

## AN EMERGING CONTRIBUTOR TO THE EUROPEAN SECURITY OF ENERGY SUPPLY: ROMANIA \*

Merve İrem YAPICI \*\*

### **Abstract**

*In order to diminish its energy dependence to the Russian Federation, Europe hastened its search for alternative supplies and rediscovered Romania both as a transit state and a reliable energy supplier especially after the Ukrainian Crisis. It is estimated that Romania would address European energy needs not only with its unexploited natural gas reserves but also with its miscellaneous energy resources like shale gas and wind power. Moreover, Romania will be able to take an active role in European future energy policy formulations as an energy transit state. Especially the AGRI (The Azerbaijan-Georgia-Romania Interconnector) Project reveals Romania's strategic position in European gas calculations. However, the functioning of the AGRI Project depends on the construction and/or alteration of pipelines to the European Union centers and the incorporation of new supplier countries to the project.*

**Keywords:** Romania, AGRI Project, Europe, energy security.

### **Avrupa'nın Enerji Arz Güvenliği Açısından Yükselen Aktör: Romanya**

### **Özet**

*Özellikle Ukrayna Krizi'nden sonra doğalgaz temini konusunda Rusya'ya olan bağımlılığı aşma çabasındaki Avrupa, alternatif kaynak arayışına hız vermekte ve bu noktada Romanya'dan hem bir transit hem de bir kaynak ülke olarak faydalanma fırsatı ile karşı karşıya kalmaktadır. Sadece doğalgaz değil, kaya gazı ve rüzgâr*

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\*\* Assist. Prof. Dr., Adnan Menderes University Faculty of Economics and Administrative Sciences Department of International Relations.

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*enerjisi gibi farklı kaynaklarıyla Avrupa'nın enerji ihtiyacına cevap vermesi beklenen Romanya, içinde bulunduğu AGRI Projesi aracılığıyla transit ülke olma konumunu da güçlendirmektedir. Ancak AGRI Projesi'nin işlerliği için Avrupa Birliği merkezlerine uzanacak boru hatları yapımının/tadilatının ve tedarikçi ülke sayısının artırılmasının zorunluluğu, Romanya'nın hassas ve zaafı bulunan bir güçlenme süreci içinde bulunduğunu kanıtlamaktadır.*

**Anahtar Kelimeler:** Romanya, AGRI Projesi, Avrupa, enerji güvenliği

### Introduction

Russian intervention towards Ukraine in 2014 has disconcerted many European capitals and Brussels. The great concern in European capitals and European Union (EU) headquarters in Brussels was not rootless, because the EU imported (and still imports) significant amount of energy from the Russian Federation, and Ukraine was (and still is) the central transit destination. Ukraine is the country through which more than 50 % of Russian gas destined for the EU is shipped<sup>1</sup>. 175 million cubic meters of Russian gas is also transported via Ukrainian pipelines daily<sup>2</sup>. On 15 June 2014, Russia stopped delivering gas to Ukraine and a threat about the disruption of the gas supplies to the EU was emerged. Especially Slovakia and Bulgaria that depended on Russia for their entire gas imports and received all their Russian gas through Ukraine were heavily affected by the Russian move<sup>3</sup>.

To reduce the risks to energy security, EU developed emergency plans including increasing gas stocks, reducing short-term energy demand, and switching to alternative fuels<sup>4</sup>. In June 2014, the EU Commission launched European Energy Security Strategy that outlined some measures to guarantee its energy security. One of those measures was to improve renewable energy as an alternative source against Russian gas. In fact, in January 2014 the EU Commission decided to increase renewable energy share in total onshore energy consumption to 27 %<sup>5</sup>. On the other hand, according to the strategy,

<sup>1</sup> Jakub M. Godzimirski, "European Energy Security in the Wake of the Russia-Ukraine Crisis", **Strategic File**, Vol 27, No 63, 2014, p. 1.

<sup>2</sup> Fatma Yılmaz-Elmas, "Ukraine Crisis: The EU's New Actorship Test", **The Journal of Turkish Weekly**, 25 March 2014, <<http://www.turkishweekly.net/2014/03/25/comment/ukraine-crisis-the-eus-new-actorship-test/>> (22 October 2015).

<sup>3</sup> Godzimirski, **op.cit.**, p. 1.

<sup>4</sup> **Ibid.**, pp. 3-4.

<sup>5</sup> Inga M. Ydersbond and Thea Sveen, "The Ukraine Crisis and European Energy System Transformation", 21 October 2014, <<http://energiogklima.no/kommentar/the-ukraine-crisis-and-european-energy-system-transformation>> (19 October 2015).

shale gas should partially be used to compensate for decline in conventional gas production, and it must be supported in addition to the renewable energy sources<sup>6</sup>. While European countries seek to refine alternative energy sources instead of Russian gas, they also look for alternative supplier countries, new transfer directions and technologies. For example, the EU aims to develop new technologies for the transfer of liquefied natural gas to the EU from sources not connected by pipelines<sup>7</sup>.

In this atmosphere, Romania as an important supplier of several energy sources and a transit country for the Caspian energy becomes an unignorable actor in the EU. In this paper, Romania's energy potential and her strategic role in energy transfer to Europe will be discussed. The aim of the paper is to explore the capacity of Romania to become energy center of the EU and to scrutinize Romania's efforts to this end.

### **Fossil (Unrenewable) Energy Sources of Romania: Natural Gas, Oil and Shale Gas**

Romania, the third most successful country in European Union's (EU) energy independence statistics after Denmark and Estonia with a dependence rate of 22.7 %<sup>8</sup>, is likely to achieve full energy independence by the end of 2020, thanks to her shale gas production and alternative energy sources like wind and nuclear power<sup>9</sup>. According to the data from the Romanian company Transgaz, Romania has not imported natural gas since March 2015 and her internal production and stored natural gas have been enough to satisfy internal demand. Romania also became a prominent exporter of natural gas, at a level of over 440 million cubic meters per month<sup>10</sup>. National Regulatory Authority for Energy (ANRE) estimated consumption of 11

<sup>6</sup> "Shale Gas and EU Energy Security", **European Parliament Briefing**, December 2014, <[http://www.europa.eu/RegData/etudes/BRIE/2014/542167/EPRS\\_BRI\(2014\)542167\\_REV1\\_EN.pdf](http://www.europa.eu/RegData/etudes/BRIE/2014/542167/EPRS_BRI(2014)542167_REV1_EN.pdf)> (23 October 2015).

<sup>7</sup> Pasquale De Micco, "Changing Pipelines, Shifting Strategies: Gas in South Eastern Europe", **European Parliament Web Page**, July 2015, <[http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/549053/EXPO\\_IDA\(2015\)549053\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/549053/EXPO_IDA(2015)549053_EN.pdf)> (24 October 2015).

<sup>8</sup> "Romania - Amongst the Most Energy Independent Countries in the EU", **FactCheckEU**, 15 April 2014, <<https://factcheckeu.org/factchecks/show/420/energy-independence>> (15 September 2015).

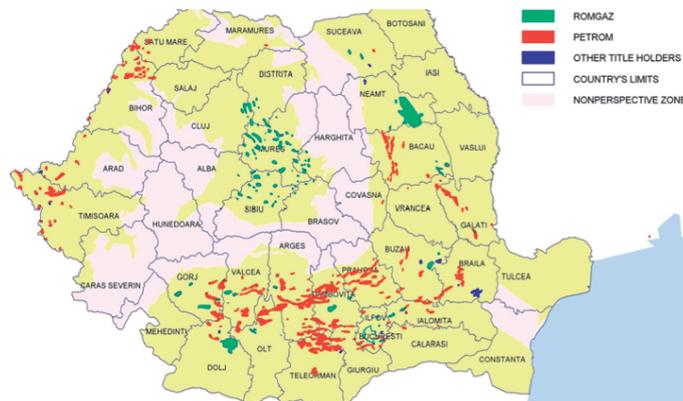
<sup>9</sup> Ana Hontz-Ward, "Romania Expects to be Energy Independent Despite Ukraine Crisis", **Voice of America**, 14 July 2014, <<http://www.voanews.com/content/romania-expects-energy-independence-despite-ukraine-crisis/1956837.html>> (13 September 2015).

<sup>10</sup> "Romania Becomes Natural Gas Exporter", **NineO'clock.ro**, 10 June 2015, <<http://www.nineoclock.ro/romania-becomes-natural-gas-exporter/>> (17 September 2015).

billion cubic meters of natural gas for the year 2015, of which imports represent only 3 %, as compared to 25 % before 2008<sup>11</sup>. As we can see from the data above, Romania is forging ahead with overcoming her dependence to the Russian gas, while other EU member states' high dependence levels increases their vulnerabilities every new year<sup>12</sup>.

According to the Energy Strategy Draft of Romania, the country has the largest natural gas reserves in Central and Eastern Europe with proved reserves of 150 billion cubic meters and geological reserves of 615 billion cubic meters<sup>13</sup>. Nearly 75 % of Romania's natural gas resources are found in Transylvania region, especially in Mures and Sibiu countries. Deleni gas field, discovered in 1912 and located in Mures Country, is the largest natural gas field in Romania with proved reserves of 85 billion cubic meters. As seen in the map below, two influential companies Romgaz and Petrom dominate the local natural gas production in Romania with market shares of 51.25 % and 46.33 % respectively<sup>14</sup>.

**Map 1: Investors in Romanian Gas Sector**



Source: <http://www.techcorr.com/news/Articles/Article.cfm?ID=2389>.

<sup>11</sup> “Romania Could Give Up Natural Gas Imports Starting Next Year, ANRE Head Says”, **The Romania Journal**, 10 September 2015 <<http://www.romaniajournal.ro/romania-could-give-up-natural-gas-imports-starting-next-year-anre-head-says/>> (15 September 2015).

<sup>12</sup> Loredana Mihailescu, “Romania As an Energy Hub in Southeastern Europe”, **Legal Insight**, <<http://www.cmslegal.com/Hubbard.FileSystem/files/Publication/7022b0c4-e5fd-4a9d-95c8-3353107a1dbc/Presentation/PublicationAttachment/5ffa74c8-31bc-4b4a-a0fd-4ad822fe4ae6/Romania-as-an-energy-hub-in-South-eastern-Europe.pdf>> (19 October 2015), p. 18.

<sup>13</sup> Constantin Radut, “Romania's Oil and Gas Reserves” **NineO'clock.ro.**, 24 February 2015, <<http://www.nineoclock.ro/romania%E2%80%99s-oil-and-gas-reserves/>> (15 September 2015).

<sup>14</sup> “Gas in Romania”, **World Energy Council**, <<https://www.worldenergy.org/data/resources/country/romania/gas/>> (8 October 2015).

Additionally, huge discoveries of oil and gas in Black Sea continental shelf of Romania have located the country at the heart of the regional energy market. In February 2012, ExxonMobil and Romania's OMV Petrom Company announced the results of Domino-1, Romania's first deep-water wildcat, in the Neptun East block in the western Black Sea. It was reported that the Domino-1 well had encountered 72 meter of net gas pay, suggesting as a preliminary estimate that the field could hold between 1.5 and 3 Tcf of gas<sup>15</sup>. This means explored deposit of natural gas in Romanian waters contains reserves with an estimated capacity between 42 and 84 billion cubic meters<sup>16</sup>. Although production could begin only after 2018, it is possible to say that the new resources can supplement Europe's long-standing efforts to decrease its reliance on Russian oil and gas<sup>17</sup>. Furthermore, in 2014 the two companies started drilling the Domino-2 well, which is about 200 kilometres offshore, and the Pelican South-1 wildcat well, located about 155 kilometres offshore in the Romanian sector of the Black Sea<sup>18</sup>. Data from the two wells are under evaluation. As OMV Petrom notes, results from the three wells as well as data from additional exploration wells will be processed for the assessment of Romania's whole potential. It should also be noted that, further exploration is expected in 2016<sup>19</sup>.

<sup>15</sup> "Romania: Black Sea Gas Discovery" **GEO ExPro**, Vol 9, No 2, 2012, <http://www.geoexpro.com/articles/2012/09/romania-black-sea-gas-discovery> (23 September 2015).

<sup>16</sup> "Romania Moves toward Independence from Russian Gas", **About Oil**, 30 June 2013, <<http://www.abo.net/oilportal/topic/view.do?contentId=2113966>>, (22 September 2015).

<sup>17</sup> Hans Von Der Brelie, "Crude Awakening: Romania's Black Sea Oil and Gas Finds Fuel Europe's Energy Hopes", **Euronews**, 5 December 2014, <<http://www.euronews.com/2014/12/05/crude-awakening-romania-s-black-sea-oil-and-gas-finds-fuel-europe-s-energy-hopes/>> (15 October 2015).

<sup>18</sup> Doinita Dolapchieva, "UPDATE 1- OMV Petrom Declines to Confirm Gas Discovery Offshore Romania", **SeeNews**, 19 February 2015, <<http://wire.seenews.com/news/update-1-omv-petrom-declines-to-confirm-gas-discovery-offshore-romania-464274>> (23 September 2015).

<sup>19</sup> Scott Weeden, "Deepwater Black Sea, Shale Top Romania's Oil, Gas Agenda", **E&P**, 22 April 2015, <<http://www.epmag.com/deepwater-black-sea-shale-top-romania-s-oil-gas-agenda-788881#p=4>>, (23 September 2015).

**Map 2: Domino-1 in the Neptun Block**

Source: <http://www.geoexpro.com/articles/2012/09/romania-black-sea-gas-discovery>.

As Radu Dudau, Director of the Bucharest-based Energy Policy Group rightfully asserts, although Romania will be faced with a surplus of gas, her underdeveloped infrastructure hinders Romania from fulfilling her export potential. Romania has a very limited interconnection with Moldova and also can not export gas either to Ukraine or Bulgaria<sup>20</sup>.

In order to overcome this problem, Romania signed a joint declaration together with Bulgaria, Hungary and Slovakia in May 2015 in Riga on regional interconnections for natural gas. The document was introduced in line with the efforts to consolidate European energy security<sup>21</sup>. The declaration asserted the contracting parties' full support for the construction of natural gas interconnection systems in Europe. As written in the Romanian Ministry of Foreign Affairs Web Site, the declaration shows

<sup>20</sup> Karel Beckman, "Interview Radu Dudau, Energy Policy Group: 'We Want in Urgent Need of a New Energy Strategy'", **Energy Post**, 27 May 2015, <<http://www.energy-post.eu/interview-radu-dudau-energy-policy-group-urgent-need-new-energy-strategy/>> (4 September 2015).

<sup>21</sup> Corina Cristea, "Romania as an Energy Hub", **Radio Romania International**, 14 August 2015, <[http://www. rri.ro/en\\_gb/romania\\_as\\_an\\_energy\\_hub-2532320](http://www. rri.ro/en_gb/romania_as_an_energy_hub-2532320)> (25 September 2015).

primarily the signatory countries' commitment to an energy union. It seeks to build a platform to promote European investment in cross-European energy infrastructure projects, mainly in Central and Eastern Europe<sup>22</sup>.

Additionally, the largest Romanian natural gas transmission company Transgaz arranges the construction of a national natural gas transmission system in Romania on Bulgaria-Romania-Hungary-Austria Corridor (BRUA). As Constantin Radut points out, "the project entails the development of a natural gas transmission capacity between existing points of interconnection with the natural gas transmission grids of Bulgaria (Giurgiu) and Hungary (Csanadpalota), through the construction of a new pipeline with a total length of 550 km, on the Giurgiu-Podisor-Corbu-Hurezani-Hateg-Recas-Horia route, and of three compressor stations located along its route (in Corbu, Hateg and Horia)". With the accomplishment of the project, it is estimated that natural gas transport capacity of 1.5 billion cubic meters per year toward Bulgaria and 4.4 billion cubic meters per year toward Hungary will be ensured. The project's deadline is 2019 and its cost is estimated at 560 million Euro<sup>23</sup>.

In addition to her vast natural gas reserves, Romania has a potential to emerge as a modest but more influential actor in European oil sector. Today, Romania is the fifth-largest oil producer in Europe and fourth-largest in the EU. The domestic crude production of Romania is around 2 % of Europe's and some 6 % of the EU's. According to Oil and Gas Journal estimates of the year 2014, the country has the fourth-largest proved crude oil reserves in Europe, with 600 million barrels<sup>24</sup>. According to the data published on the Energy Ministry's website, Romania's strategic petroleum reserve should reach a minimum of 1.2 million tons of oil equivalent (toe) in 2015<sup>25</sup>. The draft Romanian Energy Strategy for 2015-2035 acknowledges the limited nature of crude oil reserves in Romania by considering the modest

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<sup>22</sup> "Minister of Foreign Affairs Bogdan Aurescu Signs Joint Declaration by Romania - Bulgaria - Hungary - Slovakia on Promotion of Interconnection of Existing Infrastructure for Natural Gas Supply", **Ministry of Foreign Affairs of Romania**, 25 May 2015, <<http://www.mae.ro/en/node/32172>> (23 September 2015).

<sup>23</sup> Constantin Radut, "BRUA: New Natural Gas Pipeline Appears on South-East Europe's Map", **NineO'clock.ro**, 20 May 2015, <<http://www.nineoclock.ro/brua-new-natural-gas-pipeline-appears-on-south-east-europe%E2%80%99s-map/>> (22 September 2015).

<sup>24</sup> Constantin Radut, "Romania's Oil and Gas Reserves" **NineO'clock.ro.**, 24 February 2015, <<http://www.nineoclock.ro/romania%E2%80%99s-oil-and-gas-reserves/>> (15 September 2015).

<sup>25</sup> "Romania: Strategic Petroleum Reserve to Total 1.2 Million Toe", **Energyworld**, 10 July 2015, <http://www.energyworldmag.com/10/07/2015/romania-strategic-petroleum-reserve-to-total-1-2-million-toe/> (2 October 2015).

discoveries of the last 30 years. However, the document also discusses some recent signals of potential coming from the shallow Black Sea waters, the marketing of which being still at an analysis phase<sup>26</sup>.

In July 2014 OMV Petrom has announced the success of an exploration well, the Marina-1 well, in the Black Sea. The well, which was drilled 60 km from shore to a depth of about 2.150 meters below the seabed, encountered a new oil reservoir on the continental shelf of the Black Sea. Production tests of the Marina-1 show a potential production per well of 1.500-2.000 boe/day. However, it should be noted that, large-scale infrastructural investments including drilling of the production wells, is needed to exploit the reservoir. Production from the Marina discovery could commence over the next 3-4 years depending on the prediction on its commercial viability. Infrastructure investments necessary for the efficient development of the reservoir are estimated above 100 million Euro<sup>27</sup>. According to Gabriel Selischi, member of the OMV Petrom Executive Board, OMV Petrom will continue to invest in infrastructure projects of the offshore segment<sup>28</sup>.

In addition to her natural gas and crude oil potential, Romania comes to the fore as one of the biggest actors in European shale gas sector. According to US Energy Information Agency statistics, Romania was ranked third (1,444 billion cubic meters) in the list of European countries with highest estimated potential of shale gas after Poland (4,190 billion cubic meters) and France (3,879 billion cubic meters)<sup>29</sup>. Most blocks with shale gas potential are located in the eastern part of Romania, adjacent to the border with Ukraine. This area is composed of three sedimentary basins: Carpathian Foreland, Carpathian Foredeep and Moesian Platform<sup>30</sup>.

Many energy firms have been attracted by large shale gas potential of Romania. However, US energy giant Chevron announced on February 2015 its decision to discontinue its shale gas exploration operations in Romania

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<sup>26</sup> "Romania Imported 3.222 Million Tonnes of Oil Equivalent in H1 of the Year", **Act Media**, 20 August 2015, <<http://actmedia.eu/energy-and-environment/romania-imported-3.222-million-tonnes-of-oil-equivalent-in-h1-of-the-year/59573>>, (10 October 2015).

<sup>27</sup> "Romania: OVM Petrom Announces Oil Discovery in the Black Sea", **Energy-pedia News**, July 16 2014, <<http://www.energy-pedia.com/news/romania/new-160200>>, (19 September 2015).

<sup>28</sup> "Petrom Strikes Oil Under Shallow Black Sea Waters", **Agerpress**, 16 July 2014, <<http://www.agerpres.ro/english/2014/07/16/petrom-strikes-oil-under-shallow-black-sea-waters-12-16-47>> (25 September 2015).

<sup>29</sup> Ruxandra Bologa, "The Future of Shale Gas in Romania", <<http://www.nndkp.ro/publications/articles/the-future-of-shale-gas-in-romania>> (5 October 2015).

<sup>30</sup> Mihailescu, **op.cit.**, p. 19.

after massive anti-fracking protests<sup>31</sup>. Elena Mihalache clarifies the reasons behind Chevron's exit as follows: "...Chevron has had to deal with public opposition and outright protests;...mis and dis-information and lack of understanding among public and policymakers about the fracking procedure...; overwhelming bureaucracy and a highly confusing legal procedure when it comes to unconventional gas drilling in the country..."<sup>32</sup>.

While anti-shale gas slogans were instrumentalized by some political parties during the general elections of 2012 in Romania, the government chose to be neutral regarding the issue. Merely think-tanks tried to inform the public, but those think-tanks only had a limited effect on public opinion especially in the rural areas where Chevron was operating. The main reason behind Chevron's decision to exit is the lack of commercial volumes available for extraction with today's technology and economic conditions. Chevron's exit, depending on that reason, can be interpreted as a loss for the country. The move has to be evaluated by the Romanian government and politicians as a case study, by which the requests of international investors such as transparency, speedy resolution of problems, political stability etc. should clearly be identified<sup>33</sup>.

### **Renewable Energy Sources of Romania: Wind and Solar Energy**

As it is known, the consumption of fossil energy resources increases constantly, while the world's known reserves are scant. Because of that imbalance, energy from renewable sources is becoming increasingly important for each country. Romania is not an exception. In the age of globalisation, Romania seeks to maintain a more favourable national energy balance by reducing the share of fossil energy resources in favour of renewable energy sources<sup>34</sup>. According to the Romanian National Action Plan, which was presented to the European Union, at the end of 2020, 24 % of all the energy consumed will be from renewable sources<sup>35</sup>.

<sup>31</sup> "US Chevron Quits Shale Gas Operations in Romania", **Novinite**, 22 February 2015, <<http://www.novinite.com/articles/166718/US+Chevron+Quits+Shale+Gas+Operations+in+Romania>> (12 September 2015).

<sup>32</sup> Anca Elena Mihalache, "No Shale Gas in Eastern Europe, After All: Implications of Chevron's Exit from Romania", **Energypost**, 9 April 2015, <<http://www.energypost.eu/shale-gas-eastern-europe-implications-chevrons-exit-romania/>> (11 October 2015).

<sup>33</sup> **Ibid.**

<sup>34</sup> Lucian Stancila and Alin Cirdei, "Romania's Energy Security in the European Context in the Era of Globalization", **Land Forces Academy Review**, Vol 17, No 3, 2012, pp. 259-260.

<sup>35</sup> Paul Lucian, "Energy for Romania from Renewable Sources", **Studies in Business and Economics**, Vol 7, No 1, 2012, p. 111.

The renewable energy potential of Romania is quite high. According to the statistics of the European Wind Energy Association, in 2011, in Romania 520 MW were installed, in terms of wind parks. In the same year, 9.616 MW were produced in wind parks of the whole European Union. According to the data, Romania ranked seventh in the European Union and first in the region<sup>36</sup>. In Europe, Germany and the United Kingdom are the market leaders in wind power sector and Romania, Italy, Poland and Sweden are the emerging markets, which have made a surprising contribution in the last years<sup>37</sup>. At the end of 2012, cumulative wind power capacity of Romania has reached 1905 MW and the country became the leading actor among emerging markets of Europe. In terms of new installed wind power capacity Romania placed at number five in Europe, after Germany, United Kingdom, Italy and Spain<sup>38</sup>. The total installed wind power capacity in Romania increased by 36.5 % in 2013 compared to 2012 and it ranked 5th in Europe regarding renewable energy investments<sup>39</sup>. As it was seen below, the capacity jumped from 14 MW in 2009 to 2,954 MW at end of 2014, despite relative declines in growth starting from 2013<sup>40</sup>. In 2014, Romania's cumulative wind capacity grew by 354 MW to 2.95 GW, the smallest yearly rise seen since 2010 and below an annual average of about 645 MW in 2011-2013<sup>41</sup>.

<sup>36</sup> *Ibid.*, pp. 111-112.

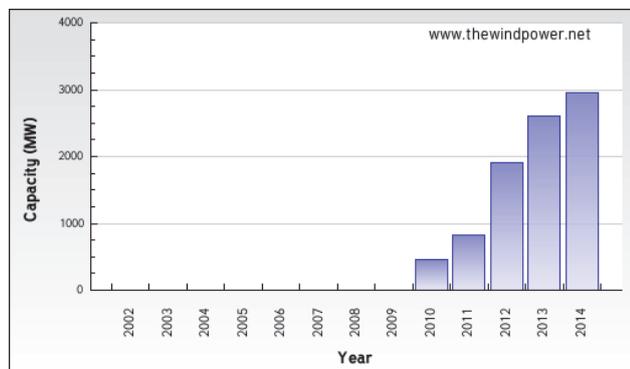
<sup>37</sup> Mădălina Cistina Tocan, "Wind Energy Sector in Romania – Present and Perspectives", *Ecoforum*, Vol 3, No 1-4, 2014, p. 34.

<sup>38</sup> *Ibid.*, p. 36.

<sup>39</sup> "Wind Power and Other Renewable Energy Sources in Romania", *Austrian Energy Agency*, 24 February 2015, <<http://www.enercee.net/detail/artikel/wind-power-and-other-renewable-energy-sources-in-romania.html?pager%5Bpage%5D=5&cHash=a966f7c9fef48a093e5426ecc40041b>> (12 October 2015).

<sup>40</sup> Heather O'Brian, "Analysis: Romanian Developer to Dismantle Now-Unprofitable Project", *Windpower Monthly*, 9 September 2015, <<http://www.windpowermonthly.com/article/1363328/analysis-romanian-developer-dismantle-now-unprofitable-project?bulletin=windpower-weekly>> (15 October 2015).

<sup>41</sup> Heather O'Brian, "Market Status: Romania - Progress Falter as Prices Fall", *Windpower Monthly*, 1 April 2015, <<http://www.windpowermonthly.com/article/1340370/market-status-romania-progress-falters-prices-fall>> (1 October 2015).

**Graphic 1: The Wind Power in Romania**

Source: [http://www.thewindpower.net/country\\_en\\_44\\_romania.php](http://www.thewindpower.net/country_en_44_romania.php).

According to a recent study of Erste Bank, Romania and especially the Dobrogea Region with Constanta and Tulcea countries is the second best place in Europe after Scotland to construct wind farms depending on its vast wind potential<sup>42</sup>. Appropriately, Fantanele-Cogealac Wind Farm, largest coastal wind farm with an installed capacity of 600 MW, was constructed in a 2,700 acre field in the Fantanele and Cogealac municipalities of Constanta County. On 1 June 2010, the first of 240 wind turbine projects was launched and on 21 November 2012, the last wind turbine was connected to the grid by Czech investors. It should be noted that, the farm is now the largest onshore wind farm in Europe and contributes nearly 10 % of the Romanian renewable energy production<sup>43</sup>.

Enel Green Power, one of the leading companies in Romanian renewable energy sector, has announced the construction of several wind farms in Romania, with a total power of 180 MW. Enel already owns farms in Valea Nucarilor, Casimcea si Corugea, Tulcea County, and in the villages of Sfanta Elena and Coronini with a total power of 269 MW. Another company GDF SUEZ Energy has entered the wind energy market, with an investment of 80 million euros in a wind farm at Gemelele, in Braila County with a capacity of 48 MW. In order to reach long-term strategic goals, those sizeable investments on wind energy must be supported by a healthy plan

<sup>42</sup> **Romania-Energy Policy, Laws and Regulations Handbook Volume 1 Strategic Information and Basic Laws**, Washington, International Business Publications, 2015, p. 31.

<sup>43</sup> "Fantanele-Cogealac Wind Farm, Romania" **Power-technology.com**, <<http://www.power-technology.com/projects/-fantanele-cogealac-wind-farm>> (14 October 2015). "Fantanele-Cogealac Wind Park" **Cez Group**, <<http://www.cez.cz/en/power-plants-and-environment/wind-power-plant/fantanele-cegealac-wind-park.html>> (14 October 2015).

that includes the improvement of power grids, dismantlement of old and inefficient power plants, and establishment of a stable legal framework<sup>44</sup>. Investors would easily move out in the absence of those measures. For example, Romanian renewable energy firm Monsson Group is preparing to remove turbines at its 27 MW Targusor wind farm in Constance County as regulatory changes damage their revenue potential. During the different construction stages of this project, legislation changed three times and expected income from the project would now stand at about 45-55 Euro/MWh compared to 120-140 Euro/MWh in 2012<sup>45</sup>.

In 2014, the Romanian government decided to revise its governmental support for renewable power in order to avoid the risk of overcompensating companies and to prevent a further increase of consumer electricity prices. By cutting in half the number of the so-called "green certificates" granted for each megawatt of power produced from wind, Romanian government forced companies that had invested heavily in new generation plants to reconsider their decisions. Therefore companies in Romania need predictability, which in reality they do not possess<sup>46</sup>.

If we look at the geographic location and climate of Romania, we can say that Romania has massive solar potential waiting to be fully utilized. With more than 200 sunny days a year, Romania is eligible for annual energy flow between 1000 and 1300 kWh/sqm/year<sup>47</sup>. In 2013, the country installed more than 1 gigawatt of solar PV (PhotoVoltaic) for the first time ever. With the construction of the PV, Romania became one of the global players in solar energy like Italy, India, Greece and the United Kingdom<sup>48</sup>. Solar power in Romania had an installed capacity of 1,150 MW as the end of 2013<sup>49</sup>. As it was seen at the map below, Romania's leading solar regions are the Black Sea Coast, Dobrogea and Oltenia with an average of 1600 kWh/sqm/year.

<sup>44</sup> Tocan, *op.cit.*, p. 37.

<sup>45</sup> Heather O'Brian, "Analysis: Romanian Developer to Dismantle Now-Unprofitable Project", *Windpower Monthly*, 9 September 2015, <<http://www.windpowermonthly.com/article/1363328/analysis-romanian-developer-dismantle-now-unprofitable-project?bulletin=windpower-weekly>> (15 October 2015).

<sup>46</sup> Andra Timu, "Romania Considers Reviving Support for Renewable Energy" *Bloomberg*, 23 February 2015, <<http://www.bloomberg.com/news/articles/2015-02-23/romania-considers-reviving-support-for-renewable-energy>> (3 August 2015).

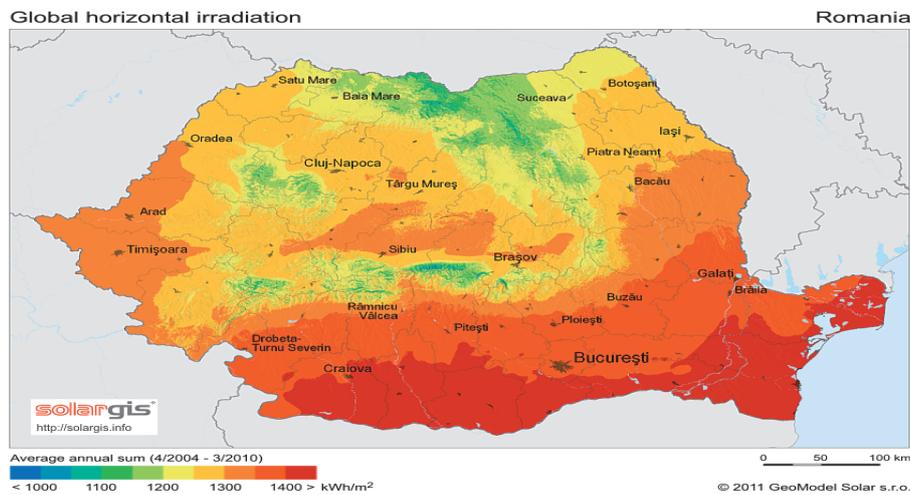
<sup>47</sup> "Romanian Photovoltaic Industry Report", <<http://www.cnecc.org.cn/uploadfile/Solar%20Energy%20in%20Romania.pdf>> (13 October 2015).

<sup>48</sup> Scott Moskowitz and Adam James, "How Romania Became a Gigawatt-Scale Solar Market and What's Next", *gtm*, 24 March 2014, <http://www.greentechmedia.com/articles/read/how-romania-became-a-1-gigawatt-market> (1 September 2015).

<sup>49</sup> "Solar Power Capacity - Romania", <[https://www.quandl.com/data/BP/SOLAR\\_CAP\\_ROU-Solar-Power-Capacity-Romania](https://www.quandl.com/data/BP/SOLAR_CAP_ROU-Solar-Power-Capacity-Romania)> (19 October 2015).

On the other hand, the European Bank for Reconstruction and Development (EBRD) lend a leader firm in the renewable energy sector - Spain's EDP Renovaveis - 20 million euro to construct and run six solar photovoltaic parks generating a total of 50 MW in the southern Romanian region of Oltenia. Black Sea Trade and Development Bank also provided a parallel facility costing 10 million euro in 2014<sup>50</sup>. So, despite recent cuts to the country's solar incentives, EDP Renovaveis has secured 30 million euro in project finance for 50 MW of Romanian PV<sup>51</sup>.

### Map 3: Solar Potential in Romania



Source: [http://solargis.info/doc/\\_pics/freemaps/1000px/ghi/SolarGIS-Solar-map-Romania-en.png](http://solargis.info/doc/_pics/freemaps/1000px/ghi/SolarGIS-Solar-map-Romania-en.png)

Romania, with miscellaneous energy sources, has implemented energy efficiency programs and therefore its potential for rising energy power of Europe strengthened. In this context, the Romanian Law on Energy Efficiency was issued in 2014 to increase energy efficiency in the country, with the intention of reducing the consumption of energy by 19 % by 2020. According to this law, the business operators are obliged to arrange and submit to the Energy Efficiency Department a statement of their total energy

<sup>50</sup> Marian Chiriac, "EBRD Finances Solar Project in Romania", **Balkan Insight**, 28 March 2014, <<http://www.balkaninsight.com/en/article/ebdr-finances-solar-project-in-romania>> (8 September 2015).

<sup>51</sup> Lucy Woods, "Romania Solar Still Attracting Despite Green Certificate Cut" **PVTECH**, 31 March 2014, <[http://www.pv-tech.org/news/romania\\_solar\\_still\\_attracting\\_investment\\_despite\\_green\\_certificate\\_cut](http://www.pv-tech.org/news/romania_solar_still_attracting_investment_despite_green_certificate_cut)> (18 September 2015).

consumption every year. Business operators that annually consume more than 1,000 tones of oil equivalent and fail to perform an energy audit every four years are subject to high fines ranging between 2,250 and 45,000 Euro. According to the article 6 of the law, in order to ensure the energy efficiency, 3 % of the overall surface area of the public administration buildings must be renovated annually<sup>52</sup>. The law also involves effective policy measures including a fund for energy efficiency, independent energy audits, consumer advice programmes, and regulations or voluntary agreements<sup>53</sup>.

### **Romania: An Influential Energy Transit State**

Romania will be able to take an active role in European future energy policy formulations not only as a supplier, but also as an energy transit state. Through the AGRI (Azerbaijan-Georgia-Romania Interconnector) Project, Romania could become the EU's leading energy player in the region, becoming a terminal country for Caspian hydrocarbons transit to Central Europe. The AGRI Project, the first liquefied natural gas (LNG) project of the Black Sea, was developed by Azerbaijan in a response to Ankara's new "Russia policy" and Turkish-Armenian Rapproachment process of 2009<sup>54</sup>. Azerbaijan, Romania and Georgia signed an agreement in April 2010 to transport LNG from Azerbaijan to the EU through Georgia and Romania bypassing Turkey. Within the scope of the project, Azerbaijan's natural gas would be liquified at the Georgian port of Kulevi, shipped across the Black Sea, and regasified at the Romanian port of Constanta<sup>55</sup>.

<sup>52</sup> "Romania: Energy Efficiency Novelties Can Revive Investments In the Energy Sector" **Schoenherr**, <[http://www.schoenherr.eu/uploads/tx\\_news/schoenherr\\_RO\\_Articol\\_legea\\_nr\\_121.pdf](http://www.schoenherr.eu/uploads/tx_news/schoenherr_RO_Articol_legea_nr_121.pdf)> (16 October 2015).

<sup>53</sup> "WEC Romania Event Highlights National Energy Efficiency", **World Energy Council**, <<https://www.worldenergy.org/news-and-media/local-news/wec-romania-event-highlights-national-energy-efficiency/>> (03 October 2015).

<sup>54</sup> Alin-Doru Codoban, "Romania: A New Geopolitical Actor in the Black Sea Energy Game", **Karadeniz Arařtırmaları**, Vol 9, No 34, 2012, p. 6.

<sup>55</sup> Michael Ratner et al., "Europe's Energy Security: Options and Challenges to Natural Gas Supply Diversification", **CRS Report for Congress**, 20 August 2013, <<https://www.fas.org/sgp/crs/row/R42405.pdf> 1-29> (19 October 2015), pp. 14-15.

**Map 4: AGRI Project**

Source: <http://www.novinite.com/articles/125268/Hungary+Lured+into+AGRI+Natural+Gas+Pipeline+Project>.

Preliminary estimates show that, depending on possible capacities of terminals, the cost of the project will vary from 1.2 billion euros to 4.5 billion euros<sup>56</sup>. On the other hand, compared to other planned means of transporting Caspian gas to Europe, AGRI may be regarded as a commercially viable project. For example, in order to transport 16 bcm of gas at the first stage, the Southern Gas Corridor's (SGC) total cost would be \$ 25 billion - \$ 27 billion. For similar gas volumes, the cost of the AGRI Project would be only \$ 9 billion<sup>57</sup>.

<sup>56</sup> "AGRI Project's Implementation Mainly Depends on Azerbaijan, Says Georgian Minister", **Trend News Agency**, 14 February 2015, <<http://en.trend.az/business/economy/2364257.html>> (8 September 2015).

<sup>57</sup> Gulmira Rzayeva, "Why is AGRI Back on Europe's Energy Security Agenda?" **Eurasia Daily Monitor**, Vol 12, No 132, 15 July 2015, <[http://www.jamestown.org/%20regions/thecaucasus/single/?tx\\_ttnews%5Btt\\_news%5D=44163&tx\\_ttnews%5BbackPid%5D=54&cHash=89f48f8ded340318d86bba45e2a926ee#.ViePBH7hDIV](http://www.jamestown.org/%20regions/thecaucasus/single/?tx_ttnews%5Btt_news%5D=44163&tx_ttnews%5BbackPid%5D=54&cHash=89f48f8ded340318d86bba45e2a926ee#.ViePBH7hDIV)> (15 October 2015).

The primary project founders of AGRI were Romania, Georgia and Azerbaijan. In September 2011 a Hungarian company also joined the project. Moreover Bulgaria, which signed a compressed natural gas agreement with Azerbaijan, is also discussing the idea of becoming an AGRI partner<sup>58</sup>. With an increase in AGRI's system capacity, Turkmen LNG could also be added to the network. Turkmen LNG support for the AGRI system would become a priority for Brussel's and Baku's long term strategic interests, because Azerbaijan's existing gas reserves will be depleted in 40 years if current exploitation trends continue<sup>59</sup>. Turkmen President Gurbanguly Berdymukhamedov also declared Turkmenistan government's determination to join the project during his visit to Romania in May 2011. However, it is not clear whether Turkmenistan will be a part of AGRI or not<sup>60</sup>.

AGRI Project, which aims to transfer Azerbaijani gas and, in the future, gas from Turkmenistan to Romania and Hungary through Georgia, was at the center of attention of regional decision makers in summer 2015. An AGRI Ministerial Meeting was held in Bucharest on 24 June 2015 and during this meeting member states' ministers of energy signed a joint declaration on supporting the development of the AGRI Project<sup>61</sup>. At the end of the meeting, Romanian Energy Minister Andrei Gerea stated that AGRI member states regard AGRI Project as a component of the SGC that may make an important contribution to the European energy security<sup>62</sup>.

SGC, aimed at improving the security and diversity of the EU's energy supply by transferring Caspian natural gas to Europe, is comprised of three pipeline projects namely South Caucasus Pipeline (SCP), Trans Anatolian Pipeline (TANAP) and Trans Adriatic Pipeline (TAP). By those pipelines, SGC transfers Caspian gas through Turkey. From a strategic perspective, the

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<sup>58</sup> Codoban, *op.cit.*, p. 6.

<sup>59</sup> Michael Tanchum, "AGRI's Progress Advances Brussels' and Baku's Energy Agendas", **The Central Asia-Caucasus Analyst**, 8 July 2015, <<http://www.cacianalyst.org/publications/analytical-articles/item/13246-agri-progress-advances-brussels-baku-energy-agendas.html>> (4 October 2015).

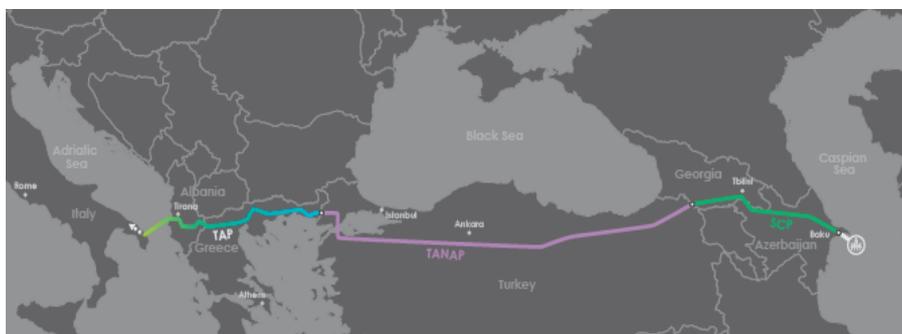
<sup>60</sup> "Azerbaijan to Revive LNG Export Project to EU", <<http://www.naturalgaseurope.com/azerbaijan-revive-lng-export-project-eu>> (15 October 2015).

<sup>61</sup> Azad Hasanli, "AGRI Project Member Countries Ink Joint Declaration", **Trend News Agency**, 24 June 2015, <<http://en.trend.az/business/energy/2410502.html>> (17 October 2015).

<sup>62</sup> "Romania: AGRI Project Feasibility Study Highlights Two Viable Capacity Alternatives", **Energyworld**, 25 June 2015, <<http://www.energyworldmag.com/25/06/2015/romania-agri-project-feasibility-study-highlights-two-viable-capacity-alternatives>>, (9 September 2015).

EU attaches great importance to the AGRI Project, because it offers not only diversification from Russian supply, but also from Turkish gas route<sup>63</sup>. In other words, AGRI could be viewed as the only project which decreases the dependence on a single pipeline system or one transit country. Furthermore, unlike SGC; non-Shah Deniz gas of Azerbaijan such as Absheron, Azeri-Chirag-Guneshli and Umid/Babek should be potential sources for the AGRI project<sup>64</sup>.

### Map 5: SGC Project



Source: <http://www.tap-ag.com/the-pipeline/the-big-picture/southern-gas-corridor>.

However, beside the advantages of AGRI Project in comparison with SGC, there are some difficulties to carry out this project. Firstly, Azeri supply will not be sufficient on the medium term for AGRI as well as for TANAP-TAP route. Secondly, at current levels of technological development, LNG construction costs are much more than those of pipelines. This means in terms of price, LNG will be uncompetitive especially compared to Russian piped gas. Last but not least, Russian encroachment on Georgian territory threatens the gas pipeline infrastructure<sup>65</sup>. Georgian port of Kulevi is near Abkhazia – a Russia-backed partially recognized state inside Georgia. Russian influence in Abkhazia can be used by Russia to put pressure on the AGRI Project<sup>66</sup>.

<sup>63</sup> “Making Sense of AGRI’s Future”, **Naturalgaseurope.com**, 27 July 2015, <<http://www.naturalgaseurope.com/making-sense-of-agri-future-24782>> (15 October 2015).

<sup>64</sup> Rzayeva, **op.cit.**

<sup>65</sup> “Making Sense of AGRI’s Future”, **Naturalgaseurope.com**, 27 July 2015, <<http://www.naturalgaseurope.com/making-sense-of-agri-future-24782>> (15 October 2015).

<sup>66</sup> László Marác, “The Strategic Relevance of AGRI in Europe’s Southern Gas Corridor” **Karadeniz Arařtırmaları**, No 28, 2011, p. 25.

### Conclusion

Romania, with her huge energy capacity and location on energy transit routes towards Europe, should be defined as a potential key contributor to the solution of the EU's energy security issue. Considering the recent discoveries in the Black Sea, it can be expected that, Romania will enrich its natural gas and oil resources. Moreover, Romania's high rank at the list of shale gas and wind energy in Europe becomes another factor in increasing its strategic role in European energy calculations. But due to some deficiencies, the activation of this potential will be delayed. The need of large infrastructure investments for getting Black Sea sources, the inadequacy of pipeline network which is necessary in exporting Black Sea sources to Europe, high costs of fracking and the lack of transparency and notification, and the deficiency of a stable legal arrangement that can provide the persistence of the investments in wind energy sector restrain Romanian potential as a supplier.

On the other hand, Romania should easily become an effective and reliable transit country thanks to the AGRI Project. Bypassing Russia as a supplier and Turkey as a transit state, this project is significant for the consolidation of Romania's role as a regional energy hub. AGRI project aims at transferring Azeri gas to Europe from a terminal in Romania via Georgia and Black Sea. However, considering the inefficient capacity of the Azeri gas, the project must be supplemented with additional quantities of Turkmen and Iranian gas to be economically feasible. Moreover, high construction costs of LNG systems and the Russian influence in Georgia decreases the possibility of the project's operation in the short run. In this context, any decrease in the level of ambiguity of the project will shape the Romania's future as an energy hub.

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