ASSESSING ROMANIA'S ENERGY POLICY IN THE CONTEXT OF A **GREEN EUROPE**

Alexandru **MAXIM**
"Alexandru Ioan Cuza" University of Iaşi, Romania
alexandrumaxim@outlook.com

Abstract: *Over the last decade, the World has shown increased concern for climate change and energy security. The emergence of these issues has pushed many nations to pursue the development of clean domestic electricity production via renewable energy (RE) technologies. RE development has generally been a top priority for the EU. The climate and energy legislative package, which was adopted just a few years ago, is already having a significant impact on the way in which the energy policies of member states are evolving, especially with regard to RE. The current paper aims to provide a review of energy regulations and RE support mechanisms specific to the EU and to place the recent changes in the Romanian energy policies within this context. The paper will also provide an outlook regarding the future of the EU and Romanian regulations based on a previous study of industry experts' points of view and on recent announcements and press releases made by the Romanian Government. We will also address some of the implications of the EU's energy legislation with regard to its fossil fuel suppliers. The results of this assessment will provide a reference for future research regarding the European and Romanian energy sector and will indirectly outline the expected evolution of the industry.*

Keywords: energy policy, EU, Romania, renewable energy, green certificates.

INTRODUCTION

For more than a hundred years, the development of humanity has been tightly intertwined with that of the energy industry. If the energy sector completely ceased to function, the world would return to the status quo of the nineteenth century and most of the knowledge gained by our society over the last hundred years would become useless or lost. A severe disruption in the energy supply at a national level would paralyze most economic activity within the affected country. This is why the stability of the energy sector is considered to be of strategic importance for the governing authorities across the world. However, as our need for energy increased over time, so did the impact that the energy sector has on human health and the environment. The emergence of these issues has pushed many nations to pursue the development of clean domestic electricity production via renewable energy (RE) technologies, as a satisfactory means to increase energy independence and to reduce ecological and health issues associated with unsustainable industrial development.

However, in an age of liberalized energy sectors, the government cannot simply dictate the direction in which the industry evolves. State run monopolies have been progressively replaced by energy companies operating in markets based on the principle of free enterprise and competition. Since such business is primarily motivated by financial gain, if governmental authorities wish to shape the industry according to a long term vision, they need to provide a regulatory framework which stimulates investors to pursue a certain direction when entering or expanding within the sector. However, due to their potential impact on the economic stability, unemployment, inflation and even international relations, the regulations that affect the energy industry are generally much broader and complex than those specific to other industrial sectors.

There are several methods that can be used to classify energy regulations. If we look at the effects of their implementation, they can be categorized into hard and soft (Attari et al., 2009). However, the most straightforward classification is based on geographical coverage: international (global or regional) and national. National regulations can be more easily constructed and implemented, even though they do need to conform to any restrictions imposed by international guidelines (e.g. regarding the control of nuclear proliferation or CO_2 emissions). However, establishing energy regulations that are accepted and implemented internationally requires numerous high level meetings and intense negotiations, as well as ample feasibility and impact studies regarding their implementation. This translates to a significant effort from all parties involved, which can be further amplified by the number of countries taking part in the discussion.

Likely the most significant and best known project of this kind was the Kyoto Protocol of the UN Framework Convention on Climate Change, which entered into effect in 2005. This was an agreement among 37 industrialized stated and the members of the European Community, through which developed nations committed themselves to a 5% reduction of their greenhouse gas emissions (GHG) – to which the energy sector is the biggest contributor (Eurostat, 2013) – compared to the levels recorded in 1990, by the end of 2012. Although most developing nations were also signatories of the Protocol, they did not have an emission reduction target since, historically speaking, the main polluters of the environment have been industrialized states. It is worth mentioning that the United States did not ratify the Protocol (United Nations, 1998).

The Kyoto Protocol also offers a good example of how difficult it is to reach a global consensus even on issues such as environmental protection. As a result of repeated failures in establishing a successor for the Kyoto Protocol, in December 2012, the Doha Amendment was adopted. This new agreement extended the validity of the Kyoto Protocol, established new GHG reduction targets and extended the list of restricted emissions to include other pollutants. However, several countries, which had previously signed the 1998 Protocol, did not agree with the new terms, so the

Doha Amendment also states that a replacement for the Kyoto Protocol should be outlined by 2015 (United Nations, 2012).

The current paper aims to provide a review of energy regulations and RE support mechanisms specific to the EU and to place the recent changes in the Romanian energy policies within this context. The paper will also provide an outlook regarding the future of energy regulations.

The first section will address the EU energy policies, focusing primarily on the "climate and energy package" also known as the EU 20-20-20 targets. Section two will provide an assessment of the current regulatory environment of the Romanian energy sector. Section three will offer an outlook regarding the future of the EU and Romanian energy policies, based on a previous study of industry experts' points of view and on recent announcements and press releases made by the Romanian Government. The final section will provide some general conclusions and will also attempt to delve into the overall implications of the EU policies with regard to its suppliers of fossil fuels for conventional energy production.

1. GREEN EUROPE – ENERGY POLICIES OF THE EUROPEAN UNION

European states have a tradition in supporting innovation within the fields of domestic clean energy and energy efficiency, being mainly motivated by the need for environmental protection and by their dependence on fuel imports. Several regional agreements and even the EU wide regulations have been implemented within the energy sector. One example is the Large Combustion Plant Directive (LCPD) issued in October 2001.

The LCPD is a directive of the European Parliament and the European Council through which a limit is imposed on the amount of sulfur dioxide, nitrogen oxides and dust particles that can be released into the atmosphere by large combustion plants with a thermal capacity of above 50 MW. The substances mentioned above create high risks to human health, to farmland (increasing the soil acidity and damaging crops) and to ecosystems (DEFRA, 2012). The generating units under the incidence of the LCPD would have to invest in upgrading their equipment in order to reduce pollution or would need to limit their yearly running time and eventually cease all operation by 2016 (European Parliament & The Council of the European Union, 2001).

In March 2007, the EU leaders approved an integrated approach of the climate and energy fields, with the purpose of increasing the energy security and efficiency of the region and, in parallel, to combat climate change. The three goals set for Europe were the limitation of dependence on imported fuels, the increase of efficiency in the use of energy and the decrease of CO_2 emissions. These plans were integrated within the 20-20-20 targets of the energy and climate legislative package. The targets represent three objectives that the EU has established for the year 2020 (European Commission, 2013a):

- reduce the GHG emissions within the EU by at least 20% compared to the year 1990
- increase the penetration of renewable energy to at least 20% of total consumption
- reduce the overall energy consumption by 20% compared to initial estimates by improving energy efficiency

Reaching these objectives would be done not just through individual investment efforts by member states or companies, but also with the support of the EU's "Emissions Trading System" (ETS), a form of "carbon market" inspired by the Kyoto Protocol's flexibility mechanisms, which allowed underperforming signatory states to increase their CO_2 cap by purchasing emission rights from countries which had surpassed their GHG reduction target. Similarly, the ETS allows for the trade of emission allowances among various CO_2 generators including power plants, factories or even airlines (European Commission, 2013b).

As a result of the RE targets imposed by the climate and energy package, the EU member states needed to provide incentive schemes that encourage investors to pursue the development of the RE projects. These schemes are commonly referred to as support mechanisms. The most frequently used types of support mechanisms are feed-in tariffs (FIT) and tradable green certificates (TGC). TGCs are usually also coupled with a renewable obligation or quota (sometimes called a Renewable Portfolio Standard). The main similarity between the two is that they both provide RE producers with a direct financial incentive per unit of electricity. TGC systems generally state that for every unit of electricity delivered into the grid (thus excluding internal consumption), the generator should receive a certain number of green certificates, depending on a series of factors, such as RE technology type. These certificates can then be sold to energy suppliers, usually via a competitive market. In order to create the demand for TGCs, the regulator imposes a quota on how much RE (and implicitly TGCs) each supplier must acquire or else face penalties. FIT systems are less complicated: each RE generator receives a direct payment (tariff) for each unit of electricity delivered into the grid, based on a predetermined calculation criterion. In some cases, an additional payment is provided for electricity that has been produced and used internally by the generator (Feed-In Tariffs, 2013).

Most countries worldwide and also at a European level are currently using FIT support mechanisms. TGCs are also widely used, however not as frequently. Generally, countries tend to combine several mechanisms in their national RE support policy (e.g. FIT, TGC, government grants etc.) (REN21, 2012). As previous research has shown, the choice between FIT and TGC can be difficult and somewhat controversial (Falconett & Nagasaka, 2010; Haas et al., 2011; Ringel, 2006) since both mechanisms have advantages and disadvantages.

FIT are more adequate for a rapid RE growth objective, since the electricity produced is sometimes measured in smaller units (kWh as opposed to the MWh used in several TGC systems) and the payment is made directly to the generator.

Thus, it encourages non-specialized agents to invest in RE (households, farmers, companies with real-estate properties etc.). In addition, FIT systems are less costly to implement and manage, compared to TGC. However, when a large number of small generators emerge (a scenario labeled as "distributed generation"), this creates issues regarding grid management and development. Moreover, researchers have determined that the fixed price FIT can have a reduced economic efficiency (Ringel, 2006).

Since TGC mechanisms are more complex, their implementation is more difficult. In addition, overall participation in the scheme tends to be lower than in the case of FIT, which means that the growth rate of RE will be reduced. However, the fact that TGCs have a flexible price, which is established through a competitive market, means that there is a lower discrepancy between what level of incentive is attractive for investors and what the cost of the support mechanism actually is. Moreover, TGCs allow the governing authority to have more control over the actual increase in RE production through the above mentioned quota (Ringel, 2006).

Although FIT based policies are more efficient in promoting the development of RE, the higher costs that such policies could generate may constitute a problem, especially in the context of a financially challenged European Union. Going forward, it seems likely that TGCs will be included, in various forms, in the energy policies of EU member states, since the implementation of a single European electricity market would be problematic without a standardization of RE support mechanisms (Haas et al., 2011; Ringel, 2006).

2. ROMANIAN ENERGY POLICIES

Romanian energy policies are compatible to the general legislative framework that exists in the European Union. Firstly, we will present the more general aspects of liberalization and deregulation of the Romanian energy sector before referring to the specific regulations regarding RE incentives.

The liberalization process began between the years 1998 and 2000 with the adoption of several laws and governmental decisions that focused on three principal areas (ANRE, 2013d):

- breaking up the state run monopoly over the energy sector and replacing it with several smaller companies, grouped around the main components of the industry's value chain (production, transmission, distribution and supply)
- creating a legal framework that defines the principles and rules that allow various agents within the energy sector to sell and purchase electricity
- establishing a system and a set of rules that will allow consumers to freely choose the company that will supply them with electricity.

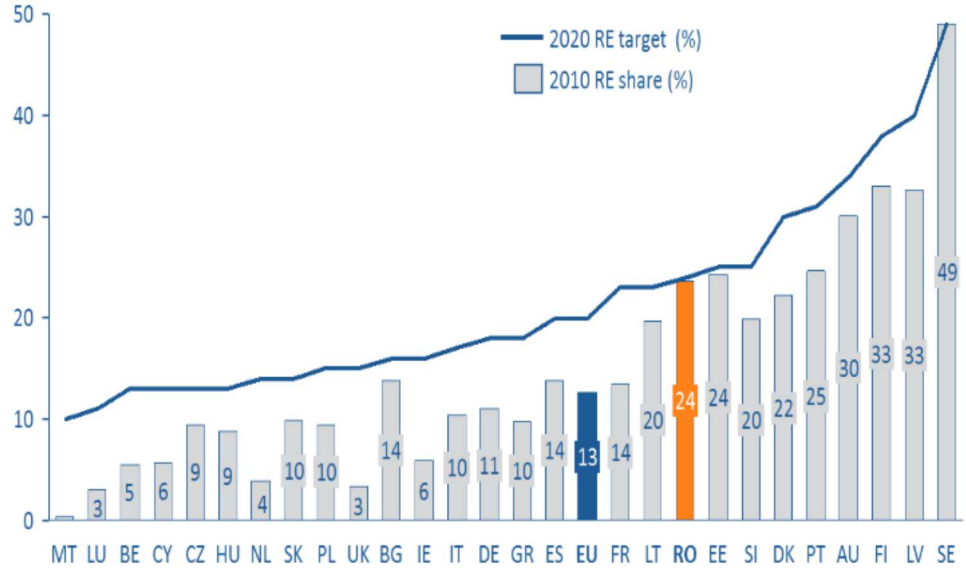
Since June 2007, all Romanian end users are able to opt for the supplier of their choice based on price plans, energy mix or any other specific preference. The electricity market is split into two branches (wholesale and retail) and both are supervised by the subsidiaries of the state run transmission and system operator Transelectrica SA and are regulated by the National Authority for Energy Regulation (ANRE).

A more recent development in the Romanian energy policy is the deregulation or elimination of regulated electricity tariffs. Until recently, any retail consumers who had not switched suppliers would be sold electricity at a fixed tariff established by ANRE. Starting with September 2012 for companies and with July 2013 for households, this regulated price will be gradually phased out and replaced with a new tariff, which is calculated based on the average price at which suppliers acquire electricity on the wholesale market, to which a series of standard costs are added, plus a 2.5% margin over the acquisition price (ANRE, 2012c).

One cannot say with certainty whether the elimination of regulated tariffs will lead to a rise or fall in the price paid by the end users in the short term. However, in the long term, this process should bring the final cost of electricity to the lowest level considered feasible by suppliers and by the other players in the wholesale market (Ivan & Nuţu, 2013). Still, experience has shown that a significant and sudden rise in energy prices for household consumers can generate civil unrest and ample protests (Euronews, 2013). Thus, it will be imperative to insure a good transparency with regard to how tariffs are calculated and to provide ample information campaigns for consumers regarding the deregulation and liberalization processes.

There are several purposes for deregulating sales prices in the Romanian energy sector, which reflect a series of advantages both for consumers and suppliers. End users will become more aware of the competitive market and they will also be able to assess the performance of their electricity supplier with regard to prices and services and then compare it with that of other companies in the market. The sellers will also benefit from the deregulation process through a reduction of their financial risk, since tariffs will be calculated based on actual electricity acquisition prices, following the actual cost structure of the retailers. Finally, the gradual phase-in of competitive tariffs is meant to protect costumers from sudden price variations which could arise from differences between regulated and competitive tariffs (ANRE, 2013c).

Figure 1. EU member state progress toward 2020 targets for RE share in total consumption



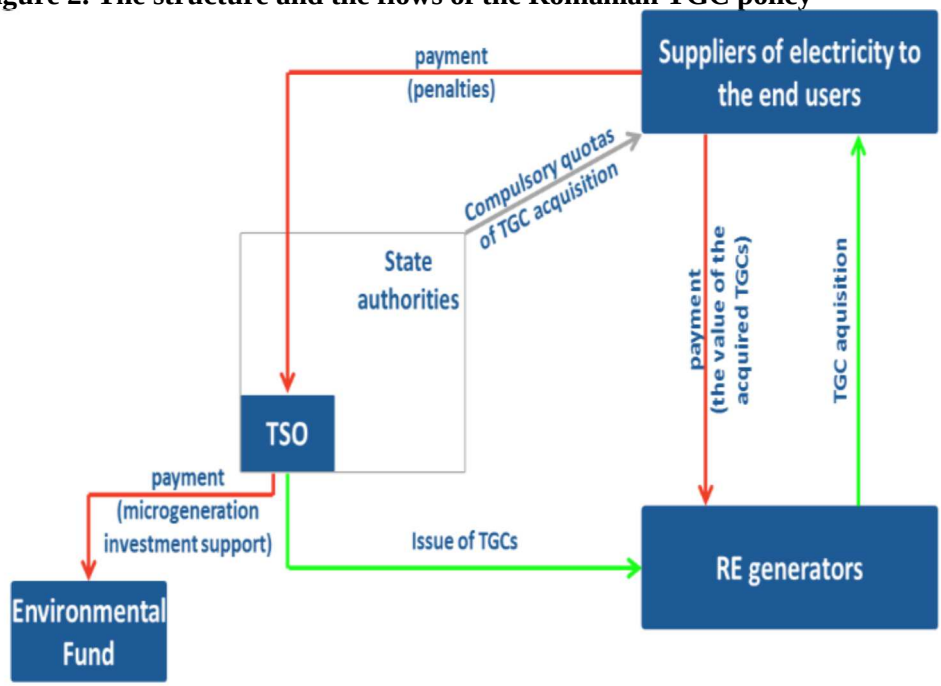
Adapted from: European Commission (2013c)

In order to understand the motivation behind Romania's choice of RE support mechanisms, we need to consider the advantages and disadvantages of the two main options (FIT and TGCs) as they were presented in the previous section. It was mentioned that FIT systems lead to a faster development of RE, but they can have a lower economic efficiency and they can create the need for significant investment in the grid infrastructure because of distributed generation. Thus, countries which are not necessarily seeking a rapid development of RE or which are not ready to invest in the grid development are likely to opt for TGCs instead of FIT, in order to encourage a more steady and controlled growth of RE mainly through large scale power generation projects. This has been the case of countries such as Belgium, Sweden, Norway and Poland. As it is the case for Belgium and Sweden, Romania was already close to reaching its 2020 RE share target at the end of 2010 (see figure 1), thus making the need to speed up the development of RE less imperative, while countries that are further away from reaching their targets, such as the United Kingdom or the Netherlands, have opted for a combination of several support policies, including FIT and TGCs (REN21, 2012).

The Romanian legislation regarding the promotion of RE production has seen a series of modifications over the years and, as a result, its implementation was postponed from 2008 (when the first relevant law was written) until 2011 – 2012 (when the last of the necessary laws and regulations were published) (ANRE,

2013a). The main reason for these delays was the rejection of the initial legislation by the European Commission due to the overcompensation it would have created for beneficiaries of the support mechanism (compared to other EU states) (ANRE, 2012b). In their final form, the policies establish a system that includes a market for green certificates and a methodology of awarding TGCs to RE generators (figure 2).

Figure 2. The structure and the flows of the Romanian TGC policy



Adapted from: ANRE (2012b)

As it can be seen in figure 2, the TGC system is administered by the Transmission and System Operator (TSO), Transelectrica SA, which issues certificates to RE generators. These certificates then have to be purchased by suppliers on the TGC market, depending on the imposed acquisition quotas established by the state authorities. However, the price of the TGCs on the market has an established floor cap of 27 EUR and also a ceiling cap of 55 EUR, both of which are indexed on a yearly basis with the inflation rate of the Eurozone, as reported by Eurostat (ANRE, 2012b). After the purchase, suppliers are allowed to transfer the cost of TGC acquisition towards the end users who are the ones ultimately supporting the entire RE policy.

Table 1 illustrates the specific period and amount of certificates which are awarded based on the technology category and the unit type. The differences are

generally motivated by the varied production and investment costs of the various categories of power plants. It should be noted that no certificates are awarded in the following instances:

- electricity produced from imported industrial/municipal waste or biomass
- electricity produced in hydroelectric plants which are part of a pumped storage application
- electricity produced in co-fired plants (usually using coal and biomass), if the proportion of conventional fuel is higher than 10% of the total combustion material
- electricity used for the internal consumption of the power plant.

Table 1. The Romanian system for awarding TGCs

RE source category	*Unit type*	*TGCs awarded per MWh*	*Period (yrs.)*
Hydroelectric (installed capacity ≤ 10 MW)	new (operational from Jan-04)	3 TGCs	15
	restored/upgraded	2 TGCs	10
	other (operating before Jan-04)	0.5 TGCs	3
Wind	*new*	2 TGCs until 2017 1 TGC from 2018	15
	reutilized	2 TGCs until 2017 1 TGC from 2018	7
Geothermal	*new*	2 TGCs	15
Biomass	*new* (all types of bio waste)	2 TGCs	15
	new (from energy crops)	3 TGCs	15
	high efficiency cogeneration	1 extra TGC	15
Fermentation gas (waste /water processing mud)	new	1 TGC	15
Solar	new	6 TGCs	15

Adapted from: ANRE (2012b)

It is also worth mentioning that Romania also offers a stimulus for high efficiency cogeneration (heat and electricity) producers. The mechanism resembles a FIT system, awarding a bonus to each generator based on a specific methodology. As with the TGCs, the cost of the cogeneration stimulus is supported by the end users (ANRE, 2012a).

The information presented in this section is valid as of April 2013. However, the Romanian Government has recently announced that it wishes to review and modify both the TGC and the cogeneration support mechanisms mainly due to the rising cost of electricity bills, but also due to certain inefficiencies which were observed over the last few years. This will constitute part of the focus of the following section, which aims to provide an outlook for the Romanian energy regulations and for the overall European policies.

3. AN OUTLOOK FOR THE EU AND ROMANIAN ENERGY POLICIES

Previous research has shown that support mechanisms and related policies are necessary in order to insure the continued development of RE technologies (Maxim, Thoma, & Vlassopoulos, 2011). The same general conclusion is also illustrated in the IEA's World Energy Outlook 2012 (IEA, 2012). Thus, it is important to understand how these policies and regulations will evolve in the coming years, given that they will determine the manner in which the energy sector will develop.

In order to gain some insights into this subject, an exploratory study was undertaken in 2011, when several energy industry experts (most of whom represented large commercial organizations active in the European electricity sector) were invited to take part in in-depth interviews. In the end, we recorded the opinions of six specialists on five major issues considered relevant to the future of regulations in this industry (Maxim, 2011). The results of the study are summarized in figure 3.

Figure 3. Medium and long term outlook regarding energy regulations

Issue	Likelyhood	Comments
Successor for the Kyoto Protocol		No clear arrangement, but multilateral agreements among the top CO_2 emitters are likely
Contingency regulations for reaching EU 2020 targets		Reaching 2020 targets is a domestic responsibility. EU wide contingency regulations are not likely to develop
EU will impose new, more strict regulations after 2020		A general roadmap to 2050 is being discussed. Milestones (2025, 2030...) not settled, but requirements are likely to become stricter
"Free market" approach to renewables		Pressure may rise from those affected by higher electricity costs. Total renewables support budget is likely to remain constant
New regulations will be non-GHG focused		Will likely focus on smart grid, electric vehicles, thermal rating for buildings, overcoming intermittent generation and other

Adapted from: Maxim (2011)

As illustrated in figure 3, regarding the succession of the Kyoto Protocol, the experts concluded that a series of direct multilateral agreements among the main global polluters is more likely to emerge. This was somewhat confirmed by the partial failure to prolong the Kyoto Protocol with the Doha Amendment at the end of 2012.

With regard to the ever increasing probability that some states will not reach their 2020 targets for RE share, the interviewees generally agreed that the issuance of additional EU wide contingency regulations is unlikely, especially given the difficult economic situation of several member states. Reaching the 2020 targets is considered to be a national responsibility and it is expected that most countries will make an effort to compensate for any lagging by adjusting their internal policies, in order to avoid any supplementary pressure from Brussels.

It is expected that in the post-2020 period, regulations will become more strict – a necessary measure, given that IEA estimates for 2035 show an increase in global average temperature by 3.6 °C, caused by continual growth in GHG emissions (IEA, 2012). Even some developing states (which are expected to be the source of most GHG emissions increase over the coming decades) are displaying intentions to reduce pollution, even at the expense of reducing the pace of economic growth (Grammaticas, 2013).

The experts also agreed that the ER development could not continue in the absence of support mechanisms and regulations. It is to be expected that the current trends to finance and promote these energy sources will remain stable in the foreseeable future.

Finally, as it is also evident from the additions brought to the Kyoto Protocol in 2012, the experts considered that, the future will bring more regulations that deal with aspects of the energy sector other than GHG emission reduction. These could refer to increases in energy efficiency and grid stability or the promotion of new technologies such as smart grids and electric vehicles.

Over the last few years, Romanian energy policies in the field of RE have gone through many revisions and transformations. The end result was the TGC system which was presented in the previous section. However, after nearly two years of experience with RE support mechanisms, ANRE, the Romanian energy regulation authority, published a report which announced the start of another turbulent period in the area of RE policies. The document included a cost-benefit analysis of the energy sector, which concluded that, in order to avoid the overcompensation of RE generators, the number of green certificates to be awarded should be reduced by 50% in the case of solar energy, by approximately 25% for small hydroelectric plants and by 25% - 35% for wind energy (ANRE, 2013b) – a measure which would apply for new investors in the sector. The findings published in this report coupled with the noticeable rise in electricity prices, partly due to TGCs, prompted the Romanian Government to seek the "suspension" of the RE support mechanism, meaning that companies which have already invested in RE could see the number of TGCs

awarded to them reduced by up to 30% in the period 1st July 2013 – 31st December 2016, prompting a clear reaction from some energy investors (Popescu, 2013). One proposal is that the "suspended" TGCs could be awarded to the state owned TSO to support investments in grid infrastructure (a necessary step given the complications associated with distributed generation and the significant concentration of RE in the South-East of Romania) (Dan, 2013b). Since the financial difficulties affecting many European states have resulted in revisions to RE support mechanisms in other EU countries in the past, some RE investment specialists believe that such a measure would have a bigger impact on speculators than on serious investors, who will not be significantly discouraged by the policy revision (Popescu, 2013).

These changes are not expected to be the only ones affecting the Romanian energy policies. The Government has also announced that it will seek to change the rules of priority access to the grid in order to protect conventional energy generators. Specifically, electricity from some steam turbines will have priority over renewable energy in order to reduce the severe inefficiencies resulting from repeated start-up and shut-down of conventional power plants caused by intermittent RE flows (Pirvoiu & Pantazi, 2013).

Finally, another change which is to be expected in the Romanian energy policies, is a revision of the high efficiency cogeneration support mechanism. The ANRE is currently performing an assessment after which it will seek to modify the methodology for qualification and award of the cogeneration bonuses in order to avoid certain companies exploiting the system (Dan, 2013a).

CONCLUSION AND IMPLICATIONS

It seems clear that the long term goal of the EU is to become "greener". In terms of energy policy, this will mean continued focus on RE development and a gradual reduction of reliance on fossil fuels. However, the Russian gas giant Gazprom has repeatedly argued that gas can be a less expensive low carbon alternative to RE (Interfax, 2011, 2012). However, one needs to take into consideration that approximately one quarter of the gas which the EU uses is currently imported from Russia and this dependence is expected to increase significantly over the following decades if the current trends are maintained (Söderbergh, Jakobsson, & Aleklett, 2010). Such a situation creates two kinds of risk for EU states: transit risk (as seen in the past with the interruptions in supply due to conflicts which arose in the gas transit countries) and supplier risk (the potential to use energy dependence as leverage in applying political pressure). This raises an important question: is the EU energy policy more security than environmentally motivated? We will address the issue briefly in this section, but it is clear that such a discussion should represent the dedicated focus of future research.

The EU's green energy policies are likely to give rise to tensions with parties such as Gazprom. Currently, more than half of Russian gas exports are addressed to

the EU (Interfax, 2012), but the output of several mature Russian gas fields is decreasing and there is limited investment in additional upstream production and transport infrastructure (Söderbergh et al., 2010). In order for investments in new field development to provide a satisfactory payback, Russian investors will need assurances regarding continued gas purchases by the EU in the foreseeable future. However, the EU's long term goal to reduce its reliance on all fossil fuels, including Russian gas, is problematic for companies from the EU's eastern neighbor.

It is unclear how this conflicting situation will evolve in the future, but for the time being the persistent financial difficulties that the EU is facing constitute the strongest argument in favor of Gazprom. However, on a more positive note, Boute and Willems (2012) provides a scenario in which Russia can invest in RE and export the electricity to Europe, thus resulting in almost no investment costs for the EU (compared to the more expensive and complex DESERTEC project) and the development of an RE industry in Russia with no extra cost of electricity for the local population. Overall, the scenario is considered a win-win, especially since it results in an overall cleaner environment.

As seen in the case of Romania and that of other member states, the development of energy policies is very much dependent on the economic environment. That being said, given the overall difficult situation that the EU is facing, it is time for Europe to decide whether or not it is willing to make a risky compromise in its energy strategy in order to temporarily relieve some pressure from its burdened population.

REFERENCES

ANRE. (2012a). Raport de monitorizare a schemei de sprijin pentru promovarea cogenerării bazate pe cererea de energie termică utilă - Trimestrul I 2012.

ANRE. (2012b). Raport de monitorizare a sistemului de promovare a E-SRE în anul 2011. Bucharest.

ANRE. (2012c). Raport privind eliminarea tarifelor de energie electrică reglementate la consumatorii noncasnici care nu uzează de dreptul de eligibilitate - perioada 01.09.2012 - 31.10.2012. Bucharest.

ANRE. (2013a). Legislaţie primară - ESRE. Retrieved 20 Mar, 2013, from http://www.anre.ro/documente.php?id=393.

ANRE. (2013b). Raport cu privire la analiza de supracompensare a sistemului de promovare prin certificate verzi a energiei din surse regenerabile de energie pentru anul 2012. Bucharest.

ANRE. (2013c). Raport privind eliminarea tarifelor de energie electrică reglementate la consumatorii noncasnici care nu uzează de dreptul de eligibilitate pentru perioadele 01.11.2012 - 31.12.2012 şi 01.01.2013 - 31.03.2013. Bucharest.

ANRE. (2013d). Raport privind rezultatele monitorizării pieţei de energie electrică în luna Octombrie 2012. Bucharest.

Attari, Shahzeen Z., Schoen, Mary, Davidson, Cliff I., DeKay, Michael L., Bruin, Wändi Bruine de, Dawes, Robyn, & Small, Mitchell J. (2009). Preferences for change: Do individuals prefer voluntary actions, soft regulations, or hard regulations to decrease fossil fuel consumption? *Ecological Economics, 68*(6), 1701-1710. doi: 10.1016/j.ecolecon.2008.10.007.

Boute, Anatole, & Willems, Patrick. (2012). RUSTEC: Greening Europe's energy supply by developing Russia's renewable energy potential. *Energy Policy, 51*, 618-629. doi: 10.1016/j.enpol.2012.09.001.

Dan, Carol. (2013a). ANRE: Ponta nu avea toate elementele despre taxa de cogenerare, ANRE lucra deja la reevaluarea ei. Retrieved 18 Apr, 2013, from http://www.mediafax.ro/economic/anre-ponta-nu-avea-toate-elementele-despre-taxa-de-cogenerare-anre-lucra-deja-la-reevaluarea-ei-10752536.

Dan, Carol. (2013b). Transelectrica cere Guvernului să primească certificate verzi, pentru investiţii în reţea. Retrieved 18 Apr, 2013, from http://www.zf.ro/companii/transelectrica-cere-guvernului-sa-primeasca-certificate-verzi-pentru-investitii-in-retea-10711791/.

DEFRA. (2012). Large Combustion Plant Directive. Retrieved 23 Mar, 2013, from http://www.defra.gov.uk/environment/quality/industrial/eu-international/ lcpd/.

Euronews. (2013). Weekend of rage in Bulgaria as tens of thousands protest electricity prices. Retrieved 24 March, 2013, from http://www.euronews.com/2013/02/18/xyz-weekend-of-rage-in-bulgaria-as-tens-of-thousands-protest-electricity-prices.

European Commission. (2013a). The EU climate and energy package. *Climate Action.* Retrieved 20 Mar, 2013, from http://ec.europa.eu/clima/ policies/package/index_en.htm.

European Commission. (2013b). The EU Emissions Trading System (EU ETS). Retrieved 23 Mar, 2013, from http://ec.europa.eu/clima/policies/ets/ index_en.htm.

European Commission. (2013c). Renewable energy progress report. Brussels.

European Parliament, & The Council of the European Union. (2001). Directive 2001/80/EC of the European Parliament and of the Council. *Official Journal of the European Communities, 44*(L 301).

Eurostat. (2013). Greenhouse gas emissions by sector. Retrieved 16 Apr 2013 http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdcc210&plugin=1.

Falconett, Irina, & Nagasaka, Ken. (2010). Comparative analysis of support mechanisms for renewable energy technologies using probability distributions. *Renewable Energy, 35*(6), 1135-1144. doi: 10.1016/j.renene.2009.11.019.

Feed-In Tariffs. (2013). FI Tariffs. Retrieved 20 Mar, 2013, from http://www.fitariffs.co.uk/.

Grammaticas, Damian. (2013). China's new President Xi Jinping: A man with a dream. Retrieved 14 Mar, 2013, from http://www.bbc.co.uk/news/world-asia-china-21790384.

Haas, Reinhard, Resch, Gustav, Panzer, Christian, Busch, Sebastian, Ragwitz, Mario, & Held, Anne. (2011). Efficiency and effectiveness of promotion systems for electricity generation from renewable energy sources – Lessons from EU countries. *Energy, 36*(4), 2186-2193. doi: 10.1016/j.energy.2010.06.028.

IEA. (2012). World Energy Outlook 2012 - Fact Sheets. Paris.

Interfax. (2011, 20 May 2011). Gas-Fired power plants could save EU $500 B compared with renewables - Gazprom, *Interfax: Ukraine Business Daily*.

Interfax. (2012, 31 May 2012). Summary: Gazprom eyes gas-powered generation in Europe, invites EU to dialog, *Interfax: Russia & CIS General Newswire*.

Ivan, Valentina, & Nuţu, Otilia. (2013). Policy Brief no. 20. In E. Forum (Ed.). Bucharest.

Maxim, Alexandru. (2011). *Orientarea companiilor energetice spre surse regenerabile*. (Dissertation Thesis), Alexandru Ioan Cuza University, Iaşi.

Maxim, Alexandru, Thoma, Benjamin, & Vlassopoulos, Tassos. (2011). *The confrontation between liberal theories and practice within the renewables sector*. Paper presented at the International Conference in Economics and Administration, Bucharest.

Pirvoiu, Claudia, & Pantazi, Cristian. (2013). Constantin Nita, despre Hotararea de Guvern care favorizeaza termocentralele: Nu influenteaza activitatea jucatorilor de pe piata/Nu s-a impus o dezbatere publica, deoarece are un caracter pur tehnic. Retrieved 18 Apr, 2013, from http://economie.hotnews.ro/stiri-energie-14581291-video-constantin-nita-despre-hotararea-guvern-care-favorizeaza-termocentralele-nu-influenteaza-activitatea-jucatorilor-piata-nu-impus-dezbatere-publica-deoarece-are-caracter-pur-tehnic.htm.

Popescu, Vlad. (2013). CEZ vrea să se concentreze pe Polonia, după discuţiile din România privind reducerea subvenţiilor. Retrieved 18 Apr, 2013, from http://www.zf.ro/companii/cez-vrea-sa-se-concentreze-pe-polonia-dupa-discutiile-din-romania-privind-reducerea-subventiilor-10716837/

REN21. (2012). Renewables 2012 Global Status Report. Paris.

Ringel, Marc. (2006). Fostering the use of renewable energies in the European Union: the race between feed-in tariffs and green certificates. *Renewable Energy, 31*(1), 1-17. doi: 10.1016/j.renene.2005.03.015.

Söderbergh, Bengt, Jakobsson, Kristofer, & Aleklett, Kjell. (2010). European energy security: An analysis of future Russian natural gas production and exports. *Energy Policy, 38*(12), 7827-7843. doi: 10.1016/j.enpol.2010.08.042

United Nations. (1998). Kyoto protocol to the United Nations Framework Convention on Climate Change.
United Nations. (2012). Doha amendment to the Kyoto Protocol.