

THE IMPACT OF RENEWABLE ENERGY SUBVENTION ON THE CAPTIVE CONSUMER

PALIU – POPA LUCIA

Prof. PhD, „Constantin Brâncuși” University of Târgu Jiu, Romania

e-mail: univers_cont@yahoo.com

COSNEANU LAVINIA

Ec. Manager, S. Complexul Energetic Oltenia S.A. of Târgu Jiu, Romania

e-mail: lavinia.cosneanu@gmail.com

Abstract

In the context of the European Union policy in the energy field on promoting the development of new and renewable energy forms, the Community legislation on the promotion of renewable sources had a significant development in the recent years. Thus, alternative fossil fuels (geothermal energy, ocean energy, hydropower energy, solar energy, wind energy, biomass and biofuels) contribute to the diversification of the supply on energy to reduce the greenhouse gas emissions and reduce the dependence on fossil fuels markets. Moreover, in accordance with the specifications of the Directive 2009/28/EC on energy from renewable sources there has been set as compulsory target the fact that an amount of 20% of the energy consumption of the European Union by 2020, to be derived from the renewable energy sources. In turn, this objective is detailed in the secondary national compulsory targets given the different starting points of Member States.

Based on these aspects, in our country, the unsubsidized renewable energy (hydroelectric), together with the photovoltaic, wind and biomass energy represented in the past three years a contribution well above the target assumed by Romania for the year 2020 of total of the produced energy. In this context, this study aims, on the one hand, to emphasize that the subsidized renewable energy to the captive consumers, by increasing the share of green certificates, results in narrowing the market of the classic manufacturers, on the other hand, to account for these securities as due to the existence of subsidies for the operating activities.

Keywords: green certificates, captive consumer, subsidies for renewable energy, fossil fuels.

Classification JEL: M41, M48, Q40, Q42.

1. Introduction

Politics of the European Union (EU) in the energy field aims to promote the development of new and renewable forms of energy. In this context, the adaptation of the electricity infrastructure in order to widespread use these energies from renewable sources is one of the main objectives of EU.

The European Parliament has always advocated in favor of renewable energy sources and stressed the importance of setting binding targets in this field, both for 2020, [5, 6, 7, 8] and for 2030. Thus, in February 2014 by the adopted resolution, the Parliament criticized the Commission's proposals on climate and energy for 2030 as being limited and lacking ambition. [9] Moreover, the Parliament called mandatory that 30% of energy consumption in the EU to come from renewable energy. Achieving this goal requires individual national binding targets.

In addition, in EU the Parliament has requested that for the renewable sources to establish a long-term incentive scheme, [10] and pleaded at the same time to support smart networks, [11] and by adopting the Directive on energy from renewable sources [15] strengthened several mechanisms. In turn, the European Commission has been invited on numerous occasions by the Parliament to propose a legal framework on renewable energy sources for heating and cooling, with the aim of increasing their proportion in total energy production.

The energetic perspective for 2050 was approved in March 2013 by the European Parliament [12] and thus it requested the Commission to provide without delay the political framework that must include stages and targets on renewable energy, greenhouse gas emissions and energy efficiency for 2030. The resolution underlined in particular the importance of a stable regulatory framework to stimulate investment in the renewable energy field and, in this regard, invited the Commission to present an analysis and proposals on sustainable and efficient exploitation of the energy resources in the European Union.

Regarding the Commission's communication of June 6th, 2012 entitled: "Energy from renewable sources: a major presence in the European energy market", the European Parliament adopted a resolution in May 2013 [10] and supported the establishment of targets and stages for the period up to 2050, the aim being to ensure that renewable energy sources have a credible future in EU. Furthermore, for 2030 the target is that at least 30% of the energy mix to come from renewable energy sources. Parliament also stressed that it is necessary to establish a long-term integrated strategy to promote renewable energy at EU level.

In addition, for the Member States to be able to achieve their objectives, Directive 2009/28/EC on energy from renewable sources took into account the different mechanisms that can be applied (support schemes, guarantees of origin, joint projects, cooperation between the Member States and third countries) and sustainability criteria for biofuels.

2. Green certificates – incentive for energy from renewable sources

The level of national targets on the share of electricity produced from renewable sources in gross final consumption of electricity for the years 2010, 2015 and 2020 is of 33%, 35% and 38% respectively [14] and to achieve them the electricity produced in hydropower plants with installed capacity exceeding 10 MW is also taken into account besides the electricity produced from renewable energy sources. In this context, the annual mandatory quota of electricity produced from renewable energy, benefiting from the promotion system through green certificates for the period 2010 - 2020 are: 2010 - 8.3%; 2015 - 16%; 2016 - 17%; 2017 - 18%; 2018 - 19%; 2019 - 19.5%; 2020 - 20%. [14]

Looking from this perspective, in our country, in accordance with the Law no. 220/2008 to establish the system for promoting the energy production from renewable energy sources, the security certifying the production of a quantity of electricity from renewable energy sources is the green certificate and the national target on the share of such electricity in the gross final consumption of energy for the year 2020 is 24% [14].

Although Romania has established a level above the limit imposed by the EU (24% versus 20% in 2020) the national level proposed for 2020 was already reached in 2014. [1, 4]

If we consider that the renewable energy is so subsidized by the captive consumer, we may deduce that this increase in the share of green certificates determines the restriction of the market of classic manufacturers and the entire cost is borne by the final consumer, i.e. the population, either directly or by the goods and services they receive. [2]

3. Accounting models specific to the appearance and trading of green certificates generated by renewable energy sources

The Beneficiaries of green certificates issued by the transport and system operator - represented by producers of energy from renewable sources - highlights the monthly claim linked to the right to receive green certificates form of a *subsidy*, and the equivalent value is the *income from the operating subsidy* related to the turnover, the assessment is carried out according to the number of green certificates to be received and the transaction price as of the date to establish this right, published by the Electricity Market Operator [OPCOM]. Furthermore, if it cannot be determined the date of that right due to the lack of other proven elements, this date is the last day of the month. [16]

Since the green certificate is the security certifying the production of renewable energy sources for a quantity of electricity, this is highlighted in the category of short-term investments when there are met the conditions for recognition under this category. In this sense, they are valued at the transaction price on the date of reception, which is published by OPCOM and the difference between their value, recorded as a subsidy when determining the right to receive the green certificates and their value at the date of reception, as established by the trading price afferent to the date of reception, represents a financial income or a financial expense, as applicable. [16]

According to the valuation rule of short-term investments, at year end the green certificates outlined in this category are valued at the transaction price published by OPCOM for the last transaction, and the resulted differences represented by the financial income or financial expenses, as applicable, are reflected in the result of this period. If later their sale generated a gain or loss, the recognition of those elements occurs at the time. Given that the submitted elements aim to the beneficiaries of green certificates issued by OPCOM, we consider it necessary to mention that *electricity suppliers and manufacturers* who are required by law to purchase a certain number of green certificates annually, they actually record their equivalence as an expense for the environmental protection, unless the purchase of the certificates is made before the deadlines which are set by law (in this case they are deferred expenses, following that later in the legal deadline to be conducted the registration of the expense for environment protection).

However, in the electricity bill which is sent to the final consumers, the value of green certificates is separately invoiced in relation to tariffs/ prices related to electricity, and it is determined as product between the value of the binding quota for the purchase of certificates estimated by ANRE (CV/MWh), the amount of the invoiced electricity (MWh) and the weighted average price for the green certificates traded on the centralized market related to them (according to a well-established methodology). [14]

In this context, an objective within the study on the impact of green certificates on the captive consumer was to look into the possibility to account such securities, due to the existence of subsidies for the operating activities and through a practical example will highlight the emergence and trading of green certificates generated by renewable energy sources. [3, 16]

Thus:

- for *producers of energy from renewable sources* by recording the subsidies afferent to the green certificates, namely the claims relating to these securities, the recognition of their value results in obtaining revenue from subsidies related to turnover;
- for *electricity suppliers and other categories of producers* by reflecting the debts on the green certificates, the recognition of their value results in reflecting the expense for environmental protection, namely the deferred expense where their purchase is performed prior to the deadlines provided by law (in this case, then, the reflection of the current expenses for environmental protection takes place in the legal terms of purchase);

Example: We believe that an entity *producer of energy from renewable sources* benefits of 20,000 green certificates issued by OPCOM and the prices published by OPCOM are as follows:

- the trading price on the date to establish this right (November 30th N): 125 lei/certificate;
- the trading price on the date to receive the green certificates (December 2nd N): 130 lei/certificate;
- the trading price published by OPCOM for the last transaction at the end of the current year (N): 128 lei/certificate;
- the selling price on January 15th N + 1: 129 lei/certificate.

For the year N:

To meet the proposed target, we will first proceed to determine the claim on these securities and thereafter to record the subsidies for the beneficiaries of green certificates, the recognition of their value results in obtaining income from the operating subsidies related to the turnover for the producers of energy from renewable sources, thus:

- number of green certificates issued by OPCOM benefiting the entity producer of energy from renewable sources: 20,000 certificates;
- the trading price on the date to establish this right (November 30th N), published by OPCOM: 125 lei/certificate;
- the amount of the subsidy for the beneficiary of these green certificates: 20,000 certificates x 125 lei/certificate = 2,500,000 lei.

Consequently, when highlighting the right to receive green certificates in the balance of the financial year N, it will be recognized the amount representing the subsidy for the beneficiary thereof, namely of the receivables on these securities. The recognition of the value of green certificates resulted in obtaining revenue from operating subsidies related to the turnover for the producers of energy from renewable sources, in accounting being performed the record:

4458 „Other amounts received as subsidies”	=	7411 „Income from operating subsidies related to the turnover”	2,500,000
- <i>analytically distinct</i>			

Also, following the reception of the green certificates by the company on December 2nd N, these securities will be recognized in the balance of the year N, including the financial income, calculated as follows:

- the value of the green certificates to the account 4458 “Other amounts received as subsidies” / analytically distinct, to determine the right to receive green certificates: 2,500,000 lei;
- the value of the green certificates on the date of reception, determined by the trading price on the date of reception (December 2nd N): 130 lei/certificate x 20,000 certificates = 2,600,000 lei;
- the financial income on the date of reception of the green certificates by the entity (December 2nd N) = 2,600,000 lei – 2,500,000 lei = 100,000 lei.

In accounting, the reception of the green certificates is highlighted:

507 „Received green certificates”	=	%	2,600,000
		4458 „Other amounts received as subsidies”	2,500,000
		- <i>analytically distinct</i>	
		768 „Other incomes”	100,000

Because at the end of financial year N the trading price published by OPCOM for the last transaction is different from trading green on the date of reception of the certificates, we will proceed to reflect the accrued differences in the result of this period, calculated as follows:

- the value of the green certificates on the date of reception, determined by the trading price on the date of reception (December 2nd N): 130 lei/certificate x 20,000 certificates = 2.600.000 lei;
- the value of the green certificates at the trading price published by OPCOM for the last transaction at the end of the current year (N): 128 lei/certificate x 20,000 certificates = 2,560,000 lei;
- differences resulting from the revaluation of the green certificates: 2,600,000 lei - 2,560,000 lei = 40,000 lei.

In accounting, the accrued differences are as follows:

668 „Other financial expenses”	=	507 „Received green certificates”	40,000
---------------------------------------	---	--	--------

For the year N+1:

Because on January 15th N+1 the entity sells 19,000 green certificates, we will proceed to the recognition of gain resulting from their sale, calculated as follows:

- the value of the green certificates valued at the trading price published by OPCOM for the last transaction at the end of the previous year (N): 128 lei/certificate x 19,000 certificates = 2,432,000 lei;
- the value of the green certificates valued at market price on January 15th N + 1: 129 lei/certificate x 19,000 certificates = 2,451,000 lei;
- the gain resulted from the sale of the green certificates on January 15th N + 1 = 2,451,000 lei – 2,432,000 lei = 19,000 lei, in accounting being performed the record:

461 „Different debtors”	=	%	2,451,000
		507 „Received green certificates”	2,432,000
		7642 „Gains from short-term investments ceded”	19,000

At the end of the year N+1, the entity cancels the unused green certificates within the validity period, whose value is up to 128,000 lei (128 lei/certificate x 1000 certificates,) in accounting being performed the record:

668 „Other financial expenditures”	=	507 „Received green certificates”	128,000
---	---	--	---------

Manufacturers and suppliers of electricity from non-renewable sources are required to annually purchase, according to the law, a certain number of green certificates, which are recorded differently in accounting, depending on the term to which they are purchased compared to the period to which they are obliged to procure them.

Thus, if an electricity supplier or a manufacturer of energy from non-renewable sources is bound to purchase the 19,000 green certificates for the period from February to June N+1, and the purchase is made on January 15th N+1 (before the deadlines which are set by the law) at a purchase price of 129 lei/certificate, there is made the record in accounting:

471 „Expenditures registered in advance”	=	401 „Suppliers”	2,451,000
---	---	------------------------	-----------

Thereafter, monthly, in the legal terms of purchasing the green certificates there takes place the inclusion of the amounts related to monthly number of green certificates that must be purchased (19,000 certificates: 5 months = 3.800 checked/month) in the expenses for the environment protection. Where on January 31st N+1 the green certificates are valued at the purchase price of 129 lei/certificate, there will be recorded the amount of 258,000 lei (3,800 certificates x 129 lei/certificate) in accounting on February 28th N+1, as follows:

652 „Expenditures on environmental protection”	=	471 „Expenditures registered in advance”	490,200
---	---	---	---------

By reflecting within the following 4 months of the inclusion of value for the 3,800 certificates in the expenditures on environmental protection, the account 471 “Expenditures registered in advance” is closed and the value of the purchased green certificates increases the cost of billing of the electricity, value which is borne by the final consumer.

Where, under the law, [14, 16] the green certificates are postponed to trading, then their equivalent value is highlighted in accounting on the date of finding the right to receive them at the expense of intangible assets, at a value which is calculated relative to the number of green certificates and their trading price published by OPCOM (November 30th N 125 lei/certificate), respectively:

266 „Postponed green certificates”	=	472 „Incomes registered in advance”	2,500,000
		- <i>analytic</i> : Green certificates	

The reception of the green certificates on the date of December 2nd N, at the value of 130 lei/certificate generates besides the revenues from operating subsidies related to the turnover, the financial income related to the difference in value between November 30th and December 2nd, the records being registered in accounting:

472 „Incomes registered in advance”	=	7411 „Incomes from operating subsidies related to the turnover”	2,500,000
- <i>analytic</i> : Green certificates			

and, concomitant:

507 „Received green certificates”	=	%	2,600,000
		266 „Postponed green certificates”	2,500,000
		768 „Other incomes”	100,000

If, at the end of the financial year, the green certificates whose trading was delayed were not received, then the exception to the general rules for registration of depreciation is made, [16] in the sense that the possible loss of value of the green certificates affects the incomes registered in advance, the record being performed accounting:

472 „Incomes registered in advance”	=	266 „Postponed green certificates”
- <i>analytic</i> : Green certificates		

The other entries which are carried out at the level of producers of energy from renewable sources and suppliers of electricity and other types of producers are similar to those previously addressed, the specificity intervenes only when the trading of the green certificates has been delayed.

By analyzing the recordings previously made, there may be seen that the beneficiaries of the green certificates are favored by the production of electricity from renewable sources, the amount of revenue increasing at their level with the value of the received green certificates that increases the revenues from operating subsidies related to the turnover, without taking into account any favorable differences arising as a consequence of their trading or of the differences of favorable value at the end of financial year.

In contrast, the electricity suppliers and other types of producers, although they are obliged to purchase green certificates for the produced energy and introduced into the system, value which increases the expenditure for the environmental protection, the entire cost of the green certificates is recovered during the delivery of electricity to final consumers, the final consumer is the one who bears the entire "burden" of producing energy from renewable sources.

4. Conclusions

We may appreciate that the EU legislation on the promotion of renewable energy sources has evolved significantly in recent years and the national laws of member countries have aligned with the European legislation, consequently amending the accounting legislation.

In this context, the unsubsidized renewable energy (hydropower one), together with the photovoltaic, wind and biomass energy, are a contribution well above the target assumed by Romania in the past three years for 2020 of total of the produced energy. Thus, we may say that renewable energy subsidized to the captive consumer by increasing the quota of the green certificates determines the restriction of the market for the classical producers, defending, at their level, the additional costs due to large imbalances that the energy system bears.

5. Bibliography

- [1] **Grecu, E.**, Controversies regarding investments in green energy in Romania, 14th International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 2014 Conference Proceedings, June 19-25, 2014, Book 4, Vol. 1, pp. 117-124.
- [2] **Paliu-Popa, L.**, Cosneanu, L., Impact of green certificates on captive consumers, Proceedings of the International Conference "Information Society and Sustainable Development", ISSD 2016, IIIrd Edition, April 14-15, 2016, Polovragi, Gorj County, Romania, Academica Brâncuși House Publisher, Târgu Jiu, 2016, pp. 340-342.
- [3] **Paliu-Popa, L.**, Accounting, an Essential Component of the Information System, Annals of the „Constantin Brâncuși” University of Târgu Jiu, Economy Series, Issue 1/2013, pp. 66-73.

- [4] **Zamfir, A., Colesca, S.E., Corbos, R.**, Public policies to support the development of renewable energy in Romania: A review. *Renewable and Sustainable Energy Reviews*, Volume 58, 2016, pp. 87-106.
- [5] *** **The resolution of the European Parliament** from September 29th 2005.
- [6] *** **The resolution of the European Parliament** from February 14th 2006.
- [7] *** **The resolution of the European Parliament** from December 14th 2006.
- [8] *** **The resolution of the European Parliament** from September 25th 2007.
- [9] *** **The resolution of the European Parliament** from February 5th 2014.
- [10] *** **The resolution of the European Parliament** from November 25th 2010.
- [11] *** **The resolution of the European Parliament** from July 5th 2011.
- [12] *** **The resolution of the European Parliament** from March 14th 2013.
- [13] *** **The resolution of the European Parliament** from May 21st 2013.
- [14] *** **Law** no. 220/2008 to establish the system for promoting the production of energy from renewable energy sources.
- [15] *** **Directive 2009/28/CE** of the European Parliament and Council from April 23rd 2009 on promoting the use of energy from renewable sources, amended and later repealed by the Directives 2001/77/EC and 2003/30/EC.
- [16] *** **The Minister of Public Finance Order** no. 1802 of December 29th 2014 approving the Accounting Regulations on the annual individual financial statements and the annual consolidated financial statements.