РЕГІОНАЛЬНА ЕКОНОМІКА

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FINANCIAL RATIO OF NUCLEAR AND HYDROPOWER ENTERPRISES OF UKRAINE

Urgency of the research. *The urgency of power sector modernization increased greatly as a consequence of the changes in Ukraine`s energy sector on account of political events of 2013-2015 years.*

Target setting. *Development of proposals for improving Ukraine's energy sector should be based on existing features and problems of its functioning.*

Actual scientific researches and issues analysis. *Pricing issues in the electric power market and are reflected in the works of such scholars as O. Bilotserkivsky, A. Borisenko, A. Voinov, A. Mazurenko, E. Olesevich, S. Saukh, O. Stoyan, K. Uschapovsky, N. Shiryaeva and others.*

Uninvestigated parts of general matters defining. *Scientists pay much attention to the analysis of general-sectoral and general-market indicators of electricity sector, while the micro problems remain largely unnoticed by researchers, although the characteristics and problems of enterprises largely determine the overall industry turmoil.*

The research objective. *The article is focused on the identification of common trends and problems of development of power generating segment of the electricity sector of Ukraine, namely nuclear and hydroelectric power companies.*

The statement of basic materials. *Financial reports of SE "NNEC "Energoatom" and JSC "Ukrhydroenergo" indicate the existence of common features of their activities, despite divergent trends of development. The common features are the high volume of funds of products and the corresponding need for financial resources to restore production capacity. And while the growth of fixed assets of JSC "Ukrhydroenergo" is largely provided by state support through the establishment of sufficiently high prices for the products, the SE "NNEC" Energoatom" is disregarded and gradually loses production potential*

Conclusions. *A common problem in functioning of nuclear and hydropower energetic is finding sources for financing fixed assets, which actually disappear under current conditions. Mechanisms of support of satisfactory condition and dynamics of fixed assets of JSC "Ukrhydroenergo" cannot be extended to the entire energetic sector.*

Keywords: *nuclear power; electricity; fixed assets; material consumption; the price of electricity.*

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ОЦІНКА ПОКАЗНИКІВ ФІНАНСОВОГО СТАНУ ПІДПРИЄМСТВ АТОМНОЇ ТА ГІДРОЕНЕРГЕТИКИ УКРАЇНИ

Актуальність теми дослідження. *Зміни в енергетичній сфері України внаслідок політичних подій 2013-2015 років підвищили актуальність модернізації електроенергетики.*

Постановка проблеми*. Розробці пропозицій щодо вдосконалення енергетичного сектору України повинна ґрунтуватися на існуючих особливостях та проблемах його функціонування.*

Аналіз останніх досліджень і публікацій. *Проблеми розвитку електроенергетики України знайшли своє відображення в працях таких вчених, як О. Білоцерківський, А. Борисенко, А. Воїнов, А. Мазуенко, Е. Олесевич, С. Саух, О. Стоян, К. Ущаповський, Н. Ширяєва та інших.*

Виділення недосліджених частин загальної проблеми. *Науковці приділяють багато уваги аналізу загально галузевих та загальноринкових показників електроенергетичної сфери, при цьому проблеми мікрорівня переважно залишаються поза увагою дослідників, хоча саме особливості та проблеми діяльності підприємств значною мірою визначають загально галузеві негаразди.*

Постановка завдання. *Стаття орієнтована на ідентифікацію спільних тенденцій та проблем розвитку частини енергогенеруючого сегменту електроенергетичного сектору України, а саме компаній атомної та гідроелектроенергетики.*

Виклад основного матеріалу. *Дані фінансової звітності ДП „НАЕК „Енергоатом" та ПАТ „Укргідроенерго" дозволяють вказати на наявність спільних особливостей їх діяльності, незважаючи на розбіжні тренди розвитку. Згадані спільні особливості полягають у високій фондоємності продукції та відповідній потребі у фінансових ресурсах для відновлення виробничого потенціалу. І, якщо зростання основних засобів ПАТ „Укргідроенерго" значною мірою забезпечується державною підтримкою через встановленні достатньо високих цін на продукцію, то ДП „НАЕК „Енергоатом" залишене без уваги та поступово втрачає виробничий потенціал.*

Висновки. *Спільною проблемою функціонування атомної та гідроенергетики є пошук джерел фінансування оновлення основних засобів, котрі в сучасних умовах фактично „проїдаються". Механізми підтримки задовільної динаміки розвитку та стану основних засобів ПАТ „Укргідроенерго" не можуть бути поширені на весь енергонеруючий сектор.*

Ключові слова: *атомна енергетика; електроенергетика; основні засоби; матеріалоємність; ціна електроенергії.*

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Urgency of the research. Electricity sector is a basic element of the national economy of any country. Electricity combines the features of consumer goods and inputs, which makes its accessibility crucial to ensure people's welfare, as well as for increasing the volume of production of goods in the country, that is, economic development. Proper attention to the problems and needs of the electricity industry at the state level was not paid for a long time. The production capacities, received as an inheritance from the Soviet Union, worked through residual life, which was sufficient in terms of reducing production in the country and a corresponding reduction in electricity consumption while the high real value of benefits for the population decreased by shifting part of it to the business sector in the framework of the mechanism of cross-subsidization. Generally, the industry functioned satisfactory. At the same time, problems and contradictions of its development accumulated and gradually worsened. The political crisis of recent years in Ukraine led to exposure and sharpening of all the accumulated contradictions. One of the most important manifestations of exacerbation mentioned was repeated rapid rise in prices for electricity, which indicates serious problems of industry.

Target setting. While agreeing with the fact of inevitable further increase in electricity tariffs in current conditions, it is necessary to point out the need for expeditious removal of discrepancies in the functioning of the sector. Ensuring the proper functioning of national electricity is a prerequisite for recovery and subsequent growth of the national economy. However, proposals for the directions and measures to promote the development of the industry should be scientifically based, providing primarily assessment of the current state and identification of major problems and contradictions.

Actual scientific researches and issues analysis. The problems of the domestic power industry are reflected in the works of many scientists. Scientific researches in this field are diverse and raise a wide layer of problems from the general condition and characteristics of the energy sector [1] and assessment of macroeconomic indicators of the electricity sector [2] to the potential development of alternative energy [3-5] and ways of energy saving and increasing of energy efficiency [6]. A layer of publications of recent years is devoted to the functioning of the electricity market [7-10] and incorporation of energy companies [11].

Uninvestigated parts of general matter defining. Despite significant activity in the field of scientific research of the factors of Ukraine's electricity sector and the development of proposals to improve its functioning, the researchers paid their attention mainly to general market and macroeconomic indicators, while the state and trends of the industry have not found adequate reflection in the scientific literature. However, it is macroeconomic factors and problems of individual businesses of energy sector that largely determine the overall market trends and contradictions. The lack of studies that take into account the state and trends of individual companies is a surprise, as the number of those that determine the functioning of the sector as a whole is relatively small.

The research objective. Of course, it is impossible and impractical to capture all the defining enterprises of power sector in Ukraine under this article. It should be considered by segments - energy generating segment and a segment of the transmission and distribution of electricity require special attention. In addition, taking into account the inability to consider all the power generation companies in one article it was decided to divide them by specific production process. This study is concentrated on assessment of financial indicators and identification of trends and issues of nuclear and hydropower companies' development.

The statement of basic materials. Generating enterprises form the basis of the national power industry. Most of generating capacity of Ukraine is concentrated in possession of seven companies: SE "NNEC "Energoatom", JSC" Donbasenergo", PJSC "DFEK Dniproenergo", PJSC "DFEK Zakhidenergo", JSC "Ukrhydroenergo", PJSC "Centrenergo", and LLC "DFEK Skhidenergo", whereby three of them belong to the energy holding DFEK. According to the Antimonopoly Committee of Ukraine (AMC) in 2013-2015 the structures identified formed 93-95% of electrical energy generation of the country [12].

The State Enterprise "National Nuclear Energy Generating Company "Energoatom" is the leading manufacturer of electric energy in Ukraine. According to AMC in the first half of 2015 the share of the enterprise in the total generation of electricity was 56% [12]. Unfortunately due to the specifics of the

legal form of the company, its financial statements get in free access fragmentary. In particular in the database of issuers posted on the website of the Agency for Development infrastructure of the stock market of Ukraine (ADISM) it is presented only for 2003 and 2012-2015, when the company attracted bond issues. However, despite the specified feature we still consider it possible to identify and provide assessment of major trends in the enterprise.

Basic analytical indicators calculated on the basis of the financial statements of SE "NNEC "Energoatom" are presented in table 1. At first glance the dynamics of total assets confirms solid growth rates. During the years 2003-2011 the value of property held by the company increased by 2 times. Only in 2012 the value of assets of the main producer of electricity in Ukraine grew by more than 4 times (905% towards the end of 2002), and subsequently not experienced such significant changes.

The increase in 2012 occurred primarily because more than sixfold increase of fixed assets. However, a detailed analysis of the sources of growth indicates that 88% of its volume was achieved by revaluation. Moreover conducted revaluation itself is of much interest. Residual value of fixed assets of the company at the end of 2011 was about 28 billion UAH. Revaluation is conducted for the amount of 161.6 billion UAH. Without sufficient information for the assessment of the legality of these actions of administration of SE "NNEC "Energoatom" we can still argue that much of the growth of nominal assets is not accompanied by a corresponding increase in property, and hence production capacity.

Table 1

Key performance indicators of SE "NNEC "Energoatom" in 2002-2003 and 2011-2015

Indicators	Years						
	2002	2003	2011	2012	2013	2014	2015
Balance at end of year, million UAH.	23219	23887	50730	210252	203277	200845	202267
The growth rate of total assets,% to 2002.	100,0	102,9	218,5	905,5	875,5	865,0	871,1
Property and equipment as assets,%	35,4	34,0	54,9	87,4	87,5	85,3	81,7
Coefficient of depreciation, %	37,0	39,6	58,9	60,7	62,3	63,8	65,2
Construction in progress as assets,%	15,2	17,9	5,0	1,7	1,9	2,2	2,5
Construction in progress in relation to the residual value of fixed assets,%	42,8	52,6	9,0	2,0	2,2	2,6	3,1
Accounts receivable as assets,%	36,6	36,0	10,5	3,5	3,6	5,7	6,0
Funds consumption of products, UAH/UAH.	1,7	1,7	1,7	10,0	10,3	7,4	5,0
Return on products with a net profit, %	30,9	13,3	20,6	-15,0	-19,3	-28,4	4,6
Return on equity for net profit, %	11,8	2,9	12,4	-2,6	-2,4	-4,0	0,8
Return on assets for operating profit,%	14,6	11,0	58,5	-9,2	-11,0	-1,6	2,7

Compiled according to [13]

It should also be taken into account that a significant part of the increase (more than 22 bn. UAH, or 80% of the value of fixed assets at the end of 2011) is not linked to the revaluation. So, we can draw a conclusion about the dual nature of positive dynamics of property of the company. On the one hand, there are signs of real growth in capital assets at company`s disposal, on the other - the lion's share of growth is the result of accounting operations with cost. Not being able to confidently assess the growth of value of assets in general and of fixed assets particularly in the period between 2003 and 2012, still we can assume such processes in that period. Dynamics of share of fixed assets in the structure of the property indirectly suggests the truth of this statement - it increased by 20% from 2003 to the end of 2011. A similar phenomenon (32% increase) occurred in 2012.

No less important than the amount of fixed assets is their status for a production company. Fixed assets of SE "NNEC "Energoatom" are worn by nearly 2/3 and the dynamics of wear coefficient is negative. It is characteristic that positive developments in fixed assets are not stipulated even by the real growth of their volume, not to mention the revaluation. We should also indicate the reduction in activity on the renewal of fixed assets. If in 2002-2003 the volume of construction in progress amounted to the half of the residual value of fixed assets and accounted for about a sixth of the

balance, in the years 2012-2015 it ranged at 2% - 3% of the assets and formed a minor component in the balance.

The receivables of SE "NNEC "Energoatom" became an important component of its balance in 2002-2003. Its share in the assets significantly decreased in the years 2012-2015, which is the natural consequence of growth in the value of fixed assets as a result of the processes mentioned. However, in absolute terms, the size of receivables was substantial - in 2002-2003, about 8.5 bn. UAH, and increased from 5.3 bn. UAH in 2011 to 12.2 bn. UAH in 2015. So, the receivables are huge and it is advisable to find a more productive use for these funds.

Index of volume of funds indicates an increased importance of fixed assets for the enterprise`s function and electricity generation. Level indicator was already quite high in 2002-2003, when the 1 UAH products used 1.7 UAH of assets. The same level was observed in 2011. After the revaluation the rate rapidly increased to 10, and this brings us to the question of the legality of its size. In the years 2014-2015 funds consumption of production halved, but this fact is mostly predetermined by prices for electricity increase to the "economically reasonable" level, which includes depreciation of the revaluated equipment. Thus, the data indicate a really high level of funds consumption of products of SE "NNEC "Energoatom" but we should not forget the possibility of using revaluation of fixed assets to inflate prices artificially.

The dynamics of absolute and relative indicators of financial results of the company indicates its relationship with valuation of fixed assets. Enormous amounts of net loss of the company (from 27 to 65 bn. UAH in 2012-2014) emerged just after the revaluation. The estimated damage was overcome only in 2015 that obviously should be associated with increased prices for electricity.

Financial performance is directly determined by the cost of its implementation. The structure of operating expenses of SE "NNEC "Energoatom" for the elements is presented in table 2. The structure of operating costs significantly transformed over the period. The indicators available allow allocating two periods of transformation. The first covers 2002, 2003 and 2011. It is associated with the reduction of the share of material costs and depreciation and with increased share of labor costs and other operating expenses. The second period includes the years 2012-2015. The share of amortization within operating expenses grew rapidly in 2012 and 2013 which occurred primarily due to a significant revaluation of fixed assets. In 2014 and 2015 the share of depreciation as an expense rapidly declined in favor of the item of material costs. Along there was a decrease of the share of labor costs. Other operating expenses increased permanently in absolute terms and per share. Exceptions can be considered only in 2013.

Table 2

The structure of operating expenses of SE "NNEC "Energoatom" on the main elements in the 2002-2003 and 2011-2015 years

Elements	Years						
	2002	2003	2011	2012	2013	2014	2015
Material costs,% of total	42,9	43,9	40,3	34,0	31,3	33,2	35,3
Labor costs,% of total	16,5	15,5	18,8	15,1	15,5	15,0	14,6
Allocations for social activities,% of total	5,5	5,5	6,8	5,5	5,6	5,4	5,0
Depreciation,% of total	14,8	13,3	11,8	29,7	35,7	32,2	27,7
Other operating expenses,% of total	20,4	21,7	22,2	15,7	11,9	14,2	17,4
Total, million UAH	3634	4169	14429	21403	23671	25998	29949

Compiled according to [13]

The data presented and analytical conclusions made upon it allow summarizing the main problems of functioning and development of SE "NNEC "Energoatom" - a key producer of electricity in Ukraine:

- fixed assets are characterized by high levels of wear and actions to restore them are gradually minimized, what, considering the high level of funds consumption identified, endangers the normal functioning of the enterprise in future periods;
- increase in assets is largely caused by purely accounting operations of revaluation, what, on the one hand can serve as a tool for accumulating resources for playing the actual value of the assets and on the other - as a mean of artificial inflation of the price of products;

- high production of materials in the absence of domestic production of raw materials and the instability of the national currency is a destructive factor which largely determines the dynamics of production prices and of current and future ability of company to capital investments.

JSC "Ukrhydroenergo" uses the third type of resource - water flow rivers of Ukraine to generate electricity and creates a much more modest share of the total amount of electricity in the country (according to AMC in the first half of 2015 - 5% [12]). The main indicators characterizing the activity of the company are presented in table 3. It should be mentioned that the financial statements of the entity are presented in the public domain at the website ADISM only since 2009 that allows making analysis in the horizon of 2008-2015.

Assessing the performance of financial statements of JSC "Ukrhydroenergo" we should firstly indicate the significant increase in the total value of the property. The assets of JSC "Ukrhydroenergo" increased by almost seven times for seven years, while the SE "NNEC "Energoatom" achieved almost 9 times growth of assets in 13 years.

Table 3

Key performance indicators of PJSC "Ukrhydroenergo" in the years 2008-2015

Indicators	Years							
	2008	2009	2010	2011	2012	2013	2014	2015
Balance at end of year, million UAH	3325	5513	9875	10365	12637	19785	21257	23199
The growth rate of total assets,% to 2002	100,0	165,8	297,0	311,7	380,0	595,0	639,2	697,6
Property and equipment as assets,%	33,8	74,2	80,1	71,6	57,5	62,8	79,2	74,6
Coefficient of depreciation, %	54,1	26,0	16,7	22,6	27,1	3,6	5,2	8,0
Construction in progress as assets,%	45,0	11,5	11,3	18,1	30,4	31,5	16,5	20,0
Construction in progress in relation to the residual value of fixed assets,%	133,0	15,5	14,2	25,2	52,9	50,2	20,9	26,8
Accounts receivable as assets,%	2,2	2,2	1,0	5,9	7,5	4,1	2,7	3,4
Funds consumption of products, UAH/UAH	1,06	3,18	5,69	5,67	3,43	4,56	6,52	3,87
Return on products with a net profit, %	120,4	140,9	92,8	30,0	73,9	107,1	36,3	49,1
Return on equity for net profit, %	38,7	19,5	8,1	3,7	8,2	9,3	2,8	6,2
Return on assets for operating profit,%	40,3	19,5	10,4	3,4	8,1	8,4	5,7	9,6

Compiled according to [13]

The rising cost of property of JSC "Ukrhydroenergo" is caused by primarily 15 times growth of rates of fixed assets which have become the dominant level (3/4) in the structure of the balance. The receivables grew more than 10 times.

According to the financial statements, as opposed to SE "NNEC "Energoatom", the growth of fixed assets of JSC" Ukrhydroenergo" was achieved without revaluation. During the years 2009-2015 the revaluation of fixed assets was performed only once in 2011 in the small amount of 839 thousand UAH, that corresponds to 1% of their residual value at the beginning of the year. At the same time the costs of constructions in progress was significant throughout the period under review. At this stage the company develops very rapidly increasing production capacity - according to information posted on the website of the company, three of the nine hydro and pumped storage power plants are under construction [14]. So, permanent activity of increasing fixed assets explains the rapid growth of their value and lowering the coefficient of wear.

A characteristic feature of the operation of JSC "Ukrhydroenergo" is a relatively small share of assets, which account for receivables. The highest value of it for JSC "Ukrhydroenergo" for 2008-2015 years was 7.5% in 2012.

Funds consumption of products of the company has been quite high, comparable to SE "NNEC "Energoatom". The overall growing trend of this indicator for JSC "Ukrhydroenergo" should also be taken into consideration.

Profitability of JSC "Ukrhydroenergo" points to the positive financial results of its operations during 2008-2015. The company has always had a positive result for a specified period of time. The level of profitability indicators, in particular the profitability of production should be regarded as extremely high, which, considering the centralized approval of prices for electricity supplied by power generators

indicates a rather substantial government support of hydropower in Ukraine. However, high funds consumption and related capital requirements, further stipulated much more modest, although relatively high level of return on assets and equity.

The structure of operating expenses of JSC "Ukrhydroenergo" is presented in table 4.

The share of material costs in operating, since 2011, had a rapid downward trend and was the lowest among major domestic power producers. Instead, other operating expenses become the dominant component to 2015. The share of the cost for depreciation remained quite high throughout the period evaluated, which generally indicates the high funds consumption, mentioned previously. The dynamics of share of costs for labor (labor costs and deductions for social events) is related to negative macroeconomic trend in Ukraine in conditions of which the increase of cost of tangible assets and services of other organizations is often offset by savings on staff despite the increase of its size by 12.6% in 2015 compared to 2009.

Table 4

The structure of operating expenses of JSC "Ukrhydroenergo" on the main elements in the years 2008-2015

Elements	Years							
	2008	2009	2010	2011	2012	2013	2014	2015
Material costs,% of total	34,4	38,3	39,1	26,3	2,2	2,8	3,3	1,4
Labor costs,% of total	24,2	21,6	21,3	12,6	15,1	16,6	16,8	11,4
Allocations for social activities,% of total	8,8	7,9	7,8	4,7	5,5	6,0	6,1	4,0
Depreciation,% of total	23,9	23,8	24,6	52,0	44,4	33,4	32,2	24,5
Other operating expenses,% of total	8,8	8,4	7,2	4,5	32,8	41,2	41,7	58,7
Total, million UAH	411	488	611	1122	1206	1370	1452	2377

Complied according to [13]

Thus, the JSC "Ukrhydroenergo" is characterized by the following features and trends:

- the company is experiencing a significant government support that is evident primarily through approval of sufficiently high prices for its products;
- the company is developing very rapidly, whereby its development is accompanied by the creation of new production capacity (construction of new hydro-accumulating power plants);
- production of the company is characterized by a high level of funds consumption, but the material consumption is low because of the nature of the production process;
- high profitability of JSC "Ukrhydroenergo" which is a consequence of the approval of high prices on the one hand contributes to a significant fund resources for investment in fixed assets, on the other - to wasteful relate to costs, as evidenced from the dynamics of other operating expenses and their share in total.

Conclusions and prospects for further research. Thus, despite the differences in the trends of companies operating nuclear power and hydropower the common feature of their work is the need for significant investment of financial resources in the creation and recovery of assets. High funds consumption of production of the enterprises considered at high levels of inflation and devaluation of the national currency largely determines the dynamics of the cost of electricity and thus its price parameters. The centralized approval of tariffs for electricity limits the ability of producers to the formation of an adequate fund of resources for reproduction of fixed assets.

The analysis should be supplemented with assessment of indicators of the operating companies of thermal power sector distribution to form more complete picture of the impact of characteristics and trends of individual companies of the power sector on its overall status and key indicators dynamics.

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