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The state of energy (in)security in Macedonia

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Energy security is of crucial national security importance. This paper analyzes the state of energy security in Macedonia and tries to identify the main issues hampering an improved energy security situation.

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Introduction

Energy security continues to be one of the most debated security related issues in the EU and especially in the Western Balkan region. Macedonia, as a small land-locked country, with no own natural gas and oil resources, an EU and NATO candidate country, is struggling to strategically plan and increase its energy security. Although much of the relevant documents aiming to improve energy security are adopted, the facts such as inability to deal with high electricity demand peaks as back in February 2012¹, the yearly increasing energy dependency² and the supply of natural gas from a single source, picture a rather troublesome state of energy security. Furthermore, a study of the World Energy Council on sustainability ranks Macedonia as 89th under energy security out of 129 countries for 2013; whereas from the countries in the region worst than Macedonia in 2013 were ranked Serbia (101) and Montenegro (115), and better Albania (87), Croatia (66), Slovenia (60), Greece (54), Bulgaria (26), and Romania (9).³

Since energy security is of crucial national security importance, it is necessary to analyze in more detail its state in Macedonia and to identify the main issues hampering an improved energy security situation. Therefore, this policy analysis borrows from the International Energy Agency (IEA) four dimensions of short-term energy security (although slightly modified in the paper to meet the Macedonian situation):

External risks – risks associated with disruption of energy imports,

External resilience - ability to respond to disruptions of energy imports by substituting with other suppliers and supply routes;

Domestic risks - risks arising in connection with domestic production and transformation of energy;

Domestic resilience - domestic ability to respond to disruptions in energy supply such as fuel stocks.⁴

These aspects are however combined with matters of long-term energy securities, as well as the Macedonian definitions of energy security in the respective legislation are taken into consideration. The methodology includes an analysis of the relevant strategies and legal acts, statistical data, newspaper articles as well as recent shifts in geopolitics concerning energy security.

1. Defining energy security

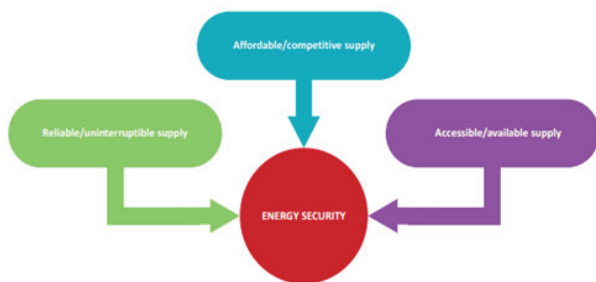
The International Energy Agency defines the notion of energy security as the *uninterrupted availability of energy sources at an affordable price*. There is a *long-term energy security which mainly deals with timely investments to supply energy in line with economic developments and environmental needs*; and a *short-term energy security which focuses on the ability of the energy system to react promptly to sudden changes in the supply-demand balance*.⁵ Energy security is graphically presented in Picture 1.

¹ In February 2012 Macedonia faced lack of electricity to meet its demand. As a preliminary measure taken was the reduction of street lighting. Source: MIA/Idividi, "Владата прогласи електроенергетска кризна состојба" (The Government has declared an electricity crisis), February 13, 2012, Accessed October 23, 2014 <http://www.idividi.com.mk/vesti/makedonija/748029/>
² Macedonia's energy dependency in 2012 is almost 50% and has increased in the last few years as stated by the State Statistical Office. Sources: State Statistical Office, „Енергетски биланси 2012“ [Energy balances 2012], (2013), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2013/6.1.13.87.pdf>; State Statistical Office, „Енергетски биланси 2011“ [Energy balances 2011], (2012), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2012/6.1.12.82.pdf>

³ It ranks among other things the energy performance by ranking also its energy security for the years 2011, 2012 and 2013. Here energy security is defined as the effective management of primary energy supply from domestic and external sources, the reliability of energy infrastructure, and the ability of participating energy companies to meet current and future demand. Source: World Energy Council/ Macedonia Sustainability Index, Accessed October 23, 2014 <http://www.worldenergy.org/data/sustainability-index/country/macedonia/2013/>

⁴ IEA, The IEA Model of Short-term Energy Security (MOSES), (2011), Accessed October 23, 2014 http://www.iea.org/publications/freepublications/publication/moses_paper.pdf

⁵ IEA, Energy Supply Security, (2014), Accessed October 23, 2014 <http://www.iea.org/publications/freepublications/publication/ENERGYSUPPLYSECURITY2014.pdf>



Picture 1: Energy security as defined by IEA

Source: IEA, Energy Supply Security, (2014), Accessed October 3, 2014
<http://www.iea.org/publications/freepublications/publication/ENERGYSUPPLYSECURITY2014.pdf>

The main legal framework in Macedonia in the energy area, the Energy Law, esteems highly energy security since one of its goals is to ensure safe and secure supply of energy. The Law defines security to be *security of supply and ensuring energy or energy sources and technical security of energy systems*. The Energy Law further on explains that security of supply of energy or energy source is ensured by: balancing supply and demand, anticipating the future demand, building new energy capacities, maintaining distribution and transmission networks, measures in case of demand peaks and in case of inability to supply energy.⁶

On strategic level, in the Macedonian energy relevant strategies, energy security also has an important role to play. In fact, the Energy strategy aims to ensure secure and quality supply of energy. The Energy strategy defines energy security *as a regular satisfaction of the energy demand under sustainable and environmental conditions and at prices which do not slow down the economic development and do not put in danger the citizens' standard of living*.⁷ It clearly states that for ensuring energy security greater diversity of energy sources by types, sources and suppliers is needed as well as active participation in the regional energy market and the European

energy community. Therefore, maximum utilization of domestic resources (renewables and coal) and a strategic long-term policy for connection to the main pipelines in the region and beyond (gas, oil pipelines, and transmission lines), as well as building up business and friendly relations with all strategically important stakeholders such as the European Union, USA, Russia and the countries in the region is needed. Nuclear energy is also seen also as a possibility for increasing the diversification, thus enabling secure supply of electricity. Construction of new capacities will improve the diversification, hence the security of supply of electricity. The Energy strategy also puts an emphasis on the market price of electricity which would improve the investment climate, strengthen the interest for improving energy efficiency and introducing renewables. It also says that the security of supply of natural gas will be ensured by connecting to gas pipelines enabling supply of natural gas from more various sources. Having gas storage in one of the neighboring countries is also a way to contribute to security of supply.⁸ The other two energy strategies, the Renewable energy strategy and the Energy efficiency strategy, are less informative on energy security, but they mention that having security of energy supply demands among other things increased share of renewables in the final energy consumption⁹ and that energy efficiency measures lead to among other things secure supply of energy.¹⁰ The country has also a Statement on Security of Supply, which is a predominantly descriptive document listing the relevant laws, strategies, projects and stakeholders relevant to secure supply of energy with focus on electricity, natural gas and oil.¹¹ In the area of security, Macedonia's strategic documents define as national, sub-national and

⁶ „Закон за енергетика“ [Energy Law], Official Gazette 16/11, Accessed October 23, 2014
<http://www.slvesnik.com.mk/Issues/EE982E53C03DAB4C982055F184E70F66.pdf>

⁷ Ministry of Economy of the Republic of Macedonia, „Стратегија за развој на енергетиката во Република Македонија до 2030 година“ [Strategy for Energy Development in the Republic of Macedonia until 2030], (2010), Accessed October 23, 2014
http://www.ea.gov.mk/images/stories/E_Izdanija/Energetika_Strategija_za_energetika_na_RM_do_2030__SV_61_2010__244131078.pdf

⁸ Ministry of Economy of the Republic of Macedonia, „Стратегија за развој на енергетиката во Република Македонија до 2030 година“ [Strategy for Energy Development in the Republic of Macedonia until 2030], (2010), Accessed October 23, 2014
http://www.ea.gov.mk/images/stories/E_Izdanija/Energetika_Strategija_za_energetika_na_RM_do_2030__SV_61_2010__244131078.pdf

⁹ Government of the Republic of Macedonia, Ministry of Economy, „Стратегија за искористување на обновливите извори на енергија во Република Македонија до 2020 година“ [Strategy for utilizing the renewable sources of energy in Republic of Macedonia till 2020], (2010), Accessed October 23, 2014
<http://www.economy.gov.mk/dokumenti/strategii/3102.html>

¹⁰ Government of the Republic of Macedonia, „Стратегија за унапредување на енергетската ефикасност во Република Македонија до 2020 година“ [Strategy for improving energy efficiency in the Republic of Macedonia until 2020], (2010), Accessed October 23, 2014
[http://www.ea.gov.mk/images/stories/E_Izdanija/Regulativa/Strategija_za_unapreduvanje_na_EE_vo%20RM_do_2020_godina_SV%20143-2010%20\(1\).pdf](http://www.ea.gov.mk/images/stories/E_Izdanija/Regulativa/Strategija_za_unapreduvanje_na_EE_vo%20RM_do_2020_godina_SV%20143-2010%20(1).pdf)

¹¹ Statement on Security of Supply, Republic of Macedonia, (2013), Accessed October 23, 2014
<http://www.energy-community.org/pls/portal/docs/2422179.PDF>

individual threat the consequences of clashes of interests for the use of the sources and the routes of strategic energy materials, as well as blocking their importation into the Republic of Macedonia.¹²

2. External shocks for possible energy disruption

External developments whether of political, economic or climate nature across Europe and its neighborhood have the potential to alter Macedonia's energy supply. Arguably the crisis in Ukraine and climate issues are at the heart of the discussion today when discussing external risks putting natural gas in the forefront among policy makers and the research community across the continent.

Macedonia's landlocked placement in the heart of the Balkan Peninsula and zero international gas pipelines going through its territory is making the country completely dependent on gas supply from Russia. No independent access to seaways in the past proved to expose country's vulnerability in terms of oil consumption making it dependent on the political relations with the neighboring countries. When it comes to electricity and compared to gas and oil, the country shows more diversified picture relying both on domestic production as well as diversified imports from abroad.

Looking back in the past, probably the most direct threat to the Macedonian energy sector and political in its essence could be traced in the Greek embargo following Macedonian proclamation of independence (February 1994 – October 1995). The political nature of the embargo stemmed from the use of the (old) Macedonian flag incorporating the Sun of Vergina, seen by the Greek authorities as implying territorial and cultural provocations. The 18 months long embargo included complete ban of oil and other energy resources coming from the Greek seaport of Thessaloniki. This directly affected much of the already fragile industry¹³ because all of the oil imports

through Thessaloniki had to stop and other more expensive routes to be considered.¹⁴

This was not the first time incident of this kind to affect the energy stability of the country. At the end of 1993 authorities in Athens halted an oil filled tanker signaling what later on became fully fledged trade embargo.¹⁵

Today however the country is situated in a more stable and predictable neighborhood, intertwined in the processes of EU and NATO enlargement. As such it shares most of the (economic) concerns that affect many other European countries and gas over-reliance has become a synonym for energy security across much of the continent.

In Macedonia in 2010 natural gas participated with only 1.7% in the final energy consumption¹⁶, a fact that provides an entry point when discussing possible adverse scenarios such as eventual gas cut offs. If a shortage does occur the impact would be felt primarily in industries that rely on gas because gas consumption in households is minor. Meanwhile Macedonian government committed to the gasification of the country hence debate on this topic should be done beforehand and in timely fashion in order to mitigate possible risks.

Experts in the field keep reassuring the public that even if there is an emergence of full-scale gas crisis just like the one of 2009 Macedonia would not be feeling any downsides.¹⁷ The justification is basically focused around the idea that the current gas usage in Macedonia is relatively low and the already functional gas network Macedonia relies on, is far from having reached its full capacity - 800

¹² Islam Yusufi, Macedonia in: M. Hadzic, M. Timotic, P. Petrovic eds, Security Policies in the Western Balkans, (2010)

¹³ Dimitrov, Petre. "Ембарго за "добро" соседство: Колкави беа штетите од грчкото ембарго [Embargo for Good Neighborhood Relations. What Was the Damage Frome the Greek Embargo]." E Magazine, September 8, 2014. Accessed October 1, 2014. <http://emagazin.mk/ембарго-за-добро-соседство-колкав/>.

¹⁴ "Macedonia Blockade (MACEDON)." February 11, 1996. Accessed August 25, 2014. <http://www1.american.edu/ted/macedon.htm>.

¹⁵ "20 години од грчкото трговско ембарго (20 Years from the Greek Trade Embargo)." Ekonomski Lider. February 16, 2014. Accessed August 9, 2014. [http://lider.mk/2014/02/16/20-godini-od-grcko\[-trgovsko-embargo/](http://lider.mk/2014/02/16/20-godini-od-grcko[-trgovsko-embargo/).

¹⁶ State Statistical Office of the Republic of Macedonia, „Енергетски статистики 2000-2010 Статистички преглед: Индустија и енергија“ (Energy statistics, 2000-2010 Statistical review: Industry and Energy), State Statistical Office of the Republic of Macedonia, 2012, Skopje, Accessed October 23, 2014 <http://www.stat.gov.mk/publikacii/6.4.12.01.pdf>

¹⁷ "Експертите демантираат: Ако има гасна криза, Македонија не е загрозена! [Experts Disagree: In Case of Crisis Macedonia Will Not Be Affected!]." Vecer, October 17, 2014. Accessed October 18, 2014. <http://vecer.mk/ekonomija/ekspertite-demantiraat-ako-ima-gasna-kriza-makedonija-ne-e-zagrozena>



million m³ annually.¹⁸ The figures suggest that in 2013 for example only 130 million m³ were transported through the network.¹⁹ Yet the announced big infrastructural projects including building additional gas networks stretching across entire country and greater demand coming from the industries signal that relying on gas might see increase of its use across households and industries in the time to come. Tenders for gasification of entire country (Central, Eastern and Western parts of Macedonia) were announced and together with the one for the capital Skopje suggest that in a medium-long run the network would be hungry for more gas especially when households start connecting to the network. In this regard there were announcements for changes in the legislation on construction which for the first time obliges new buildings to have gas connections.²⁰

2.1 Ukraine crisis

At the moment the political and economic events that have the potential to destabilize the secure flow of gas in Europe possibly affecting Macedonia could be mainly seen through the prism of the Ukraine crisis. In just few years Europe saw number of considerable disruptions of its gas supplies coming primarily as a result of the unresolved economic and to some extent political clashes with Russia being Europe’s primary source of gas imports. With a track record of problematic winters it has not been rare that the conflicts over gas supply would not only be targeting Russia and the European Union but third countries such as Ukraine, Europe’s most important energy hub linking Russia’s gas pipelines with European consumers is becoming more present and very often caught in the middle.

¹⁸ Energy Regulatory Commission, "Годишен извештај за работа на Регулаторната комисија за енергетика на Република Македонија во 2013 година" (Annual report for the work of the Energy Regulatory Commis sion of the Republic of Macedonia in 2013), (2014), Accessed October 23, 2014
<http://www.erc.org.mk/odluki/Godisen%20izvestaj%20za%20raborta%20na%20Regulatornata%20komisija%20za%20energetika%20na%20RM%20za%202013%20godina.pdf>

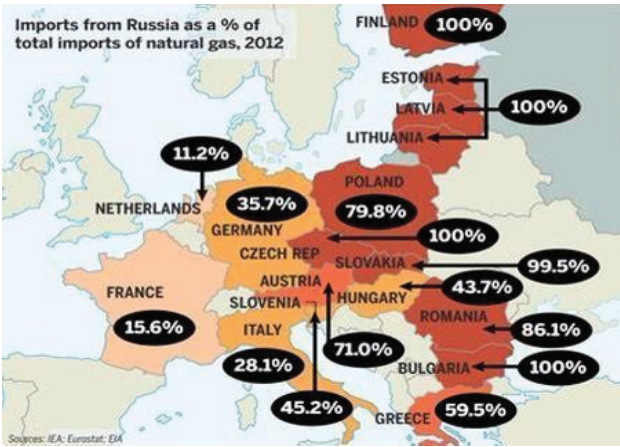
¹⁹ Pavkovikj, Zdenka. "Конзорциум од европски и од американски компании сака да го купи украинскиот гасовод? [Consortium of European and American Companies Wants to Buy Ukrainian Pipeline]." Dnevnik, June 9, 2013. Accessed September 4, 2014.
<http://www.dnevnik.mk/?ItemID=27EBB47AC5E5174EB7AC03F1542A8C35>.

²⁰ "Закон за изменување и дополнување на законот за градење [Law amending the law on construction]. Article 11a. Official Gazette 115/14, Accessed October 23, 2014 :
http://www.komoraoui.mk/gallery/Zakonski%20akti/SI.V.115_od_01.08.14.pdf

Gas disputes between Russia, Ukraine and the European Union	
March – April 1994	October - 2007
January - 2001	March - 2008
January - 2006	January - 2009

Source: Nova Makedonija/RIA Novosti²¹

Picture 2: Gas import from Russia in 2012



Source: AI Source, Accessed October 20, 2014
<http://www.aisource.com/managed-futures/news/aisource-news/2014/04/24/march-2014-global-macro-recap>

Apart from the potential disruption in lowering or halting the gas transmission, the instability of Ukraine (political and territorial) may have the potential to influence on the prices of the energy commodities.²² Numbers of studies have been analyzing the potential impact of the Russian gas cut to Europe revealing that the most affected countries would primarily be those of Central and South Eastern Europe including Macedonia where the dependency on Russian gas is amongst the highest reaching up to

²¹ Nikoloski, Vladimir, and Maja Trajkovska. "Од играта со вентили страдаат економиите [Economies Suffer Because of the Taps Game]." Nova Makedonija, April 12, 2014. Accessed September 27, 2014.
<http://www.novamakedonija.com.mk/NewsDetal.asp?vest=411141655508&id=10&prilog=0&setIzdanie=23150>.

²² "НБРМ: Украинската криза може да влијае на македонската економија [Macedonian Central Bank: Ukraine Crisis Can Affect Macedonian Economy]." Faktor. March 16, 2014. Accessed September 4, 2014.
http://faktor.mk/archives/99430?utm_source=rss&utm_medium=rss&utm_campaign=nbrm-ukrainската-kriза-mozhe-da-vlijae-na-makedonskata-ekonomija.



100%.²³ According to EU conducted stress-test exercise Macedonia is among the top five European countries (together with Finland, Estonia, Bosnia and Herzegovina and Serbia) that would be mostly affected by eventual Russian gas cut off.²⁴ However when Macedonia is compared to the rest of the countries on the list it shows extremely low dependence on natural gas. Vast majority of the households in Macedonia use electricity and fuel wood to satisfy their energy needs.

The potential for Macedonia's gas insecurity can be therefore traced in the small-scale gas network providing supply primarily to economic units such as industrial complexes. As such it is most vulnerable to eventual political/economic induced shocks as the gas comes exclusively from Russia's pipelines transiting through Bulgaria. The scale of instability in Ukraine which is almost year long has surfaced fears that the continent might have to go through another gas crisis like the ones in 2006 and 2009.

The 2009 gas crisis between Russia and Ukraine reached its peak when Gazprom turned off the taps leaving much of Europe's central and eastern parts without the normal gas supply. Both Kiev and Moscow blamed each other providing their side of the story while many households in Europe started looking for alternative heating sources in the midst of the very cold winter season. Number of Bulgarians for example stayed without their central heating systems and being directly affected by the gas shortages leading to schools and kindergartens getting closed while the gas shortages lasted.²⁵

Arguably the most dramatic cut off happened in 2009 on January 1st when Russia decided to halt gas supply to Ukraine/Europe. Week later Ukraine also decided to stop

the transit of the gas to the European markets.²⁶ The developments in Ukraine have worsened ever since. Europe's biggest gas transit corridor Ukraine has slipped into civil war that has originally started as protests in late 2013 against Ukraine's President Yanukovich refusal to sign trade agreement with the EU. This has later transformed in creating deep divisions across Ukraine's societal fabric basically splitting the country in two blocks, those showing support of closer ties with Brussels and those with a great sympathy to Moscow. Later on the crisis morphed into a full scale armed conflict affecting large proportions of Ukraine's eastern part. Russian covert involvement in the conflict and the open annexation of Crimea, additionally strains the fragile relations between Moscow and Kiev which can very easily escalate on the gas front. Some numbers suggest that around a half of the imports of gas in the EU comes through Ukraine.²⁷ This correlates to the fact that EU itself is not a big gas producer with countries like Denmark, UK, Germany, Italy and Romania having restricted gas production capabilities.²⁸ Biggest gas exporters to the EU apart from Russia are Norway and Algeria but relying on their production can be seen as a short term answer to the challenge because of their existing limitations (political, technical, resource wise etc.).²⁹

Apart from the political and economic disputes affecting the delivery of Russian gas in Europe, there is a risk of increased violence in Ukraine which might lead to physical damage of the pipelines going through its territory. In June explosions caused damage of the Trans-Siberian pipeline near Poltava, Eastern Ukraine. This act was immediately described by Ukraine's Ministry of Energy as an act of terrorism.³⁰ How strategically important the gas network in Ukraine is could be seen by Ukraine armed forces trying to protect gas facilities in March this year by

²³ Aleksandar Kovacevic, The Impact of the Russia-Ukraine Gas Crisis in South Eastern Europe, Oxford Institute for Energy Studies, 2009, Accessed October 23, 2014 <http://www.oxfordenergy.org/wpcms/wp-content/uploads/2010/11/NG29-TheImpactoftheRussiaUkrainianCrisisinSouthEasternEurope-AleksandarKovacevic-2009.pdf>

²⁴ "EK: Македонија меѓу петте најзагрозени земји во Европа ако запре рускиот гас [EC: Macedonia among the Five Most Affected Countries in Europe in Russian Gas Cut Off]." 24 Vesti. October 16, 2014. Accessed October 16, 2014. <http://24vesti.mk/ek-makedonija-megju-pette-najzagrozeni-zemji-vo-evropa-ako-zapre-ruskiot-gas>.

²⁵ "Europeans Shiver as Russia Cuts Gas Shipments." NBC News. January 7, 2009. Accessed October 3, 2014. http://www.nbcnews.com/id/28515983/ns/world_news-europe/t/europeans-shiver-russia-cuts-gas-shipments/#.VEIX2YcRa-9.

²⁶ Nikoloski, Vladimir, and Maja Trajkovska. "Од играта со вентили страдаат економиите [Economies Suffer Because of the Taps Game]." Nova Makedonija, April 12, 2014. Accessed September 27, 2014. <http://www.novamakedonija.com.mk/NewsDetal.asp?vest=411141655508&id=10&prilog=0&setIzdanie=23150>.

²⁷ "Македонија, Бугарија и Романија најранливи на рускиот гас [Macedonia, Bulgaria and Romania Most Vulnerable to Russian Gas]." Utrinski Vesnik, March 18, 2014. Accessed July 26, 2014. <http://www.utrinski.mk/default.asp?ItemID=3281D9D3B06F6141ABE125B056200AE7>

²⁸ *ibid.*

²⁹ "Norway Can 'slightly Boost' Gas Supply to EU." The Local. September 26, 2014. Accessed October 6, 2014. <http://www.thelocal.no/20140926/norway-can-slightly-boost-gas-to-russia-reliant-eu>.

³⁰ "Major Ukraine Gas Pipeline Hit by Blast." BBC. June 17, 2014. Accessed October 3. <http://www.bbc.com/news/world-europe-27891018>.



sending paratroopers near a pumping station around the village of Strilkove (north of Crimea)³¹.

The unlikely fast resolution of the Ukraine conflict and the direct confrontation with the authorities in Moscow where gas is still seen as a tool for political leverage may directly endanger European gas supplies in the forthcoming winter. Russia's Gazprom has openly suggested gas transit halt because it "...would not be in a position to stop eventual cut off of the gas transit through the territories of Ukraine, Belarus and Moldova.³² The blame game between Moscow and Kiev is not new as it was present in the previous gas shortages leaving European consumers directly affected.

2.2 South Stream

While the Ukrainian crisis is at full steam, stakes got higher with the controversial events surrounding the building of Russia's big energy pipeline South Stream. This project is supposed to significantly aid the Russian idea of energy flow independence to the European markets by circumventing Ukraine and making it less dependent on its territory as a transit country.

The pipeline that should deliver Russian gas to South-Eastern and Central Europe keep facing hurdles on the way of its implementation officially coming from its non-compliance with EU's legislation covering this area. This is why signing contracts as well as actual work on the pipeline is delayed. While at the same time the project is facing numerous problems stemming from technical and legislative nature, the building of this massive pipeline in the midst of the Ukrainian crisis is becoming an increasingly political question. Federica Mogherini, EU's new foreign affairs chief reflected on the South Stream by saying that it "...was thought in another era and could contribute to diversification of routes, provided that not only technical conditions, but also political conditions were met."³³

³¹ McElroy, Damien, Yekaterina Kravtsova, and Roland Oliphant. "Russian Troops 'in Mainland Ukraine' Ahead of Crimea Vote." *Telegraph*, March 15, 2014. Accessed October 20, 2014. <http://www.telegraph.co.uk/news/worldnews/europe/ukraine/10700496/Russian-troops-in-mainland-Ukraine-ahead-of-Crimea-vote.html>.

³² "Не е исклучена можноста за прекин на транзитот на руски гас за Европа [Russian Gas Cut off Not Excluded]." *Vecer*, April 30, 2014. Accessed October 4, 2014. <http://vecer.com.mk/?ItemID=BA60E10CE99F364A951375C609F0ACF6>.

³³ "Mogherini: Russia Is No Longer the EU's Strategic Partner." *NewsEurope*. September 4, 2014. Accessed October 16, 2013.

Macedonia is one of the countries that should indirectly benefit from its construction. By not having many options to get connected with other gas pipelines, authorities in Skopje decided to increase even more the dependence to Russian gas by making efforts and concluding a deal which is supposed to extent the South Stream to Macedonia either from Bulgaria or Serbia which at this moment is still unresolved. Moreover, the construction of the pipeline should be partially financed by Moscow with the clearing debt agreement reached in 2010. In such circumstances Macedonia's dependency from a single source increases dramatically while at the same time secures additional substantial flow of gas.

Having in mind that the talks and the actual building of South Stream are not at full speed, it represents a good possibility for authorities to continue looking for back-up options such as joining the Trans-Adriatic pipeline which should bring Azeri gas passing through Greece and Albania, ultimately reaching the shores of the Adriatic Sea and Italy. If concrete steps are taken into this direction this would significantly decrease country's one source dependency and should provide better access to gas for Macedonia's customers which ultimately should result in lower prices. Additionally the master project of gasification of the country provides possibility for connections with every neighboring country, which gives the option for further diversification.³⁴

3. Domestic risks - risks arising in connection with domestic productions and transformation of energy

3.1 Natural and other disasters

A country's energy security is also influenced by the possibility of disasters – either man-made or natural. Macedonia has a set of various institutions and has adopted a variety of legal acts to regulate the protection from disasters. Some of the most relevant include the Protection and Rescue Directorate, which deals with protection and rescue from natural and other disasters as stipulated in

<http://newseurope.me/2014/09/04/mogherini-russia-longer-eus-strategic-partner/>

³⁴ Taleska, Petranka. "Колку поголем увоз толку пониски цени на рускиот гас [Higher the Imports, the Lower the Prices of the Russian Gas]." *Nova Makedonija*, April 14, 21014. Accessed August 20, 2014. <http://www.novamakedonija.com.mk/NewsDetal.asp?vest=41314178274&id=10&prilog=0&setIzdanie=23151>.



the Law on protection and rescue.³⁵ Furthermore, the Law on crisis management mentions as possible risks and dangers to be consequences from conflict of interest regarding usage of the sources and routes of the strategic energy sources as well as blocking their import into the country, natural disasters, technical-technological disasters etc.³⁶ Also, each operator such as power or natural gas transmission or distribution operator is to adopt network rules regulating among other things measures in case of disaster.³⁷

A relevant secondary act regarding energy security is the Regulation on the criteria and conditions for declaring electricity crisis. These include collapse or partial collapse of the power system in Macedonia, collapse of the power system in the neighboring countries, issues with the transmission capacities, and issues with the larger generation capacities and lack of electricity.³⁸ The matter of shortage in gas supply is addressed in the Network rules for transmission of natural gas, which describes that crisis could be a state in which the transmission or supply of natural gas is hampered.³⁹ Very important legal act is the Rulebook on the criteria and conditions for declaring crisis with natural gas supply. The criteria for declaring such crisis include partial disruption in the supply with natural gas, extremely low daily temperatures and periods of high demands of natural gas during coldest winters.⁴⁰ Be-

side the fact that energy security relevant legislation is in place both for electricity and natural gas, judging by the final energy consumption (compare Table 2 and 3), electricity plays a more important role. Compared to electricity, the share of natural gas in the final energy consumption in 2010 is 19 times lower than the one of electricity.⁴¹ However, in light of Macedonia's aspirations to increase the share of natural gas, as visible in Table 1 stating that from 2009 till 2013 the import of natural gas has almost doubled; continuous monitoring of the overall state with natural gas supply especially the related security concerns is highly advisable.

Table 1: Imported natural gas through the years 2009-2013 in 000 nm3

Imported natural gas in 000 nm3	Year
79762.942	2009
118 396.526	2010
136671.228	2011
141557.264	2012
159502.542	2013

Source: State Statistical Office⁴²

When discussing the security of energy infrastructure, it is important mentioning that nuclear energy is perhaps the type of energy about which most discussion on safety and risks are being made. Nuclear energy brings with itself both health and security risk considerations - risks of illnesses in humans and animals due to radiation as well

³⁵ „Закон за заштита и спасување“ [Law on protection and rescue], Official Gazette 93/12, Accessed October 23, 2014 <http://www.slvesnik.com.mk/Issues/1F2D347B699C764F9E65C717889E74B2.pdf>

³⁶ „Закон за управување со кризи“ [Law on crisis management], Official Gazette 29/05, Accessed October 23, 2014 <http://www.slvesnik.com.mk/Issues/2B55BCB15891E144B555BA0302455CB6.pdf>

³⁷ „Закон за енергетика“ [Energy Law], Official Gazette 16/11, Accessed October 23, 2014 <http://www.slvesnik.com.mk/Issues/EE982E53C03DAB4C982055F184E70F66.pdf>

³⁸ „Уредба за критериумите и условите за прогласување на електроенергетска кризна состојба, начинот на снабдување со електрична енергија во овие услови, мерките што се преземаат во случај на кризна состојба, како и правата и обврските на носителите на лиценци за вршење на енергетски дејности“ [Regulation on the criteria and conditions for declaring electricity crisis], Official Gazette 53/12, Accessed October 24, 2014 <http://www.slvesnik.com.mk/Issues/30A0E542205D7E4B9E4E8384E6CEE0D2.pdf>

³⁹ „Мрежни правила за пренос на природен гас“ [Network rules for transmission of natural gas], Official Gazette 45/09, Accessed October 24, 2014 <http://www.slvesnik.com.mk/Issues/0145DC355953F340BB9BD13F8D098B80.pdf>

⁴⁰ „Уредба за критериумите и условите за прогласување на кризна состојба во снабдувањето со природен гас, начинот на снабдување со природен гас во овие услови, мерките што се преземаат во случај на кризна состојба, како и правата и обврските на носителите на лиценци за вршење на енергетски дејности“ [Rulebook on the criteria and conditions for declaring crisis with natural gas supply], Official Gazette 143/13, Accessed

October 24, 2014 <http://www.slvesnik.com.mk/Issues/4f20fda93c38442d878c6977defee7f5.pdf>

⁴¹ State Statistical Office, „Енергетски статистики 2000-2010 Статистички преглед: Индустрија и енергија“ [Energy statistics, 2000-2010 Statistical review: Industry and Energy], State Statistical Office, 2012, Skopje, Accessed October 23, 2014 <http://www.stat.gov.mk/publikacii/6.4.12.01.pdf>

⁴² Sources: State Statistical Office, „Енергетски биланси 2013“ [Energy balances 2013], (2014), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2014/6.1.14.79.pdf>; State Statistical Office, „Енергетски биланси 2012“ (Energy balances 2012), (2013), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2013/6.1.13.87.pdf>; State Statistical Office, „Енергетски биланси 2011“ [Energy balances 2011], (2012), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2012/6.1.12.82.pdf>; State Statistical Office, „Енергетски биланси 2010“ [Energy balances 2010], (2011), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2012/6.1.12.38.pdf>; State Statistical Office, „Енергетски биланси 2009“ [Energy balances 2009], (2011), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2011/6.1.11.53.pdf>

as it can be a potential target for attacks.⁴³ Macedonia's Energy strategy states that developing a nuclear program could be one of the ways of securing the needed energy for the period 2020-2030. The nuclear option would ensure increased diversification, thus increased security in supply of electricity.⁴⁴ However, so far there is no decision about building a nuclear plant in Macedonia, thus it is an area which is not on the top of the agenda at the moment.

3.2 Floods

"Up to 110,000 customers were affected by supply interruptions in 28 municipalities touched by the floods. During May 15th - 19th, water overflowing from Kolubara River and its tributaries Vranicina and Prestan flooded open pit mines Tamnava West, Veliki Crljeni, as well Fields B and D in the Kolubara coal basin."⁴⁵

It is not disputable that climate and natural disasters have the potential to interfere with the consumption of energy, therefore becoming an additional risk to the energy security. Because of their nature, energy resources as well as the energy infrastructure are exposed and are vulnerable to climate change and natural disasters. The floods of 2014 affecting the Western Balkans targeting primarily Serbia, Croatia and Bosnia and Herzegovina showed their destructive character. In Serbia the floods for example affected the coal segment of their energy portfolio. Two of the coal mines were flooded and continued production of electricity was not possible for a certain period of time.⁴⁶ The damage to its energy sector (includ-

⁴³ Sonja Risteska, Natasha Hroneska, Greening the energy sector – Does Macedonia need nuclear energy?, Analytica, 2010, Accessed October 24, 2014
http://www.analyticamk.org/images/stories/files/report/papers/paper_3.pdf

⁴⁴ Ministry of Economy of the Republic of Macedonia, „Стратегија за развој на енергетиката во Република Македонија до 2030 година“ [Strategy for Energy Development in the Republic of Macedonia until 2030], (2010), Accessed October 23, 2014
http://www.ea.gov.mk/images/stories/E_Izdanija/Energetika_Strategija_za_energetika_na_RM_do_2030__SV_61_2010__244131078.pdf

⁴⁵ Government of the Republic of Serbia. "Serbia Floods 2014". Available at: http://ec.europa.eu/enlargement/pdf/press_corner/floods/20140715-serbia-rna-report.pdf Accessed 10 October p. 12

⁴⁶ Government of the Republic of Serbia. "Serbia Floods 2014". Available at: http://ec.europa.eu/enlargement/pdf/press_corner/floods/20140715-serbia-rna-report.pdf Accessed 10 October p. 12

ing coal mining) due to the floods is estimated to 488 million Euros.⁴⁷

3.3 Fires

Fires have also the potential to hamper the electricity distribution. This is especially case when it comes to forest fires which are having the potential for fast spread affecting large geographic areas if not localized on time with the possibility to severely damage the existing electricity grids. Apart from the potential of physical destruction of the electricity grids, the local population living close to a forest fire will probably face electricity cut-offs due to the cutting that segment from the grid so that for example firefighting crews deal with the fire.

The summer of 2007 was probably one of the most critical for Macedonia in this regard, because of the intensity of fires and the effect they had on the national electricity grid. One cannot exclude the human factor for starting the fires, but the excessively high temperature (well above 40C) had role to play as well. Apart from the fires affecting the country, number of big intensity fires occurred in the neighboring countries affecting also Macedonia's electricity grid. A noticeable hazard happened on 25 July 2007 when electricity users and households across the country were left without electricity for around two hours, bringing a nationwide blackout. The reason for the collapse of the grid was traced because of the hazard of the transmission line Blagoevgrad (Bulgaria) and Thessaloniki (Greece). In those circumstances Greek electricity system pulled considerable amount of electricity through the Macedonian transmission line leading to that hazard afterwards. Forest fires as well as low domestic production of electricity were mentioned as the causes of this hazard by the Director of the Electricity Transmission System Operator of Macedonia (MEPSO).⁴⁸

3.4 Energy liberalization

In 2006 Macedonia has ratified the Energy Community Treaty,⁴⁹ which has the aim to organize the relations be-

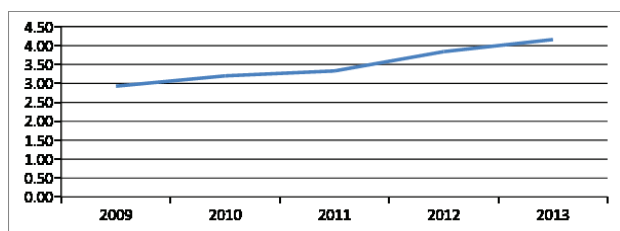
⁴⁷ Mileunsnic, Dragana. "Energy Community Reform: What Will the EU Push For?" EurActive. August 26, 2014. Accessed September 24, 2014. <http://www.euractiv.com/sections/energy/energy-community-reform-what-will-eu-push-307969>.

⁴⁸ Petreski, Goran. "Краткотраен енергетски колапс [Short Energy Collapse]." DW. July 25, 2007. Accessed September 4, 2014. <http://www.dw.de/краткотраен-енергетски-колапс/a-2705779>.

⁴⁹ „Закон за ратификација на Договорот за основање на енергетската заедница“ [Law on Ratification of the Treaty Estab-

tween the parties and create a legal and economic framework in order to inter alia create a stable regulatory and market framework capable of attracting investment in gas networks, power generation, and transmission and distribution networks; to enhance the security of supply etc.⁵⁰ This Treaty envisaged liberalization of the market for all non-household customers from 1 January 2008 and liberalization of the market for all customers from 1 January 2015.

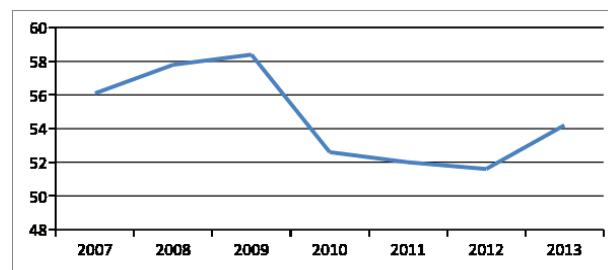
Graph 1: Average price of electricity for households connected to the distribution system through the years 2009-2013 in Denar/kWh



Source: Energy Regulatory Commission⁵¹

lishing the Energy Community], Official Gazette 59/ 06, Accessed October 24, 2014
<http://www.slvesnik.com.mk/Issues/850A30DA5426AD449FDF7009F36B13DE.pdf>
⁵⁰ Internet page of the Energy Community/ Treaty (2014), Accessed October 23, 2014 http://www.energy-community.org/portal/page/portal/ENC_HOME/ENERGY_COMMUNITY/Legal/Treaty
⁵¹ Energy Regulatory Commission, "Годишен извештај за работа на Регулаторната комисија за енергетика на Република Македонија во 2010 година" [Annual report for the work of the Energy Regulatory Commission of the Republic of Macedonia in 2010], (2011), Accessed October 23, 2014 <http://www.erc.org.mk/odluki/IZVESTAJ%20ZA%20RABOTATA%20NA%20RKE%20VO%202010%20GODINA.pdf>; Energy Regulatory Commission, "Годишен извештај за работа на Регулаторната комисија за енергетика на Република Македонија во 2011 година" [Annual report for the work of the Energy Regulatory Commission of the Republic of Macedonia in 2011], (2012), Accessed October 23, 2014 <http://www.erc.org.mk/odluki/Godisen%20izvestaj%20za%20raborta%20na%20Regulatoremnata%20komisija%20za%20energetika%20za%202011%20godina.pdf>; Energy Regulatory Commission, "Годишен извештај за работа на Регулаторната комисија за енергетика на Република Македонија во 2012 година" [Annual report for the work of the Energy Regulatory Commission of the Republic of Macedonia in 2012], (2013), Accessed October 23, 2014 <http://www.erc.org.mk/odluki/Godisen%20izvestaj%20za%20raborta%20na%20Regulatoremnata%20komisija%20za%20energetika%20na%20RM%20za%202012%20godina.pdf>; Energy Regulatory Commission, "Годишен извештај за работа на Регулаторната комисија за енергетика на Република Македонија во 2013 година" [Annual report for the work of the Energy Regulatory Commission of the Republic of Macedonia in 2013], (2014), Accessed October 23, 2014 <http://www.erc.org.mk/odluki/Godisen%20izvestaj%20za%20raborta%20na%20Regulatoremnata%20komisija%20za%20energetika%20na%20RM%20za%202013%20godina.pdf>

Graph 2: Percentage of interviewed households able to keep their home adequately warm



Source: State Statistical Office⁵²

The liberalization of the electricity market means a gradual increase of the electricity price to reach the market price, thus over the years the price of electricity has been rising in Macedonia as seen in Graph 1 for households. As households heavily rely on electricity for satisfying their energy needs as visible in Table 2, in lesser degree also the industry uses electricity as shown in Table 3; the rise of electricity price could significantly affect a large share of the energy consumers. The vulnerability of households is shown in their reply about their ability to keep their homes adequately warm (having in mind that electricity is widely used as a source for heating), so from 2009 till 2012 decreased the percentage of households able to adequately heat their homes, as presented in Graph 2. This correlates with the increase of electricity price for that period as visible in Graph 1. Academics have also formed the term *energy poverty* – it is described as a state in which the amount of warmth in the home is lower than

⁵² State Statistical Office, "Потрошувачка во домаќинствата во Република Македонија 2007" [Household consumption in the Republic of Macedonia 2007], (2008), Accessed October 23, 2014, <http://www.stat.gov.mk/Publikacii/4.4.8.01.pdf>; State Statistical Office, "Потрошувачка во домаќинствата во Република Македонија 2008" [Household consumption in the Republic of Macedonia 2008], (2009), Accessed October 23, 2014 <http://www.stat.gov.mk/Publikacii/4.4.9.01.pdf>; State Statistical Office, "Потрошувачка во домаќинствата во Република Македонија 2009" [Household consumption in the Republic of Macedonia 2009], (2010), Accessed October 23, 2014 <http://www.stat.gov.mk/Publikacii/4.4.10.01.pdf>; State Statistical Office, "Потрошувачка во домаќинствата во Република Македонија 2010" [Household consumption in the Republic of Macedonia 2010], (2011), Accessed October 23, 2014 <http://www.stat.gov.mk/publikacii/4.4.11.01.pdf>; State Statistical Office, "Потрошувачка во домаќинствата во Република Македонија 2011" [Household consumption in the Republic of Macedonia 2011], (2012), Accessed October 23, 2014 <http://www.stat.gov.mk/Publikacii/4.4.12.01.pdf>; State Statistical Office, "Потрошувачка во домаќинствата во Република Македонија 2012" (Household consumption in the Republic of Macedonia 2012), (2013), Accessed October 23, 2014 <http://www.stat.gov.mk/publikacii/4.4.13.01.pdf> State Statistical Office, "Потрошувачка во домаќинствата во Република Македонија 2013" [Household consumption in the Republic of Macedonia 2013], (2014), Accessed October 23, 2014 <http://www.stat.gov.mk/Publikacii/4.4.14.01.pdf>

the subjective minimum which allows an individual to perform his/her everyday life.⁵³ In fact the results of a study states that energy poverty in Macedonia may include up to 61% of all households in the country.⁵⁴

Table 2: Share of electricity in the final energy consumption in households through the years 2010-2013

Share of electricity in final energy consumption in households	Year
51.7%	2010
52.9%	2011
53.6%	2012
58.1%	2013

Source: State Statistical Office⁵⁵

Table 3: Share of natural gas and electricity in the final energy consumption in industry through the years 2010-2013		
Share of natural gas in final energy consumption in industry	Share of electricity in final energy consumption in industry	Year
7%	32%	2010
6.5%	33.6%	2011
3.6%	33.6%	2012
4.3%	34.5%	2013

Source: State Statistical Office⁵⁶

⁵³ Stefan Bouzarovski, Energy poverty in transition: Macedonia and the Czech Republic in comparative perspective, Political Thought, Year 8, No. 29, Skopje, (2010)

⁵⁴ Stefan Buzar, Energy poverty in Eastern Europe: Hidden geographies of deprivation, (2007)

⁵⁵ Sources: State Statistical Office, "Енергетски биланси 2013" [Energy balances 2013], (2014), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2014/6.1.14.79.pdf>; State Statistical Office, "Енергетски биланси 2012" [Energy balances 2012], (2013), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2013/6.1.13.87.pdf>; State Statistical Office, "Енергетски биланси 2010" [Energy balances 2010], (2011), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2012/6.1.12.38.pdf>

⁵⁶ Sources: State Statistical Office, "Енергетски биланси 2013" [Energy balances 2013], (2014), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2014/6.1.14.79.pdf>; State Statistical Office, "Енергетски биланси 2012" [Energy balances 2012], (2013), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2013/6.1.13.87.pdf>; State Statistical Office, "Енергетски биланси 2010" [Energy balances 2010], (2011), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2012/6.1.12.38.pdf>

On the other hand, a heavily rely on electricity could undermine a country's energy security. In the event of very cold winters, citizens tend to use electricity more for heating (more electric heaters turned on, longer periods of heating on electric heaters and usage of electric heaters additionally to using fuel wood stoves). It could result in lack of electricity as it has once happened in recent times in Macedonia – in February 2012 when Macedonia declared an electricity crisis and as mitigating measures undertaken was that the street lighting was reduced and there was a ban on using electricity for additional heating.⁵⁷ In this light big concern is the usage of electricity for heating purposes in the absence of other ways of heating (natural gas, developed district heating). In fact, the measures towards reforming the heat market such as

Table 4: Imported electricity through the years 2009-2013 in GWh

Imported electricity in GWh	Year
1437.942	2009
1 420.221	2010
2748.752	2011
2741.497	2012
2490.618	2013

Source: State Statistical Office⁵⁸

introduction of efficient fuel wood stoves, installing heat meters in the district heating areas and similar, still remain to be undertaken. To underline even more the worry about the reliance on electricity, the statistical data show that the import of electricity has been increasing over the years and from 2009 till 2013 has almost doubled as presented in Table 4.

⁵⁷ MIA/Idividi, "Владата прогласи електроенергетска кризна состојба" [The Government has declared an electricity crisis], February 13, 2012, Accessed October 23, 2014 <http://www.idividi.com.mk/vesti/makedonija/748029/>

⁵⁸ Sources: State Statistical Office, "Енергетски биланси 2013" [Energy balances 2013], (2014), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2014/6.1.14.79.pdf>; State Statistical Office, "Енергетски биланси 2012" [Energy balances 2012], (2013), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2013/6.1.13.87.pdf>; State Statistical Office, "Енергетски биланси 2011" [Energy balances 2011], (2012), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2012/6.1.12.82.pdf>; State Statistical Office, "Енергетски биланси 2010" [Energy balances 2010], (2011), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2012/6.1.12.38.pdf>; State Statistical Office, "Енергетски биланси 2009" [Energy balances 2009], (2011) Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2011/6.1.11.53.pdf>



Regarding the process of gasification, it progresses slowly on the central level; but several municipalities have embarked on local gasification projects. Despite that the advanced local projects involving introduction of natural gas for heating have produced positive results for the local heat markets in a relative short period, some of the amendments to the Law on energy from May 2013 go in direction of centralization of the gasification process as they prescribe that the Government decides about starting a procedure on contract awarding about establishing public private partnership for building new gas distribution system. This amendment also raises the issue how this will reflect on the ongoing and on future local gasification projects.⁵⁹

Another matter of concern is the sudden announcement of the Minister of Economy on October, 9, 2014 to postpone the liberalization of the electricity market. By this Macedonia breached the Energy Community Treaty as reported by Director of the Secretariat of the Energy Community.⁶⁰

The explanation for this postponement is that the electricity price for households will increase.⁶¹ Raise in electricity prices is a matter as discussed above of growing concern, but the real question that needs to be asked is to which extent do the energy policies adopted on paper are being implemented to mitigate the effects of the rise of electricity prices? Especially the gasification process and the reform of the heat market? As the analysis above showed, these policies are yet to be implemented. All these energy sector reform policies are to improve the standard of living of citizens and to contribute to increased security of supply.

4. Resilience - ability to respond to disruptions of energy imports by substituting with other suppliers and supply routes and ability to respond to disruptions in energy supply

4.1 Storage of energy

Macedonia's efforts to integrate into the EU family have been in line with the increase over the years of its compulsory reserves of oil and oil reserves - the oil stocks were equivalent to only 26 days' average consumption in 2010, grew to equivalent to 57 days' average consumption in 2014.⁶² The Law on Compulsory Oil Reserves prescribes that the total reserve quantities of a certain oil derivative are to reach a coverage of the achieved average daily consumption of that oil derivative for a period of 90 days in the previous calendar year or 25% of the total achieved consumption of the oil derivative in question in the previous calendar year.⁶³ Although the envisaged target is still not achieved, the raise of oil stock reserves shows signs of positive development.

4.2 Ability to convert to other energy sources in case of disruption

Eventual gas cut off is in direct connection with the ability of the country affected to respond to the challenge, either by using its reserves, getting immediate assistance from neighboring countries or by switching to other energy sources. Among the countries from Macedonia's wider surrounding Italy, Poland and Slovakia could go unaffected for three months using their gas reserves if a cut of gas through Ukraine emerges. Serbia on the other side could potentially rely on the Hungarian gas reserves, while Slovenia and Croatia could benefit from the gas re-

⁵⁹ Sonja Zuber, Ana Stojilovska, "Анализа на Законот за изменување и дополнување на Законот за енергетика од мај 2013" [Analysis of the Law amending the Energy law from May 2013], Analytica, 2013, Accessed October 25, 2014 http://www.analyticamk.org/images/stories/files/briefs/13049-Policy_Brief_zakonot_za_energetika_2013.pdf

⁶⁰ Sonja Zuber, "Изгубени во реформите? Што следи по лошото планирање на одложувањето на либерализацијата на пазарот на енергетика во Македонија?" (Lost in the reforms? What follows after a bad planning of the delay of the liberalization of the energy market in Macedonia?), Accessed October 23, 2014 http://analyticamk.org/images/stories/files/2014/izgubeni_reformite.pdf

⁶¹ Faktor, "Официјално: Последната фаза на либерализацијата на пазарот на струја се одлага до 2020 година!" [Officially: The last phase of the liberalization of the electricity market is postponed till 2020!], October, 9, 2014 Accessed October 25, 2014 <http://faktor.mk/archives/126273#>

poned till 2020!], October, 9, 2014 Accessed October 25, 2014 <http://faktor.mk/archives/126273#>

⁶² European Commission, The former Yugoslav Republic of Macedonia 2010 Progress report accompanying the Communication from the Commission to the European Parliament and the Council Enlargement Strategy and Main Challenges 2010-2011, (2010), Accessed October 23, 2014 http://ec.europa.eu/enlargement/pdf/key_documents/2010/package/mk_rapport_2010_en.pdf; European Commission, The former Yugoslav Republic of Macedonia Progress report, (2014), Accessed October 23, 2014 http://ec.europa.eu/enlargement/pdf/key_documents/2014/20141008-the-former-yugoslav-republic-of-macedonia-progress-report_en.pdf

⁶³ "Закон за задолжителни резерви на нафта и нафтни деривати" [Law on Compulsory Oil Reserves], Official Gazette 84/08, Accessed October 23, 2014 <http://www.slvesnik.com.mk/Issues/9C8BE756C108374B9E7384DCC63C2B4F.pdf>



serves of Italy, Austria and Hungary.⁶⁴ Macedonia on the other hand does not have natural gas storage capacities. The limited reserves are stored in the pipelines themselves which could possibly last for a week.⁶⁵ As a relatively small user of natural gas but knowing its getting all that supply of around 130 million cubic meters from a single source⁶⁶ and having to make it all the way from relatively unstable regions such as Ukraine makes the situation increasingly risky. On the other hand the single entry point of the Russian gas to Macedonia is making country's energy supply closely connected with the developments in Bulgaria. If the cuts do happen it would be up to the Bulgarian authorities to decide whether they would continue sharing the limited gas flow with Macedonia or secure it to Bulgaria only. Bulgaria as well has limited capacities to store certain amounts of gas using locations with used gas reserves.⁶⁷

During the EU wide gas shortage in 2009 and 2011 when Makpetrol (gas supplier) stopped the gas flow, only one factory Makstil faced challenges because it could not work with other energy sources.⁶⁸ However, in case of shortage in electricity, a significant part of the energy consumers will be affected. Most vulnerable sector will be households since they heavily rely on electricity. However, the shortage of electricity will not affect households only; the industry will be concerned as well (see Table 2 and 3).

4.3 Energy diversification and connection to gas pipelines

As stated in its Energy strategy, Macedonia has considered several possible sources of supply for natural gas for Macedonia such as the South Stream carrying Russian and Caspian gas, Blue Stream carrying Russian gas via Bulgaria, White Stream carrying Caspian gas via Roma-

nia, Nabucco, Liquefied natural gas (LNG) transported via Greece, Albania, Montenegro or Croatia and similar. The Energy strategy itself has as one of its priorities an increased utilization of natural gas.⁶⁹ Having in mind that joining an international pipeline involves many factors and things can be often unpredictable, one option left to Macedonia on a mid-term is to continue satisfying its gas demand by utilizing the full capacity of the existing network, which at current capacity could supply Macedonia for at least 5 additional years. Another option which the country could undertake in the meanwhile is to increase the capacity of its existing pipeline with a compression station from 800 million m³ to 1.2 billion m³ per year, which is enough to supply the country for the next 15 to 20 years.⁷⁰ The utilization of the capacity of the system for gas transmission remains low and is 20% in 2013. This is a positive sign, since this share in 2012 was 17% and in 2011 16.9%.⁷¹ Joining a regional gas pipeline will have to be parallel to the process of building gas distribution network as this distribution network is crucial for bringing natural gas to the households. As the Energy Regulatory Commission in its annual report for 2013 reports, there are households connected to the gas distribution network, which was still not the case for the situa-

⁶⁴ "Македонија, Бугарија и Романија најранливи на рускиот гас [Macedonia, Bulgaria and Romania Most Vulnerable to Russian Gas]." *Utrinski Vesnik*, March 18, 2014. Accessed July 26, 2014.

⁶⁵ "Експертите демантираат: Ако има гасна криза, Македонија не е загрозена! [Experts Disagree: In Case of Crisis Macedonia Will Not Be Affected!]." *Vecer*, October 17, 2014. Accessed October 18, 2014. <http://vecer.mk/ekonomija/ekspertite-demantiraat-ako-ima-gasna-kriza-makedonija-ne-e-zagrozena>.

⁶⁶ Pavkovikj, Zdenka. "Македонија ќе има мали штети, Европа огромни. [Macedonia Will Face Little Damage, Europe Huge]." *Dnevnik*, March 5, 2014. Accessed August 11, 2014. <http://dnevnik.mk/?ItemID=C169252B6144DE46B4BE255D4BAB719E>

⁶⁷ *ibid*.

⁶⁸ "Експертите демантираат: Ако има гасна криза, Македонија не е загрозена! [Experts Disagree: In Case of Crisis Macedonia Will Not Be Affected!]." *Vecer*, October 17, 2014. Accessed October 18, 2014. <http://vecer.mk/ekonomija/ekspertite-demantiraat-ako-ima-gasna-kriza-makedonija-ne-e-zagrozena>.

⁶⁹ Ministry of Economy of the Republic of Macedonia, „Стратегија за развој на енергетиката во Република Македонија до 2030 година“ [Strategy for Energy Development in the Republic of Macedonia until 2030], (2010), Accessed October 23, 2014 http://www.ea.gov.mk/images/stories/E_Izdanija/Energetika_Strategija_z_a_energetika_na_RM_do_2030__SV_61_2010__244131078.pdf

⁷⁰ Analytica and partner, Forum: Energy strategy, security, and gasification in Macedonia and the region on 11 June 2013, Conference conclusions, Accessed October 25, 2014 <http://analyticamk.org/images/stories/files/2014/Conclusions.pdf>

⁷¹ Energy Regulatory Commission, "Годишен извештај за работа на Регулаторната комисија за енергетика на Република Македонија во 2011 година" [Annual report for the work of the Energy Regulatory Commission of the Republic of Macedonia in 2011], (2012), Accessed October 23, 2014

<http://www.erc.org.mk/odluki/Godisen%20izvestaj%20za%20rabota%20na%20Regulatornata%20komisija%20za%20energetika%20za%202011%20godina.pdf> ; Energy Regulatory Commission, "Годишен извештај за работа на Регулаторната комисија за енергетика на Република Македонија во 2012 година" [Annual report for the work of the Energy Regulatory Commission of the Republic of Macedonia in 2012], (2013), Accessed October 23, 2014

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<http://www.erc.org.mk/odluki/Godisen%20izvestaj%20za%20rabota%20na%20Regulatornata%20komisija%20za%20energetika%20na%20RM%20za%202013%20godina.pdf>



tion in 2012.⁷² Although there is no concrete data about the number of households connected, their portion is small related to the fact that only two municipalities - Kumanovo and Strumica and the technological industrial development zone Bunardzik are expanding their distribution networks. This is a sign of positive development, thus an indicator that local gasification projects should continue.

4.4 Increased domestic production

One of the priorities of the Energy strategy is to increase the share of renewables. The Energy strategy also states that for ensuring energy security, necessary is maximal utilization of domestic resources. The Strategy assessed Macedonia to have significant potential for renewables both for electricity and heat generation. More precisely, the unused potential of renewables which can be utilized by 2030 is 3795 GWh annually for electricity production and 1565 GWh annually for heat generation.⁷³ The Government has also adopted a Decision on the goals and the annual dynamic for the increase of the share of renewables in the final energy consumption, stating that the share of renewables by end of 2013 in the final energy consumption should be 17.6% and by end of 2020 to be 21%.⁷⁴ However, if the statistics is consulted it can be concluded that the envisaged share for 2013 is not reached. In fact, the share of renewables in the gross fi-

nal energy consumption in 2013 (preliminary data) was 15.3% (calculated with actual values) and 15.6% (calculated with normalized values).⁷⁵

⁷² Energy Regulatory Commission, "Годишен извештај за работа на Регулаторната комисија за енергетика на Република Македонија во 2013 година" [Annual report for the work of the Energy Regulatory Commission of the Republic of Macedonia in 2013], (2014), Accessed October 23, 2014 <http://www.erc.org.mk/odluki/Godisen%20izvestaj%20za%20rabota%20na%20Regulatornata%20komisija%20za%20energetika%20na%20RM%20za%202013%20godina.pdf> ; Energy Regulatory Commission, "Годишен извештај за работа на Регулаторната комисија за енергетика на Република Македонија во 2012 година" [Annual report for the work of the Energy Regulatory Commission of the Republic of Macedonia in 2012], (2013), Accessed October 23, 2014 <http://www.erc.org.mk/odluki/Godisen%20izvestaj%20za%20rabota%20na%20Regulatornata%20komisija%20za%20energetika%20na%20RM%20za%202012%20godina.pdf>

⁷³ Ministry of Economy of the Republic of Macedonia, „Стратегија за развој на енергетиката во Република Македонија до 2030 година“ [Strategy for Energy Development in the Republic of Macedonia until 2030], (2010), Accessed October 23, 2014 http://www.ea.gov.mk/images/stories/E_Izdanija/Energetika_Strategija_za_energetika_na_RM_do_2030__SV_61_2010__244131078.pdf

⁷⁴ „Одлука за целите и годишната динамика на порастот на учеството на енергијата од обновливи извори на енергија во финалната потрошувачка на енергија“, [Decision on the goals and the annual dynamic for the increase of the share of renewables in the final energy consumption], Official Gazette 100/11, Accessed October 23, 2014 <http://www.slvesnik.com.mk/Issues/47D56301AAB3324281A085DAAC0AEF98.pdf>

⁷⁵ State Statistical Office, "Енергетски биланси 2013" [Energy balances 2013], (2014), Accessed October 23, 2014 <http://www.stat.gov.mk/pdf/2014/6.1.14.79.pdf>



Concluding remarks

The developments in Ukraine will continue making the headlines across Europe as the situation continues to deteriorate. Its energy sector will undoubtedly continue to suffer which would generate intensified energy diplomacy between Brussels-Kiev and Moscow in order to secure gas supplies for the EU and Ukraine. As the winter is approaching the exchange of accusations between the parties will grow which has the potential to lead to another gas crisis. Macedonia should closely follow these developments and timely react on possible gas shortages.

Joining South Stream would secure considerable amount of gas but the politicization of the project makes the overall process more vulnerable to politics. Macedonia in this regard as EU candidate country should follow EU's advice on streamlining the agreements for joining the project in accordance with the EU energy law. Because of its uncertainty Macedonian authorities should also seriously consider and make concrete steps in joining the Trans-Adriatic Pipeline.

Fortunately Macedonia today is in a stable and politically predictable neighborhood where regional cooperation is a precondition for further integration in the European Union. Cooperation in the field of energy is a necessity and not only in terms of joint energy projects but also in cases of natural or manmade disasters. The floods in Serbia should serve as a powerful reminder about the infrastructure vulnerability and the damaging effects climate can have on the energy infrastructure.

While EU is concerned with gas shortages, Macedonia is more vulnerable to electricity. This is visible from Macedonia's energy balances, the share of electricity used by households but the industry too, as well as the fact that electricity import increases. Also, by taking into consideration the event of the 2012 electricity crisis, efforts should go in direction of mitigating this state of electricity vulnerability. This can be achieved by offering other sources of heating than electricity for households (natural gas, developing district heating, efficient use of fuel wood, energy efficiency measures etc.), focusing on increasing the utilization of renewables, and of natural gas.

As the electricity prices will be increasing in the upcoming period, Macedonia should intensively continue with the energy reforms to mitigate the consequences from rising energy prices such as reforms to improve the heat market, improve energy efficiency, support local gasification projects and continue with the gasification plans on central level.

Although, not the highest energy security concern at the moment, the increasing utilization of natural gas means that the country should think more intensively about the energy security concerns of natural gas, to try to join as many as possible gas pipelines, but most importantly to undertake all measures that is able to achieve on its own in the meanwhile- to utilize the maximal capacity of its gas network as well as to increase its capacity.

As it is a breach of the Energy Community Treaty, the Government should reconsider the decision to delay the liberalization of the electricity market.

Last but not least, the sole definition of energy security understands increasing the number of energy sources and the number of energy supplies. Therefore, Macedonia should continue with its efforts to diversification of the energy sources in the energy mix and increasing the number of suppliers.

EU POLICY

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