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Bulgaria Natural Gas Sector Study

Project No. 10-383-140019

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1. Introduction

The purpose of this study is to review the current status of the natural gas (NG) sector in Bulgaria. The evaluation will be used to address strategic issues concerning alternative sources of energy and the feasibility of energy efficiency measures within the country.

Bulgaria is strategically situated in the Balkans. It consumes a significant amount of gas in power generation, industry, and households. In addition, Bulgaria is a gas transit country that currently provides Russian gas transmission services to Turkey, Greece, and Macedonia. The country has the potential of becoming a regional gas hub with gas supplies coming from the Caucasus region, Asia, and Europe. It also borders Romania and Serbia, which could be interconnected to Bulgaria in the future.

European gas trade is increasing due to rising global gas demand, declining gas reserves, lower gas transportation costs (particularly for liquefied natural gas or LNG), requirements to diversify supply and higher gas prices. Furthermore, restrictions on CO2 emissions, the nuclear phase-out announced by some EU States, high emissions levels from coal-based generation, and barriers to rapid development of renewable generation are factors that result in a high level of dependency on natural gas in Europe. Bulgaria is in a favorable position to take advantage of these geopolitical forces by developing its own gas sector and participating in regional gas initiatives.

This report concentrates on the Bulgarian internal gas sector as well as its gas transit operations. It provides background information on the current gas sector infrastructure, historical supply and demand figures, and some forecasts of future consumption. It also discusses strategic and regional gas-related initiatives. Finally, it provides a comparison of gas-based energy vs. other available sources of energy.

2. Energy Consumption

Background

The natural gas industry in Bulgaria is mature and has a significant history. The country's gasification started in the mid 1970s and saw the construction of the national gas transmission system for supplies from the former Soviet Union. The first domestic discovery of gas condensate occurred in 1963 near the village of Chiren in the northwest section of Bulgaria.

In 1973, a national oil and gas company Bulgargaz was registered. In 1993, Bulgargaz EAD was restructured as a joint-stock company. This status was preserved through the end of 2006. Honoring the requirements of the Energy Law in force in the Republic of Bulgaria and Directive 2003/55/EC of the European Parliament concerning the common rules for internal markets in natural gas, Bulgargaz EAD underwent unbundling, both organizationally and legally in 2007; Bulgargaz EAD was restructured into daughter companies Bulgartransgaz EAD, Bulgargaz EAD and Bulgartel EAD within a parent company, Bulgargaz Holding EAD. The capital of the three daughter companies is 100% owned by Bulgargaz Holding EAD.

In 2008, by virtue of a Decision by the Minister of Economy and Energy, Bulgarian Energy Holding EAD (BEH) was incorporated. It included three Bulgargaz Holding EAD daughter companies as well as Mini Maritsa Iztok EAD, Maritsa East 2 TPP EAD, Kozloduy NPP EAD, NEK EAD, and Electricity System Operator EAD. Bulgartransgaz EAD and all other companies within the holding structure preserve their operational independence and licenses, and they remain owned by and directly subordinated to the BEH corporate center[1].

Gas Consumption

Gas entering Bulgaria is used for consumption within the country (domestic usage) and for transit to neighboring Turkey, Macedonia, and Greece.

A summary of domestic use by sector is presented in Exhibit 1.

Exhibit 1-1 – Domestic Use Summary

	2005	2006	2007	2008	2009
Domestic Use, MCM[2]					
Sectoral Usage (%):					
- Energy					
- Chemical					
- Distribution					
- Others					
- Metallurgical					
- Cement/Glass/ Porcelain					
- Construction					
- Rest					
TOTAL	100%	100%	100%	100%	100%

Data available in full report

[1] Based on < > data.
[2] MCM - Million cubic meters.

Based on the data above, both energy and chemical use appears to have declined during 2005-09, while gas distribution is steadily increasing primarily due to the gasification effort in the country.

The energy sector consumers include all enterprises and/or energy installations that transform natural gas into heat and/or electric power. The companies providing central heat supply represent 68% of this consumption, while the factory power plants (installations in the industrial enterprises) consume 32%.

The total amount of natural gas supplied in 2009 was <> BCM[3], of which <> BCM was imported[4]. The natural gas at the delivery point of the national transmission network is provided by three external supplies (Overgas Inc., Wintershall, and Gasexport) and one domestic company (Petreko SARL). The quantity of locally produced natural gas was <>116 BCM.

Based on a preliminary verbal estimate from <>, 2010 consumption is expected to fall in the <>9 BCM range. The lower annual consumption in the most recent year is primarily due to the economic slow-down associated with the global economic crisis, and in particular due to a significant consumption reduction in the metallurgical, porcelain, and chemical sectors. CG was told that at least 3 metallurgical and porcelain manufacturers closed their operations due to demand reduction for their products.

Consumer Prices

The data provided in Exhibit 1-2 provides the dynamics of natural gas and electricity pricing for 2004-09 together with crude oil prices for comparable periods. As can be seen, natural gas prices are closely correlated with crude oil prices. This is primarily due to the contract peg of gas to oil, which is standard practice under the long-term supply contracts. Electricity prices, however, are less correlated to oil and gas prices, since electricity production in Bulgaria is heavily dependent on nuclear, domestic coal, and hydro resources that are somewhat independent of oil price fluctuations.

[3] BCM – billion cubic meters (1,000 MCM = 1 BCM)
[4] There is a discrepancy between use and supply numbers which includes loses, flaring, and other.

Exhibit 1-2 – Prices for Various Commodities (excluding VAT)[5]

Category	Units	20				3
Brent Crude Oil	Current Prices $ per bbl	3				26
Electricity - Industry	Current prices in $ per kWh	0				77
Electricity - Households	Current prices in $ per kWh	0				97
Natural Gas - Industry	Current Prices in $ per 1000 cub m	1				6.4
Natural Gas - Households	Current Prices in $ per 1000 cub m	2				1.5
Natural Gas - Commercial	Current Prices in $ per 1000 cub m					4.0
Natural Gas - Public Provider	Current Prices in $ per 1000 cub m					309.5

Data available in full report

It should be noted that in 2009 the State Energy and Water Regulatory Commission (SEWRC) approved prices for transmission of natural gas through the gas distribution networks, prices of natural gas supply by the end supplier, and prices of connecting consumers of licensed distribution companies, according to a new pricing method referred to as 'Price Cap'.

Exhibit 1-3 provides the prices of various energy sources in Bulgaria in 2008. Based on the data, natural gas appears to be one of the cheapest sources of energy, followed by local brown coal. Various oil-based products tend to be more expensive.

Exhibit 1-3 – Various Products Pricing 2008[6]

Category	Units	2007
Natural Gas - Industry	2007 price in $/GJ	6.7
Natural Gas - Households	2007 price in $/GJ	
Natural Gas - Commercial	2007 price in $/GJ	
Gas Oil	2007 price in $/GJ	
Oil 3.5% S	2007 price in $/GJ	
Diesel Oil	2007 price in $/GJ	
LPG	2007 price in $/GJ	
Brown Coal (3800 kcal/kg)	2007 price in $/GJ	14.3

Data available in full report

While official data are not yet available for 2010 pricing, some distribution companies have published price comparisons between various energy sources for their customers. These data cannot be independently verified and should only be used as guidance for relative positions of various fuels. Exhibit 1-4 shows that natural gas in 2009 remains the cheapest fuel. The data were prepared by <>.

[5] Data source included: <>

[6] Data source included: <>

Exhibit 1-4 – Various Product Pricing - 2009

Data available in full report

Source: <>

Gas Transit

Bulgaria has acted as a transit county for Russian gas for some time. Exhibit 1-5 provides the details of transit quantities to Bulgaria via three major connections – Turkey, Greece, and Macedonia. It should be noted that the amount of transit has been increasing over the years, from 11.9 BCM in 2000 to over 17 BCM in 2007. 2008-09 data are not representative due to supply interruptions and global economic pressures. 2010 data is preliminary estimate.

Exhibit 1-5 – Transit of Russian Gas (BCM)[7]

transit to:	Data available in full report
Turkey	
Greece	
Macedonia	
Total	

Souce: <>

The exact imported gas prices are confidential and therefore not available. However, many consultants have attempted to provide estimations based on past known contract details. <>[8] has derived the relationship presented in the Exhibit 1-6 below of gas and crude oil prices. The price relationship, however, may be skewed by various oil reference points as well as the multi-year nature of long-term gas contracts. In general, for a $<> crude price the public provider gas price is estimated at about $<>, which is fairly consistent with Exhibit 1-2 prices.

[7] 2010 is a <> estimate based on actual Jan-Sept numbers.
[8] <>

2. Energy Supply

Energy Resources

Gas Market

Wholesale market

Retail market

Local Gas Production

Gas Consumption Forecast

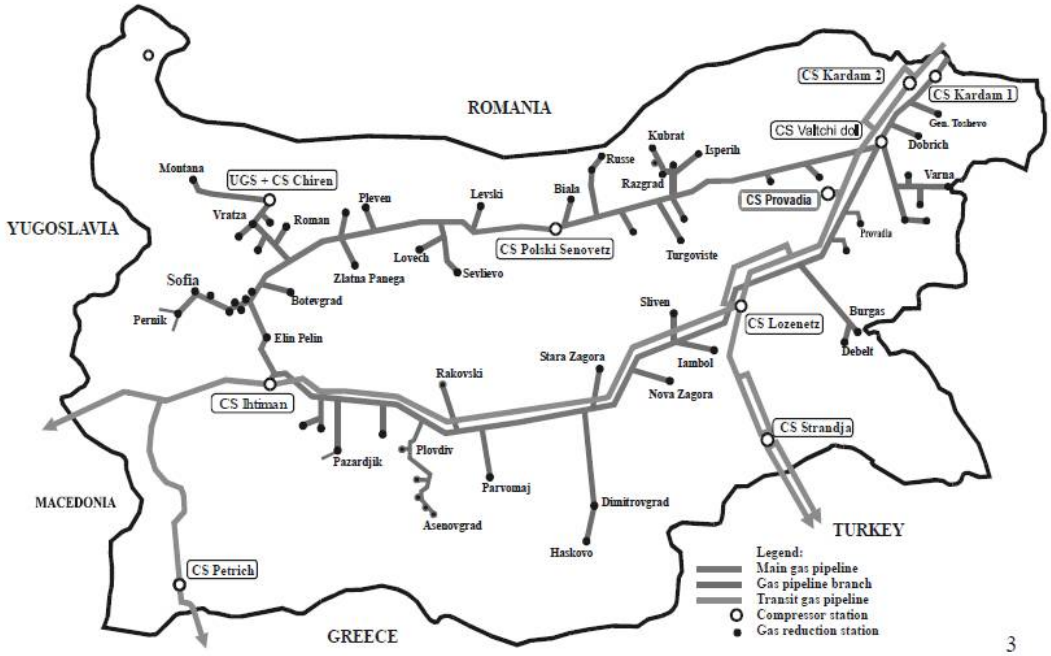
3. Gas Infrastructure

Current Infrastructure

Local Transmission

Transit Transmission

Exhibit <> – Layout of Bulgaria Natural Gas System



Source: <>

Distribution

Future Gas Projects

Short-Term Projects

Bulgaria – Romania Interconnection

Turkey-Greece Pipeline and Bulgaria – Greece Interconnection

Greece-Italy Pipeline

Trans-Adriatic Pipeline (TAP)

Long-Term Projects

Nabucco Pipeline Project

South Stream Pipeline Project

4. Strategy

Reliability

Diversification

Near-Term Priorities

Security

Gas Substitution

Energy Efficiency Methods

5. Conclusions

Short-term

Long-term

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