

**8th International Scientific Conference  
Science and Society 2015**

**Zeldner A.G., Sidorova N.G., Savchenko I.I., Oleinik E.B.**

**THE RATIO OF RATIONAL AND  
EFFECTIVE APPROACHES TO THE  
FORMATION OF PROPORTIONS  
FUEL AND ENERGY RESOURCES  
OF THE PACIFIC ECONOMIC  
COMPLEX**

**Zeldner A.G., Russia, Russian Academy of Sciences,  
Institute of Economy, Full Professor, Doctor in Economics  
Sidorova N.G., Russia, Far Eastern Federal University,  
Associate Professor, PhD in Economics  
Savchenko I. I., Russia, Far Eastern Federal  
University, Associate Professor, PhD in Economics  
Oleinik E. B., Russia, Far Eastern Federal University,  
Associate Professor, PhD in Economics**

**Abstract**

We consider the relationship between the concepts "rationality" and "efficiency" in relation to the economic valuation of natural resources as objects and property as factors of production. Assessment of natural resources as an object property, you need to determine the differential natural resource rents, rates of payment for use of mineral resources, fair prices for the products of the mining industry, etc. Assessment of natural resources as factors of production is necessary for the organization of their management and capital efficiency. This approach is necessary in the formation of the proportions of fuel and energy resources pacific economic complex (PEC). In the Eastern Federal District, in particular in the Primorsky Territory, urgent problem of improving the energy balance in the direction of increased use of natural gas in order to increase the efficiency of the energy sector.

**Keywords:** fuel and energy complex, natural resources, economic valuation of natural resources, effective and rational use of energy resources.

**8th International Scientific Conference  
Science and Society 2015**

Tasks for effective and efficient use of limited resource base become major issues of economic growth, political and social stability of any society. This set of circumstances is the need to understand what the rational, efficient and optimal solution in the use of economic resources mean, as well as to establish what the relationship is of these categories. Rational behavior is objectively derived from the fact that resources are limited and its use is aimed at achieving the utility maximization. However, it is known that the rationality in terms of representatives of the various areas of economics, may be full, limited and organic, in this regard, and the implementation of the principle of utility is considered with varying degrees of accessibility. However, the concept of rationality requires a more detailed breakdown. John. Stiglitz writes: "The interpretation of the term economists' best transmitted the word" sequence ". [1] People choose what they prefer, a ranking of alternatives agree preferences, choose the course of action that provides them achieve this goal. In other words, the objective function is the rational behavior of economic agents - to achieve a certain level of utility. M. Friedman gives the following concept: "Instrumental rationality concerns our ability to effectively weigh or relate goals and means to maximize the chances of success in achieving predetermined goals. First, given the need to achieve a certain goal, and then to attempt to achieve the desired state of affairs the most effective way, which allowed the external environment. "[2] The purpose serves as a way to integrate various human actions in a sequence or system. The real cause of economic activity underlying the immediate motives, goals, actors involved, are economic interests. Economic interest in its qualitative and quantitative determination is closely linked with the concept of economic efficiency as a measure of economic efficiency-implementation of economic interest expressed by a group of indicators or integral indicator. The theory of economic efficiency, cut off from the theory of economic interests, cannot give positive results. P. Heine, determining that there is "efficiency", raises the question: is not too much we appreciate the efficiency, neglecting the more important goals for the sake of efficiency, not worth our efforts? ". [3, P.169] The question is legitimate, because, first, we decide what we most appreciate. In our opinion, this statement reflects the status of the relationship between the concepts of "utility" and "use-value", which is interrelated, but not identical.

Set of consumer properties of things, its high-quality component of certainty, its ability to meet personal and social needs, is a utility. The use-value is created in production and this

**8th International Scientific Conference  
Science and Society 2015**

requires a certain cost, is the potential usefulness. In a market economy, where there is a social division of labor, where the production process is separated from the process of consumption, where the utility has a use value for others, there is a gap between these concepts. Usefulness is inseparable from the thing to its natural properties, but to identify the thing with these properties cannot be, since the utility reflects the relation of man to things. In addition, it is impossible to identify the category of utility and use value, although the utility of a thing makes it a use-value.

However, the social division of labor is a prerequisite for the conversion of the individual consumer value things in the social use value, ie, use value for other people. Consumer characteristics, utility, consumer values are fused together in a particular thing, but are different definitions. Public use-value is not an easy thing, and the material carrier of public relations. This is a public utility in the form of a market economy. By itself, the thing is not yet public use-value; in order to make it such, it is necessary that its beneficial properties exist social need. When it comes to natural resources as factors of production, the economic effect determines their social use value, which is achieved using their consumer properties in the production of public goods with a minimum of cost. It is difficult not to recognize the validity of the statements P. Heine: "Economic growth is not an increase in the production of things, and to increase wealth. Moreover, wealth is everything that people value". [3, P.172]. Accordingly, what people value, which is of economic interest, which goes into the goal activities, and is rational in people's behavior. Rational choice - this is the best choice from the standpoint of the interests of the subject. Rationality and efficiency of course related concepts, but not identical. The rationality of activity of subjects can be evaluated using performance indicators. However, it is not always what we consider rational, can be effective when comparing the effect and costs for its achievement. P. Heine, considering the essence of efficiency, writes: "Our notion of efficiency and inefficiency determined by what we value ... The question is not what is actually better, but that those who have the right to make certain decisions." [3, P.183] So, what is the starting point for assessing efficiency?

According to Heine is "property rights, they implicitly define how the decision-making process will be assessed the costs and benefits." [3, P. 185] It is known that in the case of private ownership of certain economic resource, the criteria for the use of this resource stand obtaining the maximum profit. Nevertheless, it would be wrong to say that the assessment of economic resource is entirely limited to the assessment of it as a property, not less

**8th International Scientific Conference  
Science and Society 2015**

important is its assessment as a factor of production in order to optimize its use. Assessment of natural resources as an object property, you need to determine the differential natural resource rents, rates of payment for use of mineral resources, fair prices for the products of the mining industry, etc. Assessment of natural resources as factors of production is necessary for the organization of their management and capital efficiency. This approach is relevant for all natural resources, including minerals, especially in the state ownership of the subsoil. Moreover, such an assessment is required to establish the comparative advantages of various natural resources to improve the efficiency of social production. "This comparative advantage of using one resource over others in a certain way (compared with other methods) - determines the most efficient way to use someone else resources". [3, P. 186] is determined by the comparative advantage of alternative values. In other words, the relative evaluation of different economic agents determines whether a resource is effective, based on their target systems.

Effectiveness depends on estimates and such estimates are needed for the rational use of natural resources. The task of finding a rational and efficient choice is particularly relevant in such a complex structure as the fuel and energy complex (PEC) of the country and the region, which is a system of processes of reproduction, the primary delivery, conversion, distribution and consumption of energy. The main feature is the use of the PEC functioning strictly limited and non-renewable natural resources, as well as the interaction of different interests (population, industries, businesses, and organizations, regional and federal levels of government). Efficient use of energy potential of the country can be represented as a ratio of gross domestic product to the energy cost (in physical or value terms). Most often to evaluate the energy efficiency, the return value is used - the ratio of the volume (and, more recently and cost) used fuel - energy resources in an annual cut to the size of the gross domestic product.

Efficient use of natural resources is only possible in a certain ratio and their sequence from the position of public use value in achieving optimal planned result. This approach is necessary in the formation of the proportions of fuel and energy resources of the PEC. The main purpose of Russia's energy policy is the most efficient use of natural energy resources and potential of the energy sector for sustainable economic growth. In addition, it wants to administer in improving the quality of life of the population and promote its foreign positions. Development of regions throughout Russia largely depends on the efficiency of the

**8th International Scientific Conference  
Science and Society 2015**

fuel and energy complex. Far East is especially important because one of the strategic objectives of development of the region is to increase the population, to ensure its heat and electricity. The problem of increasing the population of the Far Vostoka- is not only a problem of providing people with housing, electricity and heat, but also the creation of social and productive infrastructure, new businesses and jobs. Production and distribution of electricity, gas and water represent in tables. Sales of own-produced goods, works and services on their own are in the table 1.

Table 1- Sales of own-produced goods, works and services on their own; mln. rubles

Region	2007	2008	2009	2010	2011	2012	2013
The Republic of Sakha (Yakutia)	25138	27401	33367	37946	42849	45863	50131
Kamchatka Krai	13464	12670	12874	14948	15370	15517	16094
Primorsky Krai	31408	32673	41323	47025	51397	53814	55777
Khabarovsk Krai	24291	28754	33902	39891	44320	44974	50372
Amur region	16758	17634	21774	26935	25889	26915	27547
Magadan Region	5638	6397	7392	8183	9705	10399	11975
Sakhalin Region	9369	10413	12223	12965	16183	18533	18429
Jewish Autonomous Region	1554	1985	2287	2866	2500	3014	3235
Chukotka	4133	5464	7150	6950	5637	7971	10635

Source: [4, 5]

The indexes of industrial production are in table 2. For the effective development of production and social need for rational use of energy resources, and accordingly, ensuring optimal proportions between sources such as oil, gas and coal, given the urgent need for regional gasification. A special place in the regional economy takes Primorsky Krai. This is due to the geological development of the province, which determined the presence here of fuel, energy and mineral raw materials. Geographical location, climatic conditions of the region contribute to the development of various sectors of the

**8th International Scientific Conference  
Science and Society 2015**

economy. Primorsky Krai has a lot of potential. From the tables, Primorsky Krai has been ranked among the subjects of the Far Eastern Federal District for the production and distribution of electricity, gas and water. Energy plays a very important role in the economy of Primorsky Krai and in recent years is almost 5% of the gross regional product.

Table 2- The index of industrial production; Percentage of previous year

Region	2007	2008	2009	2010	2011	2012	2013
The Republic of Sakha (Yakutia)	96.1	103.5	95.1	101.6	105.8	102.2	100.2
Kamchatka Krai	98.9	99.8	99.8	102.2	97.3	101.1	103.1
Primorsky Krai	97.0	104.2	93.5	102.7	104.9	102.2	92.6
Khabarovsk Krai	96.7	100.8	96.1	99.5	102.7	106.1	100.7
Amur region	103.6	100.2	113.0	107.3	90.1	114.9	108.0
Magadan Oblast	96.9	102.3	99.8	100.6	99.7	100.6	98.5
Sakhalin Region	103.2	98.0	99.3	117.3	96.5	100.2	97.3
Jewish Autonomous Region	211.1	115.2	104.7	102.9	90.4	108.9	101.8
Chukotka	99.9	113.0	93.1	98.1	95.9	100.5	109.0

In 2010, there were concentrated over 17% of fixed assets; 5.7% of the employed work in the organizations of the region. The number of employees of the fuel and energy complex amounted to 33.6 thousand. Pers., 83.8% of them were employed in organizations for the production, transmission and distribution of electricity, steam, gas and hot water, 16.2% - for the extraction of fuel and energy minerals. Currently in the Primorye Territory, under the existing balance today fuel consumption on Coal accounts - 57, 8%, gas - 1.3%, 39.2% fuel oil, diesel fuel - 1.7%. Level of security edge own power over the last few years is 7.8%. Its revenues from outside the region cover annual electricity deficit. At this stage, unfortunately, in Russia and the Far East, in particular, the cost of producing electricity is twice as global, - stated the presidential

**8th International Scientific Conference  
Science and Society 2015**

envoy to the Far Eastern Federal District Viktor Ishayev. - We need additional mechanisms to power was less costly and more effective. [6] Experts note that for power of the Far East is characterized by sub-optimal fuel balance of power plants and irregular schedules loads (share communal household load power consumption and increased more than 20 percent), and focus on more efficient use of fuel and diversification. In December 2014, Project developed a comprehensive program of development of the power of the Far Eastern Federal District until 2025 on behalf of the Prime Minister. The authors identified three design goals of the integrated program. Firstly, it is designed to determine the direction of development of electric power, given the current state of the fuel and energy complex of Far East regions for the period up to 2020 with a view to 2025. Second, it is focused on reducing the impact of infrastructure constraints to socio-economic development of the Federal District. Finally, create the conditions for an integrated socio-economic growth of the Far East. Calculate the expected outcome of the program: in the east of the country should increase the utilization of installed capacity of thermal power plants from 39 to 54 percent, and the specific fuel consumption for the production of a kilowatt-hour of energy will be reduced by 15 percent. This happens due to the fact that they will build new power plants and inefficient serial output objects. It is assumed that the increase in vacation of hydroelectricity Electricity Interconnection East by 47 percent and reduce the actual provision of electric power from 69 to 33 percent. The document assesses the long-term fuel mix Far East and the need for power plant fuel resources County for the period up to 2025. It is estimated that up to 2025 will significantly increase the share of natural gas in the fuel mix - from 2,951 to 5,073 million tones, i.e. 1.72 times. It will be due to gas shelf of Sakhalin Island, the Sobolev field in the Kamchatka region, deposits of the Republic of Sakha (Yakutia). The scope of use of petroleum products will be reduced from 417.3 to 116.7 million tones; hence, the rate of the most expensive fuel in the power of the federal district falls in 3.57 times. Coal power generation by 2025, would be to consume less by 4.4 percent in real terms, however, this type of fuel, as experts believe, is the most preferred. This approach is due to several factors: the region has significant reserves of solid fuels, waste transport arrangements have been made and logistics, power plants were designed for specific burning coals and existing technologies are justified.

Financial calculations given in the integrated program, have shown that the development of the energy sector of the Far Eastern Federal District until 2020, it is necessary to invest 588 627

**8th International Scientific Conference  
Science and Society 2015**

000 000 rubles. Funding sources identified as federal funds and money from extra-budgetary funds. In addition, investments are needed through private investments, loans and rates. According to the authors of the project, in 2011-2020 the consumption of electricity in the IPS East will grow by 40 percent (from 30.7 to 42.9 billion kWh). A 2025-th it can increase almost twice compared the current period (up to 52.5 billion kWh)."[6] The sub-program "Creation and development of gas supply system of Primorsky Territory" state program "Energy efficiency, the development of gas and power in the Primorsky Territory" calculated until 2017 provided gasify 41 settlement in 9 urban districts: Vladivostok, Ussuriisk, Artem, Nahodskinsk, Lesozavodsk, Dalnerechensk, Spassk-Far, The Big Stone, Fokino and Spassky municipal district. Total up to 2017 for the gasification of cities and districts of Primorye Territory of the budget will be allocated more than 1.28 billion rubles. Over 500 million contributions will be participating municipalities. The situation for heat supply change dramatically, helped launch of the project Sakhalin - 3 VNHL constructions that will lead to the next fuel balance gas 36.4%, fuel oil - 63.6%, diesel oil 0.01%. The situation in the future will dramatically improve the ecological situation in the region. However, following the promising outlook for the Russian fuel and energy sector until 2020 ratio should be adjusted so that the carbon dioxide and will be used in the following proportions: 35% gas, 27% carbon, 0.01% diesel fuel oil and 38%. Energy complex should fully meet the needs of infrastructure development in the region. [7]

**References:**

- [1] Stiglitz J. E. Steep dive: America and the new economic order after the global krizisa.- AM: ESCMO, 2011.- p.291.
- [2] Friedman M. Dynamics of Reason.- Stanford .: CSLI Publications, 2001.- P. 541.
- [3] Heyne P. economic way of thinking / per.s angl.Izd.2 th. - M. : Publishing House "Delo", 2007.- 702.
- [4] Dalny East Russia (Primorsky Krai position in comparison with other subjects Far East) .2013: Statistical collection / Primorskstat, 2014.-68.
- [5] Far East Russia (Primorsky Krai Position in comparison with other subjects of Far East). 2013: Statistical Yearbook / Primorskstat, 2014. P.48
- [6] Looked into tomorrow// Russian newspaper in January 2015.10. Accessed Ocrober 12, 2015 at <http://rg.ru/2011/12/22/reg-dfo/programma.html>.

**8th International Scientific Conference  
Science and Society 2015**

- [7] State program of Primorsky Krai "Energy, gas and energy development in the Primorsky Territory" for 2013-2017. Accessed October 18, 2015 at [http://base.consultant.ru/regbase/cgi/online.cgi? Base = RLAW020; frame = 5112 ; n = 74 063; req= Doc..](http://base.consultant.ru/regbase/cgi/online.cgi?Base=RLAW020;frame=5112;n=74063;req=Doc..)