

CAPITALIZATION OF ENERGY RESOURCES IN TERRITORIAL ASPECT

Abstract

An efficient exploitation of natural resources may lead to the establishment of a country's energy independence. In this sense, the article shows the status of primary energy resources, for the period 2000-2013, in Romania.

Emissions of greenhouse gases produce climate change. One of the ways to reduce gas emissions greenhouse is given to capitalization of renewable energy resources. Reserves of fossil fuels are not inexhaustible. For this reason, are becoming increasingly significant actions of identifying alternative energy resources.

Considering the situation of the energy resources, the article presents a situation for the production of electric energy by categories of electrical centrals. For a good use, durable, of the natural resources, and for realise a sustainable development, it is need the involvement of all stakeholders from local and regional communities.

Keywords: natural resources, green economy, Romania

JEL CODES: O13, P48, Q42

VALORIFICAREA RESURSELOR ENERGETICE ÎN PROFIL TERITORIAL

Petrică Sorin ANGHELUȚĂ

PhD Student, Faculty of Agri-Food and Environmental Economics, Bucharest University of Economic Studies
E-mail: sorin.angheluta@gmail.com

Carmen Georgiana BADEA

PhD Student, Faculty of Agri-Food and Environmental Economics, Bucharest University of Economic Studies

Rezumat

O exploatare eficientă a resurselor naturale poate conduce la stabilirea independenței energetice a unei țări. În acest sens, articolul prezintă starea resurselor de energie primară, pentru perioada 2000-2013, în România.

Emisiile de gaze cu efect de seră produc schimbări climatice. Una din modalitățile de reducere a emisiilor de gaze cu efect de seră este dată de valorificarea resurselor regenerabile de energie. Rezervele de combustibili fosili nu sunt inepuizabile. Din acest motiv, sunt din ce în ce mai importante acțiunile de identificare a resurselor alternative de energie.

Având în vedere situația resurselor energetice, articolul prezintă o situație referitoare la producția de energie electrică pe categorii de centrale electrice. Pentru o bună utilizare, durabilă, a resursele naturale, precum și pentru a realiza o dezvoltare durabilă, este nevoie de implicarea tuturor factorilor din comunitățile locale și regionale.

Cuvinte cheie: resurse naturale, economie verde, România



Proceedings of the 11th Administration and Public
Management International Conference
"Strategic Management for Local Communities"

1. INTRODUCTION

At the territorial level is desired balanced development by stimulating economic growth based on knowledge. It also aims to achieve environmental protection, sustainable use of natural resources and strengthening social cohesion.

In this regard, an important financial contribution I can provide European funds. These funds can be used for environmental protection, biodiversity conservation, climate change mitigation and prevention of natural hazards, expanding the use of alternative energy sources and improving energy efficiency in industry and in the household.

Nonrenewable energy resources are on the verge of exhaustion. In the European Union it desires that, until 2020, the share of energy from renewable sources in gross final energy consumption to be 20%. The national objective is 24% (ME, 2015). For this reason, in Romania should develop and implement a legal framework and mechanisms for targeting EU funds in the renewable energy sense. According to European commitments, Romania should like 2020 to improve its energy efficiency by 19% and reduce greenhouse gas emissions by 20% effect. Also, to meet its target, Romania will have to capitalize 63.5% of the total potential of renewable energy sources at its disposal. The European energy sector is heavily dependent on fossil fuels. This fuel is exhausted by burning pollutes the environment and accentuates the greenhouse effect. Therefore, to support the identification of other energy resources, the European Union formulated a series of policies and measures for the use of renewable energy resources. In the European Union for the next period seeks to put great emphasis on energy efficiency. An important objective is on supporting the transition to an economy with low carbon consumption. Investments must be made in the coming years is the increase of energy efficiency of housing and public buildings, the use of heating and cooling from renewable energy sources, development and implementation of integrated strategies to reduce emissions of carbon dioxide and sustainable Energy action Plans favorable for urban areas, including public lighting systems and smart grids. The actions of thermal rehabilitation of housing can lead to the increase of energy efficiency and increase the attractiveness of urban areas.

2. PRODUCTION OF ELECTRIC ENERGY

It is considered that electricity production is given by the total quantity of electricity obtained from solid, liquid and gaseous fuels, both in thermal power plants, hydroelectric, nuclear and other energy sources.

It notes that, globally, to produce electricity, using increasingly more renewable sources. Due to the development of alternative energy sector, Romania has the ability to produce electricity "green", with low

greenhouse gas emissions. In this way, the EU requirements can be met relating to energy production from renewable sources. The electricity that comes from renewable sources cannot totally replace energy produced by power stations using conventional materials. However, electricity produced from renewable sources can become an important pillar of the national energy system (ICEMENERG, 2015). One of the objectives of Europe 2020 is given share of renewable energy fulfilling of all energy consumed at least 24%. Thus, based on the upward trend of Romania has the opportunity to achieve and exceed this value. Regarding regional development, an important objective is improving the quality of the environment. One way of achieving this objective is given by the energy efficient use of resources. Energy resources available today are: coal, natural gas, petroleum products and other resources. In the last ten years, electricity production nationally registered alternative differences in plus and minus over the previous year. Thus, in the Table 1 shows the production of electricity for the period 1992-2013, in million kilowatt hours.

TABLE 1 - PRODUCTION OF ELECTRIC ENERGY FOR THE PERIOD 1992-2013

Year	Categories power plants				
	Total	thermoelectric power plants	hydroelectric power plants	wind power plants	nuclear power plants
1992	54.195	42.495	11.700	-	-
1993	55.476	42.708	12.768	-	-
1994	55.136	42.090	13.046	-	-
1995	59.267	42.573	16.694	-	-
1996	61.350	44.209	15.755	-	1.386
1997	57.148	34.239	17.509	-	5.400
1998	53.496	29.310	18.879	-	5.307
1999	50.713	27.225	18.290	-	5.198
2000	51.935	31.701	14.778	-	5.456
2001	53.866	33.497	14.923	-	5.446
2002	54.935	33.376	16.046	-	5.513
2003	56.645	38.480	13.259	-	4.906
2004	56.482	34.421	16.513	-	5.548
2005	59.413	33.651	20.207	-	5.555
2006	62.696	38.709	18.355	-	5.632
2007	61.673	37.995	15.966	3	7.709
2008	64.956	36.529	17.196	5	11.226
2009	58.016	30.448	15.807	9	11.752
2010	60.979	28.807	20.243	306	11.623
2011	62.216	34.136	14.946	1.387	11.747
2012	59.047	32.604	12.337	2.640	11.466
2013	58.888	27.443	15.307	4.520	11.618

Source: conducted by the authors based on existing information on the website of the National Statistics Institute

Although it appears that annual variations in electricity production, in 2013 is about 9% higher than that recorded in 1992.

From the data it can be concluded that in 20 years (1992-2013) electricity production in thermoelectric power plants has achieved almost halved. Also, the share of hydropower plants in the production of electricity has remained relatively constant. It is important to note that in 1996 the share of electricity produced in nuclear power plants was only 2% and in 2013 is 20%. Wind power plants began producing

electricity in 2007. In just six years, the share of electricity produced from wind power plants increased from 0.005% (2007) to 7.67% (2013).

Thus, the variation of electricity generation in wind power plants for 2007-2013 is shown in Figure 1.

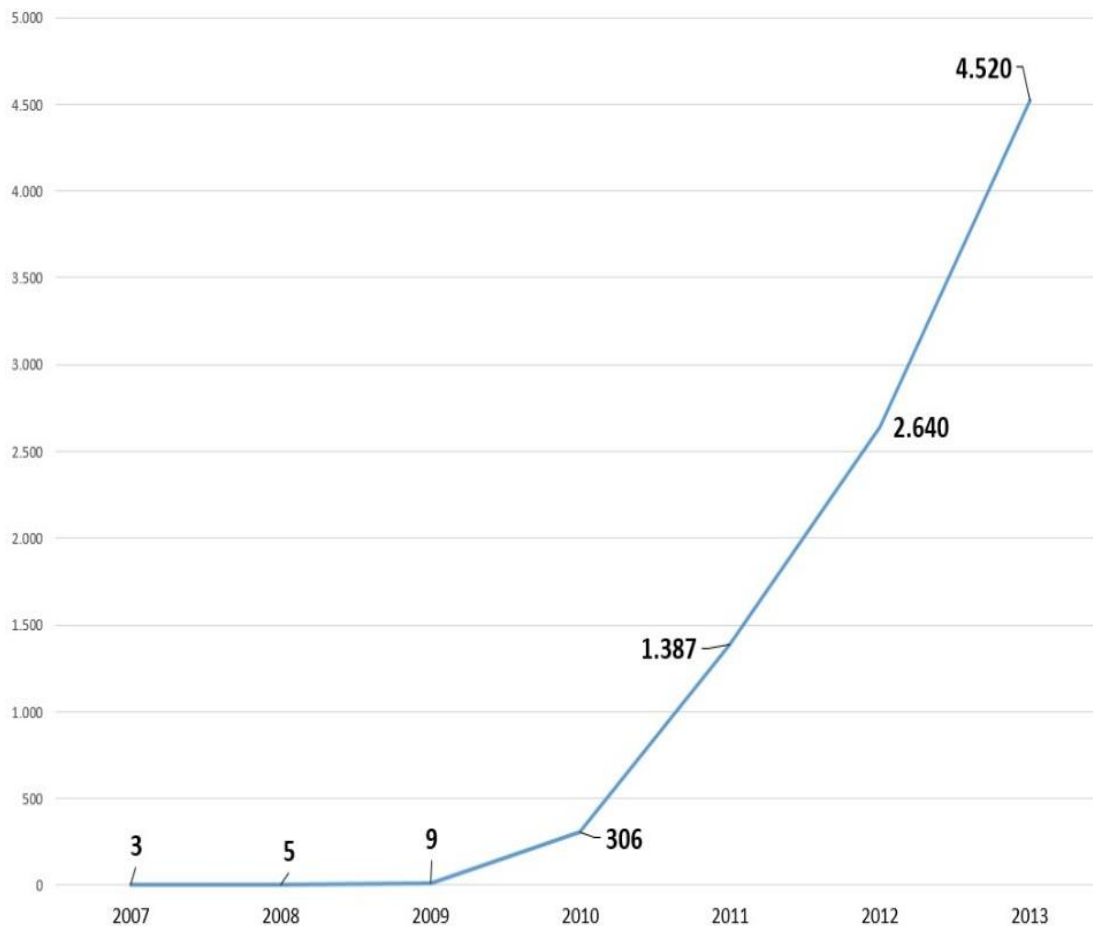


FIGURE 1 - PRODUCTION OF ELECTRIC ENERGY IN WIND POWER PLANTS, FOR 2007-2013

Source: conducted by the authors based on existing information on the website of the National Statistics Institute

The primary energy resources include: bearers of primary energy production, importing primary energy, stocks on 1 January of primary energy carriers in establishments producing, consuming units and distribution units. In the category of primary energy bearers production includes net coal, oil natural gas used, firewood, hydroelectricity, nuclear energy and renewable electricity unconventional (NSI, 2015)).

With this in mind, in Table 2 are presented for the period 1992-2013, total primary energy resources and the share of coal in these resources, expressed in thousands of tonnes of oil equivalent.

TABLE 2 - TOTAL PRIMARY ENERGY RESOURCES AND COAL, FOR THE PERIOD 1992-2013

Year	Categories of primary energy sources	
	Total energy resources	of which: coal
1992	50.943	12.171
1993	50.683	10.793
1994	50.164	11.523
1995	55.941	12.172
1996	55.936	12.109
1997	51.275	11.397
1998	46.205	9.381
1999	39.791	7.511
2000	40.360	8.058
2001	42.664	8.977
2002	43.992	9.775
2003	45.377	9.912
2004	47.137	9.611
2005	47.289	9.408
2006	47.630	9.906
2007	47.460	10.616
2008	48.166	10.130
2009	42.729	8.078
2010	42.467	7.393
2011	42.430	8.299
2012	41.727	7.846
2013	39.251	6.060

Source: conducted by the authors based on existing information on the website of the National Statistics Institute

The graphical representation for total primary energy resources is shown in Figure 2.

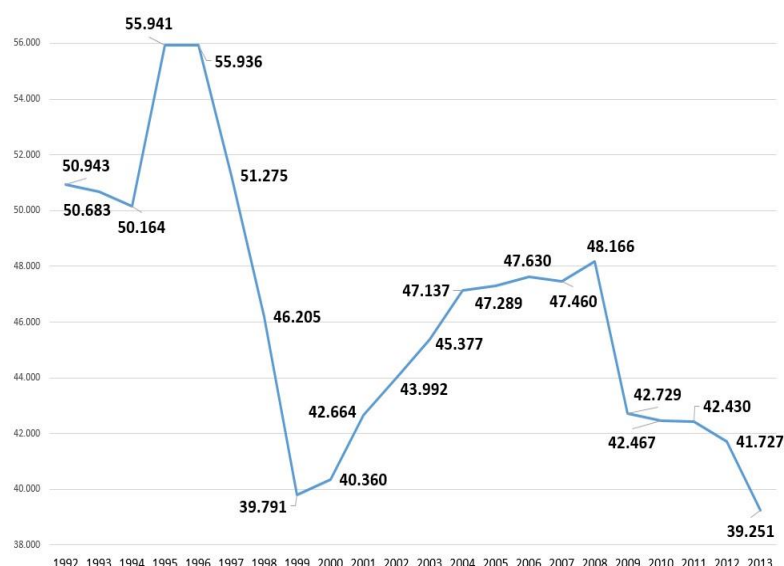


FIGURE 2 - TOTAL PRIMARY ENERGY RESOURCES, FOR THE PERIOD 1992-2013

Source: conducted by the authors based on existing information on the website of the National Statistics Institute

From the data presented, it appears that total primary energy resources decreased in 2013 to about 77% of the value it had in 1992.

3. RENEWABLE RESOURCES

Is there a high primary energy consumption in both the public sector and the private sector. This is manifested by higher costs for businesses, the public budget, but also for the population. At the same time, is maintained high level of carbon dioxide emissions. However, there is interest in combating climate change by using energy with low carbon emissions and renewable energy, and promoting energy efficiency (ELCEN, 2015).

In recent years, the share of renewables in final energy consumption volume increased. However, renewable energy is not sufficiently exploited to energy efficient public institutions or thermal power plants.

The share of energy from renewable sources in gross final consumption of energy (EUROSTAT, 2015), for Romania and the European Union for the period 2004-2013 is shown in Figure 3.

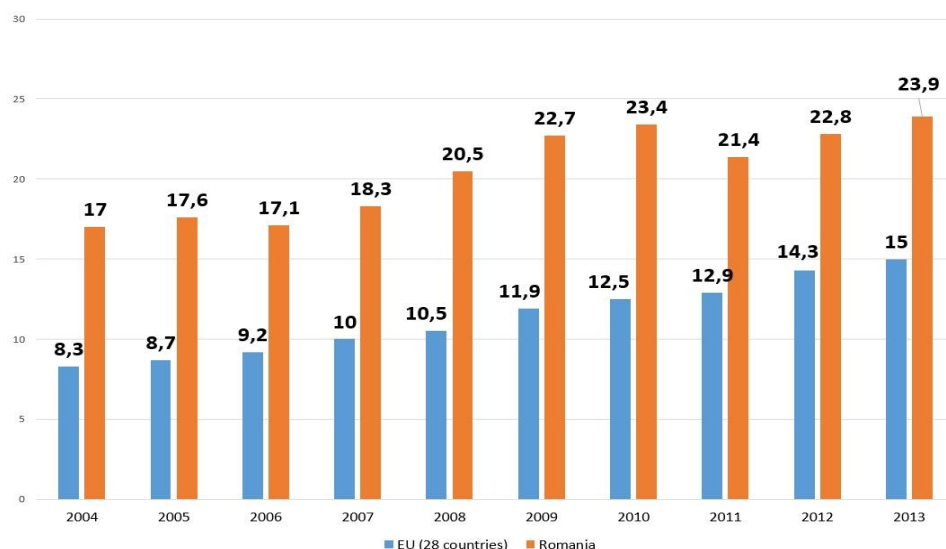


FIGURE 3 - THE SHARE OF ENERGY FROM RENEWABLE SOURCES IN GROSS FINAL CONSUMPTION OF ENERGY, FOR ROMANIA AND THE EUROPEAN UNION, FOR THE PERIOD 2004-2013

Source: conducted by the authors based on existing information on the website of the EUROSTAT

It is important to note that the EU proposed target is 20% and for Romania is 24%. From the graph, it appears that Romania has reached the programmed target. Both European policies and national policies recommended to increase energy efficiency and reduce emissions of greenhouse gases.

Under these circumstances, it increased both the level of investment and the number of projects for producing energy from renewable sources. Energy resources available to Romania are diverse, but small quantity. They consist of both fossil and mineral primary resources (oil, natural gas, coal and uranium) and renewable resources. The business environment from a community contributes to the success of the local economy and the sustainable development of that community. Thus, if the business environment is

performing, whose investment to increase energy efficiency, both in production activities and for activities represented by the services sector, these investments can be a key element for increasing economic performance. At EU level was decided to create until 2020 cogeneration of electricity and heat for that use the waste. The cogeneration plants should take for about 40% of the waste burning a community. Given the speed with which technology advances are necessary programs to inform and awareness of community members on the need for energy efficiency and use of renewable resources (TRANSELECTRICA, 2015). Another important aspect of efficient public lighting is given based on the use of renewable resources. Are necessary studies in order to increase energy efficiency at local communities and regional communities. Also, investments are needed on efficient energy consumption of public institutions.

Another important source of renewable energy is provided by solar radiation. To capture it using photovoltaic and thermal solar collectors.

CONCLUSIONS

From the above data, we find that Romania has significant natural resources, including energy resources. At the territorial level, depending on relief, we estimate that for renewable energy resources we have opportunities for the capitalization. However, climate change and rational exploitation of natural resources may adversely affect the ability to exploit energy resources. For an efficiency the energetic buildings, is necessary to investment through the implementation of systems using renewable energies. Also, investments can be made so that there is the possibility of producing electricity and heat, in both biomass and biogas power plants and in geothermal plants. Another possibility for the use of renewable resources is given the extension of intelligent lighting systems in the street, respectively road transport.

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