

## A COMPETITIVE ENERGY MARKET – REALITY OR JUST A SLOGAN

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Розглянуто проблеми конкурентоспроможності енергетичного ринку ЄС, дослідження якої є одним з пріоритетів енергетичної політики ЄС, спрямованої на забезпечення більшої енергетичної безпеки в умовах сталого розвитку. У статті охарактеризовано основні етапи та правила створення конкурентного енергетичного ринку в країнах Європейського Союзу. Автор висвітлює цілі, переваги та загрози для розвитку конкуренції в енергетичній галузі. Був проаналізований рівень концентрації енергетичного ринку ЄС. Ситуація на польському ринку електроенергії була оцінена з точки зору можливостей споживачів щодо зміни постачальників енергії.

**A competitive energy market belongs to the priorities of the EU's energy policy, which is aimed at ensuring better energy security in the conditions of sustainable development. The article presents the background and the basic rules for creation of the competitive energy market. It indicates the objectives, the benefits, but also the threats, to the development of competitiveness in the power industry. The level of the EU's energy market concentration has been analyzed. The situation on the Polish electricity market has been evaluated from the perspective of customers' possibilities to change energy providers.**

**Definition of a scientific problem.** The energy policy is an important element in increasing energy security, while maintaining sustainable development. The competitive energy and fuel markets belong to the priorities of the Poland's new energy policy. Creation of a liberal energy market in developed countries constitutes a part of a broadly understood policy and strategy, which aim to establish and follow the principles of competition. Competition (also on the energy market) is a condition for stimulation of innovations and reduction of prices, recruitment of employees and protection of consumer rights. The policy of competition is targeted at preventing monopolies (which concerns, in particular, the power industry) and encouraging market entities to implement scientific, research, technical, economic and organisational solutions, forcing them to streamline their manufacturing operations and distribution, and improve customer service. In this context, the analysis of establishment and operation of the competitive energy market may be considered as a very interesting and valid scientific area and, hence, an important scientific problem.

**Analysis of latest studies and publications.** The EU's high dependence on imports of energy raw materials and implementation of the macroeconomic business strategy of sustainable development make the energy issues particularly important. Already at the inception of the European Economic Community, the energy issues were regarded as a priority. The energy policy is an essential factor which affects the operation of the energy market. The concept, aims or scope of the EU's energy policy have been evolving. The problems of changes in the EU's energy policy and competitiveness of the power industry, which constitutes its part, have been analyzed e.g. by: B. Fiedor [8] and J. Brzóska, J. Pyka [2]. It should be noted that especially in the latest decade the problems related to introduction of competition rules into the power industry, creation and operation of liberal energy markets have been in focus. Variety and a multidimensional character are the features of the scientific problems concerning the construction and operation of the competitive energy market, which is demonstrated by the abundance of literature on this subject. The key technical and economic aspects of the energy markets within the European Union are presented in a very interesting way by W. Mielczarski [9]. Optimisation of market processes, using

mathematical modelling, with limitations resulting from the regulation principles, has been surveyed by E. Toczyłowski [15].

M. Zerka [16], in turn, described the market mechanisms in the power industry, presenting, in his work, various operational models of power utilities. An extensive study issued by the Energy Regulatory Office (Urząd Regulacji Energetyki) [12] presents, in a detailed manner, the evolution of the EU's approaches, conditions and legal regulations related to the development of competition on the electricity and gas market. The issues related to mergers and acquisitions in the power sector are discussed in a paper written by T. Motowidlak [10]. In his highly interesting and wide-ranging study devoted to the future of the world and domestic power industries, J. Popczyk [11] analyses the energy market problems in the aspect of structural changes and development of an innovative power industry.

**Aims of the article.** With the belief that the researched scientific problems are interesting from a cognitive perspective and quite valid, the following key theses have been formulated for the presented article:

1. Determination of conditions and requirements for creation of competition in the energy market.
2. Evaluation of the energy market in terms of its liberalisation.

**Basic scientific material of the article.** 1. Principles and objectives behind the creation of the competitive energy market. The basis for the construction of the liberal energy market rules in the European Union and, consequently, in Poland, is treaty law (primary law) [8]. The liberalisation of the energy market is also affected by a number of other documents on the energy policy, including so-called green papers and white papers [1]. The EU's economic and social program approved in March, 2000 in Lisbon, i.e. the so-called 'Lisbon Strategy', is crucial for the development of the competitive energy market. [14]. This document sees the liberalisation of the power industry as one of the key directions for actions. The need for legislative changes, and a schedule for opening of the market to competition, had a very big impact on the new energy directives and respective regulations.

It concerns, in particular, the following documents:

- 1) (EC) Directive No. 2003/54 of the European Parliament and of the Council of 26 June 2003, concerning common rules for the internal market in electricity and repealing Directive 96/92/EC[3],
- 2) (EC) Directive No. 2003/55 of the European Parliament and of the Council of 26 June 2003 common rules for the internal market in natural gas and repealing Directive 98/30/EC[4],
- 3) (EC) Regulation No. 1228/2003 of the European Parliament and of the Council of 26 June 2003 on conditions for access to the network for cross-border exchanges of electricity [5],
- 4) (EC) Regulation No. 1775/2005 of the European Parliament and of the Council of 28 September 2005 on conditions for access to the natural gas transmission networks [6].

We believe that these documents contain the most essential regulations for the development of competition. The most essential ones are: third party access (TPA), separation of transmission network operators from distribution network operators, free choice of electricity and gas suppliers. The documents, approved by the European Parliament, formed the basis for market-based modifications of legal regulations in the specific EU countries. The introduction of the Third Party Access (TPA) principle to the energy law made a breakthrough for the application of the competition rules on the energy market. It allows an authorised customer to receive energy or gas network services (transmission, distribution) from a selected supplier (producer). It means that gas and electricity may be bought from any producer or entity which deals with trade in such commodities. In the EU countries, appropriate regulations state that, starting from 1 July 2007, all recipients of electricity and gas, i.e. both commercial users and households, have the right to choose their supplier.

In the present situation, we can talk about the truly competitive energy markets only in case of the Scandinavian countries and Great Britain. A very important factor when introducing competitiveness into the energy market is the obligatory separation of energy transport (transmission and distribution services) from other types of activities conducted by energy companies (unbundling). It leads to creation of the conditions for existence of an effective and non-discriminatory access to transmission and distribution grids for various market players. This is an instrument for the effective application of the TPA principle. In

EU's energy utilities, electricity and gas transmission services were separated in 2004, and distribution services in 2007.

Liberalization of the market is an essential element and factor for the new EU and internal energy policies. The latest document which discusses these problems – ‘An energy policy for Europe’ [7] – specifies the assumptions, objectives and an action plan for the implementation of the EU's energy policy until 2030. The key objectives for the EU power industry are:

- reduction of greenhouse gas emissions in developed countries by 30%, compared to the 1990 level, by 2020. Furthermore, by 2050 global greenhouse gas emissions have to be cut down by max. 50%, compared to the 1990 level, which means that industrialised countries have to reduce their emissions by 60-80% before 2050
- a commitment to achieve at least a 20% reduction in greenhouse gas emissions, compared to the 1990 level, by 2020, irrespective of the situation.

In the action plan, established in order to meet these goals, an important element is an internal competitive energy market in the EU. It has three strategic goals to fulfil, which may be treated as real challenges. These are:

1. Competitiveness. A competitive market should lead to cost-savings for households and businesses, it will stimulate actions aimed at energy efficiency, investment and innovations;

2. Stability. A competitive market is necessary for the effective use of economic instruments, and the correct operation of a system for trade in emission rights. In addition, operators of transmission networks must be willing to assist renewable energy producers, electricity and heat producers and small power stations in their connecting to the system, which will enhance innovations and encourage smaller businesses and individuals to consider using non-conventional sources of energy;

3 Security of energy supplies. A well-operating and competitive internal energy market may ensure substantial benefits in terms of security of supplies and provision of public services. Effective separation of the networks from the competitive parts of power and gas companies will stimulate companies to invest in a new infrastructure. This will improve the throughput of network-to-network connections and production capacity.

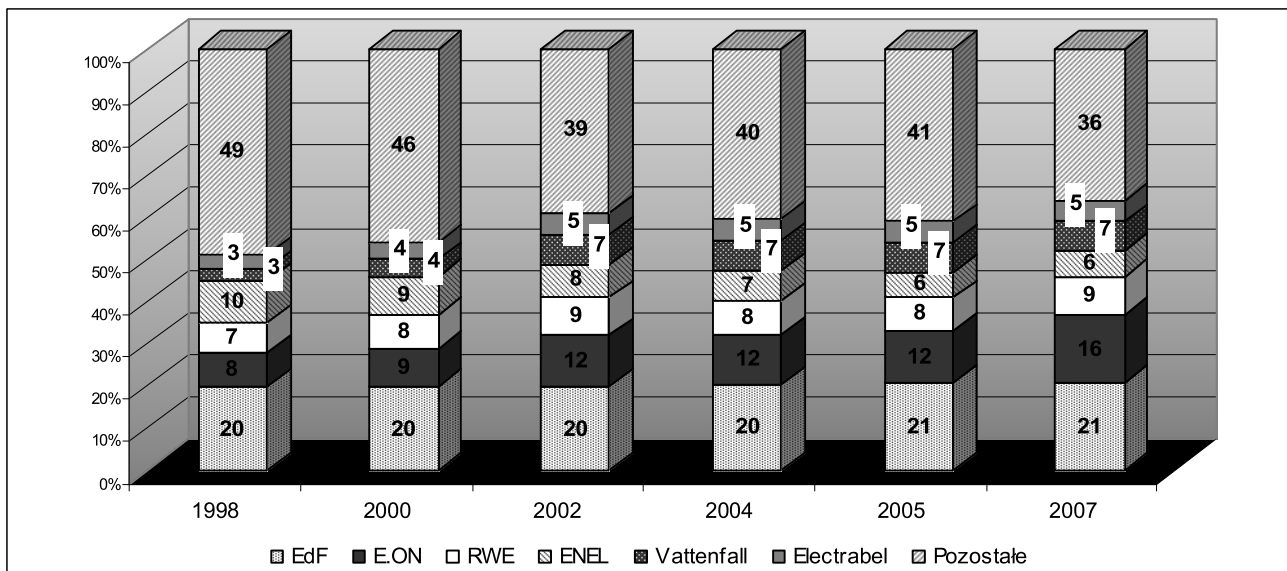
In that way, power failures and disadvantageous price fluctuations will be prevented. A genuine, homogenous and competitive market will contribute to a technological and organizational variety.

In the latest proposal of the Polish energy policy [13], in turn, creation of a competitive energy and fuel market is one of priorities. Its main aim is to ensure undisturbed operation of energy and fuel markets and, thereby, prevent excessive price rises. The objectives in this area are:

- to increase diversification of sources and directions of natural gas, crude oil and liquid fuel supplies and of suppliers, transmission routes and transport methods, also by using renewable energy sources,
- to remove barriers to changing sellers of electricity and gas,
- to develop competition mechanisms as the main means to rationalisation of energy prices,
- to regulate fuel and energy markets in the areas which demonstrate the features of a natural monopoly, in such a way as to ensure the right balance between the interests of all the market players,
- to limit regulation wherever a competitive market operates and develops,
- to create a smooth spot market and a futures and forwards market for electricity,
- to introduce market methods for affecting heat prices,
- to participate in the building of a regional electricity market, in particular to enable international exchanges,
- to implement effective mechanisms for electricity balancing, to support the security of energy supplies, trade on futures and forwards markets and spot markets, identification and allocation of specific costs of energy supplies.

2. Consolidation and concentration of the power sector and competitiveness of the energy market.

The launch of the competitive energy market is a factor which contributes to consolidation and privatization of the European power industry. These processes are expected to result in the emergence of competitive businesses, able to operate on the open EU market. The ongoing consolidation will lead to strengthening of the position of big energy groups on the EU market, which is illustrated on Fig. 1.



pozostałe = others

Source: the author's own elaboration based on energy companies' data

Fig.1. Participation of leading energy companies in the EU's electricity market

While the five biggest power companies held a 51% share in the EU market in 1998, in 2007 this figure grew up to over 64 %. During nine years, the market concentration increased by 13%, despite the EU's enlargement due to the accession of new member states.

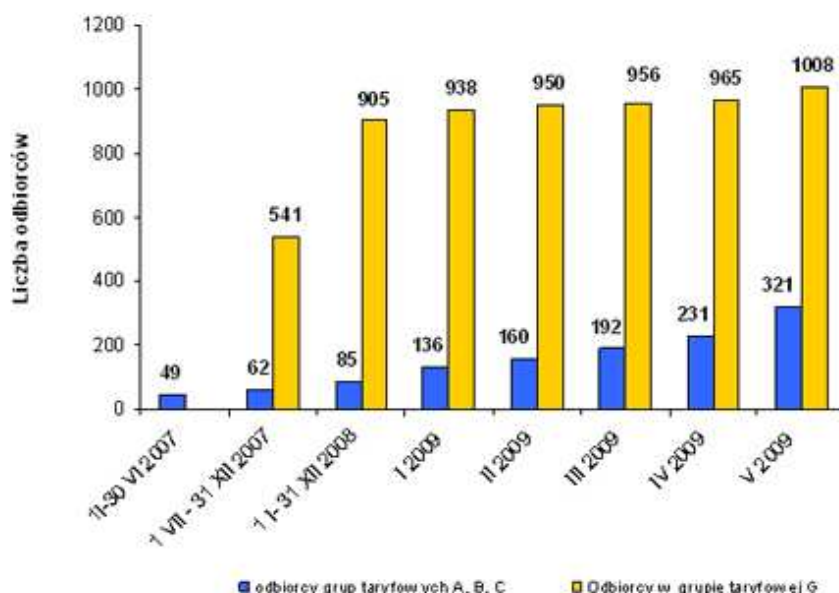
The growing participation of the big corporations in the EU's energy market is combined with a high concentration of electricity and gas markets of numerous EC countries. It can be measured using the Herfindahl – Hirschman Index (HHI) (expressed as the sum of the squares of the market shares of the given firms in the industry) [11]. In order to maintain competitive conditions, its value should not exceed 2,500. Below (based on the Eurostat data) there is a presentation of the EU's energy market in terms of its concentration. A very high level of concentration ( $HHI > 5,000$ ) of the electricity market can be found in 12 EU countries, including France, Ireland, Belgium, Slovenia, Slovakia and Portugal. A high level of concentration ( $HHI > 2,500$ ) characterises the power industries in such countries as Germany, Spain and Italy. The power sectors in Great Britain, Sweden, Norway Denmark, Hungary and Poland are typified by medium or low concentration indices.

In case of natural gas, a very high level of concentration can be seen in Poland and France, and quite a high one in Germany, Spain and Italy. Analysing the structures of the power industry concentration in the specific countries in more detail (Eurostat 2007 data) we can see high differences in the concentration levels of the electricity generation sectors. The process of separating energy distribution from energy sale (so-called 'unbundling'), targeted at supporting liberalisation of the energy market, continues to bring insufficient effects. In some countries, the market shares held by single plants (Greece, Cyprus, Malta), just a few plants (Estonia, Slovenia, Spain, Belgium, France) or several plants (Luxembourg, Bulgaria, the Czech Republic, Germany, Romania and Great Britain) in the electricity generation sectors reach at least 95 percent. There are a few dozens of such plants in: Finland, Poland and Hungary. Moreover, there are a hundred power plants in Italy, but the biggest number of such sites are located in Denmark and Holland. Despite such differences, 1 to 7 key producers only (with every one having at least a 5 percent share in net electricity output in their own countries) maintain the leading position on their domestic markets, i.e. at least a 50% market share. Poland is an exception to this rule, as the five leading suppliers hold approx. a 44 percent share in the electricity generation market and Norway (three producers hold the market share of 44.5 percent). The total market shares held by the leading producers in the biggest countries are as follows: France and Germany - 88 percent in each, Spain - 73 percent, Great Britain - 72 percent, and on the dispersed markets i.e. in Denmark - 68 percent and in Holland - 62 percent.

In the period from 2003 to 2007, in the majority of EU countries the number of the leading electricity producers did not change. The concentration process occurred e.g. in Poland (from 7 to 5 producers), Spain (from 5 to 3) and Hungary (from 6 to 5). In some countries, though, energy generation dispersed and the number of producers increased, for instance in Ireland (from 3 to 5), Italy (from 4 to 5), Lithuania (from 2 to 4) and Great Britain (from 6 to 7). Germany has the most liberalised market of electricity supplies to ultimate users – there are about 1,020 operators there and, at the same time, the biggest three of them hold approx. a 47 percent market share, which is less than half of the market. There are a lot of operators in Italy (400), Spain (394) and the Czech Republic (293), although the three leading ones in Italy sell 53-percent of energy, the biggest three in Spain – as much as 94 percent, and the biggest four in the Czech Republic – 86.9 percent. The Polish distribution market shows a medium level of diversification. In 2007 there were 158 operators, and the biggest six combined sold 63.5 percent of total electricity. In broad terms, it can be concluded that the internal and regional energy markets in the EU are, to a high extent, oligopoly markets.

### 3. A competitive energy market in the Polish economy.

For two years now the law allowing recipients to freely choose their suppliers (the Third Party Access (TPA) principle) has been in force in Poland. It guarantees the right to conclude a contract to any recipient who finds a new partner trading in energy. Below you will find the latest figures from the Energy Regulatory Office which show the current situation. The graphic presentation of the data can be found on Fig. 2. It should be added that recipients from the G tariff group are households; recipients from the ABC group are various business organisations.



Liczba odbiorców – number of recipients; odbiorcy grup taryfowych A,B,C /G = recipients from A,B,C/G tariff groups

Source: data from the Energy Regulatory Office

Fig. 2. Dynamics of energy supplier changes

Before the end of May, over 1,000 household recipients changed their suppliers. Compared to over 10 million households in Poland, this is just a negligible figure. High dynamics of supplier changes can be seen in the segment of big and commercial users. Although in 2008 such changes were made by 23 entities, but in the first calendar quarter of 2009 already 127 businesses changed their energy providers. In May this year 90 entrepreneurs changed their suppliers. This increase seems to result from a surplus of energy supplies on the market, as well as the actions taken by industrial users in order to find the cheapest energy. A positive phenomenon is the fact that municipalities are becoming active participants of the energy market. For local governments the change of suppliers is an opportunity to get cheaper energy and make savings in the municipal budgets. A good example is given by the City Hall of Częstochowa, which

consciously follows a sustainable development policy in the area of energy management. The energy purchase costs turned out to be 10% lower than in the first tender for purchase of energy, carried out by this City Hall.

The figures presented here might not be impressive but they show that the awareness of competitiveness on the electricity market is growing slowly.

### **Conclusions.**

1. Building of the competitive energy market belongs to the key factors behind the growth of security and sustainable development. The principles for construction and operation of this market are closely connected with the objectives of the energy policies adopted by the EU and its member states.

2. The European Union is committed to the launch of the competitive energy market, which is a great challenge. A considerable progress in legislation in this area /new regulations, institutional solutions and funds/ has not brought about any effective competition mechanisms yet.

3. The EU citizens and economy cannot fully enjoy the benefits resulting from liberalisation of the energy market. A situation on the Polish electricity market may be used as an example.

4. We can see a high level of concentration in the EU's energy sector. This is due to historical reasons and the consolidation processes which occurred. Such a situation does not contribute to the enhancement of competitiveness on the energy markets.

5. The EU's focus on implementation of the Climate Package may slow down the liberalisation processes on the energy market.

**Prospects for future scientific research.** An interesting area for future studies will be in-depth research into the establishment of more effective mechanisms and instruments for operation of the competitive energy market. The accepted EU's energy policy creates huge needs for research in this area, to be focused, in particular, on investment processes.

1) Brzóska J., *Modele strategiczne przedsiębiorstw energetycznych*, Wydawnictwo Politechniki Śląskiej, Gliwice 2007; 2) Brzóska J., Pyka J., *Wewnętrzny bezpieczny unijny rynek energii – szansa czy zagrożenie dla Polski [w:] Procesy restrukturyzacji i konkurencyjność w przemyśle i usługach*, (red.) J. Pyka, Towarzystwo Naukowe Organizacji i Kierownictwa, Akademia Ekonomiczna w Katowicach, Wydział Organizacji i Zarządzania, Politechnika Śląska, Katowice 2007; 3) Dz.U UE L 176 z 15.7.2003, str. 37-56; 4) Dz.U UE L 176 z 15.7.2003, str. 57-78; 5) Dz.U UE L 176 z 15.7.2003, str. 1-10; 6) Dz.U UE L 289 z 3.11.2005, str. 1.; 7) *Europejska Polityka Energetyczna, Komunikat Komisji do Rady Europejskiej i Parlamentu Europejskiego, Komisja Wspólnot Europejskich, Bruksela 2007*; 8) Fiedor B., *Rynek i polityka energetyczna Unii Europejskiej (cykl artykułów)*, *Energia*, Nr 7-8-9 z 2003 roku., Nr 10-11 z 2003 roku., Nr 4 z 2004 roku; 9) *Komunikat Komisji do Rady i Parlamentu Europejskiego. Perspektywy rynku wewnętrznego energii elektrycznej i gazu, {SEK(2006) 1709}, {SEK(2007) 12}, Bruksela, 2007*; 10) Mielczarski W., *Rynki energii elektrycznej. Wybrane aspekty techniczne i ekonomiczne*, Agencja Rynku Energii SA, Energoprojekt – Consulting SA, Warszawa 2000; 11) Motowidlak T., *Konsolidacja przedsiębiorstw energetycznych na europejskim rynku energii elektrycznej „Energetyka”*, listopad 2008; 12) Popczyk J., *Polska elektroenergetyka 2009, „Rynek energii” Nr II, Zeszyt kwartalny 2009*; 13) *Praca zbiorowa, Droga do konkurencji na rynku energii elektrycznej i gazu*, Wydawnictwo URE, Warszawa 2003; 14) *Projekt Polityki energetycznej Polski do roku 2030*, MG, Warszawa, sierpień 2009; 15) *Strategia Lizbońska. Droga do sukcesu zjednoczonej Europy*, UKIE, Warszawa, 2003, s. 85 i dalsze; *Komunikat Komisji Europejskiej pt. „Finalizacja wewnętrznego rynku energii”*, COM (2001) 125 final; 16) Toczyłowski E., *Optymalizacja procesów rynkowych przy ograniczeniach*, Akademicka Oficyna Wydawnicza EXIT, Warszawa 2002; 17) Zerka M., *Mechanizmy rynkowe w elektro-energetyce – zagadnienia wybrane*, Instytut Doskonalenia Wiedzy o Rynku Energii, Warszawa 2002.