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DETERMINANT FACTORS FOR ELABORATING THE ENERGETIC STRATEGY IN ROMANIA

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ABSTRACT:
Regardless of the previous evolution, the energetic industry draws the attention upon itself through several specific elements which, as a whole, can become determining factors in designing and underlying the energetic strategy. From our point of view, they can be classified as follows: the final product of the energetic industry, the production process, the operating mode of the energetic market, the pricing and rating system for electricity, the perspective of creating power plants.
KEYWORDS
energetic strategy, energetic market, power plants, demand of electricity, offer of electricity, captive and eligible consumers

1. INTRODUCTION

The energetic strategy, as a component of the national economy, includes a set of major objectives of the national energetic system which pushes its long term activity towards an efficient, equitable and compatible usage of energetic resources in order to provide the necessary quantity of electric power. Energetic management specialists reveal that the elaboration of such a strategy in this field must start from the analysis of several variables, for example; the institutional frame and the field legislation, the price of energy and the relationship between supplier and consumer, the national and international state of energetic industry, etc.

2. DETERMINING FACTORS IN THE ENERGETIC STRATEGY

Regardless of the previous evolution, the energetic industry draws the attention upon itself through several specific elements which, as a whole, can become determining factors in designing and underlying the energetic strategy. From our point of view, they can be classified as follows:

a. Considering the final product of the energetic industry

Electric power is indispensable to economy and society; it is a specific product, a necessary product which must be accessible to any man in a civilized society; due to this fact the energetic industry holds a special place within the national economy. Thus, several characteristics can be outlined (1, 2, 4, 5): electric power is not a product which can be stored therefore it requires a good correlation of production and consumption, that is to say they must be simultaneous; in this branch there is no such thing as unfinished production or product production in progress; electric

power is a public commodity which must be available to the entire population on terms of some economic regulations set by governmental authorities, invested with the legal power to control that certain field of activity; the transmission of electric energy on long distances through the national electric-power-supply network which is connected to the unified West European energetic system, and can provide electric power for the entire country; it can even export energy or import it in case of shortage/deficiency; the production of electric power can be expressed by specific indicators such as: the power chart instead of global production, the om/MW indicator instead of productivity expressed in numbers, the volume of fixed and variable costs per product unit instead of 1000 Lei product production costs and the units used in measuring the production capacity are usually quantitative (kWh/an, Gcal/an); numeric units are not relevant in this field; electricity is a "specific product" which strikes up certain characteristic relationships between suppliers and consumers, unlike commercial relationships established between sellers and buyers of common products.

b. Considering the production process

The main characteristic of the production process within the energetic industry is the fact that there is a close connection between the generation and the consumption of electricity, the phases of electricity generation process and those of the consumption process blend together, and this makes the use of production capacities depend on the operational command of the national energy dispatcher, and in underlying an energetic strategy it should analyze all these aspects in detail. Therefore, due to shape of the daily consumption curve and allowing for the implication of electric power plants in covering the lead chart of the energy system which has ups and downs, as well as intermediary areas, electric power plants fall into three categories (5): basic power plants, semi-basic power plants and peak power plants.

They function according to a plan for power plants drawn up by the Commercial Operator and it can be modified in the following situations: when the request for electricity and thermal power is different from the preliminary one; when hydrologic conditions are different than the forecasted ones; when several energetic groups are accidentally taken out of service; when some energetic production capacities are not put into function on time.

In order to obtain electricity, according to the energetic source and the used technology, the generating processes are mainly carried out in four types of electric power plants: thermal power plants using natural gas, black oil or coal; hydroelectric power plants using the forces of water; nuclear power plants using uranium as raw material; power plants based on non-conventional technologies (wind-driven, solar, bay-type power plants, etc.)

Starting from these general coordinates of production processes within the energetic industry, several characteristics can be outlined:

- the period of time taken into consideration is a calendar year because the generation process is continuous;
- in dimensioning the generation capacities the peak consumption must be taken into consideration and this fact leads to a miss-usage of the existent production capacity, because part of it is needed only during the peak hours of the energetic system;
- in order to ensure a continuous supply of electricity to consumers it is necessary to provide, at the national energetic level, a reserve power because electricity cannot be stored;

- the coefficients for using fixed assets are relatively low compared to other industrial branches and they vary a lot because they are activated before electricity consumers become operational;
- the period of time needed to reach normal functioning parameters is uncertain;
- the use of production capacities is closely related to the economic efficiency at system level and to the load factor of the power plant is determined by the national dispatcher.

c. Considering the operating mode of the energetic market

The energetic market dates back at the end of the 19th century and it represents the mechanism which ensures efficient and sure commercial relations for both electricity consumers and all economic agents within the energetic sector, producers, transporters and distributors, respectively. The Romania energetic market was formed and it developed based on the regulations presented in the articles of the Commercial code of the electricity wholesale market, elaborated by the National Energetic Regulation Agency in 1999 in concordance with the articles of Directive 96/92 EC (3).

The functioning mechanism of a competitive electricity market can be described by two types of transactions: *buying electricity on the energetic market*, through the indicator of production and consumption equilibration and coordination, as well as of establishing short-term prices; *buying through bilateral transactions* based on negotiations between electricity buyers and sellers, thus there's no need for a centralized market. According to these types of transactions, the Romanian energetic market is divided into a competitive segment of bilateral contracts between producer and final qualified consumers that are able to choose their own electricity supplier and a centralized segment in which the competitive impact is more reduced compared to the competitive segment.

In the year 2007, the energetic strategy estimated for the electricity market a degree of openness of 100% so that it could become a component of the European market, considering the logistic development in this respect and the foundation of U.C.T.E (Union for the Coordination of Electricity Transmission) to which Romania adhered in 2003. The benefits of interconnecting with this system would be visible especially after connecting South-East Europe to the main network, with low transmission prices, independent of the distance between the electricity generator and consumer. In order to integrate SE European countries in the structure of the European energetic market, the main objective is to set up a regional electricity market in Bucharest based on a partnership between the electricity companies within the area. Accomplishing this would bring benefits to Romania which can become an important electricity exporter for the bordering countries on condition it maintains the existent functional capacities and finalizes the investments started for hydroelectric power plants.

The role of energetic market in the national economy is highlighted by the two characteristics of a market: the demand of electricity coming from electricity consumers and the supply of electricity coming from electricity generators or service suppliers within this sector.

The demand of electricity coincides with the consumption of electricity and it is determined by the maximum absorbing power demanded by captive and eligible consumers from industry, agriculture, constructions, etc, as well as by domestic consumers during a limited period of time. The forecast of electricity consumption is based on a series of possible evolution scenarios for the demand and consumption of electricity, elaborated by specialized institutes within the country and from

abroad. In order to forecast the electricity consumption for the year 2020, the Institute of Energetic Studies and Researches has analyzed eight scenarios of economic, technical and social evolution, among which only two have been considered to be optimum. Thus, the reference scenario (scenario 1) starts with the premise of increasing the efficiency of industrial activities by reducing the energetic intensity by 7% until 2020, on condition the demand of electricity increases from 34.731 MWh in 2000 to 69.965 MWh in 2020. The fifth scenario of energy conservation forecasts a reduction in the intensity of electricity by 10% until 2020 because of the increase in the demand of electricity by 38% until 2010 and by 79% until 2020. The evolution of the demand of electricity by the year 2020 in our country, as forecasted in the two scenarios mentioned above, is presented in the table 1:

Table 1- The evolution of the demand of electricity in Romania by the year 2020 (M.U.= MWh)

No	Demand of electricity according to destination	2010		2020	
		S1	S5	S1	S5
	Total commercialized energy, divided as follows :	49965	46313	69965	63.00
1	Industry	31667	28181	47819	41106
2	Agriculture	3015	3018	4656	4649
3	Transportation	4723	4054	5774	4840
4	Population and services	10561	11061	11716	12605

**Source: I.S.P.E. – National study on climate changes*

The offer of electricity or the generation of electricity presents a series of characteristics which derive from the fact that for each day of transaction producers have to make an offer of electricity generation that must include the available hours and production costs. The price levels are established for each 24 basic accounts intervals of a day of transaction and they must be submitted by 10 o'clock in the morning in order to draw up the operational program.

d. Considering the pricing and rating system for electricity

The pricing and rating system in the energetic industry represents the total of types or categories of prices or rates used in the trading relations between energetic companies, as well as between them and industrial and domestic consumers. The specialized literature reveals the fact that there is no clear delimitation of the way the two concepts are used within the energetic industry; in most of the cases they have the same meaning, mainly because the rate is a form of expressing the price. Some specialists consider that the concept of rate for electricity can be used in the case of domestic lighting and utilities, while for the electricity used for other purposes the concept of price can be used (1). Moreover, in electricity transactions on a specific market as well as in international transactions the term price is being used.

In the case of Romania, setting the electricity generation rates has the following characteristics: the installed power rate exceeds the necessary power rate; therefore, the rates are set based on the medium generation costs and not according to long term marginal cost; the predominance of thermo-electric power plants which generate approximately 60% of electricity makes the rate of electricity difficult not to be separated from the rate of thermal energy; the process of setting prices and rates for the energetic industry starts from generation costs which can differ according to the various categories of consumers based on the demand, intensity and on the characteristics of the power curve.

One peculiarity of the analysis of the relation between the cost and price of electricity is the structure of the electro-energetic system based on three components – generation, transmission, distribution – which can be classified as

phases of a complex production process, since they are inseparable considering the technological process and they bring their own contribution to the price of a kWh that reaches the final consumer. If before the year 1990 the price of electricity was grant-aided in order to disguise the problems of efficiency through a low price, after 1990, the national adverse budget, the absolute monopoly of electricity and thermal energy generators and distributors, the cross grant-aids offers to domestic consumers by industrial ones, as well as the pressures coming from international institutions (the International Monetary Fund, the World Bank, the European Union) regarding the continuous increase of the price of energy necessary to line up to the global price have marked a new price policy in the energetic industry in order to ensure the premises for an efficient industry. Analyzing the evolution of the medium selling price of electricity during the last couple of years indicates a general ascending tendency of this price expressed in lei, except for the interval between August 2002 and April 2003 when there was registered a reduction of prices (a reduction by 0.05% in December 2002 and by 1.4% in April 2003) for the first time after 1989.

e. Considering the perspective of creating power plants

Another characteristic of the energetic system is "the vertical segmentation" through setting up "energetic holdings" formed after the merge of thermal power stations and mines which supply energetic resources and even with the development of other industrial companies which are great consumers of electricity and thermal energy.

The experience of developed countries demonstrates that the informational links between the productive component, thermoelectric power stations respectively and the mines within an energetic holding are direct, and they ensure a better coordination of activity and greater flexibility towards the demand of electricity. Such integrated energetic stations are functional in other countries as well: for example, Point Tupper (Canada) is one of the largest industrial parks supplied with primary energy like oil and includes besides the oil refinery, a thermoelectric power station that uses the secondary products of the refinery; in its turn, the refinery produces the thermal and electric power necessary for the station; the station from Kashima, another representative integrated industrial park consists of several ethylene factories, oil refineries, thermal power stations and other factories of petrochemical products; the industrial parks based on solid fuel from Ruhr region and from Lorraine's coal basin include companies that extract and process coal, ironworks and chemical factories, as well as power generating stations.

Thus, the new power stations will provide continuous operations from extraction, processing and transporting raw materials to the generation of thermal and electric energy, at substantially improved costs and they will be able to create appropriate conditions for attracting investors with the view of privatization.

3. CONCLUSIONS

Presently, there are power stations set up around three thermoelectric power stations based on lignite – Turceni, Rovinari and Craiova II Isalnita – which include an important number of coal pits and a mine belonging to The National Company of Lignite Oltenia. Their importance on the electricity market is estimated to be quite great considering the generation of electricity which will reach 5000-5500 MWh, meaning over 10% of the annual electricity generation of our country.

Restructuring the coal mining industry corroborated with that of the energetic industry will encourage the setting up of such a power station in the Jiu Valley through modernizing the longwall from Paroseni and Vulcan mines; this will double he

productivity and it will significantly increase the production; Paroseni thermal power station is in charge of modernizing Coroiesti Coal Processing Plant, of increasing its capacity/efficiency and of rehabilitating the system.

This "Integrated Paroseni Program" could be extended in order to create am energetic holding which includes the coal mines and coal processing stations belonging to the National Company of Pit-coal from Petrosani and the pit coal based thermal power stations from Paroseni and Mintia.

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