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## **South East Europe: Regional Gasification Study**

### **Draft Final Report: Romania Market Report**

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submitted to  
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# 1 Physical, Demographic and Political Profile

Romania is situated in South Eastern Europe, bordering the Black Sea and the following countries: Bulgaria, Hungary, Moldova, Serbia, Montenegro, and Ukraine. Romania has an area of 237,500 sq km, making it the largest country in South East Europe. Romania's terrain is distributed roughly equally between mountainous, hilly and lowland areas. The Carpathian Mountains dominate the centre of Romania, with fourteen peaks exceeding 2,000 metres. The highest mountain in Romania is Moldoveanu Peak (2,544 m).

Romania's climate is of the moderate humid continental type, exposed to predominant northerly cold winds in the winter and moderate westerly winds from the Atlantic in the summer. Average January temperatures range from  $-4^{\circ}\text{C}$  to  $0^{\circ}\text{C}$ . During the summer, the highest temperatures are recorded in the Danube Valley ( $24^{\circ}\text{C}$ ). Temperatures decrease toward the high elevations in the northwest and toward the southeast, where the Black Sea exerts a moderating influence. Precipitation decreases from west to east and from the mountains to the plains, with an annual average of between 1,000 and 1,250 mm in the mountains and about 380 mm in the area of the Danube delta.

**Figure 1 Romania map**



Source: CIA World Factbook

Romania has a population of 22.3 million (July 2007 estimate), implying a population density of 94 persons per sq km. Fertility rates are below replacement levels, giving rise to a negative rate of population growth ( $-0.4\%$  pa). The urban population is 54% of the total. The capital, Bucharest (București), with a population of over 2 million, is by far the largest Romanian city. The next four cities – Iași,

Cluj-Napoca, Timișoara and Constanța – have populations of between 310,000 to 320,000.

The modern state of Romania was formed by the merging of the Danubian Principalities of Moldavia and Wallachia in 1859. The country had a rather tumultuous history during the twentieth century. The period after the second world war was marked by Soviet occupation followed by authoritarian rule, which ended in 1989 when popular dissent resulted in the downfall and public execution of Ceaușescu. After violently disputed elections in 1990, there have been three democratic changes of government (in 1996, 2000 and 2004).

Post-Cold War Romania developed closer ties with Western Europe, eventually joining NATO in 2004. The country applied in June 1993 for membership of the EU. It became an Associated State of the EU in 1995, an Acceding Country in 2004, and a full member on January 1, 2007. Romania has the seventh largest population and the ninth largest territory in the EU.

## 2 Economy

Romania had a GDP of US\$ 81.4 b in 2006, equivalent to US\$ 3,650 per capita (considerably higher in purchasing power parity terms). In terms of income inequality, Romania is ranked as 'medium', but has a high human development index. The economy is growing strongly, with an average rate of GDP growth around 6% per annum expected over the period 2005-2007. Inflation is low (around 5%), as is foreign debt (26% of GDP). The current account deficit, which is currently running at -10% of GDP, is of concern. Merchandise exports of around US\$27 billion are made up of textiles, footwear, metals, metal products, machinery and equipment, minerals, fuels, chemicals and agricultural products. Imports of around US\$34 billion are primarily machinery and equipment, fuels, minerals, chemicals, textiles, basic metals and agricultural products.

Agriculture has a 15% share in GDP, but a much larger share of employment (35%). Although industry continues to be a large sector of the economy (in excess of 30% of GDP), it is outmoded and in need of modernization and restructuring. Key industries include textiles and footwear, light machinery and automobile assembly, construction materials, metallurgy, chemicals, food processing, and petroleum refining.

Romania scores rather well on indices of international freedom (67 in the world in the 2007 Index of Economic Freedom), but on some measures it is still regarded as a medium to high risk country from the viewpoint of an international investor. It is expected that investor confidence will grow as Romania consolidates its status as a full member of the EU. As regards private investment in infrastructure, data is available for the period between 2000 and 2005. During that time, Romania had 9 PPI projects worth over US\$5.3 billion. Overall foreign direct investment is running at about US\$5.5 billion per annum.

## 2.1 Energy Sector

### 2.1.1 Energy Resources

Romania has significant fossil fuel and hydroelectric resources. Crude oil reserves are about 1.4 billion barrels, proven natural gas reserves estimated at 335 bcm and estimated coal reserves are nearly 4 billion tonnes. Most of these reserves are lignite and sub-bituminous coal. The total hydroelectric power potential is about 40 TWh per year, of which 12 TWh per year has already been developed. Biomass is still extensively used to meet household energy requirements. Domestic production currently supplies 70% of the primary energy demand.

Romania is Eastern Europe's largest producer of natural gas, producing 12.9 bcm of gas in 2005. This constitutes about 60% of demand, with the remainder being imported from Russia. Romania's production has fallen significantly in recent years and although Romania contains proven natural gas reserves of 630 bcm, the country is expected to continue to be a net importer. A properly functioning gas market would encourage additional exploration and production. There is potential for additional production from deeper geological plays that require more sophisticated geophysical techniques than have been available in Romania.

### 2.1.2 Energy Usage

**Gas** consumption is presently around 18 bcm per annum. Almost all the country is gasified, with gas constituting an important source of energy for power generation, industrial use and domestic applications. The details of gas demand and future prospects are given in Section \*\* below. In this section, we consider fuels which compete with gas in both industrial and domestic end-uses.

**Lignite.** At a production rate of 30-35 million tons/year in open pits operations, Romania's domestic lignite reserves will remain for 50 to 70 years. Lignite production in Romania is not subsidised, and represents a competitive source of energy to natural gas.

**Coal:** Table 1 shows the historical consumption of coal in five-year intervals.

Table 1 Coal consumption 1990 - 2020							
	1990	1995	2000	2005	2010	2015	2020
Mtoe	11.7	9.7	7.0	7.1	7.1	7.1	7.1

Source: BP World Statistical Review and ECA calculations

**Oil.** Table 6 shows a projection of the historical trend to 2025.

**Table 6 Oil Consumption 1990 - 2025**

	1990	1995	2000	2005	2010	2015	2020	2025
'000 bbl/d	372.9	274.1	202.9	240.2	264.5	295.1	325.6	356.2

Source: BP World Statistical Review and ECA calculations

In the case where oil and gas compete directly, gas will retain its link to the oil price through the price indexation in the Gazprom import contracts.

**Fuel oil**, delivered from Ukraine via barges on the Danube, is a strong competitor for gas in end-uses such as district heating. The government plans to reduce subsidies on district heating and this should lead to more market-determined decisions by consumers. Many households have been installing their own combi-boilers for heating and hot water. Rising gas prices may slow this development, but this tendency will be countered over time by rising income levels.

**Nuclear power:** Nuclear power production has stabilised at around 5.4- 5.5 TWh annually. It is expected that this level of production will be maintained into the future, with retiring units being replaced with new ones.

**Renewable energy.** Renewable energy sources should be encouraged as provided in the national program for renewable energy sources; this represents a local source that can help reduce reliance on import and improves the security of energy supply, meeting the environment protection criteria. The renewable energy sources (biomass, hydropower plants, geothermal energy, etc.) represents an important resource. But the high cost of initial investments represents a limiting factor in their expansion so that in order to overcome this obstacle a special incentive program should be enforced including a financial and or financing component.

**Electricity** generation capacity is 22,600 MW. The annual gross energy production is about 57 TWh pa, part of which is exported. The current generation mix is 10% nuclear, 23% hydro, 25% gas-fired and 22% other thermal (mainly coal).

### 2.1.3 Energy Development Plans

The National Strategy for Energy Development aims at the creation of efficient energy markets which will underpin the competitiveness of the Romanian economy. The sector development strategy is based on achieving secure, efficient and environmentally sustainable energy supplies. The Strategy is oriented to raising finance for energy sector investments, in part through involvement of the private sector.

A primary objective of the National Strategy is increased energy efficiency throughout the whole chain of supply and usage, from natural resources, through production, transport, distribution, consumption. The market is envisaged as one of the key mechanisms to achieve this. There is a target to improve energy efficiency by 2% per year.

The sector-wide energy strategy runs from 2007-2020. There are separate strategies for the nuclear sector and the oil industry, the latter running to 2010. In the electricity sector, significant growth in electricity production is envisaged, from 55 TWh in 2004 to around 85 TWh in 2020 (growth of about 2.8% pa). Much of the increased generation is to come from hydro, renewables and nuclear rather than from gas. Substantial transmission and distribution investments are also being planned. In the gas sector, modest investments are envisaged, mainly for rehabilitation of existing networks and for the regional interconnectors.

## 3 Gas Sector

### 3.1 Policy and Legal Framework

Over the last decade, the Romanian gas industry has gone through substantial structural change, being required to modernise its regulation procedures as part of Romania's successful drive to become a member of the EU. An independent gas regulator was set up in 2001. Since then, the ANRGN (Regulatory National Authority in Natural Gas Sector) has implemented a number of important measures in accordance with its mandate. It has licensed the operators; adopted regulations aimed at improving efficiency, safety, competition and transparency and non-discrimination in the operation of the gas market; instituted new tariff methodologies; significantly increased overall tariff levels while adjusting relative tariffs; and implemented a number of key measures aimed at liberalizing the gas market.

An important achievement for the natural gas sector was the coming into force of the Gas Law no. 351/2004 (amended in 2005), aimed at adopting the provisions of Directive 2003/55/CE concerning common rules for the internal market in gas. The Law mainly regulates: natural gas sector policy, organisation, operation, role of the regulation authorities, authorisations, licenses and certification in natural gas sector, access and rejection of access for third parties to the systems within the natural gas sector, public service and customer protection obligations, market, prices and tariffs in natural gas sector.

### 3.2 Regulatory bodies

An independent gas regulator, the Romanian Regulatory Authority in the Natural Gas Sector (ANRGN<sup>1</sup>) was incorporated under Government Ordinance no 41/2000 and approved by Law no 791/2001. The subsequent Gas Law no. 351/2004 and associated statutes entrenches the Regulator's independence in decision making. The president and vice president are appointed for 5 year terms by the Prime Minister. The Regulatory Committee has a further 3 members and this is assisted by a 9-person Advisory Council. ANRGN is financed from licence fees.

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<sup>1</sup> [www.anrgn.ro](http://www.anrgn.ro)

ANRGN is responsible for:

- Issuing licences
- Establishing the methodology for gas prices and tariffs
- Preparing the framework contracts for wholesale, retail and transportation

The 2004 Gas Law provides a framework within which ANRGN can operate. In this new legislative context, the authority's mission is the elaboration, application and monitoring compliance with the mandatory regulation system at the national level.

The electricity sector has a separate regulator (ANRE<sup>1</sup>), which was established prior to ANRGN. A final regulatory body which may have an influence over the energy sector is the Competition Authority. For example, in the event of proposed mergers or large-scale acquisitions in the energy sector, clearance would have to be obtained from the Competition Authority as well as from the energy regulators.

### 3.3 Institutional Framework

Within the structure of the Romanian government, responsibility for energy is allocated to the Directorate General for Energy Policy which falls under the Ministry of Economy and Trade<sup>2</sup>. The Directorate is responsible for the preparation of policy documents and the legal framework in the energy sector including electricity, natural gas, petroleum, renewable energy sources and energy efficiency, as well as for the privatization of energy companies. Environmental matters fall under the Ministry of Environment and Water Management.

The gas sector is dominated by the state-owned company, Romgaz, which produces around 57% of the Romanian domestically produced gas and is responsible for around 75% of gas imports. Romgaz was restructured into six divisions in June 2000. Currently the main players are<sup>3</sup>:

- Manufacturers:* S.N.G.N. Romgaz S.A., S.C. Petrom S.A., Amromco Energy, L.L.C. New York
- Operators of storage systems:* S.N.G.N. Romgaz S.A., S.C. Depomures S.A., S.C. Amgaz S.A.
- Transporters:* S.N.T.G.N. Transgaz S.A.

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<sup>1</sup> [www.anre.ro](http://www.anre.ro)

<sup>2</sup> [www.minind.ro](http://www.minind.ro)

<sup>3</sup> [www.anrgn.ro](http://www.anrgn.ro)

- ❑ *Distributors:* S.C. Distrigaz Sud S.A., E.ON Gaz Romania S.A. , S.C. Petrom S.A., S.C. Congaz S.A. etc. By G. D. 1283/2003, the Government approved the strategy of privatisation of the two natural gas state capital distribution companies (SC Distrigaz Sud SA Bucharest and SC Distrigaz Nord SA Tg-Mures). The two companies' privatisation process was successfully completed during June, 2005<sup>1</sup>.
- ❑ *Suppliers:* S.C. Distrigaz Sud S.A., E.ON Gaz Romania S.A , S.N.T.G.N. Transgaz S.A., S.C. Petrom S.A, S.N.G.N. Romgaz S.A., S.C. Congaz S.A., Amromco Energy, L.L.C. New York, S.C. Depomures S.A. etc.
- ❑ *Eligible customers:* 329 (on 1st of January 2006)
- ❑ *Operator of transit system:* S.N.T.G.N. Transgaz S.A.
- ❑ *Importers:* S.C. Distrigaz Sud S.A., E.ON Gaz Romania S.A, Termoelectrica, Wirom etc.

In 2006, the degree of natural gas market opening was established at 75%, up from 30% in 2003. The current steps are those agreed within the negotiations of Romania's adherence to the European Union Directives on market opening, requiring 100% for non-household customers from 1st of January 2007 and 100% for all customers from 1st of July 2007.

While 75% of the gas market was privatised in Romania by July 2006, this figure was still far below the 90% average of privatisation in Central Europe. In spring 2006, the Romanian government decided to delay the sale of a 15% strategic stake in Romgaz and possibly replace this with an initial public listing (IPO) on the stock exchange. The government cited limited options for increasing security of gas supply, limited underground storage capacity, the diversification of supply, and the flexibility of production and imports as reasons for the delay. Various companies have expressed interest in acquiring a significant stake in Romgaz, including GdF, Russia's Lukoil, Hungary's MOL, Germany's Wintershall and E.ON Ruhrgaz<sup>2</sup>.

Other institutions which have a bearing on the gas sector are:

- ❑ Energy Conservation Agency (ARCE<sup>3</sup>)
- ❑ Green Certificates Market Operator (OPCOM)
- ❑ Romania's National Agency for Mineral Resources (NAMR)

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<sup>1</sup> Distrigaz Sud and E.On Gaz are the two major distributors in Romania, with a combined market share of about 90 percent. In June 2005, Gaz de France (GdF) finalized the acquisition of a 51 percent stake in Distrigaz Sud for \$330 million. That same month, German gas supplier E.On Ruhrgas finalized its acquisition of a 51 percent stake of E.On Gaz Romania (formerly Distrigaz Nord) for \$US368 million. In 2006, E.On Gaz Romania announced plans to invest \$55.3 million to replace 217 miles of pipeline, upgrade its equipment and installation, and develop new networks.

<sup>2</sup> Source: [www.eia.doe.gov](http://www.eia.doe.gov)

<sup>3</sup> [www.areceonline.ro](http://www.areceonline.ro)

### 3.4 Fuel Prices

Since 2003, the regulator has significantly increased tariffs. ANRGN halted the decline in consumer tariffs in dollar terms, differentiated between residential and non-residential consumers, introduced a two-part-tariff system, and eliminated for the most part, cross- subsidies between consumers' categories. Regulated prices were increased partly in order to correct for the cross subsidisation issue, but also as a result of the increase in purchase price for imported natural gas from Russia and the necessity of gradual alignment of wellhead price to the import price.

As of February 2007, the weighted average import price (over 10 contracts from 2 suppliers) was around US\$300 per mcm. This was considerably higher than the indigenous price at the wellhead of US\$145/mcm, of which about \$80 to \$100 is said to cover extraction and production costs. Romanian gas import contracts are indexed to crude oil, fuel oil and diesel, with a 2003 base year and quarterly adjustments. The contracts now run for 5 year periods, not 20 years which was the norm in the past.

In 2002 the price of natural gas was set at US\$ 82.5 per Mcm. (the previous price was US\$ 45.1 per Mcm for household consumers and US\$ 85 per Mcm for industrial consumers). As of March 2003 the price level increased to US\$90 per Mcm, and later in the year , from July 2003, it increased to US\$ 99 per Mcm. On 1 January 2006, the price of gas increased by another 17% followed by a further 4% on 1 April. ANRGN has implemented another 30% price increase towards the end of 2006, bringing the average price up to US\$145 per Mcm.

These developments caused social unrest in Romania (newspapers reported seven out of nine manufacturers of chemical fertilizers at the brink of bankruptcy). Therefore the Romanian Government has negotiated delaying further increases in gas prices with EU to 2008<sup>1</sup>. These delays, however, have resulted in criticism from international financing institutions. The IMF notes that gas prices have not been yet adjusted in line with opportunity costs, and the domestic gas producer price are yet far below the international import price<sup>2</sup>.

The Romanian Government has started investigations into the price paid for the imported Russian gas, claiming that Romania pays more than other countries.

**Table 1 End-user gas prices**

Sector	US\$/Mcm
Industry	357
Households	370

Source: Prices for January 2007, Eurostat

<sup>1</sup> EIROnline: Industrial Action in Chemical and petrochemical Sector, 03/2006

<sup>2</sup> IMF Public Information Notice No. 06/49, May 4, 2006, IMF Executive Board concludes 2006 Article IV consultation with Romania

Romania has also had significant problems with the enforcement of payment discipline. The two major gas distribution companies, Distrigaz Nord and Distrigaz Sud, owed 28% and 54% of annual turnover, respectively, at the beginning of 2002. Over 50% of arrears were accumulated by municipal heating plants and the other 50% by large industrial enterprises, predominantly in the state sector.

However as privatisation has proceeded debt has been written off. Gaz de France has purchased a 51% stake in Distrigaz Sud and E.ON purchased a 51% stake in Distrigaz Nord in 2005.

### **3.5 EC Gas Commitments**

Romania has fully incorporated the provisions of the EU Gas Directive into its own legal framework. It is not just a question of legal adherence, but also of applying the principles to the operation of the gas sector. Amongst the SEE countries, Romania is the most advanced in its adoption of all aspects of its EC gas commitments.

### **3.6 City Distribution Demand Studies**

#### **Drobeta Turnu Severin**

Drobeta Turnu Severin is a city with a population of approximately 106,000. It is made up of a Residential and Commercial area of around 6km<sup>2</sup> and 1km<sup>2</sup> Industrial. This gives a population density of 17,667 per km<sup>2</sup>.

**Figure 2 Drobeta Turnu Severin distribution map**



Data provided shows a total number of households to be 35,797 estimated to comprise 25,000 apartments and 10,797 houses. Based upon an annual estimated consumption of 15,240KWh and peak consumption of 3m<sup>3</sup>/hr per residential customer, residential demand is estimated at 545,546MWh per annum, with a peak hour demand of 80,543m<sup>3</sup>/hr.

Using the sectoral demand assumptions set out above results in the following potential demand estimates as shown in Table 2.

**Table 2 Potential demand**

Sector	Annual demand	Peak hour demand
	MWh	Cu.m/hr
Residential	545,546	80,543
Commercial	227,311	10,031
Industrial	136,387	5,016
Total	909,244	95,590

It is suggested that due to its remoteness from the proposed SEE Ring, the town of Drobeta Turnu Severin is supplied with gas by connecting to the existing Romanian gas transmission system to the south of Hurezani, and constructing a 80km / 12in dia. Pipeline to City Gate Station located to the north of the city. Gas would be metered and the pressure reduced to 16 bar for supply to a 4.7km / 16in diameter high-pressure steel distribution system.

The high pressure distribution system would supply the 4bar medium pressure network, which would in turn supply customers.

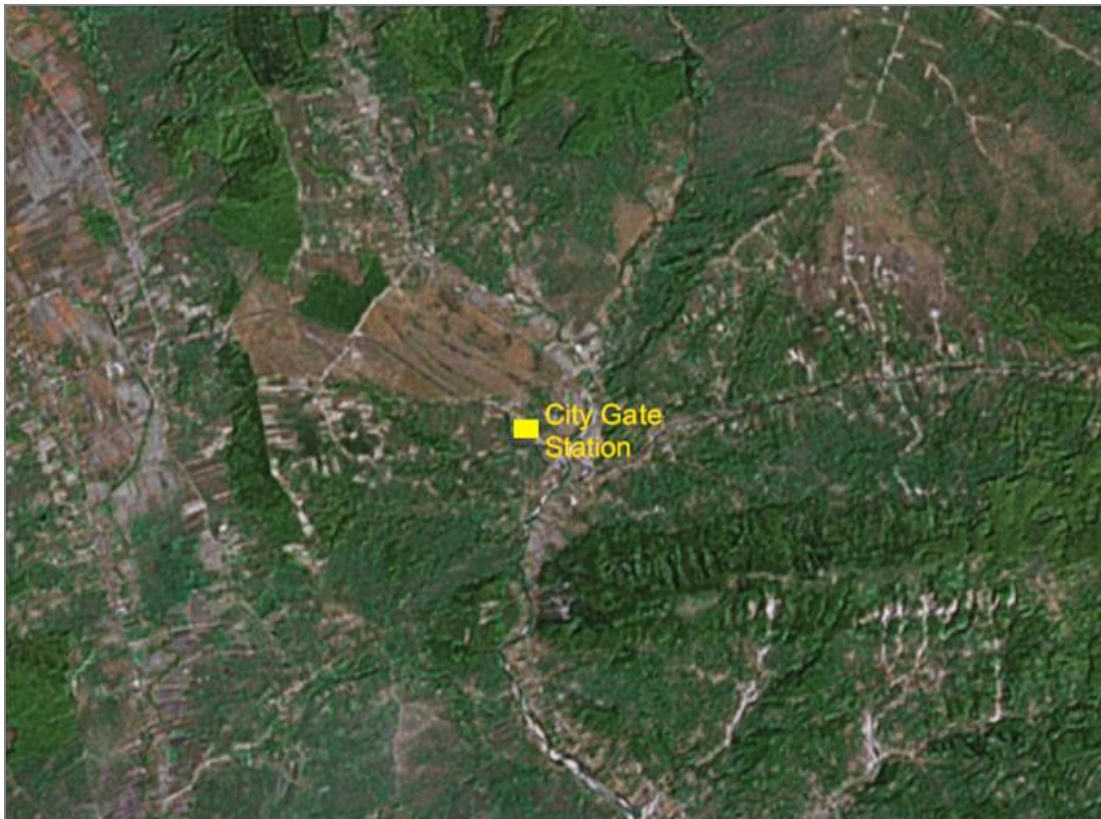
Estimated capital costs for the gas supply system are shown below in Table 3.

<b>Table 3 Estimated capital costs</b>	
<b>Item</b>	<b>Total Cost</b>
	US\$ million
SEE Ring Connection	5.0
Spur Line	25.6
City Gate Station	4.0
HP Distribution System (16 bar Steel)	2.3
MP Distribution System (4 bar PE)	7.2
Residential Connections	29.1
Residential Installations	8.4
Industrial and Commercial Connections	4.0
<b>Total</b>	<b>85.6</b>

### **Horezu**

Horezu is a small resort town with a population of approximately 6,995. It is estimated to comprise a Residential and Commercial area of around 1.4 km<sup>2</sup> and an Industrial area of around 0.2 km<sup>2</sup> Industrial. This gives a population density of 5,181 per km<sup>2</sup>.

**Figure 3 Horezu distribution map**



Data provided shows a total number of households to be 2,423 estimated to comprise 571 apartments and 1,852 houses. Based upon an annual estimated consumption of 15,240KWh and peak consumption of 3m<sup>3</sup>/hr per residential customer, residential demand is estimated at 36,927MWh per annum, with a peak hour demand of 5,452m<sup>3</sup>/hr.

Using the sectoral demand assumptions set out above results in the following potential demand estimates

**Table 4 Potential demand**

Sector	Annual demand	Peak hour demand
	MWh	Cu.m/hr
Residential	36,927	5,452
Commercial	15,386	679
Industrial	9,232	339
Total	61,544	6,470

It is suggested that gas would be supplied from a connection to the existing Romanian transmission system at Gavora, via a 40km / 6in diameter pipeline to a City Gate Station located to the north west of the city. Gas would be metered and the pressure reduced to 4 bar for supply to the medium pressure (PE) distribution system.

The high-pressure distribution system would supply the 4bar medium pressure network, which would in turn supply customers.

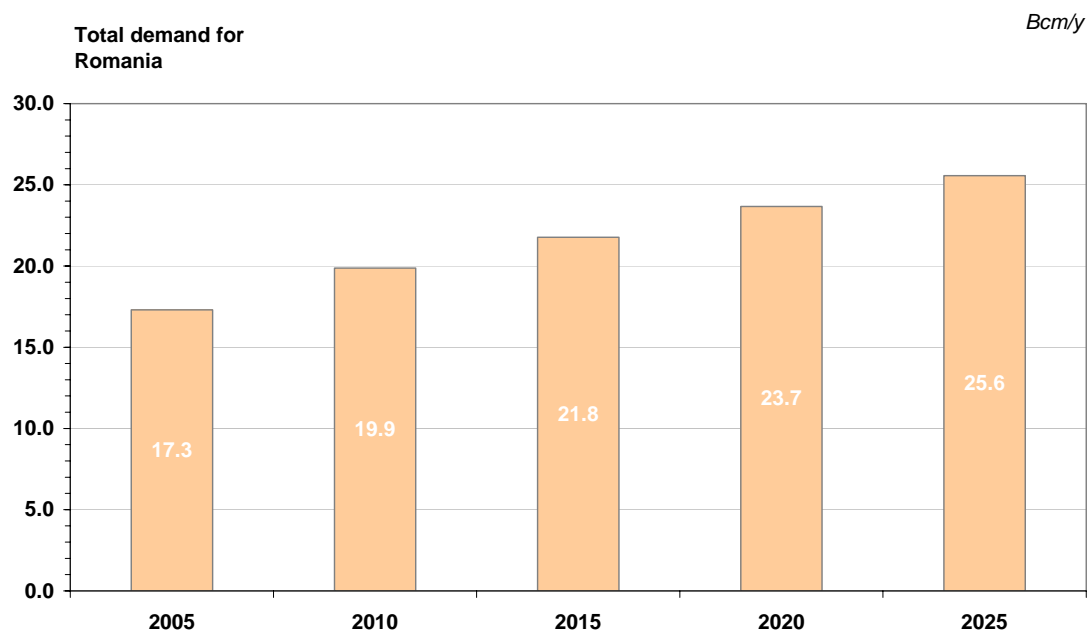
Estimated capital costs for the gas supply system are shown in Table 5.

Table 5 Estimated capital costs	
Item	Total Cost
	US\$ million
SEE Ring Connection	5.0
Spur Line	8.2
City Gate Station	3.0
HP Distribution System (16bar Steel)	0.0
MP Distribution System (4bar PE)	0.7
Residential Connections	2.0
Residential Installations	0.5
Industrial and Commercial Connections	0.3
Total	19.6

### 3.7 Overall Demand for Gas

Figure 4 shows the Romania's gas demand projection. Demand has been stable since the year 2000, however modest demand growth is expected over the next few years specifically in the residential sector.

Figure 4 Gas demand to 2025



Source: ECA Graphic, historic data from BP, ECA forecasts based on linear time series regression from 2002.

Table 6 shows the typical gas consumption mix for natural gas in Romania. With combined cycle gas plants supplying district heating, benefits from power generation are shared with residential consumers. Such benefits will not accrue in situations where hydroelectric and nuclear plants are chosen over gas for future power generation.

Table 6 Natural Gas Consumption Mix in Romania in 2003

Consumer Category	Percentage
Residential and Commercial	22%
Power Generation	25%
Industry	53%
Total	100.0

Source: CEER-SEE Gas market Survey 2005

Consumption has dropped dramatically over the last two decades from 35.4 bcm in 1984 to 17.0 bcm in 2006<sup>1</sup>. This reflects a number of factors, but mainly the closure of many large-scale inefficient process industries. It is unlikely that industrial demand for gas in Romania will grow significantly in the foreseeable future; it is expected to

<sup>1</sup> BP Statistical Review, 2007

remain at around 8-9 bcm per year. At the same time household demand is growing in spite of increasing prices, and is expected to grow further with the introduction of private capital into the distribution market.

The Romanian government believes that the household and commercial sector will account for 40% of demand in 2015. IEA EU Synergy study on the Balkans suggests that overall demand in Romania will stabilise at 25-26 bcm per year. This is around the level achieved before the recent collapse in demand. ECA projections show demand reaching 23.7 bcm per annum by 2020.

### 3.8 Current Gas Supplies

Romania has the largest gas market in SEE as it was the first country to use natural gas for industrial purposes. Despite being the largest producer in SEE, Romania is a net importer of gas. Transgaz currently operates the majority of gas transmission and transit infrastructure within Romania, maintaining approximately 11,000 km of pipelines. The network ranges in size from 6 inches to 32 inches, and has a capacity of 40 bcm. There are seven storage facilities (depleted fields) with a total working capacity of 2.5 bcm. Parts of the system are antiquated, so operating pressures are low, 12 bar being common (law requires a minimum of 6 bar). *Inter alia*, this makes line pack ineffective as a buffer for variable demand.

In 2006, from the total consumption of 17.0 bcm, domestic production accounted for 12.1 bcm. However the BP Statistical Review reports that during 2006 Romania importuned 6.25 bcm; 3.95 bcm came directly from the Russian Federation, 1.00 bcm from Eurasia and 1.95 bcm from Germany. The balance of supply is provided by Russia through Ukraine where the current capacity of the transit system is being upgraded from 8 bcm per annum to 14 bcm per annum. Table 3 shows the transit volumes for the consumers as well as the maximum capacity.

**Table 7 Gas transit volumes**

Country	Volume (bcm/y)	Capacity (bcm/y)
Ukraine/Isaccea (Import)	28	35
Ukraine/Mediesu Aurit (Import)	-	3.3
Bulgaria (Export)	2.89	26.3

Source: Gas Transmission Europe Maps and Data

In 1998 Romania signed an agreement with Ruhrgas to import 0.5 bcm per annum of gas through Austria and Hungary for 15-20 years starting in 1999. The agreement allows this to increase to 2 bcm per annum by 2005. Discussions continue on the construction by Ruhrgas of the Szeged-Arad pipeline which would link Hungary directly with Romania.

Based on a forecast of domestic gas production falling to 8.5 bcm per annum in 2015 (a decline of 3.7% pa), the Ministry of Industry and Trade calculates the import requirements as shown in Table 8.

<b>bcm per annum</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>
Russian Federation	5.0	12.0	13.0	14.0	14.0
Western Supplies	0.0	0.5	1.0	1.5	1.5
Central Asia	0	0	0	1.0	2.0
<b>Total</b>	<b>5.0</b>	<b>12.5</b>	<b>14.0</b>	<b>16.5</b>	<b>17.5</b>

*Source:* Ministry of Industry and Trade, Black Sea Energy Report, pg 179.

However, it is clear from the latest 2006 figures that Romanian demand has not grown as expected and therefore the import requirement is much lower than that shown in Table 8.

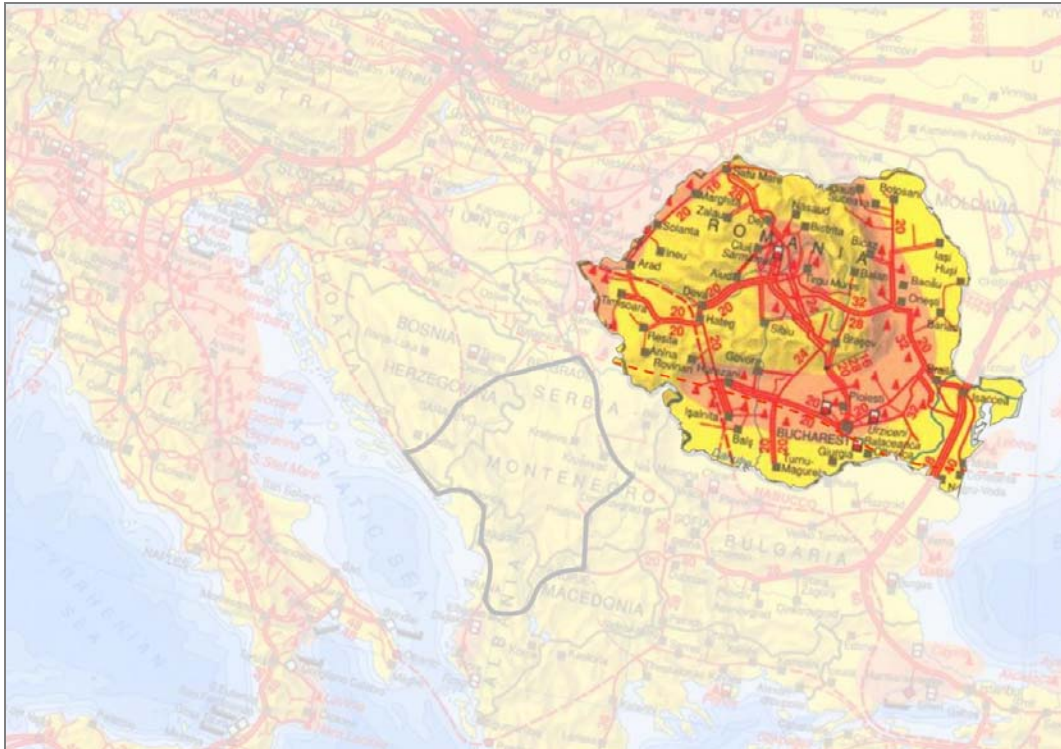
### **3.9 Anchor Loads**

Promoting anchor loads is a concern in the ungasified SEE markets. In Romania's case, the gas market is already mature. It would nonetheless be attractive for large gas projects to provide the justification for the proposed interconnectors with trunk lines such as Nabucco or BlueLine.

### **3.10 Future Gas Supply Options**

Currently a number of activities are planned with regard to the gas infrastructure within Romania and between Romania and other countries. One such project is an interconnection with Western Europe, in order to interlink the Romanian gas transmission system with that of Western Europe via the Arad-Szeged pipeline, which runs from Arad in northwestern Romania to Szeged in southeastern Hungary. This 1.5 bcm pipeline project began in 2006 and is to be completed by 2008. The pipeline will enable Romania's system to link fully with the network in western Europe, and will stretch for 37 km in Romania and 25 km in Hungary. Figure 5 shows a schematic of the EC Ring from the perspective of Romania.

**Figure 5 EC Ring – Romania**



Another planned pipeline, the Siret-Cernauti pipeline, will connect Siret, in northern Romania to Cernauti in southwest Ukraine. The pipeline was originally contracted in 2004 between Romanian state-owned Transgaz and Ukrainian authorities, but was delayed by the political crisis in Ukraine, and construction has yet to begin.

The Giurgiu-Ruse pipeline would connect Romanian and Bulgarian gas transport systems and is currently under assessment by Transgaz, Bulgargaz and the Wintershall/Gazprom joint venture Wintershall Erdgas Handelshaus (WIEE). In May 2006, the Romanian Economy and Trade minister emphasised the need to continue with all pending projects, including the Siret-Cernauti and the Giurgiu-Ruse pipelines.

Other planned interconnections with neighbouring countries include:

- ❑ Turnu Magurele – Levski, Bulgaria
- ❑ Iasi – Balti, Moldava

The biggest potential supply project is the Nabucco pipeline. This will transport gas from the Caspian Sea region/Middle East via Romania to central Europe. The capacity of the pipeline is to be 30 bcm per annum. The project has received widespread support from the EU since it would lessen the region's dependence on Russian gas. Construction of the 1,760-mile, US\$ 5.8 billion pipeline is set to begin in 2008 and end in 2011.

Meanwhile, to consolidate its present position with Russia, Romgaz and Gazprom are apparently intending to sign an agreement for a joint venture for gas imports and transportation, and for building underground gas storage facilities with a capacity of 2 bcm<sup>1</sup>. Additional storage is necessary to deal with variable demand. At present, meeting daily peaks is a problem and some customers have been put on interruptible tariff agreements.

## 4 Conclusion

The future import supply options for Romania are increased supplies of Russian gas, offtake of Caspian gas from Nabucco, in which Transgaz is a 20% shareholder, and direct import of Caspian (Azeri) gas via the proposed GUEU/White Stream pipeline under the Black Sea from Georgia.

The main reform themes in the Romanian energy market continue to be:

- Harmonisation of the energy policy according to the European Union Directives
- Improving consumer protection rules
- Development of the regional market
- Romania's role in promoting the regional market will become pivotal when the Nabucco pipeline is built. The proposed branch line from Timisoara into Serbia will be a key route for supply to the Western Balkans Ring.
- Continue to encourage market opening
- Future import requirements as demand continues to increase

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<sup>1</sup> Estimated investment in the project reach hundreds of millions of euros. At this point, the parties have only expressed their intention to establish a joint venture, April 2007.

<http://www.rusnet.nl/news/2007/04/17/businessseconomics02.shtml>