Natural gas – an energy necessity for Macedonia:

Overview of the Macedonian energy potential

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Introduction

Despite the growing importance of Southeast Europe (SEE) in the new map of natural gas pipelines, the natural gas as an energy resource is underused in the wider region of SEE. In Macedonia only one percent of the total energy consumption comes from natural gas and there is also a lack of developed infrastructure for large scale gasification of the industrial capacities and the households.[1] With this, Macedonia and other countries of the region risk increasing their energy dependencies to imported energy sources, which is unsustainable on long term.

Taking the above said as a starting point, this report advocates the stance that in the time of energy crisis, price turbulences on the global oil market, and electricity import dependence, natural gas is the most favorable energy option for achieving long-term energy stability and sustainability in SEE and specifically in Macedonia. By giving a comprehensive analysis of the natural gas market in Macedonia as a case study for the region of SEE, we aim to underline the importance of the natural gas for the energy future of the country and the region.

Starting from the standpoint that for sustaining the energy balance Macedonia and the region need a stabile energy source, this report analyzes the natural gas market in Macedonia, its infrastructure and legal framework, and gives recommendations for future development.

Energy Supply

Southeast European countries are faced with energy crisis and instability of the energy supply, both domestic and international. For example, only half of Macedonia's energy consumption is covered by home production, while for the other half Macedonia remains highly dependent on import of oil, natural gas and electricity[2].

Macedonia has a scarcity of domestic energy resources. The basic energy source is the coal – lignite, which contributes with almost 70% of the total energy production in the country. It is the main energy source for electricity production in the two major thermal power plants "REK Bitola" and "TEC Oslomej". However the lignite in Macedonia as an energy source is not efficient enough. It is low caloric lignite, characterized with low quality and with estimated reserves only until 2025. The other fossil fuels with big share in the

[1] In the Energy policy paper on Macedonia in 2004, the World Bank projected a "dark scenario" for the energy future of the country according to which until the year of 2019, Macedonia will import 90% of its electricity demands. For more info, see *FYR Macedonia Energy Policy Paper*, World Bank document, July 2004, pg. 14.

[2] According to the Energy Balance for 2008 51,53% of the energy consumption is covered by home production, while 48,47% of the total energy consumption in the country is imported. *Energy Balance of Republic of Macedonia 2008*, Official Gazette of Republic of Macedonia, No.158/07. Also available at: http://www.economy.gov.mk/MEKEnergetika/WBStorage/Files/E_Bilans_2008_Final%2027%2012%202007%20%20objaven%20%20vo%20Sluzben%20Vesnik.pdf.

energy consumption in Macedonia, are oil and natural gas, and are imports.[3] There is only one oil pipeline transporting crude oil from Thessaloniki, Greece to Skopje, capital of Macedonia. The realization of the AMBO oil pipeline project, aiming to transport oil from Black Sea to Adriatic, has been on a halt for a decade now, due to political and financial barriers. All of the above said, together with the astronomic take-off of the global oil prices, has contributed to large expenditures from the state budget for oil imports and has led to further increase of the trade deficit, and has increased the country's trade volume with oil exporting countries such as Russia.[4]

The other alternative sources of energy like the nuclear energy are still out of any energy policy in Macedonia. There are some embryonic initiatives concerning the exploitation of the renewable energy sources (RES). Even though some feasibility studies for the wind energy have been undergoing, and the solar energy has been used in the private sector, the large-scale exploitation of these energy sources leading to country-wide electricity production still has not emerged.

The total annual generation of electricity in Macedonia comes mostly from thermal and hydroelectric sources. The generation capacities include four coal-fired power plants with an installed capacity of about 800MW and over 20 small and medium hydro-power plants with an installed capacity of above 500MW and a 200MW oil-powered Negotino plant mostly used during peak periods. However, these quantities cover only 70 percents of the total annual consumption can not cover the rising annual consumption of electricity in the country. Also, the (re)opening of some large industrial capacities[5] has led to significant increase of the annual electricity demand in Macedonia from 8100 GWH in 2005 to 9700GWH in 2007. This has lead to unplanned electricity import costing the state only in 2007 additional 80 million euros, and an alarming increase of trade deficit by 37,4% compared to 2006.

The situation with the electricity has further deteriorated in 2008. From the beginning of the year, numerous defects in the thermo plant REK Bitola and decrease of the hydro power have influenced the projected electricity production of 5500 GWH for 2008 to remain far less than actual electricity demands in the country of around 8600 GWH. For replenishment of the gap between the total electricity production and consumption, which includes electricity import, the government is spending additional 150 million euros in 2008.[6]

Natural Gas

Despite being dependent on electricity import, the region of SEE is striving to become self-sufficient in electrical energy. As the experience from other places shows, the best energy strategy for this is electricity production from natural gas. In the EU countries, the natural gas is the second leading source for electricity production after the nuclear energy. Its

[3] The oil import for 2008 is planned to reach 906.230 tones.
[4] According to the Energy Balance of Macedonia for 2008, the expenditures for liquid fuels will cost the Macedonian government 398 741 euros.
[5] Like the big companies in the metal, steel and automobile industry: Feni, Silmak, Skopskileguri, Johnson Controls.
[6] "Makedonija ja gubi energetskata nezavisnost. Koj e izlezot?" in *Kapital*, 27.03.2008, pg. 23-25.

usage for electricity generation has seen the growth of 11 percentages per year between 1994 and 2004. In 2004 the electricity generation by natural gas in natural gas-fired power plants reached 18, 9 percent in EU25.[7] On the other side, from SEE countries, Macedonia doesn't produce single MWH electricity from natural gas. The country doesn't possess the necessary infrastructure and still can't benefit from the low-cost electricity from natural gas-fired power plants. The Macedonian industry is paying the highest prices for electricity in Europe and the electricity prices for the tariff consumers are not cost effective and compatible on the energy market.[8] They are still regulated by the Energy Regulatory Commission and kept on the lowest level in order to sustain the ability of citizens to pay. However due to the obligations for liberalization of the electricity market in the country by the Energy Community Treaty, signed between EU and SEE countries in 2005 Macedonia has undertaken responsibilities for market regulation of the electricity price. Thus, it is estimated that until the end of 2008 the electricity prices in will rise from today's 21 euro for MWH and approaching the EU level of 130 euros for MWH. [9]

Moreover, Macedonia is one of the few countries in Europe (together with Albania and Montenegro) where electricity is widely used for heating purposes. This is energy inefficient, economically unbeneficial, environmentally undesirable and goes against the priorities set in the country's Energy Efficiency Strategy adopted in 2004.[10] Among the other things this strategy emphasizes the use of natural gas for electricity generation in industry and households and the improvement of the interconnection with natural gas pipelines.

Outlook of the natural gas market in Macedonia

For achieving energy stability Macedonia should posses a stabile energy basis - a stable domestic energy source**.** Considering the wider picture of the energy situation in Macedonia, along with the prediction that the natural gas consumption in Macedonia will rise to 45 percent in 2008 or from 0.1 bcm (billion cubic meters) in 2005 to 1.2 bcm per year until 2025[11], it is obvious that there is a necessity for prioritizing natural gas as energy source in Macedonia.

At present, the natural gas market in Macedonia is underdeveloped and territorially limited. The functioning of the market is defined with the legislative framework that regulates it and with the concrete level of development of the infrastructure of natural gas in Macedonia.

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[7] *Eurostat yearbook 2006-07*, Figure SP.11.

[8] In comparison the prices of the electricity for the industry in KHW are: 8 euros in Macedonia; 9, 20 euros in EU27, 5, 97 in Croatia; 4,70 in Bulgaria, 6,98 in Greece. Source, *Gas and electricity market statistics*, Eurostat 2007, Table 4.9.

[9] Dimitrov, Konstantin. *A survey - Energy sector in the Republic of Macedonia – Basic Facts*, Fourth Poverty Reduction Strategies Forum, Athens 2007.

[10] This strategy identifies the natural gas as important energy source for the overall policy for increasing of the efficiency of the energy sector in Macedonia. Available at: http://www.economy.gov.mk/MEKEnergetika/WBStorage/Files/Energy%20Efficiency%20Strategy%20of%20the%20Republic%20of%20Macedonia.pdf

[11] According to the World Bank gasification study *South East Europe: Regional Gasification Studysource*, October 2007.

- *Infrastructure* –

The situation with the natural gas in Macedonia is characterized by underused capacity of the natural gas transmission pipeline and underdeveloped infrastructure for primary and secondary gasification of the country.

In Macedonia currently there is a standard gasification of the country. The pipeline system of natural gas in Macedonia is a part of the system that transits Russian natural gas to the markets of Southeast Europe and Turkey through Ukraine, Moldova, Romania and Bulgaria. The juncture point in Macedonia is at Deve Bair on the Macedonian-Bulgarian border and the transmission line goes to the capital Skopje, with connection spots for future distributive pipelines towards Veles, South Serbia, Romanovce and Gostivar. The 98km long transmission pipeline is rather new, being built in the mid-nineties (in function from 1997), jointly financed by the Macedonian government and the private venture "Makpetrol AD", with "Gazprom" as the strategic partner from Russia. The primary idea of this pipeline has been the natural gas to become a primary energy source in the industrial and energy capacities in Macedonia replacing the fuel oil and other fossil fuels. However, this basic idea has not been achieved and during the last decade natural gas remained on the margins of the energy supply in Macedonia. From the opening of the pipeline the level of the natural gas consumption has remained low, rising from only 19 mcm (million cubic meters) in 1998 to 82 mcm in 2006. In 2007 the total consumption of natural gas through the gas pipeline in Macedonia has reached 102 mcm or only 15 percent of the total projected capacity of the pipeline of 800 mcm.[12] This is a result on the undeveloped natural gas infrastructure in Macedonia. The transmission pipeline has reached only the industrial zone of the capital city of Skopje where currently 20 industrial facilities are connected on the main transportation system. The situation with gasification of the rest of Macedonia is on hold for 10 years. All the territory is in "dark age" when it comes to natural gas. The distribution pipelines with length of 25 km are theoretically covering only the regions of Kriva Palanka, Kumanovo and Kratovo.

A future gasification of the country will eventually allow for increased consumption of natural gas in Macedonia because it will mean introduction of the households to the natural gas network and more efficient use of the capacity of the gas transmission pipeline in Macedonia. Last year for the first time there was a serious move forward in this area. The World Bank feasibility study for the Balkans stressed out the necessity for gasification of Macedonia, as the only economically feasible solution for the energy crisis in the country. In this study the completion of the two gas rings around Skopje was seen as an important project that will wrap up the gasification of the areas covered by the transmission pipeline capacity in the capital city.[13]

In this context, other two initiatives for development of the distribution network in two Macedonian cities of Kumanovo and Kriva Palanka are underway. These projects are being implemented on local level and the municipality authorities are responsible for the realization

[12] "Osnovni Karakteristiki i aktuelni razvojni proekti vo gasovodniot system na Republika Makedonija", Ministerstvo za Ekonomija, Skopje, Mart 2008.

[13] For completion of the gasification process of Skopje there are only 14 km of the primary distributive network to be built. Only after this first phase - the closure of the Big Ring around the city - is completed the period of development of the secondary network of natural gas will follow. World Bank gasification study *South East Europe: Regional Gasification Studysource*, October 2007, available at: http://www.energy-community.org/pls/portal/docs/89911.PDF

of the projects. In Kumanovo the venture "Kumanovo Gas" has invested around million euros for construction of pipelines for distribution of natural gas to around 6, 000 households. In Kriva Palanka with a donation from the American company "C&A capital" (the first foreign direct investment in pipelines in Macedonia) of seven million euros the city will start the construction of the secondary pipeline network that will allow for gasification of the city. According to the plan, the households should get the first quantities of natural gas from the winter 2009.[14]

- *Legal Framework* –

The legislative framework for natural gas in Macedonia has been developed in accordance to the provisions of the Energy Community Treaty (ECT), which entered into force in Macedonia on 01 July 2006. The main goal of this Treaty is to enable free trade in energy under transparent conditions between SEE region and the EU member states. The document traces the road of the signatory countries towards gradual opening of their energy markets to competition for eligible consumers and regional cooperation in energy supply and standardization. Complying with the provisions of this Treaty in the market of natural gas, Macedonia has undertaken obligations to apply the relevant EU energy acquis for gradual market opening.

The main law incorporating the EU legislation on natural gas in Macedonia is the Law on Energy adopted in 2006.[15] The provisions in this law have been drafted according to the EU legislation regulating the natural gas market: the Council Directive 2004/67/EC, concerning measures to safeguard security of natural gas supply, EC Directive 2003/55 concerning common rules for the internal market of natural gas and the Regulation 1775/05 that regulates the condition for access to the natural gas transmission network. In addition to the Energy Law, Macedonian government has adopted new regulations and acts that regulate specific areas of the natural gas market like the Rulebook on the method and conditions for regulating prices for transport, distribution and supply with natural gas; Tariff System for transport of natural gas; Tariff system for selling natural gas to tariff consumers; Rulebook on the conditions, method and procedures for obtaining and ceasing the status of eligible customers of natural gas.[16] The above mentioned bylaws and regulations reformed the natural gas market in Macedonia. They allowed for the closure of the first stage in the opening of the natural gas market anticipated in the ECT and opening of the gas market for eligible consumers except households since 01 January 2008 (with the first qualified consumer of natural gas being "Toplifikacija AD") and for all consumers until 2015.

This new legislation for the natural gas market received generally positive assessment in the Progress report on Macedonia by the European Commission in November 2007[17]. However, the European Commission identified several problematic areas of the natural gas

[14] See the official web sites of the municipalities: www.krivapalanka.gov.mk and www.kumanovo.gov.mk
[15] Zakon za Energija, *Sluzben Vesnik na Republika Makedonija* 63/06 Law on Energy, *Official Gazette of Republic of Macedonia* No.63/06.
[16] These bylawas and regulations can be found in Official Gazettes: *Sluzben vesnik na Republika Makedonija* 94/05, *Sluzben Vesnik na Republika Makedonija* 49/07.
[17] *The Former Yugoslav republic of Macedonia 2007 Progress Report*, November 2007, available at: http://ec.europa.eu/enlargement/pdf/key_documents/2007/nov/fyrom_progress_reports_en.pdf

sector in Macedonia that are halting the development of the projects related to the natural gas and prevent investments in the natural gas sector. The criticized areas include:

First is the lack of institutional capacity for implementation of the legislation. There is no Ministry for Energy, the institution dealing with energy issues - the Sector for Energy is within the Ministry of Economy and is understaffed. The Energy Agency has been formed a year and half ago and became operational only in 2007.

Second is the slow process of drafting and adoption of new rules and procedures. Twelve new rules for gasification of the cities that will replace the outdated one from the previous political system (period of ex-Yugoslavia) are waiting to be drafted. Other example of the lethargic decision-making process is the adoption of the new Network (Grid) codes for transportation of natural gas that are a legal requirement with the EC Directive 2003/55. These Rules have been drafted by "GA-MA AD" (the joint venture between the Government and "Makpetrol AD") since February 2008 and are still waiting for approval in parliamentary procedure.

Third important area of the market of natural gas criticized in the EU Report is the unresolved gas pipeline ownership dispute, namely the unresolved dispute between "Makpetrol AD" and the Government over the ownership right of the transmission gas pipeline on the Macedonian territory. The dispute concerns the governmental share in "Makpetrol AD", formerly a state owned company, now a private domestic owned venture that (among the other products like oil trade and gas stations) collects revenues from the operation with the transmission gas pipeline from Bulgaria to Skopje.[18] This unresolved dispute has been halting the developments in the market of natural gas in the area of investments in new infrastructure and entrance of new stakeholders (in the transmission and distribution sector) in the Macedonian market of natural gas. A compromise between the two sides of the dispute has been reached with the foundation of the joint stake-holder venture for joint participation and managing of the gas pipelines in Macedonia - "GA-MA AD". This venture is founded in compliance with the Athens Memorandum[19] - its competition perspective and for facilitation of the management with the pipeline, aiming at undisturbed supply of the country with natural gas. However, the work of "GA-MA AD" is not transparent and is often subjected to the political games and quarrels between the representatives of "Makpetrol AD" and the Government. Thus, in anticipation of the resolution of the relation between the two key players in the natural gas market in Macedonia and only after their legal obligations are fixed, the legislative framework for the natural gas market can be fully, transparently and lawfully implemented in Macedonia.

The developing of the legal framework for the gas market furthermore is overshadowed from the fact that Macedonia does not posses the highest document in the energy sector, namely a comprehensive National Strategy for Energy. This is a legal document that should give a detailed analysis of the energy situation in the country and underline the energy priorities of the government in a clear, systematic and timely manner. Instead of this, the energy priorities of the last government can be found in the country's Energy program for

[18] See the official web site of "Makpetrol" - http://www.makpetrol.com.mk/index_mk.asp

[19] Memorandum of Understanding on the Regional Energy Market in South East Europe and its Integration into the European Community Internal Energy Market, signed in Athens on 8 December 2003, available at: http://www.energy-community.org/pls/portal/docs/36297.PDF

the period from 2006-2010.[20] However, since last year there has been an improvement in this area. It has been acknowledged that the only way out of the energy crisis and a starting point for development of the energy sector is the adoption of an overall energy strategy on a national level. Thus, one of the priorities of the Ministry for Economy for 2008 has been drafting the first Strategy for development of the energy sector in Macedonia. Its first phase[21] has started and the final version of the Strategy is planned to be ready by the end of this year. However, the early parliamentary elections in the country have halted this process and now its completion is reassigned to the new parliament. The overall National Strategy on Energy for Macedonia presents the basis for all further policies and investment projects in the energy sector and particularly it will be important for the prioritization of the energy projects and investments in natural gas.

What is the road that lies ahead?

The current situation in the energy sector in Macedonia, the dark scenarios for the energy future and the indispensable connection of the regional energy networks in Southeast Europe are the main reason for identifying new energy sources in Macedonia that will serve as the basis for balanced energy supply in the country. Within this context we identified the natural gas as the priority resource for the future of the energy stability in Macedonia. What is the road that lies ahead?

Firstly, the National Strategy for Energy until 2020 has to be adopted until the end of this year. This strategy will be the basic legal document that will draw the directions of the development of the energy sector in Macedonia and will set deadlines and concrete time frame for implementation of the planned projects of natural gas in the next decade. The National Energy Strategy will also act like a guideline for the legislative framework regulating the market of natural gas in Macedonia. So far the energy projects of natural gas in Macedonia have been adopted only in the government's energy program 2006-2010, which does not provide a comprehensive plan for future development of the natural gas sector. It is well known that the energy projects need a period of several years between the planning stages until their final realization. The latter is an important argument for the government and the parliament in Macedonia to speed up the process of the drafting and adoption of the National Energy Strategy in the upcoming months.

Secondly, parallel with the drafting of the National Energy Strategy the government has to continue with the approximation of the legislation in the energy sector, aiming to create fully liberal and competitive market of natural gas in Macedonia that could easily be integrated in the EU natural gas market. The country has been positively evaluated concerning the progress in the legislation reforms. Yet, the law-making process is not completed and there are many bylaws and regulations that wait to be drafted, like the new Regulations for gasification of the cities, an area regulated with a completely outdated Decision from 1990.

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[20] Program of the Government of the Republic of Macedonia (2006 – 2010), available at http://www.vlada.mk/assets/program%20of%20the%20government%202006-2010.pdf

[21] The first phase of the National Strategy for Energy is creation of a large-scale Database of all consumers of energy in Macedonia and the responsible institution is the Energy Agency. It was planned to finish until end of June 2008, but its completion was prolonged for after the parliamentary elections.

We mentioned that the issues with the legislating process in Macedonia come as a result of several reasons like: the understaffing of the state institutions, the (non) consolidation of newly established energy institutions and the political turbulences in the relevant ministries. Within this context the parliamentary procedure and the unfavourable political climate in the country is the other obstacle for efficient implementation of the energy legislation in Macedonia. The new political situation in the country and the early elections in June have blocked the decision-making process in Macedonia and all energy projects have been halted. Therefore, considering the energy issues in the country it is very important for the new parliament to prioritize the energy projects on its agenda. Here the most important is the adoption of the new Energy Law with amendments and incorporated comments from the European Commission. A law on energy that will create a unique gas system in Macedonia by merging of the transmission pipeline, distributive and city pipeline networks in one whole. Initially the Macedonian government has undertaken responsibilities for adoption of this law until June 2008, but this initiative failed due to the political turbulences. Thus, the **new Energy Law**[*] should be high on the working agenda of the new parliament in order to be adopted before the annual EU progress report for Macedonia this November.

Thirdly, even if the above mentioned conditions are fulfilled, still the natural gas sector in Macedonia remains highly dependent on the development of the infrastructure in the country as well as the building connections to the regional pipeline network. Because Macedonia does not poses domestic reserves of natural gas the development of the natural gas sector is the most important issue that concerns the entire energy sector in Macedonia. Except the 98 km long transmission pipeline currently the country does not possess any primary and secondary infrastructure that will allow for increased exploitation of the natural gas and will secure the energy stability within the regional context. Thus, Macedonia needs urgent realization of new infrastructure projects. The latter requires big financial investments and respect of the principles of transparency in the government's work, law enforcement and lawful resolution of the pipeline ownership dispute between "Makpetrol" and the Government of Macedonia. Without resolution of this issue mobilization of finance for projects reliant on the pipeline will be problematic.

[*] Please take in consideration that in the time of publication of this report the Macedonian parliament has adopted the new Energy Law (in a controversial adoption procedure without the participation of the opposition parties), introducing changes that have been criticized by Brussels.

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