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ECONOMIC EFFECTS OF ENERGY POLICIES

Theoretical article

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Abstract

This paper highlights some of the issues raised by the implementation of energy policies and the fiscal measures in the energy sector and it aims to identify the impact of energy policies at regional level. It is emphasized, along with the environmental impact of the use of renewable resources and economic and social effects on sustainable regional development which can generate state intervention through direct and indirect, financial and non-financial instruments. Given the complex energy profile of Romania, the paper reveals also, the problems that have had to face in the last two decades and the impact of energy policies of Romanian governments. The research is based on an analysis of statistics, publications in energy sector, as well as primary and specific legislation.

1. Introduction

Energy policies, as an integrated part of national policies have, as main goal, the economic development of a country. Certainly, besides the economic impact of energy policies should be taken into account the social and environmental influences.

In this sense, in energy policies are embedded strategies that aim the growth of the energy efficiency, the assurance the necessary energy resources and the energy supply, environmental protection, the development and the modernization of national energy systems.

2. Energy policies and their effects

Given the concerns about the effects of energy policies, a number of studies have been carried out for this purpose [Băhnăreanu, 2010], [Hurjui, 2008], [Leca et al., 2014], [King, 2012],[Lupan, 2008], [Muşatescu et al., 2012], [Zamfir, 2005].

This research is based on an in-depth analysis of a wide range of publications, as well as primary and specific legislation**.**

Most of the countries have similar objectives in launching and implementating energy policies, even if the strategies they adopt to achieve them are different.

For example, USA relies on its influence to ensure the necessary resources and to maintain the access to oil markets. Germany is trying to reduce dependence on resources by imposing taxes in order to reduce its dependence on imported oil.

The main directions of EU energy policy, formulated in 2006 are the power supply safety, minimal environmental impact of energy sector and increase of the competitiveness. There were also addressed the development of the internal markets and enhancing competition, reducing emissions of greenhouse gases, development of energy technologies for energy conservation and renewable energy.

To achieve the main objectives of energy policy: sustainable development, competitiveness and security of supply, there have been established a series of measures, economic and social implications in the short, medium and long term.

The opening of the energy market aims to create benefits for consumers, but at least in Romania, consumers do not perceive an improvement in their position, given the repeated price increases.

Security of power supply supposes the guaranteeing citizens' access to energy, but energy price liberalization may result in low-income population, extremely vulnerable, restricting this right.

Creating a more diverse energy mix, durable, incorporating a larger proportion of renewable energies and internal sources of energy, reduces the import dependence and, at the same time, is more effectively.

The failure of carried actions paved the way for a new energy policy in the EU, in 2007, the European Commission outlining an integrated strategy for energy and climate change. Thus, subsequently, a series of directives adopted at European level have made mandatory targets for Member States regarding the use of renewable energy, reducing greenhouse gas emissions, the geological storage of carbon dioxide.

In 2007, the plan "Energy Technology Strategies" aimed at improving energy efficiency by stimulating research, development and innovation, international cooperation and a substantial increase in funding in this area.

The third energy package approved in 2009 was oriented towards full liberalization and functioning of energy markets.

Strategy "EU 2020" establishes a smart, sustainable and inclusive growth. It covers a number of ambitious goals such as achieving a minimum of 75% employment for the population aged 20-64 years, the targets of the energy sector, reducing the number of people at risk of poverty. There are considered also the fields of education and research & development, the foundation for sustainable economic development, setting goals of increasing the share of young people with higher education, reducing early school leaving and an allocation of at least 3% of GDP investment in research & development.

By 2020 it is targeted a 20% reduction of primary energy consumption in the EU. In this regard, given the existence of a trend of increasing dependence on imports of resources in the different Member States, the EU Energy Efficiency Plan takes into consideration the energy efficiency as the most important European energy resource. Reducing energy consumption has a double effect: on the one hand, economic one, reducing energy costs and, on the other hand, reducing the negative environmental impact.

Given that approximately 40% of energy consumption is due to buildings, Directive 2010/31 / EU highlights the impact of reducing the energy consumption of buildings on the level of GHG emissions. The energy efficiency measures are, for the public sector, the need of renovation of buildings, energy performance standards applying to purchases of goods and services, the introduction of measures in the Member States on energy efficiency. For the residential sector, the thermal rehabilitation programs of the buildings, lead to reduction of energy consumption of the population and the share of energy costs in monthly expenses. There also improve the comfort, aesthetics of buildings and increase the number of jobs in the thermal rehabilitation activities.

Besides these immediate and visible advantages, the reduction of CO2 emissions is among the indirect benefits of thermal rehabilitation of

buildings. But even partial financing by public founds will lead to higher taxes in the respective regions for all individuals and companies.
In Romania, introducing the obligation to obtain an energy efficiency certificate will result, in the long term, in investments in works to improve the energy performance of buildings.
It is arisen the question of choice of instruments for implementation of such measures. The voluntary policies can be combined with coercion. For example, limitations may be imposed on access and use of inefficient devices.
In 2012 it was approved the Energy Efficiency Directive 2012/27 / EU which establishes the obligation of Member States to publish by the end of April 2014 a national strategy for long-term renovation of existing buildings, residential and commercial, both to the public as and private ones.
The Directive also states the need to conduct energy audits of large enterprises until 5 December 2015 except the industrial companies that implement certified energy management and environmental systems, as well as energy audit programs for SMEs, with implementation of the recommendations of these audits.
Other measures aim generalized individual metering for electricity, natural gas, heating and cooling, domestic hot water, in order to accurately reflect of actual energy consumption of final consumers. It requires also the adoption of regional and local policies to encourage the use of high efficiency cogeneration.
In Romania, in the first National Action Plan for Energy Efficiency there was included regulatory measures, legislative, information, use of financial instruments, financing schemes, horizontal measures across sectors.
One of the EU energy policies aimed at ensuring energy security of member countries. In this respect, different strategies may be adopted:

- Increasing energy efficiency;
- Diversification of energy sources;
- Increase the interconnection of member states;
- Increasing the share of renewable in energy production and consumption.

Increasing energy efficiency is a priority for the EU countries. But in some countries, as is the case of Romania, reconfiguring the economic landscape by reducing activity in the industrial sector or even disappearance of entire branches of this sector, has determined significant changes in the structure and size of companies.
A significant share holds the SMEs, less prepared in the field of increasing the energy efficiency, due to fewer staff and lack of experience or qualification in the field of efficient use of energy. Development of training programs for staff of such companies or their support measures in their attempt to optimize energy consumption could solve the problems of low efficiency of these companies and, thus, increase energy efficiency in the economic sectors and, as a result, optimizing it to the entire economy. In this respect, the EU SAVE program was launched to develop energy efficiency.
Use of automated control systems, such as lighting, temperature or pressure sensors can help increase energy efficiency, but this requires investment from companies. The main elements considered in this respect will be lighting systems, boilers, chillers, pumping systems and compresses air.
Increasing energy efficiency counteracts the rising energy prices, whose detrimental effect on the economy is manifested by loss of jobs and investments.
Stimulation of reducing energy consumption is achieved by providing incentives to replace electrical equipment with energy efficient equipment, but also some other measures:

- rebates for implementation of energy efficient ligthing systems and use of fluorescent lamps;
- replaces standard water heaters with high ‑ efficiency water heaters;
- efficient room air conditioners;
- rebates for installing and use of solar water heaters;
- insulation of floors, attics, walls;
- sealing of doors and windows.

For registration the measure of energy efficiency a representative indicator is the energy intensity that at the macroeconomic level is quantified as ratio between energy consumption and GDP.
Increasing energy prices will cause changes in energy consumption behavior, but also in demand and consumption of other goods and services, due to propagation of this effect across the economy.
Another study aimed the effect of energy policy on SMEs, pointing out that "the Adoption of the Directive on energy performance on buildings is likely to lead to job creation in the SME sector, through the certification and installation of more energy-efficient equipment" [Lupan, 2008].
Investments in renewable energy can generate increasing number of jobs caused by expanding the number of activities directly or indirectly related to these investments.
Creating new jobs in its turn generates revenue for the companies directly and indirectly involved in this investment, but also investments of employees in housing and consumer goods, with direct effects on regional development.
Therefore there can be identified the indirect effects of the development of industries or some business partners, suppliers of equipment, facilities, materials.
On the other hand, creating a significant number of jobs occurs during the realization of investments. During exploitation their number is expected to

decline, given that new technologies are more efficient, and productivity is higher.
The effects are manifold and depending on the policies adopted by the State in the economy.
For example, because the financing costs of energy production based on solar energy are significant, in the USA a group of companies involved in this process advocates financing streamlining the process by creating a standard method for facilitating such transactions (Sidney Hill, 2014). Such a procedure would result in reducing the cost of capital for such investments and thus reduce energy prices.
Providing incentives for companies in the field determine indeed some expenses from the state, but in turn, they are generating revenue for the state budget and local budgets through taxes levied by the State from these companies.
More, the creation of new jobs induces a demand for education and training to create and train of categories of specialists. If the state will provide education and training expenses, this will involve increasing spending. But if this task will be taken over by the private sector, the state will be absolved of these charges.
Some forms of renewable energy have a negative effect on the landscape, but the visual impact is difficult to quantify in financial terms.
There are a number of studies made in Germany, Spain and other EU countries that have addressed the issue of the impact of policies of expanding renewable energies over those conventional sources. Thus, in terms of net employment effects, they are negative, given that although the design and implementation phase there is an increasing number of jobs in the renewable energy sector, but, increasing energy prices lead to reducing the number of jobs in other sectors.
The EU has developed a series of programs for promoting greater use of renewable energies. Romania in 2011 exceeded the target of 19.6% reaching a 21.4% share of renewable in total final energy consumption, [Eurostat, April 2013], primarily by exploiting the wind potential. At this helped and implementation of green certificates to stimulate investment.
Development of the renewable energy sector reduces maintenance and operating costs of conventional energy sector and the investments in this sector. Furthermore, it reduces dependence on imported fossil fuels.
Among the financial instruments it can be used subsidies, co-financing of thermal rehabilitation, tax exemption on issuing permits for carrying out such works, the introduction of white certificates in order to impose quotas for reducing consumption possibility to trade customers, tax deductions, grants or reductions in interest on loans for this purpose.
It can be used also the mechanism of mandatory quotas in production or consumption as the non-financial direct instruments. Indirect mechanisms of intervention the most common are information, consumer education, standardization and certification.
In the case of energy consumption in transportation field, the measures aimed at modernizing the fleet and traffic optimization.
Energy pricing mechanisms can reduce energy consumption and lead to implementation of effective solutions for its use, both in the domestic environment and in economic entities. The adoption of stimulating pricing solutions for the increase energy efficiency has the advantage of setting up funds for financing investment projects in new production capacities, rehabilitation and improvement of technical performance for the existing facilities.
Government decisions on excise duties and other taxes may lead to significant changes in energy prices. For example, in the EU, their share in the total energy billed experienced significant increases in recent years, both for industrial users, as well as those households.
On the other hand, the policy on reducing emissions of greenhouse gases will lead to the necessity to realize important investments in energy infrastructure and equipment.
Since investment in new energy efficient equipment involve significant expenditure in the budget of companies, most often, they are put in a position to make appeal bank loans. There is a risk however, that due to the limitations of banks, there don't do such investments or to choose less energy efficient equipment.

3. Impact of energy policies in Romanian business environment

In Romania, in the 90s, under-funding of the energy sector, kept in service outdated and inefficient installations and equipment. The sector also faced problems caused by lack of efficiency in electricity production, as well as losses between producers and end users. Furthermore, mismanagement of recent years of the companies in the energy sector, most often by political appointees, with low level training or even no experience in the field, it is added to the current situation in the sector.
Energy intensity was well above the EU average, while the buildings were energy intensive due to the way they were designed and inefficient central heating installations. Moreover, the lack of real policies in the field of urban energy and measures to ensure the heating, determined, since the mid 90s, in some regions of the country, the centralized system completely disappeared only in a few years. Social protection measures have been put in place non-unitary and were based on providing subsidies

for fuels used for heating. Eliminating subsidies led to a considerable increase in bills, with disastrous effects for those with low incomes.
Not being a priority, energy efficiency of some regions increased only by closing energy intensive industrial enterprises. Moreover, maintaining regulated prices, direct and cross-subsidies in energy, didn't encourage taking energy efficiency measures.
The wrong energy policies carried by the post-revolutionary governments, through its use as leverage in solving social problems, has only to delay structural changes in the sector and stifle economic development in reality. EU integration has resulted in the need to adapt to its requirements, but, unfortunately, with rather large delay, which will prevent, even in a fully liberalized market conditions immediate decrease in energy prices. Rather, it is estimated a price increase both for households and for the non-residential. This will result in social problems, major financial difficulties due to the vulnerability of a large enough share of consumers. To mitigate the financial impact on households was set a longer period of deregulation in prices for these consumers.
Continuous increase in energy prices in order to align them with the values charged in the EU will have a major effect on low-income population, whose share in population structure is important, increasing its vulnerability.
The elimination of subsidies to fossil fuel mining activities may cause their ceasing, due accumulated arrears in the last 25 years.
Disposal of the old plants requires a series of environmentally works, which determines the need to allocate funds for these activities.
For the industrial sector, companies in energy-intensive industries such as steel industry, the automotive production of aluminum, fertilizers, and construction will be most affected. But the effects will be different on the companies according to their level of technology and energy efficiency of equipment, the share of energy consumption in total production costs.
In the period 2013-2015 Member States may benefit from the possibility of a state aid in energy intensive industries, as a form of compensation of indirect costs for the CO2 emissions reflected in the price of electricity.
Another economic issue facing the energy sector is the risk of penalties due to delay payment in the transposition of EU legislation set.
The existence of several producers of electricity, with a moderate concentration of market share, given a greater supply than demand, could influence liberalization process, which could result in only a moderate initial increase prices or even insignificant. Difficulties arise however when the natural gas market, characterized by a small number of manufacturers and importers.
It is necessary however to be considered also the administrative costs of compliance, costs of informing consumers need. On the other hand, for the consumers can appear a number of charges generated by the regulations.
Policy of promoting renewable resources leads to increased energy bills with negative influences on the industrial and domestic consumers, the effects on the latter being both directly through higher prices paid for power, and indirectly by increasing the prices of products and services of industrial consumers.
A sustainable energy policy is characterized by the reduced environmental impact, use of renewable energy and energy efficiency.
Romania applies the mechanism of mandatory quotas for the procurement of green certificates to support the production of renewable energy. This mechanism stimulates investments in technology and production capacities. The market is distorted, manufacturers of this type of energy being favored. Providers are required to buy shares of energy products, this transferring costs to distributors, who in turn transferred them to the final consumers.
The most important wind potential is in mountainous regions, Dobrogea and Eastern Plain, while exploitation of solar energy can be made at the highest efficiency in the Western Plain and the Southern part of Romania.
In order to protect oil and gas resources that are limited, Romania needs to ensure adequate resources by direct or indirect agreements with Russia and some Eastern countries rich in resources. Besides the advantages of the imports of resources, in the case of indirect agreements, there is the risk of establishing a uniform price across the EU, given that in Romania the population income is much lower than the European average.
Regarding the insurance of interconnection, for Romania it has a great importance its achieving it with the Republic of Moldova, both in terms of the electricity network, and that the transport and distribution of natural gas.
Dependence on imported natural gas from a single source, especially in the current geo-political context, creates difficulties not only for Romania, but also for an important part of the member countries.
Given that hydrocarbon reserves available to the Black Sea, it presents a strategic role in the European energy map.
There is a mutual influence and even an interrelation between economic development and energy strategy of a region. The economic development of a region offers the potential for regional energy development providing financial resources. The level of technology influences the efficiency of the companies in energy sector, but

also the energy prices and implicit the financial results of non-domestic consumers and the energy expenditure share in the total household expenditure of domestic consumers.
Increasing energy prices due to liberalization of the energy market will increase inflation by share which has energy in a basket of consumption underlying the calculation of inflation rate. The increase in energy prices may be due also to the investment programs run by companies in the sector or the share that have renewables in total energy production and the number of green certificates for each MWh of energy.

4. Conclusions

Given the complex energy profile of Romania, there are some important issues that have to face. The main important problems during last two decades are:

- insufficient involvement in supporting programs to increase energy efficiency
- energy market distortions due to corruption and the existence of interest groups that have affected companies in the sector
- delay to take measures related to building energetics;
- the absence of clear directions in terms of systems of centralized heat supply, manifested since the 90's, which resulted in some cities even their abolition.

First of all, there need to take measures to solve these issues. The fight against corruption can be a step in order to change the energy business environment. But it is necessary to take in consideration also economic, financial and technical solutions in order to overcome these drawbacks.
The introduction of fiscal instruments to stimulate the development of programs designed to increase energy efficiency investment could determine benefits both for households and companies, which in turn leads to increase their economic competitiveness.

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