgaz D.

Our network connects the Czech Republic, Germany, Austria and France. With Waidhaus and Oberkappel, the MEGAL pipeline system possesses two import points, with Medelsheim and Oberkappel, two export points. In addition to those, there are interconnection points with the national network SETG at Gernsheim, the TENP and the Remich pipeline (Luxemburg) at Mittelbrunn, and at Rimpar with a pipeline going to the Ruhr Industrial Area. The networks of Saar Ferngas Transport, Gas-Union Transport, E.ON Gas Grid, EWR network, bayernets, ernergienetze Bayern and E.ON Bayern are connected to the GRTgaz D transmission system. The MEGAL pipeline system consists of two pipelines: the MEGAL Nord (North) pipeline and the MEGAL Süd (South) pipeline. They are interconnected by a connecting pipeline at Rothenstadt.

As a subsidiary of one of Europe's major energy supply companies, we are committed to the goals of the liberalisation of the energy markets. We offer and provide our customers with a discrimination-free, efficient and fair access to our natural gas transmission network. We attach great importance to transparency and reliability when handling our natural gas transports. Our efficient pipeline system and our IT infrastructure are subject to continuous improvement in order to be able to meet our customers' individual transport requirements.

More information is available on our website:
http://www.grtgaz-deutschland.de/content/startseite/index_uk.phpv

Length of grid in km on the national grid level (not regional and town utility level)	Network shared with EONGT (pipe in pipe model) : Megal Nord : 2 pipes in parallel (each one 460 kms) Megal Sud 167 kms
Yearly transported volumes	2007: 107 bn kWh
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	Oberkappel (AT) Medelsheim (FR) Waidhaus (CZ) Mittelbrunn TENP (IT)

ONTRAS – VNG Gastransport GmbH

Within the European grid system, ONTRAS – VNG Gastransport GmbH operates a high-pressure network in Eastern Germany and markets its capacities. In addition, together with its partners, ONTRAS organise gas transport in the market area GASPOOL.

More information is available on its website: www.ontras.com.

Length of grid in km on the national grid level (not regional and town utility level)	2008: 7100 km High pressure grid
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	Deutschneudorf (CZ) Lasow (PL)
Aggregated entry and exit capacities from/to storages	Entry from Storage: confidential due to 3-shipper-rule Exit to Storage: 289 GWh/d

Statoil Deutschland Transport GmbH

Following a rebranding of the Statoil Group that led to the former company name "Statoil" and a simultaneous restructuring of the Statoil subsidiary in Germany **Statoil Deutschland Transport GmbH** (SDT) is now the responsible TSO in the sense of the German Energy law (EnWG). Its transportation network comprises the Entry-Points Emden and Dornum and thereby SDT grants access to the trading hub in the market area **GASPOOL**. Further grid information can be obtained on www.statoil.de. Information about GASPOOL and its market area related tasks are available on www.gaspool.de.

Thyssengas GmbH

Thyssengas GmbH ensures the supra-regional transport of natural gas from major import points to the consumers in the regions. Apart from conurbations, smaller cities, municipalities, power plants and industrial establishments are also connected. It creates expert solutions for cities and municipalities or individual consumers with specific needs, e.g. for energy-intensive production. Reliably and friendly to the environment, Thyssengas GmbH ships natural gas through its underground transmission grid to wherever it is needed.

Length of grid on the national grid level (split into pressure ranges) (31.12.2008)	Pressure (bar)	Length (km)
	PN >= 70	1.397
	70 > PN >= 40	1.098
	40 > PN >= 25	366
	25 > PN >= 16	1.133
	16 > PN	301
	Medium Pressure	1
	Total length of grid	4.296
Yearly transported volumes to downstream grids and end costumers	81 bn kWh (2008)	
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	Eynatten [Lichtenbusch] (BE) Zevenaar (NL) Bocholtz (NL) Haanrade (NL) Emden (NO)	
Aggregated entry and exit capacities from/to storages	Entry Capacity: 441 GWh/d Exit Capacity: 161 GWh/d	
Aggregated entry capacities from national production	0 GWh/d	

WINGAS TRANSPORT GmbH & Co. KG

WINGAS TRANSPORT GmbH & Co. KG operates a long distance national gas pipeline network. It offers its customers state-of-the-art, competitive transport services, using a high-pressure pipeline network of a total of more than 2,000 km in length, which covers the whole of Germany and includes nine compressor stations. More than 3 billion euros have been invested in this pipeline network overall since 1990. This infrastructure is positioned at the heart of Europe as the interface of European natural gas transportation.

Length of grid in km on the national grid level (not regional and town utility level)	2008: 2172 Km High pressure grid
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	Bunde (NL) Eynatten (BE) Mallnow (PL) Olbernhau (CZ) Überackern (AT)
Aggregated entry and exit capacities from/to storages	Entry from Storage: 776 GWh/d Exit to Storage: 394 GWh/d

A.13.2 Current Processes for Investment, Current Publications

In Germany, two different regulatory frameworks determine the investment process: Generally the cost based-regulation applies to DSOs and TSOs, which will be though replaced by the incentive regulation in 2009/2010. Within the incentive regulation all new investment budgets have to be applied by DSOs/ TSOs. The NRA (BNetzA) will consider and stipulate these investment budgets.

Supra-regional TSOs could also apply for a market-based regulation, which is according to German energy law an equal option within the regulatory framework. In 2008, the BNetzA rejected all TSO applications for a market-based regulation, so these TSOs applicants are now cost based regulated, but will switch to the incentive regulation in 2010, too. Under market-based regulation the TSOs decide freely and under economic aspects about further investment and there are no specifications concerning the investment process.

Publications relevant

The European network access regulation 1775/2005 shapes together with German network access decree law (Gasnetzzugangsverordnung, GasNZV) the current investment and capacity related TSO publications.

According to this framework, TSOs publish for each Entry and Exit Point the maximum technical capacity daily for the next 36 months (GasNZV). This information, if applicable, includes changes triggered by planned investment projects.To ensure customer data confidentiality some German TSOs do not publish this information for some points, as permitted in national and European legislative specifications. According to GasNZV the TSOs/ DSOs also publish on their homepages planned pipeline construction projects as well as pipelines and compressor stations which are already under construction. The current legislation provides no specific investment publication requirements for TSOs/ DSOs, such as a Long Term Report.

A.13.3 Capacity Development in the Reporting Period, Investment Decisions Taken

To meet customer requirements and expectations concerning further market area development, and to serve European security of supply and the expansion of the European pipeline system, E.ON Gastransport has decided to invest approx. €400 million in the creation of additional firm and freely allocable capacities. The investment decision was taken on the basis of an Open Seasons procedure. The resulting capacities allocated to Open Season participants are included in the table below. (For details on the Open Season capacity allocation and prioritization process please cf. to: http://www.eon-gastransport.com/cps/rde/xchg/SID-554C4413-F6989221/eon-gastransport/hs.xsl/3824.htm?rdeLocaleAttr=en).

The construction projects include numerous minor expansion measures, as well as major new loop pipelines from Sannerz in Hesse to Rimpar in Lower Franconia and along the MEGAL pipeline system to Austria. An important aim is to eliminate a north-south bottleneck. This will enable the network to flow more volumes via Austria to South East Europe, which increases European security of supply.

It should be noted that E.ON Gastransport's decision to considerably invest in new infrastructure was taken despite severe regulatory uncertainty. Particularly, it is unclear whether the Federal Network Agency will allow network operators to recoup the specified cost of capital provided for in the Gas Network Fees Ordinance. Currently, it seems to be impossible to attain this in practice, because of a possible inappropriate reduction of the necessary investment budget in the regulatory approval process. As a result, network operators making investments would be systematically placed at a disadvantage in relation to network operators not making any investments.

No projects of European significance with final investment decisions taken for Eni Gas Transport Deutschland S.p.A., EWE NETZ GmbH, Gasunie Deutschland Transport Services GmbH, ONTRAS – VNG Gastransport GmbH, RWE TRANSPORTNETZ GAS and WINGAS TRANSPORT GmbH & Co. KG.

The table summarises the capacity developments:

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AT-DE: Burghausen/ Überackern (WGT)	11	11	11	11	11	11	11	11	11	11
AT-DE: Oberkappel (EGT)	1	1	1	2	2	2	2	2	2	2
AT-DE: Oberkappel (GRTgazDT)	12	12	12	12	12	12	12	12	12	12
BE-DE: Eynatten/Raeren (EGT)	10	10	10	18	18	18	18	18	18	18
BE-DE: Eynatten/Raeren (ENI GTD)	3	3	3	3	3	3	3	3	3	3
BE-DE: Eynatten/Raeren (Thyssengas)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
BE-DE: Eynatten/Raeren (WGT)	12	12	12	12	12	12	12	12	12	12
CZ-DE: Hora Svaté Kateriny / Deutschneudorf (Ontras)	24	24	24	24	24	24	24	24	24	24
CZ-DE: Hora Svaté Kateriny / Olbernhau (WGT)	confidential									
CZ-DE: Waidhaus (EGT)	58	58	58	58	58	58	58	58	58	58
CZ-DE: Waidhaus (GRTgazDT)	41	41	41	41	41	41	41	41	41	41
DE-AT: Oberkappel (EGT)	6	6	6	16	16	16	16	16	16	16
DE-AT: Oberkappel (GRTgazDT)	1	1	1	1	1	1	1	1	1	1
DE-CH: Wallbach (EGT)	14	14	14	14	14	14	14	14	14	14
DE-CH: Wallbach (ENI GTD)	33	32	32	32	32	32	32	32	32	32
DE-CZ: Hora Svaté Kateriny / Deutschneudorf (Ontras)	10	10	10	10	10	10	10	10	10	10
DE-CZ: Hora Svaté Kateriny / Olbernhau (WGT)	confidential									
DE-BE: Eynatten/Raeren (EGT)	21	21	21	28	28	28	28	28	28	28
DE-BE: Eynatten/Raeren (ENI GTD)	7	7	7	7	7	7	7	7	7	7
DE-BE: Eynatten/Raeren (WGT)	12	12	12	12	12	12	12	12	12	12
DE-NL: Bunde - Oude Statenzijl H-gas										
-EGT	19	19	19	21	21	21	21	21	21	21
-EGT2	13	13	13	13	13	13	13	13	13	13
-GasunieD	2	2	2	2	2	2	2	2	2	2
-WGT	3	3	4	4	4	4	4	4	4	4
DE-FR: Medelsheim/ Obergailbach (EGT)	10	10	10	10	10	10	10	10	10	10
DE-FR: Medelsheim/ Obergailbach (GRTgazDT)	49	49	49	49	49	49	49	49	49	49

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
DE-LU: Remich	3	3	3	3	3	3	3	3	3	3
DE-PL: Lasow (Ontras)	3	3	3	3	3	3	3	3	3	3
DK-DE: Ellund (DEP)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
DK-DE: Ellund (EGT)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
DK-DE: Ellund (GasunieD)	2	2	2	2	2	2	2	2	2	2
NL-DE: Bocholtz (EGT)	4	4	4	11	11	11	11	11	11	11
NL-DE: Bocholtz (ENI GTD)	33	32	32	32	32	32	32	32	32	32
NL-DE: Bocholtz (Thyssengas)	1	1	1	1	1	1	1	1	1	1
NL-DE: Bunde - Oude Statenzijl H-gas										
-EGT	10	10	10	10	10	10	10	10	10	10
-EGT2	4	4	4	4	4	4	4	4	4	4
-GasunieD	6	6	6	6	6	2	2	2	2	2
-WGT	5	5	5	5	5	5	5	5	5	5
NL-DE: Bunde – Oude Statenzijl L-gas (EWE NETZ)	8	8	8	confidential						
NL-DE: Bunde – Oude Statenzijl L-gas (GasunieD)	18	18	18	17	15	15	15	15	15	15
NL-DE: Haanrade (Thyssengas)	confidential									
NL-DE: Vreden/Winterswijk	35	35	35	35	37	37	37	37	37	37
NL-DE: Zevenaar / Elten (EGT)	33	33	33	33	34	34	34	34	34	34
NL-DE: Zevenaar / Elten (Thyssengas)	23	23	23	23	23	23	23	23	23	23
PL-DE: Mallnow	confidential									
Import										
NO-DE: Dornum (EGT)	42	42	42	42	42	42	42	42	42	42
NO-DE: Emden EPT (EGT)	19	19	19	21	21	21	21	21	21	21
NO-DE: Emden EPT (GasunieD)	19	18	18	18	18	18	18	18	18	18
NO-DE: Emden NPT (EGT)	7	7	7	7	7	7	7	7	7	7
NO-DE: Emden NPT (GasunieD)	3	3	3	3	3	3	3	3	3	3
NO-DE: Emden (Thyssengas)	confidential									

A.13.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

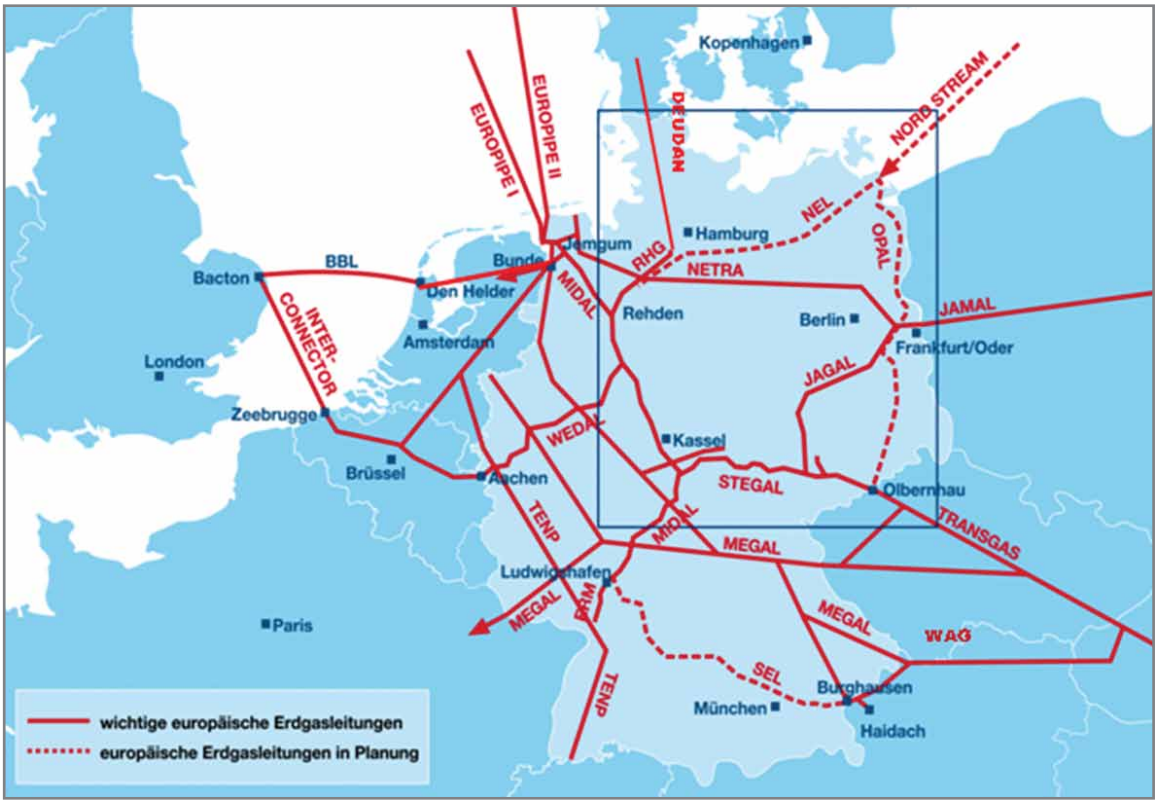
Nord Stream Onshore – OPAL and NEL

The Ostsee Pipeline Anbindungsleitung called OPAL and the Norddeutsche Erdgasleitung called NEL are planned for onward transportation of the natural gas quantities transported via the Nord Stream pipeline. Thereby these two pipelines are designated to transport up to 55 bcm/a of natural gas to the European Single market. These importvolumes, which in future will also originate from newly developed natural gas sources in Russia, contribute to security of supply in the European Union by filling at least a part of the forecasted supply gap.

OPAL and NEL are planned to be built as joint co-ownership pipelines of WINGAS and E.ON Ruhrgas. The designated transmissions system operators are OPAL NEL TRANSPORT GmbH and E.ON Ruhrgas Nord Stream Anbindungsleitungsgesellschaft mbH.

The 470 kilometer long OPAL will start at the landfall point of the Nord Stream pipeline in Lubmin near Greifswald and run towards the German-Czech border near Olbernhau where it will be connected to the Czech transmission system. OPAL will go through three German federal states: Mecklenburg-Western Pomerania, Brandenburg and Saxony. The OPAL pipeline is designed for a transport capacity of approximately 35 bcm/a of natural gas. The planned start of the construction is 2009, the planned completion 2011.

The 440 kilometer long NEL will also start at the landfall point of the Nord Stream pipeline in Lubmin near Greifswald and run towards Rehden in the federal state of Lower Saxony where it will be connected to the transmission systems of WINGAS TRANSPORT GmbH & Co. KG and E.ON Gastransport GmbH whereby further major European transmission systems up to the UK can be reached. NEL will follow a route through the German federal states of Mecklenburg-West Pomerania and Lower Saxony and will offer sufficient capacity for onward transportation of approximately 20 bcm/a of natural gas. The majority of the construction work is planned to be carried out in 2011 and 2012. Completion is scheduled in 2012.



Gasunie Deutschland Transport Services GmbH

Dated 8 October 2008 Gasunie Deutschland Transport Services GmbH announced to carry out an integrated Open Season procedure together with Gas Transport Services B.V. to screen market interest for additional transmission capacity in their areas. The result of this international integrated Open Season process will form the main part of the planning basis for additional network expansion in Northern Germany and the Netherlands.

It is the first time in Europe that a cross-border network development approach will be carried out in this way by a fully unbundled cross-border asset owner. This integrated approach aims to synchronize capacity development on both sides of the border and, as a result, will provide business opportunities for customers. In offering this integral concept of network development to its customers, Gasunie fully recognizes the cross border nature that characterizes todays natural gas marketing business to a large extent.

The initial phase of market screening is planned to be launched in the last quarter of 2008 in order to compose an aggregated picture of market demand on the basis of preliminary responses of interested companies at the end of 2008. Firm capacity bookings by shippers are foreseen by autumn 2009. Gasunie aims to synchronise its network expansion with network expansion programmes of neighbouring network operators.

Concord Power NORDAL GmbH

Concord Power NORDAL GmbH, an independent project developer, is responsible for planning the gas pipelines NORDAL (Northern German connection pipeline) and DEPAL (German-Polish connection pipeline).

NORDAL

The 210 km NORDAL is to be built to link the Nord Stream Baltic Sea gas pipeline with the German and European gas network.

The landfall for the Nord Stream pipeline at Lubmin makes NORDAL the ideal pipeline to bring the gas coming from the north to the German and Western European markets.

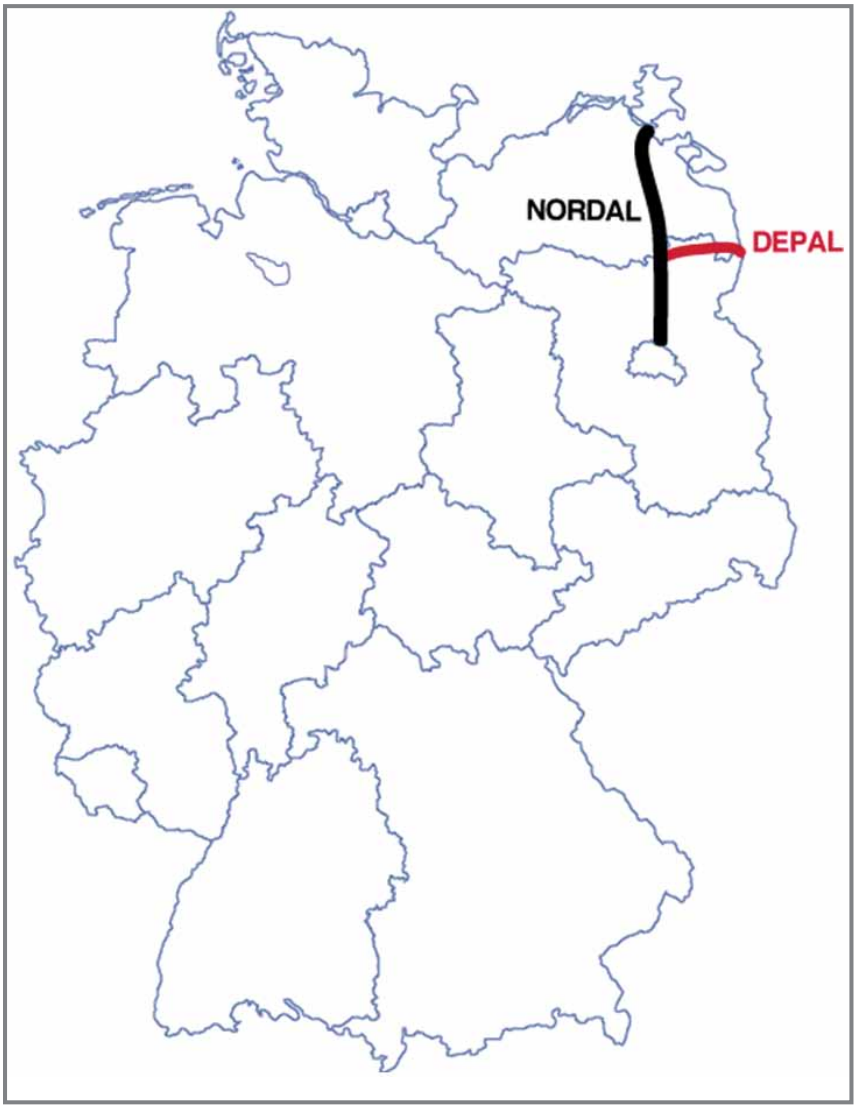
The NORDAL pipeline will end in Börnicke, where it joins the NETRA pipeline, which goes west, and the JAGAL pipeline, which goes south. Thus the construction of the NORDAL will optimise the existing European gas network.

The approved nominal diameter of 1,200 mm matches the capacity of the Nord Stream pipeline (30–35 bcm/a).

DEPAL

An eastern branch of the Nordal called DEPAL (German-Polish connection pipeline) is planned to run from the level of Prenzlau and offers the option of delivering partial volumes from the Nord Stream directly to Poland, for example to Stettin.

No projects of European significance planned for Eni Gas Transport Deutschland S.p.A., EWE NETZ GmbH, ONTRAS – VNG Gastransport GmbH and RWE TRANSPORTNETZ GAS.



No projects of European significance planned for Eni Gas Transport Deutschland S.p.A., EWE NETZ GmbH, ONTRAS – VNG Gastransport GmbH and RWE TRANSPORTNETZ GAS.

A.13.5 Development of National Production and Storage Deliverability

National Production Deliverability

German TSOs do not dispose of data that indicates how the deliverability of national production will develop over the 10 years of this report. Therefore, to provide figures on this development, an existing study on energy scenarios is used as reference. This officially sanctioned work, commissioned by the German Federal Ministry of Economics and Technology, was conducted by the Institute of Energy Economics (EWI, University of Cologne) in cooperation with the Prognos AG. (please confer to the chapter "National Demand Scenario" for the main assumptions made in the study.) In the study, yearly production is given for the years 2010, 2015, and 2020 in energy units (Petajoule). For the table below, these figures have been converted to Nm^3 (by assuming an average gross calorific value of 11 kWh/ Nm^3) and divided by 365 to yield a daily deliverability value. It should be noted, however, that this is the most conservative way to derive the daily deliverability, because full production throughout the year is assumed. Peak deliverability is likely to be higher. The values for the intermediate years have been linearly interpolated.

Storage Deliverability

The figures given below are the aggregated technically available entry capacities from storage into the network[3], at 70% as a margin for reduced withdrawal capacity due to storage depletion at the end of the winter. Given that capacity is marketed in energy units, the figures were converted using an assumed average gross calorific value of 11 kWh/Nm^3.

It should be noted that due to the condition "final investment decision taken" the table only displays the deliverability development that has been firmly decided on. (According to the GSE storage investment database, a significant number of additional storage capacity is planned in Germany, with an expected growth in working gas capacity of 48% until 2016, according to February 2009 figures at http://www.gie.eu.com/maps_data/GSE/database/index.html)

[3] of E.ON Gastransport, EWE Netz, Gasunie Deutschland Transport, Ontras, Thyssengas, Wingas Transport.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
39	39	38	38	37	37	37	36	36	36
Development of Storage Deliverability (Mio. Nm^3/day)									
228	228	228	228	228	228	228	228	228	228

A.13.6 National Demand Scenario(s)

The German Natural Gas TSOs do not conduct extensive long run demand forecasting. However, there are studies on energy scenarios from other bodies. Officially sanctioned work, commissioned by the German Federal Ministry of Economics and Technology, was conducted by the Institute of Energy Economics (EWI, University of Cologne) in cooperation with the Prognos AG. The study, "Energy Scenarios for the Energy Summit 2007" (hereinafter "the study") was used for high level talks on energy policy, sponsored by the Federal Chancellor.

The study contains three scenarios: A standard scenario based on declared government policy ("coalition treaty") and two alternative scenarios with stronger renewables or nuclear utilization, respectively. The coalition treaty scenario, as it is based on the current policy framework (including phase-out of nuclear), is deemed most appropriate for the report at hand[3], at least from today's perspective.

Central assumptions of the study are enhanced sensitivity for climate change issues in the society, demographic change (population in 2020 down to 81.4 Mio, reduced number of persons per household), average yearly economic growth of 1.7% (growth in service sector, while industrial basis is kept), technological development leading to higher energy efficiency along investment cycles, a real oil price (2005 base) around 50 USD/barrel up to 2020, taxation of biofuels that renders them competitive, continued promotion of renewables, and growing international participation in emissions trading with phasing in of certificate auctioning. (Please note that the current economic crisis has not yet been modeled by the study, so growth is likely to be lower in the short run.)

In the study, the yearly consumption figures for natural gas demand within Germany are given in PJ, therefore a conversion has been applied to the figures in the table below: 1 Petajoule=0,27778 Bn kWh. The yearly consumption in Billion Nm^3 has been approximated by dividing energy by an estimated average calorific value of 11 kWh/Nm^3.

As there is no simple formula with a driver such as temperature to determine a peak day in Germany, the figure given under "peak day demand" is the aggregated exit capacity booked by DSOs and consumers as of 2008. This is regarded as an acceptable proxy for peak day demand, because the network has to be able to satisfy all booked capacity. Furthermore, DSOs are obliged to book peak demand capacity according to a complex calculation based on historic flows and temperature assumptions, enshrined in a legally binding cooperation agreement. Failure to do so is penalized by the regulatory system, which probably constitutes an incentive to book according to a realistic peak demand scenario. Given that capacity is booked in energy units/time, here the Mio. Nm^3 /day have also been approximated by dividing energy by an estimated average calorific value of 11 kWh/Nm^3.

Peak day demand is expected by the German TSOs to remain constant over the next years. A reduction in household demand will probably be substituted by higher demand from power generation which is less predictable. It has to be kept in mind, however, that the assumption that peak day demand remains constant does not necessarily mean that there are no changes in capacity demand at both entries and exits. Growing competition and shifts in the geographical demand distribution may lead to shifts in capacity demand. Furthermore, entry and exit capacities are freely allocable within market areas, which means that peak commodity demand does not necessarily correspond with peak capacity utilisation at any point in the grid (please cf. chapter 2.x.4, Possible Projects, Planned or Running Open Seasons).

[3] By the TSOs endorsing this chapter: E.ON Gastransport, Gasunie Deutschland Transport, Ontras, Thyssengas, Wingas Transport.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)(a)									
500	500	500	500	500	500	500	500	500	500
Yearly Consumption (Billion Nm^3/year)(b)									
85	84	83	83	82	81	81	81	81	81
Yearly Consumption (Billion kWh/year)(c)									
936	927	917	908	898	889	890	891	893	893

Notes:
2008 internally booked exit capacity. Please cf. text above for commentary.
Yearly consumption in Bn kWh/year divided by an estimated average calorific value of 11 kWh/Nm^3.
Source EWI/Prognos (yearly consumption in energy in 2005, 2010, 2015, 2020; values for year 2005: 912 Bn kWh/year; for year 2020: 895.6 Bn kWh/year.) Other values are linear interpolations.

A.13.7 Supply Scenario(s)

The figures in the table below were derived as follows:

"Maximum peak day supply via European import pipelines" corresponds to the aggregated capacities published in this report for European import points, plus an estimation of the future additional capacities from the Nord Stream pipeline project. According to the internet site www.nord-stream.com, the following capacities are foreseen to become available. In 2012: 27.5 bcm per year, and in 2013: another 27.5 bcm per year. These figures were divided by 365 and then divided by 0.8 (to allow for e.g. maintenance periods), to derive a daily capacity that can be used as peak day supply.

"Maximum daily supplies via EU-internal cross-border pipelines" corresponds to the aggregated EU-internal cross-border pipeline import capacities published in this report (in case of confidential data, exit capacities from the other side of a border and assumptions were used as in the demand scenario vs. capacity adequacy calculation in this report).

For "Peak day national production deliverability" and "Peak day storage deliverability", please cf. to the sources and assumptions given in the section "Development of National Production and Storage Deliverability" above. Please note that according to the GSE storage investment database, a significant number of additional storage capacity is planned in Germany, with an expected growth in working gas capacity of 48% until 2016, according to February 2009 figures at http://www.gie.eu.com/maps_data/GSE/database/index.html). However, due to the variety of planning stages, and due to the missing data on withdrawal capacity of these projects, which cannot simply be deduced from working gas volume, only the aggregated firm entry capacities of TSOs from storages (at 70%) with final investment decisions taken as of today are included here.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm^3/day) incl. estimation for Nord Stream, cf. text above.									
90	89	183	279	279	279	279	279	279	279
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
469	468	468	483	483	484	484	484	484	484
Maximum peak day supply via LNG terminals (Mio. Nm^3/day)									
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Peak day national production deliverability (Mio. Nm^3/day)									
40	39	39	38	38	37	37	37	36	36
Peak day storage deliverability (Mio. Nm^3/day)									
224	228	228	228	228	228	228	228	228	228

The yearly scenarios were derived from the energy balances of the EWI/Prognos study described in the section "Development of National Production and Storage Deliverability" above.

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated net imports (quantities via European import pipelines and EU-internal cross-border pipelines) (Billion kWh/year)									
778	770	762	754	746	739	741	745	748	751
Aggregated quantities via LNG terminals (Billion kWh/year)									
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Aggregated national production (Billion kWh/year)									
158	157	155	153	152	150	148	147	145	143
Source: Study by EWI/Prognos, 2007									

A.14 Greece

A.14.1 Description of the Existing Network

DESFA fully owns, operates and develops the National Natural Gas System (NNGS), with full responsibilities regarding the provision of Third Party Access (TPA) services under non-discriminatory terms. The company also operates the LNG regasification terminal in Revythousa island.

DESFA was established in 2007, as a 100% subsidiary of the Public Gas Corporation (DEPA SA) after the completion of the legal separation of the transmission and trading activities, in accordance with Law 3428/2005 for the liberalization of the natural gas market.

The company's website is www.desfa.gr

The existing high-pressure NNGS with its potential expansions in the Greek territory is presented in the above Figure. Currently, the NNGS comprises of:

- A main pipeline of approximately 815 km for the transmission of natural gas through the three gas entries to the Greek territory (Greek/Bulgarian borders in the North, Greek/Turkish borders in the East and LNG terminal in the South).
- Branch pipelines of total length 390 km for the transmission of high pressure gas across the country.
- One LNG receiving terminal on Revithoussa island in the gulf of Megara with a total storage capacity of 130.000 m3 LNG. The Sustained Maximum Send out Rate (SMSR) is 590.000 Nm3 (~ 1.000 m3 LNG), while the emergency hourly rate rises to 1.250 m3 LNG.
- Two Border Metering Stations (BMS) for measuring the volumes of natural gas flowing from North (Sidirokastron BMS) and East (Kipoi BMS), along with a metering station (Ag. Triada MS) for measuring the gas income from South after the re-gasification process occurred on the LNG receiving terminal (Revithoussa island).
- Four Operation and Maintenance (O/M) control centers in order to provide technical support, storage and handling of materials.
- Metering stations at outlet points from the system.

A.14.2 Current Processes for Investment, Current Publications

DESFA performs a draft program of the National Natural Gas System Development which defines its development, reinforcement and interconnection works that are meant to be implemented within a time frame of 5 years from the adoption of the above Program. The Development Program is approved by the Minister of Development after the concurrent decision of the Regulatory Authority for Energy. A summary of the approval is published in the Government Gazette. The first investment program of DESFA was published in 2007.

The second Development Program is expected to be published in 2010.

A.14.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Within its balanced financial status and a favourable geo-strategic environment, DESFA is about to launch a vigorous investment program for the development of projects in the Greek territory and also transit projects enhancing the security of supply of the Greek and the European gas markets.

New branch pipelines

A HP pipeline (~26 km) for delivering gas to a gas-fired power plant in Thisvi (Sterea) is under construction.

The expansion of NNGS to Aliveri (Evia) is under construction and is anticipated to be in operation in the beginning of 2011.

DESFA is also studying the new gas branch to Peloponnesein order to feed the new gas fired power plant of PPC in Megalopoli. The project is in the basic engineering phase.

Compressor station Nea Mesimvria

The EPC Contract for the procurement and the construction of a compressor station (CS) in the area of Nea Mesimvria (close to the city of Thessaloniki) and the site works have been already started. The installation of this compressor station will be realized in two phases: In the first phase, two compressor units with an ISO power of 7.7 MW each, will be installed. This phase is planned to be in operation in the 1st QT of 2011.

Later, a third compressor unit with the same characteristics is planned to be installed, depending upon the gas market evolution. The further increment of the gas demand will lead to additional enforcement of the NNGS in terms of new CSs or doubling part of the existing pipeline system.

CHP at Revithoussa Island

Within 2008, DESFA started the construction of a CHP unit (13 MW) in the field of the LNG terminal at Revithoussa island. Main scope of this unit is to cover the electricity demand of the terminal.

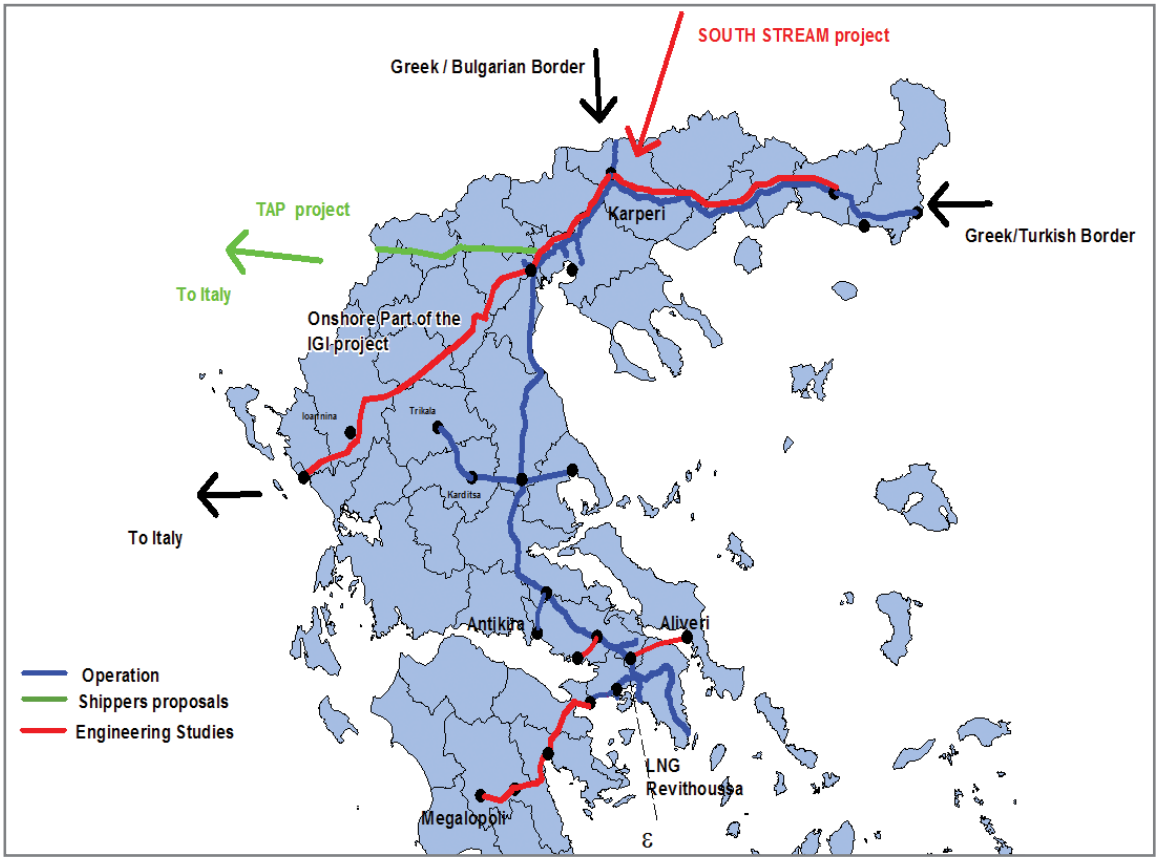
The CHP unit is in operation since May 2009.

The capacity of the afore mentioned three gas inlets of NNGS are presented in the following table:

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BG-GR: Sidirokastron BMS	16	16	16	16	16	16	16	16	16	16
LNG										
Revithoussa (Ag. Triada MS)	13	13	13	13	13	13	13	13	13	13
Import										
TK-GR: Kipoi BMS	7	7	7	7	7	34	34	34	34	34

It is mentioned here that part (app. 24 Mio. Nm³/day) of the capacity increment (from 7 to 34 Mio. Nm³/day) in the BMS Kipoi, follows the anticipated transit gas volumes.

A.14.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)



Existing NNGS with its potential expansions

Onshore section of IGI

The Interconnector Greece – Italy (IGI) Project has been developed, since 2002, by Edison and Depa in cooperation with Botas, with the aim to connect the huge Caspian and Middle East gas resources to the European market. The IGI Project can be considered as part of the greater Interconnection Turkey-Greece-Italy (ITGI) Project, the first part of which, namely the Interconnector Turkey-Greece (ITG) has already been developed by DESFA (formerly DEPA) and BOTAS (operational since 2007).

The IGI Project is constituted by two parts, the onshore part to be developed by DESFA and the offshore part (Poseidon pipeline), which will be developed by DEPA and EDISON. The onshore part will be built as part of the Greek National Grid, under regulated Third Party Access (TPA) regime, whereas the offshore part has been granted a TPA exemption for 8 bcm/yr for 25 years by the European Commission.

The onshore part of the IGI project includes the expansion of the National Natural Gas Transmission System up to the region of Thesprotia and its upgrading with necessary above-ground facilities in order for it to have the capacity to transport the estimated quantities of approximately 8bcm/yr to Italy. In the area of the shores of Thesprotia, the Greek onshore system will be linked to the offshore pipeline "Poseidon" and via this to the Italian Transmission System.

The project construction is expected to be completed in a single phase within 2015.

TAP project

DESFA has already received applications for booking of future capacity in the NNGS from StatoilHydro and EGL. Their applications are assessed under the framework of the existing legislation and the provisions of the Transmission Code, which is expected to be published as a formal Ministerial Decree within 2010.

LNG Crete

DESFA is currently studying the construction of an LNG terminal at Korakias in Crete island. The terminal will supply natural gas to the power plants of the island as well as to the domestic and commercial consumers on the island. The tender documents for the basic design study have already been prepared and the tendering procedure is expected to start in the near future.

New branch pipelines

DESFA is also studying the construction of other direct lines in order to feed with natural gas, new power plants in several regions of the Greek territory.

Greek Branch of South Stream

On 29th of April 2008, an Intergovernmental Agreement for the Greek portion of the project SOUTH STREAM was signed between the Greek and the Russian Government. This new project with a total capacity of 31 bcm/yr includes an offshore pipeline in the Black Sea with a length of approximately 900 km, a main branch within the Bulgarian territory and two branches towards Central Europe. One of them is planned to pass through Greece.

On 15th of May 2009 the Basic Cooperation Agreement (BCA) was signed between GAZPROM and DESFA, setting the basic principles for the next steps of the development of the project, as well as a time schedule for the establishment of the joint Greek-Russian company which will develop and operate the project.

The table below presents the above mentioned investments as well as the kilometres added in the National Gas Transmission System.

NAME OF PROJECT	STATUS	Km added
Expansion to Aliveri (Evia)	EPC contract	71,4
Compressor at Nea Mesimvria	EPC contract	0
Revythoussa CHP	In Operation	0
Expansion to Megalopoli (Peloponnese)	Engineering Studies	135,5
Expansion to Thisvi (Sterea)	Construction phase	26
Onshore Section of IGI	Engineering Studies	570
LNG Crete	Preparation of Basic Engineering Tender	0
HP Pipelines Expansion	Engineering Studies	65
Greek Branch of SOUTH STREAM	Feasibility	

A.14.5 Development of National Production and Storage Deliverability

There is no national production or storage for which the final investment decision has been taken.

A.14.6 National Demand Scenario(s)

The table here below presents the foreseen yearly consumption of the Greek System for the time period 2010 – 2019, along with the estimated peak day in every year. In the above gas volumes, quantities dealing with transit projects are not included.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
22	24	28	30	32	33	33	34	34	35
Yearly Consumption (Billion Nm^3/year)									
4	5	5	6	6	6	6	6	7	7
Yearly Consumption (Billion kWh/year)									
47	52	59	63	66	66	69	72	73	80

A.14.7 Supply Scenario(s)

The peak day supply scenario for the period 2010-2019 is presented in the table that follows.
The distribution of the incoming volumes through the three gas inlets (BMS Sidirokastron, BMS Kipoi and LNG Terminal at Revithoussa) is the outcome of the NNGS hydraulic simulation procedure.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm³/day)									
3	5	6	6	7	7	8	8	8	8
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm³/day)									
10	11	12	13	13	13	14	14	14	15
Maximum peak day supply via LNG terminals (Mio. Nm³/day)									
10	9	10	10	12	12	12	12	12	12
Peak day national production deliverability (Mio. Nm³/day)									
-	-	-	-	-	-	-	-	-	-
Peak day storage deliverability (Mio. Nm³/day)									
-	-	-	-	-	-	-	-	-	-

A.15 Hungary

A.15.1 Description of the Existing Network

FGSZ Ltd. is the independent operator of the natural gas transport/transit grid infrastructure in Hungary.

FGSZ's grid has 19 entry points includes 2 import, 6 storage, 10 production and 1 storage/production entry points. FGSZ's grid also serves for transit flows of natural gas to Serbia and Bosnia-Herzegovina and to Croatia and to Romania.

The FGSZ's network has 5,530 kilometres of pipelines. Most of the pipelines are PN63, a few PN75 and a small regional network PN20. There are 5 compressor stations with a total installed capacity of 187 MW. It is used both to transport natural gas for consumption in Hungary and for transit. FGSZ transports around 12-15 billion cubic metres of natural gas for consumption in Hungary. Around 2.5 billion cubic metres per year are reserved in the long term for transit through the grid.

Number of shippers is 13 in 2009/2010 gas year.

More information is available on our website: http://www.fgsz.hu;

The transport and transit capacity at 01.01.2010 on FGSZ network amounts to:

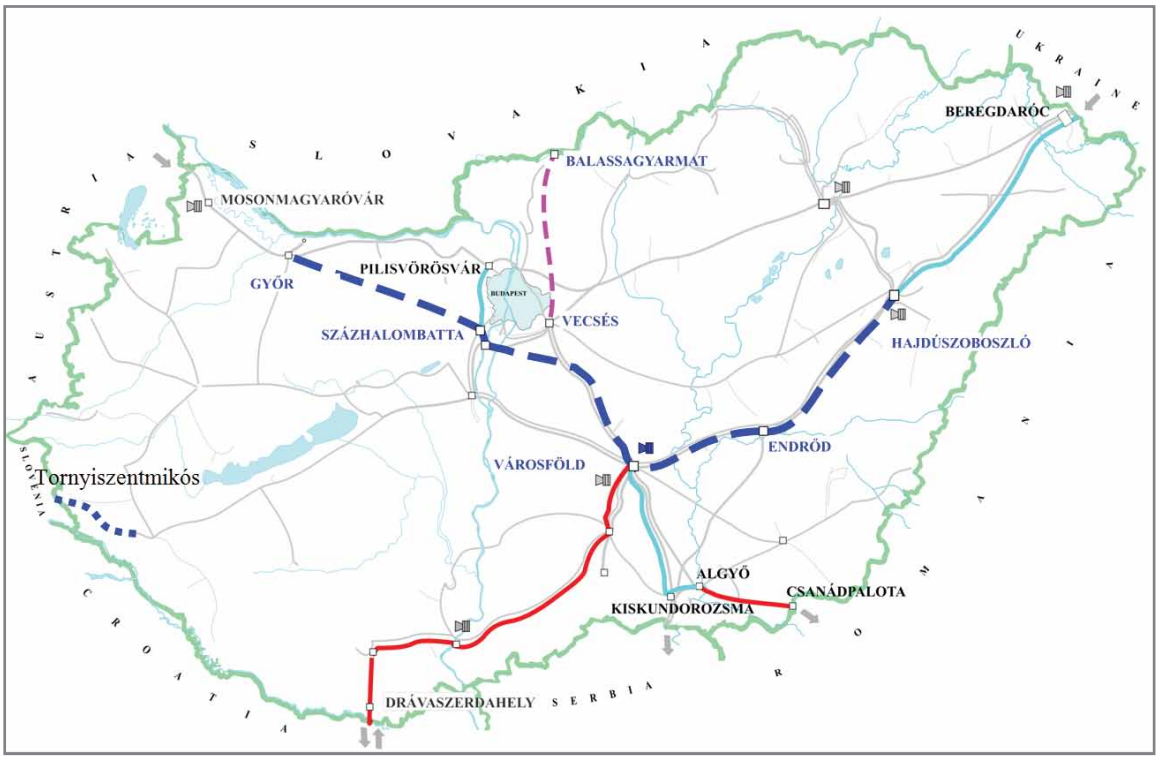
- 53.3 million Ncm/d at entry points interconnected with foreign import pipelines (UA, EU import point)
- 11.5 million Ncm/d at entry points interconnected with foreign import pipelines (AT, EU internal cross-border point)
- 10.5 million Ncm/d at national productions entry points
- 51.9 million Ncm/d at Storage entry points and 26 million Ncm/d at storage exit points
- 18.9 million Ncm/d at strategic storage facility and 9,5 million Ncm/d at strategic storage exit point (It is possible to use only in case of supply disruption.).

A.15.2 Current Processes for Investment, Current Publications

Investment in pipelines

The investment program for 2009 includes infrastructure projects to increase import entry capacity of transmission system, new pipeline connection for strategic storage facility and improve the local transport capacity around Budapest. These investments serve existing and new customers and increase the security of supply for end users.

- UA/HU border-Beregdaróc DN 1400; PN75; L=5 km
- Beregdaróc-Hajdúszoboszló DN1000; PN63; L=125 km
- Városföld-Algyő DN1000; PN63; L=83 km
- Százhalombatta-Pilisvörösvár DN800; PN63; L=54,5 km



Investment in Compressor station

The above mentioned pipeline project needs capacity development in **Beregdaróc**, and in **Hajdúszoboszló** compressor station also. With the help of these compressor stations the border capacity will increase 14.2 million Ncm/d (0oC; 101 325Pa) capacity in 2009/2010 gas year, which will be increased in the future for 28.5 million Ncm/d.

Hungarian-Romanian interconnector:

In August 2008, FGSZ and Transgaz signed a Joint Development Agreement to build an interconnection pipeline between Hungary and Romania. After the open season procedure FGSZ started to build the Hungarian section, the target commercial operation date 01.01.2010. At the initial phase the pipeline will be prepared to deliver gas from Hungary to Romania. Later the pipeline will be bidirectional, with additional development (compressor station both side etc)

- Algyő-Csanádpalota DN700; PN63; L=47km

Hungarian-Croatian interconnector:

FGSZ and Plinacro have finalized the Joint Development Agreement. Commissioning is expected in 2011. The pipeline will be bidirectional from the beginning. In the initial phase gas will be delivered from Hungary to Croatia. The gas could be delivered from existing entry points and later from Nabucco pipeline direction. Additional developments in Croatian side the connecting pipeline systems will be able to deliver gas from the planned Adria LNG terminal towards Hungary and via Hungary towards Romania, Serbia later towards Slovakia.

- Városföld-Drávaszerdahely DN800; PN75; L=206 km pipeline, Városföld and Báta compressor stations

Hungarian-Slovakian interconnector:

In March 2009, FGSZ and EUSTREAM began the negotiation to establish an interconnection pipeline between Vecsés (Hungary) and Velky Krtis (Slovakia). On 28.10.2009 we have launched a common non binding open season procedure; the result will be available end of January 2010. The pipeline will be bidirectional from the beginning.
This pipeline will be the vital importance in concerning the reverse flow in case of supply disruption. The planned capacity will be 13.6 Mcm/d.

- Vecsés-Balassagyarmat (Hu/Sk border) DN800; PN75; L=94 km pipeline, Gödöllő compressor station.

Hungarian-Slovenian interconnector:

In June 2009, FGSZ and Geoplin Plinovodi began the negotiation to establish an interconnection pipeline between Nagykanizsa (Hungary) and Lendava (Slovenia). A detailed feasibility study will be completed by end of February 2010. The pipeline will be bidirectional from the beginning. The planned capacity will be 1.2 Mcm/d.

- Nagykanizsa-Tornyiszentmiklós (Hu/Slo border) DN400 or DN500; PN63; L=41 km pipeline, Nagykanizsa compressor station.

A.15.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Decisions are in progress.

Development of the main pipeline system:

Hungarian demand will increase in middle and western part of the country and the additional gas source will be available from Ukrainian direction/ Városföld(Nabucco)/Városföld(Adria LNG terminal). In order to fulfill the increasing capacity demand, FGSZ has to develop its pipeline system from east to westwards.

- Hajdúszoboszló - Városföld DN1000; PN63; L=156 km pipeline, Városföld compressor station.
- Városföld-Százhalombatta DN1000;PN75; L=105 km
- Százhalombatta-Győr DN1000;PN75; L=111 km

FGSZ has prepared a system development proposal and submitted to the Hungarian Energy Office (HEO). After HEO's acceptance it will be an approved development plan and FGSZ has to realize the projects.

The influence on capacity increase of the above described investments is documented in the table below:

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
AT-HU: Mosonmagyaróvár	12	12	12	12	12	12	12	12	12	12
HU-RS: Kiskundorozsma	12	12	12	12	12	12	12	12	12	12
HU-RO: Csanádpalota	4	4	4	4	4	4	4	4	4	4
HU-HR: Drávaszerdahely		18	18	18	18	18	18	18	18	18
Import										
UA-HU: Beregdaróc	53	53	68	68	68	68	68	68	68	68

A.15.4 Development of National Production and Storage Deliverability

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
10	8	7	6	6	5	4	4	3	3
Development of Storage Deliverability (Mio. Nm^3/day)- Commercial									
53	59	59	59	59	59	59	59	59	59
Development of Storage Deliverability (Mio. Nm^3/day)- Strategic*									
19	19	19	19	19	19	19	19	19	19
*The strategic storage will be fill up and of 2009 year, this storage facilities can be used only in case of gas supply disruption									

A.15.5 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
111	113	126	126	128	128	130	131	132	132
Yearly Consumption (Billion Nm^3/year)									
14	17	18	20	20	20	21	21	21	21
Yearly Consumption (Billion kWh/year)									
157	190	202	224	224	224	235	235	235	235

Peak day reference temperature: -12°C (The system operators have to maintain/develop their systems (transmission/distribution) in oder to serve the connected consumers demand even at -12°C.

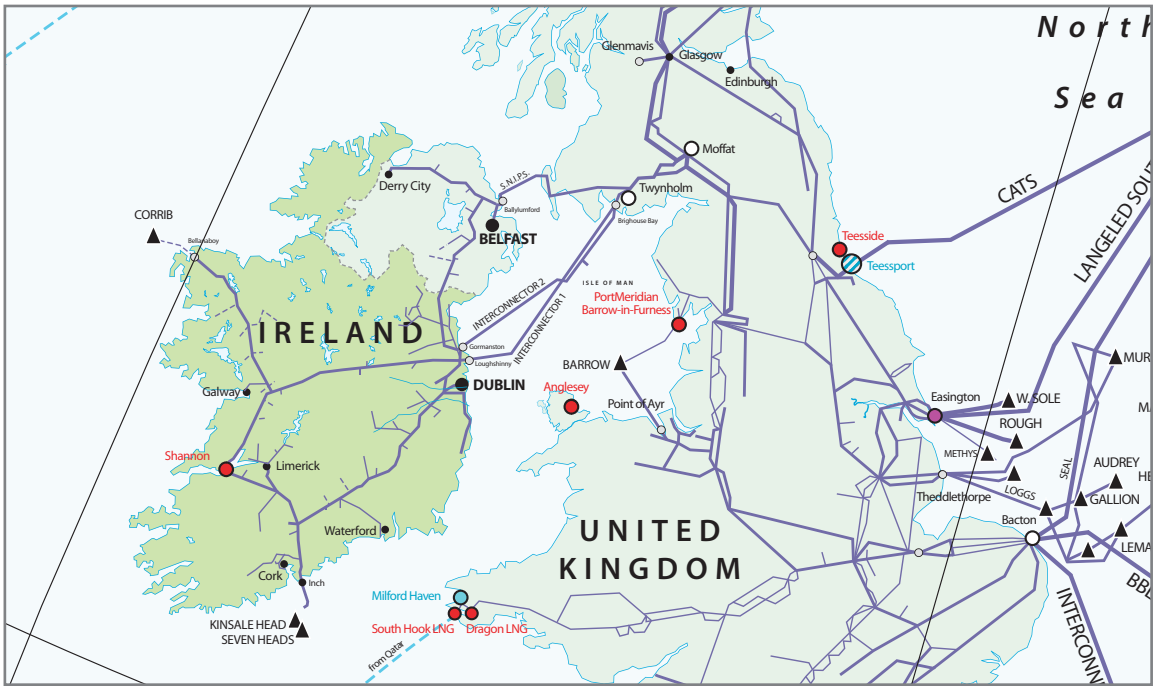
A.15.6 Supply Scenario(s)

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm³/day)									
53	53	68	68	72	73	76	77	79	79
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm³/day)									
12	12	12	12	12	12	12	12	12	12
Maximum peak day supply via LNG terminals (Mio. Nm³/day)									
0	0	0	0	0	0	0	0	0	0
Peak day national production deliverability (Mio. Nm³/day)									
10	8	7	6	6	5	4	4	3	3
Peak day storage deliverability (Mio. Nm³/day)									
53	59	59	59	59	59	59	59	59	59

Yearly Supply Scenario (Billion Nm³/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm³/year)									
9	12	13	16	15	15	15	14	14	13
Aggregated quantities via EU internal cross-border pipelines (Billion Nm³/year)									
3	3	3	3	4	4	5	6	7	8
Aggregated quantities via LNG terminals (Billion Nm³/year)									
0	0	0	0	0	0	0	0	0	0
Aggregated national production (Billion Nm³/year)									
2	2	2	1	1	1	1	1	0.5	0.5

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
101	134	146	179	168	168	168	157	157	146
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
34	34	34	34	45	45	56	67	73	84
Aggregated quantities via LNG terminals (Billion kWh/year)									
0	0	0	0	0	0	0	0	0	0
Aggregated national production (Billion kWh/year)									
22	22	22	11	11	11	11	11	6	6

A.16 Ireland



A.16.1 Description of the Existing Network

Gaslink

Gaslink has been established as an independent organisation to operate, maintain and develop the transportation system and took over responsibility for the operation of the Republic of Ireland transmission and distribution systems on 4th July 2008 .

Further information can be found on the Gaslink website: www.gaslink.ie

The Transmission Network consists of approx 2000km of high-pressure transmission pipelines . Gaslink is responsible for transmission operations, infrastructure development and maintenance of the network. Natural gas is currently transported from two entry points on the network (the "Inch" and "Moffat" entry points) directly to large customers and indirectly to residential customers via the distribution network throughout Ireland.

The Distribution Network consists of approx 10,000km of low-pressure polyethylene distribution pipelines. Gaslink manages the operation, maintenance and development of the low-pressure network within towns and cities supplying gas to industrial, commercial, residential and new housing sector.

An interconnector (IC) system connects the onshore ROI system to the Great Britain National Transmission System (NTS) at Moffat in Scotland. It also supplies gas to the NI market from Twynholm and to the IOM market from IC2. The IC system is also used to provide a gas inventory service to ROI shippers. The IC system includes two subsea interconnectors to Scotland, two compressor stations at Beattock and Brighouse Bay, and the 110-km of onshore pipeline between Brighouse and Moffat in Scotland. The high-level system statistics are summarised in Table 1 and shown in the Figure above.

Table 1: ROI Transmission pipeline summary statistics

Location	Current MOP* Pressure (bar-g)	*Total Length (km)*	Max Nominal Pipe Diameter (mm)
Onshore ROI	70.0	1,146.7	900
Onshore ROI	40.0	91.0	500
Onshore ROI	37.5	99.9	600
Onshore ROI	19.0	155.9	600
Onshore ROI	7.0/4.0	7.2	600
Total	N/A	1500.7	

Yearly transported volumes in bn kWhs	77.4 (2008/09)
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	The Republic of Ireland is connected to Great Britain via the Interconnectors (Fig1)
Aggregated entry and exit capacities from/to storages	Storage capacity at Inch = 2,093 GWh Storage injection: 19 Gwh/day Storage Extraction 29 Gwh/day
Aggregated national production	10.5 GWh/d (2008/09)
Number of shippers	18

A.16.2 Current Processes for Investment, Current Publications

Current Processes for Investment

The current investment process on the network in Ireland ensures that an efficient safe and secure system is available to all end-users.

Investment on the network is driven by increased demand – such as;

- Request for connection to the grid: The network is extended to supply gas to new customers.
- Infrastructure reinforcement: Demand on the transmission system continues to grow. Pipelines and AGIs may be approaching their original design capacity limit and hence some of the more mature sections of the transmission system may need reinforcement on occasion.
- Replacement of the network - There is a continuous programme to review and refurbish the existing transmission system, to ensure that it complies with all relevant safety and technical standards.

A number of reinforcement projects are currently underway. Gaslink continues to connect new customers to the grid, whilst also ensuring that appropriate reinforcements and refurbishments are made wherever necessary.

Current Publications

The Commission for Energy Regulation produce a Gas Capacity Statement in July of each year. The Statement presents a summary of the analysis and review of the impact of forecasted gas supplies into and gas demands from Ireland's natural gas transmission system over the following 7 years. The report determines whether the transmission system has sufficient capacity for supplies to meet the reasonable medium term demand growth and network reinforcement that would be needed in the medium to longer term.

Gaslink is required to produce a "Long-term Development Plan" under Condition 11 of its Transmission System Operator Licence covering planning over a ten year period also. It is hoped that the Transmission Development Plan (TDS) will assist users to optimise their gas usage, and thereby, maximise the resulting economic and environmental benefits to the Irish economy. The plan provides both existing and potential users of the gas transmission system with an overview of the forecast demand, the likely sources of supply and the ability of the transmission system to meet the resultant flows of gas.

On the 10th July 2009, the Commission for Energy Regulation and the Northern Ireland Authority for Utility Regulation published, as part of the Common Arrangements for Gas project, the Joint Capacity Statement covering the period 2008/09 to 2015/16. It is the first to have been produced on an all-island basis.The Statement presents a summary of the analysis and review of the impact of forecast gas supply and demand on the transmission systems for both Ireland and Northern Ireland over the next eight years. It provides the best estimate of the adequacy of the all-island system to meet demand growth in Ireland and Northern Ireland.

A.16.3 Capacity Development in the Reporting Period, Investment Decisions Taken

The following capacity development figures were provided by Gaslink.

Capacity (Mio. Nm^3/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
UK-IE: Moffat	29	29	29	29	29	29	29	29	29	29

A.16.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

There are a number of new gas supply projects at various stages of study and proposed development in Ireland and Northern Ireland. They range from new indigenous production projects to LNG re-gasification and gas storage projects. They include:

- The Corrib gas field which is currently being developed by the Corrib Partners (Shell, Statoil & Vermilion), with first gas expected during the 2010/2011 gas year. This is located to the West of the country.
- Shannon LNG who have received planning permission for an LNG re-gasification facility on the Shannon estuary, near Tarbert in Co. Kerry; SouthWest of Ireland
- Island Oil & Gas have confirmed the presence of proven gas reserves in the Celtic Sea.
- The feasibility of a number of salt cavity gas storage projects is currently being evaluated in Northern Ireland.

The Corrib gas field is the most advanced of the above supply projects, with Shell (the Operator) completing the subsea infrastructure and progressing the completion of the onshore gas processing terminal in Bellanaboy. Initial production from the Corrib field is forecast to supply circa 39% of the Republic of Ireland's (R.O.I) peak-day demand and circa 62% of the ROI annual demand. Corrib production is forecast to peak relatively quickly unless further satellite fields are developed.

Shannon LNG plan to develop their re-gasification facility on a phased basis, with maximum production of 17.0 mscm/d from by 2016/17 during Phase I, and the ability to increase this at a later date to 28.0 mscm/d during Phase II.

Island Oil and Gas Ltd are carrying out technical studies, to evaluate the commercial viability of developing prospects in the South of the country. It is expected that any gas from these prospects could be brought ashore at Inch via the existing Kinsale Energy offshore infrastructure. Geological testing (e.g. seismic surveys etc) is being conducted to determine whether the salt-layers in Northern Ireland are suitable for gas storage purposes.

Running Open Seasons (individual or co-ordinated)

Gaslink is responsible for the management of access to the Irish natural gas pipeline system for all Shippers. Holders of Shipper licences who have booked capacity under the Code of Operations have a right to input and/or off-take gas from the natural gas system. There is a finite amount of capacity that can be made available. Shippers are required to

reserve capacity in order to transport gas through the network, both at the entry and exit points and as such are reserving a portion of the available throughput of the pipeline network. Provision is made with respect to the Interconnector Inventory (Storage) Product for where demand exceeds supply where by a apportion of the available Capacity is allocated equally amongst all applying Shippers & the remainder allocated pro rata to applicants Long Term Entry Capacity bookings at Moffat.

There is currently no congestion on the network.

A.16.5 Development of National Production and Storage Deliverability

There are two entry points into the RoI system; Moffat, via the interconnector system from Great Britain and Inch, where there is some indigenous production and a storage facility in depleted fields. Imports via the interconnector accounted for 92.5% of the total RoI annual demand in gas year 2008/09. The remainder was sourced from Inch.

The ROI market will continue to source the majority of its natural gas requirements from the GB market during 2009/10, however, this situation is set to change rapidly from 2010/11 onwards. The Corrib gas field which is currently being developed by the Corrib Partners (Shell, Statoil & Vermilion), with first gas expected during the middle of the 2009/10 gas year. Initial production from the Corrib field is forecast to be 103 GWh/d (or 9.9mscm/d), which will supply c. 39% of the ROI peak-day demand and c. 62% of the ROI annual demand. Corrib production is forecast to peak relatively quickly unless further satellite fields are developed.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
0.6	10	10	9	7	6	3	3	2	2
Development of Storage Deliverability (Mio. Nm^3/day)									
3	3	3	3	0	0	0	0	0	0

A.16.6 National Demand Scenario(s)

The basic modelling approach used in the Transmission Development Statement process is to produce separate peak-day and annual demand forecasts for the power generation, I/C and residential sectors.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
23	25	26	26	26	26	26	27	27	28
Yearly Consumption (Billion Nm^3/year)									
6	6	6	6	6	6	6	6	6	6
Yearly Consumption (Billion kWh/year)									
60	60	64	62	62	61	61	62	62	62

A.17 Italy


Wallbach
Oltingue
Rodersdorf
Geneva
BERN
SWITZERLAND
LIECHT.
Griespass
Passo Gries
Aosta
Milano
Torino
Nice
Genova
Panigaglia
Livorno
Toscana Offshore
Piombino
Olbia
Cagliari
Porto Botte
ALGERIA - SARDINIA - ITALY (GALSI)
Annaba
Koudiet Eddraouch
TUNIS
Burghausen
Salzburg
Kiefersfelden
Innsbrück
AUSTRIA
Arnoldstein
Tarvisio
Graz
Weitendorf
Murfeld
Klagenfurt
Cerśak
Trento
Bologna
Firenze
Venezia
Gorizia
Trieste
Sempeter
SLOVENIA
Rogatec
LJUBLJANA
Adr.LNG
Porto Levante
Umag
Porto Viro
from Qatar
Vodnjan
Pula
Rijeka
Omisalj
Adria LNG
Krk
CROATIA
Lučko
ZAGREB
Karlovac
VIENNA
Baumgarten
Kittsee
BRATISLAVA
Mosonmagyaróvar
BUDAPEST
HUNGARY
Nabucco
Kiskundoro
Sombor
D.Miholac
Osijek
Slavonski Brod
WBR
Banja Luka
Gospić
BOSNIA
HERZEGOVINA
Zvornik
Loznica
Zenica
Zadar
Knin
Benkovac
SARAJEVO
Split
Mostar
Ploče
Crna Gora
MONTENE
PODGORICA
IAP
Ancona
Porto Recanati
Triton
Perugia
L'Aquila
ROME
Campobasso
Bari
Napoli
Potenza
Brindisi
Taranto
Fier
Otranto
Policastro
Poseidon
I.T.G.I.
Catanzaro
Monforte
Messina
Palermo
Mazara del Vallo
TRANSMED
Agrigento
Porto Empedocle
Gela
Priolo / Augusto / Melili
MALTA
LA VALETTA

A.17.1 Description of the Existing Network

Snam Rete Gas is the main Transmission System Operator in Italy owning and managing about 96% of the whole transportation system that amounts to more than 33.000 km. The remaining part of Italian transportation system is managed by S.G.I. (Società Gasdotti Italia), Edison Stoccaggio and other regional operators.

At the end of 2008, the extension of Snam Rete Gas network was 31.474 km, consisting of 8.779 km of National grid, with diameters up to 56" and 22.695 Km of Regional grid. The compression system of the National grid consists of 11 compressor stations with a total installed power of 830 MW.

The range of maximum operating pressures in the National network is between 24 and 75 bar, while in the Regional network the maximum operating pressures are also below 24 bar.

The National network is interconnected with foreign import pipelines through 5 entry points: Tarvisio (Austria), Passo Gries (Switzerland), Gorizia (Slovenia), Mazara del Vallo (subsea interconnector Tunisia-Italy) and Gela (subsea interconnector Lybia-Italy).

Moreover, there are two entry points interconnected to LNG Terminals: one in correspondence to Panigaglia regassification plant, owned and managed by GNL Italia and one at Cavarzere, interconnected with the regassification plant managed by Terminale GNL Adriatico.

In addition there are also 59[3] entry points interconnected with domestic production fields. The Italian Storage facilities (8 sites managed by STOGIT and 2 sites managed by Edison Stoccaggio) are interconnected to the National network through two virtual entry and exit points.

Finally, the National network has 5 exit points interconnected with foreign pipelines (Tarvisio, Gorizia, Passo Gries, Bizzarone and the San Marino Republic), while the Regional network has more than 7000 redelivery points interconnected with distribution networks, industrial customers and power generation plants.

The transport capacity at the beginning of the thermal year 2009-2010 on the national network amounts to:

- 346.4 million Nm^3/d at entry points interconnected with foreign import pipelines and LNG Terminals (including interruptible capacity)
- 33.4 Nm^3/d at national productions entry points
- 214.1 Nm^3/d at Storage entry points and 144.3 Nm3/d at storage exit points
- 19.1 million Nm^3/d at exit points interconnected with foreign pipelines

In the year 2008, Snam Rete Gas performed the transportation service for 73 users. In the same year, the volumes injected into Snam Rete Gas amounted to 85.6 billion cubic meters (Sm^3) corresponding to 99% of the overall Italian transported volumes.

Further information about Snam Rete Gas is available on the company website: www.snamretegas.it

[3] Data referred to the thermal year 2009-2010..

A.17.2 Current Processes for Investment, Current Publications

Every year, Snam Rete Gas elaborates an investment plan for the following four years. The investment plan includes projects related to the development of new transport capacity, as well as projects related to the maintenance of the existing network.

This plan includes projects under construction and projects that are expected to start within the planning period. For the development projects included in the four year plan aimed at increasing the transport capacity at Entry Point of the National network, the start of the construction phase is subject to the contractual commitment by the network users, according to the principles defined by the law n° 239/04 and by the Decree of the Ministry for the Production Activity dated 28/04/2008. In particular, these laws set out the criteria for the development of new transport capacity envisaging the application of open season procedures and the subsequent subscription of the transportation contracts with the network users.

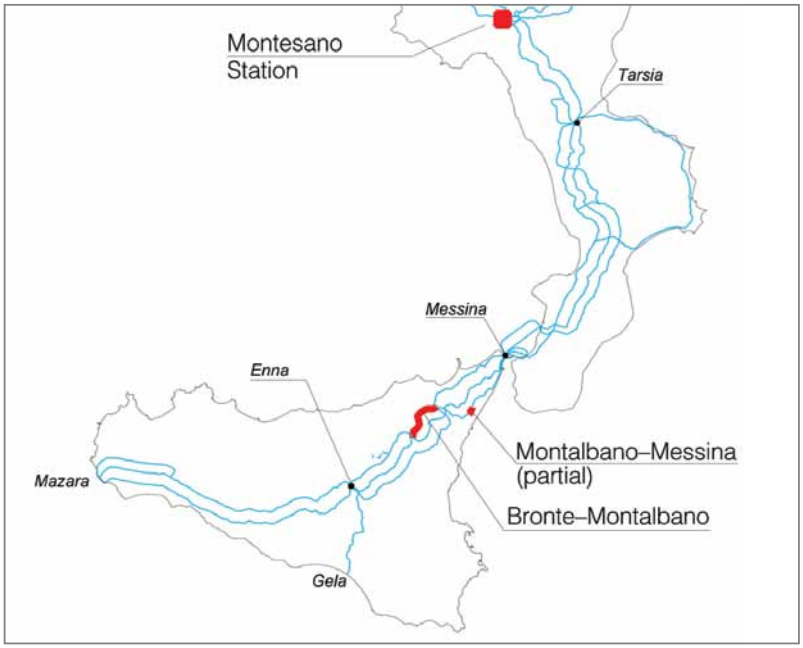
The investment plan is not binding and, therefore, Snam Rete Gas reserves the right to modify it if needed. The investments that have been carried out and that are reported in the Annual Report of the previous year are considered in the determination of the transportation tariffs starting from the following thermal year.

In year 2008 the investment expense of Snam Rete Gas has been equal to 1.044 million Euro. The 2009 – 2012 investments plan amounts to 4.3 billion Euro.
Each year Snam Rete Gas communicates its investment plan to the Italian Regulator and publishes a "Plan for the implementation of new capacity and for the development of the network". The document provides information on the infrastructure development and a description of the main projects, as well as on the 10 year plan for the transportation capacity development at the entry and exit points interconnected with foreign pipelines. It is publicly available at:
http://www.snamretegas.it/en/clienti_e_istituzioni/anno_termico_0809/cln_istituzioni_info_utenti__capacita.shtml

A.17.3 Capacity Development in the Reporting Period, Investment Decisions Taken

The projects under construction in the period 2010-2019, aimed at developing new transport capacity at entry points interconnected with foreign pipelines, are related to the southern area of Italy.

In the southern area the projects under construction involve about 23 km of 48" pipelines (Bronte – Montalbano and the completion of Montalbano – Messina in Sicily) and the expansion of the existing compression station of Montesano.



The following table summarises the capacity developments at the Interconnection Points:

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
AT-IT: Tarvisio	101	101	101	101	101	101	101	101	101	101
CH-IT: Griespass	56	56	56	56	56	56	56	56	56	56
IT-AT: Tarvisio	9	9	9	9	9	9	9	9	9	9
IT-SI: Šempeter/Gorizia	4	4	4	4	4	4	4	4	4	4
IT-CH: Griespass	5	5	5	5	5	5	5	5	5	5
SI-IT: Šempeter/Gorizia	2	2	2	2	2	2	2	2	2	2
LNG										
Panigaglia	12	12	12	12	12	12	12	12	12	12
Cavarzere	25	25	25	25	25	25	25	25	25	25
Import										
LY-IT: Gela	27	28	30	30	30	30	30	30	30	30
TN-IT: Mazara del Vallo	94	94	94	94	94	94	94	94	94	94

Moreover in central Italy, Snam Rete Gas has signed an agreement with OLT for the construction of the interconnection pipeline between the future offshore LNG plant near Livorno and the national network. Planned capacity of the new entry point is about 14 million Nm3/d.

A.17.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

Beyond the projects mentioned in the previous paragraph Snam Rete Gas is planning about 3000 km of pipelines and approximately 250 MW of power installed in compressor stations along the routes from South, from North-East and from Sardinia to increase the transportation capacity of the existing entry points and/or to set up new entry points. For these projects final investment decision will be taken according to the outcomes of open season procedures and the subsequent commitments with the network users.

In the southern area, planning and permits acquisition activities are currently in progress for several reinforcement projects including the second looping of the existing lines in Sicily (about 130 km of 48" pipelines), a new sea line between Sicily and Campania coasts (about 250 km of 32" pipelines equipped with a 60 MW compressor station in Sicily) and the Adriatic pipeline between Massafra, nearby Taranto, and Minerbio, nearby Bologna (about 700 km of 48" pipelines equipped with a 30 MW compressor station in Sulmona). These projects would increase transportation capacity at the entry points located in the South-Italy to about 25 million Nm3/d. About Adriatic pipeline, final investment decision has been taken for a section connecting Massafra to Biccari within Puglia region, to increase safety and reliability of the network; final investment decision has been taken also for the compressor station of Sulmona in order to increase capacity of the network at the entry point interconnected with the existing storage facilities in the center of Italy.

Moreover, Snam Rete Gas is planning a second sealine between Sicily and Campania coasts and a new sealine between Campania and Lazio coasts (about 850 km of 32" pipelines), the reinforcement of the compressor station in Monforte (60 MW) and a new line between Terranuova and Minerbio (about 200 km of 48" pipelines). These projects would lead eventually to additional 25 million Nm3/d of transportation capacity at the entry points located in South-Italy.

In north-east Italy, planning and permits acquisition activities are currently in progress for about 120 km of new pipelines (with a 56" diameter) between Friuli Venezia Giulia and Veneto, a new compressor station in Flaibano (about 75 MW) and the reinforcement of the compressor station of Istrana. These projects would increase the existing or future entry points capacity in Friuli Venezia Giulia to about 30 million Nm3/d.

Moreover, Snam Rete Gas is planning the reinforcement of the pipeline downstream the entry point interconnected with the Panigaglia LNG terminal. This project is conditional on the Panigaglia LNG terminal development and the subsequent commitments with the network users.

Finally, Snam Rete Gas has signed an agreement with GALSI for the construction of the Italian part of the new pipeline between Algeria and Italy via Sardinia, consisting in 630 km of pipelines of 32" and 48" inches and a 50 MW compressor station. The project would make available about 25 million Nm3/d of transport capacity at the new entry point of Porto Botte.

A.17.5 Development of National Production and Storage Deliverability

Gas production

There are currently 59 Entry points to the National transmission network in correspondence of the delivery points from national production fields or their collection and treatment centres.

The Italian gas production is steadily decreasing since the middle of 90s. Operations are currently carried out in the Adriatic Sea, in the central-southern Apennines, both onshore and offshore in Sicily and in Val Padana.

Data for years 2012 and 2015 refer to the estimates available at the beginning of 2009.[3] Data for the other years have been derived by interpolation considering the actual value in 2008 equal to 24 Mio. Nm^3/day.

[3] The yearly production has been converted from Sm3 at 38.1 MJ/Sm3 (as expressed by SRG) to Nm3/d by multiplying it for a factor equal to 0.94794378 and by dividing the resulting value for 365 days.

Storages

The Italian storage system has a total availability in terms of space for working gas of approximately 14 Billion Nm3 (including also gas for strategic storage services).

Currently two operators manage all storages infrastructures: Stogit with 8 storage fields located throughout Italy (amounting at approximately 95% out of the total national capacity) and Edison Stoccaggio with 2 fields (for the remaining 5% out of the total national capacity).

In Italy there are several storage projects at different development stages. Howevere specific information on the development of the storage deliverability for the following years is not available.

The data for 2010 represents 70% of the capacity for the year 2009-2010[3] in correspondence of storage sites to take into account the possible decreases in the deliverability during the winter period because of the reduction in storage working gas. Data for the following years have been assumed equal to 2010 data.

[3] A conversion factor equal to 0.94794378 has been used to pass from Sm3/d to Nm3/d.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
23	23	23	22	21	20	19	18	17	16
Development of Storage Deliverability (Mio. Nm^3/day)									
150	150	150	150	150	150	150	150	150	150

A.17.6 National Demand Scenario(s)

The demand scenario reported in the table has been developed at the beginning of 2009 and therefore it does not fully reflect the potential effects of the ongoing economic crisis.

According to this scenario, domestic gas demand was expected to grow by an average annual 2% in the four years from 2009 to 2012. This growth was driven by the thermoelectric sector, which was forecasted to show an average annual approximate 5% growth rate following the greater production of electricity by the stations that use natural gas as their fuel. Demand from the residential, services and industrial sectors was also expected to increase, although at a slower pace. Moreover, the industrial sector is adversely affected by the ongoing economic and production crisis.

An update of the demand scenario is under progress and will be available at the beginning of 2010.

Data for the years 2012 and 2015 refer to the estimates available at the beginning of 2009[3]. Data for the other years for both Peak Day Demand and Yearly Consumption have been derived by interpolation considering the actual values in 2008 equal respectively to 380 Mio. Nm^3/day and 80.5 Billion Nm^3/year (898 Billion kWh/year).

[3] Yearly demand has been converted from Sm3 at 38.1 MJ/Sm3 (as expressed by SRG) to Nm3/year by multiplying it for a factor equal to 0.94794378. Yearly demand has been converted from Sm3 at 38.1 MJ/Sm3 (as estimated by SRG) to KWh/y by multiplying it for a factor equal to 10.58333 KWh/Sm3.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
394	400	407	411	414	418	422	425	429	433
Yearly Consumption (Billion Nm^3/year)									
85	87	89	91	93	95	97	99	100	102
Yearly Consumption (Billion kWh/year)									
947	971	995	1016	1037	1058	1079	1101	1122	1143

A.17.7 Supply Scenario(s)

There are currently several supply projects under discussion in Italy with a different level of development both with reference to new import pipelines and LNG terminals. Also for storages there are a number of projects under evaluation.

Herewith are listed the main projects currently under discussion according to the information provided by the Ministry for the Economic Development and presented by the Italian Authority for Electricity and Gas in the Annual Report published in July 2009.

Import pipeline project	Project Sponsor	Entry Point Location	Nominal Capacity G(m3)/y
TAP Trans Adriatic Pipeline (Greece-Albania-Italy)	EGL – Satoil Hydro	Brindisi (South)	10 / 20
IGI Interconnector (Italy-Greece)	Depa – Edison	Otranto (South)	8 / 10
Interconnectirol (Italia-Austria)	Provincia di Bolzano	Bressanone (North-East)	1.3
GALSI (Algeria-Italy)	Sonatrach – Edison – Enel – Sfirs – Hera Trading	Porto Botte (Sardinia)	8
TGL Tauern Gas Leitung (Germany-Austria-Italy)	E.On Rurhgas - Others	Malborgehtto (North-East)	11.4

LNG Terminal project	Project Sponsor	Nominal Capacity G(m3)/y
Brindisi - (South)	British Gas Italia	8
Rosignano (LI) - (Central)	Edison – BP – Solway	8
Gioia Tauro (RC) - (South)	Fingas – Sorgenia – Iride – Others	12
Taranto - (South)	Gas Natural Internecional	8
Zaule (TS) – (North-East)	Gas Natural Internecional	8
Trieste offshore (TS) - (North-East)	Endesa Europa	8
Porto Empedocle (AG) - (South)	Enel	8
Rada di Augusta (SR) - (South)	Erg Power&Gas – Shell Energy Italia	8
Ravenna (RA) - (Central)	Gruppo Belleli	8
Senigallia (AN) - (Central)	Gdf-Suez	5
Panigaglia (SP) – (North-West)	GNL Italia	4.5

Storage field project	Working gas M(m3)/y	Peak deliverability M(m3)/d
Alfonsine (RA)	1,550	10
Bordolano (CR-BG)	1,440	12.5 / 20
San Potito – Cotignola (RA)	915	7.2
Cornegliano (LO)	590 / 1,010	16.5
Cugno Le Macine – Serra Pizzuta (MT)	742	7
Rivara (RA)	3	32
Verdicchio (AP)	70	0.8
Sinarca (CB)	324	3.3
Poggiofiorito (TE)	160	1.7
Piadena Est (CR)	n.d.	n.d.
Romanengo (CR-BG)	n.d.	n.d.
San Benedetto (AP)	n.d.	n.d.
Bagnolo Mella (BS)	n.d.	n.d.
Rapagnano (AP)	n.d.	n.d.

For all these projects however Snam Rete Gas has not visibility on the status of the authorisation process and has no information about final investment decisions by the respective project sponsors. For the reasons mentioned above, Snam Rete Gas is currently not in a position to provide information on the dates from which new capacity might enter into operation.

Therefore the data filled in the table below represent the existing and under construction capacities, as already indicated in A.17.3, plus an additional capacity of about 14 million Nm3/d from 2013 referred to the OLT LNG Terminal for which the construction phase has started.

For National Productions and Storages the same figures and assumptions provided in the previous section have been used.

Peak Day Supply Scenario									
Year									
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Maximum peak day supply via European import pipelines (Mio. Nm^3/day)									
121	122	124	124	124	124	124	124	124	124
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
159	159	159	159	159	159	159	159	159	159
Maximum peak day supply via LNG terminals (Mio. Nm^3/day)									
37	37	37	52	52	52	52	52	52	52
Peak day national production deliverability (Mio. Nm^3/day)									
23	23	23	22	21	20	19	18	17	16
Peak day storage deliverability (Mio. Nm^3/day)									
150	150	150	150	150	150	150	150	150	150

Concerning yearly supply scenarios, Snam Rete Gas has no visibility on the long term supply contracts of network users and therefore it's not in a position to provide this information.

A.18 Latvia

The following capacity development figures were provided by **Latvijas Gaze**.

Capacity (Mio. Nm³/day)	**Year**									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
LV-LT: Kiemenai	5	5	5	5	5	5	5	5	5	5
LT-LV: Kiemenai	5	5	5	5	5	5	5	5	5	5
LV-EE: Karsi	7	7	7	7	7	7	7	7	7	7
Import										
RU-LV: Korneti	20	20	20	20	20	20	20	20	20	20

A.19 Lithuania

A.19.1 Description of the Existing Network

Lithuanian transmission system operator is **Lietuvos Dujos AB**. The Company provides gas transmission, distribution, supply and transit services. The Company also purchase (import) natural gas from Russian Federation.

Lietuvos Dujos AB operates gas transmission system:

- 1.85 thousand km of gas transmission pipeline (design pressure 47-55 bar),
- 65 gas metering and regulation stations,
- 3 border gas metering stations
  - BY-LT: Kotlovka (belongs to BY TSO)
  - LT-RU: Šakiai
  - LT-LV-LT: Kiemenai)
- 1 compressor station (≈8 MW).

There are no storages and no local gas production within country.

The Company transmits natural gas to domestic system users and by transit to the Kaliningrad Region of the Russian Federation.

Yearly transported volumes are presented in the table below (in billion m3):

Year	Transmission to domestic system users	Transit to the Kaliningrad Region
2006	3.0	1.2
2007	3.6	1.2
2008	3.2	1.3

Because of state regulation, Lietuvos dujos AB supplies gas to all household consumers, more than half a million, connected to the network of the Company. Since regulated conditions are economically unattractive, no other supplier ever showed any interest in entering this business. However, the market share of gas supply to the non-household consumers consists just 34,5% (in 2008). This shows the high level of TPA (third party access to the system).

For further information please refer to the respective website www.dujos.lt.

A.19.2 Current Processes for Investment, Current Publications

Construction of Jauniūnai compressor station and gas transmission pipeline from Šakiai gas metering station (GMS) to the border with Kaliningrad region, expansion of Šakiai GMS

After closure of Ignalina nuclear power plant at the end of 2009, a substantial increase of natural gas for electricity production is forecasted.

Also, capacity in LT-RU (Kaliningrad region) interconnection point will be increased, according to Gazprom request to increase transported gas volumes to Kaliningrad region.

In order to ensure sufficient level of capacities and guarantee transmission of the increased gas volumes to Lithuanian customers and to Kaliningrad region, Jauniūnai compressor station (≈35 MW) will be constructed. Also, for the cross-border capacities enhancement, investments to gas transmission pipeline from Šakiai GMS to the border with Kaliningrad region (approx.18 km, D 700 mm) as well as in Šakiai GMS expansion is necessary.

No long term Report published.

A.19.3 Capacity Development in the Reporting Period, Investment Decisions Taken

No projects of European significance.

Capacity development, taking into consideration above described investments, is figured in the table below:

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
LV-LT: Kiemenai *	2	2	2	2	2	2	2	2	2	2
LT-LV: Kiemenai	5	5	5	5	5	5	5	5	5	5
Import										
BY-LT: Kotlovka	27	27	27	27	27	27	27	27	27	27
Export										
LT-RU: Šakiai	11	11	11	11	11	11	11	11	11	11

* Possible maximum flow capacity is 2 Mio. Nm³/day, because of the transmission system limitation, in spite of the maximum capacity of Kiemenai gas metering station is 5 Mio. Nm³/day.

Investments decisions are based on a long-term technical capacity demand. Investment Decisions Taking processes are strongly State regulated.

A.19.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

No projects of European significance.

A.19.5 Development of National Production and Storage Deliverability

Local gas production and gas storages are not projected in the near future.

A.19.6 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
14	-	-	-	-	-	-	-	-	-
Yearly Consumption (Billion Nm^3/year)									
3	-	-	-	-	-	-	-	-	-
Yearly Consumption (Billion kWh/year)									
29	-	-	-	-	-	-	-	-	-

Customers sign maximum one-year gas transportation or gas purchase contracts. Big Lithuanian consumers are until now not prepared to sign binding agreements on gas transportation or gas purchase for the time after end of 2009 (i.e. only unbinding forecasts are available from consumers).

Currently, uncertainty is added, because it is not clear, how much of natural gas will be used for the electricity production after the closure of Ignalina NPP at the end of 2009.

Recently, the new government has demonstrated that its attitude towards gas strongly differs from the attitude of the former government. It has a substantial effect on a forecast of gas consumption of state controlled enterprises. As LD is not in the position to forecast political decisions, 10 years plans cannot reasonably be set-up.

Therefore gas consumption forecast for the year 2010 is given very approximate and forecasts from the year 2011 and thereafter could not be provided.

A.19.7 Supply Scenario(s)

Lithuania is exclusively supplied by gas from Russia, which is transited via Belarus (in the tables below "supply via European import pipelines").

Because Lithuania does not have gas storage, it stores gas in Latvian underground gas storage (UGS) and to supply to Lithuanian gas custumers (in the tables below "supply via EU internal cross-border pipelines").

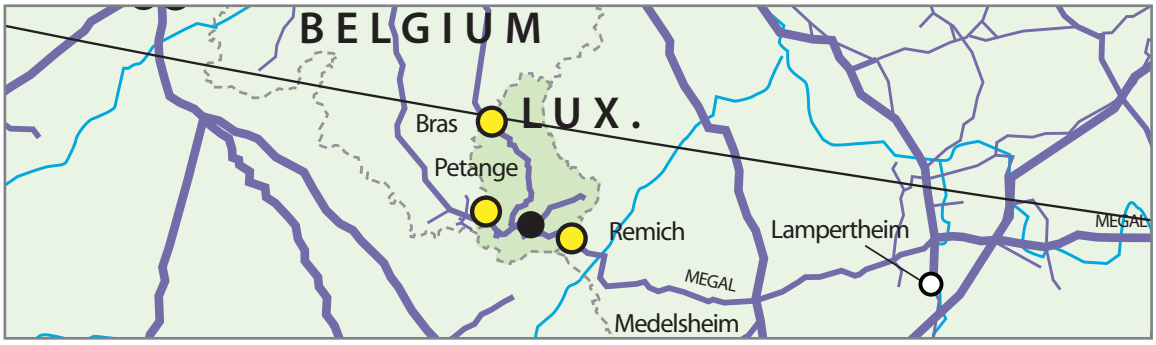
However the interconnection capacity between LV and LT currently is limited, therefore only modest amount of gas could be supplied from Latvian UGS to Lithuania.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm³/day)									
15	-	-	-	-	-	-	-	-	-
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm³/day)									
1	1	1	1	1	1	1	1	1	1
Maximum peak day supply via LNG terminals (Mio. Nm³/day)									
-	-	-	-	-	-	-	-	-	-
Peak day national production deliverability (Mio. Nm³/day)									
-	-	-	-	-	-	-	-	-	-
Peak day storage deliverability (Mio. Nm³/day)									
-	-	-	-	-	-	-	-	-	-

Yearly Supply Scenario (Billion Nm³/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm³/year)									
3	-	-	-	-	-	-	-	-	-
Aggregated quantities via EU internal cross-border pipelines (Billion Nm³/year)									
0.03	0.04	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Aggregated quantities via LNG terminals (Billion Nm³/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated national production (Billion Nm³/year)									
-	-	-	-	-	-	-	-	-	-

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
29	-	-	-	-	-	-	-	-	-
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Aggregated quantities via LNG terminals (Billion kWh/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated national production (Billion kWh/year)									
-	-	-	-	-	-	-	-	-	-

A.20 Luxemburg



A.19.1 Description of the Existing Network

On February 5, 1974 **SOTEG** was found as SOTEG S.A. (Société de Transport de Gaz) for securing the transport of natural gas from Belgium within Luxembourg. Its founding shareholders had been the State of Luxembourg (50%), the Luxembourg steel enterprise Aciéries Réunies de Burbach-Eich-Dudelange (ARBED) /45%), and the metallurgical plant MMR-A (5%). In 1998 the shareholding structure has changed as followed: 21% State of Luxembourg, 20% ARCELOR MITTAL, 20% EON, 19% CEGEDEL, 10% Saar-Ferngas, 10% SNCI;

Since 1st July 2009 SOTEG, Cegedel and Saar Ferngas merged towards **ENOVOS International**, the holding company of **CREOS** in which the TSO and DSO activities for electricity and gas are represented.

The new shareholders of ENOVOS International are : Luxembourg government 28.3%, SNCI 10.8%, ArcelorMittal 25.3%, RWE 19.8%, E.ON 10.8%, Electrabel 5.1%

Creos Key figures

- part of ENOVOS Group
- power and natural gas grid operator for Luxemburg (TSO, DSO) and Germany (TSO)
- legal grid owner
- 7400 km power grid
- 2100 km natural gas grid (LUX + GER)
- 500 employees
- 9 local centers (5 LUX + 4 GER)

For further information please refer to the website www.creos.net

Length of grid in km on the national grid level	PN 80: 213 km PN 40: 50 km PN 25: 2 km PN 16: 35 km PN 4: 110 km
Yearly transported volumes	1 254 934 908 Nm^3 in 2008 14 126 861 MWh in 2008
Overview of international cross-border points and their characteristics	- **Bras** (Belgium) : Technical Entry capacity: 140'000 Nm3/h - **Petange** (Belgium) : Technical Entry capacity: 100'000 Nm3/h - **Remich** (Germany) Technical Entry capacity: 190'000 Nm3/h - **Total** EXIT capacity : 0
Aggregated entry and exit capacities to/from storages	/
Aggregated entry capacities from national production	/
Number of shippers	2 in 2008
Level of investment in Euros	1 400 000 in 2008 €

A.20.2 Current Processes for Investment, Current Publications

5 year investment program approved by general assembly;

Publication platform under investigation

A.19.3 Capacity Development in the Reporting Period, Investment Decisions Taken

The table summarises the capacity developments:

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BE-LU: Bras	4	4	4	4	4	4	4	4	4	4
BE-LU: Pétange	1	1	1	1	1	1	1	1	1	1
DE-LU: Remich	4	4	4	4	4	4	4	4	4	4

A.20.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

No capacity extension projects

Actually an Open Season launched by Fluxys for additional long-term capacity to Luxemburg

A.20.5 Development of National Production and Storage Deliverability

There is no national production or storage in Luxemburg.

A.20.6 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm³/day)									
7	7	7	7	7	7	7	7	7	7
Yearly Consumption (Billion Nm³/year)									
1	1	1	1	1	1	1	1	1	1
Yearly Consumption (Billion kWh/year)									
14	14	14	14	14	14	14	14	14	14

A.20.7 Supply Scenario(s)

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm^3/day)									
/	/	/	/	/	/	/	/	/	/
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
7	7	7	7	7	7	7	7	7	7
Maximum peak day supply via LNG terminals (Mio. Nm^3/day)									
/	/	/	/	/	/	/	/	/	/
Peak day national production deliverability (Mio. Nm^3/day)									
/	/	/	/	/	/	/	/	/	/
Peak day storage deliverability (Mio. Nm^3/day)									
/	/	/	/	/	/	/	/	/	/

Yearly Supply Scenario (Billion Nm^3/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm^3/year)									
/	/	/	/	/	/	/	/	/	/
Aggregated quantities via EU internal cross-border pipelines (Billion Nm^3/year)									
1	1	1	1	1	1	1	1	1	1
Aggregated quantities via LNG terminals (Billion Nm^3/year)									
/	/	/	/	/	/	/	/	/	/
Aggregated national production (Billion Nm^3/year)									
/	/	/	/	/	/	/	/	/	/

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
/	/	/	/	/	/	/	/	/	/
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
14	14	14	14	14	14	14	14	14	14
Aggregated quantities via LNG terminals (Billion kWh/year)									
/	/	/	/	/	/	/	/	/	/
Aggregated national production (Billion kWh/year)									
/	/	/	/	/	/	/	/	/	/

A.21 Montenegro

A.21.1 Description of the Existing Network

Because of non-existence of the gas sector in Montenegro at present, there is very little donor-supported activity at present which would exclusively address the gas sector of Montenegro. However, Montenegro as the Contracting party of the EC Treaty (ECT) is actively involved in all activities of the Gas Forum established under the ECT. Thus, Montenegro is included in all regional gas studies, strategic considerations and regional development plans. In additions, there was some previus research and studies undertaken since the late '90ies that are normally available in local language only.

Montenegro still does not have acces to international sources of natural gas. If a domestic production does not get developed, there are several possible delivery directions in the future: throught the Republic of Serbia, through Albania and across the territory of the Republic of Croatia. On 25. sep 2007, Ministers from Albania, Croatia and Montenegro signed an Intergovernmental Declaration and an MoU on implementation of the Ionian-Adriatic Pipeline (IAP). In October 2008, also Bosnia and Herzegovina confirmed its participation in the IAP project.

Planned exploration in the Montenegrin seabed will confirm whether there are significant quantities of its own natural gas. In the case of discovery of natural gas, it is logical to expect that the system of natural gas supply in Montenegro will develop much faster than in any other option of the import of this energy source.

According to international standards, Montenegro has low potential of gas consumption, while planned investments in the development of gas network are rather high. The adopted Energy Development Strategy of Montenegro by 2025 and the pertaining Action Plan promote introduction of decentralised gas network gas system on LPG around larger cities and in tourism, for varius heating purposes, which would definitively have a twofold effect: I) prolong the tourism season in Montenegro, and even more importantly, II) provide a cost-effective opportunity

for substation of LPG by natural gas when the latter comes.

There is interest of foreign investors for possible construction of a terminal for LNG in the coastline of Montenegro, i.e. area in the vicinity of port of Bar. The potential implementation of this Project is ranked high in consideration of future investment projects in Montenegro because of its probable multiple positive effects on diversifications of supply in general, improved security of supply of gas, power transmission network stability, gas market development …which all would have positive impacts on the overall economic development of Montenegro.

LPG is foreseen as the predecessor to natural gas in major cities (podgorica, Niksic, cetinje) as well as the coastline (Tivat, Bar, Budva, area of Koror, Herceg Novi, Ulcinj) .

A.21.2 Current Processes for Investment, Current Publications

A.21.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
ME-HR: Dubrovnik										

A.21.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

A.21.5 Development of National Production and Storage Deliverability

A.21.6 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
1990	2010	2011	2012	2013	2014	2015	2016	2017	2020
Peak Day Demand (Mio. Nm³/day)									
Yearly Consumption (mil. m³/year)									
430									512
Yearly Consumption (Billion kWh/day)									

A.22 Netherlands

A.22.1 Description of the Existing Network

Gasunie/GTS

Gasunie is the first independent gas transport provider with a cross-border network in Europe and offers transport services via its subsidiaries Gas Transport Services B.V. (GTS) in the Netherlands and Gasunie Deutschland in Germany. Our high-pressure gas transport network in the Netherlands, with its 12,000 kilometers of pipelines, numerous installations – including an LNG facility (peak shaver) - and around 1,100 custody transfer stations is one of the biggest in Europe.

We use this network to transport gas to major industrial consumers that are directly connected to it and to other national and international network operators that distribute gas through their transmission networks to consumers. In 2008, Gasunie transported in the Netherlands 1055 billion kWhs, over twice the volume consumed in the Netherlands. This gives us a special role and responsibility within the European gas market and the energy supply. Fulfilling that role safely, reliably and efficiently is our main aim.

We are also committed to responding swiftly to new demand for transport capacity and related services from customers and consumers. This promotes both competition and security of supply. Gasunie applies a commercial approach based on a sense of corporate social responsibility and a commitment to transparency and sustainability.

The State of the Netherlands, represented by the Ministry of Finance, is the company's sole shareholder. Our aim is to satisfy the demands and expectations of our shareholder in respect of return on investment, value creation, business operations and corporate governance.

Guaranteeing the secure transport of gas through the national transport grid and its accompanying installations is the responsibility of Gas Transport Services B.V. (GTS), the government-appointed transmission system operator. GTS is a subsidiary of Gasunie, through which it provides transport and associated services to customers, identifies future capacity needs and compiles investment plans based on these needs.

Website:
www.gasunie.nl and www.gastransportservices.nl

National Transmission System

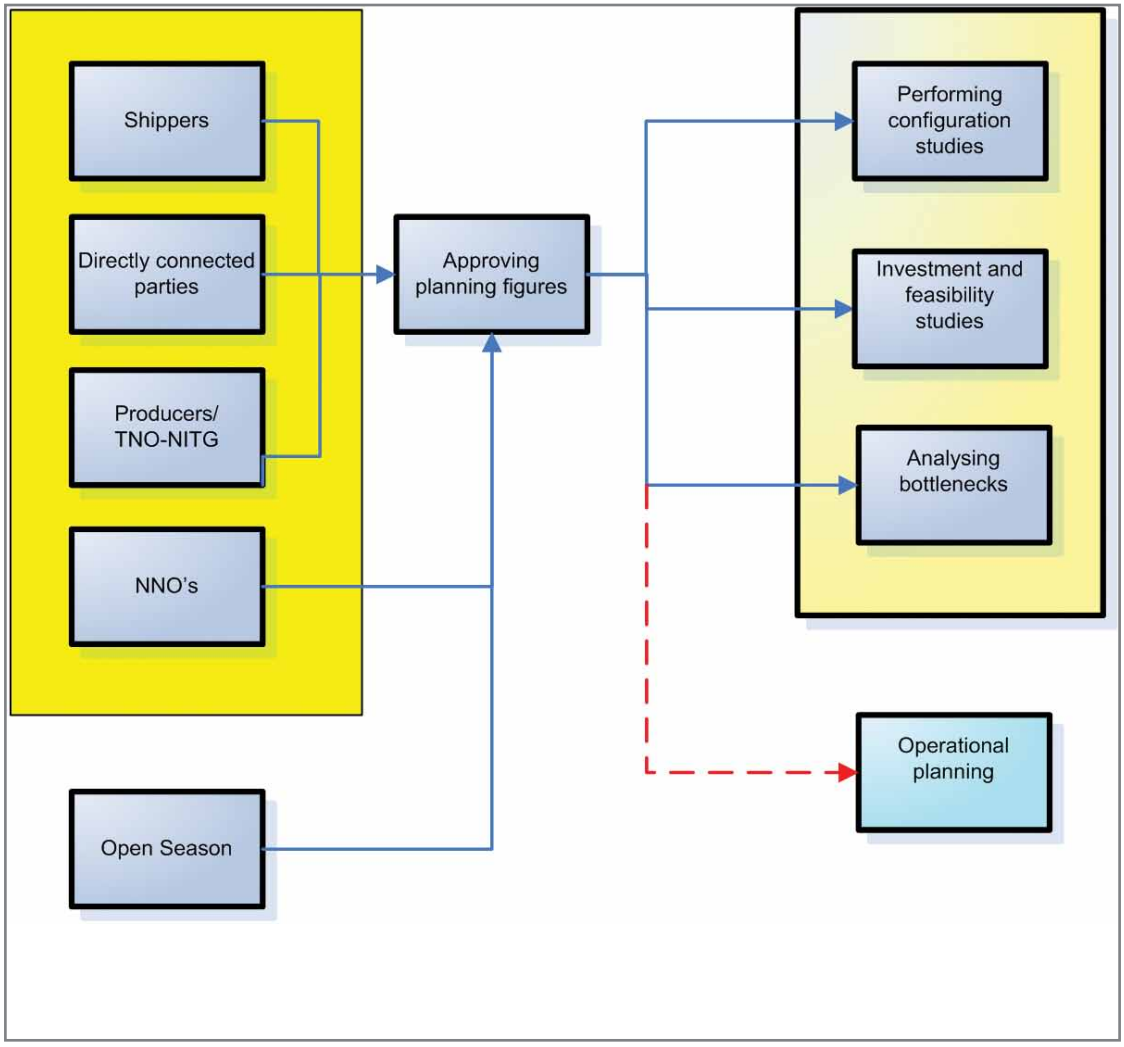
Length of grid in km on the national grid level)	11.500 km, 6.000 km of which are part of the medium pressure (<40 bar) system (Transport Insight)
Yearly transported volumes in bn kWhs	1055 billion kWhs of gas in 2008
Number of shippers	Approximately 149

A.22.2 Current Processes for Investment, Current Publications

Outline of the investment processes in GTS

The Capacity Plan outlines market demand for transmission capacity and indicates how it is likely to change. It also describes how potential bottlenecks in the network will be identified and how they will be resolved.

The process starts with gathering forecasts on supply and demand and ends with identifying measures for resolving existing and anticipated bottlenecks. It gives insight into the long-term network configuration.



Each year GTS carries out a survey in which shippers, directly connected parties (RNBs, industrial players and power stations) and producers are requested to indicate their future need for capacity at border points and domestic entry and exit points. GTS coordinates capacity requirements on both sides of the border point, in partnership with the Neighboring Network Operators (NNOs).

GTS consults TNO-NITG on future indigenous gas supplies in the Netherlands and on the Dutch section of the continental shelf.

GTS then compiles the capacity forecasts based on contracted capacity, data from previous years, figures obtained from the surveys and the results of an analysis of sales. These planning figures are used to compose scenarios in which future developments on the Dutch and neighboring gas markets are modeled. These scenarios later provide major input for studies and the congestion analysis.

On the long term, GTS looks at the required network configurations in view of specific longer term developments on the North-West European

gas market. These studies are used a guidance only. Investments will always be based on long term contracted capacity. The congestion analysis focuses on the shorter term, that is, on the next 1 to 5 years, and identifies existing operational and other anticipated bottlenecks. These bottlenecks can for example be resolved through commercial measures or investments.

The investments GTS ultimately takes depend on the long-term transmission contracts of the market players.

Major investments cannot be based on forecasts, since there is a risk that they may be inaccurate. Often, individual requests from shippers are small and not aligned and therefore not sufficient to justify major investments. Instead, long term contracts are required. An Open Season can be carried out to bundle and align these contracts.

Description of relevant current publications

External Publications	(see website GTS http://www.gastransportservices.com/corporate/publications/reports/
Capacity Plan (Dutch : Kwaliteits- en Capaciteitsdocument)	Is a combination of a quality report and a capacity report. Published once in two years
Report Quality Indicators	Published annually
Survey Small Fields	Forecasts of production from small fields, published annually
Security of Supply	Published annually
Transport Insight	Published annually

Website:
http://www.gastransportservices.com/corporate/publications/518467/

Forecast of transportation system usage and likely system developments, volume forecasts, system reinforcement projects and investment plans are covered.

A.22.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
BE-NL: Zelzate	8	13	20	21	21	21	21	21	21	21
NL-BE: Zelzate	0	10	24	24	24	24	24	24	24	24
NL-BE: Zandvliet H-gas (Fluxys)	Confidential									
NL-BE: Zandvliet H-gas (Wingas)	Confidential									
NL-BE: Zandvliet L-gas	Confidential									
NL-BE: Hilvarenbeek/Poppel	Confidential									
NL-BE: Obbicht/Dilsen	Confidential									
NL-BE: 's Gravenvoeren	22	22	23	29	29	29	33	33	33	33
NL-DE: Bocholtz	35	35	42	43	43	43	43	43	43	43
DE-NL: Oude Statenzijl EGT	20	24	31	36	36	36	36	36	36	36
DE-NL: Oude Statenzijl GUD	3	3	5	5	5	5	5	5	5	5
DE-NL: Oude Statenzijl Wingas	3	4	7	7	7	7	7	7	7	7
DE-NL: Oude Statenzijl Renato	Confidential									
NL-DE: Oude Statenzijl EGT	16	16	16	16	16	16	16	16	16	16
NL-DE: Oude Statenzijl GUD	10	10	10	10	10	10	10	10	10	10
NL-DE: Oude Statenzijl Wingas	7	7	7	7	7	7	7	7	7	7
NL-DE: Oude Statenzijl Renato	Confidential									
NL-DE: Oude Statenzijl EWE (L-gas)	8	8	8	8	8	8	8	8	8	8
NL-DE: Oude Statenzijl GUD (L-gas)	23	23	23	23	23	23	23	23	23	23
NL-DE: Vlieghuis	Confidential									
NL-DE: Winterswijk (L-gas)	43	43	43	43	43	43	43	43	43	43
NL-DE: Zevenaar (L-gas)	Confidential									
NL-DE: Haanrade (L-gas)	Confidential									
NL-DE: Dinxperlo (L-gas)	Confidential									
NL-DE: Tegelen (L-gas)	Confidential									
NL-UK: Julianadorp (H-gas)	33	34	37	39	40	40	40	40	40	40
Import										
NO-NL: Emden NPT	15	28	29	31	31	31	31	31	31	31
NO-NL: Emden EPT	28	37	44	53	53	53	53	53	53	53
LNG										
LNG Rotterdam (GATE)	0	0	30	30	30	30	33	33	33	33
Total Cross-Border Capacities										
Export NL-UK	33	34	37	39	40	40	40	40	40	40
Export NL-BE	81	87	96	103	107	107	110	110	110	110
Export NL-DE	180	180	183	188	188	188	188	188	188	188
Import NO-NL	36	59	67	77	77	77	77	77	77	77
Import DE-NL	35	54	76	90	90	90	90	90	90	90
Import BE-NL	8	13	20	21	21	21	21	21	21	21

In these figures expansions from those investment projects where a final investment decision has been taken are included. Furthermore an expansion of the BBL (NL-UK: Julianadorp (H-gas)) is shown in the table. For confidentiality reasons GTS is not able to publish all interconnection points. In the Total Cross border capacities the simultaneous -17 degrees Celsius peak import and export capacity is shown.

GTS markets capacity only in energy units. For this publication numbers are however converted to Mio Nm3/day by applying a caloric value of 39,0 MJ/Nm3 and 44,0 MJ/Nm3 for L-gas and H-gas respectively.

A.22.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

OS2012 phase 2b.

GTS started Open Season 2012 in 2007. The first two parts (called phase 1 and phase 2a) have been finalized. Phase 2b is delayed due to delays in Belgium and France. An investment decision is expected in spring 2010.

First integrated network development by GTS and Gasunie Deutschland

Gasunie subsidiaries Gas Transport Services B.V. (GTS, the Dutch national transmission system operator) and Gasunie Deutschland Services GmbH (Gasunie Deutschland, transmission system operator in Northern Germany) announced in October 2008 that they will carry out an integrated Open Season procedure to determine interest for additional transmission capacity in their areas. The results of the open season process will form the basis for the planning of network expansion in Northern Germany and the Netherlands. It is the first time in Europe that a cross-border network development approach will be carried out in this way by a fully unbundled cross-border asset owner. This integrated approach aims to synchronize capacity development on both sides of the border and, as a result, will provide business opportunities for customers. In offering this integral concept of network development to its customers, Gasunie fully recognizes the cross-border nature that characterizes today's natural gas marketing business to a large extent.

On October 1st 2009, many shippers have contracted significant capacity in the Integrated Open Season. An investment decision is expected before year-end 2010.

A.21.5 Development of National Production and Storage Deliverability

The figures for national production deliverability and storage deliverability were combined to preserve confidentiality. The national production consists of the Groningen field and the Dutch small fields on land and sea. The data for the national production is a result of forecasts of the research institute TNO and questionnaires we send to producers every year. For the storage deliverability only the projects with a final investment decision were taken into account.

See also our Quality and Capacity document 2009: http://www.gastransportservices.com/corporate/publications/reports/

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability and Storage Deliverability (Mio. Nm^3/day)									
517	553	561	555	540	515	496	478	464	449
For this publication numbers are converted to Mio Nm3/day, applying a caloric value of 37,9 MJ/Nm3									

A.22.6 National Demand Scenario(s)

For the national demand scenarios GTS uses forecasts of energy institutes and the result of questionnaires sent to market parties every year. For the peak demand GTS used the peak hour demand corresponding to a -17 degrees Celcius cold winter day.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
428	435	441	441	439	438	437	435	433	431
Yearly Consumption (Billion Nm^3/year)									
44	44	44	45	45	45	45	46	46	46
Yearly Consumption (Billion kWh/year)									
428	430	433	435	438	441	444	446	449	450
For this publication numbers are converted to Mio Nm3/day, applying a caloric value of 37,9 MJ/Nm^3									

A.22.7 Supply Scenario(s)

For supply and storage only projects with a final investment are taken into account. The first row of the table below is thereby the same as the Import NO-NL in the total cross border capacities table subchapter 3. The second row of the table is the sum of Import BE-NL + Import DE-NL.

The national production in row 4 is based on forecasts. For storage in row 4, the projects with a FID are taken into account plus the Bergermeer Gas Storage project (70% of maximum send out capacity). There is a FID for the Bergermeer Gas Storage project but there is not yet a FID taken by GTS.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm^3/day)									
36	59	67	77	77	77	77	77	77	77
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
43	68	96	111	111	111	111	111	111	111
Maximum peak day supply via LNG terminals (Mio. Nm^3/day)									
0	0	30	30	30	30	33	33	33	33
Development of National Production Deliverability and Storage Deliverability (Mio. Nm^3/day)									
517	553	561	555	580	555	536	518	504	489

The table below contains aggregated commodity contracts from shippers. It includes also gas commodity that will likely be contracted by shippers. Because shippers contract their commodity in energy GTS provided the kWh/year table. For National production the numbers are converted to Billion Nm^3/year using a conversion factor. .

Yearly Supply Scenario (Billion kWh/year)*									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
102	136	158	177	175	164	144	130	129	122
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
214	239	274	283	290	302	314	300	300	261
Aggregated quantities via LNG terminals (Billion kWh/year)									
0	15	78	78	78	82	90	90	90	90
Aggregated national production (Billion kWh/year)									
884	832	784	739	728	712	671	629	618	602
Aggregated national production (Billion Nm3/year)**									
84	79	74	70	69	68	64	60	59	57

* Contracted and likely to be contracted volumes (source: The Security of Gas Supply 2009)
** For converting the aggregated national production to Billion Nm3/year a calorific value of 37,9 MJ/Nm3 was used

A.23 Poland

A.23.1 Description of the Existing Network

Name of the Company	**Gas Transmission Operator GAZ-SYSTEM S.A.**
Registered seat of the Company	ul. Mszczonowska 4 02-337 Warsaw / Poland
KRS number (National Court Register):	0000264771, District Court for the capital city of Warsaw, 12th Economic Department of the National Court Register
NIP (Tax ID):	527-243-20-41
Amount of the nominal capital	PLN 3 019 393 716
Amount of paid-in capital	PLN 3 019 393 716
Regon (National Official Business Register)	015716698
Legal form	Joint-Stock Company
Website	www.gaz-system.pl

Since 2005 **GAZ-SYSTEM** acts as independent, and fully unbundled TSO, in a strict accordance with EU Regulations, industry standards and best practices, offering the highest quality of services. The company is wholly owned by Polish State Treasury. A key task of the Gas Transmission Operator GAZ-SYSTEM is the transport of gas via the transmission network throughout the country in order to supply distribution networks and customers connected to the transmission system.

The core activities of the Company are as follows:

- providing natural gas delivery safety through ensuring the safe functioning of the transmission system
- conducting gas network operation in a coordinated and effective manner while maintaining the required reliability for delivery of natural gas
- operation, maintenance and repairs of the grid, facilities and resources of the transmission system,
- developing the transmission grid infrastructure and connections with other gas systems.
- cooperation with operators of integrated systems and energy companies in order to ensure the reliable functioning of the gas system and coordinating their development
- system balancing and congestion management
- providing current information on the transmission network to the system users and gas system operators

GAZ-SYSTEM operates a transmission network comprising in total 9 777 km of pipelines, which transported around 14.5 bcm of natural gas (including transportation to underground gas storage facilities) in the financial year 2008/2009. The company is also responsible of operating other transmission system facilities, which include 14 compressor stations, 56 interconnection points and 974 exit points. The total value of assets owned by GAZ-SYSTEM exceeds PLN 3 billion. The remaining assets are operated by the company under a long-term lease agreement with PGNiG S.A.

Length of grid in km on the national grid level (not regional and town utility level)	9 777 km max. 84 bar
Yearly transported volumes in bn kWhs	159,5 bn kWhs; (11 kWh = 1 cm)
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	Poland is connected to west Europe by IP Lasów (ONTRAS)
Aggregated entry and exit capacities from/to storages	UGS total capacity – 1.66 bcm On entry points 1.26 bcm (injection) On exit points 936,3 mcm (withdrawal)
Aggregated national production	4.3 bcm
Financial investment levels – planned and previous level of investment in Euros	In the last financial year (2008/2009) the company spent nearly PLN 371 million on investment, modernisation and maintenance projects. For financial year 2009 (May-December) level of investment is around PLN 283,3 million and for 2010 (January-December) level of investment is around PLN 1.7 billion
Main Interconnection Points within the country.	Lwówek (Europol – Gaz-System) Włocławek (Europol – Gaz-System)
Number of Shippers	2

A.23.2 Current Processes for Investment, Current Publications

To ensure proper performance of the transmission system and acting in line with the assumptions of the Investment Plan GAZ-SYSTEM completed a number of investment projects including modernisation activities on both own and leased assets.

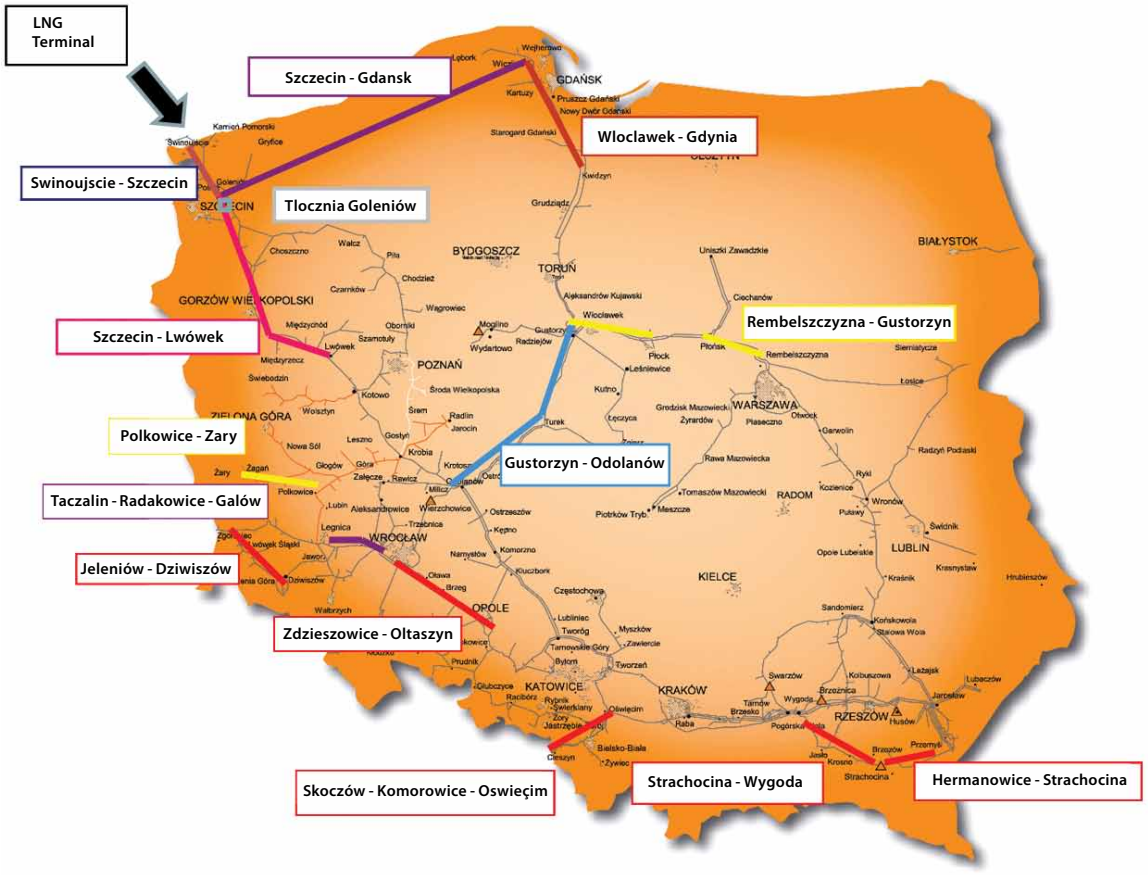
GAZ-SYSTEM is preparing internal documents: Development Plan (for 5 years) and Investment Plan (annually) which are not disclosed. Development Plan is by the force of binding legislation assessed by NRA. Development plan elaborates on main objectives set for GAZ-SYSTEM by National Energy Policy. Development Plan has to be approved by NRA. It is simultaneously one of the basic documents in tariff for gas transmission approval process. General information about planned investments are described in Annual Report 2008/2009.
Latest Annual report is available for download at:
http://www.gaz-system.pl/fileadmin/pliki/do_pobrania/pl/raport_GazSYSTEM_pl_mini.pdf

With respect to the infrastructure development, the undertaken investment projects were primarily focused on:

- construction of the LNG Terminal in Świnoujście,
- modernisation of the transmission system and preparation for interoperability with the planned new source of natural gas supply in north-western Poland (LNG terminal and in future for Baltic Pipe),
- elimination of capacity constraints existing along specific sections of the transmission system due to bottlenecks and full utilisation of the available technical capacity,
- development of telemetric systems in order to improve the standard of services provided to eligible customers,
- preparation for construction and upgrade of system interconnections (CZ-PL: Cieszyn and DE-PL: Lasów),
- realisation of the pre-investment phase (authority process) of the Baltic Pipe pipeline project.
- continuation of outgoing investments and the preparation and launch of new projects featured in the Operational Programme Infrastructure and Environment Action 10.1 – Energy Security, including the diversification of energy sources,
- construction of a new compressor station in Goleniów, which will increase the system capacity in congested regions.

A.23.3 Capacity Development in the Reporting Period, Investment Decisions Taken

The undertaken investment projects are primarily focused on: modernisation of the transmission system in preparation for interoperability with the planned new sources of natural gas supply in north-western Poland (LNG terminal in Świnoujście and the Baltic Pipe).



Gas Pipeline Włocławek – Gdynia

- physical execution of the project within the municipalities of Gniew and Pelpin
- building permission received in the municipalities of Tczew and Szemud
- tendering procedure for choosing the contractor underway in the municipality of Tczew
- project implementation into the local development plan in the municipalities of Żukowo and Gdynia

Gas Pipeline Świnoujście – Szczecin

- feasibility study for the gas pipeline – analytical and technical part completed
- consultations concerning the incorporation of the project into the local development plan
- Environmental Impact Assessment with corrections received

Goleniów Compressor Station

- under construction

Gas Pipeline Szczecin – Gdańsk

- phases I and II Płoty-Karlino-Koszalin – preparations concerning the incorporation of the project into the local development plan
- phase I Płoty-Karlino – preparation of the documentation for the building permission
- phase III Koszalin-Słupsk – definition of the functional and development concept
- phase IV Słupsk-Wiczlino – consultations

concerning the incorporation of the project into the local development plan
- feasibility study for the gas pipeline – analytical and technical part completed
- preparation of the Environmental Impact Assessment

Gas Pipeline Szczecin – Lwówek
- continuation of planning and pre-engineering studies in the municipalities of Kłodawa, Santok, Deszczno
- feasibility study for the gas pipeline – analytical and technical part completed
- tendering procedure for choosing the contractor for technical documentation underway

Gas Pipeline Gustorzyn – Odolanów
- feasibility study for the gas pipeline – analytical and technical part completed
- preparation of the documentation for the building permission

Gas Pipeline Rembelszczyzna – Gustorzyn
- feasibility study for the gas pipeline – analytical and technical part completed
- preparation of the documentation for the building permission

Gas Pipeline Jeleniów-Dziwiszów
- the feasibility study for the gas pipeline – analytical and technical part - completed
- Environmental Impact Assessment documentation completed
- preparation of the documentation for the building permission

Gas Pipeline Taczalin-Radakowice-Gałów
- preparations concerning the implementation of the project into the local development plan
- preparations concerning administrative decisions
- preparation of the documentation for the building permission

Gas Pipeline Zdzieszowice-Ołtaszyn
- preparation of the feasibility study for the gas pipeline – analytical and technical part
- preparations concerning the incorporation of the project into the local development plan

Gas Pipeline Skoczów-Komorowice-Oświęcim
- preparation of the feasibility study for the gas pipeline – analytical and technical part
- tendering procedure for choosing the contractor for technical documentation completed

Gas Pipeline Strachocina- Podgórska Wola
- first activities scheduled for the 1st quarter of 2010

Gas Pipeline Hermanowice-Strachocina
- first activities scheduled for the 1st quarter of 2010

Gas Pipeline Cieszyn-Skoczów
- feasibility study completed
- building permit obtained
- permissions from the landowners granted

Gas Pipeline Polkowice - Żary
- Environmental Impact Assessment received
- tendering procedure for choosing the contractor for preparation of the feasibility study for the gas pipeline – analytical and technical part

The company's efforts included both the continuation of ongoing investments and the preparation and launch of new projects featured within the framework of Operational Programme Infrastructure and Environment, Action 10.1 – Energy Security, including the diversification of energy sources.

Technical capacity development summary:

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
CZ-PL: Cieszyn (1)	0	2	2	2	2	2	2	2	2	2
DE-PL: Lasów	3	3	5	5	5	5	5	5	5	5
Import										
BY-PL: Wysokoje	15	15	15	15	15	15	15	15	15	15
UA-PL: Drozdowicze	16	16	16	16	16	16	16	16	16	16
National Inter-TSO IP										
Europol-Gaz-System: Lwówek (2)	6	6	6	6	6	6	6	6	6	6
Europol-Gaz-System: Włocławek (2)	8	8	8	8	8	8	8	8	8	8
LNG										
Świnoujście	0	0	0	0	15	15	15	15	23	23

Comments:

[1] The bi-directional flow is envisaged for the interconnection with Czech Republic. It is foreseen that flow up to 2.5 mcm/d on CZ-PL will be available from 2011 and in future also flow on PL-CZ direction is foreseen.

Construction of the Baltic Pipe pipeline is still considered within the above period (till 2019). Due to complexity of this project it is not possible to estimate the exact date for the completion of its implementation, but the preparatory works regarding the Baltic Pipe project are ongoing.
Further extension of the interconnection point in Lasów capacity is also considered. Therefore the relevant opportunities, conditions and development needs are under assessment.
Assumptions related to the implementation of these investments are included in the table in point. 2.22.7 Supply Scenario(s).

GAZ-SYSTEM S.A. is considering the development of the system in order to enhance the capacity at the interconnection points:

DE-PL: Lasów

Extension of capacity on Lasów direction has been supported by signals received from market participants. The scope of investment as well as possible time frame are defined (the connection is included within the scope of work of GTE+ Reverse Flow Task Force).

On 15 July 2009 GAZ-SYSTEM has submitted the application for EU financial aid in the field of the European Energy Programme for Recovery "EEPR". The application concerned the extension of the Polish transmission system related to the Poland – Germany interconnector. The procedure of evaluation of the applications is being underway in the European Commission.

CZ-PL: Cieszyn

The project of developing the IP between Poland and Czech Republic near Cieszyn is currently the subject of cooperation between the two TSOs – Polish GAZ-SYSTEM and Czech RWE Transgas Net.

It provides the construction of the gas transmission pipeline from the Polish-Czech border in the vicinity of Cieszyn (planned new entry point Skoczów), which shall interconnect with the Czech TSO's pipeline, running from the border to the system entry point in the Czech Republic. The pipeline parameters are as follows:

- DN 500 mm
- P= 6.3 MPa
- L= app. 22 km (on the Polish side)
- Capacity up to 2.5 mcm/d on CZ-PL direction.

Such interconnection will enable in future the transmission of natural gas from CEGH in Austria, what may constitute an important contribution to enhancing the security of supplies in both countries (the connection is included within the scope of work of GTE+ Reverse Flow Task Force).

On 9 September both TSOs have announced the planned opening of the capacity allocation procedures of the above mentioned project for 18 September, which were started that day. On Polish side, the procedure results are being currently analysed by GAZ-SYSTEM. It is assumed that procedure will end in the mid of November 2009 by signing of transmission contracts with Shippers.

LNG Terminal in Świnoujście

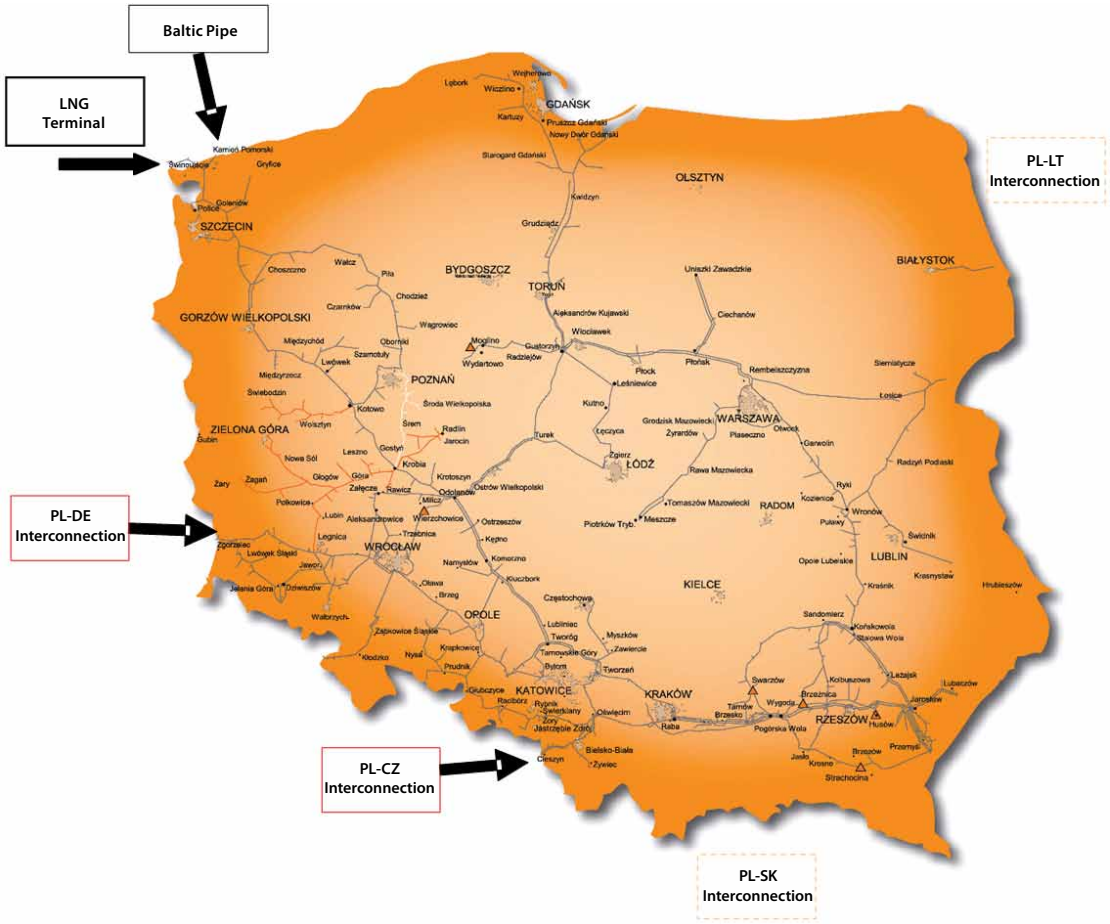
Polskie LNG sp. z o.o. (PLNG) was established in 2007 by Polish Gas and Oil Company (PGNiG SA). On 8 December 2008, 100% of the shares of Polskie LNG were acquired by GAZ-SYSTEM S.A. The objective of the PLNG is to construct and operate the Liquefied Natural Gas terminal in Świnoujście.

The duties and responsibilities of the Company involve:

- preparation of the technical and economic documentation and obtaining the necessary administrative permits and licences
- selection of the general contractor for the project
- monitoring and coordination of actions connected with the construction of the terminal.

LNG terminal in Świnoujście will enable the supplies of gas from new sources to the Polish market. The construction of the LNG terminal is acknowledged as a strategic investment for the interests of Poland, compliant with the plans for diversification of sources and routes of supply of natural gas and guaranteeing the energy security of the country.

A.23.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)



On 18 September GAZ-SYSTEM started the capacity allocation procedures of the IP between Poland and the Czech Republic near Cieszyn with the similar coordinated procedure on the Czech side – held by RWE Transgas Net. On the Polish side, the procedure results are being currently analysed by GAZ-SYSTEM. It is assumed that the procedure will be ended in the mid of November 2009 by the signing of transmission contracts with Shippers.

GAZ-SYSTEM also launched the Open Season procedure in 2009 regarding the potential connections between the gas transmission system in Poland and the gas systems in neighbouring countries, namely Denmark, Germany, and Lithuania.

- The preliminary phase of the procedure a Market Screening was held in September 2008. In the first phase of the Open Season procedure, which ended on 15 June 2009 no non-binding orders for gas transmission over the planned bi-directional interconnections between Poland and Denmark and between Poland and Lithuania had been submitted.

GAZ-SYSTEM has been expanding the transmission infrastructure taking into account the needs of the market participants willing to transmit gas purchased by them. In the case of the gas market interest towards the interconnections mentioned above, e.g. Poland - Denmark (the activities concerning Baltic Pipe project are still continued), Poland - Lithuania, as well as new interconnections, e.g. Poland – Slovakia, GAZ-SYSTEM would consider announcing a new Open Season procedure for these projects.

In conjunction with the process of construction of the LNG regasification terminal in Świnoujście, Polskie LNG Sp. z o.o. started in June 2009 the Open Season procedure. The purpose of that procedure is to offer, based on market demand, the primary regasification services and additional services, as well as to provide all the interested players on the gas market with access to newly-built infrastructure according to the rules of equality and transparency.

More information on the Open Season Procedure is available at: http://en.polskielng.pl/open-season.html

A.23.5 Development of National Production and Storage Deliverability

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm³/day) (1)									
12					11				
Development of Storage Deliverability (Mio. Nm³/day)									
37	49	55	55	55	55	55	55	55	55

Comments:
(1) The complete forecasts for the Development of National Production are not published by PGNiG S.A. due to the fact that such information is treated as confidential and cannot be disclosed.

National Production

The annual National Production Deliverability for the years included in the forecast will be: 4.302 bcm (2010); 4.160 bcm (2015). The forecast presents the National Production from all sources in Poland calculated in the high-methane natural gas values. Stable supply from domestic sources is guaranteed by the storage capacity specially designed for the production purposes. Such storages are located in Swarzów, Strachocina, Brzeźnica.

Production from the developed and currently exploited fields is diminishing with an annual rate of 5 to 7%. It is caused by the depletion of the gas reservoirs and lowering of the pressures of the fields.

New discoveries of natural gas sources and their development may only partially, not entirely, cover the lowering production in the existing fields. That is why in 2015 it may be observed a slight decrease of production from national sources in Poland.

Storage Deliverability

The deliverability of natural gas from storage facilities in Poland will increase in 2011-2012. For this years the completion of large investment in storage facilities is envisaged. The capacity of existing storage in Wierzchowice, Husów and Strachocina will be developed. The new storage facilities will be built in Daszewo, Bonikowo and Kosakowo.

A.23.6 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
72	76	78	82	82	82	83	83	84	85
Yearly Consumption (Billion Nm^3/year)									
16	17	17	18	18	18	19	19	19	19
Yearly Consumption (Billion kWh/year)									
177	186	191	200	201	202	204	205	207	208

Data presented in the above table describing the National Demand Scenario are based upon the PGNiG S.A. forecasts.

The forecasts above assume the increase in natural gas consumption in Poland. They are based upon the PGNiG S.A. analysis. The main assumptions for the changes in natural gas consumption are:

1. Fluctuations in the households demand for natural gas. Growing number of new individual customers combined with more efficient use of gas by that group of customers. The second factor has the stronger impact on the final demand of that sector of customers in Poland.
2. Strong increase in demand for natural gas from commercial and services sector including the SMEs (small and medium-sized enterprises).
3. Rapid development of power generation and heating based on natural gas.
4. Development of industries basing on natural gas.

The analysis uses the natural gas consumption needs communicated to the PGNiG S.A. by the current and perspective customers of the company.

However, it should be also pointed out that the forecast of future demand for gas in Poland prepared by the Polish Ministry of Economy is more conservative than the one presented above basing on the PGNiG S.A. data. The Ministry of Economy included its forecast in the document: "Energy policy of Poland until 2030" (October 2009); Appendix 2: "Projection of demand for fuels and energy until 2030"

Year		
2010	2015	2020
Yearly Consumption (Billion Nm^3/year)		
14.1	15.4	17.1
Yearly Consumption (Billion kWh/year)		
155	169	188

A.23.7 Supply Scenario(s)

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm^3/day)									
49	49	49	49	49	49	49	49	49	49
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
3	8	8	8	8	10	18	18	18	18
Maximum peak day supply via LNG terminals (Mio. Nm^3/day)									
-	-	-	-	15	15	15	15	23	23
Peak day national production deliverability (Mio. Nm^3/day)									
12	12	12	12	12	11	11	11	11	11
Peak day storage deliverability (Mio. Nm^3/day)									
37	49	55	55	55	55	55	55	55	55

Yearly Supply Scenario (Billion Nm^3/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm^3/year)									
16	16	16	16	16	16	16	16	16	16
Aggregated quantities via EU internal cross-border pipelines (Billion Nm^3/year)									
1	2	2	2	2	3	6	6	6	6
Aggregated quantities via LNG terminals (Billion Nm^3/year)									
-	-	-	-	5	5	5	5	8	8
Aggregated national production (Billion Nm^3/year)									
4	4	4	4	4	4	4	4	4	4

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
176	176	176	176	176	176	176	176	176	176
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
11	19	22	22	22	31	64	64	64	64
Aggregated quantities via LNG terminals (Billion kWh/year)									
-	-	-	-	55	55	55	55	83	83
Aggregated national production (Billion kWh/year)									
47	47	47	47	47	45	45	45	45	45

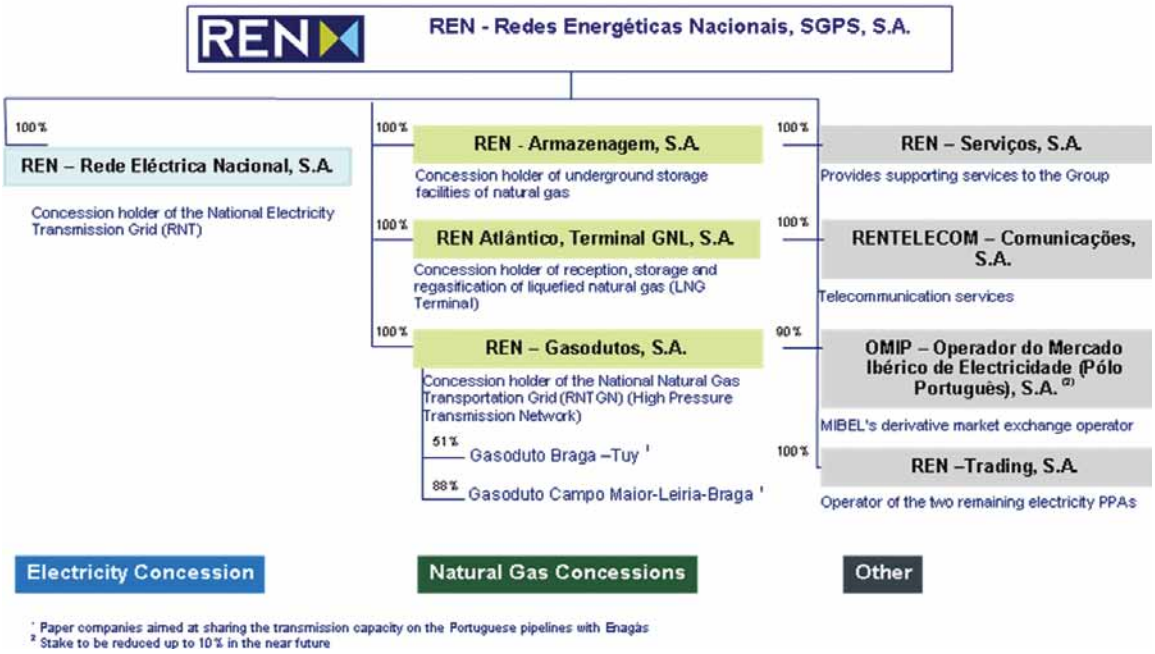
A.24 Portugal

A.24.1 Description of the Existing Network

REN – Redes Energéticas Nacionais, SGPS, S.A. (REN) is a limited liability holding company organised as a *"Sociedade Gestora de Participações Sociais" and a "Sociedade Anónima"* under the laws of the Portuguese Republic.

In September 2006, REN acquired certain assets and companies relating to the transportation, underground storage of natural gas (NG) and the liquefied natural gas (LNG) terminal and regasification facility in Sines from Transgás.

On 5 January 2007, REN changed its by-laws to reorganise the group (the REN Group) becoming a holding company that operates electricity and gas businesses through its subsidiaries. It also changed its name to REN – Redes Energéticas Nacionais, SGPS, S.A.



REN engages in two principal lines of business: electricity transmission and system operation where it operates the RNT, (the only electricity transmission network in mainland Portugal); and natural gas, where it is engaged in the operation of the national high-pressure natural gas transmission network (the only natural gas transmission network in mainland Portugal), reception, storage and regasification of LNG, and underground storage of natural gas. REN owns all the respective infrastructures that are operated under public concessions.

REN's businesses are the result of the deregulation of the electricity and natural gas industries in Portugal. This involved, in the case of electricity, the unbundling of certain regulated functions previously carried out by EDP (the vertically integrated electricity company in Portugal) into separate companies. In the case of natural gas, the regulated activities of Transgás (a former subsidiary of GALP Energia S.A. (GALP)) were split up under a reorganisation that included, among other things, the segregation of the natural gas regulated infrastructure for transport, underground storage, reception and regasification.

REN's electricity transmission business is conducted through its subsidiary REN – Rede Eléctrica, which holds concession to operate the electricity transmission network in Portugal (renewed for a 50 year period commencing on 15 June 2007). Pursuant to this concession, REN provides a public utility service in Portugal, which includes planning, constructing, operating and maintaining the electricity transmission network and managing the technical aspects of the national electricity system.

REN's natural gas business comprises the ownership and operation of (i) the high-pressure natural gas transmission network in Portugal; (ii) the LNG terminal in Sines, which is engaged in the reception, storage and regasification of LNG; and (iii) the underground storage and related facilities in Carriço. REN operates these businesses through 40 year concessions granted by the Portuguese State on 26 September 2006.

REN also operates certain other businesses that complement its core electricity and natural gas businesses: a telecommunications business which exploits the excess telecommunications capacity of its electricity and natural gas networks, an energy trading business (under the PPAs that were not subject to early termination) and it is also involved in the Portuguese marketplace for trading Iberian electricity derivatives.

For the year ended 31 December 2008, REN's total operating revenue, total operating profit and net profit were €607 million, €237 million and €127 million, respectively.

The national natural gas system

The national natural gas system can be divided into six major activities: reception, storage and regasification of LNG, underground storage of

natural gas, transmission of natural gas, distribution of natural gas, supply of natural gas and operation of the natural gas market. As with electricity, each of these functions must be operated independently, subject to certain exceptions.

In much the same manner as the national electricity system, an integrated national natural gas system has been established, in which the supply of natural gas and management of the organised markets are open to competition, subject to obtaining the required licenses and authorisations. The reception, storage and regasification of LNG, underground storage of natural gas and transmission of natural gas continue to be provided through the award of public service concessions. The distribution of natural gas is provided through the award of public service concessions or licenses.

As is the case for many European countries, Portugal is not a producer of natural gas. Natural gas is purchased from other countries pursuant to long-term supply contracts. Natural gas is fed into the national gas transmission network through three entry points: the Campo Maior entry point, which receives natural gas from Spain; the LNG terminal located at Sines, which receives shipments of LNG from methane tankers; and the Valença do Minho entry point, which may occasionally receive natural gas from Spain.

Main infra-structures

Reception, storage and regasification of LNG, is performed at REN Atlântico facilities at Sines. The Sines terminal also has the facilities to fill up road tankers to transport LNG.

Underground Storage is performed in salt caverns and operated by REN Armazenagem. Transgás Armazenagem is another company owning only salt caverns that relly on REN Armazenagem for gas movement.

The national gas transmission network operated and owned by REN Gasodutos, connects to medium and lower pressure pipelines operated by the distribution companies for distribution to end users.

The activities of the reception, storage and regasification of LNG, underground storage of natural gas and transmission of natural gas are carried out under 40 year concessions granted by the Portuguese State. The concessions are required to allow third party access at published tariffs applicable to all eligible consumers, energy traders and supply companies. These tariffs must be applied objectively without discrimination to all system users, and without prejudice to entering into any long-term supply contracts in compliance with competition law provisions.

LNG terminal in Sines

REN acquired the LNG terminal in Sines on 26 September 2006, by acquiring the total share capital of SGNL – Sociedade Portuguesa de Gas Natural Liquefeito, S.A. (SGNL) (the company is now named REN Atlântico) through which REN operates the reception, storage and regasification concession for LNG, subject to the public service regime. This concession involves the reception of LNG, the storage of LNG, the regasification of LNG and the delivery of LNG to the national natural gas transmission network. REN Atlântico, under the terms of the concession, also performs the activities of loading and dispatching tanker trucks, marine tankers and also the construction, operation, maintenance and expansion of its infrastructures.

The Sines LNG terminal entered the first phase of its commercial operation in January 2004. The LNG terminal consists of a ship docking station with an unloading capacity of 40,000 cubic meters to 165,000 cubic meters with an average unloading time of 20 hours, two storage tanks each having a net capacity of 120,000 cubic meters and five open rack

vaporisers for regasification. The LNG terminal has a guaranteed (nominal) send out capacity of 675,000 cubic meters per hour (5.26 bcm per year), with a peak (interruptible) capacity of 900,000 cubic meters per hour, and is able to load up to 3,000 trucks per year (or an equivalent of 0.08 bcm per year).

Underground Storage

REN incorporated REN Armazenagem on 26 September 2006 with assets acquired from the Galp group, which include the gas stations, the leaching facilities and three underground storage caverns with an overall operational capacity of 139 Mm^3(n). Galp still keeps a stake in the same site through its subsidiary company Transgás Armazenagem, SA, also a concessionaire for underground storage, currently holding one cavern with an operational volume of 37 Mm^3(n) and currently leaching a second one. Subject to Ministry authorisation, REN Armazenagem has the right to build and acquire additional natural gas caverns for the expansion of the system. REN's underground storage concession includes:

- The underground storage of natural gas in the salt caverns and the injection, withdrawal, treatment and delivery of natural gas to the national gas transmission network.
- The construction, operation, maintenance and expansion of the facilities and infrastructure related to the storage of natural gas.

Currently, REN's three operational gas caverns have a combined storage capacity of 1.6 TWh.

The gas station, above ground infrastructures, has two reciprocating natural gas engine-driven compressors with an injection capacity of 110,000 cubic meters per hour and gas dehydration facilities for extraction with a capacity of 300,000 cubic meters per hour. It also serves the remaining gas caverns at Carriço site that are owned by Transgás Armazenagem.

Transmission network

The national natural gas transmission network consists of a main trunk line and branch lines totalling 1,248 kilometers, with nominl pipe size ranging from 150 mm to 800 mm in diameter. The national gas transmission network includes 183 pipeline stations, which consist of 41 block valve stations, 67 junction stations, 74 gas regulating and metering systems, and one custody transfer station (at the northernmost section of the trunkline). The national natural gas transmission network's main dispatching center is located in Bucelas (Loures) and it also has an unmanned emergency dispatching center in Pombal, which is located in a different seismic zone than the main dispatching center. There are also four operation and maintenance centers located on the grid at Sandim (Vila Nova de Gaia), Pombal, Portalegre and Bucelas (Loures).

Distribution of natural gas

The distribution of natural gas through medium and low-pressure pipelines is carried out through concessions or licenses granted by the Portuguese State by public tender. The entities operating the natural gas distribution grid at the date of enactment of Decree-Law no. 30/2006 of the 15th of February have maintained their right to operate the natural gas distribution grid as concessionaires or licensed entities under an exclusive territorial public service regime.

Natural gas from the high pressure pipelines of the national gas transmission network is transported to a network of medium and lower pressure pipelines owned by local distribution companies, which deliver natural gas to end users.

Third party access to the distribution system must be ensured by the relevant concessionaires based on published tariffs applicable to all eligible customers, including supply companies, and applied objectively without discrimination among system users.

Certain licensed distributors also carry out regasification of LNG in small cryogenic facilities, in order to supply local distribution networks that are not connected to the natural gas transmission system. In this case, the LNG is transported by insulated tanker trucks via the national roads and unloaded into 80 to 120 m^3 LNG storage tanks installed at those sites, also known as satellite LNG plants

Supply of natural gas

The liberalisation of the natural gas supply commenced in 2007 (with respect to power plants) and was extended to consumers of over one million cubic meters of natural gas per year in 2008 and to consumers of over ten thousand cubic meters of natural gas per year in 2009. Full market opening will take place at the 1st of January 2010. The activities of supply of natural gas are scheduled to be fully competitive by 2010, subject only to the granting of a specific license by DGEG (national energy agency, which depends on the Minister responsible for economic affairs). Suppliers may buy and sell

natural gas in the open market or by means of bilateral agreements. Under the new regime, all eligible consumers are free to choose their supplier, and may switch suppliers without incurring any additional charges. A new entity, whose activity will be regulated by ERSE, will be created to oversee the logistical operations for switching suppliers.

Suppliers are subject to certain public service obligations and are required to ensure the quality and continuous supply of natural gas.

In addition, the role of the last resource supplier has been created until the liberalised market is fully efficient. This new role has been assumed by a wholly owned subsidiary of Galp for wholesale customers and by all other present concessionaires or licensed natural gas distributors within their area of coverage for retail customers, subject to licensing requirements.

Operation of the natural gas markets

The natural gas markets in Portugal are operated on an open market basis, subject to authorisations to be jointly granted by the Minister of Finance and by the Minister responsible for the energy sector (economic affairs). The entity managing the organised market is also subject to authorisation granted by the Minister responsible for the energy sector and, whenever required by law, the Minister of Finance.

Global technical management of the national natural gas system

The global technical management of the national natural gas system is a role attributed under the Portuguese law to the country's TSO – REN Gasodutos - which consists of the systemic coordination of the gas infrastructures in order to ensure open and non-discriminatory third party access under safe conditions, as well as monitoring capacity utilization and proposing to DGEG future developments of the gas system with the goal of avoiding constraints and providing adequate response to market requirements in a cost effective manner.

From a technical perspective, REN Gasodutos must ensure that the pipelines have enough capacity to meet user demand, managing the varying pressures and flows in order to maintain the responsiveness and availability of the network. In addition, REN is also responsible for monitoring compliance by other participants operating in the national natural gas system with legal and operational obligations in relation to the security of supply.

Investments in natural gas infrastructure

REN intends to invest approximately €330 million from 2007 to 2012. The main drivers of investment in the natural gas sector are the growth in demand for natural gas in Portugal in the long run, market requirements for flexibility tools and the need to increase security of supply, and include the expansion of the Sines LNG Terminal, the expansion of the underground storage capacity at the Carriço site, the construction of new branchlines and supply points to new consumers such as new CCGT's and, possibly, the construction of a new gas pipeline interconnection with Spain (currently under study).

Tariff regime for natural gas infrastructure access

REN's natural gas infrastructures mainly perform regulated activities. Until 1 July 2007, the start of the first gas regulatory year under the new tariff regime, the natural gas concessions which REN holds, were carried out under a set of bilateral contracts between the companies which had been conducting these activities and their single user, Galp. After that date, REN's regulated natural gas activities are conducted on the basis of the regulations and tariffs published by ERSE (the NRA).

A.24.2 Current Processes for Investment, Current Publications

As the development of new infrastructures requires a long time span since the identification of its need until it can be put into operation, an energy demand planning tool / scheme is necessary to anticipate the requirements for entry capacity and network development.

The planning of the energy sector is carried out through Energy demand forecast scenarios based on medium and long term econometrical models. Nevertheless, the free market principle and the free access to the infrastructures by the shippers should be guaranteed. Consequently, the developments for the national gas system should take into account the following:

- The need for increased entry and/or exit interconnection capacity;
- The entry capacity required by the creation of new interconnections or the expansion of existing LNG terminals;
- The transmission system increase capacity, by the duplication of pipelines or installation of compressor stations;
- The reinforcement and development of storage capacity.

The procedures to build new infra-structures are based on a planning instrument set by the government whereby, based on the Global Technical System Manager (GTSM) and infra-structure companies' advice, DGEG publishes the guidelines for investment to comply with the market requirements.

All relevant information regarding access is published on the GTSM website and information is public, namely the approved Infrastructures Development Plan for each 3 year period.

The national regulatory agency in Portugal (ERSE – Entity for the Regulation of Energy Services) prepares an annual report that reviews demand forecasts, company assets based on the infrastructures development according to what has been planned, in order to review tariffs for access natural gas infrastructures.

http://www.erse.pt/pt/gasnatural/tarifaseprecos/TarifasReguladasdeJulhode2009aJunhode2010/Paginas/default.aspx

A.24.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Due to both the demand growth and the daily peak demand forecasted for the future years, an infrastructures development plan is set in order to increase the total capacity of the Portuguese network. This capacity increase will be critical to ensure both the security and efficiency of supply of the Portuguese natural gas market, and also to provide and improve the free access of new shippers in a liberalized natural gas market.

Capacity (Mio. Nm³/day)	**Year**									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
ES-PT: Badajoz/ Campo Major	11	11	11	11	11	11	11	11	11	11
PT-ES: Badajoz/ Campo Major	4	1	9	9	9	9	9	9	9	9
PT-ES: Valença do Minho / Tuy	1	1	1	1	1	1	1	1	1	1
ES-PT: Valença do Minho / Tuy	2	2	5	5	5	5	5	5	5	5
LNG										
Sines	16	16	27	27	27	27	27	27	27	27

Note: the sendout capacity for the LNG terminal is considered under nominal conditions (higher capacity figures can be temporarily achieved in peak conditions)

The studies carried out concerning future capacity developments led to the following investment decisions / projects under way:

- LNG Terminal – Expansion of the Sines LNG Terminal with an additional third LNG tank and an increase of the regasification capacity into the grid;
- Transmission System – Installation of a new compressor station located in Carregado region to accommodate Sines LNG Terminal expansion;

A.24.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

A new bidirectional interconnection point between Portugal and Spain at Mangualde / Zamora has been studied, consequence of the will of Portuguese and Spanish Governments of increasing international capacity between both systems and promoting the Iberian Gas Market (MIBGAS). The objective of this project is the development of new reversible capacity of aprox. 4 bcm/year.

REN Gasodutos and ENAGAS have agreed the general layout of the new pipeline. The total length of the new interconnection between the Spanish and Portuguese gas systems will be around 290 km, being 205 km in Portugal.

This new interconnection will connect the gas networks in both countries with the Underground Storages and LNG terminals, increasing the potential of the Iberian Peninsula as entry point of Natural gas to Europe, promoting the progressive integration of national markets and contributing to the security of supply.

In a final step this project must be approved and awarded by both Governments.

Additional projects regarding infrastructure developments are namely:

- Construction of additional salt caverns in Carriço Underground Storage, to accommodate the fulfilment of the Portuguese legislation regarding gas storage for security of supply and to provide additional storage capacity for the market;
- Construction of a third interconnection pipeline between the gas systems of Portugal and Spain, fully reversible (see notice on this project in the preceding point).
- Transmission system's entry capacity increase at the cross-border point of Valença do Minho - Tuy.

A.24.5 Development of National Production and Storage Deliverability

Portugal has no indigenous gas production.

The Carriço Underground Storage development plan for the next ten years consists of an average of an additional salt cavern every two years. The withdrawal capacity is scheduled to be doubled by 2015, as shown in the table. Additional investment planning, namely regarding the increase in injection capacity, hasn't been made yet.

At the moment, reductions in storage working gas are not expected in the winter period and so, the figures below account for 70% of the maximum daily withdrawal capacity.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Development of Storage Deliverability (Mio. Nm^3/day)									
5	5	5	5	5	10	10	10	10	10

A.24.6 National Demand Scenario(s)

The annual Natural Gas Demand Scenarios for the Industry and Distribution sectors were developed based on econometric models. The Industry sector forecasts incorporate the effect of firm short and medium term new consumption points. As the chronological series of NG demand figures in Portugal is short due to the sector's youth, the applicable econometric models still yield a somewhat wide prediction interval as the forecasts extend further into the future. In terms of gas to power generation based on CCGT's, the forecasts were based on the country's total electricity demand projections and then derived under certain assumptions regarding all the available supply sources (renewable, hydro, coal, oil and gas). The new CCGT plants short and medium term projects were integrated into the models based on the respective latest promoters information, with regards to RFO status.

For the peak day demand forecast, the results presented on the table below were derived from existing time series, under the assumption of intermediate temperature conditions and certain simultaneity considerations.

The assumptions that underlie the demand forecast figures presented on the table below take into consideration an intermediate hydro scenario (based on existing weather data) as well as an intermediate temperature profile variation throughout the years.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
21	23	26	27	28	28	29	31	32	32
Yearly Consumption (Billion Nm^3/year)									
5	6	6	6	6	7	7	7	8	8
Yearly Consumption (Billion kWh/year)									
61	70	72	74	76	78	82	87	91	93

A.24.7 Supply Scenario(s)

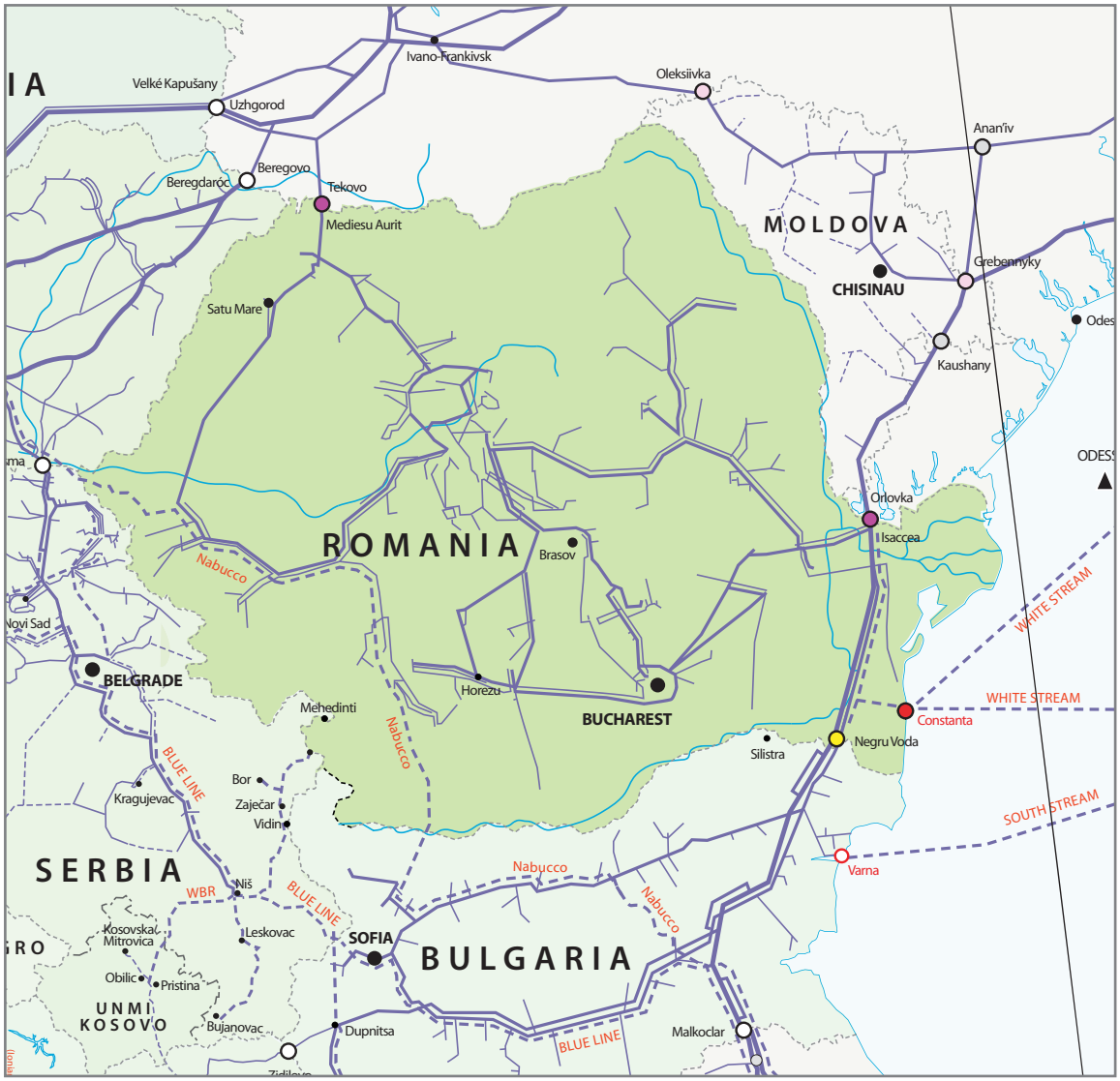
The presented long term supply scenario accounts for natural gas supply capacities that are expected to be available in the system under normal operating conditions. This means that capacity exiting to Spain is already deducted from the maximum day supply via Spanish cross-border pipelines.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm³/day)									
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm³/day)									
10	10	10	10	10	10	22	22	22	22
Maximum peak day supply via LNG terminals (Mio. Nm³/day)									
16	16	27	27	27	27	27	27	27	27
Peak day national production deliverability (Mio. Nm³/day)									
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Peak day storage deliverability (Mio. Nm³/day)									
See comment below									
Deliverability from underground storage was not accounted for as a requirement to meet peak day supply under normal operating conditions, since it is assumed that the transmission system is properly balanced. Storage deliverability can be derived from the table inserted in point 2.24.5									

Yearly Supply Scenario (Billion Nm³/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm³/year)									
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Aggregated quantities via EU internal cross-border pipelines (Billion Nm³/year)									
2	2	2	2	2	3	3	3	3	3
Aggregated quantities via LNG terminals (Billion Nm³/year)									
3	4	4	4	4	4	4	4	5	5
Aggregated national production (Billion Nm³/year)									
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
24	28	29	30	30	31	33	35	36	37
Aggregated quantities via LNG terminals (Billion kWh/year)									
36	42	43	44	46	47	49	52	54	56
Aggregated national production (Billion kWh/year)									
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

A.25 Romania



A.25.1 Description of the Existing Network

S.N.T.G.N. Transgaz S.A. is the sole network system operator in Romania. The company was founded in 2000, further to the restructuring of the vertically integrated National Gas Company „ROMGAZ" S.A., through the legal unbundling of the upstream, midstream, gas storage and downstream activities.

The legal, operational and organisatoric unbundling of the gas transmission activity took place in 2007, according to the Directive EC/2003/55 translated into the Romanian Law 351/2004. The main activity object of Transgaz is gas transmission across the territory of Romania - a regulated activity, and international gas transit through dedicated pipelines – a non-regulated activity.

In Romania, the national gas transmission system is part of the state's public domain. Both the NTS (The National Transmission System), as well as the gas transmission sevices are concessioned by Transgaz from the Romanian state based on a Concession Agreement according to the Oil Law.

The company's website is www.transgaz.ro.

The technical characteristics of the Romanian transmission system are:

- An approximate length of 13,100 km of the transmission network, out of which about 600 km are international transit pipelines;
- The diameters of the Transgaz operated pipelines go up to 1200 mm, and the nominal pressures are between 6 and 70 bar.
- There are two take over points for gas imported from the Russian Federation (Isaccea – 24 mil cm/day, Medieşu Aurit – 11 mil. cm/day);
- The domestic gas enters the NTS through 147 entry points and is delivered from the system to the distributions and consumers through 896 regulating – metering stations.
- 6 compressor stations with an overall installed power of 52,000 HP.
- The NTS transmission capacity is about 3 mil. cm/hour. The transported volume in 2007 was of 14.5 bcm.
- There are 8 points connected to the underground storages having an overall storage capacity of 3.2 bcm/cycle.
- In 2007 there were 34 network users.
- In 2007 the investment level reached EURO 50.4 mil.

A.25.2 Current Processes for Investment, Current Publications

The company's investment progam includes two types of investment projects.

1. Development and modernisation projects – 69.6%
2. Rehabilitation and maintenance projects – 30.4%

The main development projects considered are the implementation of a new SCADA system and modernisation of the regulating – metering stations. As for the new pipelines note that Transgaz signed a Joint Development Agreement with the Hungarian company FGSZ, in order to build a new interconnection between Szeged and Arad. Transgaz is also the Romanian company involved in the Nabucco project.

One of the main objectives ist the rehabilitation of part of the NTS, about 3,200 km, in order to ensure transmission at pressures higher than 40 bar in the main consumption areas.

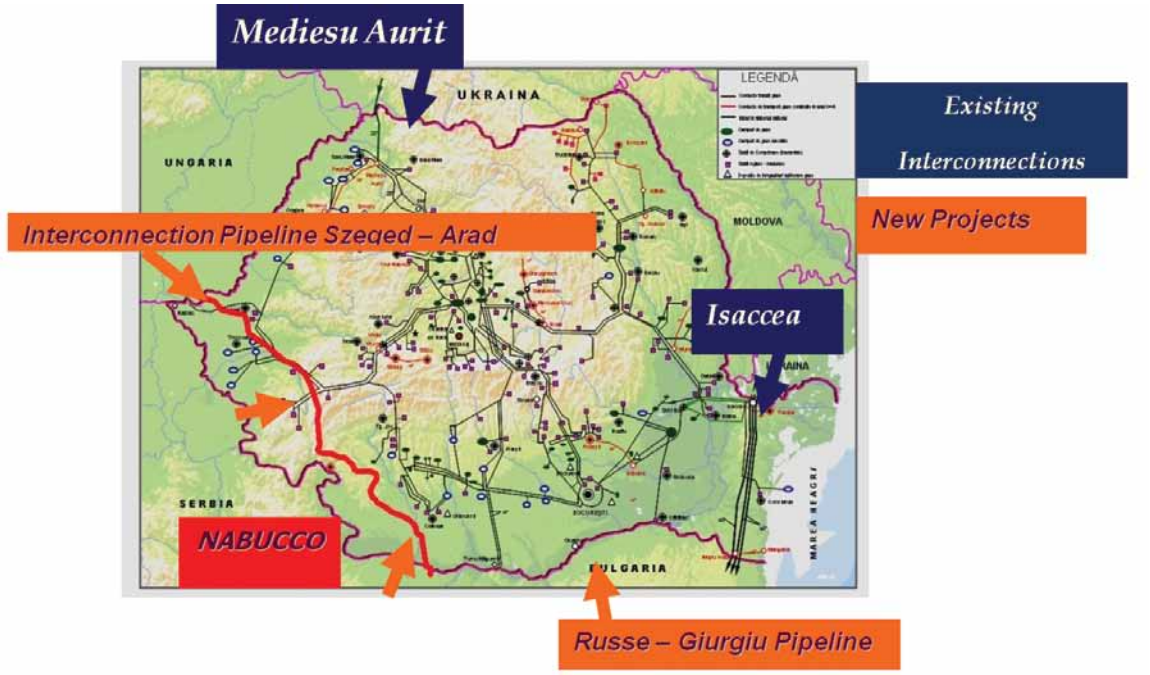
Transgaz provides on annual basis, and once every 4 years as well, the minimum investment plan to the National Agency of Mineral Resources as well as to the National Energy Regulating Authority.

The company's web site provides all the relevant information regarding the transmission activity: the overall NTS capacity, the booked capacity, the available capacity. The web site aso provides the list with the NTS entry/exit points with all relevant information according to the 1775/2005/EC rules (minimum pressure, maximum pressure, technical capacity, partners).

A.25.3 Capacity Development in the Reporting Period, Investment Decisions Taken

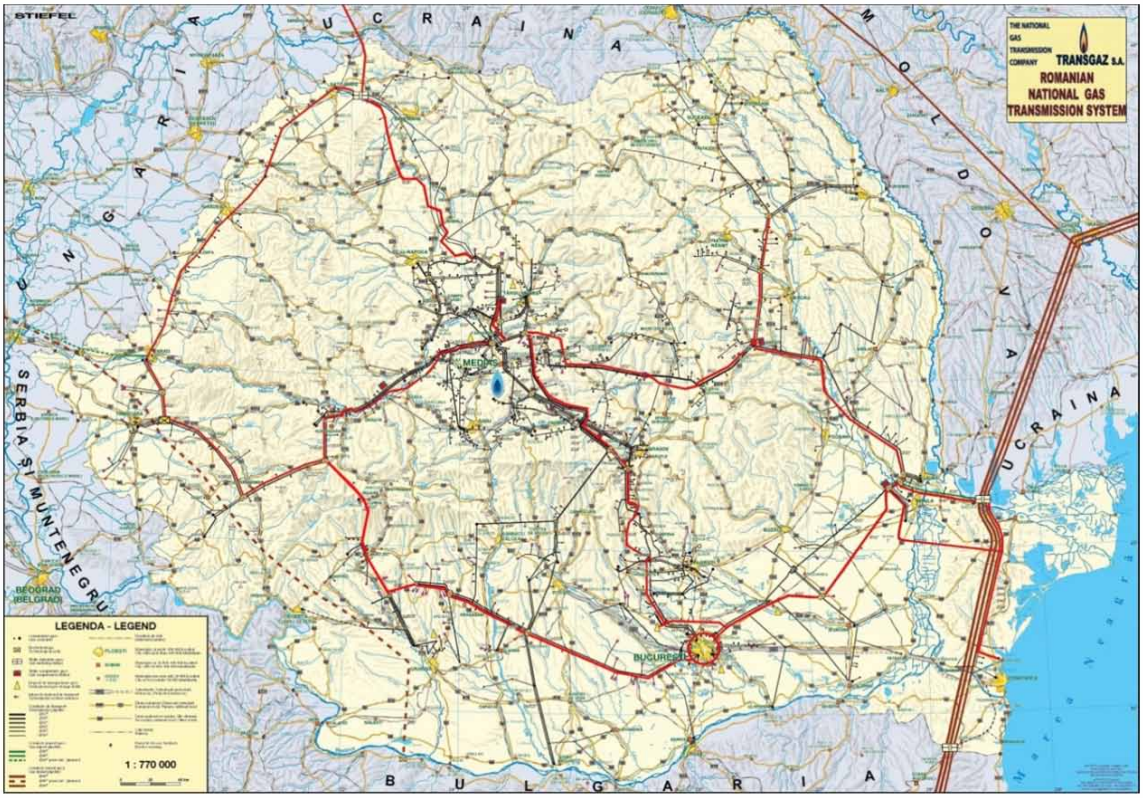
Transgaz commited to the development of a transmission capacity between Szeged and Arad, at an initial value of 200,000 cm/hour until 2010 and with future value increase possibilities.

Another important European project is the building of a new interconnection of the gas tranmission networks between Romania and Bulgaria via Russe (Bulgaria) – Giurgiu (Romania), in order to improve the gas supply in the Southern area of Romania. The designed capacity for this interconnection is 1.5 bcm/year.



The so called „O" system is designed to be build in order to ensure an adequate capacity for the consumption demand and for the transit demand via North - South and East - West, within the NTS rehabilitation program. This „O" system is designed to work at a pressure above 40 bar and with pipelines having diametres between 20" and 40", able to take over the inteconnection capacities with the neighbouring countries systems.

The „0" System



Capacity (Mio. Nm³/day)	Year									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
RO-BG: Negru Voda 1	13	13	13	13	13	13	13	13	13	13
RO-BG: Negru Voda 2	25	25	25	25	25	25	25	25	25	25
RO-BG: Negru Voda 3	22	22	22	22	22	22	22	22	22	22
HU-RO: Arad	4	4	4	4	4	4	4	4	4	4
Import										
UA-RO: Isaccea	83	83	83	83	83	83	83	83	83	83
UA-RO: Mediesu Aurit	10	10	10	10	10	10	10	10	10	10

A.25.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

Additonal to the previously mentioned projects Transgaz is also involved in the Nabucco project, a section of about 457 km crossing the Romanian territory.

The capacity trading open season process is now in progress both for the Nabucco project as well as for the Szeged – Arad interconnection. These processes are developed in cooperation with the partners involved in the two projects

A.25.5 Development of National Production and Storage Deliverability

In Romania there are two gas producers: ROMGAZ and PETROM. The table below shows the production deliverability for each of the two gas producers.

ROMGAZ, the main Romanian gas producer, is also the operator of the underground storage facilities. It operates 8 underground storages, two of them in association with other companies.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
31	31	31	29	29	27	27	27	26	26
Development of Storage Deliverability (Mio. Nm^3/day)									
30	30	30	32	35	36	37	37	37	37

A.25.6 National Demand Scenario(s)

The data included in the table below represents a demand scenario in the view of the transmission operator (estimations regarding the demand for transmission capacity). In Romania, beneath the gas quantities flowing through the transmission system, there are also situations where gas amounts pass from the supplier directly to the consumers (such amounts being however very low). The consolidated data for the entire country can be found only at the national regulator (ANRE).

Our estimations are based on the information we have with regard to the degree of economic growth, to major investments foreseen for the following years, investments which will require significant gas supplies. Please note the fact that the figures presented are rough estimations, and that there are some factors which currently cannot be anticipated, like for example the evolution of the world economy crisis or the evolution of certain industries with significant influence on the gas consumption at national level (example: the chemical industry).

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
75	80	80	85	85	90	90	90	90	90
Yearly Consumption (Billion Nm^3/year)									
11	11	11	12	12	12	12	12	12	12
Yearly Consumption (Billion kWh/year)									
112	118	118	124	124	131	131	131	131	131

A.25.7 National Demand Scenario(s)

The main elements taken into account in drawing up the supply scenario are the possibilities to cover the consumption demand from national production and storage facilities. The gas quantities imported by Romania are currently only of Russian origin and are transited through The Ukraine. Therefore, the table below presents the import supply scenario as a total between supplies via import pipelines coming from The Ukraine and supplies via cross border interconnections inside the EU.

Starting with January 1st, 2010, the new interconnection between Hungary and Romania will become operational, having maximum capacity of 4.8 million cm/day. Such capacity can be extended in the future up to 12 million cm/day, with additional investments to be implemented. The operation commencement of the interconnection between Romania and Bulgaria is also envisaged for 2013. This interconnection will provide the possibility to take over maximum 1.4 million cm/day, with the possibility to extend such capacity up to 4.2 million cm/day, with additional investments.

For the time being it is impossible to have an estimation on how quantities supplied from import will be split up on import via the Ukraine and imports through interconnections inside the EU.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak day supplies via import pipelines (Mio.cm/day)									
19	24	24	29	28	32	31	31	32	32
Peak day supplies via LNG terminals (Mio.cm/day)									
-	-	-	-	-	-	-	-	-	-
Peak day national production deliverability (Mio. Nm^3/day)									
31	31	31	30	29	28	28	27	26	26
Peak day storage deliverability (Mio. Nm^3/day)									
25	25	25	26	28	30	32	32	32	32

Yearly supply scenario (Billion cm/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via import pipelines (Billion cm/year)									
5	5	5	5	5	6	6	7	7	7
Aggregated quantities via LNG terminals (Billion Nm^3/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated national production (Billion Nm^3/year)									
10	11	12	12	12	12	11	11	10	10

Yearly supply scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via import pipelines (Billion kWh/year)									
48	48	48	61	68	76	80	84	92	92
Aggregated quantities via LNG terminals (Billion kWh/year)									
-	-	-	-	-	-	-	-	-	-
Aggregated national production (Billion kWh/year)									
101	117	122	128	128	122	115	113	108	106

A.26 Serbia

A.26.1 Description of the Existing Network

Srbijagas is system operator of natural gas transmission / transit grid infrastructure in Serbia. Srbijagas transmission grid has 13 entry points includes 1 import, 11 domestic production, 1 storage/production entry points. Srbijagas grid also serves for transit flows of natural gas to Bosnia and Herzegovina. The Srbijagas transmission network has 2.140 km of pipelines, ANSI 300, pressure 16 to 50 bars. There are 1 compressor station (5 units), total power 4.4 MW used primarily for transit. Srbijagas transports around 2.5 billion cubic meters per year of natural gas for consumption in Serbia and around 0.3 billion cubic meters per year are reserved in the long term for transit through the grid.

Number of active shippers is 1.
Number of gas transmission companies is 2 (company Yugorosgaz).

More information is available on websites:
www.srbijagas.com , www.aers.rs and
www.yugorosgaz.rs

The transport and transit capacity on Srbijagas network at the gas year 2008-2009 amounts to:

- 13 million m3/day at entry point interconnected with foreign import pipelines (HU)
- 0.75 million m3/day at national production entry points
- 1 million m3/day at Storage entry and 0.5 million m3/day exit points
- 2 million m3/day at exit point interconnected with foreign pipelines (B&H)

A.26.2 Current Processes for Investment, Current Publications

Underground gas storage Banatski Dvor, with DV 04-18 pipeline section Gospođinci-Banatski Dvor

Underground storage, 450 million meter cubic capacity

- production UGS B. Dvor Q=5.000.000 m3/day)
- injection UGS B. Dvor Q=3.000.000 m3/day)

Reversible gas pipeline DV 04-18 MRN Gospođinci-UGS Banatski Dvor should enable smooth and comprehensive connection of the storage to the gas transmission system of the Republic of Serbia.

Main data on the pipeline:

- length L=42.5 km
- nominal diameter DN 500
- maximum operating pressure Pmax=75 bar

Niš-Dimitrovgrad Gas Transmission Pipeline with extension Niš-Priština-Montenegro

The pipeline should enable gas supply from the same source, but via a different route (import possibilities amount to 1.8 bcm/y of Russian gas). It also provides for extending the gas transmission systems in Montenegro.

A.26.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
HU-RS: Kiskundorozsma	13	13	13	13	13	13	13	13	13	13
RS-BA: Zvornik	2	2	2	2	2	2	2	2	2	2

A.26.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

Feasibility study for South stream project (Russian natural gas across Black Sea to Europe) is in progress and will define pipeline working pipeline parameters.

A.26.5 Development of National Production and Storage Deliverability

Development of National Production and Storage Deliverability										
Year										
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Development of National Production Deliverability (Mio. Nm³/day)										
0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
Development of Storage Deliverability (Mio. Nm³/day) entry										
3	3	3	3	3	3	3	3	3	3	
Development of Storage Deliverability (Mio. Nm³/day) exit										
5	5	5	5	5	5	5	5	5	5	

A.26.6 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
12	13	13	14	14	15	15	16	20	20
Yearly Consumption (Billion Nm^3/year)									
3	3	3	3	3	3	3	3	4	4
Yearly Consumption (Billion kWh/year)									

A.27 Slovakia

A.27.1 Description of the Existing Network

Slovak gas transmission system is the biggest European gas transmission corridor for the access of Russian and Central Asian gas to Europe. Company **eustream** is the operator of the Slovak transmission system. The transmission network of eustream has a length of 2 270 km. Company headquarters are located at Mlynské nivy 42, 825 11 Bratislava, Slovak Republic and its legal form is joint stock company.

Since 1968, eustream has secured the transmission of more than 1.9 trillion (1,900,000,000,000) cubic meters of natural gas across the territory of the Slovak Republic. The total annual transmission capacity in east to west direction is about 94 billion cubic meters, which equals roughly 15 times the overall domestic gas consumption of the Slovak Republic. In 2008, eustream transported more than 76 billion cubic meters of gas, which is about 20% of total EU consumption.

The Slovak transmission system stretches from the Slovakia/Ukraine border point Veľke Kapušany westwards. In intersection station Plavecký Peter it splits and goes southwards in direction to Austria (moreover Italy, Slovenia, Croatia, Germany, France) and westwards in direction to Czech Republic (then Germany and France).

The transmission system has four compressor stations that are about 115 km apart, in the following locations (in direction from East to West):

- CS01 Velké Kapušany
- CS02 Jablonov nad Turnou
- CS03 Veľké Zlievce
- CS04 Ivanka pri Nitre

The gas transport through the transmission system is controlled from the Transmission Gas Dispatch Centre in Nitra. The transmission system serves primarily for the purpose of the international transport of natural gas and is partially also used to import gas for the Slovak Republic. Natural gas is received and measured both quantitatively and qualitatively at the border takeover stations in entry point Velké Kapušany, and is handed over at the border delivery

stations in exit point Lanžhot in the territory of the Czech Republic and in exit point Baumgarten in the territory of Austria. The system is providing also the gas transmission as counter-flows from entry points Baumgarten and Lanžhot to all other exit points. During the gas crisis in January 2009 also physical reverse flow was introduced in Lanžhot. The service to domestic market and underground storage is provided to and from the aggregated entry/exit point Domestic.

The line section of the transmission system consists of gas pipelines in the dimension from DN500 up to DN1400 and with nominal pressures 6.1 MPa and 7.35 MPa. Its transport capacity east to west is about 94 Nm^3 per year. The system uses an entry-exit capacity and pricing system. Also the transmission services from entry points Lanžhot and Baumgarten are provided to shippers, especially in connection with growing importance and liquidity of Central European Gas Hub in Baumgarten.

Eustream allows access to the gas transmission network and offers its customers a wide range of transmission services on a transparent and non-discriminatory basis. The access regime is in full compliance with existing legislation and gas industry standards. The business partners of eustream include major energy companies from EU and non-EU member states.

Web address:
www.eustream.sk
Information for shippers:
www.eustream.sk, http://tis.eustream.sk/TIS

A.27.2 Current Processes for Investment, Current Publications

Eustream, a.s. publishes information about investments into transmission network at www.eustream.sk. This is published as a long-term forecast of investments into transmission network. The database is updated regularly, as soon as new information is available.

Period	2009	2010	2011	2012
Investment [millions EUR]	75	61	101	111

The current projects are mainly oriented to increasing of reliability and efficiency of gas transmission and not to capacity increase due to surplus of planned import routes for Russian gas to Europe.

At present time there are projects planned to be build to diversify routes and source of the gas. Examples of such activity are the project of reverse flow from Czech Republic to the Slovak Republic and the planned interconnection between Hungary and Slovakia, where open season is running from October 2009. The transmission system of eustream has sufficient spare capacity in the short and medium term.

A.27.3 Capacity Development in the Reporting Period, Investment Decisions Taken

The project of the Hungary-Slovakia interconnection is in phase of non-binding open season as of October 2009 and the binding phase from March 2010. The project intends to provide missing link in north-south direction, aiming to enhance significantly security of supply situation in the region as well as to further integrate the markets. The capacities and technical details will be determined as a result of the open season procedure, therefore possible new capacities of this interconnection are not included in the report.

Capacity (Mio. Nm³/day)	**Year**									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
AT-SK: Baumgarten	9	9	9	9	9	9	9	9	9	9
SK-AT: Baumgarten	137	137	137	137	137	137	137	137	137	137
SK-CZ: Lanžhot	117	117	117	117	117	117	117	117	117	117
CZ-SK: Lanžhot	9	9	9	9	9	9	9	9	9	9
Import										
UA-SK: Velké Kapušany	279	279	279	279	279	279	279	279	279	279
National Inter-TSO IP										
Domestic Point - Exit	33	33	47	47	47	47	47	47	47	47
Domestic Point - Entry	2	2	18	19	22	22	22	22	22	22

Listed values include capacities starting 1st January 2010. Information source: data of company eustream a.s.

A.27.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

In the very near future, eustream will complete the project of automation in the steering of the transmission system. The project of increasing the compression ratio at Velké Kapušany will be followed by a systematic re-engineering of all compressor stations.

There are several projects that came up as results of the gas crisis in January 2009, which demonstrated that gas supply to Europe is vulnerable to external events. The mail goal of the projects is to diversify routes and source of gas. These security-of-supply projects are:

- interconnections between Slovakia and Hungary, where the open season started October 2009 (see details in 2.26.3)
- reverse flow capacities in gas transmission systems

In general the investments in gas infrastructure should be market driven. In case that market does not deliver these projects then there is clearly room for public support and backing by the EU. As a method which was tested during the gas crisis, reverse flow from Czech Republic is an immediate need. Total investment estimation for reverse flow would be 5 Mio. €. The emergency interconnection KIP between the Slovak republic and Austria is planned to be made operational for the case of potential supply disruptions.

In case of country/country interconnection the planned Slovakia – Hungary gas interconnection accelerated in result of gas crisis is a perfect fit. In the territory of Slovak Republic a new pipeline is needed to be build for this reason. Approximate budget necessary for establishment of such transmission system is 100 Mio €.

A.27.5 Development of National Production and Storage Deliverability

Eustream is not in charge of operating of storages or natural production as well there is no legal obligation for market players to submit data to the transmission operator, therefore relevant information on production are based on historical data published in EU energy and transport in figures, statistical pocketbook. Information source: database of GSE - published withdrawal rate of Slovak storages.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Development of Storage Deliverability (Mio. Nm^3/day)									
34	34	50	51	54	54	54	54	54	54

A.27.6 National Demand Scenario(s)

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm³/day)									
40	40	40	40	40	40	40	40	40	40
Peak Day Demand (Mio. kWh/day)									
444	444	444	444	444	444	444	444	444	444
Yearly Consumption (Billion Nm³/year)									
6	6	6	6	6	6	6	6	6	6
Yearly Consumption (Billion kWh/year)									
62	62	63	64	64	64	65	66	67	67
Data presented in table above are based on historical figures published by Slovak gas-supply company – SPP a.s. and forecast of Slovak economic.									

A.27.7 Supply Scenario(s)

Data presented in tables below are based on forecasts of eustream a.s., furthermore historical figures published by Slovak gas-supply company – SPP a.s. and forecast of Slovak economy. Storage data are based on GSE database and the publicly available withdrawal rate of Slovak storages plus planned update of storage to transmission network capacity upgrades. Eustream is not in charge of operation of storages or natural production as well there is no legal obligation for market players to submit data to the transmission operator, therefore relevant information on production are based on historical data published in EU energy and transport in figures, statistical pocketbook.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm³/day)									
279	279	279	279	279	279	279	279	279	279
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm³/day)									
19	19	19	19	19	19	19	19	19	19
Maximum peak day supply via LNG terminals (Mio. Nm³/day)									
0	0	0	0	0	0	0	0	0	0
Peak day national production deliverability (Mio. Nm³/day)									
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Peak day storage deliverability (Mio. Nm³/day)									
34	34	50	51	54	54	54	54	54	54

Yearly Supply Scenario (Billion Nm^3/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm^3/year)									
102	102	102	102	102	102	102	102	102	102
Aggregated quantities via EU internal cross-border pipelines (Billion Nm^3/year)									
7	7	7	7	7	7	7	7	7	7
Aggregated quantities via LNG terminals (Billion Nm^3/year)									
0	0	0	0	0	0	0	0	0	0
Aggregated national production (Billion Nm^3/year)									
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
1057	1057	1057	1057	1057	1057	1057	1057	1057	1057
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
72	72	72	72	72	72	72	72	72	72
Aggregated quantities via LNG terminals (Billion kWh/year)									
0	0	0	0	0	0	0	0	0	0
Aggregated national production (Billion kWh/year)									
2	2	2	2	2	2	2	2	2	2

A.28 Slovenia

A.28.1 Description of the Existing Network

Geoplin plinovodi network

Geoplin plinovodi is the gas transmission system operator in Slovenia (www.geoplin-plinovodi.si). The principal business objective and activity of Geoplin plinovodi is to provide long-term, reliable, high quality, low-cost and environmentally acceptable transportation of natural gas to the industry and local distribution companies, connected to the natural gas transmission pipeline system.

The activities of the company are the following:

- transportation of natural gas through the transmission pipeline system
- planning and development of natural gas transmission pipeline system
- calibrating and measuring of gas meters and volume correctors
- professional training for customers.

Geoplin plinovodi operates 980 km of pipelines and one compressor station, while in Slovenia there are no storage facilities or LNG terminals.

Length of the network	980 km (2008) 771 km in pressure range 1,6 – 8,0 MPa 209 km in pressure range less than 1,6 MPa
Yearly transported volumes	2,2 bn Nm3 (2008)
International cross-border points	**Murfeld/Ceršak** (Austria/Slovenia), **Gorizia/Šempeter** (Italy/Slovenia) **Rogatec** (Slovenia/Croatia)
Aggregated entry and exit capacities from/to storages	no storage in Slovenia
Aggregated entry capacities from national production	no national production in Slovenia
Number of shippers	2 (2008)
Level of investment into network	€32 million (2008)

A.28.2 Current Processes for Investment, Current Publications

In regard to increased natural gas consumption in Slovenia, Geoplin plinovodi intensively invests into an expansion of the transmission capacities of its gas pipeline network. The new investment cycle is comparable, in regard to size, to the existing backbone of the system, built in 1978.

Geoplin plinovodi is going to duplicate the main and most occupied transmission routes (as indicated on above map), new compressor station Ajdovščina will start operation in year 2010, while the power of existing compressor station Kidričevo will be increased.

A.28.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Expansion of transmission capacities is based on the document "Slovenian Natural Gas Transmission Development Program" which is considered in development plans of the TSO Geoplin plinovodi d.o.o. Development plans were prepared in accordance with "Slovenian National Energy Program (NEP)" and were confirmed by competent Slovenian Ministries and Government. In the frame of developments projects, Geoplin plinovodi d.o.o. has also applied for founds of European Energy Programme for Recovery (EEPR), where the project of upgrading the transmission system between Austrian border and Ljubljana already was recognized as an eligible EEPR project.

Capacity data published for years after year 2012 represent the capacity development of Slovenian gas transmission system – it must be considered that cross-border capacities will also depend on capacity development of neighbouring TSOs (e.g. OMV Gas at IP 51-Murfeld/Ceršak) and on contracted pressure boundary conditions (e.g. SNAM RG at IP 48B-Gorizia/Šempeter).

The table summarises the capacity developments:

Capacity (Mio. Nm^3/day)	**Year**									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
IT-SI: Šempeter/Gorizia	3	3	3	3	3	6	6	6	6	6
SI-IT: Šempeter/Gorizia	0	0	0	2	2	6	6	6	6	6
AT-SI: Murfeld/Ceršak	7	7	8	12	12	19	19	19	23	23
SI-HR: Rogatec	5	5	5	5	5	5	5	5	5	5

A.28.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

There are two projects considered:

1. **Project LNG** (15 bcm/y) is included into the document "Strategy of Slovenian Spatial Development", which also deals with development of Slovenian energy infrastructure to assure the flexible, safe and reliable energy supply, which considers that Slovenian infrastructure is properly incorporated into European networks and that proper diversification of supplies is ensured.
2. **South stream** deals with transit of Russian natural gas across Black See, Bulgaria, Romania, Serbia, Hungary and Slovenia (5 bcm/y).

A.28.5 Development of National Production and Storage Deliverability

There is no national production or storage facility in Slovenia.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
N/A									
Development of Storage Deliverability (Mio. Nm^3/day)									
N/A									

A.28.6 National Demand Scenario(s)

Estimations for National Demand Scenario are based on consumption analyses presented in the "Long-Term Slovenian Energy Balance" which was prepared for Slovenian Ministry of Economy.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
6	6	6	7	7	8	8	8	8	9
Yearly Consumption (Billion Nm^3/year)									
1	2	2	2	2	2	2	2	2	2
Yearly Consumption (Billion kWh/year)									
16	17	19	20	21	23	23	24	24	25

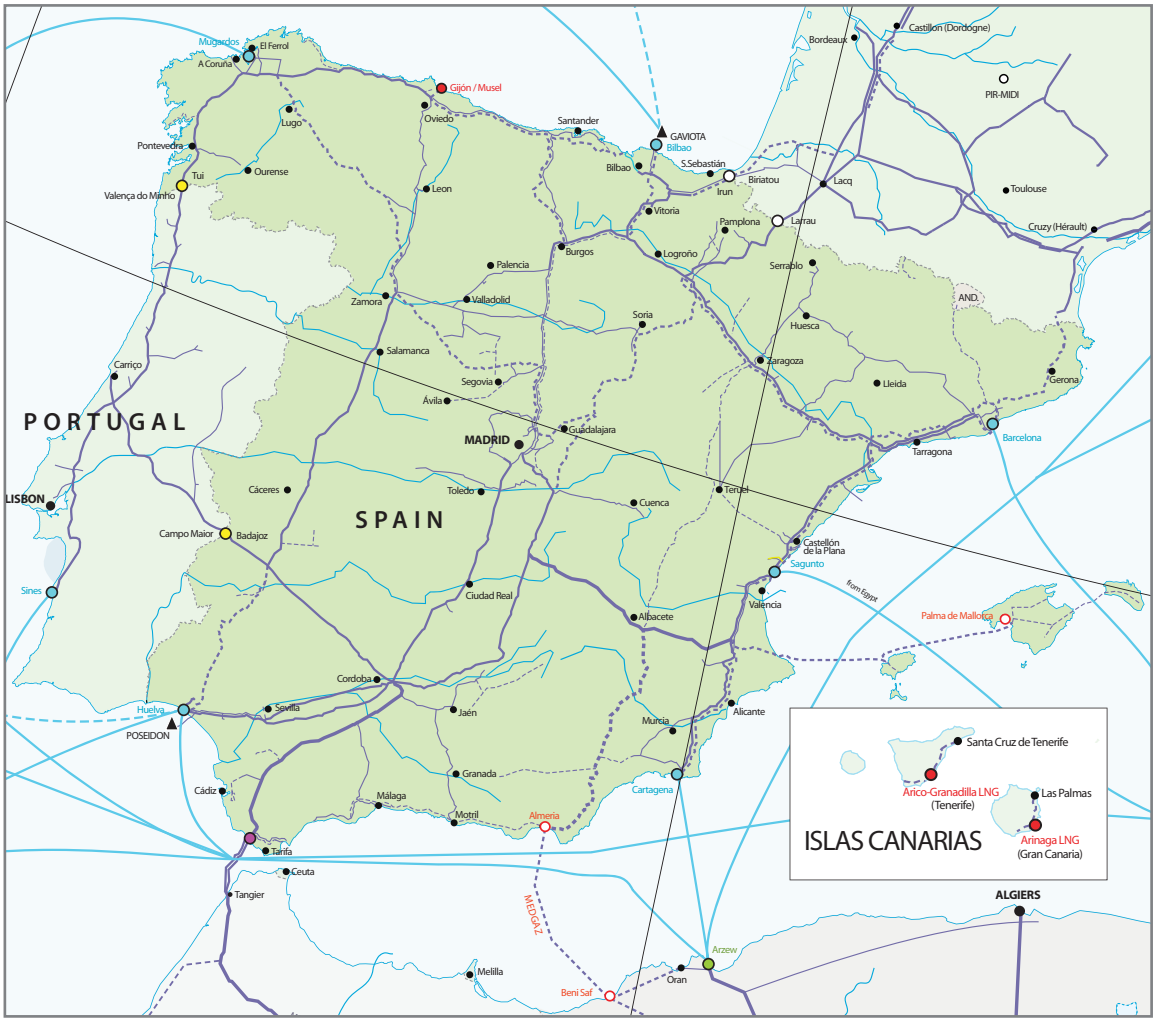
A.28.7 Supply Scenario(s)

Based on Geoplin plinovodi network development projects, the transport capacitiy of Slovenian transmission system will increase. Additional transport capacitiy (including bi-directional operation) will improve possibilities for diversification of gas sources and increase the security of supply by interconnecting gas networks in the region. Therefore, the Slovenian peak day supply scenario will also depend on development of transport- and storage-capacities as realised by other transmission system operators in the region. In addition, the peak day supply scenario will also follow the price-based contractual and commercial decisions of different possible market players, which can not be reliably predicted for the period of next 10 years.

Yearly Supply Scenario (Billion Nm^3/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm^3/year)									
1	2	2	2	2	2	2	2	2	2
Aggregated quantities via EU internal cross-border pipelines (Billion Nm^3/year)									
1	2	2	2	2	2	2	2	2	2
Aggregated quantities via LNG terminals (Billion Nm^3/year)									
0	0	0	0	0	0	0	0	0	0
Aggregated national production (Billion Nm^3/year)									
0	0	0	0	0	0	0	0	0	0

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
16	17	19	20	21	23	23	24	24	25
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
16	17	19	20	21	23	23	24	24	25
Aggregated quantities via LNG terminals (Billion kWh/year)									
0	0	0	0	0	0	0	0	0	0
Aggregated national production (Billion kWh/year)									
0	0	0	0	0	0	0	0	0	0

A.29 Spain



A.29.1 Description of the Existing Network

Enagás was founded in 1972 as a state-owned company with the objective of creating a network of gas pipeline in Spain. In June 2002, Enagás became ownership unbundled from its parent company and started to quote in the stock exchange market. Enagás is the main independent basic infrastructure operator which owns and operates high pressure pipelines, LNG terminals and underground gas storages. At this moment 70% of the shareholdings are on the "free float". Main shareholders are saving banks, together with Omán Oil Holdings Spain and SEPI which own 5% each of Enagás' shares too. The Spanish law 12/2007 ensures the independence of Enagás by limiting the exercise of voting rights to a maximum of 1% for companies active in the energy sector (and also for companies which held ownership of energy companies, ie., banks), such is the case for all the largest shareholders except one. For the other cases the exercise of voting rights is limited to a maximum of 3%.

Website: www.enagas.es

Enagás is the main transmission, regasification and storage service provider in Spain, as well as the System Technical Manager. Enagás has the commitment of guaranteeing continuity and safety in natural gas supply and the correct coordination of access points, storage, transport and distribution encouraging competition in a transparent and non-discriminatory manner. Enagás optimizes the way the gas system works, by coordinating the different agents and proposing measures for improvement. It develops the transport network and manages its

infrastructure in a secure, efficient, beneficial and environmentally-friendly way.

The Royal Decree Law 6/2009, dated 30 April, gave Enagás the condition of Transmission System Operator for the high pressure gas network.

Enagás is the owner and operator of the majority of the Spanish 'Basic Grid', holding more the 90% of the high pressure transmission pipelines (pipelines with maximum design pressure equal or greater than 60 bar, but between 72 and 80 bar). The total length of Enagás' high pressure network at the end of 2008 is around 8,400 km, with 13 compressors (total installed capacity of 440.503 HP) used to raise gas pressure to 72/80 bar, in order to maximize gas pipeline transport capacity. During the 1st quarter of 2009, a new compressor station was commisioned in Navarra, associated with the Larrau Interconnection Point, increasing the interconnection capacity at this IP.

At the end of 2008 the Spanish grid was characterized by 13 entry points, defined as follows:

- 6 entry points connecting the LNG regasification terminals of:
  - **Barcelona**, **Cartagena** and **Huelva** (owned by Enagás),
  - **Bilbao** (*), **Sagunto** and **Mugardos** (owned by other companies within the transmission network).
    . (*) Enagás has signed a contract in September 2009 with BP to buy 25% of their shareholding in the Bilbao regasification plant. The deal is subject to approval by the CNE – the Spanish energy commission – and by the competition authorities.

These plants have a total emission capacity of 6.6 $Mm^3(n)/h$, and a total storage capacity in tanks of 2.3 Mm^3 of LNG at the end of 2008

- 5 entry points at the international interconnections of
  - **Tarifa** (Maghreb-Europe pipeline),
  - **Larrau** (Lacq-Calahorra pipeline),
  - **Badajoz** and **Tuy** (Portugal)
  - **Irún** (Vergara-Irún pipeline)

In the next months a new Interconnection Point will come into operation in Almería, connecting the Spanish gas System with Algeria by Medgaz pipeline. Enagás has already put into operation the necessary gas infrastructures in the Spanish gas system for the integration of this new entry point.

- 2 entry points from underground storage sites **Gaviota** and **Serrablo**.

  - Storage withdrawal capacity: 148.0 GWh/d.
  - Storage injection capacity: 99.6 GWh/d

The drilling operations for the development of the future Yela underground gas storage started in June 2009.

From over 350 exit points, the Spanish 'Basic Grid' supplies gas to 55 combined-cycle power plants, industrial consumers and other transmission/ distribution networks. The transported volume of natural gas during 2008 was 466 bn kWh.

The Spanish liberalization process accounted for 100% market opening since 2003, and continued its evolution with the finalisation of the tariff system during the first semester 2008. The number of licensed shippers is now around 30.

Gas consumption in Spain increased 10% in 2008 with a significative increase of 32% in gas demand for power generation and soft decrease of –1,7% in conventional demand. Enagás continues to integrate new assets into the system. Investments level reached €777 million in 2008.

A.29.2 Current Processes for Investment, Current Publications

The development of new infrastructures requires a long period since the identification of its need until it can be put into operation. Therefore energy planning is necessary to adequate in advance the entry capacity and network development to demand forecasts and scenarios for the use of system capacity.

Energy Planning is mostly indicative, respecting the Free Market Principle and the Private Initiative. However, energy planning also includes essential developments for the national Gas System in conformity with the Mandatory Planning:

- Entry capacity required by the creation of LNG terminals or the expansion of existing LNG terminals,
- Increase of entry and/or exit interconnection capacity,
- Definition of main corridors of the transmission system,
- Reinforcement and development of storage capacity

All these essential infrastructures for the national gas system must be compulsorily carried out.

The Spanish Government is responsible for the Mandatory Planning. The information comes from a long and detailed consultation process led by both: the Ministry of Industry, Trade and Tourism and the Regional Governments. This consultation process involves all stakeholders (including also final consumers associations, ecologist groups, etc.). Every stakeholder participates in the process sending information and proposals to be analyzed. The Technical Manager of the System elaborates the technical studies for different level of gas flow for the following 10 years.

The Mandatory Planning distinguishes between two different types of infrastructures.

- Type A: Projects approved without condition.
- Type B: Projects that are subject to some milestone for its definitive approval.

The Mandatory Planning is approved by the Council of Ministers and it is reviewed every four years. There are also brief annual updates published in the Official Gazette.

Link to the last Mandatory Planning and Annual Report:

http://www.mityc.es/NR/rdonlyres/69C43BE5-9613-49AD-B29C-0D69743771D2/0/Planificacion_20082016.pdf

http://www.boe.es/g/es/bases_datos/doc.php?coleccion=indilex&id=2007/10935&txtlen=1249

The National Energy Commission (CNE), regulatory body for Spain's energy systems elaborates an annual report that reviews demand forecasts and includes the impact of possible delays in the launch of infrastructures approved in the Mandatory Planning.

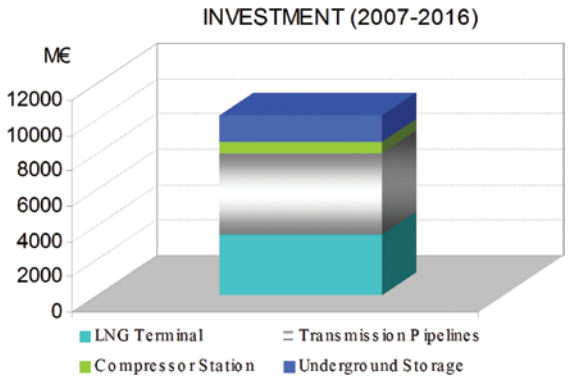
http://www.cne.es/cne/doc/publicaciones/cne13_09.pdf

A.29.3 Capacity Development in the Reporting Period, Investment Decisions Taken

The following figure shows the approved investment projects over the period 2009-2016.

All these investments will provide enough gas transmission capacity within the whole Spanish Gas System, reinforcing also international connection capacity.

Interconnections are essential for the integration of the national markets and a major step for the final objective of creating a well-functioning internal energy market in Europe. In addition, they increase the security and diversification of supply and make the development of energy trade between countries possible, thus promoting competition.



The European Commission, with the aim of getting a single European energy market, has developed the Regional Initiatives with the global goal of facilitating and integrating the markets eliminating barriers for the trading and the increase of competition, and contributing to security of supply.

In 2006, ERGEG launched the Regional Initiatives as an intermediate step to speed up the integration of Europe's national energy markets. Through these regions, specific barriers to trade and competition (such as a lack of transparency and different balancing regimes) are tackled by each

country working with its neighbors, and solutions found as to improve market integration. Three regions were initially defined: North-West region, South–South East and the South region. Spain was located in the South Gas Regional Initiative (SGRI).

As part of the SGRI, Spanish and French TSO's, are working together since 2007. They have jointly developed an indicative plan of infrastructures in order to increase the interconnection capacity between Spain and the North of France in both directions.

http://www.enagas.es/cs/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1146243810315&ssbinary=true

http://distribuidora.naturgasenergia.com/uploads/pdf/transporte/nuevas_capacidades_para_la_Conexion_Internacional_de_Euskadour.pdf

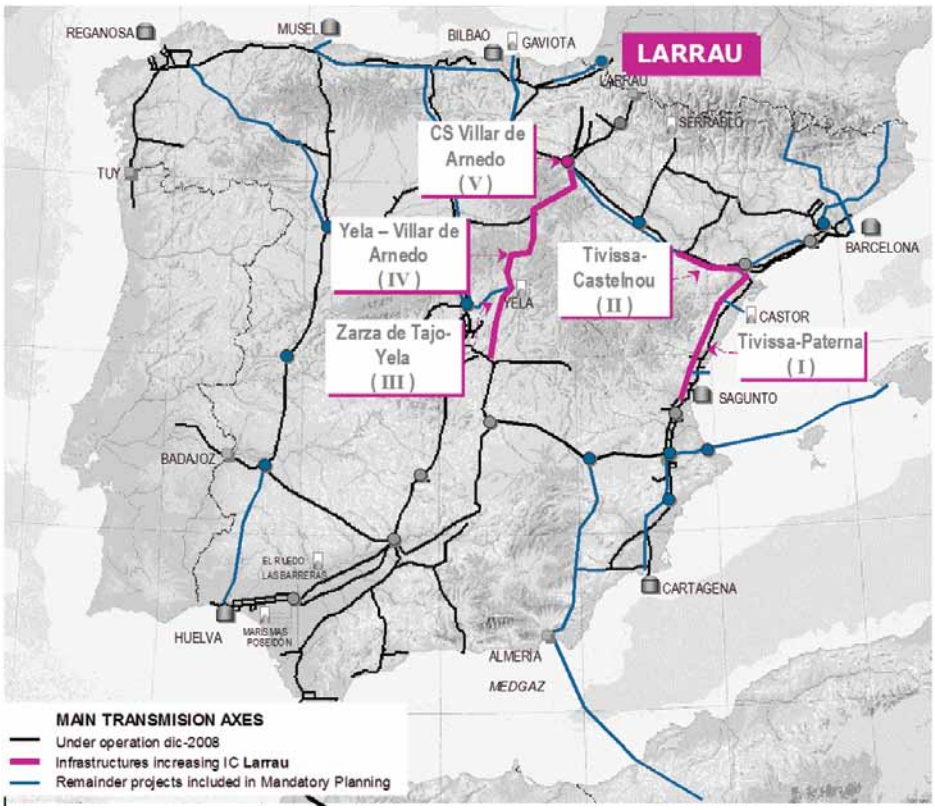
Spanish INFRASTRUCTURES		
I	Pipeline TIVISSA - PATERNA	233 km, 40"
II	Pipeline TIVISSA - CASTELNOU	91 km, 26"
III	Pip. ZARZA TAJO-YELA	106 km, 30"
IV	Pip. YELA-VILLAR ARNEDO	251 km, 30"
V	VILLAR de ARNEDO COMPRESSOR STATION	36 MW

This indicative plan includes the development of the interconnection between France and Spain at Larrau, the so called "Western Axis Larrau Branch", was listed as elegible in the European Energy Programme for Recovery.

The infrastructures of the "Larrau Axis" were initially designed to allow flows in direction France to Spain for the capacity associated to a long term supply contract of Norwegian gas. This supply contract started in 1993 and since then no significant new cross-border capacity has been successfully developed between France and Spain until 2009.

According to the Spanish Government in the Mandatory Planning 2002-2011, a Compressor Station was built in Navarra (Larrau Axis Intermediate point) in order to duplicate (+100%) the interconnection capacity from France to Spain. This new Compressor Station in Navarra is since 2Q-2009 in operation, but due to a lack of parallel necessary developments in the French side, the real increase of capacity was limited to +15%. These necessary reinforcements in the French network are under an Open Season process.

Subsequent revisions of the Mandatory Planning have continued this trend of increasing cross-border interconnection capacity, focusing now on the development of new additional interconnection



capacity in direction Spain to France. In this sense, some other strong reinforcements in the core of the Spanish gas system have been planned with the objective of achieving a reversible bidirectional flow between the two countries with similar capacities in both directions:The development of the Spanish infrastructures is the first step in the global interconnection development plan.

Capacity of the Interconnection Point	**Flow Direction SPAIN → FRANCE**		**Flow Direction FRANCE → SPAIN**	
Last Year (without CS Navarra)	**W: 0 GWh/d**	**S: 0 GWh/d**	**W: 87 GWh/d**	**S: 87 GWh/d**
Current Status (with CS Navarra)	**W: 0 GWh/d**	**S: 0 GWh/d**	**W: 100 GWh/d**	**S: 100 GWh/d**
After development of infrastructures (*)	**W: 110 GWh/d**	**S: 100 GWh/d**	**W: 100 GWh/d**	**S: 100 GWh/d**

(*) Compressor Station in Navarra (into operation), Pipeline Zarza de Tajo-Yela-Villar de Arnedo, Loop Tivissa-Paterna, Loop Tivissa-Castelou and Compressor Station Villar de Arnedo

W: Winter period S: Summer period

This first step will be followed by investments in the core of the French network which will lead to the creation of real gas corridors between the gas entries from Spain and central European markets.

After the commissioning in 2009 of Navarra compressor station, the interconnection development process, specifically regarding the Western Axis Larrau Branch is making progress in the development of infrastructures in the Spanish Gas System to enable **reverse flows** through this Interconnection point.

With these infrastructures developments, the Larrau IP becomes an exit point for some gas coming from the LNG terminals and from Algeria (via Medgaz & GME), contributing in this way, to **increase the security and diversification of supply** of the French system.

The availability of equivalent capacity in both flow directions increases the **competitiveness** and **liquidity of gas markets** providing equal opportunities for shippers in both markets.

In October 2008, Enagás and TIGF (French TSO) launched jointly an Open Subscription Procedure (OSP) to allocate the new capacity created by the development of "Western Axis Larrau Branch" consequence of the new Spanish infrastructure. The result was an absolute success, surpassing the requests received nearly 6 times the offered capacity. This fact shows that the market is demanding more integration between France and Spain. This OSP was the first step in the market integration.

In accordance with the "Procedures for the commercialization of existing and committed capacity at the cross point of Larrau border between France and Spain", Enagás and TIGF launched an Open Subscription Period for Short-Term Capacity (OSP STC 2009), by which it has been convened, the procedure for coordinated allocation of interconnection capacity of natural gas between Spain and Fwrance for the period between 1 April 2010 and March 31, 2011 for short-term contracts.

The following tables show the summarized and detailed evolution of the Firm Capacity in Spain for the period 2009-2018.

FIRM CAPACITY SUMMARY (Infrastructures Type A)

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Spanish EU Import	57	57	57	57	57	57	57	57	57	57
Total Spanish LNG Terminal	170	170	189	203	223	223	230	230	230	230
ES-FR	0	3	3	10	10	10	10	10	10	10
FR-ES	9	9	9	9	9	9	9	9	9	9
ES-PT	14	14	16	16	16	16	16	16	16	16
PT-ES	7	7	10	10	10	10	10	10	10	10

TOTAL FIRM CAPACITY (Infrastructures Type A)

Capacity (Mio. Nm³/day) (*)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
FR-ES: Larrau	9	9	9	9	9	9	9	9	9	9
ES-FR: Larrau		3	3	9	9	9	9	9	9	9
ES-PT: Badajoz / Campo Maior	12	12	12	12	12	12	12	12	12	12
PT-ES: Badajoz / Campo Maior	6	6	9	9	9	9	9	9	9	9
PT-ES: Valenca do Minho / Tuy	1	1	1	1	1	1	1	1	1	1
ES-PT: Valenca do Minho / Tuy	2	2	5	5	5	5	5	5	5	5
ES-FR: Biriatou (Irun)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
FR-ES: Biriatou (Irun)										
Import										
MA-ES: Tarifa	35	35	35	35	35	35	35	35	35	35
DZ-ES: Almeria	22	22	22	22	22	22	22	22	22	22
LNG										
Barcelona	47	47	47	47	47	47	47	47	47	47
Cartagena	32	32	32	32	32	32	32	32	32	32
Huelva	32	32	32	32	32	32	40	40	40	40
Bilbao	19	19	19	29	29	29	29	29	29	29
Sagunto	29	29	29	34	34	34	34	34	34	34
Mugardos	10	10	10	10	20	20	20	20	20	20
Musel			20	20	29	29	29	29	29	29

(*) Note: The interconnection capacity in the European Cross-Border Points is defined as the minimum common value of Exit and Entry capacities at both sides of the border. (Ref. ERGEG South Gas Regional Initiative).

A.29.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

The Spanish Mandatory Planning includes projects "Type B", i.e., projects that would be indispensable for the Gas System only if other milestones happen previously.

- Some reinforcements of LNG Terminals are classified as type B projects, conditioned to delays in the development of underground storage.
- The development of a new South-North Axis between Chinchilla and Zaragoza, would be necessary if the entry capacity in Almería Import Point was increased by reinforcements in African export facilities.
- Increase of entry and/or exit interconnection capacity:
  - A new CS located in Irún close to the Spanish-French border is included in the Mandatory Planning classified as Type B conditioned to developments in the French Side (TIGF network).
  - MIDCAT project: this project will develop physical interconnection capacity via the eastern Pyrenees, on a new route through the Perthus Pass area. On the Spanish side, a short pipeline between Figueras and the French border (25 km.) and a new CS located in Martorell (Catalonia) are considered as Type "B", also conditioned to further developments in the French network.

  The goal of this project would be the creation of high capacity, International Connections connecting the main Central European markets with the African producer countries via Spain, and contributing to Europe´s security and diversification of supply. Therefore, the Midcat project should progress simultaneously with development of the Eastern Corridor focused on the reinforcement of the link GRTgaz South-GRTgaz North.

Spain, and therefore the Iberian Peninsula, dramatically lack cross-border capacity interconnections with the rest of continental Europe. As a consequence the Iberian market is practically isolated from the rest of Europe. The development of the Western Axis Larrau Branch will reduce this historical isolation with the creation of bidirectional flow interconnection capacity between France and Spain.

Capacity of the Interconnection Point	**Flow Direction SPAIN → FRANCE**		**Flow Direction FRANCE → SPAIN**	
Last Year (without CS Navarra)	**W: 0 GWh/d**	**S: 0 GWh/d**	**W: 87 GWh/d**	**S: 87 GWh/d**
Current Status (with CS Navarra)	**W: 0 GWh/d**	**S: 0 GWh/d**	**W: 100 GWh/d**	**S: 100 GWh/d**
After development of infrastructures (*)	**W: 110 GWh/d**	**S: 100 GWh/d**	**W: 100 GWh/d**	**S: 100 GWh/d**
Developments in the core of French Network (**)	**165 GWh/d**		**165 GWh/d**	

(*) Compressor Station in Navarra (into operation), Pipeline Zarza de Tajo-Yela-Villar de Arnedo, Loop Tivissa-Paterna, Loop Tivissa-Castelou and Compressor Station Villar de Arnedo
(**) Under Open Season process.

W: Winter period S: Summer period

In late July 2009 an Open Season Procedure was launched to asses the market's interest and allocate future gas interconnection capacity between Spain and France as well as inside France. All information related to the process is described in the Information Memorandum that shows the market the potential of new transmission capacities to be created by Enagás, GRTgaz, Naturgás Energía Transporte and TIGF on the Spanish and French transmission systems within the framework of a joint project to increase interconnection capacity between France and Spain as from April 1st 2013 and December 1st 2015.

The Information Memorandum additionally details the capacity products that will be offered to the market. The Information Memorandum shall clarify the coordinated development as designed by the TSOs to the market in order to assess this new opportunity.

The need for a joint Open Season (OS or Open Season) to achieve this goal was agreed at the S-GRI in 2007, in order to coordinate the decision-making processes in France and Spain. In France it is required to carry out a positive assessment of market demand in order to provide a rational and to trigger an investment. In Spain, although a mandatory planning procedure for essential infrastructures is applied, the regulatory framework has been adapted to allow for Open Season procedures at interconnection points with France.

The Information Memorandum forms part of the documentation that regulates the Open Season jointly conducted by Enagás, GRTgaz, Naturgás Energía Transporte and TIGF to asses market demand for the interconnection projects under discussion.

- As of today, there are two interconnection points on the Western side of the border between France and Spain, at Larrau and Biriatou. The current and future capacities to be offered through the Open Season at these points, and at the related connection points between balancing areas in France, are referred to as "2013 capacities".

- A third interconnection point is foreseen on the Eastern side of the border between France and Spain, at Le Perthus (MidCat project). The capacities created at this point, plus the available and future capacities to be offered through the Open Season at the related connection points between balancing areas in France, are referred to as "2015 capacities".

These capacity increases are presented as a single project; however, they can also be developed independently, depending on the actual market demand. From September 2009, TSOs will carry out simultaneously the binding phase for the 2013 capacities and the non-binding phase for the 2015 capacities. The binding phase for the 2015 capacities is envisaged for February 2010.

Enagás, GRTgaz, Naturgás Energía Transporte and TIGF have studied different projects in order to increase the commercial capacities among the market zones by 2013 and 2015: Spain, TIGF, GRTgaz South and GRTgaz North.

These projects have been presented in the S-GRI.

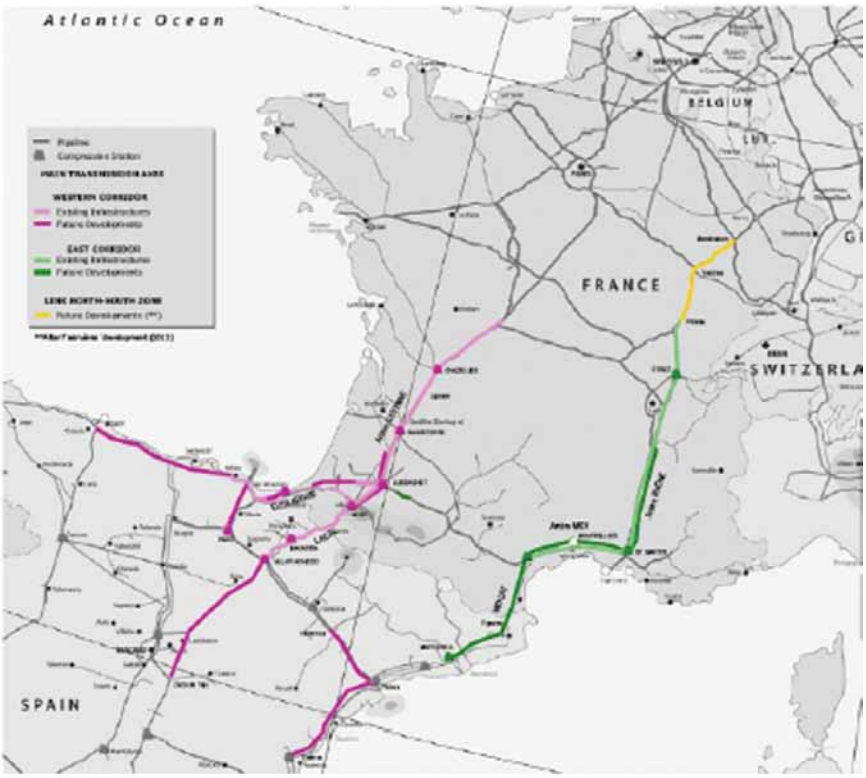
CAPACITIES BY 2013:

- **Larrau**: development of an existing interconnection (Enagás / TIGF).
- **Biriatou**: development of an existing interconnection (Enagás / Naturgás Energía Transporte / TIGF).
- **GRTgaz South – TIGF interface**: development of an existing interconnection (GRTgaz / TIGF).

CAPACITIES BY 2015:

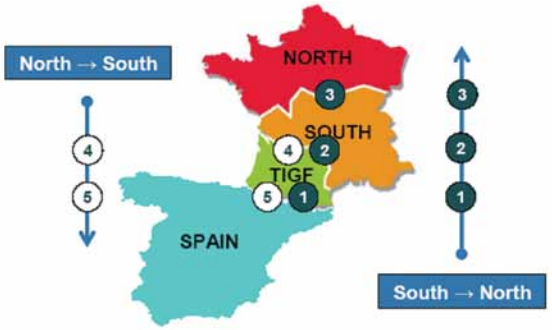
- **Perthus**: development of a new interconnection (Enagás / GRTgaz / TIGF).
- **GRTgaz North – GRTgaz South link:** development of an existing interconnection (GRTgaz).

Figure 2 : Infrastructures related to the development of new physical capacities



Only firm capacities will be proposed to the market in the Open Season.

The annual capacities proposed to the market in the Open Season are presented in the table hereafter. Unless otherwise specified, they represent 80% of the capacity available after investments, and after deduction of capacity assigned to existing long-term commitments.



2013		
Products	**From South to North**	**From North to South**
GRTgaz North-GRTgaz South	138 (*)	0
GRTgaz South-TIGF	204	238
TIGF-Spain	180	118
(*) 60% of marketable capacities, according to CRE's deliberation on 2nd July 2009.		

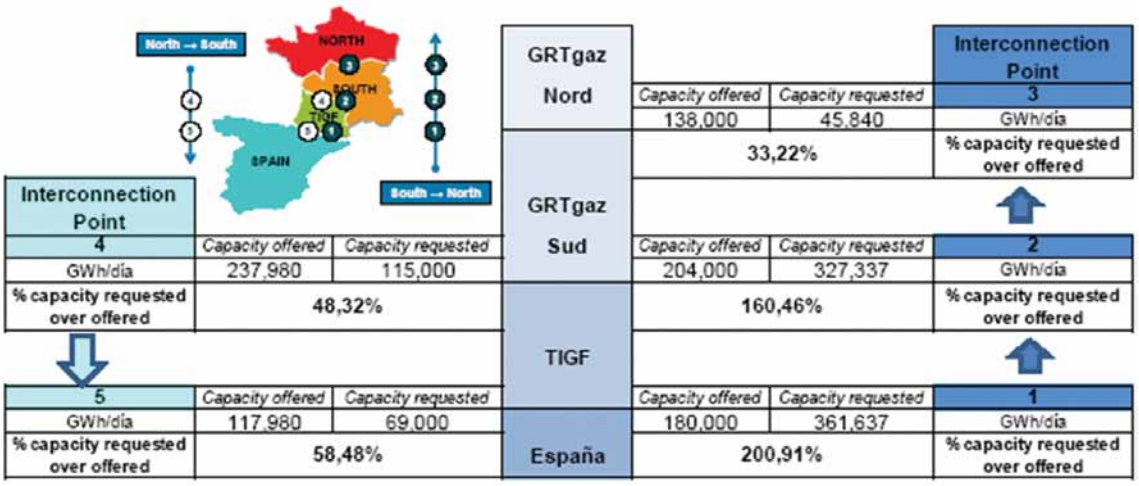
2015			
Products		**From South to North**	**From North to South**
GRTgaz North-GRTgaz South		between 80 (**) and 264	between 160 (**) and 282
France - Spain		184 to be split between option 1 & 2	144 to be split between option 1 & 2
Option 1	GRTgaz South - Spain	0 to 184	0 to 144
Option 2	GRTgaz South - TIGF	0 to 184	0 to 144
	TIGF - Spain	0 to 184	0 to 144
(**) 80% of newly-created capacities, according to CRE's deliberation on 2nd July 2009.			

http://www.enagas.es/cs/Satellite?cid=1146232795934&language=en&pagename=ENAGAS%2FPage%2FENAG_pintarContenidoFinal

Up to date, the Open Season procedure can be considered a success. Shippers' interest in more gas interconnection capacity between these two countries and inside France has become evident.

Application forms for 2013 capacity, belonging to eight different companies, have been received. Most of them request multiannual capacity with duration of ten years or more, being quite **above the offered capacity at some of the network interconnection points**, the ones where new infrastructures need to be built. The table bellow summarizes global results obtained during the request period at every interconnection point for 2013 capacity.

Results of the request period: requested capacity versus offered capacity (2013 capacity)



This stage of the procedure is essential since the effective construction of the interconnection infrastructures for 2013 depends on the market interest and the level of capacity requested through **binding requests**. Regulators and TSOs are currently analyzing the information in order to make a decision on the investments, which will make possible new gas interconnection capacities between Europe and the Iberian Peninsula.

http://www.cne.es/cne/doc/prensa/OPEN_SEASON_PRESS_RELEASE.pdf

- A new interconnection point with Portugal has been studied, consequence of the will of Portuguese and Spanish Governments of increasing international capacity between both systems and promoting the Iberian Gas Market (MIBGAS). The objective of this project is the development of new reversible capacity of aprox. 4 bcm/year.

- REN and ENAGÁS have agreed the general layout of the new pipeline. The total length of the new interconnection between the Spanish and Portuguese gas systems will be around 290 km, being 205 km in Portugal.

  This new interconnection will connect the gas networks in both countries with Underground Storages and LNG terminals, increasing the potential of the Iberian Peninsula as entry point of Natural gas to Europe, promoting the progressive integration of national markets and contributing to security of supply.

  This new link will contribute to harmonize the regulation in the energy system in Spain and Portugal, creating the necessary conditions for the development of the Iberian Gas Market (MIBGAS).

  In a final step this project must be approved and awarded by both Governments.

The following tables show the summarized and detailed evolution of the Firm Capacity in Spain for the period 2009-2018 including possible projects.

FIRM CAPACITY SUMMARY (Infrastructures Type A & B)

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Spanish EU Import	57	57	57	57	57	57	57	57	57	57
Total Spanish LNG Terminal	170	170	207	212	238	243	250	250	250	250
ES-FR		3	3	15	15	15	35	39	39	39
FR-ES	9	9	9	14	18	34	35	35	35	35
ES-PT	14	14	16	16	16	16	28	28	28	28
PT-ES	7	7	10	10	10	10	22	22	22	22

TOTAL FIRM CAPACITY (final decision not taken)

Capacity (Mio. Nm³/day) (*)	Year									
Interconnection Point	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
FR-ES: Larrau	9	9	9	14	14	14	14	14	14	14
ES-FR: Larrau		3	3	14	14	14	14	14	14	14
LNG Cartagena	32	32	32	32	40	40	40	40	40	40
LNG Huelva	32	32	36	36	36	36	43	43	43	43
LNG Bilbao	19	19	34	34	34	34	34	34	34	34
LNG Sagunto	29	29	29	34	34	38	38	38	38	38
ES-FR: Biriatou (Irun)	0.4	0.4	0.4	0.4	0.8	0.8	5	5	5	5
FR-ES: Biriatou (Irun)					4	4	5	5	5	5
ES-FR: MIDCAT						20	20	20	20	20
FR-ES: MIDCAT						15	15	15	15	15
ES-PT: Alcañices							12	12	12	12
PT:ES:Alcañices							12	12	12	12

(*) Note: The interconnection capacity in the European Cross-Border Points is defined as the minimum common value of Exit and Entry capacities at both sides of the border. (Ref. ERGEG Sout Gas Regional Initiative).

A.29.5 Development of National Production and Storage Deliverability

Nowadays the gas national production in Spain is negible.

Currently, in Spain there are two underground storages in operation:

- **Gaviota**: Offshore Oil Reservoir, belongs mostly (82%) to RIPSA. Currently its operative volume is 979 Million Nm3, and the nominal withdrawal capacity is 5,7 Million Nm3/day.
- **Serrablo**: Old Gas Reservoir, belongs to ENAGÁS. Its operative volume is 680 Million Nm3, and its withdrawal capacity reaches 6,8 Million Nm3/day.

The Mandatory Planning includes some new projects of underground storages, in different stages of development:

- **Marismas**: Old Gas Reservoir developed by Gas Natural. In a first stage of development, which will be put into operation in 2011, its operative volume will be 300 Million Nm3 and its nominal withdrawal capacity will reach 2 Million Nm3/day. A second stage of development will come into operation in 2013 increasing withdrawal capacity to 4,4 Million Nm3/day and 600 Million Nm3 of operative volume.
- **Yela**: Aquifer formation to be developed by Enagás. Its come into operation is expected by 2011. Its operative volume will be 1.050 Million Nm3, and its nominal withdrawal capacity will reach 15 Million Nm3/day.
- **Castor**: Offshore Oil Reservoir. It will come into operation in 2012 with 25 Million Nm3/day of withdrawal capacity and 1.300 Million Nm3 of operative volume.
- **Poseidon**: Old Gas Reservoir. Its operative volume will be 250 Million Nm3, and its withdrawal capacity will reach 2 Million Nm3/day. The date of its put into operation is still undetermined.
- **Revamping of Gaviota**: in 2015 is scheduled the revamping of Gaviota. The new withdrawal capacity will reach 14 Million Nm3/day, with an operative volume of 1.558 Million Nm3.

Technical feasibility studies of some other new projects are currently being analyzed: Salt Cavities in Cardona, aquifer formation in Reus and old Reservoirs in Dorada, El Ruedo and Las Barreras.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of Storage Deliverability (Mio. Nm^3/day)									
11	16	16	16	16	42	42	42	42	42

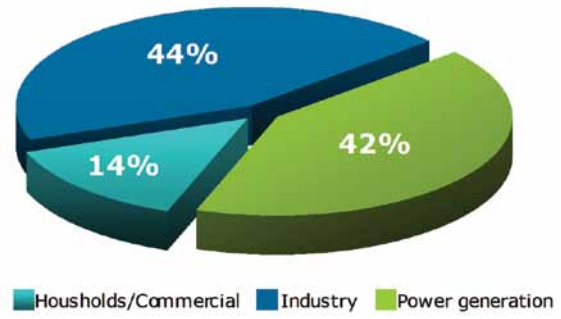
A.29.6 National Demand Scenario(s)

In Spain, natural gas consumption is dedicated to two sectors: **conventional sector**, ie, residential-commercial and industrial intended to production process and also includes supply to zones unconnected to transmission network, where supply is carried out from satellite plants, and a major use in **power generation sector**.

Gas Demand is divided between:

- Conventional sector: Only around 25% is intended to residential-commercial and the remaining 75% to industrial use.
- Gas for Gas-fired power stations. This sector represented the 42% in the Total Gas Demand in 2008.

Due to their specific characteristics, demand forecast for each sector is carried out independently from the other.



Enagás has developed a long-term demand-forecasting tool in collaboration with an renowned economic institute. This forecasting tool analyses Conventional sector and Gas for CCGT on a different basis

The demand forecasting tool has two different mathematical-econometric models for the Conventional sector based on different methods of analysis, in such a way that results are auto contrastable: a logistic "s" curve for national annual demand and a Panel Data model for annual predictions province by province.

These two models have been determined by the detailed analysis of historical gas consumption behavior through the determination of the most significant variables affecting it:

- GDP growth
- Population with access to gas, related with the expansion of the gas network
- Industrial Structure difference between zones, measured by industrial indexes for specific sectors.
- Industrial specialization Index in the major gas consuming activities.
- Number of Homes with gas installation

The forecasting tool also simulates scenarios of the electricity generation mix. The gas demand for gas-fired power stations is forecasted by simulation of long-term electricity generation. It is based on:

- Electrical annual Demand forecasts
- Scenarios of installed power by technology specially focused on the number of CCGTs necessary for the Electrical System back-up of renewable technologies.
- Annual Generation: Balance Scenarios for electricity generation mix, under different border prices, emissions prices, and energy policies.

Peak day demand

As well as has been explained for annual demand, peak day demand forecasts are divided between conventional sector and power generation sector (CCGT).

Conventional Peak demand is consequence of low temperatures during winter cold waves, affecting mainly the domestic sector, with the increase of consumption. Due to the low weight of this sector, around 15% of the total gas consumption, the effect of cold waves over the global gas demand is limited.

Conventional peak day is estimated as the historical maximum deviation from the average yearly demand. It is composed by the combination of the occurrence probabilities of the winter type and peak day type. This way, the conventional peak demand load factor is calculated with two different indexes; the first one represents the demand reaction to a specific temperature drop, and the second one characterizes the accumulated demand consequence of consecutive cold waves during winter.

The resulting load factor varies between a minimum of 1.40 and a maximum 1.69, with an average of 1.55.

Peak gas demand for CCGT is in function of the electricity generation mix, and the availability coefficients of the different generation technologies, especially for renewable energy.

The installed power of CCGT that must be available for the hourly electrical peak demand is determined by the forecasted electrical peak demand, and the expected installed power mix, applying the statistical availability coefficients of the different generation technologies.

In the horizon year, forecasts show a 50% conventional and 50% CCGT gas consumption in the peak day demand.

Under these peak demand estimations, on the basis of the design criteria, and the existing network simulation, the necessary development of the gas transmission system has been determined: entry capacity, pipelines, compressor stations and storage capacity for the peak demand secure coverage.

Next figure shows the gas demand forecasts that have been included in the Mandatory Planning.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
224	245	250	255	266	279	288	291	293	294
Yearly Consumption (Billion Nm^3/year)									
45	45	48	50	51	53	55	55	56	56
Yearly Consumption (Billion kWh/year)									
522	526	554	578	596	618	639	645	650	655
Mandatory Planning 2008-2016,forecasted in 2007; (2017-2019): Estimation									

The forecast included in the Mandatory Planning was made in 2007, when the economical scenario was significantly different from the one currently managed. Nowadays, as a consequence of the economic crisis, the industrial consumption has considerably decreased. The last estimations of demand evolution, taking into account the new economic situation, show a delay in the evolution of gas demand that could be estimated in around 3 years.

Additionally, function of the actual evolution of the annual and the peak gas demand, the gas demand forecasts for the next ten years will be necessary reviewed, even considering changes in the mathematical models, in order to take into account the impact of structural changes of the industrial sector on the gas demand consumption pattern. In any case, this analysis must be based on a stable economic forecast not yet available.

A.29.7 Supply Scenario(s)

Supply is a subject that implies shippers/suppliers above all the stakeholders. TSO are involved in the infrastructures needed to cover the estimated demand evolution and connect the supply projects. From this point of view, the most valuable supply information should come from shippers. Despite this information being confidential, it has to be treated as commercially sensitive and has to be handled with the extreme caution.

Enagás, as TSO, has no information on supply scenarios. But in order to contribute to an approach for the capacity-demand-supply analysis, Enagás has estimated a supply scenario taking into account assumptions based on the historical data. Next figures show the currently best estimation of this Enagás supply scenario.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
(1) Maximum peak day supply via European import pipelines (Mio. Nm^3/day)									
49	49	49	49	49	49	49	49	49	49
(2) Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
3	-	-	-	-	-	-	-	-	-
(3) Maximum peak day supply via LNG terminals (Mio. Nm^3/day)									
170	170	189	203	223	223	230	230	230	230
Peak day national production deliverability (Mio. Nm^3/day)									
0	0	0	0	0	0	0	0	0	0
Peak day storage deliverability (Mio. Nm^3/day)									
11	16	16	16	16	42	42	42	42	42

(1) Total firm entry capacity at Almería and Tarifa entry points subtracting the gas transit to Portugal.

(2) In 2010, the minimum entries required by the Spanish gas System at Larrau Interconnection Point (ref. SGRI) are detailed. After this year, all the EU internal cross-border pipelines in Spain will be bidirectional; therefore the peak day supply can not be determined.

(3) Estimated as the Total firm capacity at LNG terminals, under the hypothesis that there is LNG in the storage tanks.

Yearly Supply Scenario (Billion Nm³/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
(1) Aggregated quantities via European import pipelines (Billion Nm³/year)									
15	15	15	15	15	15	15	15	15	15
(2) Aggregated quantities via EU internal cross-border pipelines (Billion Nm³/year)									
1	-	-	-	-	-	-	-	-	-
(3) Aggregated quantities via LNG terminals (Billion Nm³/year)									
31	31	34	37	41	41	42	42	42	42
Aggregated national production (Billion Nm³/year)									
0	0	0	0	0	0	0	0	0	0

(1) Considering an annual load factor of 0.85 of the total firm entry capacity at Almería and Tarifa entry points and subtracting the gas transit to Portugal.

(2) In 2010, the minimum entries required by the Spanish gas System at Larrau Interconnection Point (ref. SGRI) are detailed. After this year, all the EU internal cross-border pipelines in Spain will be bidirectional; therefore the peak day supply can not be determined.

(3) Considering an annual load factor of 0.5 of the total firm capacity at LNG terminals.

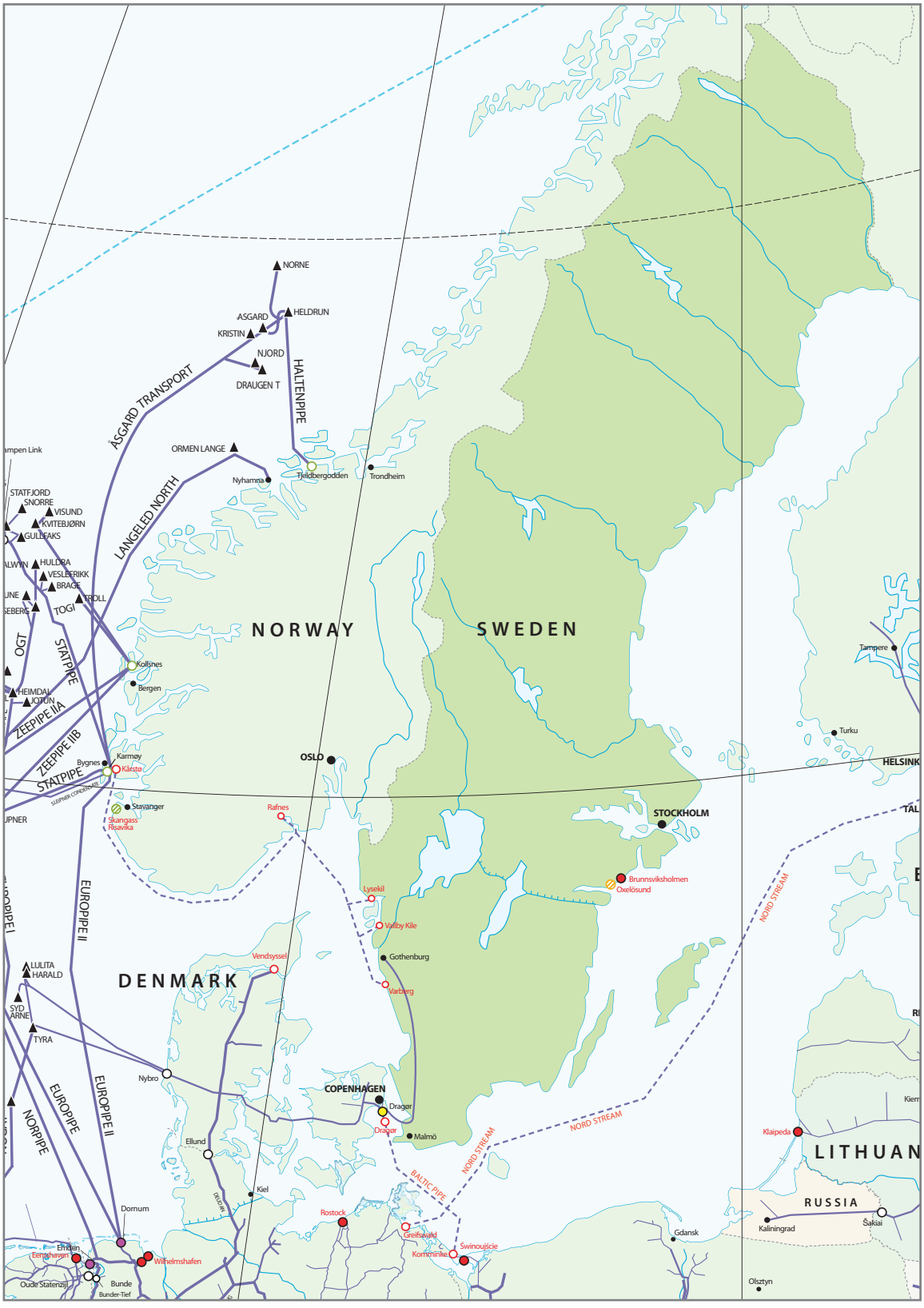
Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
(1) Aggregated quantities via European import pipelines (Billion kWh/year)									
178	178	178	178	178	178	178	178	178	178
(2) Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
9	-	-	-	-	-	-	-	-	-
(3) Aggregated quantities via LNG terminals (Billion kWh/year)									
360	360	400	431	472	472	488	488	488	488
Aggregated national production (Billion kWh/year)									
0	0	0	0	0	0	0	0	0	0

(1) Considering an annual load factor of 0.85 of the total firm entry capacity at Almería and Tarifa entry points and subtracting the gas transit to Portugal.

(2) In 2010, the minimum entries required by the Spanish gas System at Larrau Interconnection Point (ref. SGRI) are detailed. After this year, all the EU internal cross-border pipelines in Spain will be bidirectional; therefore the peak day supply can not be determined.

(3) Considering an annual load factor of 0.5 of the total firm capacity at LNG terminals.

A.30 Sweden


NORNE
HELDRUN
ASGARD
KRISTIN
NJORD
DRAUGEN T
HALTENPIPE
ÅSGARD TRANSPORT
ORMEN LANGE
Nyhamna
Tjeldbergodden
Trondheim
LANGELED NORTH
STATFJORD
SNORRE
VISUND
KVITEBJØRN
GULLFAKS
HULDRA
VESLEFRIKK
BRAGE
TROLL
TOGI
OGT
STATPIPE
Kollsnes
Bergen
HEIMDAL
VALHALL
ZEEPIPE IIA
ZEEPIPE IIB
STATPIPE
Karmøy
Kårstø
Stavanger
Skangass
Risavika
NORWAY
SWEDEN
OSLO
Rafnes
STOCKHOLM
Brunnsvikskolmen
Oxelösund
Lysekil
Valby Kile
Gothenburg
Varberg
Vendsyssel
DENMARK
LULITA
HARALD
SYD ARNE
TYRA
EUROPIPE II
EUROPIPE
EUROPIPE II
NORPIPE
Nybro
COPENHAGEN
Drager
Malmö
Ellund
Kiel
Dornum
Emden
Emshaven
Wilhelmshafen
Oude Statenzijl
Bunde
Bunder-Tief
Rostock
Greifswald
Kosmonike
Swinoujscie
Gdansk
Olsztyn
Kaliningrad
RUSSIA
Klaipeda
Šakiai
LITHUAN
Tampere
Turku
NORD STREAM
BALTIC PIPE

A.30.1 Description of the Existing Network

Swedegas own and operates the Swedish transmission pipeline for natural gas, sell transport services and flexibility services. Core business is to offer customers simple, reliable, safe, environmental friendly and efficient transmission of energy gases, taking an active part in the development of the gas market and, offering services related to the core business. Swedegas has been operating the transmission system in Sweden since 1987.

The natural gas is produced in the Danish North sea fields. From there natural gas is transported in the Danish transmission pipeline to Dragör where the Swedish transmission pipeline takes over. Pipeline goes from Dragör in Denmark via Malmö in Sweden further to Stenungsund. Along transmission pipeline are branch connections to downstream distribution network, customers and storage.

Swedegas AB is owned by E.ON Ruhrgas International AG, Germany (29,6%), StatoilHydro ASA, Norway (29,6%), DONG Energy A/S, Denmark (20,4%) and Fortum Heat and Gas Oy, Finland (20,4%).

Swedegas has obtained concessions for pipelines from the Swedish Government under the provisions of the Swedish Pipeline Act. The concessions are valid until 2012 and have then to be renewed according to the prevailing Natural Gas Act for a period of 40 years.

Swedegas transport of gas totalled 954 (923) million Nm3, corresponding to 10,5 (10,1) TWh in 2007.

Natural gas accounts for approx 20% of the energy used in the region that has access to gas. The need for gas transport services depends to a large extent upon the average temperature for the winter season. The year 2007 was characterized by an unusual warm winter with less use of gas than expected.

Costs for transport- and storage services In Sweden is regulated according to The Swedish Natural Gas Act in force as of 1st of July 2005. The Government has approved the Energy Market Inspectorate (EI) to supervise tariffs and related services.

Existing network

The natural gas from Danish system to Sweden is transported from Dragör in Denmark through one offshore pipeline to Klagshamn in Sweden. In Dragör the quality of the gas is checked and metered and the pressure is reduced in order to meet the Swedish market daily booking.

The gas is centrally odorized in Klagshamn for the whole Swedish natural gas market according to law requirements.

The onshore gas transmission pipe line runs along the West coast of Sweden from Klagshamn south of Malmö to Stenungsund north of Gothenburg to distribution companies, industries and to large CHP Power plants. Transmission pipeline are in total 390 km, pipe size range from 600 mm, 500 mm down to 400 mm.

Total length of network including distribution transmissions pipeline are 620 km.

Length of the network	390 km (2007) 330 km in pressure range 80 bar 60 km in pressure range less than 28,6 bar
Yearly transported volumes	954 million Nm^3 (2007)
International cross-border points	Dragör in Denmark
Aggregated entry and exit capacities from/to storages	1 Million Nm3/day capacity entry and exit. Operating capacity 8 Million Nm3
Aggregated entry capacities from national production	No national production in Sweden
Number of shippers	5 (2008)
Level of investment into network	€1 milj (2007)

One natural underground gas storage facility owned by a downstream distribution natural gas network owner with an operating capacity of 8 Million Nm3 connected to the natural gas system pipeline. The storage facilities are filled up during the summer months when gas consumption is low.

In principle, the market players' daily orders determine the hourly input/output from the system (the commercial system). Svenska Kraftnät (Authority) is responsible for the physical system balance, flexibility and linepack. The storage serves as strategic storage and Svenska Kraftnät have the right to use capacity for emergency situations.

Meter and regulator stations (M/R stations) are located along the transmission pipelines for the purpose of supplying the local distribution grids and end users. Their function is to reduce gas pressure, and metering of gas flow. There are a total of 41 M/R stations and one regulating station in Sweden.

The figure below gives the capacities in the entry-exit points of the transmission grid.

The capacity in exit zone Sweden depends on distribution of consumption quantities. Some parts of the transmission system are affected by capacity shortages and upper limits of the individual M/R stations. The capacity stated is an estimated value of the maximum off take.

Point		**Capacity** Million Nm3/day
Skallen	Storage	1.0 8.0 (Total)
Exit-zone-SE	Exit	6.0
Dragør Border	Entry	6.0

A.30.2 Current Processes for Investment, Current Publications

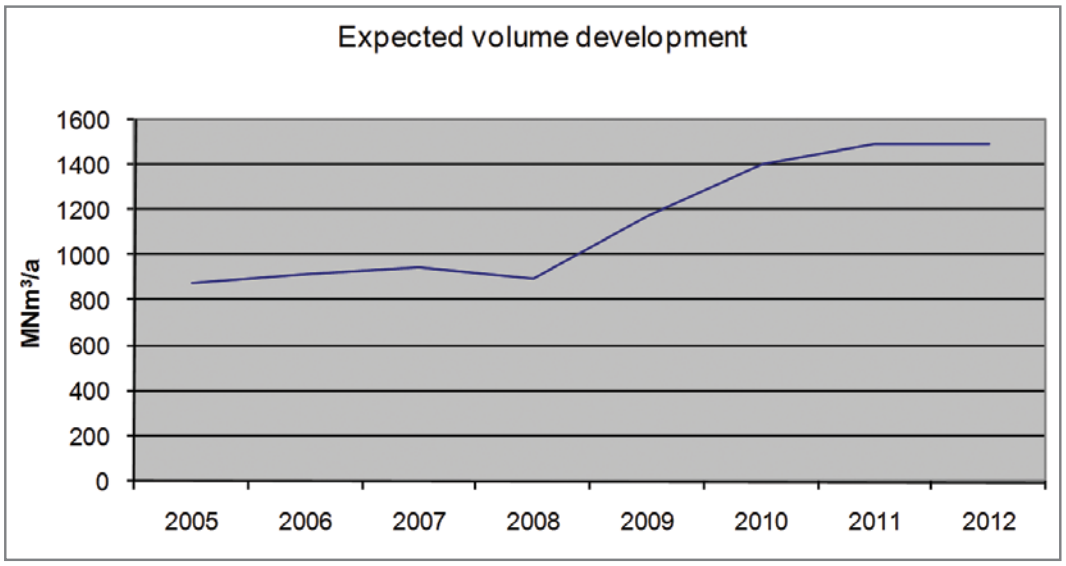
Swedegas publishes annual reports and several independent publications that may be found at the company website www.swedegas.se . All publications are in Swedish.

A.30.3 Capacity Development in the Reporting Period, Investment Decisions Taken

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
DK-SE: Dragør	8	8	8	8	8	8	8	8	8	8

The market for gas in Sweden has during the period 1990 to 2007 developed slowly. There have been two major steps during the period when the pipeline 2003 – 2004 was extended to the petrochemical center in Stenungsund (60 km) and when a large CHP plant was connected 2006.

The forecast for the period to 2012 is mainly effected of that a CHP plant in Malmö will be commissioned during 2009. Investment for that connection was already taken 2007.



There are no investments planned before 2012 other than connections to new customers along existing system.

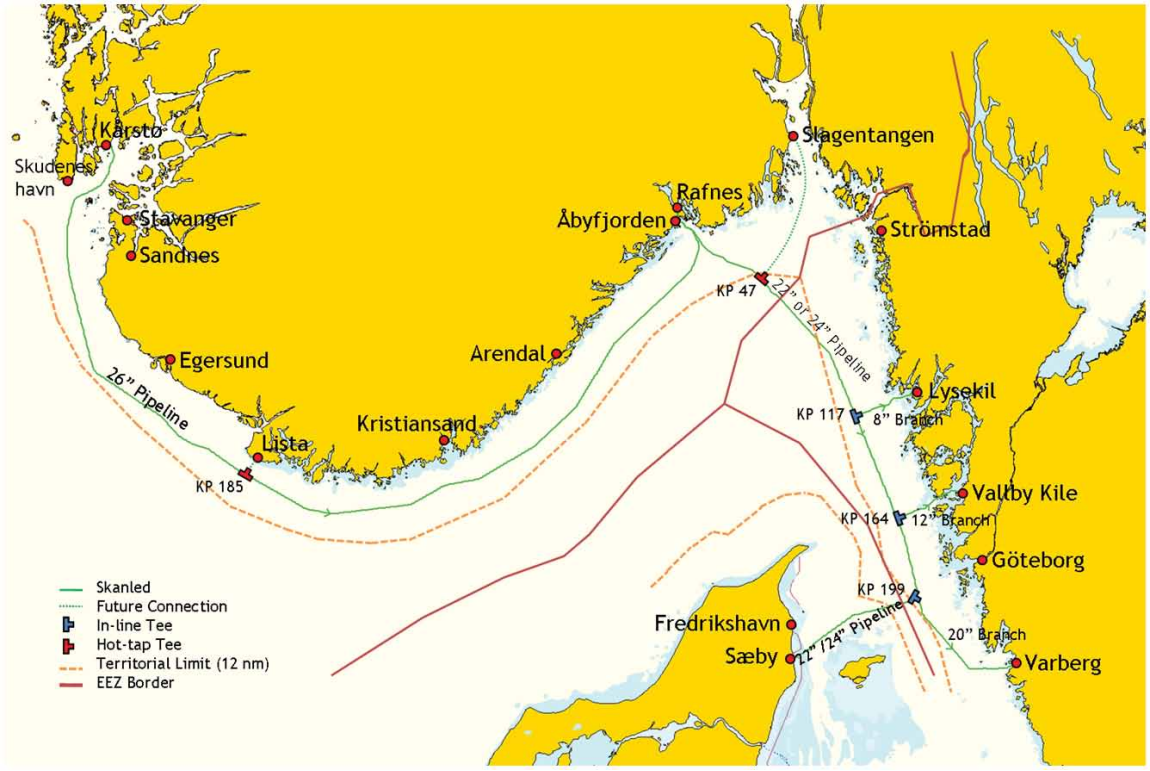
A.30.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

During the year 2007, Swedegas performed indepth pre-engenering and executed a consultation process according to the Swedish environmental act, in order to obtain concession concerning the possible connection of the Swedeish gas transmission system to the Norwegian gas fields. This work was performed in close co-operation with the state owned company GASSO in Norway. Decision was taken beginning 2008 to go further with FEED (Front and engineering) in order to have a secure base for an ivestment decicion fall 2009.

Swedegas is participating in the Skanled project that comprises of an offshore gas transmission pipeline for natural gas, connecting the gas modulation plant at Kårstø, Norway, with the Norwegian industrial cluster in Rafnes at the Norwegian east coast and further to the Swedish west coast and to the east coast in Jutland, Denmark.

In Sweden, the pipeline will connect to the existing natural gas net at three points; Lysekil, Vallby Kile (Kungälv) and Värö near Varberg. This project is called NGAS.

In Denmark the connection to the existing gas pipe system will be near Sæby.



Skanled offshore pipeline route

The Skanled project consists of five parts:

- Installations for export of natural gas to the Skanled pipeline from Kårstø
- Pipeline from Kårstø to Rafnes (26").
- Installations for receiving gas and export installations with compressor at Rafnes
- Pipeline from Rafnes to Sæby in Denmark (22" or 24").
- Three branch pipelines to three landfalls in Sweden (8", 12" and 20"),
- Installations for receiving gas in Sweden and Denmark

The main objective of the project is to provide natural gas to industrial consumers in southern Norway and Western Sweden, and make it possible for the gas supply to the existing Danish and Swedish gas markets.

The Danish gas fields in the North Sea have for a number of years delivered gas to the Danish domestic market as well as to Sweden and Germany. This gas production will decline in the coming years. The Skanled project will make up for the reduction and contribute to continued security of supply to the Danish and Swedish domestic and export markets. The Skanled pipeline is planning to be in operation 2012.

In Sweden, it is important for the industry to have safe, stable, competitive long term feedstock and energy supply. Two relevant examples are the petrochemical industries in Stenungsund and Preem Petroleum in Lysekil situated on the Swedish west coast.

Thus, it is foreseen that construction of the Skanled pipeline will increase the demand for natural gas in Sweden. The increased demand for gas will primarily substitute heavy oils, thus contributing to an overall reduction of green house gases.

In connection with the Skanled project Swedegas have invited all possible stakeholders and informed about the project and new possibilities. This in order to in a early stage receive information about interest for booking in the planned Swedish part that connect Skanled with the existing Swedish system.

A.30.5 Development of National Production and Storage Deliverability

Storage deliverability: 70% of the maximum daily withdrawal capacity.

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
0	0	0	0	0	0	0	0	0	0
Development of Storage Deliverability (Mio. Nm^3/day)									
0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

A.30.6 National Demand Scenario(s)

Figures include an increase in industrial consumption related to the finalization of the Skanled project.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
7	7	7	9	9	9	9	9	9	9
Yearly Consumption (Billion Nm^3/year)									
1	2	2	2	2	2	2	2	2	2
Yearly Consumption (Billion kWh/year)									

A.31 United Kingdom (incl. Northern Ireland)

A.31.1 Description of the Existing Network

National Grid

National Grid is an international electricity and gas company and one of the largest investor-owned energy companies in the world. We play a vital role in delivering gas and electricity to many millions of people in an efficient, reliable and safe manner. We are committed to safeguarding our global environment for future generations and providing all our customers with the highest standards of service through investment in our networks and through our talented, diverse workforce.

National Grid is based in the UK and northeastern US. Following the successful acquisition of KeySpan in August 2007, our growing operations are now approximately 50 per cent UK/50 per cent US, as well as roughly 50 per cent electricity and 50 per cent gas.

The gas transmission business within the UK has evolved over a number of years since the 1960's. On 10th October 2005, the majority of operating businesses were unified under the National Grid name. Transco plc became National Grid Gas plc.

Website: www.nationalgrid.com

National Grid is the owner and operator of The National Transmission System (NTS) in England, Scotland and Wales. The NTS is the high pressure part of National Grid's transmission system and it consists of roughly 7400 Kilometres of top quality welded steel pipeline operating at pressures of up to 85 bar (over 1250 psi). The gas is pushed through the system using 26 strategically placed compressor stations. From over 140 off-take points, the NTS supplies gas to 40 power stations, a small number of large industrial consumers and the twelve Local Distribution Zones (LDZs) that contain pipes operating at lower pressure which eventually supply the consumer.

National Transmission System

Length of grid in km on the national grid level)	7400km, with pressure range 38bar(g) to 85 bar(g)
Yearly transported volumes	1092 bn kWh (2008)
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	The United Kingdom is connected to mainland Europe by the IUK (Bacton – Zeebrugge, Belgium) and BBL (Bacton – Balgzand, Netherlands). Northern Ireland is connected to Great Britain via the Scotland Northern Ireland Pipeline (SNIP) and The Republic of Ireland is connected to Great Britain via the UK – Ireland Interconnectors.
Aggregated entry and exit capacities from/to storages	Storage withdrawal : 134 mcm/d (2009/10) Storage injection: 56 mcm/d (2009/10)
Aggregated national production	183 mcm/d (90% peak 2009/10)
Number of shippers	Approximately 70

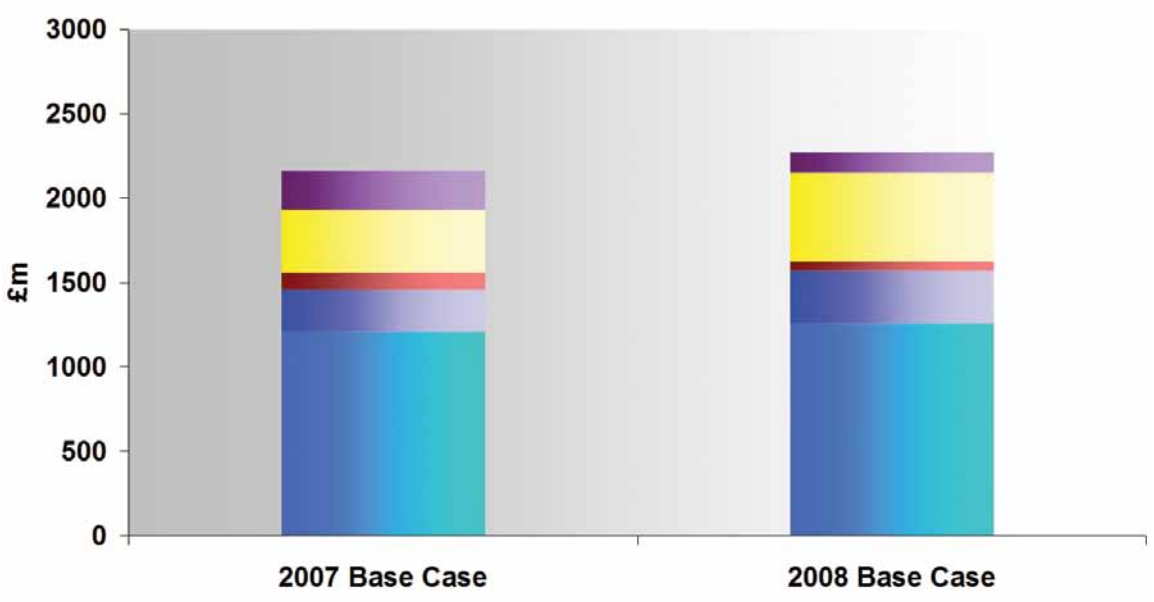
In addition to the cross-border points mentioned above, there are a number of other interconnection points. There are the interconnection points with the Norwegian infrastructure at St Fergus (Vesterled), Easington (Langeled) and also the Tampen Link which connects into the FLAGS pipeline into St Fergus. There is also the LNG importation facility at Isle of Grain, the dockside regasification facility at Teesside (Teesside Gasport), and the two new LNG importation facilities at Milford Haven: South Hook and Dragon LNG.

Financial investment levels – planned and previous level of investment

The figure below shows the investments associated with our 2008 Base Case forecast compared with our previous assessment of potential investment over the forecast period.

Forecast Spend by Investment Category

Source – National Grid



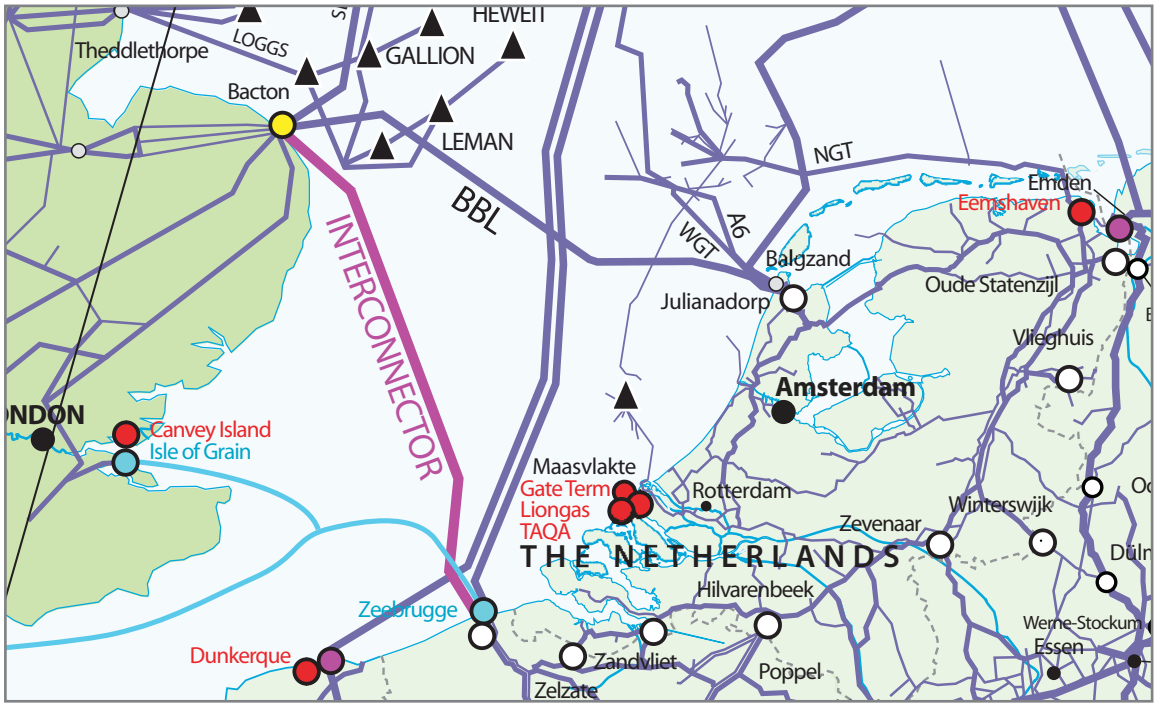
In the figure above, 'Entry' and 'Exit' relate to growth investment consistent with the obligations placed on National Grid under its Gas Transporters' licence to meet capacity requirements of the 1 in 20 peak day criteria and to provide entry capacity where justified. 'Power Station' investment accounts for the large one-off connections to the NTS. 'Other' investment includes asset enhancement and the replacement of assets that have reached the end of their economic life. 'Emissions' is the investment forecast to comply with new environmental legislation to reduce pollutants.

The NTS investment planning process uses scenario analysis as a mechanism for managing uncertainty regarding new gas supplies. This technique ensures that a broad spectrum of potential investments is identified allowing initial feasibility studies to be undertaken where appropriate. These initial studies support the delivery of timely and efficient investment on the NTS as requirements are clarified, predominantly through the Long Term System Entry Capacity (LTSEC) auctions, and Offtake Capacity Statement (OCS) process for DN exit requirements.

A combination of recessionary effects and poor credit availability are lowering expectations of new connections at entry or exit to the NTS in the short and medium term. Any expectations of growth opportunities are primarily focused on the potential for new power stations and new storage facilities. The existing supplies and offtakes from the NTS will be well served through to the medium term by the recently completed investments in South Wales and in the Yorkshire area.

The primary mechanism for shippers to provide us with signals of their future capacity requirements is through the long term auctions, which now form an integral part of our investment planning process. Hence the requirement for any additional projects into the future is subject to the relevant market signals being received and any approved projects are subject to an ongoing review following subsequent auctions.

Interconnector UK

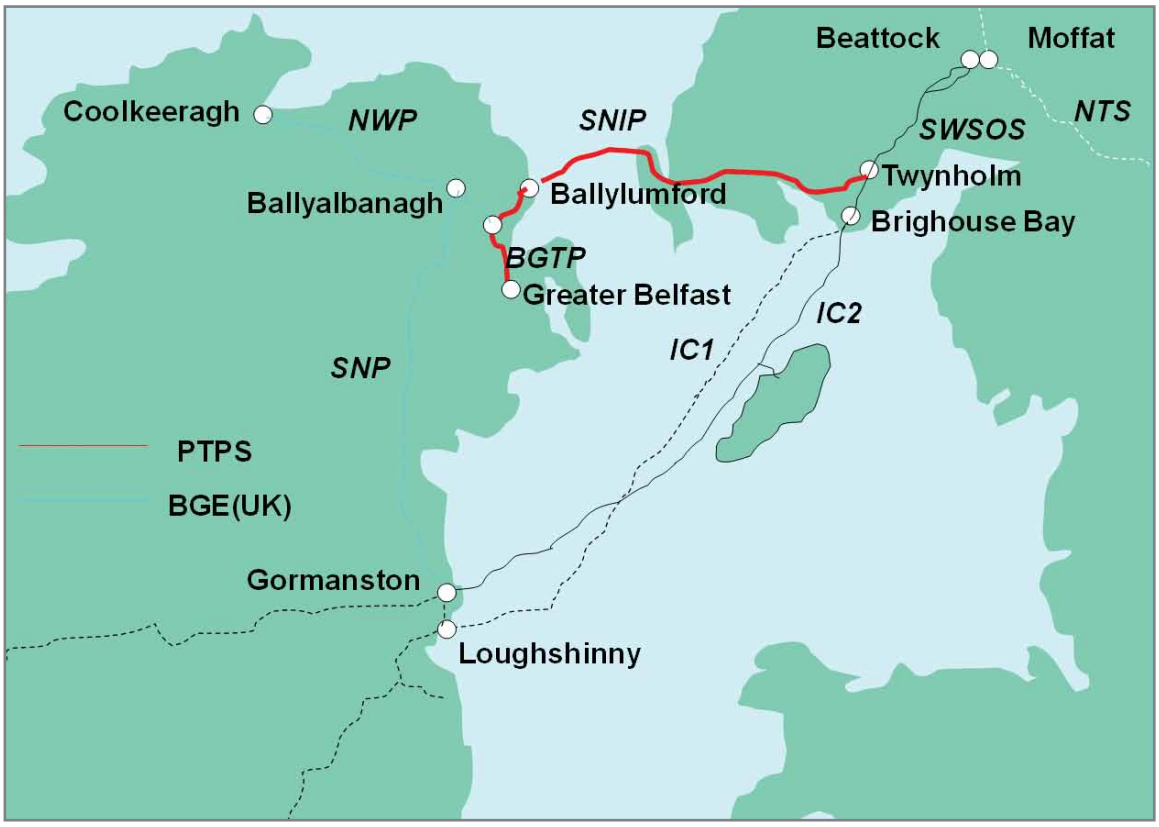


Interconnector (UK) Limited operates a sub sea gas pipeline and terminal facilities to provide a strategic bi-directional link between the UK and Continental European energy markets.

The Interconnector system comprises compression terminals at Bacton in UK and Zeebrugge in Belgium connected by a 235 kilometre pipeline. It is currently capable of transporting 25.5 billion cubic metres of gas per annum from Zeebrugge to Bacton and 20.0 bcm per annum in the opposite direction.

Under existing contractual arrangements, an IUK Shipper may request that Interconnector invests in an enhancement of the pipeline's capacity. If such a request is received, Interconnector will first consult its Shippers to see if there are any who may be willing to dispose of Capacity Rights, which might fully or partially satisfy the requirement for additional capacity. If following consultation it is clear that IUK Shippers are not willing to release such Capacity Rights, IUK will canvass support for the proposed enhancement and develop a detailed proposal for the project. A request from a third party for access to the Interconnector, which could only be granted following a further enhancement of system capacity, will be given proper consideration as to the technical and economic feasibility of such enhancement.

The Northern Ireland Gas Transmission System



Northern Ireland Transmission Pipeline System

Premier Transmission Limited & Belfast Gas Transmission Limited

Premier Transmission Limited

Premier Transmission Limited (PTL) is the owner and operator of the Scotland to Northern Ireland natural gas transmission pipeline (SNIP).

PTL also operates the Belfast Gas Transmission Pipeline (BGTP) on behalf of Belfast Gas Transmission Limited. The SNIP and the BGTP jointly form the Premier Transmission Pipeline System, PTPS.

The full share capital of PTL was acquired from the 50/50 joint venture owners, BG Group plc and Keyspan Energy Development Corporation, on 18 March 2005 by Mutual Energy Limited (formerly Northern Ireland Energy Holdings Ltd). Mutual Energy Limited is a mutual company which manages energy assets in the long term interests of Northern Ireland's energy consumers. Having no shareholders, any financial surpluses are for the benefit of energy consumers. This combined with long term secure finance has allowed the company to manage major energy assets at a very low cost to consumers.

Belfast Gas Transmission Limited

Belfast Gas Transmission Limited (BGTL) is the owner of the Belfast Gas Transmission Pipeline system – a part of the Premier Transmission Pipeline System. The full share capital of Phoenix Natural Gas Limited, was acquired from Phoenix Energy Holding on 31 March 2008 by Mutual Energy Limited. The Phoenix Natural Gas name has changed to BGTL.

BGE(UK) Ltd

The North-West & South-North Pipeline in Northern Ireland is operated by BGE (UK) Ltd. (trading as BGE (NI)), a wholly owned subsidiary of Bord Gais Eireann. BGE (NI) is the holder of the North-West & South North Pipeline Authorisations. BGE (NI) has contracted out the maintenance of the North-West & South North pipeline, including an Emergency Response to Scotia Gas Networks. The operation of these pipelines is contracted out to Bord Gais Eireann.

NI Transmission System Description

The Moffat entry point connects the Irish natural gas system to that belonging to National Grid in GB, and allows for the importation of GB gas to Ireland and Northern Ireland via two sub-sea interconnectors and an onshore pipeline in Scotland. From the connection with the National Grid system at Moffat, the Scottish onshore system consists of a compressor station at Beattock, which is connected to Brighouse Bay by two pipelines from Beattock to Cluden and a single pipeline from Cluden to Brighouse Bay, all capable of operating at 85barg. A second compressor station at Brighouse Bay compresses the imported gas into the two sub-sea interconnectors which can operate at pressures in excess of 140barg if required. Before reaching the Brighouse compressor station, an offtake station at Twynholm supplies gas to Northern Ireland via the SNIP.

The Scotland to Northern Ireland 600mm pipeline (SNIP) connects to the BGÉ system at Twynholm in Scotland and has a maximum operating pressure of 75 barg. The pipeline is 135 km long and runs towards the coast near Stranraer and crosses the Irish Sea to terminate at Ballylumford Power Station, Island Magee. The SNIP is owned and operated by PTL the primary transporter in Northern Ireland.

The Belfast Gas Transmission Pipeline comprises a further 35kms of 600mm pipeline with a maximum operating pressure of 75 Barg and runs from Ballylumford via Carrickfergus to Belfast, where it supplies the Greater Belfast demand.

From Carrickfergus 112km of 450mm pipeline extends to supply the powerstation at Coolkeeragh. This pipeline, the North-West Pipeline (NWP), is owned and operated by BGÉ(UK) Ltd. As well as Coolkeeragh, several distribution networks are being developed in towns adjacent to the pipeline by firmus Energy.

A 450mm pipeline connecting the Interconnector System to the North-West Pipeline was built in 2006. This pipeline, called the South-North Pipeline (SNP), is 154.5 km long and extends from the IC2 landfall at Gormanston, Co. Meath in Ireland to Ballyalbanagh on the North - West Pipeline, approximately 12km west of the Carrickfergus AGI. This pipeline facilitates supplies to towns and industries in the corridor from Newry to Belfast (also being developed by firmus) and in the longer term will be able to support the SNIP pipeline in meeting increased demand levels in Northern Ireland. The SNP was developed by BGÉ (UK).

Length of grid in km	439km, with pressure range 19bar(g) to 85 bar(g)
Yearly transported volumes in bn kWhs	17.9 bn kWh (GY 2008-09)
Overview of international cross-border points and their characteristics (EU import points, EU export points, EU internal cross-border points, LNG entry points)	Northern Ireland is connected to Great Britain via the Scotland Northern Ireland Pipeline (SNIP) and connected to the Republic of Ireland via the South North Pipeline, SNP. The Republic of Ireland is also connected to Great Britain via the UK – Ireland Interconnectors.
Aggregated entry and exit capacities from/ to storages	n/a
Aggregated national production	n/a
Number of shippers	7

A.31.2 Current Processes for Investment, Current Publications

National Grid

Outline of the investment processes

The assessment of future transmission capacity requirements distinguishes between system entry and system exit. National Grid has introduced a Transmission Planning Code that describes how the NTS is planned and developed over the long term and how the planning process interacts with the processes for entry and exit capacity release. A copy of the Transmission Planning Code may be obtained from our website at:

www.nationalgrid.com/uk/Gas/TYS/TPC

National Grid undertakes scenario analysis around the Base Case supply patterns to understand the capability to accommodate different patterns of flows on the system. The analysis is started in advance of long term entry capacity auctions to identify potential projects required to support entry capacity provision. Further entry analysis is conducted after the long term auctions to confirm the need for new entry projects, and review the requirement for projects identified through previous auction signals.

In respect of system exit, analysis is undertaken during the year to identify investment requirements for new loads that wish to connect directly to the NTS and during the summer to support the provision of capacity to Distribution Network Operators (DNOs).

Our analysis includes consideration of commercial options available to National Grid to avoid or defer investment and to determine the most economic and efficient outcome. Commercial arrangements can include (but are not limited to) booking of constrained services at LNG storage sites, buyback contracts and interruption contracts.

The UNC requires DNOs request firm bookings for exit flat capacity, flexibility capacity and pressure commitments each year, for a period of 4 years into the future, and indicative requirements for a fifth year, under the Offtake Capacity Statement (OCS) process. The 2008 OCS process considered firm bookings period from 1 October 2008 through to 30 September 2012 and indicative requirements for the year commencing 1 October 2012. The fourth year of the 2008 OCS process is of particular interest because it provides the first firm requirements for Interruptible to Firm capacity switching anticipated by DNOs as a result of the forthcoming reform of Interruption arrangements.

Description of relevant current publications

The 2008 edition of the Ten Year Statement was published in line with Special Condition C2 of National Grid's Gas Transporters' Licence and Section O of the Uniform Network Code. The 2009 edition will be published in December 2009. Special Condition C2 requires that the Ten Year Statement, published annually, shall provide a ten-year forecast of transportation system usage and likely system developments that can be used by companies, who are contemplating connecting to our system or entering into transport arrangements, to identify and evaluate opportunities.

The Statement explains our latest volume forecasts, system reinforcement projects and investment plans. The Statement forms the basis of our industry wide consultation process, Transporting Britain's Energy, and was the first element of our 2009 planning process.

The Ten Year Statement contains essential information on actual volumes, the process for planning the development of the system, including demand and supply forecasts, system reinforcement projects and associated investment. The main body of the document provides an overview of the key issues, with all the detail contained in the appendices.

The production of the Ten Year Statement (TYS) is essentially the conclusion to the planning process for the planning cycle. As in previous years there are areas of uncertainty, and these are addressed through the "Transporting Britain's Energy" (TBE) consultation. We use the forecasts contained in the last TYS as the starting point for the next consultation. Shortly after the publication of the TYS, targeted questionnaires will be circulated to a range of industry players (producers, importers, shippers, storage operators, terminal operators, transporters and consumers) requesting demand and supply forecast data and inviting views on our underlying assumptions.

The programme for the 2009 plan is as follows:

- Publish 2008 Ten Year Statement – December 2008
- Circulate 2009 Consultation questionnaires – January 2009
- Receive responses to questionnaires – February 2009
- Hold consultation meetings – January/February 2009
- Provide feedback via the internet on responses received – ongoing from March 2009
- Produce outline investment proposals based on updated demand and supply forecasts and publish at an industry seminar – July 2009
- Publish 2009 Ten Year Statement – December 2009

National Grid also contributes heavily to the Department for Energy and Climate Change (DECC, formerly DTI) Energy Markets Outlook document, which takes a longer term view of UK energy matters.

The Northern Ireland Gas Transmission System

Investment in the NI Transmission System is based upon the ability of the existing infrastructure to accommodate current and future Supply and Demand projections. Previously the Northern Ireland Authority for Utility Regulation (the Utility Regulator) published an annual Pressure Report which examined the future potential of the transmission network in Northern Ireland. The transmission system operators in Northern Ireland are obliged in their respective network codes and licences to jointly produce a pressure report based upon network analysis of relevant supply and demand scenarios. The result of such network analysis largely informs industry decision as to what future investment is required.

In April 2008, the Utility Regulator and the Commission for Energy Regulation in the Republic of Ireland, ('the Commission') jointly published a Memorandum of Understanding (MoU) on the development of the Common Arrangements of Gas, (CAG) on the island of Ireland. In establishing the CAG, the Commission and the Utility Regulator aim to facilitate the operation of the natural gas market in Ireland and Northern Ireland on an all-island basis. As part of this process, both authorities noted their commitment to a single approach to security of supply on the island which involves the production of a Joint Capacity Statement, (JCS).

The 2009 JCS includes updated analysis and modelling of the impact of forecast gas supply and demand on the island's transmission systems for the period 2008/09 to 2015/16. The study provides the best estimate of the adequacy of the transmission system on the island to meet demand growth in the two jurisdictions. The 2009 JCS can be obtained from the Utility Regulator website at www.niaur.gov.uk/publications/

The report structure is as follows;

Section 1:-	provides an introduction to the JCS which highlights its background, general approach and structure.
Section 2:-	describes the transmission network in Ireland and Northern Ireland.
Section 3:-	provides the central planning case projections for gas demand by market sector.
Section 4:-	considers the current sources of gas supply on the island, the development of gas storage, the potential for new sources, and the requirement for gas imports.
Section 5-	describes the network simulation and supply-demand scenarios.
Section 6:-	discusses the conclusions and recommendations arising from the analysis in previous sections.

A.31.3 Capacity Development in the Reporting Period, Investment Decisions Taken

National Grid

NTS Planned Projects

The NTS investment planning process uses scenario analysis as a mechanism for managing uncertainty regarding new gas supplies. This technique ensures that a broad spectrum of potential investments are identified, allowing initial feasibility studies to be focused. These initial studies support the delivery of timely and efficient investment of the NTS as requirements are clarified.

The critical aim of the investment planning process is to ensure that thew suite of projects proposed within the previous Ten Year Statement has been exhaustively re-appraised to ensure that investment is made in the most efficient manner possible to meet the overlapping drivers of growth, replacement, entry supply flexibility and environmental efficiency.

The following tables highlight NTS investment projects that are either approved or under review over the next few years.

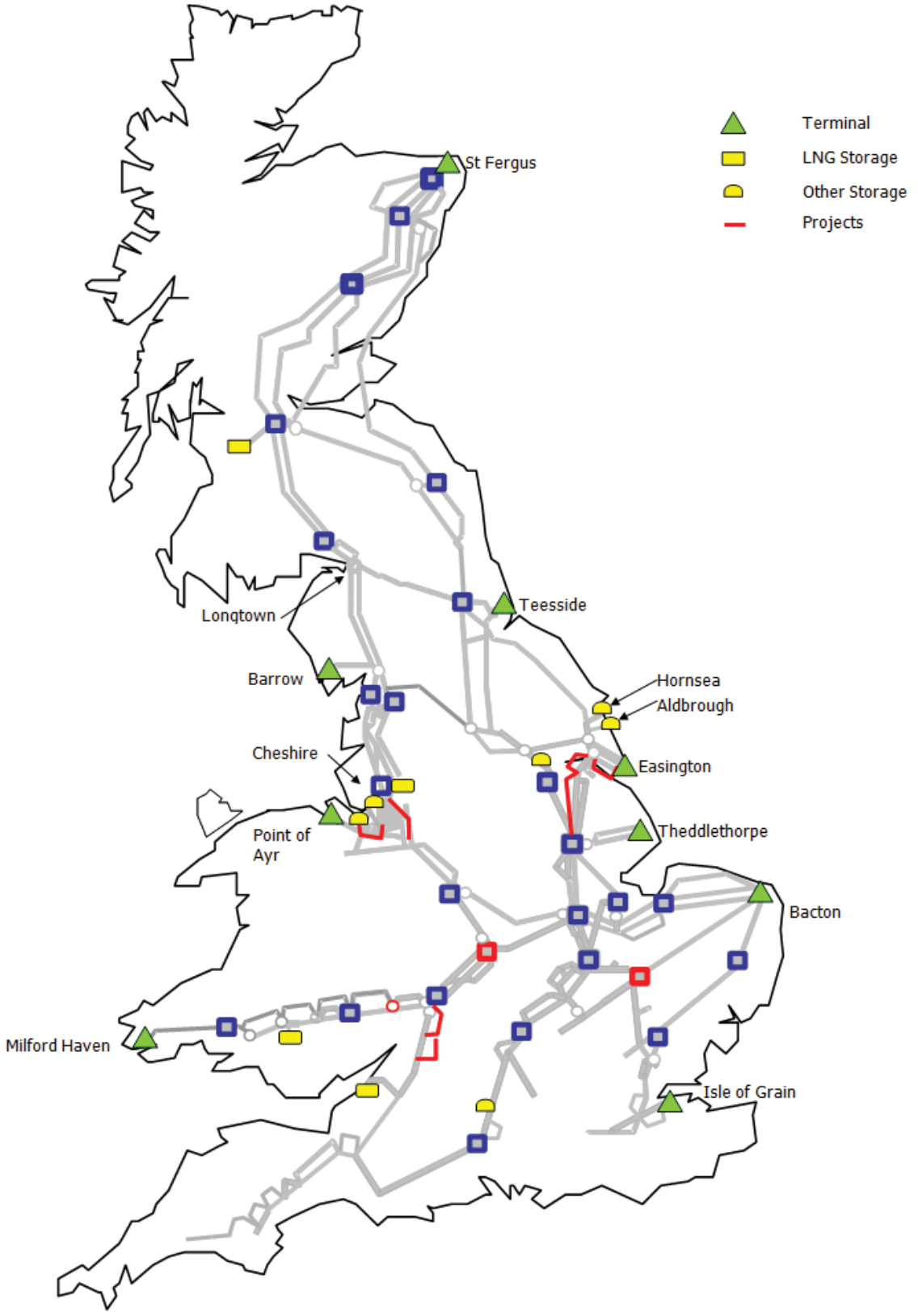
Projects Approved for 2009 Construction		
Project	**Build**	**Scope**
Churchover New Compressor	2009-10	15MW

Projects Approved for 2010 Construction		
Project	**Build**	**Scope**
Easington to Paull	2010-11	26km x 1200mm
Cambridge Multijunction modifications	2010-11	Flexible Flow Configurations
Gilwern Offtake	2010-11	Uprating for Higher Presure
Wormington to Sapperton	2010-11	42km x 900mm

Projects Currently Planned for 2010 Onwards	
Project	**Scope**
Sapperton to Easton Grey	19km x 900mm
Hole House Farm to Elworth	5km x 900mm

Projects Currently Under Review	
Project	**Scope**
Warburton to Audley Pipeline	49km x 1200mm
Paull to Goxhill Pipeline	6km x 1200mm
Goxhill to Hatton Pipeline	63km x 1200mm

NTS 2009 Investment Map



Capacity Development at Interconnection Points

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
UK-IE: Moffat	38	38	38	38	38	38	38	38	38	38
UK-BE: Bacton (IUK)	55	55	55	55	55	55	55	55	55	55
BE-UK: Bacton (IUK)	70	70	70	70	70	70	70	70	70	70
NL-UK: Bacton (BBL)	39	47	47	47	47	47	47	47	47	47
Import										
NO-UK: St Fergus (Vesterled)	34	34	34	34	34	34	34	34	34	34
NO-UK: Easington (Langeled)	68	68	68	68	68	68	68	68	68	68
NO-UK: Tampen Link	25	25	25	25	25	25	25	25	25	25
LNG										
Isle of Grain	39	60	60	60	60	60	60	60	60	60
Milford Haven (Dragon & South Hook)	82	82	82	82	82	82	82	82	82	82
Teesport LNG	11	11	11	11	11	11	11	11	11	11

Note: National Grid uses Standard million cubic meters per day (Mio Sm³/day), and hence a conversion factor of 273.15/288.15 is used to convert to Normal million cubic meters per day (Mio Nm³/day).

The Northern Ireland Gas Transmission System

NI Transmission System Planned Projects

Although a number of new Supply and Demand projects have been considered in the 2009 JCS, (see sections A.31.4 below) they have not yet been approved for construction.

Capacity (Mio. Nm³/day)	Year									
Interconnection Point	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
IE-GB: Moffat	29	29	29	29	29	29	29	29	29	29
PTL-BGE(UK) Twynholm	8	8	8	8	8	9	9	9	9	9
BGE(UK)- BGE Gormanstown	6	6	6	6	6	6	6	6	6	6

A.31.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

The following tables detail existing or near completed, under construction and proposed import projects.

Existing and near completed import projects

Import Project	Operator / Developer	Type	Location	Capacity (bcm/yr)
Interconnector	IUK	Pipe	Bacton	25.5
BBL Pipeline	BBLw	Pipe	Bacton	~15
Langeled	Gassco	Pipe	Easington	25
Tampen*	Gassco	Pipe	St Fergus	10
Vesterled	Gassco	Pipe	St Fergus	13
South Hook 1	QP / ExxonMobil	LNG	Milford Haven	10.5
Dragon	BG / Petronas	LNG	Milford Haven	6
Isle of Grain Phase I & II	National Grid LNG	LNG	Isle of Grain	13.5
GasPort	Excelerate	LNG	Teesside	~4
			Total	**123**

Under construction and proposed import projects

Import Project	Developer	Type	Location	Date	Capacity (bcm/yr)	Status
South Hook 2	QP / ExxonMobil	LNG	Milford Haven	2009/10	10.5	Under construction
BBL Expansion	BBL	Pipe	Bacton	2010+	~3	Investment Decision taken
Isle of Grain 3	National Grid LNG	LNG	Isle of Grain	2010	7	Under construction
Dragon 2	BG / Petronas	LNG	Milford Haven	2013+	6	Planning received (1 tank)
ConocoPhillips	Partners	LNG	Teesside	2013+	7+	Planning received
Canvey LNG	Partners	LNG	Canvey Island	2013+	5.4+	Planning rejected possible resubmission
Port Meridian	Hoegh LNG	LNG	Barrow	2013	4	Planning granted
Other LNG	Various	LNG	n/a	2013+		Conceptual
			Total under construction		**17.5**	
			inc proposed		**(42+)**	

In addition to the potential new import projects, a number of storage projects are also under consideration or development. These include salt cavity developments and conversions of depleted onshore oil and gas fields and are covered in more detail in a later section.

The Northern Ireland Gas Transmission System

Provision was made in the 2009 JCS for the construction of a new 430 MW CCGT by AES at the site of their existing Kilroot coal-fired power station. The JCS assumed that the Kilroot CCGT will commence commercial operation by 2012/13. The new CCGT station would require the construction of a 2.5Km spur pipeline connecting to the existing 600mm Premier Transmission Pipeline System and extending to the existing Kilroot site. The pipeline project to connect the new CCGT station has not progressed beyond the JCS analysis stage.

The other prospective development is the construction of salt cavity storage in the Larne area. This is discussed further in section A.31.5 below.

A.31.5 Development of National Production and Storage Deliverability

National Grid

National Production

In constructing our base case gas supply forecast we consider UKCS supplies as the first supply component in terms of the make-up of our supply forecasts for numerous reasons:

- Since UKCS supplies were first developed in the late 1960's UKCS supplies have always under-pinned UK gas demand
- Though in decline the estimated 63.5 bcm of UKCS supplies[3] in 2008 made up 61% of all UK supplies[4]. This compares to 66.8 bcm in 2007 (67% of UK supplies)
- Most supplies from the UKCS are from fields currently in production, hence the marginal cost of supply is relatively low
- With the exception of limited volumes of UKCS gas that is piped direct to the Netherlands and potential options for exports through the Interconnector (IUK) at Bacton, the UK is the only option in terms of supply destination
- With the exception of a few high swing fields, most UKCS supplies operate at a high load factor[5] to maximise production. A high load factor is usually commensurate with 'base load' operation. In 2008 the average load factor for all UKCS supplies was 80%, this was the highest of all supply components, the next highest being Norwegian imports at 64% based on observed peak flow and just 53% based on capacity
- Consequently all UKCS supplies are considered as 'core' with the exception being those high swing fields (typically less than 10%). The non-core component for UKCS is determined in the final allocation of the remaining shortfall after all other core gas sources are calculated

In constructing our long-term gas supply forecasts we continue to rely on information received through the long term auctions for entry capacity and information from market participants through our TBE consultation process. To ensure we consider other supply possibilities we supplement this data with information from commercial sources and trade journals. This year was the fourth year that we received most of the information regarding UKCS supplies through Oil and Gas UK, whereby Oil and Gas UK members released their data to Oil and Gas UK and under agreed terms we extracted a field specific data set. This data representing about 90% of UKCS fields was supplemented with additional commercial data to form the basis of our UKCS supply forecasts. Hence we believe our UKCS forecasts continue to closely reflect the view of upstream parties.

Based on the information provided to us, our latest forecast for UKCS annual production for next year (NTS deliveries in 2009/10) is 9% lower at 53 bcm than the equivalent forecast that we made in 2008. This is due to a combination of lower demand and a lower forecast for UKCS production next year. In aggregate for the 10 year planning period where our

[3] Estimated UKCS supplies delivered to the NTS

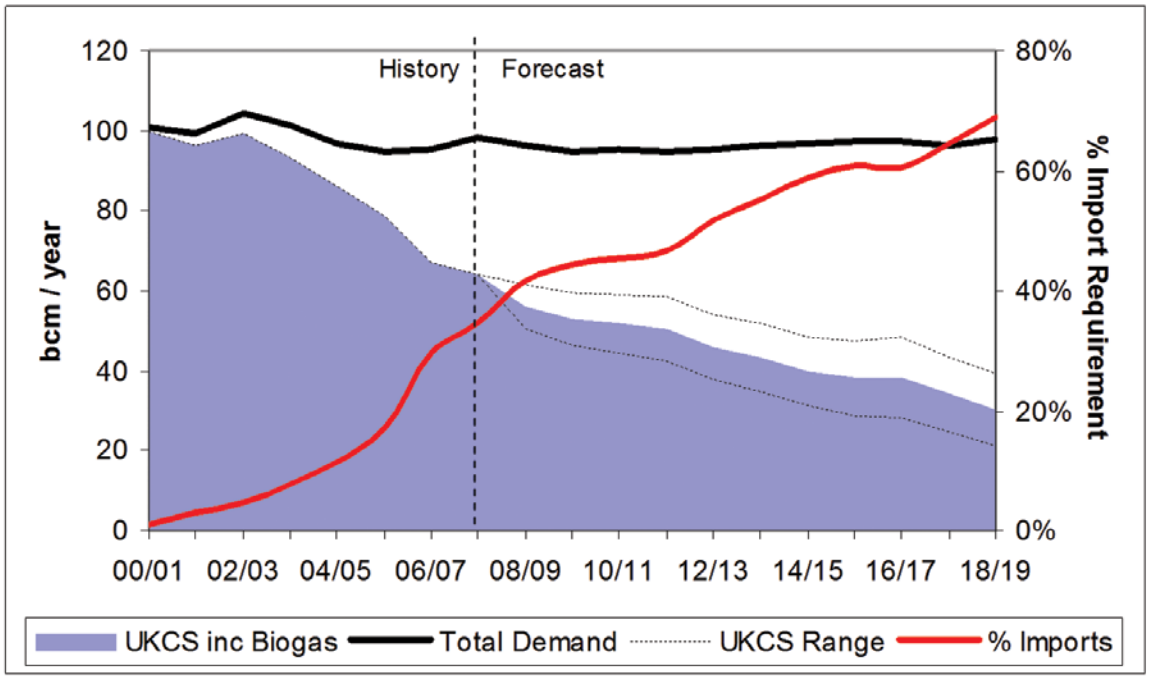
[4] Aggregated supplies to NTS, includes storage

[5] % of average flow divided by peak flow

forecasts 'overlap' our latest UKCS annual forecasts are approximately 2% lower than those made in 2008, with lower forecasts being seen between 2008/09 through to 2010/11, then similar forecasts through to 2015/16 before they revert to being higher for the remainder of our 10 year planning period. Our current assumption for the commencement of West of Shetland production is 2014/15 a year later than forecast in 2008.

The figure below shows our latest forecast for UKCS annual production (delivered to NTS) shown as core and non-core and UK annual demand (includes exports to both Ireland and through IUK). Around the forecasts for UKCS annual production is a range commencing at +/ - 10% of our 2008/09 forecast and thereafter increasing by +/- 2% per year. Also shown on the chart is actual UKCS supplies and annual demand since 2000/01. The actual demand line has not been weather corrected. The % import line relates to NTS demand including both Irish and IUK exports, if these were excluded, the % for imports would be lower.

UKCS Annual Supplies



Note: above chart shows supplies at standard conditions

The figure above shows for our base case the UK's import dependency reaching 46% in 2010/11: this is marginally lower than the 47% we reported last year. The chart also shows UK import dependency reaching 69% at the end of our 10 year planning period in 2018/19. This is slightly lower than reported last year primarily due to lower demands. The range for import dependency based on uncertainties associated with future UKCS production is typically +/- 10% around our base case forecast.

The current basis for reporting import dependency includes exports to Ireland and the Continent in the measure of demand, if these demands were excluded, the UK's import dependency would be lower. The rapid increase in the import dependency line between 2006/07 and 2007/08 was due to a combination of events in 2006/07. Namely; low demands (not weather corrected) and high Norwegian imports as Continental buyers took less gas, this in turn depressed some UKCS production from high swing fields. This is a good example of where non-core supplies have been reduced.

Our latest forecast for UKCS peak production in 2009/10 is about 1% higher at 203 mcm/d than the equivalent forecast that we made in 2008.

Through the 10 year planning period our latest peak UKCS forecasts are generally higher than those made in 2008; this is more noticeable towards the end of our 10 year planning period.

Storage Deliverability

The following tables detail existing storage and storage currently under development.

Existing UK storage

Storage Project	Operator	Location	Space (~bcm)	Operational
Rough	Centrica Storage	Southern North Sea	3.3	1985
Hornsea	SSE Hornsea	Yorkshire	0.3	1979
Humbly Grove	Star Energy	Hampshire	0.3	2005/06
LNG Storage	National Grid LNG Storage	Various	0.3	1971-1983
Hatfield Moor	Scottish Power	Yorkshire	0.1	2000/01
Holehouse Farm	Energy Merchants Gas Storage	Cheshire	0.04	2001/02
		Total	**4.34**	

Storage under development

Storage Project	Developer	Location	Space (bcm)	Gas Year
Aldbrough (*)	SSE / Statoil	East Yorkshire	0.4	2008/09
Holford	E.ON	Cheshire	0.2	2011/12
Caythorpe	Centrica	East Yorkshire	0.2	2011/12
Stublach	Storengy UK Limited	Cheshire	0.4	2013/14
		Total	**1.1**	

(*) Commercial operations commenced July 2009, space 0.06 bcm of planned 0.37 bcm

Storage projects with planning consents

Storage Project	Developer	Location	Space (~bcm)	Planning Granted	Status
Aldbrough II	SSE / Statoil	East Yorkshire	0.4	May-07	FID(**) not yet taken
Portland	Portland Gas Ltd	Dorset	1.0	Jul-07	FID not yet taken
Whitehill Farm	E.ON	Yorkshire	0.4	Oct-07	FID not yet taken
Gateway	Stag Energy	Offshore Barrow	1.5	Nov-08	FID not yet taken
Holehouse Farm	EDFT Storage	Cheshire	0.3	Mar-09	FID not yet taken
Bains	Centrica Storage	Offshore Barrow	0.6	Jun-09	FID not yet taken
		Total	**4.2**		

(**) FID – Final Investment Decision

Storage projects yet to receive planning consents

Storage Project	Developer	Location	Space (~bcm)	Date Applied
King Street	NPL	Cheshire	0.2	Oct-07
Saltfleetby	Wingas	Lincolnshire	0.7	Oct-08
Fleetwood	Canatxx	Lancashire	1.0	Feb-09
		Total	**1.9**	

Storage projects yet to submit planning consents

Storage Project	Developer	Location	Space (~bcm)
Albury I	Star Energy	Surrey	0.2
Albury II	Star Energy	Surrey	0.4
Hewett	ENI	Offshore Bacton	4.0
Baird	Centrica	Offshore Bacton	1.7
Hatfield West	Scottish Power	Yorkshire	0.1
Gateway II	Stag Energy	Offshore Barrow	1.5
		Total	**7.9**

Inclusion of all storage proposals in National Grid's base case forecast is neither practical nor realistic for the following reasons:

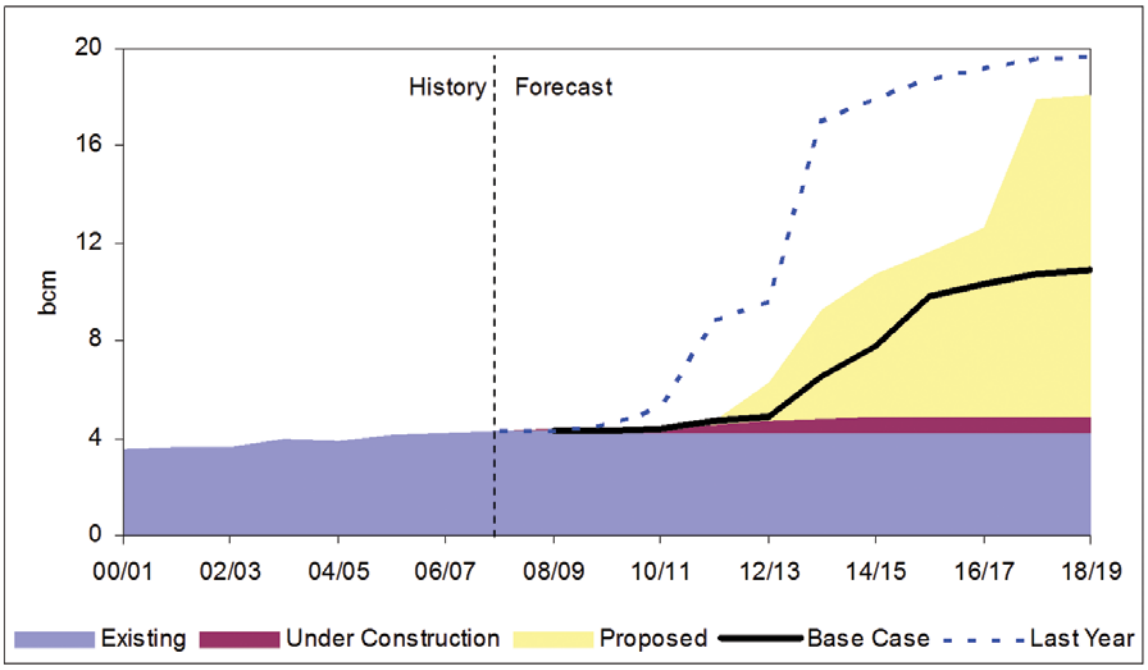
- the history / track record of many UK storage developments has been one of slippage and deferral with relatively few new storage projects being completed over the past decade. The recent economic conditions have ensured that this trend has continued
- the absence of limited capacity signals from entry auctions for most of the proposed storage projects
- the difficulty in obtaining planning and other permits
- the sheer magnitude of the proposed storage facilities in the context of peak day demands at approximately 500 mcm/d

Hence for inclusion in our base case forecast we have included all storage facilities that are currently under construction and those that we believe are well advanced in terms of securing planning, financial backing and have commitments from major players. Even for these we may assume some slippage. For external reporting purposes, we are not explicit for any of the proposed storage facilities other than those that are under construction or have signalled entry capacity through the auctions. Hence our network plans can readily substitute one proposed storage facility with another.

The flowing figure shows storage space in terms of existing facilities, those under construction and those proposed. For comparative purposes, last years aggregated storage space is shown. The chart also shows storage space since 2000/01 and our base case forecast.

Forecast Storage Space

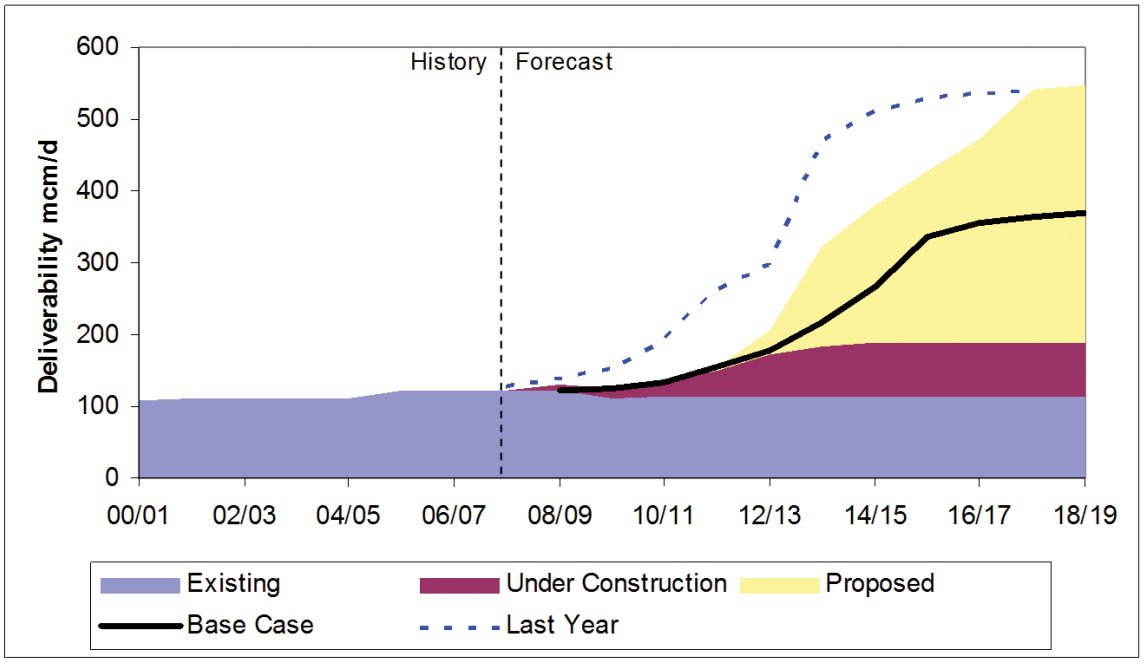
Source : National Grid



Note: above chart shows supplies at standard conditions

Forecast Storage Deliverability

Source : National Grid



Note: above chart shows supplies at standard conditions

Development of National Production and Storage Deliverability									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Development of National Production Deliverability (Mio. Nm^3/day)									
193	184	172	148	137	126	121	121	108	96
Development of Storage Deliverability (Mio. Nm^3/day)									
80	86	101	118	126	133	135	139	139	139

Note: National production deliverability is 90% of peak UKCS deliverability

Note: The table above only includes new storage where the final investment decision has been taken both on storage development and entry capacity development.

Note: To take account of reductions in deliverability across the winter, a factor of 70% has been applied to Medium Range Storage maximum deliverability and 25% to Short Range Storage maximum deliverability.

The Northern Ireland Gas Transmission System

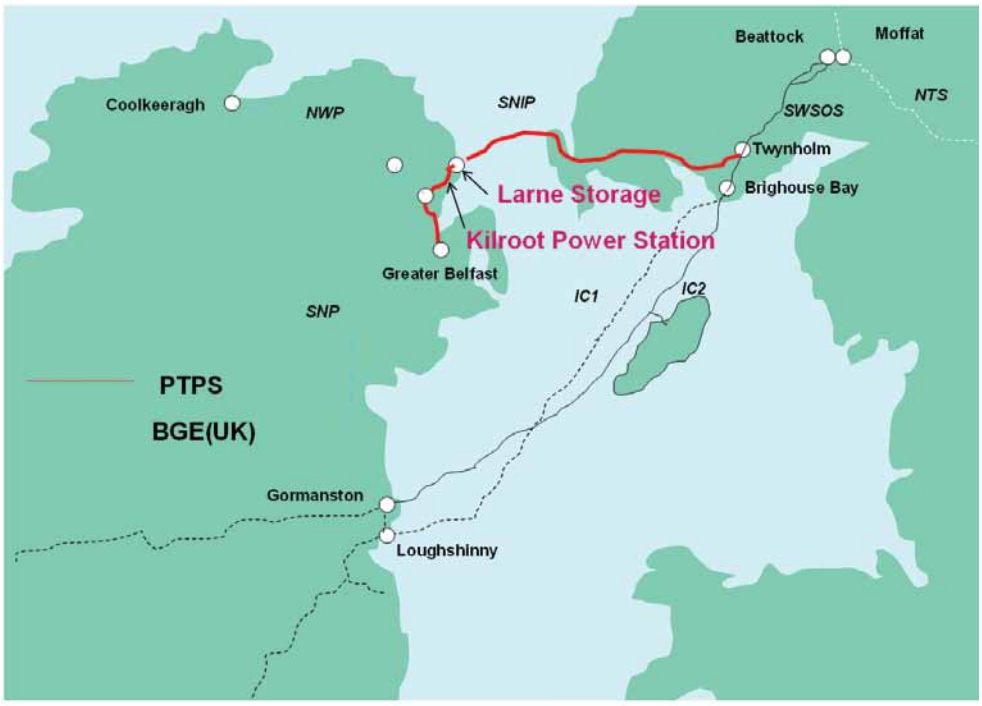
National Production

NI does not currently have any indigenous sources of supply. However the 2009 JCS reported that there is a significant amount of ongoing and planned exploration and production activity in the seas around NI and the Republic of Ireland. This includes drilling by Island Oil and Gas in the Celtic Sea and planned drilling by a consortium led by Shell and Statoil in the Atlantic Ocean. The nature of drilling of this type is that the prospects for finding commercially viable reserves of gas are necessarily very uncertain.

Storage Deliverability

Islandmagee Storage Limited (ISL) (recently changed from Portland Gas NI Ltd), propose to develop a 500 mscm salt cavity storage facility under Larne Lough. ISL has completed seismic testing and plans to submit a planning application by Q4 2009, with first gas operations expected to begin in 2014.The gas storage facility will be located adjacent to the SNIP and no extensive pipeline development will be required to facilitate connection. It is expected that the storage facility will be made available to at least the NI and Irish markets and potentially the GB market.

Map showing location of ISL project



Northern Ireland Transmission Pipeline System

In addition, Bord Gáis Strategic Investments (BGSI) and Storengy (a GdFSuez company) are actively progressing a study with the view to developing a salt cavern underground gas storage facility to the southwest of Larne. A seismic survey will be carried out in 2009 which will indicate the actual potential working gas capacity that could be developed. This will be followed by a test drill in 2010. In the interim, an indicative figure of 300 mscm is being used for working gas capacity for this facility. The North West Pipeline passes through the licensed area covered by the feasibility study.

	Development of National Production and Storage Deliverability									
	Year									
Project	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	Proposed Development of Storage Deliverability (Mio. Nm^3/day)									
ISL					6	12	18	24	24	24

A.31.6 National Demand Scenario(s)

National Grid

This section provides an overview of National Grid's latest gas demand forecasts, covering the impact of the recession on gas demand, our view on the economy, fuel prices and levels of energy efficiency going forward.

Recent demand history and gas prices

The past year has seen unprecedented levels of volatility in both the energy markets and the world financial markets. This has seen end-user gas prices in the UK reach record levels and a rapid decline in the UK economy, resulting in a recession. The effect of the economic downturn on energy demand has been significant with a rapid decline in both electricity demand and gas demand, with the latter particularly concentrated in the traditional Distribution Network (DN) market sectors. Although this document focuses on gas, the level of electricity demand has an impact on gas-fired power generation demand. For the financial year 2008/9, weather-corrected electricity demand from National Grid's Transmission system fell by 4% when compared with the previous year. Weather corrected gas demand in the DN markets fell by 5% over the same period.

Weather-corrected consumption in the gas Distribution Networks (DNs) fell by around 1.6% in 2008 when compared with 2007, the fourth consecutive year of gas demand falling in these sectors. Between 2004 and 2008, weather-corrected gas demand fell by over 10% in the DNs. Almost all of the reduction in gas demand in 2008 occurred in the final four months of the year as the impact of the financial 'credit-crunch' and the increase in end-user fuel prices combined. This reduction in demand due to the ongoing recession has continued into 2009. Weather-corrected demand for the first five months of 2009 was 9.5% lower than for the corresponding period last year. The fall in DN demand has also been prevalent across all market sectors from domestic consumers to large industrial users.

The global nature of the economic crisis has resulted in a fall in energy prices from the record levels seen in the summer of 2008 and a subsequent reduction in end-user prices in early 2009, although this fall in end-user prices has not been significant when compared with the increases seen in recent years.

The steady increase in end-user prices over the past five years, coupled with government policies around energy efficiency and carbon emissions reductions, is thought to have changed consumer behaviour and stimulated energy efficiency improvements. Our analysis of the demand reduction in the domestic (0-73.2 MWh p.a.) gas sector suggests that a significant proportion of this fall is due to increased energy efficiency, with scope for further reductions into the future. Rising public awareness of their carbon footprint and the impact on global warming may also be affecting consumption.

Gas demand in the power generation sector increased by over 6% in 2008. The very high coal prices in the summer of 2008 saw gas become a more competitive fuel for generation despite the corresponding high gas process. The delay in fitting FGD equipment to some of the opt-out LCPD coal plants and the continued problems with nuclear plant availability also contributed to gas' share of the generation mix rising. Power generation gas demand fell in the early part of 2009 as coal and carbon prices fell dramatically and electricity demand also fell due to the impact of the recession.

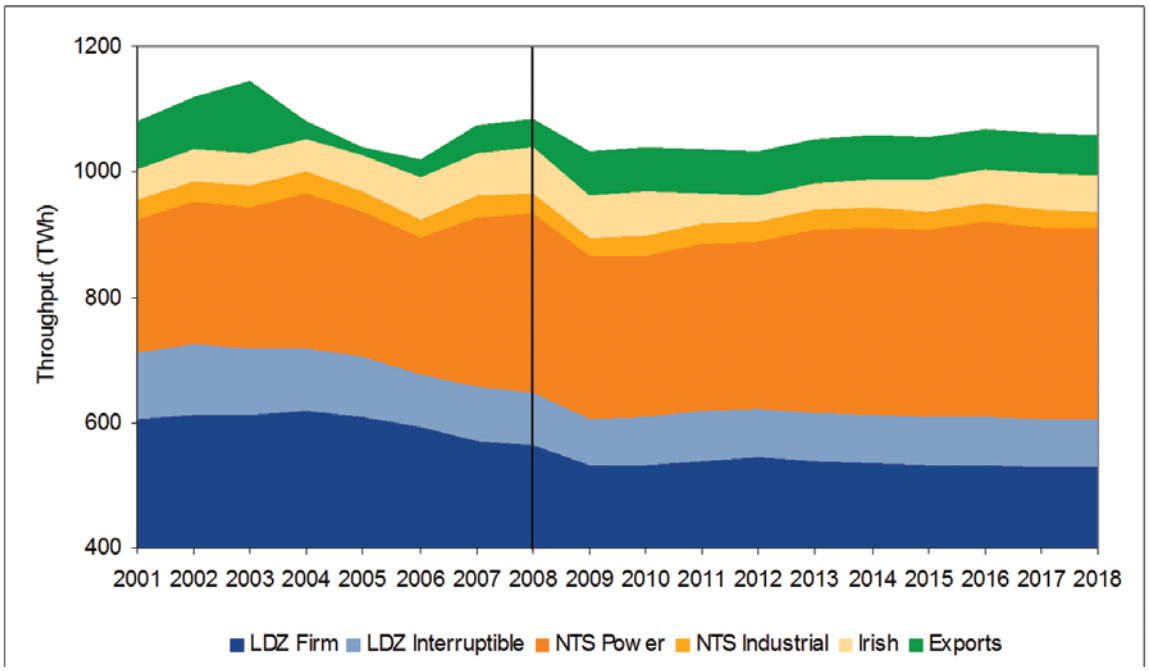
Exports to continental Europe have been above 4 bcm for the past two calendar years. These volumes have been driven by a combination of new UK import infrastructure and differences between the UK gas price and Continental contracted gas. Due to the global recession, there now appears to be increased availability of 'international' supplies for the UK; notably LNG and to a lesser extent Norway as Continental buyers take less gas or change their timing for receipt of gas due to pricing arrangements that are indexed to oil albeit lagged. For 2009 there is also a driver for higher exports to the Continent on account of increased depletion of Continental storage, partly as a result of the Russia / Ukraine dispute. Exports to Ireland increased again in 2008, with strong demand in the power generation sector outweighing falling demand in the traditional market sectors due to the recession.

2009 Annual Gas Demand Forecasts

The figure below shows both historical annual gas demands and our 2009 forecast. All demands shown are weather corrected. The history shows the continued fall in DN demand from 2004 and the increase in NTS demand over the past two years, driven largely by increased gas-fired power generation demand.

Historical and Forecast Annual Gas Demand

Source : National Grid



Note: 1 bcm = 11 TWh at a CV of 39.6 MJ/m3

The most significant aspects of this year's forecast are the sharp reduction in demand in 2009 and the lower overall growth rates across the ten-year period. The impact of the recession in 2009 is evident. DN demand is forecast to fall by around 6.4% in 2009 due to the contracting UK economy. NTS demand is also predicted to fall, by around 2.3%, with lower power generation, industrial and Irish export demand being offset to some degree by greater exports to Continental Europe. Overall demand is therefore forecast to fall by just under 5% in 2009.

Our forecast for the economy is that we will begin to see a return to growth in mid 2010, with GDP levels returning to 2% from 2012 onwards. Coinciding with a reduction in end user fuel prices, this results in a small amount of growth in the DNs, although this is also driven by new power generation demand within the networks. Over the long term, however, the demand growth driven by the improving economic outlook and new housing completions is more than offset by the impact of rising end user gas prices and energy efficiency initiatives. These, coupled with increasing carbon prices and government policy, are forecast to result in increased levels of energy efficiency and renewable energy, thus reducing gas demand. The long term DN forecast is therefore that demand will fall over the ten-year forecast period.

After falling in 2009, gas demand in the power generation sector is forecast to increase in subsequent years as new CCGT plant connects to the NTS, replacing opt-out coal-fired generation and ageing nuclear plant. This results in gas' share of generation increasing. 13.6 GW of new CCGT plant is forecast to connect to the NTS by 2018/19, although at a slower build up rate than in previous forecasts due to our lower forecast of electricity demands increasing the forecast plant margin. 7.5 GW of CCGT plant is currently under construction, which may result in very high plant margins in the short-term.

Exports to Europe are forecast to increase in the early part of the forecast due to lower GB demands and an improved global (LNG) supply position arising through lower demands. Though subject to considerable uncertainty, we forecast these exports to be maintained over the forecast period.

Exports to Ireland are forecast to fall in the short to medium term due to a combination of lower Irish demand due to the recession and the onset of new indigenous supplies. Exports are then predicted to increase as these indigenous volumes decline, thus increasing the level of exports, although not back to the level seen in 2008 due to a lower forecast of overall Irish demand.

Over the ten-year forecast period, gas demand is therefore projected to fall at a rate of around 0.25% per annum, with DN demand falling at 0.7% per annum and NTS demand forecast to grow at an average of 0.4% per annum.

Demand Sensitivities

Alongside our base case of demand a number of sensitivities have been developed to enable us to look at a range of potential demands in the future. Given the volatility seen in energy markets over the past eighteen months and the uncertainty over the length and severity of the current economic downturn, this work is especially relevant this year.

This work has been developed for the Energy Markets Outlook document which will be published by DECC and Ofgem later in the year. To give a flavour of the sensitivities assessed, cases were analysed for economic variables, fuel prices, energy conservation, power generation capacity and output, CHP capacity, warm weather and exports to both Ireland and the Continent. In this year's sensitivities we have also developed two 'recession cases' – one with a deep and long lasting recession and the other with a rapid economic recovery.

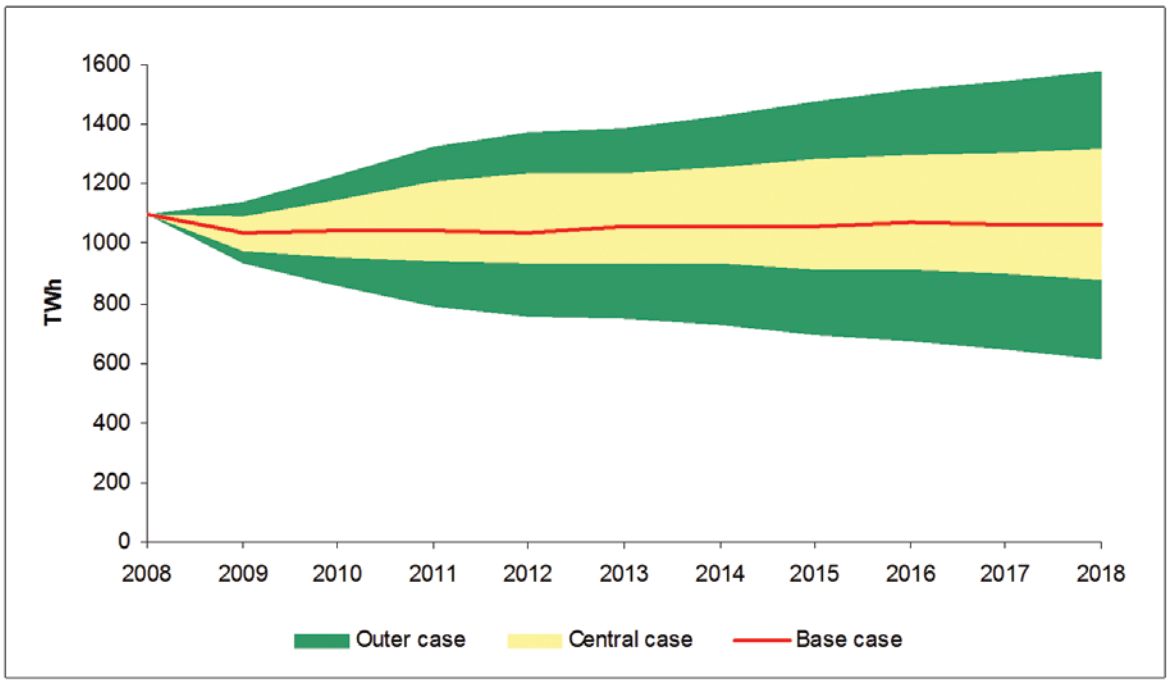
The figure below shows a possible range of gas demands around our base case forecast. The outer case assumes that all factors are acting independently and pushing gas demand in one direction, hence the extremely wide range. In practice these variables are not mutually exclusive and it is unlikely they would push gas in one direction. For example, it is possible that weaker fuel prices and weaker economic growth could coincide thus cancelling each other out to a certain degree, as far as the impact on demand is concerned. The central case takes this into account and gives a more probable band of demand levels.

This central band is noticeably wider in the short-term than last year. The volatile nature of energy markets in the recent past suggests this is a more prudent approach. This range also reflects the uncertainty still surrounding the length and depth of the recession and when will see a return to economic growth. Over the longer-term there is a little more scope for an upturn in demand in the sensitivities we have analysed, which reflects the level of this year's forecasts and the underlying assumptions behind them.

It should be noted that these sensitivities are indicative at present and will be finalised for publication in the Energy Markets Outlook document later this year.

Sensitivities around Base Case Demand Forecast

Source : National Grid



2009 Peak Gas Demand Forecasts

The reduced forecast in annual demand has resulted in a lower forecast of peak gas demand, a key driver for investment in transportation infrastructure. Peak demand is forecast to rise at 0.3% per annum over the forecast period, with NTS demand growing at 2.1% per annum and DN demand falling at 0.4% per annum. The 'spiky' nature of the growth rates is indicative of new CCGT loads connecting to the NTS.

The peak forecast is derived using our established weather / demand modelling methodology which has detected no significant change in the weather sensitivity of demand despite lower annual throughputs. Peak demand forecasts in the weather sensitive DN sectors therefore have a very similar profile to the annual forecasts.

Definition of 1 in 20 peak day demand

The 1 in 20 peak day demand is the level of demand that, in a long series of winters, with connected load held at the levels appropriate to the winter in question, would be exceeded in one out of 20 winters, with each winter counted only once.

National Demand Scenario(s)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1 in 20 Peak Day Firm Demand excluding Irish exports (Mio. Nm^3/day)									
444	444	449	452	456	461	473	473	471	473
1 in 20 Peak Day Firm Demand including Irish exports (Mio. Nm^3/day)									
476	469	475	478	485	478	490	493	492	496
Yearly Consumption excluding Irish exports (Billion Nm^3/year)									
84	86	86	87	87	87	88	87	87	87
Yearly Consumption including Irish exports (Billion Nm^3/year)									
90	90	89	91	91	91	92	92	92	92
Yearly Consumption excluding Irish exports (Billion kWh/year)									
975	993	997	1013	1015	1008	1020	1010	1004	1004
Yearly Consumption including Irish exports (Billion kWh/year)									
1045	1041	1037	1055	1061	1058	1073	1066	1062	1062
Note: For peak day, exports via IUK are assumed zero, and all interruptible load has been interrupted.									

[Comment:

National Grid is currently unable to split its Irish exports forecast into the constituent elements of Northern Ireland, which is within the UK and The Republic of Ireland. Hence two sets of annual and peak day demand data have been supplied: one excluding and the other including Irish exports.]

Demand Forecast Summary

A brief summary of the key demand forecast drivers and assumptions is listed below.

- Economic growth forecast to return in mid-2010 with GDP returning to 2% growth in 2012.
- End user prices rise over the forecast period following falls in the short-term.
- Energy efficiency measures forecast to reduce growth rates over the forecast period.
- Demand levels are forecast to fall in the Distribution Networks over the ten-year period, where previous forecasts have always shown some growth.
- 13.6 GW of new CCGT capacity forecast to connect over the ten-year period, mainly to replace closing coal and nuclear plants.
- Exports to continental Europe rise as GB demand falls, remaining at a near consistent level over the forecast period.
- Irish exports reduced by new indigenous supplies from 2011 onwards.

Long Term Energy & Environmental Targets

The UK Government has set two key environmental targets relating to renewable energy and green house gas emissions (GHGs):

1. The first of these targets is part of the EU's integrated energy/climate change proposal that addresses the issues of energy supply and climate change and in doing so sets a target of 20% of European energy (including electricity, heat & transport) to come from renewable sources by 2020. The UK contribution to this target is 15% which is lower than the European wide average due to the UK's low starting point (2% compared to EU average of 9%); however, the UK has the largest increase of any country due to it's low starting point, economic strength and it's high potential for renewable generation i.e. significant wind, wave and tidal resource.

2. The second target, which follows the principles of the overall EU 20/20/20 vision (20% of energy from renewable sources along with a 20% reduction in GHG emissions and 20% improvement in energy efficiency by 2020) but goes even further, has been incorporated in the recent Climate Change Bill and sets a target of 80% reduction in GHGs from the 1990 levels by 2050.

Clearly the size of this challenge means significant changes in Government and regulatory policies coupled with increased incentives to help facilitate the construction of necessary infrastructure and maximise energy efficiency measures. These changes will need to ensure the access regime delivers the timely connection of new renewable sources of generation some of which may well need to be connected ahead of associated network reinforcement.

Our base case or "business as usual" forecast described in this document only reaches around half of the renewable sources required by 2020. Consequently, we have been developing a range of holistic energy scenarios to inform our understanding of the priorities across all sectors e.g. electricity, heat and transport.

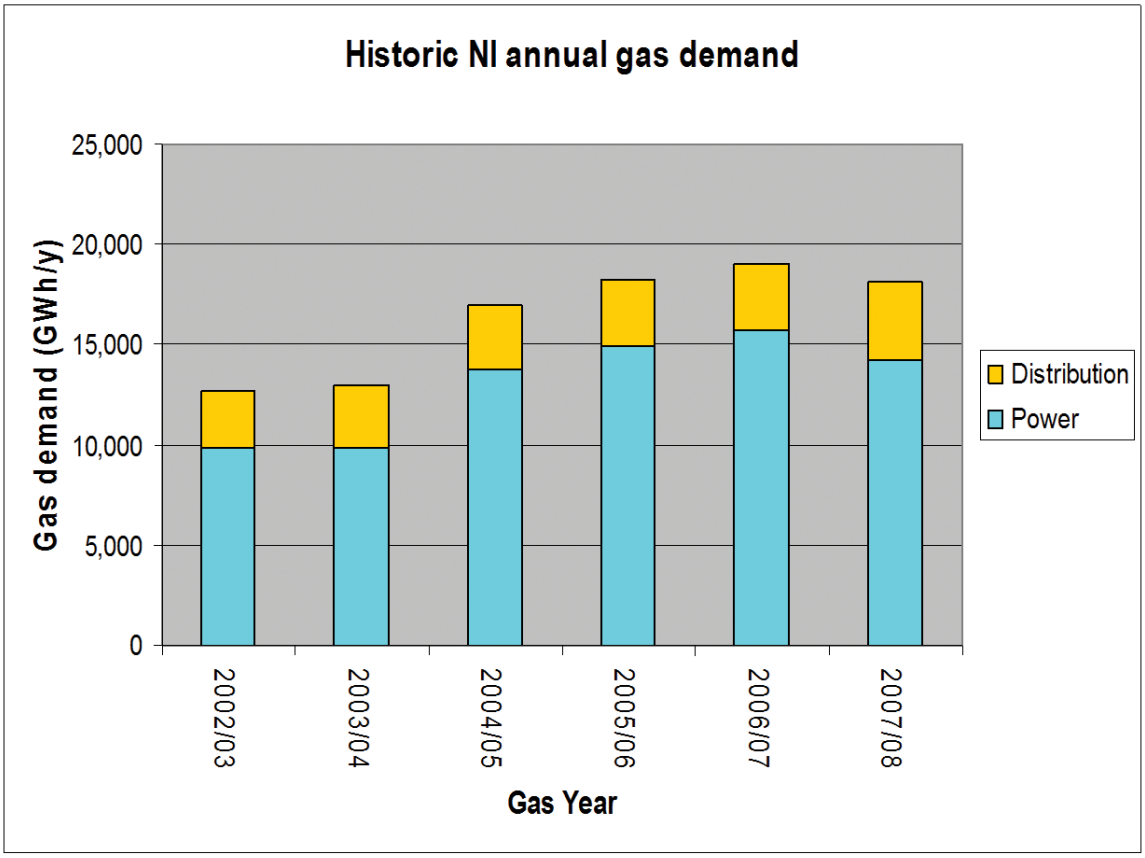
The Northern Ireland Gas Transmission System

Historic NI annual gas demand

The historic NI gas demand is summarised by sector in the table and diagram below. The distribution category includes the gas demand of the Phoenix Gas, Firmus Energy and Stranraer distribution systems, while the power sector includes the Ballylumford and Coolkeeragh power stations. The NI annual demand has grown by 43.7% over the period (or 7.5% p.a.):

- The power sector grew by 7.6% p.a. with the combined effect of the commissioning of one new CCGT at Coolkeeragh and the displacement of 600MW of open cycle generation with a 600MW CCGT at Ballylumford; and
- The distribution sector grew by 7.2% p.a. with the expansion of the Phoenix distribution system in the Belfast area and the Firmus distribution systems along the North West Pipeline (NWP).

Historic NI annual gas demand



Historic NI annual demand summarised by sector

	Unit	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
ENERGY							
Power	GWh/y	9,880.9	9,902.8	13,769.6	14,921.6	15,695.6	14,248.8
Distribution	GWh/y	2,766.2	3,040.4	3,208.8	3,326.9	3,393.8	3,923.3
Total NI	GWh/y	12,647.2	12,943.2	16,978.4	18,248.5	19,089.4	18,172.1
VOLUME							
Power	mscm/y1	889.3	891.2	1,239.3	1,342.9	1,412.6	1,292.4
Distribution	mscm/y	249.0	273.6	288.8	299.4	305.4	355.9
Total NI	mscm/y	1,138.3	1,164.8	1,528.1	1,642.3	1,718.0	1,648.3

NI gas demand forecasting methodology

The NI shippers are required to provide an estimate of their future capacity requirements and commodity throughput, as part of the Postalised tariff arrangements. This information has been collated by the Utility Regulator and projected forward to the end of the period (where necessary).

NI forecast of annual gas demand

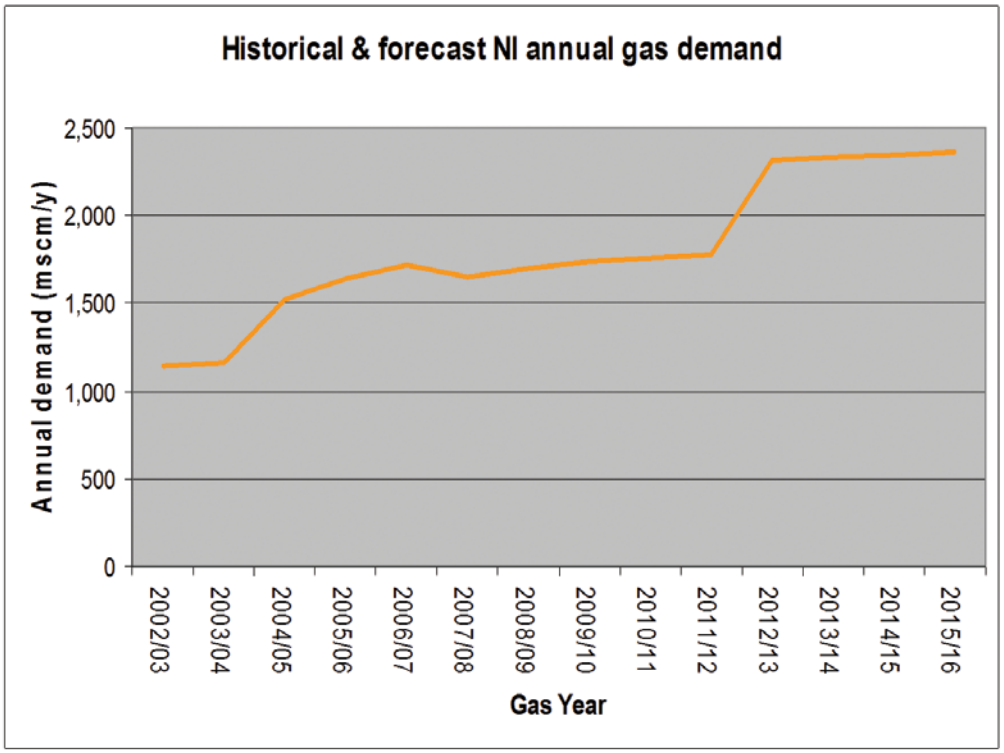
The forecast NI annual demand is summarised in the table below. The distribution forecasts have been taken from information provided to the Utility Regulator by Phoenix and Firmus. The distribution forecasts are based on 1 in 20 peak day demand.

The power forecasts are based on information provided in the 2008/09 Postalised Tariff calculation for the Ballylumford and Coolkeeragh CCGT power stations.

In addition to the existing Ballylumford and Coolkeeragh power stations, provision has also been made for the construction of a new 430 MW CCGT by AES at the site of their existing Kilroot coal-fired power station. It is assumed that the Kilroot CCGT will commence commercial operation by 2012/13.

Forecast NI annual demand									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Peak Day Demand (Mio. Nm^3/day)									
8	8	8	10	10	10	10	10	10	10
Yearly Consumption (Billion kWh/year)									
19	19	20	26	26	26	26	26	26	26

Historical and forecast NI annual gas demand



A.31.7 Supply Scenario(s)

National Grid

This section provides a brief overview of our latest gas supply forecasts and the key assumptions behind them. Besides conventional gas sources, we have for the first time assumed a small supply contribution from biogas based on a build-up profile to 1% of all supplies by 2020. There is much uncertainty over the contribution biogas and other non conventional gas sources (i.e. coal bed methane) could provide, hence we acknowledge that these flows could be less or considerably more, but their inclusion is a recognition of the role they could ultimately play.

The main purpose of our supply forecasts is to allow a picture of supply and demand to be created that can be used to assess potential NTS investments and determine other business requirements that are influenced by the pattern and availability of gas supplies. The supply-demand picture is clearly also relevant from the perspective of security of supply

Our supply forecasts are developed through a combination of:

- TBE consultation
- supply intelligence including commercially available data
- market observations and assessment
- signals for entry capacity through the LTSEC auction - as a result of the last LTSEC auctions in September 2008 we released 90 GWh/d (~8 mcm/d) at Caythorpe from October 2011

Our supply-side analysis continues to be based on declining UKCS production and increasing import dependency. Whilst we have a surplus of import capacity, most of which is now either built or nearing completion, we face considerable uncertainty regarding where imports will be delivered and how much gas will flow. Last year we captured the supply uncertainty through a base case supply forecast with ranges around each of the supply sources.

This year we have again developed a base case supply forecast and detailed the rational behind our methodology. Our base case should not be seen as a central case or necessarily a best view of future supplies but as a starting position to capture the ongoing uncertainty as to how import capacity may be utilised.

As in previous years we build our base case supply forecast around declining UKCS supplies and increasing levels of imports, with the following section detailing our approach for the various components of gas supply.

With lower forecast demands and high capacity from completed or near completed import projects from diverse sources of supply, there is considerable uncertainty as to how supply will meet demand. To capture this ongoing supply uncertainty, we have enhanced the approach previously used that prioritised or used a merit order of gas supplies. Namely, for each of the components or supply sources we have developed a 'core' / 'non- core' concept where core represents what gas is likely to flow and non-core what gas may flow. Obviously with import capacity far exceeding import requirements, even this approach only partly captures possible supply patterns.

In the following sections that detail each of the supply sources in turn we have identified the basis for core gas and non-core gas. We have only been partially explicit as to how the non-core gas from the each of the supply sources has been allocated as this was achieved in part through an iterative basis. At a high level the allocation process is as follows:

1. Determination of annual demand
2. Determination of core and non-core gas from each supply source
3. Allocation of core gas to annual demand
4. By difference identify the annual supply shortfall to be made up from non-core gas sources
5. Due to excessive surplus of non-core, further review of non-core gas for each supply source i.e. move from capacity based apportionment to a derated[3] based availability
6. Finally we allocate the remaining supply shortfall to all non-core supply sources based on derated availability

[3] A derated basis relates to anticipated usage or application of load factors

Imports

The declining production from the UKCS has resulted in a need for increasing quantities of imported gas. To fill this requirement, there has in a relatively short period been the construction or near completion of numerous import projects to supplement existing importation routes from Norway, the Continent and LNG. These projects include:

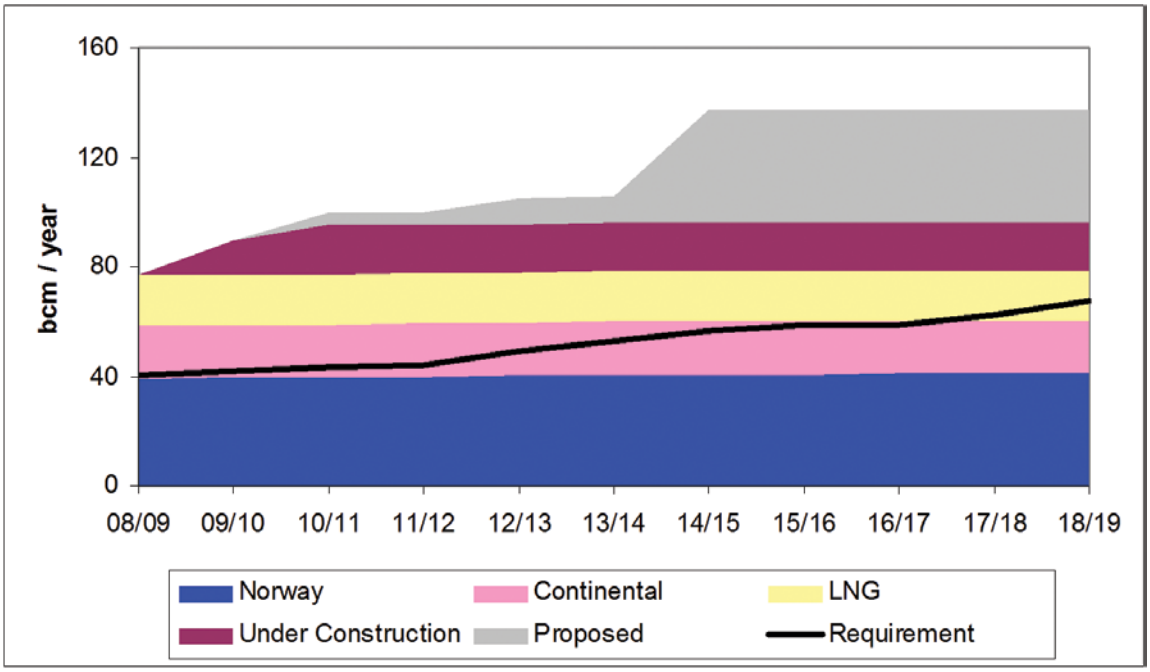
- first operational in 1978, the Frigg pipeline to St Fergus. This was modified in 2001 to accept further Norwegian supplies. Subsequently known as Vesterled, this pipeline has a 13.1 bcm/year capacity
- first operational in 1998, IUK import capacity has been upgraded through the construction of compression facilities at Zeebrugge in 2005/06 and 2006/07 with further expansion in 2007/08 to 26.9 bcm[4]
- completed in 2006/07 a 26.3 bcm/year capacity pipeline, known as Langeled, from the offshore Norwegian gas network to Easington. From 2007/08, this pipeline was linked to the Ormen Lange gas field via the onshore processing terminal at Nyhamna
- completed in 2007/08 an offshore pipeline, known as the Tampen Link between the Norwegian Continental Shelf and the FLAGS pipeline to St Fergus. This pipeline could ultimately be used to fill the ~10 bcm/year FLAGS pipeline as UKCS supplies into it decline
- completed in late 2006 and upgraded in 2007, a 15 bcm/year capacity pipeline, known as BBL, between Balgzand in the Netherlands and Bacton. From September 2008 there are plans to accept non physical reverse flows through netting off import nominations. Longer term BBL may be expanded for higher UK imports and possibly exports.
- LNG imports into Isle of Grain commenced in 2005, with an initial capacity of 4.7 bcm/year. This was expanded by 9.1 bcm/year in late 2008, and further expansion post 2010/11 by a further 6.9 bcm/year
- LNG imports into Teesside through Excelerate's on board gasification were commissioned in early 2007. Whilst not expected to be base load, the capacity of this facility is potentially 4.2 bcm/year
- LNG imports into two new facilities at Milford Haven were expected from 2007/08, these are now expected to be fully operational later this year. The initial combined capacity is 16.4 bcm/year, with plans to expand both facilities thereafter towards a potential capacity of 32.9 bcm/year
- other LNG imports projects yet to receive full planning consents include another Teesside project, Canvey Island, Anglesey, Barrow as well as at other UK ports
- currently there are limited other new pipeline projects that are being reported publicly

In aggregate, the existing and development plans for new import capacity is around 200 bcm per year. This far exceeds the UK's projected import requirements even at the end of our 10 year planning cycle. Rather than show the import capacity against the import requirement we have 'de-rated' the import capacity to reflect operational experience and expectations of future use. For import pipelines (except IUK) connected to the UK we have assumed a de-rated annual capacity of 85%, this is broadly reflective of maximum utilisation rates than could be achieved when factors such as demand seasonality, lack of UK storage and operational outages are considered. For LNG and IUK imports we have assumed a de-rated annual capacity of 75% or 50% (operation & under construction or proposed) and 25% respectively. This may appear low but to date the highest annual load factor for IUK imports is just 22% in 2005/06, whilst for LNG imports through Grain Phase 1 just 57% also in 2005/06. Globally LNG regasification capacity exceeds production or liquefaction capacity by a ratio in excess of 2 to 1.

The figure below shows our view of import requirements against a back drop of de-rated capacity for existing import facilities (shown by supply type), import projects that are under construction (all LNG) and proposed import projects yet to be sanctioned (all LNG except for the possible further expansion of BBL). For the proposed import projects we have for illustrative purposes assumed development timescales consistent with the proposals.

[4] Reported flow rates at standard conditions, reduce by ~5.5% for normal conditions

Import Requirement vs De-rated Import Capacity



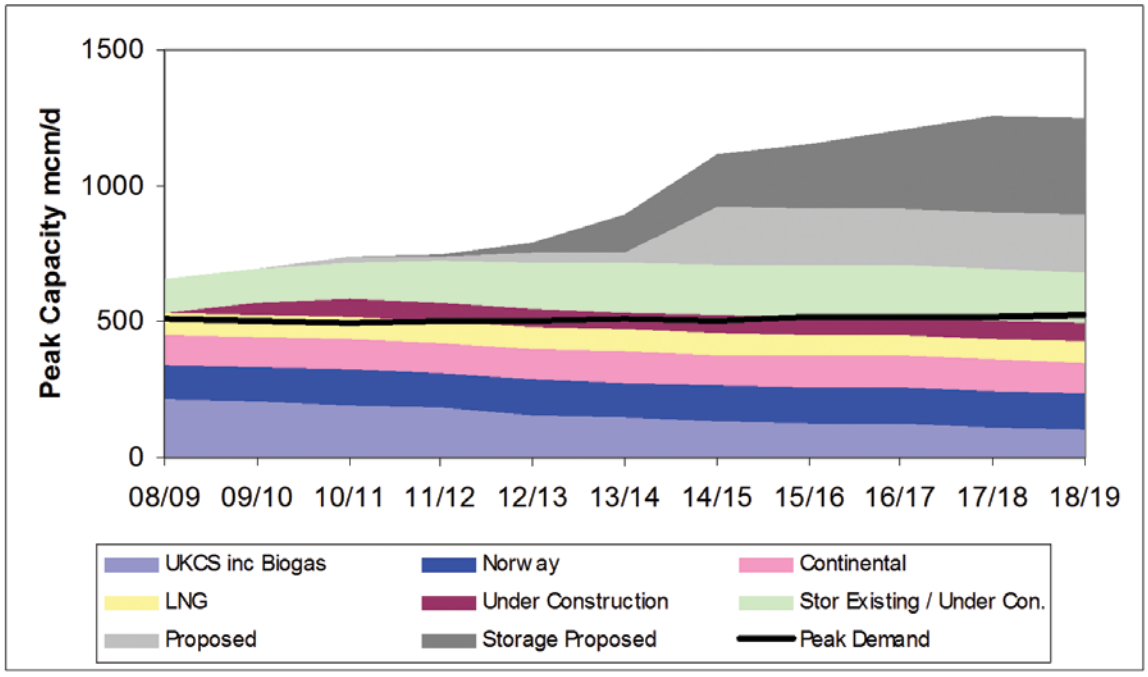
Note: above chart shows supplies at standard conditions

The figure above shows that the de-rated annual import capacity is just over 140 bcm, if the category of import proposals is excluded this falls to about 100 bcm. This is above our forecast import requirement at the end of our 10 year planning period. Hence without high export volumes to the Continent through IUK and possibly BBL, we believe that it remains unrealistic to expect that all of the proposed import projects will meet their proposed development timescales and delivery volumes. The inclusion of new proposed import projects in the 2009 base case are described in the subsequent import sections.

The figure below shows the peak position. As we have used our 1 in 20 peak day demand[5] we have not de-rated any of the supplies, hence all imports are shown at their maximum capacities. Besides the import components, the peak position also includes UKCS and storage. For the proposed import and storage projects we have for illustrative purposes assumed development timescales consistent with the proposals.

[5] Undiversified demand

Potential Peak Supply



Note: above chart shows supplies at standard conditions

The chart shows that the theoretical peak position is well covered; however the supply is almost certainly overstated due to the following reasons:

- inclusion of all proposed import and storage projects with development timescales consistent with proposals. In reality not all of these will proceed as reported
- reporting of capacity rather than peak forecasts
- reporting of UKCS at 100% load factor
- no consideration for any storage space / deliverability limitations

Norwegian Imports

The difference between annual demand and our annual forecast for UKCS production determines our view of future import requirements. In our base case supply forecast Norway is the primary source of imports to make up this shortfall. This is broadly consistent with last years base case supply assumptions; however this year we have apportioned Norwegian supplies on a core and non-core basis.

Our basis for assuming Norway as the primary source of imports in our base case is based on a combination of:

- future expectations of Norwegian production
- Norwegian export capacity to UK and Continent
- proximity of UK and characteristics of UK market

As future Norwegian supplies to the UK are so important we have developed a high level Norwegian forecast by considering numerous concepts and sources of information, these include:

- historic performance, in terms of annual trends and seasonal variation
- capacity utilisation, in terms of historic load factors both nationally and seasonally
- system developments, in terms of new supplies, new infrastructure and its effect on overall capability and network flexibility
- other forecasts, including those from the Norwegian Petroleum Directorate (NPD) and from consultants
- remaining gas reserves, in terms of potential impact on long term production profiles

Norwegian gas production in 2008 was approximately 99 bcm, the Norwegian Ministry of Petroleum and Energy (NMPE) forecast production to increase to 103 bcm in 2009, 107 bcm in 2010 and potentially rising to 115-140 bcm by 2020. Our forecasts for future production from the Norwegian

Continental Shelf (NCS) also assume further increases; however we have taken a more cautious build-up in production and assume production in 2020 is below 120 bcm. Whilst in theory production could be higher, primarily driven by higher volumes from Ormen Lange, developments within the Statfjord area and new discoveries in the Norwegian Sea, we believe that system capabilities and the application of realistic load factors may in the absence of new offshore Norwegian infrastructure limit production below the NMPE forecasts. Recent reports of a new discovery, the Gro field, in the Norwegian Sea suggest this field may be the largest Norwegian discovery since Ormen Lange with reserves between 10-100 bcm.

Hence if / when developed, along with other potential discoveries in the area, this could materially increase future Norwegian production and / or extend Norwegian production beyond existing forecasts.

Our assessment of export pipelines from Norway to the Continent suggests that with the partial exception of flows to Germany, there is limited head room to flow significant additional volumes. Hence by inference, much of the increase in Norwegian production over the next few years is expected to flow to the UK. Of course, any new export pipeline would affect this assumption, but such a pipeline is unlikely to be operational within the next few years, and if constructed would be expected to build-up over a number of years.

To determine Norwegian flows to the UK we make the following assumptions:

- during the forecast period no new major pipelines are built to either the UK or the Continent
- Norway prioritises gas supply to the Continent, hence flows to the UK are based on the difference between total Norwegian production and flows to the Continent
- Our basis for core Norwegian gas represents our lower estimate of Norwegian production less maximum export volumes to the Continent. Hence this represents gas that 'must' be delivered to the UK
- For non-core Norwegian gas (before final allocation) we take the difference between maximum Norwegian production less minimum export volumes to the Continent less core UK exports
- for security planning we make the assumption that the loss of Norwegian production impacts the UK ahead of the Continent
- regarding UK entry locations for Norwegian flows we assume preference of flows through Langeled (capped at 85% load factor) rather than Vesterled and a modest increase in flows through Tampen as ullage in FLAGS becomes available.

The commencement of our forecast in 2008/9 shows further growth to about 27 bcm before levelling off until about 2012. Thereafter our forecast increases to 30 to 35 bcm due to higher Norwegian production and no commensurate increase in Continental export capacity. Thereafter we forecast a slight decline post 2015 due to higher Norwegian export capacity to the Continent (this is assumed through new compressors rather than a new pipeline).

In terms of meeting the total UK import requirement, the Norwegian contribution falls from approximately 65% in 2008/9 to 45% in 20018/19.

Continental Imports

It must be stressed that there is considerable uncertainty over future flows through both BBL and IUK due to:

- options to flow gas to alternative markets
- market liberalisation and access to transmission pipelines and storage
- development of new commercial arrangements
- possible gas quality issues

In our base case supply forecast we assume that the current basis for imports through BBL will continue broadly unchanged. Namely that BBL will import at reported contracted rates but may in the short term become more responsive to market differentials between the UK and the Continent due to the commencement of non-physical reverse flows. Longer term as the UK's level of import dependency increases and there is a need for new or expanded import infrastructure, there is the possibility that BBL's capacity is further expanded. Alternatively there could be a new pipeline with the Continent to effectively link-up with the increase in gas transportation capacity to Europe from Russia through Nord Stream and to a lesser extent South Stream and other routes.

Capacity through BBL is assumed to increase by 3 bcm in 2010/11 through additional compression (an approved project). The forecasts include both core and non-core gas, with core gas representing about 90% of BBL imports at the start of the forecast period and about 50% at the end. BBL imports are reduced over the next few years due to increased commercial arrangements including non-physical reverse flows, to approximately half of the original import 8 bcm/year contract between Centrica and GasUnie.

Our BBL forecast shows flows declining through to 2011/12 due to increased commercial arrangements before slowly increasing due to a combination of an increase in the UK's import requirement and an improved supply position on the Continent. The latter is assumed to be brought about by the completion of new supply routes to the Continent from Russia and possibly elsewhere and improvements in terms of the market structure on the Continent.

For IUK we continue to make the assumption that IUK responds to market conditions tending to operate seasonally between a UK market with summer / winter price differentials against a Continental market that is predominately supplied through long term contracts that are also oil indexed. In a changed world of potential 'surplus' LNG imports, to provide a driver for exports to the Continent, we make the assumption that IUK exports are higher than last year with lower levels of imports. Over time as the UK's level of import dependence increases we make the assumption that IUK gradually imports more though continues to be a net exporter and retain some measure of seasonality.

Due to its commercial type behaviour, for IUK we assume no core gas. The contribution provided by the non-core component is based on:

- average observed flows (aggregated for both imports & exports) for the past 5 years (20 mcm/d)
- the import / export split for 2008/9 based on recent experience (i.e. predominately exports)
- an assumption that in the short term the UK will remain well supplied, thus maintaining predominately exports
- an assumption that in the longer term the UK will tend to import more from the Continent, thus slowly reducing exports
- modest changes in IUK imports / exports from one year to the next to limit both supply and demand volatility

LNG Imports

Of all the supply components LNG imports provide the greatest level of supply uncertainty due to numerous factors:

- limited operational experience to date
- global options to deliver gas to alternative (higher priced) markets
- an excess of global LNG re-gasification capacity over LNG production, thus providing destination options
- a view that most LNG imports to the UK may not be specifically contracted
- the prospect of greater LNG availability for 'traded' markets due to the global recession
- uncertainties regarding the commissioning dates of new import facilities and how such facilities will operate
- reported delays and increasing costs associated with the construction of LNG production facilities

As with the other supply components we have applied a core / non-core approach in determining our LNG import forecasts. The basis for determining these have not been based on a global LNG model but on operational experience to date and consideration of other metrics.

For core LNG imports we have made an assessment of LNG boil off and combined this with a load factor (12% of capacity) that represents average operational experience to date. For future plants that are either not yet constructed or may operate as merchant facilities we have applied a lower load factor. For non-core gas we have made the assumption that LNG imports could operate at a load factor as high as 50% of installed capacity. This may appear low but needs to be considered in the context of global utilisation rates for LNG terminals (below 50%) and the very high capacity of existing and future capacity of UK LNG terminals relative to import requirements. For example the capacity of existing LNG facilities and those under construction now exceed 50 bcm, with proposals for other LNG projects adding potentially a further 50+ bcm.

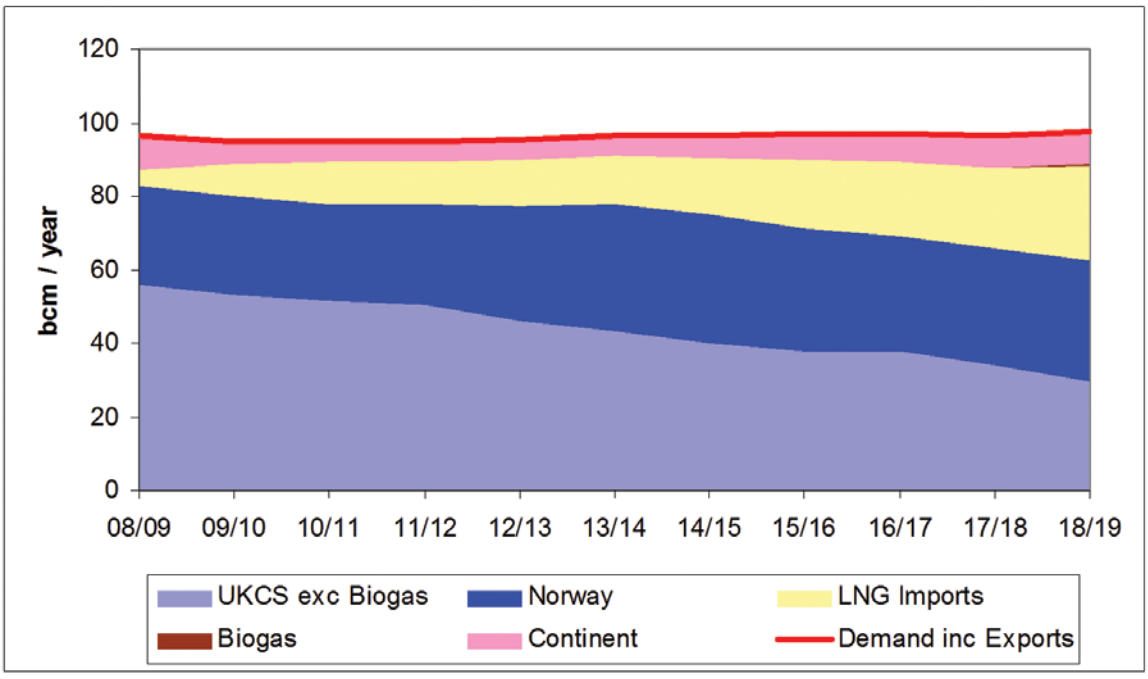
Our forecasts include both core and non-core gas, with core gas representing about 90% of LNG imports at the start of the forecast period and about 50% at the end. Around the forecast we have shown a range for LNG imports, the upper range is based on 50% of forecast capacity and the lower range based on the core gas assumptions detailed above.

We assume further LNG import capacity is brought on stream towards the end of our 10-year planning period. Our base case forecast shows a gradual build up of LNG with imports approaching 10 bcm in 2009/10 and exceeding 20 bcm in 2016/17. Though these forecasts are well below installed capacity they do represent a significant proportion of UK imports and a flow of 10 bcm per year relates to about 10 LNG cargoes per month (based on 135,000 m3 vessels). Whilst much higher rates of delivery may be achieved for short periods, they will not be maintained an annual basis.

Base Case Annual Match

The figure below shows our resulting base case annual supply-demand match.

Base Case Annual Supply



Note: above chart shows supplies at standard conditions

Yearly Supply Scenario (Billion Nm^3/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion Nm^3/year)									
26	25	26	30	33	33	31	30	30	31
Aggregated quantities via EU internal cross-border pipelines (Billion Nm^3/year)									
6	5	5	5	5	6	7	7	8	9
Aggregated quantities via LNG terminals (Billion Nm^3/year)									
8	11	11	12	12	15	18	19	21	24
Aggregated national production (Billion Nm^3/year)									
50	49	48	44	41	38	36	36	32	29

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via European import pipelines (Billion kWh/year)									
299	288	300	347	381	387	365	343	349	360
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
71	62	57	60	63	70	81	86	91	100
Aggregated quantities via LNG terminals (Billion kWh/year)									
93	126	130	136	141	169	204	219	243	283
Aggregated national production (Billion kWh/year)									
582	569	554	505	476	438	419	420	374	333

The following points summarise the key assumptions for our annual supply forecast.

- little or no growth in annual demand
- a decline in UKCS production
- relatively high levels of Norwegian imports with only modest growth from current import levels
- a short term reduction in Continental imports before returning to nominal growth
- a phased build-up of LNG imports

Base Case Peak Match

Storage

For the peak position, we also need to include storage. There are numerous proposals for new storage in the UK. In aggregate the peak deliverability of all existing and proposed storage facilities(9)[3] is now approximately 550 mcm/d, this compares with the current deliverability of nearly 130 mcm/d.

Inclusion of all storage proposals in our base case forecast is neither practical nor realistic for the following reasons:

- the history / track record of many UK storage developments has been one of slippage and deferral with relatively few new storage projects being completed over the past decade. The recent economic conditions have ensured that this trend has continued
- the absence of limited capacity signals from entry auctions for most of the proposed storage projects
- the difficulty in obtaining planning and other permits
- the sheer magnitude of the proposed storage facilities in the context of peak day demands at approximately 500 mcm/d

Hence for inclusion in our base case forecast we have included all storage facilities that are currently under construction and those that we believe are well advanced in terms of securing planning, financial backing and have commitments from major players. Even for these we may assume some slippage. For external reporting purposes, we are not explicit for any of the proposed storage facilities other than those that are under construction or have signalled entry capacity through the auctions. Hence our network plans can readily substitute one proposed storage facility with another.

[3] This includes most press reported storage projects, in addition to these there are numerous other storage projects that are not yet fully defined or reported in the press

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via European import pipelines (Mio. Nm^3/day)									
112	117	117	120	120	119	120	120	119	117
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
77	74	75	76	77	80	82	83	84	87
Maximum peak day supply via LNG terminals (Mio. Nm^3/day)									
84	100	100	100	100	112	129	147	147	147
Peak day national production deliverability (Mio. Nm^3/day)									
193	184	172	148	137	126	121	121	108	96
Peak day storage deliverability (Mio. Nm^3/day)									
80	86	101	118	140	173	220	233	239	243

The Northern Ireland Gas Transmission System

All of NI gas is currently supplied from the Moffat Entry via the BGE(UK) onshore Scotland pipeline and the PTL PTPS. In the longer term the SNP which connects the Northern Irish system to the Irish system could be used to support the SNIP pipeline in meeting increased demand levels in Northern Ireland.

Full implementation of the CAG project which seeks to facilitate the operation of the natural gas market in Ireland and Northern Ireland on an all-island basis would provide a number of additional supply options to Northern Ireland including supplies from the Irish market such as the Corrib gas field, the proposed Shannon LNG facilities and the Kinsale production facilities. The outcome of the CAG project is currently unknown and therefore the NI supplies have been assumed to continue to be supplied via the GB Moffat Entry point and any new proposed storage facilities.

Peak Day Supply Scenario									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Maximum peak day supply via EU internal cross-border pipelines (Mio. Nm^3/day)									
8	8	8	10	10	10	10	10	10	10
Peak day storage deliverability (Mio. Nm^3/day)									
				6	12	18	24	24	24

Yearly Supply Scenario (Billion kWh/year)									
Year									
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aggregated quantities via EU internal cross-border pipelines (Billion kWh/year)									
19	19	20	26	26	26	26	26	26	26

A.32 UNMI Kosovo

A.32.1 Description of the Existing Network

Figure 1.: Natural Gas Ring for Western Balkans (WB/KfW Regional Study)

Kosovo it is not currently using natural gas. The World Bank/KfW South East Europe Gasification Study (October 2007 and revised in November 2008) has looked into the economics of bringing gas into Kosovo. It concluded that it may be viable to supply industrial and commercial loads and build gas distribution networks particularly in Prishtina and Mitrovica. Government policy is to promote and support Kosovo's connection with regional gas supply

projects, such as the Gas Ring Project for Southeast Europe (figure 1), as well as to support construction by private investment of the local network for gas utilization mainly by the household, services, and the industrial sectors, TPPs and DH (detail analysis about natural gas demand in the following sections). Based on the above short description (more details in the following) for the future natural gas transmission system will be two Interconnection Points: one with Macedonia and the second one with Serbia.

Although a gas transmission pipeline exists within Kosovo, the system has not been used since 1986 and is totally out of operation and many parts of it are destroyed. The system previously supplied town gas, produced in Kastriot/Obilic, to Pristina, Mitrovica and Skopje in Macedonia. It should also be noted that the transmission system was not closed with the proper measures in the year 1986 i.e. purging and nitrogen filling. Consequently, widespread corrosion of the pipeline has occurred. Although initially designed for an operational pressure of 25 bar and yearly capacity of 0.2 bcm, the present owners of the pipeline, Kosovo power company KEK, report that the system has been almost completely damaged in several areas due to third party construction work on and around the pipeline. Legally, the easement along the route should be available for the construction of a new pipeline. The New Transmission System Network proposed in this paper, for the segment Kosovo-Macedonian border up to Kastriot/Obiliq will follow the same right of the way (more details about development of transmission and distribution networks will be described in the following).

A.32.2 Current Processes for Investment, Current Publications

Actually, only the above mentioned study has been carried out by the WB/KfW for natural gas development in Kosovo and it is important to stress that in this study Kosovo (as all other countries) has been analyzed in general under the regional point of view. So, in WB/KfW study there is not any reliable evaluation of investment and this will be a task to be fulfilled in the future months. There has not been any capacity development plan or investment decision taken up to now for the development of natural gas network. Security of supply, promotion of investments in the sector, preserving of environment and further development of the energy market are the main strategic goals of the updated Kosovo Energy Strategy. An important aspect of increasing the security of supply is related also with diversification of energy sources. Based on the actual energy balance where coal is contributing with 59% and oil by-products with 29.5%, the introduction of natural gas in Kosovor energy system is very important. In this regard, depending on prospects for the development of such regional gas projects in the Southeast Europe in the framework of the EnCT, the Government remains committed to the development of a legal and regulative framework for the development of the natural gas sector through private investments. Thus, the Draft-Law on Natural Gas has been prepared In the following analysis, the figures shown are only for natural gas which is forecast (and shown in the second part of this questionnaire) for internal Kosovar natural gas market. No analyses have been done yet for the amount of transit gas which might pass in the future natural gas transmission networks.

A.32.3 Capacity Development in the Reporting Period, Investment Decisions Taken

A.32.4 Possible Projects, Planned or Running Open Seasons (individual or co-ordinated)

Based on the above mentioned entry interconnection point (Kosovo-Macedonian boarder) and the topographical terrain of Kosovo, the preliminary transmission natural gas plan is shown in Figure 2 below. Red colored lines indicate the path of the natural gas transmission network (part of Western Balkan Ring) and blue ones the inter-region natural gas network. Based on Figure 2 has prepared the preliminary schematic layout of this natural gas transmission network and inter-region natural gas network, which is shown in the Figure 3. This scheme will be analysed in the future and the following data shown on it will help to define more accurately the right-of-the-way, pipeline diameters for each section and what is more important as well as the investment needed for its realization.

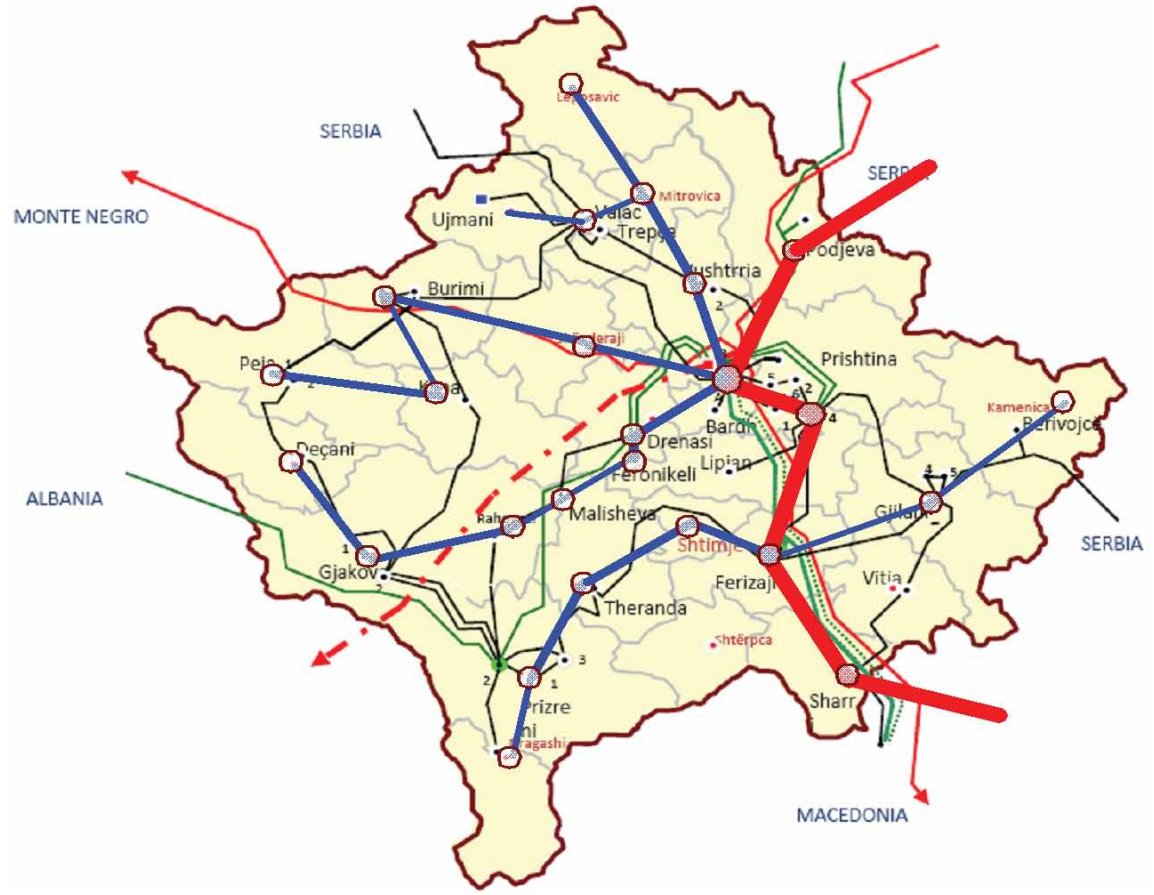


Figure 2: Preliminary Natural Gas Transmission Network for Kosovo (only for discussion purposes and will be further analyzed)

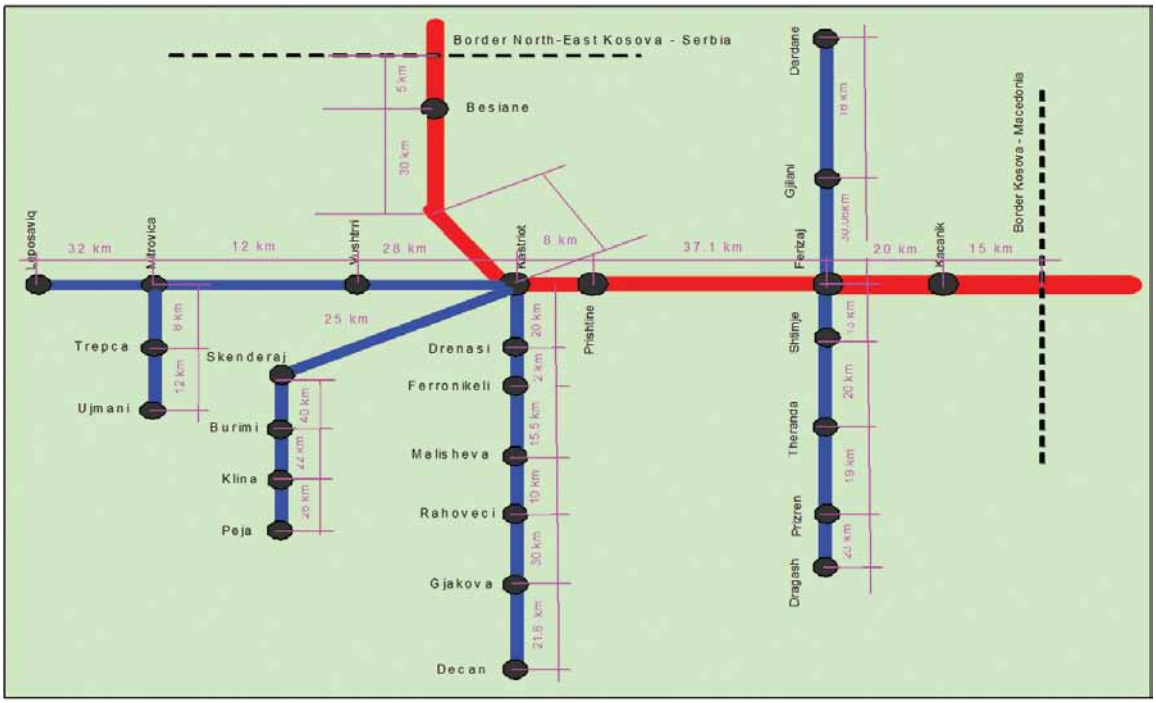


Figure 3: Preliminary schematic layout of natural gas transmission network and inter-region natural gas network (only for discussion purposes and will be further analyzed)

The most important tasks for the future analysis for development of gas system in Kosovo will be:

1. Evaluation of investment needed for the development of gas transmission network based on the preliminary right-of-the-way presented in the following sections.
2. Evaluation of investment needed for the development gas distribution networks for six main regions and these tasks will the future work of MEM's experts. Natural gas demand forecast on the national scale and as well as on the regional scale shown in the table 1&2 will serve as very good basis for defining the dimensions of transmission gas network as well as distribution gas network.
3. Carry out a sensitivity analysis of investments requested for different Supply/Demand.
4. Integration of Kosovo gas transmission master plan into the European Ten Year Network Development Statement.

A.32.5 Development of National Production and Storage Deliverability

One of the general recommendations of the WB/KfW Study is that for Kosovo will be good that Storage Facilities to be used in the regional context since their cost is very high and does not normally provide a good return on investment when building a facility just for one country with small demand. Kosovo has no natural gas reserves up to now and there are no mid term plans to reconsider the production of town gas from the gasification of coal as it has been in the past.

A.32.6 National Demand Scenario(s)

Methodology used for forecasting natural gas demand is based in the bottom-up approach and this create possibilities to have better forecast and is used in the different countries of the world for all energy sectors in general and natural gas in particular. Main assumptions used for this natural gas demand scenario are as following: The energy demand forecast was made based on a set of key documents, such as the Updated Kosovo Energy Strategy, Energy Strategy Implementation Plan, Kosovo Energy Efficiency and Renewable Sources' Implementation Plan, Energy Balances 2003-2008, Electro-Energy Demand Forecasts by KOSTT, and Detailed Studies currently being undertaken by MEM, supported by international assistance on development of new generation capacities in thermal and renewable energy sources. Based on the optimistic natural gas scenario, the possible commercial operation in Kosovo is expected to start by 2016-2017. Under these conditions, the calculation of the load of natural supply is foreseen up to 2025, a time period (2009-2025), which can be as minimum time considered economically viable for all projects of this kind. Gas demand is based on priority consumers listed as follows:

- First priority, the sector of power generation using natural gas as secondary fuel instead of mazut for the flame stability in both Kosovo A, Kosovo B and in the future as well as in New Kosovo coal-fired power plant;
- Second priority, power sector generation using natural gas for peak power plant (simple cycle or combined cycles) in the power sector to cover the peak demand if will be financially viable compare with import or its production from Zhuri HPP. This simple cycle or combined cycles might probably come on line only after 2019 and their total electricity generation will be less than 10%;
- Third priority in the district heating sector to cover part of energy demand for district heating plants of Prishtina (this includes: existing DH System of Prishtina and new CHP system supplied by Kosovo B TPP and small modern CHPs systems for new urban areas), Gjakova (this includes: existing DH System of Gjakova and its expansion and small modern CHPs systems for new urban areas), Mitrovica (this includes: existing DH System of Mitrovica and its expansion and small modern CHPs systems for new urban areas);
- Fourth priority in the industrial sector to cover part of energy demand for process heating in the industrial enterprises of Kosovo;
- Fifth priority is to cover part of energy demand for space heating, water heating and cooking for public and private commercial building of Kosovo service sector;
- Sixth priority is to cover part of energy demand for space heating, water heating and cooking for public and private commercial building of different regions of Kosovo households urban sector;

Based on the above analysis, the natural gas energy demand for each sector was calculated and Tables 1&2 shows the forecast for each sector according to Scenario presented.

Table 1: Total Natural Gas Forecast for all sectors of Kosovo (Millions of Nm³)

Sectors	2015	2016	2017	2018	2019
Natural Gas as secondary fuel for coal TPPs	0,00	0,00	246,43	254,35	262,28
Natural Gas for Open&Combined Cycles TPPs	0,00	0,00	0,00	0,00	133,97
Total_DH	0,00	0,00	78,17	80,51	89,66
Total_Industry	10,59	18,12	47,10	84,82	144,85
Total_Public&Commercial Buildings	4,25	7,19	23,93	36,58	76,12
Total_Urban Household Buildings	5,33	9,33	26,37	38,47	79,54
Total	**20,17**	**34,64**	**422,00**	**494,74**	**786,43**

Sectors	2020	2021	2022	2023	2024
Natural Gas as secondary fuel for coal TPPs	270,20	278,13	286,06	293,98	301,91
Natural Gas for Open&Combined Cycles TPPs	138,02	142,07	146,12	150,17	154,22
Total_DH	99,03	101,89	104,85	107,88	111,01
Total_Industry	211,28	261,87	300,73	322,65	335,25
Total_Public&Commercial Buildings	107,81	130,13	146,07	152,64	155,81
Total_Urban Household Buildings	113,84	140,81	162,17	173,08	180,07
Total	**940,18**	**1054,90**	**1145,99**	**1200,41**	**1238,27**

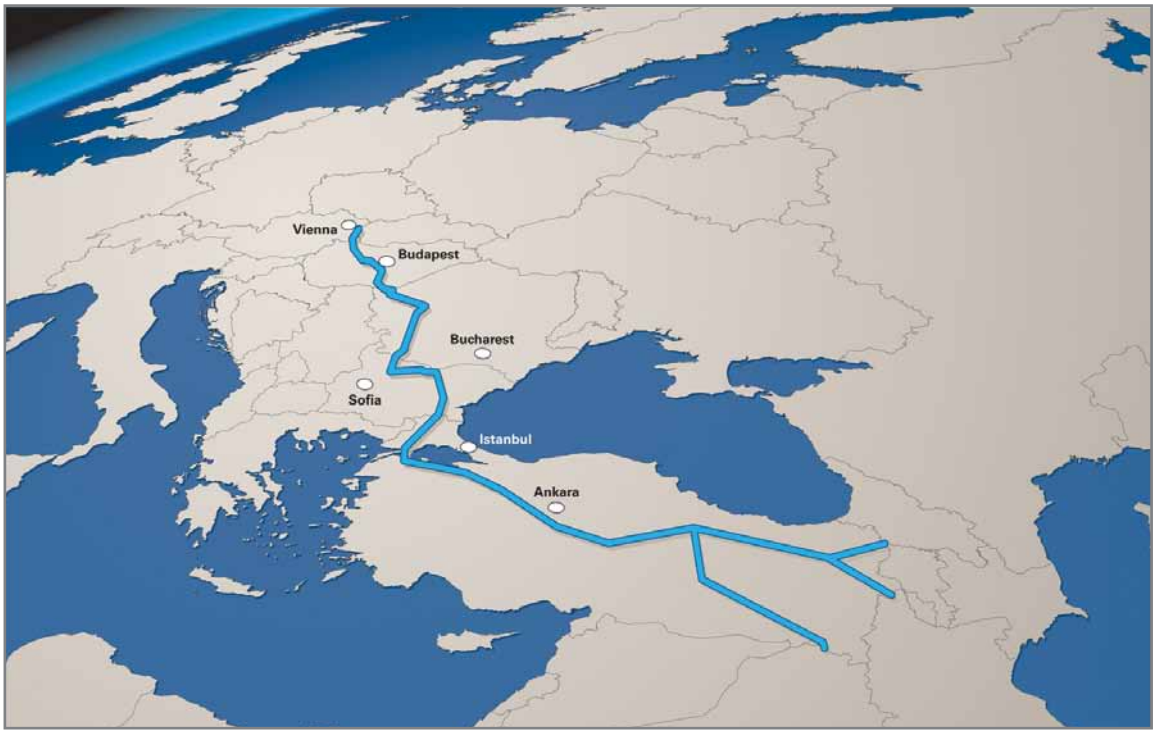
Table 2: Total Natural Gas Forecast for Kosovo (Millions of m3N and GWh/year)

GTE+ required table have been completed based on the above mentioned methodology for the period 2015-2018 (2015 is the first year foreseen for natural gas penetration in Kosovo as it has been described above).

Year									
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Peak Day Demand (Mio. Nm^3/day)									
0	0	0	0	0	0.1	0.2	2	3	3
Yearly Consumption (Billion Nm^3/year)									
0	0	0	0	0	0.02	0.04	0.5	0.6	0.6
Yearly Consumption (Billion kWh/year)									
0	0	0	0	0	0.2	0.3	5	6	6

A.33 Exempted projects and projects not contained in the previous chapters

A.33.1 Nabucco



Nabucco is the first pipeline that will connect the world's richest gas region – the Caspian region and the Middle East - with the European gas market. European gas demand is expected to increase considerably in the upcoming two decades, while the European production is declining. Reserves around Europe are available, but the challenge is to transport the gas to the consumers. The pipeline will start at the eastern border of Turkey, run trough Bulgaria, Romania and Hungary to end close to Baumgarten, next to Vienna. When completed, the pipeline's annual capacity will be 31 bcm/y over a length of 3.300 km.

The main strategic goals are:

- Opening a new gas supply corridor for Europe
- Raise the transit role of the participation countries along the route
- Contribution to the security of supply for all partner countries
- Strengthening the role of the gas pipeline grids

Nabucco Shareholders are RWE (Germany), OMV (Austria), MOL (Hungary), Transgaz (Romania), Bulgarian Energy Holding (Bulgaria) and Botas (Turkey). Each shareholder holds an equal share of 16.67 % of Nabucco Gas Pipeline International GmbH. Estimated construction costs are EUR 7.9 billions. Approximately one third of the investment will be invested by consortium partners (equity capital).

Around two thirds of the investment will be provided by lenders (bonded capital).Nabucco already started a frutitful dialogue with the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD) and the International Finance Corporation (IFC).

Nabucco is an enabling pipeline and follows a multi-sourcing approach. The project will provide the technical options to transport gas from various sources, like the Caspian Region, the Middle East or Egypt. Nabucco Gas Pipeline Int. is responsible for the construction and development of the project. Due to European Unbundling law Nabucco International Company (NIC) will not buy or trade any

gas. Transport customers will do so and they have to decide which sources they will approach.

In July this year a big milestone was archieved: The Intergovernmental Agreement (IGA) was signed by all transit countries: Turkey, Bulgaria, Romania, Hungary and Austria. This treaty established stable legal contitions and the same tariff method along the entire route. It is valid for 50 years and guarantees full political support.

Also the Project Support Agreements are on their way to regulate the legal framework in greater detail. They are signed between NIC and the national ministries of all Nabucco transit countries.

In preparation for the Open Season Process – a capacity allocation on binding bases - Nabucco conducted a market survey in July 2008 with all potential shippers on a non binding basis. The demand for long term contracts was twice as high as the capacities. During the Open Season Process, which will take place in 2010, 50 percent of the transport capacities will be offered to third parties and 50 percent to the consortium partners. The owner´s engineer was already announced at the end of 2007 and detailed planning is on its way. The five local Feed Engineers are currently working on the technical specifications in the Nabucco countries. In 2010 the Environmental and Social Impact Assessment will start. Construction will start in 2011, first gas will flow 2014.

A.33.2 Poseidon Pipeline

The Poseidon Pipeline is part of the *Project of European Interest* ITGI (Interconnection Turkey-Greece-Italy) that will allow the import of up to 12 Bcm/y natural gas from the Caspian and Middle East Area to Europe.

The Poseidon Pipeline will link the compression station in the Ionian Coast of Greece to the measuring station in Otranto, in the South-East Italy.

IGI Poseidon S.A. (50% Edison; 50% Depa) is the project company that will develop, build and operate the Poseidon Pipeline. IGI Poseidon S.A. is incorporated in Athens under Greek Laws (further information available at www.igi-poseidon.com)

The transportation capacity of the Poseidon Pipeline is divided as follows:

- **TPA Exempted Capacity: 8 Bcm/y**
  - of which: 6,4 are reserved to Edison and 1,6 are reserved to Depa
- **Initial Open Season Capacity: 1 Bcm/y**
- **Potential Capacity Upgrade: up to 3 Bcm/y**

Institutional Support:

In consideration of the strategic relevance of the ITGI Project, several specific Intergovernmental Agreements have been signed:

- Intergovernmental Agreement between Greece and Italy (November 2005).
- Intergovernmental Agreement among Turkey, Greece and Italy (July 2007) supporting the definition of transit agreements through Turkey and Greece for volumes destined to Italy via the ITGI Project.
- Memorandum of Cooperation between Greece and Azerbaijan (August 2007) establishing the interest in supply agreements for volumes destined to Italy via the Poseidon Pipeline.
- Protocol of Agreement between Italy and Azerbaijan supporting gas supply negotiation for ITGI project (December 2007).

Moreover, TEN-E Financial Contributions from the EU were granted. ITGI Poseidon was included in July 2009 among the Southern Gas Corridor Projects eligible to receive grants for up to 100M€ under the European Energy Plan for Recovery as per EU Regulation 663/09.

Open Season Procedure

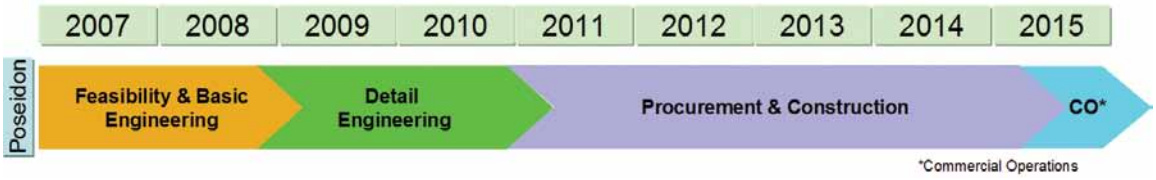
The Open Season Procedure for 1 Bcm/y of the capacity of the Poseidon Pipeline was launched on 20th June 2008, according to the provisions of the TPA Exemption Decree and the Regulation approved by Italian and Greek Energy Regulators.

The Open Season procedure is structured as follows:

- A non-binding phase in order to allow Applicants to submit expressions of interest (EOI).
- A bidding phase where Participants will be invited to submit offers for reservation of transportation capacity.
- An allocation phase to assign available capacity to shippers.

The OS procedure will terminate with the execution of Advanced Reservation Capacity Agreements between IGI Poseidon and Shippers.

During the non-binding phase 17 EOIs were received coming from Italian and foreign companies. The Bidding and Allocation Phases will be concluded in 2010.



Poseidon Pipeline development program

The Development of the Poseidon Pipeline is currently in the Detail Engineering phase. The tenders relative to the procurement and construction contracts will start in 2010.

The permitting procedures have started in both in Italy and in Greece (11/06 and 6/07); all environmental permits are expected to be awarded in 2010.
The Poseidon Pipeline start-up date is 2Q 2015.

A.33.3 Trans Adriatic Pipeline

The missing link

Currently, natural gas from Caspian Sea and Middle East regions cannot reach other European markets because there is no pipeline in place and the existing infrastructure does not have the capacity to accept new volumes.

The Trans Adriatic Pipeline (TAP) provides the link to Europe which is currently missing by connecting Greece to Italy via Albania and across the Adriatic sea. TAP enables gas supplies from the Middle East and Caspian Sea regions to reach European markets through the shortest and most efficient, hence economic, transit route. Moreover, by crossing Albania, TAP will open up a new gas market in South Eastern Europe facilitating the integration of the pro-posed Balkan Energy Ring with the internal EU energy market and contributing to political stability and economic progress in the wider Western Balkans region.

TAP's business model

Shareholders

The shareholders of the TAP project are Statoil ASA and Elektrizitäts-Gesellschaft Laufenburg AG (EGL).

Technical aspects

TAP will initially have a capacity of 10 billion cubic metres (bcm)/year, providing enough energy for as many as 3 million European households. The pipeline's transport capacity can be expanded up to 20 bcm/year by installing additional compressor capacity.

With initial design TAP will have a total length of about 520 kilometers, including 115 kilometers offshore, on the Adriatic Sea bed. TAP's highest elevation point will be 1800 meters in Albania's mountains, while its lowest part offshore will be at 820 meters of depth.

The onshore part of the pipeline will have a diameter of 48 inches (1.2 meters), and a design pressure of 90 Bar, while its offshore segment will have a diameter of 42 inches (1.05 meters.) and a design pressure of 145 bar.

The project also includes the option to develop natural gas storage facilities in Albania, which in turn would further contribute to increasing the security of supply in southeast Europe. A pre-feasibility study has been performed and TAP's shareholders have decided to investigate this option by conducting further studies on the geological structure of the relevant salt dome.

Institutional support

The Trans Adriatic Pipeline is recognized as a "Project of Common Interest" by the EU Parliament and Council under the European Union's Trans European Energy Network (TEN-E) guidelines, as it is seen as an important project which is contributing to the EU's objectives and policies aimed at diversification and security of energy supply. The TAP project has received EU financial funding for two of its engineering phases as part of the TEN-E program.

The Italian and the Albanian government have explicitly acknowledged the strategic relevance of the TAP project by means of an Intergovernmental Agreement on energy cooperation.

Development program

TAP's extended basic engineering, and preliminary impact assessment surveys were concluded by March 2007. In 2008 TAP entered the front-end engineering detailed design stage (FEED). In 2009 TAP continues to work on engineering, route refinement, e.g. through the seabed survey to validate and finalize the route selection for the crossing of the Adriatic sea, planning, as well as securing a favourable regulatory framework for the pipeline project.

The schedule for TAP has to be aligned with the upstream developments, in order to secure the commercial basis for the project. The planning is currently well progressed and the construction of the pipeline is expected to take four years after the Investment Decision has been taken. With the current assumptions, the first gas delivery is expected in the period 2015 to 2016.

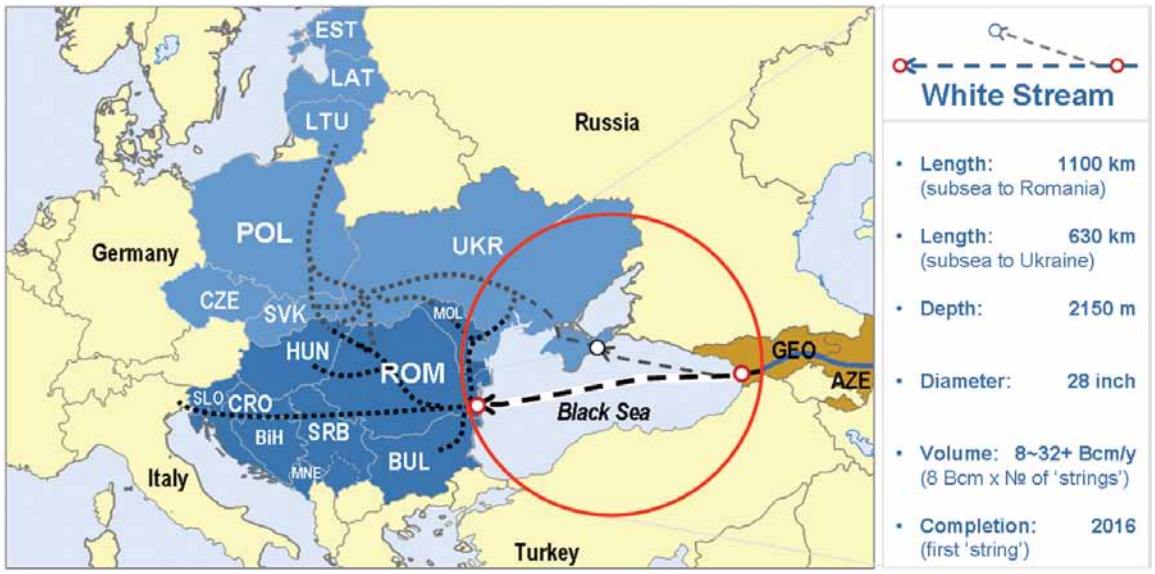
TAP and Southern Corridor

TAP supports a platform for interaction among representatives from all projects. Subject to acceptable technical solutions and commercial principles, the TAP shareholders are prepared to co-operate with other interested parties and pipeline developers with regard to pipeline routing, project and shareholder structure.

A.33.4 White Stream

White Stream will deliver gas from Azerbaijan and the Caspian region via Georgia and across the Black Sea directly to Romania, Ukraine and markets in Central and Eastern Europe. The private sector White Stream consortium is developing the pipeline. Project management and engineering is being undertaken by GUEU-White Stream Pipeline Company Limited from the UK.

The project will provide gas transport capacity in increments of 8 Bcm/y. This capacity will build up to 32 Bcm/y and potentially more. The capacity build-up schedule has the advantage of flexibility in responding to the evolution of supply and demand in the European gas market.



In combination with other Southern Corridor projects, in particular the Nabucco pipeline, White Stream will provide needed export security for gas producers in the greater Caspian region by diversifying their transport routes direct to Europe. Thus, by stimulating investment in upstream production and westbound transportation, White Stream will significantly improve energy security of supply for Europe, as well as increasing the pipeline capacity for gas transport to Europe.

In addition to EU support through the European Commission's TEN-E programme, development of White Stream is encouraged by the governments of Romania, Poland, Lithuania, Ukraine and Georgia and numerous other governments that would benefit from increased diversification. The State Oil Company of the Azerbaijan Republic (SOCAR) along with other national and major international oil and gas and energy utility companies that have a commercial interest in the westward transport of Caspian and Central Asian gas directly to Europe are also supportive of the project.

White Stream studies funded by the investors' seed financing complemented by co-funding from the TEN-E programme have established the technical, economic, legal and commercial viability of the project. Construction of the first 8 Bcm stage of the project is planned for completion in 2016. Private and multilateral financing will support the detailed route alignment and environmental impact studies. White Stream is currently in discussion with the European Bank for Reconstruction and Development (EBRD) and other multilateral and bilateral development institutions.

White Stream will help to meet the objectives of the new EU Security of Supply Regulation by increasing security of supply under the N-1 criterion, in which the ability of the EU gas transmission system to meet demand is assessed under a variety of scenarios for major supply interruption events. In this way, White Stream will contribute to enhanced competitiveness within the EU internal and gas (and electricity) markets.

Hertogstraat 83 / rue Ducale 83
1000 Brussels
BELGIUM

Phone : +32 (0)2 209 05 00
Fax : +32 (0)2 209 05 01
Email : info@entsog.eu
Web : www.entsog.eu