ALTERNATIVE ENERGIES' MANAGEMENT IN ROMANIA – MEMBER STATE OF EUROPEAN UNION

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Abstract

Due to the negative effects on the environment made by the usage of fossil fuels, a poor management regarding energy sources made the world leaders to rethink the development strategies for the global economy. As a consequence the European Union made its own strategy based among others on utilizing the alternative energy sources. The paper analyses the implementation of these strategies in Romania, who is an EU member since 2007.

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Alternative energy is a very important concept today, when the future development of mankind depends on a clean and healthy environment in a more and more globalized economy. So the concept of sustainable development was born. The concept means that we should fulfill the present needs without compromising the ability of future generations to meet their own needs.

Sustainable development was the main theme of the "Earth Summit' held in Rio de Janeiro in 1992, where the world leaders drew up a plan consisting of 27 principles in order to achieve a sustainable development in a less polluted environment.

European Union, prepared a set of rules of its own concerning these aspects and it is concentrated on seven aspects, like climate change and clean energy, sustainable transport, and so on. Due to insufficient progress this plan was modified throughout the years and the Member States are closely monitored in order to implement these objectives.

Romania, as an EU Member State since January 1st 2007, had to implement these regulations too starting with a better resource management. According to recent studies, in Romania the electric energy consumption is one of the highest in the Central and Eastern Europe. A better management means economic growth, pollution reduction and a resource saving in order to be used in a more productive

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way. In this context the alternative energy sources have become a major preoccupation.

"Alternative energy" refers to that type of energy obtained from a variety of sources and all of them have the capacity to regenerate. Such types of energy are solar energy, Aeolian energy and so on. These types of energy can be used in all sectors, from industrial processes to home heating systems, to produce the fuels needed for transportation etc.

Energetic potential of renewable energy sources in Romania.

Solar Energy. When we talk about alternative energies the accent is made mainly on solar energy, a resource very little utilized today, considering that the total value of solar energy intercepted by the Earth is 15000 times more than the whole planet needs. An important reason for using this type of energy is that using the solar home heating installations has a positive impact on the environment: by covering up all the roofs and surfaces that are orientated into south 20% of the energy we use today could be obtained. Every house is somehow heated up by the sun, but some of these houses are designed to use the best of this type of free energy. For example the windows on the side where the sun shines more are bigger than the rest of the house. Another possibility is to equip the house with rolling shutters with thermo-insulation that maintain the heat accumulated through the day. This is called passive use of solar energy. This type of energy can also be used for water heating, through a system of black panels mounted on the roof of the house in order to absorb the as much sun heat as possible.

Solar panel systems are a reliable source of electricity in areas that are less accessible in terms of geographic positioning. Some of the energy produced by these systems is used to charge batteries that will be used in the night.

Romania is not at its first attempt to use the solar energy. In the last two decades of communism the conquest of finding new ways to produce energy was at its top. This started after the oil crisis in the 70s. It was a sign that Romania was trying to get in touch with the developed countries. But, unfortunately because the population was not interested enough by this technology, the research and funding were stopped.

Aeolian energy. In Romania studies have shown that the best areas for this type of energy are situated along the coast of Black Sea, in the mountain areas or in the plateaus of Moldavia and Dobrogea.

Thermo-photo-voltaic energy. It is a relatively new way of producing electricity and it is based on fuel cells that convert thermal energy or infrared radiation produced by burning natural gas or by the concentration of solar energy in electricity. The basic element of this method is that the energy is produced by a chemical reaction inside this solid cell. The process is similar to electrolyze.

The biomass represents the vegetal component of nature. As a form of storing the

solar energy in a chemical form the biomass is one of the most popular and universal resource. Not only that it provides food but it offers energy, construction materials, paper, medicines and chemicals also.

The biomass is used in achieving energetic purposes since the discovery of fire. Today the biomass fuel can be utilized in a variety of situations: from home heating systems to producing electricity and car fuels.

The electric power plants that use the biomass produce electricity by putting to good use the agricultural, industrial or domestic residues in burners along with coal, oil or gas or by converting biomass into combusting gases that can replace the natural gases.

The usage of biomass has increased in the past few years. In some developed countries the biomass is utilized intensively. An example of such a country is Sweden which provides 15% of its electric needs from primary energy sources. In United Sates of America 4% of the total energy produced is made from biomass, which is about the same amount the atomic power plants produce.

The biomass can easily offer over 20% of the energetic needs of a single country. Furthermore, using the biomass to produce ethanol can reduce the oil imports with 50%.

But, unfortunately Romania is far from Europe if we talk about clean energies. In Europe there are 34.000 MW installed in Aeolian turbines which produce approximately 70TWh, while in Romania there are 900kW. In Europe there are 14 million square meters of solar-thermal panels, while in Romania there are less than 4.000 sm. Only in five cities in Romania the required thermal agent for home heating is produced out of sawdust. There is only one sunflower oil producer that obtains his technological steam by burning sunflower seeds' skin; there are only two places in Romania where there are installed photo-voltaic cells that provide the electricity needed by a home. Regarding the Aeolian energy the only place where we can find the systems for producing this energy is near Ploieşti in an industrial park.

Anyone who knows something about energy, can see that Romania is an energy waste land. It's obvious that the waste got to be stopped, even though Romania has the resources to alternative power, but how? Our country has the greatest potential in alternative power but the investments made are scarce. Great companies or business men announced their plans regarding alternative power, but not even one has been finished or even commenced.

Romania has the third geothermal potential in Europe, after Italy and Greece, and it is considered to have the biggest potential on Aeolian energy; further more it has more solar energy than Germany or Austria that are much more developed than us.

There are only 12 suppliers for Aeolian energy but their resources are up to to 6,5 MW. In comparison a nuclear reactor at Cernavoda has 700 MW, the Iron Gates hydroelectric power plant has 1000MW, Turceni thermal has 1700 MW. The Aeolian energy possessed by Romania sums up to 14 000MW.

Besides that there are 5 thermals that use sawdust for fuel, but these units have no more than 500 clients, especially from domestic users. These units are placed in Tasca,Huedin, Intorsura Buzaului, Vatra Dornei and Gheorghieni.

Regarding geothermal energy investments were made only in Oradea and Caciulata-Calimanesti, the total capacity being 150 MWt. In Iosia district, Transgex has build a geothermal that provides 5% of the hot water in Oradea.

The local authorities from Calimanesti have installed three energy probes with PHARE money.

The only investment made in solar energy since 1990 was made in Mangalia, by Rominservices Therm, which has installed 540 solar panels; this helped decrease the heat bill by 16% to 660 apartments in that region. Atilla Korodi, former ministry of environment and sustainable development, recently said that if we were to use the entire solar energy in Romania we would decrease the heat energy bill with 15%.

But what should we expect if the level of endowment is very weak, even though the intentions and projects of construction of production capacities of alternative energy, are really good. The main target of private investors is wind energy, and preferred location is Dobrogea. Officials of Transelectrica, declared recently that they have received requests to connect to the national energy network a number of Aeolian power plants which totaled a capacity of 12,000 MW. To integrate such a capacity a new national energy system is needed, said Dan Preotescu executive in Transelectrica. After the review, 75% of projects are still only at the stage of intent.

Currently, the most advanced investment is a 600 MW Aeolian power plant eveloped by Tomis Team Tariverde area of Tulcea County. It will become operational next year, according to Transelectrica officials. Tomis Team is a company owned by an offshore company in Cyprus, Cyprus CWP Limited, and by businessman Emmanuel Swedish Muntmark. Also in the area Tariverde, the Spanish Iberdrola, the company Eolica, developed a wind farm, of 600 MW, but the project is less advanced than the previous one.

The wind in Dobrogea region becomes increasingly attractive to large energy companies in Europe. This was observed especially in the last two years, when a few transactions were recorded in the business of developing wind energy projects. Italians from Enel, which are present on the Romanian distribution of electricity, bought Blue Line LLC, which owns the rights to develop a wind farm with a capacity of 200 MW.

Also, Czechs from CEZ, former Electrica Oltenia, have purchased a wind park project of 600 MW from Continental Wind Partners LLC. Construction of the park, in the area and Fantanele Cogealac of Constanta, is estimated to reach 1.1 billion euros. Also, the Portuguese group Energias de Portugal acquired from a company registered in Cyprus, 85% of the capital of Renovatio Power and Cernavoda Power, which developed several wind farms totaling a capacity of 735 MW. According to the Romanian authorities, the potential of green energy looks like this: 65% biomass, 17% wind energy, solar energy 12%, 4% micro-hydro power plants, 1% photovoltaic

energy and 1% geothermal energy.

But have you ever thought about our neighbors, the Hungarians and Bulgarians, how do they do it? Well, Hungary, the regional leader in geothermal energy, even if they do not enjoy the natural conditions existing in our country, Hungary is more advanced in terms of resource alternatives usage. Strong point of the Hungarians is the geothermal energy. Currently, plants in Hungary have a capacity of 690 MWt. Moreover, they have a better situation regarding investments in biomass power plants with a central at Borsod 30 MW and one in Pecs 50 MW. Regarding aeolian energy, in 2007 there was a capacity of 65 MW, according to Market Research Analyst.

This means that Hungarians use 10 times more wind energy than we do. In the future, Hungary will invest in all alternative energies. Iberdrola, a Spanish company is developing a wind project of 108 MW at Komarom and another at Ikervar producing 27 MW. SWECO Company will build a biomass power plant of 210 MW to Dunaújváros and Kalocsa Hoeromu will build one at Kalocsa and the other at Szerencs. In addition, there are two projects for constructing two solar power plants at Tatabánya and Retsag of 80 MW and 50 MW.

Bulgaria now stands better than Romania, but also than Hungary. According to Navinite, our southern neighbors have an installed power of 105 MW. Their maximum potential is 3000 MW, compared to 14,000MW as it may develop in Romania. Regarding solar energy, Bulgarians dowry is 2 MW, and geothermal energy is used only 30 MW out of 107 MW. Just like in Romania, most of the consistent projects are made in aeolian energy. Geo AES Power will build a farm of 200 MW in Kavarna, Balkan Energy will invest in everything from a 200 MW from Dobrich and Plambeck Neue Energien will invest in a 250 MW power plant. Next year, two solar power plants will come into operation in the area of Pirin.

Among the ex-Soviet countries, Ukraine is a country that invested mostly in alternative energy. Currently, it has a production capacity for Aeolian energy of 86 MW and out of biomass Ukraine will provide 0.5% of the energy.

However there are other states that are less advanced than Romania in this area, namely Serbia and Moldavia. In Serbia, the only direction that was insisted was geothermal energy. Currently, there are 88 MWt installed capacity. The investments announced so far are in biomass and Aeolian energy, but they are small. In Moldavia, alternative energy means just a few capacities under 1 MW in biomass. In terms of Aeolian energy potential the country can provide up to 1000 MW.

But this should not make us happy, it should give us something to think about because Romania remains an under developed region in alternative energy. Thus the largest oil company in the country, Petrom, wants to make money from alternative energy. After it announced that it would build a gas power plant near Petrobrazi refinery, Petrom intends to produce electricity from renewable sources. Company officials say that they have identified several projects that required a budget of 2.3 million euros in the years 2008-2009.

Petrom projects relate to obtaining energy from exhausted oil and gas fields, after assessing geothermal potential, biogas production from biomass, development of Aeolian energy projects, the separation of carbon dioxide production and reinserting it in the pool, in order to increase factor for the recovery of crude oil.

By exploiting the complementarity of natural gas and electricity and the development of projects in renewable energy, Petrom will transit over the medium term, from an oil and gas company to an energy company. This was shown in a press release. "We cannot say if Romania's energy reserves will the country's auto sufficiency, as some experts have said that Romania is a candidate for energetic auto sufficiency," said Mariana Gheorghe, Executive General Manager of Petrom. According to experts, Romania has oil and gas for 14-15 years if the current pace of production is kept. Petrom has the monopoly of oil exploitation and shares the gas production market with Romgaz.

In conclusion it may be said that the last two decades of the communist regime were contained by a real frenzy of nonconventional energy production. Economic analyst Ilie Şerbănescu said that testing various technologies was an attempt to connect Romania to the world: "After the oil crisis of the early 70s, worldwide investment in research and production for alternative forms of energy was a good idea, taken from Western countries. If we continued the investments in research on this segment, today we would be far away. "

It seems that time has passed, but even now we can't figure out what we need to produce the green energy. At the same time, needs to be outlined the benefits of renewable energy not only in terms of environmental protection, but also in economic and social fields. Thus, increasing air quality, energy security, and increasing the employment and development of business environment are key objectives to be achieved by promoting renewable energies.

According to the strategy for putting to good use the renewable energy sources, the investment requirements in the period 2003 - 2015 was estimated at 2.7 billion Euros, out of which over two billion are a direct investment. In this sense, traders and local authorities will be able to use the Environment Fund Administration as financial instrument. AFM finances such projects and supports 50% of the eligible project costs (for businesses) and 60% (for local authorities).

The essence of ecological responsibility is not only maintaining nature as a space for continuing vital activity, but also in protecting the genetic fund of the human population, thus becoming an important social problem of political humanity. The public in Romania is not sufficiently aware, at present, by the importance of preserving the environment and complying the required measures because the personal welfare is not associated with the environment.

If the Romanians' attitude doesn't change, we will assist in further degradation of environmental conditions, regardless of the authorities' efforts to involve the financial and human resources.

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