

A COMPARATIVE STUDY OF THE COMPETITIVE ENVIRONMENT IN THE ELECTRICITY SECTOR OF THE REPUBLIC OF MOLDOVA AND ROMANIA

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Abstract

The current situation in the energy sector of Moldova reflects the difficulties caused by sector reform process and transition to the principles of functioning of the sector in the market economy. Development of energy sector is under almost total lack of energy resources, which affect the energy security of the country. Moldova's accession to the European Energy Community, and the harmonization of national legislation with Energy Community acquis that would secure the implementation of a sustainable energy system. Taking Romanian experience in the liberalization of energy sector will boost the development to a normal competitive environment in the energy sector of Moldova.

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1. Introduction

Energetics is a key branch which depend, in fact, on the developments of entire national economy and macroeconomic security of the Republic of Moldova. Moldova currently can not provide full energy needs from its own sources, and is largely dependent on import. This can affect macroeconomic stability of the state, because energy represents a strategic branch of the

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national economy, and if it is a vulnerable link in the economy may create a malfunction of the entire economic system. If we follow the evolution of the energy balance of the country in the last 10-14 years, we see that the overall situation is practically the same, 4% are from domestic sources, of which 80% are solid fuels, the remaining energy demand is met from external sources (BNS, 2013).

The Republic of Moldova is in a difficult situation on ensuring its own energy security and actually Moldovan government may not have a full control in this field. Therefore, diversification of import sources and interconnection with other energy systems and reducing the share of imported energy sources in the national energy balance, particularly of natural gas, attracting investments, de-monopolization and liberalization of the energy sector is particularly important targets for energy system of the Republic of Moldova and for national economy.

Addressed news issues is that Moldova's accession to the European Energy Community (EEC) and the assumption of liabilities in this regard, including the implementation of the energy package III, entails some changing rules in the "energy game ", which has an impact on our state.

European Energy Community Treaty provides that members who are outside the Community to adopt EU regulations regarding the single energy market and liberalization of natural gas and electrical energy.

The study of Romanian experience in the electricity sector will allow the takeover in a most efficient way the best practices in this area, energy security, creating a safe and competitive investment environment.

2. Electricity sector in Romania

The energy sector is traditionally a regulated sector, characterized by the existence of enterprises operating in conditions of natural monopoly. For a long time this area was considered to be outside the competition rules. Progress in liberalizing this sector in the European Union was recorded in the mid 90s, when they started to remove obstacles to competition, while having the opening of the market. (Bael, 2005).

Although the transition to a market economy in Romania began in 1989, the liberalization of the energy sector began after 2000, with the separation of monopolistic activities of commercial ones. Having examined from this point of view we can speak of a beginning similar to that of the Republic of Moldova, but the internal resources and the reforms carried out in

the Romanian energy system resulted in achieving superior results to those of the Republic of Moldova. Romania has made significant progress, as of 2005 there were new spot trading mechanisms of electricity, allowing a bilateral tender sale, which will provide up till present the best liquidity in Eastern Europe.(SER,2007)

Currently, the energy sector in Romania is part of the energy system of the European Union, and in this respect Romania's energy policy pursues the objectives set at EU level. Internal energy market is still fragmented and has not reached the potential of transparency, affordability and choice. Companies have grown beyond national borders, but their development is still affected by a number of different national rules and practices. There are still many barriers for an open and fair competition. (SER, 2007)

Romanian energy sector is partially regulated . Activities of production and those of electricity trading take place in a competitive regime and energy transport activities by high ,medium and low voltage electric networks constitute natural monopolies and place in regulated regime. (RCC, 2012)

At the national level in Romania there is a wide range of sources of electricity generation (hydro, nuclear, coal, oil, natural gas, wind, biomass, solar, etc..), which contribute significantly to increasing the safety of the power electricity. The most significant existing resources are coal and water (hydro), while natural gas have a low share. The statistical data shows that total installed capacity of electric power from the National Power System (NPS) in 2011 was 21,405 MW, of which 30% hydroelectric, 7% nuclear, 59% in power plants and 4% in wind and biomass. Share of energy from renewable sources (mainly wind) recorded significant increases in recent years (RCC, 2012).

Competition between operating companies in the energy sector in Romania are manifested nationally both as a result of differences in regulation and market operating rules and the current level of interconnection capacity between Romania and neighboring countries.

To analyze the competitive environment in the relevant markets in the electricity sector are defined based on categories of activities in this sector, each of these being able to represent a distinct relevant market. The main relevant markets in the electricity sector can be considered:

- production and sale of electricity on the market;
- electricity supply market;

- electricity transmission market;
- electricity distribution market.

Given the need to ensure the permanent balance between consumption and production of electricity are identified ancillary services market and balancing market – it is the market where electricity is traded in order to compensate the deviations from the programmed values of production and consumption. The promoted measures by the European Union to reduce greenhouse emissions generated a development of new markets, as green certificates market and carbon dioxide emissions agreement trading/ Emission trading/ Carbon emissions trading (RCC, 2012).

Production and sale of electricity on the market consists mainly in energy production in power plants for sale to other operators on the wholesale market. The amount of imported energy is physically insignificant, being unable to exert a significant competitive pressure on electricity producers in Romania.

On this market, electricity producers and companies that perform imports are supply-side and other market participants (suppliers of electricity distribution and transmission operators, industrial consumers etc.) buying electricity on the wholesale market are application side. (RCC, 2012).

According to the statements given by the regulator authority , currently the electricity market in Romania there are a number of approx. 170 of companies licensed to produce electricity. Of these, only a part of them conduct effectively the business for which they obtained a license, other companies representing potential competition (RCC, 2012).

Table 1: Concentration indicators of production and marketing market electricity

Nr.	Concentration indicators	2009	2010	2011
1.	Indicator CR5, %	75	81	76,5
2.	Indicator CR10, %	95,9	95	92,5
3.	Herfindahl-Hirschman index	1632	1947	1469

Source: Competition Council Report 2012

The evaluation of the market structure of electricity production and marketing, there is a variation in the degree of market concentration as measured by the HHI index, CR5 and CR10 indicators remained at relatively constant.

Concentration of market production and sale of electricity in Romania is at an average level compared with the situation in other European Union member states. For example, while in Romania the largest energy producer has a market share of approx. 30% in countries such as Denmark, Portugal, Sweden and Hungary, the share of the largest energy producer has values between 40% and 50%, and in countries such as Belgium, Czech Republic, France, Greece, the share of the largest energy producer is between 70% and 90% (RCC, 2012).

The supply of electricity to final consumers can be achieved in a competitive and also in a regulated regime. According to ANRE, on the electricity market in Romania there are a number of approx. 180 companies, licensed to supply electricity. However, as in the case of electricity on supply market operates effectively as suppliers / traders about half of the companies that have supply licence, other companies representing potential competition.

Table: 2 Concentration indicators of electricity supply market

Nr.	Concentration indicators	2009	2010	2011
1.	Indicator CR5, %	42	41	31
2.	Indicator CR10, %	62	51	53
3.	Herfindahl-Hirschmann index	559	518	395

Source: Competition Council Report 2012

Analysis of the market structure of the electricity supply shows a downward trend over the last three years, also may mention a low degree of market concentration that would mean the existence of effective competition on this market (RCC, 2012).

Distribution of electricity includes electricity transmission networks of low and medium voltage power (up to 110 kV). In case of electricity distribution the market is the geographical area in which it operates a distribution system operator, according to the granted license. In Romania there are regulated eight areas of distribution. Between companies operating distribution networks shall not be manifested competition, the work of these operators realizing in a regulated regime. Distribution tariff charged by the network operator is established by ANRE.

Electricity transmission market include also the electricity transmission through high voltage electrical networks (less than 110 kV). In Romania there is only one carrier, and its work is conducted in a regulated

regime. Transmission tariff charged by the network operator is determined differently by ANRE. The application of different tariffs by an undertaking that hold the monopoly although it may create the impression of potential discrimination of contracting firms, it may be motivated by technical conditions.

The electricity sector is characterized by high entry barriers due to the very high cost of initial investment, the long duration of implementation and amortization of investment projects. However, electricity production sector in Romania can be considered as quite permissive for the event that new businesses wish to enter on the market. The main barriers raised by market participants are represented by the existence of long-term purchase contracts concluded in a intransparent and discriminatory way. Compared with the situation in other countries, certain market segments, particularly those that are implementing new technologies (wind, micro-hydro) there is an influx of new entrants companies, along with a decrease in investments in other segments (production sources oil, coal, nuclear) (RCC, 2012).

In conclusion, we found that the concentration of the electricity market in Romania is at an average level compared with the situation in other European Union member states. The diversity of sources of electricity production gives to Romania a high degree of safety in the power supply. The size of energy competitive segment is small compared to the degree of legal liberalization achieved in Romania.

3. The electricity sector of the Republic of Moldova

The current situation in the energy sector of Moldova reflects the difficulties caused by the transition to sector reform and the principles of operation of the sector in the market economy. Development of energy sector is under almost total lack of proper energy resources, 97% of energy consumed is imported (BNS, 2013) and the existence of significant external debt to suppliers.

Examining the power system of the Republic of Moldova identify a number of problems, among which may be mentioned: low energy efficiency (it is 2.6 times lower than in the EU, which is equivalent to a loss of approx. \$ 600 million annually); lack of indigenous primary energy resources (natural gas, oil, coal) and their import; import of electricity; more than the low use of renewable energy sources; deviation fuel mix towards dominance of imported natural gas; uneven location of generation capacity power in Moldova and the

lack of necessary capacity to generate electricity in the right-bank of Nistru to cover their consumption; separate operation of energetic system components of the Republic of Moldova located on the right and on the left bank of the River Nistru; advanced usage of energy equipment (about 60-70 percent) power plants, high-voltage lines and distribution networks; low capacity power lines connecting the South-East and West; reduced rate of energy efficient equipment and non-optimal topology circuit transmission lines; low rates of modernization, for example renovating power grids does not exceed 1 percent per year. (Canter, 2009)

The main problems are caused by energy development and financial unsatisfactory technical condition of many energy companies and inefficient organization of energy supply and consumption.

Early steps taken by Moldova in the direction of energy market liberalization does not differ from the first steps of the European Union and took place under the aegis of the EU RM partnership. In 1997, the state company "Moldenergo" was divided, aiming three main areas: generation ("CET-1 Chisinau", "CET-2 Chisinau", "CET-Nord Balti"), distribution (JSC "RED Chisinau", JSC "Northern RED" of "RED Nord-Vest" JSC "RED Centre", JSC "South RED"), transport and dispatching center (SE "Moldtranselectro").

The operator of the electricity transmission network "Moldelectrica" manages the internal transport on the right bank of the River Nistru, including 5977.5 km transmission lines 400, 330, 110 kV and 25877.4 km radial lines 35 and 6 -10 kV. Interconnections include 7 lines of 330 kV and 11 kV lines 110 with Ukraine, 3 lines of 110 kV and a 400 kV line with Romania. Electricity system in Moldova is operated synchronously with the IPS / UPS and only the island of Romania in the Republic of Moldova or Romania. While currently the connection with Ukraine is used in totally and a great deal of use is made with the highest transit security, operation with Romania connection provides a low cross border exchange and low certainty of supply.

In 2000 Moldova has privatized much of the distribution sector (approximately 70%), that three of the five power distribution units, which subsequently merged ICS "RED Union Fenosa" SA, while the other two remaining state-owned enterprises: JSC "RED Nord" and JSC "RED Nord-Vest".(HP RM , 2013)

Current degree of opening the electricity market is only up to 10% for connected consumers to 110 and 35 kV, which was established by the

Decision of the National Energy Regulation Agency for Energy Regulatory no. 62 of 30 May 2002. According to the Treaty Establishing the Energy Community, the liberalization of the energy market in Moldova is set for January 1, 2015, with an interim period of January 1, 2013 for industrial consumers.

To promote a coherent energy policy, it is necessary to take into account the domestic markets of neighboring countries: Ukraine and Romania. Energy strategies in both countries come from the prior period to the implementation of three power package, and the package of measures on climate and energy change. Romania has revised energy strategy in 2011 and Ukraine will.

One of the relevant elements to the energy sector of the Republic of Moldova on the markets of neighboring countries is the adoption in 2012 of the new law on electricity and natural gas in Romania, which is accompanied by a roadmap for liberalization of electricity markets and natural gas, a process that will last until 2017 (with a possible extension until 2018), with an intermediate-term non-household consumers. The evolution of the legislative and regulatory provisions that address natural gas exports and phasing out regulated prices for electricity and gas is important for Moldova in planning the integration of markets in Moldova and Romania in the Energy Community.

Electricity production covers about 25% of national needs, the largest share of electricity production award to Electric Central Heating no. 2 ("CET-2") - 70-80%. The rest of their energy in Moldova is generated by "CET-1", "CET-Nord" and SE "NHE Costești" and "Picador-group." In 2013 there was decrease in the volume of produced electricity representing the lowest level since 2001. (ANRE, 2013)

It should be noted though insignificant contribution but growing renewable electricity. In 2013 the Republic of Moldova operated 5 companies producing electricity from renewable sources. During the year 2013 were issued in total 47 guarantees of origins (Gos), for a total volume of produced electricity from renewable sources of 1.9 GWh. That volume of electricity is up from 2012, during which it was delivered into the power grid a total volume of electricity from renewable sources of 0.3 GWh.

The only electricity transmission company is "Moldelectrica" which is a state company functionally and legally separated. Prices for transportation

services are approved by ANRE, and they are adjusted if the transmission system operator costs and financial system deviations exceed the limit of 3%.

At the national level there are 3 major distributors: "RED Union Fenosa", "RED-Nord" and "RED Nord-Vest".

From 1 January 2013, all non-household customers are declared eligible (Article 52 Law on Electricity) electricity consumer having the right to purchase electricity from any supplier or manufacturer of choice, including abroad. Electricity market will be open for households on 1 January 2015.

Analyzing data on production and electricity purchases we conclude that this market is highly concentrated, so at national level there are 4 major manufacturers and distributors and only 3 distributors who are at the same time and suppliers.

Table: 3 Herfindahl-Hirschmann index of electricity market of the Republic of Moldova

Nr.	Economic activity	2009	2010	2011	2012
1.	Production of electricity	6582	7097	7672	7966
2.	Distribution and supply of electricity	3374	3741	4630	4008

Source: calculated by the authors based on National Bureau of Statistics

In light of the above, it is necessary to take into account that the amount of electricity generation remains far below the level of consumption, domestic production (right-bank of river Nistru except Moldovan ECH(Electric Central Heating)) covering only 20-25% of needs, its share decreasing for several years in a row. Given that decrease production and increased consumption it denotes a state of increased vulnerability of the national energy sector which, over a number of consecutive years continues to increase.

It is obvious that, in the Republic of Moldova, in the absence of proper energy resources and increasing dependence on imports of energy resources, ensuring energy efficiency and use of renewable energy are strategic priorities. However, the reform of national power sector and harmonization of legislation with the Community acquis will boost energy market and currently missing segments such as green certificates market etc.

4. Development of competition in the energy sector of the Republic of Moldova

Legislation analysis and energy policy in Moldova illustrate the progress in recent years in the align legislation of the Republic of Moldova with European and international standards. Moldova has adhered to all relevant international conventions related to the energy sector. Moreover, Moldova has made significant progress in harmonizing its legislation with EU rules on electricity and natural gas, in terms of energy efficiency. Moldova is currently in the process of finalizing a set of legislation on renewable energy and biofuels in accordance with existing commitments to the European Union. Recently Moldova became a full member of the Energy Community, and outlined a timetable for further harmonization of Moldovan legislation with the relevant legislation of the European Union's energy.

Moldova gained the status of observer to the Energy Community Treaty under Ministerial Meeting of the EU Council of 17 November 2006. On 19 January 2007, Moldova has submitted an application to join the Energy Community Treaty as a full member. After three rounds of negotiations, on 17 March 2010 in Vienna was signed the Protocol on the Accession of the Republic of Moldova to the Energy Community, which allows our country to be an active member of regional and European energy market, forcing the state to align national energy legislation to the Community *acquis*.

European Energy Community is an association between EU Member States and the South East, which aims to create and regulate market of electricity and common gas. Basics of EEC were released on 25 October 2005 in Athens, when it was signed the Basic Treaty, which entered into force in 2006. In addition to EU member states under EEC fall all non-member states of the Balkan peninsula, and Moldova and Ukraine. The main objectives of the European Energy Community are:

- creating a stable legal and commercial environment favorable to investments, to enable stable and continuous energy supply;
- creating a single regulatory space for trade in Network Energy;
- improving security of supply in the area and developing relationships with neighboring countries;
- improving energy efficiency and environmental situation related to the energy network;
- development of renewable energy;
- development of competition in energy network markets.

Reasons for Moldova's accession to the European Energy Community are directly related to national energy security, with regard to European energy networks interconnection and diversification of supply sources with the country's energy resources, which would be a viable alternative of East exclusive reliance: to the Russian Federation – for natural gas and partly in that of electricity (RSPP (Regional System Power Plant) Transnistria belongs to the Russian company "Inter RAO UES") and to the Ukraine – for electricity. Another reason for the participation of our country in the Energy Community Treaty is that it opens up new opportunities for attracting investments in the energy system, which would ensure a modern domestic energy infrastructure, improving energy efficiency and promoting the use of alternative energy sources.

It needs to be noted that a delicate situation in the Moldovan-Russian bilateral energy relations arose from the decision of the Government dated 6 October 2011 on the implementation of the 2015 Directives and Regulations which form the third energy package, including:

- division of production, transmission and distribution in natural gas and electricity to provide the access to any company that plans to enter in the internal energy market of the state (it is considered de-monopolization of the energy market);
- competition stimulation among different companies by eliminating discrimination for new suppliers or manufacturers to those that already exist on the market;

The joining of the RM to the European Energy Community was extremely necessary and welcome for us in the context of energy security, as it offers several advantages, such as:

- integration and interconnection in European energy market to the European energy system;
- attracting investments;
- opportunity to diversify Moldova's energy cooperation;
- to identify new partners and viable alternatives to unidirectional import from the Eastern;
- control of the national energy industry;
- increase energy efficiency;
- increasing the security of supply of natural gas and electricity;
- positive environmental effects, etc..

EU energy policy has two objectives (Pitsas N., 2011), namely:

- security / safety of domestic and foreign community in terms of its dependence on energy imports and
- guarantee reliable delivery of energy services at low costs and high quality of consumers in the European Community.

This main objectives were gradually supplemented by secondary endpoints, one of which involves promoting economy with low-carbon emissions, which in principle is based on the planned reduction through various means of greenhouse gases emissions.

Examining the energy sector it is necessary to address each market separately: petroleum products, electricity and natural gas, nuclear, renewables and biofuels, energy efficiency, because each of these dimensions have distinct characteristic features, supported by financial, structural, technical and otherwise requirements.

Analyzing the regulatory framework in the energy sector of the Republic of Moldova notice a real progress made in recent years, but there are some drawbacks in the process of harmonization, in particular, in the market for petroleum products and biofuels, and the area of energy efficiency.

In the field of renewable energy and biofuels, one of the main problem develop implementation plans for the implimentation 2001/77/EEC Directive on the promotion of electricity produced from renewable energy sources in the internal electricity market and 2003/30 / EC Directive to promote the use of biofuels and other renewable fuels for transmission. A new law of renewable energy was drafted wich fully transpose the essential content of these two directives. Establishing a supply mechanism for renewable energy would stimulate competition between energy producers.

Energy efficiency legislation in Moldova is underdeveloped, therefore is necessary to develop and adopt legislation to harmonize the legal framework in Moldova's energy efficiency to EU standards and relevant rules. More specifically, it is necessary to transpose EU directives in the field of energy labeling, energy performance of buildings, etc.. Should also be developed secondary legislation on energy audits and energy management. The situation in Moldova is dependent on imported energy, th adoption of regulatory framework of energy efficiency would contribute to the increase of the national economycompetitiveness.

Moldova's energy system is highly dependent on the energy system of Ukraine and the Russian Federation, which makes it extremely vulnerable to external shocks. The integration of the Republic of Moldova to the Energy Community, the access to energy resources (natural gas, electricity) from Romania would reduce the dependence on Russian Federation.

5. Conclusions

In the context above is necessary to ensure the use of all the opportunities as a member of the European Energy Community to diversify the sources and routes of energy supply, de-monopolization and liberalization

of national energy sector, to attract investment in the future and allow penetration of other players on the national energy market, leading, as a result, competition and quality in the field.

Only access to EU energy markets and harmonization of Moldovan legislation will bring secure solutions to solve energy problems existing in the country. Structural separation of the electricity market and competition among different companies by eliminating discrimination for new suppliers or manufacturers to those that already exist on the market, will ensure energy security of the country and increase of consumer welfare.

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