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# THE ENERGY SECURITY OF BELARUS AS THE BASIC CONDITION OF THE IMPLEMENTATION OF THE GOALS OF ITS SOCIO-ECONOMIC DEVELOPMENT

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## Abstract

The article provides an analysis of the current situation in the country's energy sector in the light of the dynamics of global trends of exploiting various sources for providing the population with heat and energy and efficiency of national economies.

## Introduction

Energy is the fundamental system-forming and life-supporting sector of any country and society in general. The extent of its development and the state of the fuel and energy complex (FEC) have direct influence on the productive capacities and economic prospects, social health of the people and comfort of labour and living standards, while taken in an integrated way, it determines the place of the state in the international economic and political system.

Taking into consideration the fact that in recent years Belarus' economy and social sphere have been developing dynamically in an upward direction, one can state with confidence that the operation of the energy sector is substantially efficient. This conclusion is fairly convincingly supported by the results of the social monitoring of the situation in the sector conducted throughout 2005-2006.<sup>1</sup> According to these results, 42,1% of the population assess the operation of the sector positively; 39,2% – assess it rather positively than negatively; 7,6% assess it rather negatively, than positively, and only 2% assess it negatively. It also has to be born in mind that even this low

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<sup>1</sup> Бобров В.В., Дмитриев Е.И. и др. *Энергетика Беларуси: Состояние. Проблемы. Перспективы.* (Belarus' Economy: Current State. Problems. Prospects.) Под ред. Хурса М.Н. – Минск: «ФУАинформ», 2006 .

indicator of negative assessments most likely has been caused by gaps in another life-supporting sector, i.e., housing a public utility. We believe that there can hardly be another country in which its population would give such high assessment of the operation of the energy sector. Meanwhile a systemic analysis of the situation in the FEC of the country has allowed to unveil a number of serious problems which largely determine the development prospects of the sector in particular and the economy as a whole.

### **1. Problems of development of the energy sector**

The main problems are as follows: limited amount of its own energy resources, major depreciation of machinery and equipment at the relevant enterprises, and high energy output of production. As for the first of the problems listed above, one should acknowledge that the current level of Belarus' self-sufficiency in its own energy supply is determined not so much by factual availability or shortage of the relevant raw materials in the earth's interior, as by considerations of economic appropriateness of extraction of the resources encountered and cost efficiency of extractive enterprises.

A series of state republican programs have been designed to solve these FEC problems. The most exhaustive and comprehensive account of measures targeting the development of the energy system of the country is presented in the "Key Trends of Energy Policy of the Republic of Belarus until 2020". First of all, they are targeted at the creation of necessary preconditions and terms for the substantial and reliable energy supply to the desired development rates of national economy in the standard period and minimization of damage in emergency situations, the main objective being to ensure energy security of Belarus as a basis for the security and autonomy of the state. At the same time the long-term economic strategy of the republic is projected taking into account the existing realities and mutual interdependence of opportunities for the development of objective (availability of own energy resources, the condition of the material and technical base, energy output for production) and subjective (situation on the international arena, socio-psychological features of the mentality of the population) FEC factors.

The long-term development strategy of the sector has a pronounced social aspect and provides for broad-scale implementation of new energy technologies aimed at growth in household comfort and prosperity of the population, improvement in healthcare and working conditions, and conservation of natural environment. At the same time it sets the objective of maximum reduction in energy expenditure in the housing and public utility sector through the following: implementation of door-to-door metering and regulation of heat consumption, effective lighting and ventilation systems, water heating using helium heaters, heat recovery of leaving air, wastewater heat recovery, and use of energy-saving building materials and constructions. The latter is particularly relevant for Belarus since, in accordance with construction standards adopted in the republic long ago, residential buildings are constructed to withstand for the maximally low temperature of 24 degrees Celsius below zero.<sup>2</sup> Meanwhile, according to Minister of housing and public utilities V. Belokhvostov, “When the temperature falls below 25 degrees and stays for 5-6 days, the houses grow cold. In the apartment the temperature goes down 2 degrees every day. 18 degrees above zero is already a discomfort boundary, while 16 degrees make one suffer inconvenience. Unfortunately, however, many houses were built with such temperature lag that in severe frost the temperature to be supplied to the district heating network has to amount to 150 degrees.”<sup>3</sup> These considerations testify to the fact that modern energy industry is increasingly transforming from the technico-technological into man-measuring complex, which is to be developed and regulated taking into consideration not only technical standards and economic indicators, but also axiological parameters, expectations and assessments of the population.

Speaking of the public’s attitude towards energy economy, it seems appropriate to distinguish three levels: daily, manufacturing and existential (socio-global).

At the daily level most people use the products of the fuel and energy complex as ordinary goods and services on the basis of the price-quality correlation.

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<sup>2</sup> Белуга В. «Когда «жировка» не жирует» (“When the greasing does not grease”), *Рэспубліка*, 11.02.2006. p.3

<sup>3</sup> Бабоев У., «Міністр ЖКХ Белохвостов В.: Рэформа ЖКХ в Беларусі завершана» (“Minister of Housing and Public Utilities Belokhvostov V.: Reform of Housing and Public Utilities in Belarus is complete”), *Комсомольская правда в Беларуси*, 30.03.2006. p.16

Many of them preserve the long-standing attitude that formed in the times when housing and public utility services were virtually for “free”, while petrol and lube-oil, electricity, gas, and heating tariffs were considerably below cost. Paradoxically, yet such attitude changes only in the case of malfunctions and breakdowns at the energy enterprises. During emergency shut-downs of hot water supply, heat, and energy the population fully appreciates the indispensability and value of these utilities services for supporting daily living necessities. Unlike some CIS countries, where even at the present time heating in autumn and winter has not yet been debugged (due to which people are forced to install *burzhuikas*, old-fashioned metallic furnaces, in their rooms), and in which both hot and cold water is supplied periodically, while electricity is turned on for 2-3 hours per day, Belarus has never had anything in common.

At the second, manufacturing, level, the energy constituent in the broad sense of the word is assessed as the main source ensuring the production process, an indispensable part of the cost of any type of production and services, necessary safety conditions and household comfort of working activity in any sphere.

At the existential (socio-global) level these are specific perceptions of global processes taking place in the energy sector, including the dynamics of global prices for energy carriers, exhaustion of planetary resources of oil, gas, coal; these are also perceptions of how forthcoming generations are going to live should reliable alternatives for energy supply of the country not be explored. The latter is first and foremost stipulated by the following facts:

First, domestic natural and raw resources are limited; even if non-conventional and renewable resources are fully employed, their volume may amount to no more than 30% of the needs of the country's energy system.

Secondly, the existing level and import conditions of energy carriers from Russia (as well as other countries) have dramatically deteriorated for the past two years, due to both economic and political reasons. To secure and enhance the main directions of import of heat and energy resources in the long-term perspective, it is necessary to ensure stable institutionalized full-fledged relations with countries supplying energy carriers, which would be insensitive to situational fluctuations and, importantly, political environment.

Thirdly, in reality the diversification opportunities of the sources of import of fuel and energy resources seem to be rather hypothetical (gas from Turk-

menistan, oil from the states of the Persian Gulf or the Northern Sea), primarily due to economic considerations. For example, the considered scenario of building a Central Heating and Power Plant in Brest bordering Poland turned out to be counterproductive due to a sharp rise in prices for this type of energy resources in Poland itself.

Fourthly, there is a problem of the development of a domestic nuclear power system and construction of a nuclear power plant in Belarus. With this regard one should remember, on the one hand, about the persisting public consciousness and social psychology of the “Chernobyl syndrome”, with inherent radiation induced phobias and high level of socio-psychological anxiety. On the other hand, there is also awareness of the fact that the Chernobyl Nuclear Power Plant accident was a tragic fortuity that could have been avoided minutes before the explosion. Therefore, assessing the situation and prospects of nuclear energy in the country one has to consider that to date there are over 440 nuclear power plants operating in the world with over 50 nuclear power units under construction in China, Japan, Iran, South Korea, Russia, Ukraine and other countries. After Chernobyl none of the countries has fully stopped active reactors at their nuclear power plants, and only enhanced safety measures, especially those dealing with the influence of human factors. Moreover, the early 21<sup>st</sup> century witnessed a new wave of nuclear power plant construction in the USA, which was partly frozen in 1979 following a major accident at Three Miles Island nuclear power plant. Without going into detailed analysis of the “Pros” and “Cons”, one may assume that the Belarusians, with their high level of education and mental wisdom are able to objectively assess specialists’ arguments, the experience of operating nuclear power plants in other countries, including nearest neighbours, Russia, Ukraine, Lithuania, and to make an informed decision on the issue of the construction of the nuclear power plant in the republic.

We believe that, in considerations of appropriateness of nuclear energy, one of the reasons for the slow responsiveness by the Belarusian population is the fact that until now this problem has not been widely discussed in the domestic media. Moreover, publications and materials in the newspapers, on the radio and TV are most frequently one-sided, as virtually nothing is said about the environmental friendliness and low production cost of energy at a nuclear power plant, while journalists are overwhelmed with their post-Cherno-

by scary stories, which, naturally, does not contribute to the decrease in the number of opponents of the power plant construction.

We believe that there are at least two cogent reasons to ultimately decide on the issue of a nuclear power plant construction in Belarus. The first reason deals with opportunities to use the currently rather unfavourable cost situation on import of power carriers, which may further deteriorate in the foreseeable future. The other reason is the expected change in the balance of energy resources and, respectively, inevitable growth in expenses on the electric power production.

However, Belarus has a clear advantage over many CIS countries due to the fact that Belarusian energy has remained state-owned property while the key priority of the energy policy of the state, listed in all far-sighted programs on the development of the heat and energy complex, is to ensure reliable and safe provision of the population and the economy with energy resources at reasonable prices, cushioning of risks and prevention of crisis in energy supply.

## **2. Belarus' energy policy in the light of global trends of energy development**

Due to the above reasons the country pursues an energy policy which targets preservation of the Single centralized heat and power supply network to the population and the economy the establishment of which dates back to the Soviet times. The division of the Single heat and power supply network in Russia and Kazakhstan into separate private segments of heat and energy complex operating on the basis of the commodity market, which took place as part of reform implementation, remarkably lessened the consolidated effect of the network, cut down fuel conservation from waste heat utilization of FEC in heating, aggravated the negative influence of energy on the environment, led to the increase of heat tariff rates and use of less economical heating systems (for example, individual and block heating stations, heating elements, etc.). Despite the abundance of domestic energy resources, all this has led these countries to multiple malfunctions of energy and heat supply to the people and the industry, wintertime energy crises, numerous outages of heat and electric energy equipment. This is not surprising bearing in mind that, ac-

According to statistical data, in Russian Federation about 50% of municipal heat supply objects and engineering networks need to be replaced, and at least 15% are in emergency condition. Every year in Russia 70 failures are reported per 100 km of the heating system. Losses in the heating system amount to 30%, while 82% of all length of the heating system require repair, overhaul, or total replacement.<sup>4</sup>

This issue is just as urgent for the energy sector of the republic. Average life expectancy of a power generation resource has amounted to 29.7 years against the normative standard of 27 years. To solve this problem the State comprehensive program makes provisions for introduction in the period from 2006 to 2010 of a large number of new generating supplies, which will allow to decrease their deterioration from the present 61,4% to 41,5%, and will enable further improvements in durability, reliability and efficiency of the energy system of the country.

Despite the limited quantity of energy resources, Belarus, thanks to the efficient energy policy, has managed to avoid crisis situations and to provide the country with light and heat without interruption. Yet changes in the import of energy resources make the objective of the development and implementing additional system measures aimed at enhancing energy safety of the country more urgent than ever. In the periods until 2010 and until 2020 a number of additional measures are to be taken, based on the diversification of sources of energy supply, more efficient use of local energy sources, scientifically grounded adjustments to the state energy policy, new resources prospects, establishment and development of the system of economical habits and prudence, decrease in production energy-output ratio.

In order to better understand the situation and prospects of the development of the energy sector it seems appropriate to analyze them in the light of trends and prospects of the development of global energy.

For several decades the economic as well as futuristic literature as well as numerous scientific publications devoted to the issues of the development of global economy have been discussing the question of the supposedly fatal imminence of ultimate exhaustion of a number of renewable natural resources in

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<sup>4</sup> Инвестиционный климат и структура рынка в энергетическом секторе России (Бюро экономического анализа) (Investment climate and market structure in Russia's energy sector (Bureau of Economic Analysis), – М. ТЕИС. 2005. p. 266-267

the 21<sup>st</sup> century, among which primarily are energy carriers, i.e., oil, natural gas and black coal. Notably, this perspective attracted broad attention of FEC specialists and scholars immediately following the 1973-1974 energy crisis. It was then that categorical statements appeared, claiming that global civilization will perish ineluctably due to raw resources exhaustion, primarily, energy resources, within the following 50 years. Rather pessimistic prospects formulated in a stiff way predicted inevitable exhaustion of the mineral and raw materials base and acute deficit of the relevant raw materials in the global market in the early 21<sup>st</sup> century. This first of all applied to oil, coal and natural gas.

To date it has become obvious that the majority of these forecasts did not come true or turned out to be erroneous, as, for example, the widely known research of the Roman club the Limits to Growth, as is convincingly evidenced by real statistical data.<sup>5</sup> The foreseeable future of the humankind and, therefore, Belarus, at least in this respect no longer seems so gloomy and desperate, whatever the apprehensions in the 70s-80s of the past century. In addition, the suggested viewpoint rests on the theoretical and applied assumption that long-term supply of global economy with natural energy raw materials is an issue that requires research and scholarly interpretation, first of all, from the perspective of the expenditure mechanism of their extraction and further processing as well as the dynamics of global demand. It is deemed totally counterproductive to ignore the fact that, alongside gradual exhaustion of currently exploited oil and gas fields, geological exploration activities, prospecting and involvement into exploitation of new reservoirs are taking place everywhere. Due to this throughout several decades the relation of the general level of the prospected and confirmed global geological reserves of hydrocarbon raw materials to per-year consumption volume has not only remained at the relatively high level, but importantly, shows an increasingly apparent growth tendency. The examples are easy to find.

Thus, in March 2006 in his edict, President of the Republic of Belarus A.Lukashenko approved the State program of exploration work aimed at the development of the mineral and raw materials base of Belarus for the period 2006-2010 and for the period until 2020. The allowance for the implementa-

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<sup>5</sup> *The Limits to Growth*. A Report for the Club of Rome's Project on Predicament of Mankind. N.Y. 1972.



tion of the program is estimated at 349 bn roubles.<sup>6</sup> Of them 192 bn roubles are budgetary funds, and the rest is at the expense of enterprises and organizations that are subsurface users. 68% of budget costs will be directed into the provision of the country with domestic fuel and energy resources. Notably, in terms of natural resources, to date only 45% of Belarus' earth resources have been researched. As a result, over 4000 minefields of 30 kinds of mineral wealth have been established. The main obstacle of exploratory activities is that the surface of the country is covered with a hundred-meter series of sand and clay, which hinder access to other resources found beneath. In this light we believe it is appropriate to make an interesting assumption. Its essence is hypothetical, and its significance is fantastic. If true, it may totally change our views on the factual oil reserves and, possibly, natural gas, in Belarus as well. The assumption is presented below.

As is known, petroleum is found in sedimentary strata and, in accordance with the geologic theory of its origins, this is where it is always searched and found. However, geological practice is known to include several facts that have not yet secured a serious scientific explanation: this is when oil reserves were accidentally discovered not in the sedimentary strata, but in intrusive crystalline rocks, where deep exploratory drilling with a view of finding metallic minerals was undertaken. Until recently it did not occur to geologists to even attempt to look for petroleum in these rocks, while, as is known, they constitute about half the area of the Earth's crust.

Meanwhile, to date an almost 6000-meter well has been bored in the Rechysia Raion of Homiel Voblast; a new series of deeper bores is under consideration and, as is known, the first results have already been received as new promising oil-bearing strata have been discovered.

Besides, one should not forget the obvious fact that the dynamics of the explored oil reserves, natural gas, and coal largely depends on the amount of investments in this sector, on the degree of correspondence of investments to the growing demand and factual prices in the global market. As most scholars and experts believe, investments in FEC tend to have long-term cyclical fluctuations. For example, major structural changes in the market of energy car-

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<sup>6</sup> Кукалов В. «Зрящие в недра. От эффективности работы геологов во многом зависит экологическая безопасность страны» ("Looking intot he interior. The efficiency of fieldworkers' activities largely determines ecological security of the country", *Народная газета*. 01.04.2006. p.2

riers and speculatively high prices may be viewed as a consequence of the beginning of another investment cycle. This may be followed by a period of relative price stabilization, which may again be changed by another bullish cycle (wave) and, correspondingly, high investment activity in the period from 2020 until 2030. If we extrapolate this tendency further into the future, an analogous situation may be expected by the mid-2080s. Naturally, the presence of waves in the dynamics of investments in the mining operation of fuel and energy reserves should be viewed as hypothetical. However, as any research hypothesis, it has to be taken into consideration and may well be used to develop long-term forecasts of the dynamics of the hydrocarbon market.

We should point out that the application of this hypothesis is based on acknowledgement of the shortening of downward waves of the Kondratieff cycles and shift of global economy to the fifth cycle of the world environment, which may last till the end of the first decade of this century at the least. The idea that the world economy is undergoing the ascendant wave of the fifth cycle is supported by a sudden increase of the political, psychological, and partly military pressure of the USA and EU countries and their political-military and economic institutions on Belarus, Russia and a number of other countries. The descendant wave always prompts attempts to establish a different balance of forces among various centers of world economy, since their “weight” in international policy and economy is changing. In the nearest years these tendencies will ultimately reveal themselves in the acute phase of the “third limit” of world fuel and energy markets (the first two limits had been provoked by local wars and had to do with the redistribution of the spheres of political influence). We believe that we are witnessing the beginning of the so-called “geoeconomic revolution”, i.e., the phase of revolutionary renovation of the world order, concerned primarily with the opposition of the global centers of economic force rather than individual states. In this respect two critical points of further development of the world economy and, particularly, FEC, can be observed. The first one, which has already been passed, is the time of conducting Presidential elections in the USA and Russia, while the upturn in economic cycle in these as well as other countries had run low: the global economic crisis broke out, as always, unexpectedly, which led to the aggravation of the political situation in the world. The second critical point, 2010-2011, when the ascendant wave of the fifth Kondratieff cycle was

to be substituted by the descendant one, as is known, came ahead of time, in the late 2008. Bearing this in mind, we must immediately start to develop our energy policy taking into consideration possible changes in the world economic and energy markets, which may reveal themselves in the beginning of the second decade of the 21<sup>st</sup> century. In addition, it is important to take into account the main factors affecting global consumption and production of primary energy resources (PER).

Let us first distinguish the factors that influence the consumption volume of PER in the world.<sup>7</sup>

Without going into detail we will list the main ones below: these are economic growth rates, population growth, divergence of approaches to nature management, the dynamics of global prices for PER, enhancement of efficiency of energy use and energy saving, substantial changes in natural environment and some others.

Against this background the results of the analysis of the situation in the energy sector of the republic become even more objective and tangible.

The main methodological implication of this analysis both at the current stage and in the foreseeable future is the following axiom: in the field of energy economics, Belarus is a state with a very high deficit of domestic natural energy reserves. Annual extraction and production of natural fuel resources in Belarus, primarily, petroleum, casinghead gas, peat, and wood constitute around 5.0-5.2 mln tones of reference fuel, which is approximately 15% of the country's general need in fuel and energy sources.

According to another axiom, which was considered in the formation of the country's long-term energy policy, to date Belarus' energy is mono-dependent on the supply of natural resources from Russian Federation.

Thirdly, as compared to Western Europe, Japan, India, China, USA and even Canada, we live in a country characterized by a peculiar and rather rigorous climate. It is not so much the average annual temperature as severe climate, which manifests itself primarily in the difference between summer and winter, night and day temperatures. For example, in the absolute majority of Western European countries, including the inhabited part of Norway

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<sup>7</sup> Байков Н., Безмельнищина Г. «Мировое потребление и производство первичных энергоресурсов» ("Global Consumption and Production of Primary Energy Resources", *Мировая экономика и международные отношения* 2003. №5. p.44-52.

and south of Sweden, the average annual temperature is above zero. Geographers acknowledge that, thanks to the Gulf Stream, Western Europe is a unique region: there is no other place in the planet located in such proximity to the North Pole that would be so warm. Meanwhile, in terms of climatic conditions the inhabited part of Canada is, again, comparable to Western Europe, as the average annual temperature in Vancouver constitutes 9.8 degrees above zero (similarly to Vienna), and in Montreal it is 6.7 degrees above zero (the same as in Warsaw).

Fourthly, given all known unexpected and unilateral changes in the terms of supply of energy resources to Belarus from Russia, accompanied by flagrant violation of agreements within the framework of the development of union relations, the leadership of the country was forced to make pivotal changes in the existing approaches to the issue of the development of the sector, both as the basic condition of its socio-economic development and autonomy.

An analysis of undertaken national measures aimed at minimization of negative consequences of Russia's oil-and-gas demarches testifies to the fact that they are timely and efficient and allows one to make some conclusions regarding the prospects of industry development.

These demarches have not reached their intended purpose. Belarus has withstood and has not bargained away its strategic ownership, whose acquisition at the terms posited by the authors of the demarches seemed to have been decided upon.

Judging by their reaction, authors of the demarches were unpleasantly surprised by a peculiar paradox (and we believe that on this occasion we should express our sincere gratitude to them). Belarus' timely move away from Russia's oil-and-gas game saved it unavoidable expenses. Belarus did not palpably slow down the pace of economic and social development and was able to take a number of timely and efficient measures to forestall negative outcomes.

As is known, Belarus is the first country in Europe to have developed the Concept of Energy Security in 2005, founded on the principle of cooperation with Russia satisfying the needs for FER and foreseeing three versions of scenarios: favourable, neutral, and pessimistic.

Thanks to this the republic was ready for Russia's challenge and, as the events took on the pessimistic course, made a pivotal update on this Concept by rigorously relating the clarified forecasts on industrial development with

the prospective trends of the global energy resources market and opportunities for expansion of exploitation of domestic sources by taking into consideration changes in the price factor given the fact that most of them are already becoming competitive and profitable. A decision has been made on the construction of a domestic nuclear power station, which will not only enhance energy security of the country, but will also make our production more competitive. The new version of the Concept contains grounded optimism in issues relating to the attainment of the necessary level of energy security in the country. The complex of measures provided in the Concept and aimed at the development of the energy sector ensures accomplishment of all indicators of socio-economic development for mid-term (until 2010) and long-term (until 2020) perspectives even given the most unfavourable price conditions for energy sources.

### **Conclusion**

We believe that the programme of measures aimed at the implementation of the Concept is feasible. Moreover, it has significant reserves due to the progressive and objective inclusion of the human factor in the process. Under these conditions every citizen will be aware of the price for heat and energy and will do whatever possible to rationalize their use both at workplace and at home. Every cent saved will contribute to the expansion of economic opportunities in order to ensure the development of the social sphere and advance in the living standards of the population. This apparent fact is axiomatic and does not require any additional clarifications or substantiation.