

# Assessment of Energy Organizations' External Conditions in the Russian Federation: A Sector Analysis

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## Abstract

**Purpose** – The paper analyzes basic indicators characterizing the volume of energy sector activity in the Russian Federation, Privolzhsky Federal district, Republic of Tatarstan.

**Research design, data, and methodology** – The study analyzed data from the Privolzhsky Federal district, specifically, industrial production volume, electricity production, energy consumption, energy-balance data, capital investments, and capital investment structure. An array of data has been investigated in recent years. The dataset's dynamics were analyzed in 1998. Fixed capital investment dynamics were studied in 1946 the figures were converted to a comparable form using the index method. Trends were analyzed using multivariate statistics methods and the Statgraphics software package.

**Results** – Hypothesis 1. There are sectoral disproportions in energy flows, taking into account the volume of electricity production and consumption. Trends in electricity production in general coincide with industrial production volume trends. Energy flows have disparities in individual territorial units, and in general. Hypothesis 2. The degree of sectoral economic stability decreases with insufficient levels of investment in fixed capital energy organizations.

**Conclusions** – Because total electricity production is largely determined by fixed capital investments, the study of their trends and patterns will coordinate efforts on investment operations in this area.

**Keywords:** Volume Production, Investments, Assets, Russian Federation.

**JEL Classifications:** L20.

## 1. Introduction

The presented results of the conducted research the external conditions of functioning of energy organizations will allow to coordinate efforts in the following aspects:

- in the process of distribution and redistribution of international and internal energy flows;
- in the system of state regulation-industry,
- at tactical and strategic management of activities of individual companies.

The strategic goal of the state of energy regulation is the formation of a management policy in the sector which involves the development of a rational fuel and energy balance optimization the structure of production, domestic consumption and exports of energy resources taking into account the requirements of energy security, economic and energy sustainability and efficiency of the companies of the energy sector, as well as strengthening the foreign economic the position of the country. Omitting the theoretical and methodological foundations of industry analysis, which can be seen in the works of many scientists<sup>1)</sup> (Averbukh, 1990 Golubkov, 1987 Zavarikhin, 1987 Kazinets, 1981 Krivov, 2013). let us consider the results of the assessment of key industry indicators: the industrial production volumes, the production volumes and energy consumption, the investment in the fixed capital (The Republic of Tatarstan, 2014a, 2014b; Federal state statistics service, 2014).

## 2. Research hypothesis

**Hypothesis 1.** There are sectoral disproportions in energy flows taking into account given the volume of electricity production and consumption.

Trend in electricity production in General coincides with the trend of industrial production volumes. This energy flows have

1) In the works of these authors determined the main directions and traditional interpretation of economic indicators from the perspective of the different scientific approaches, Supplement that you can, in our view, a significant application of economic-mathematical methods that can improve the results of the analysis.

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disparities in individual territorial units, and in General.

**Hypothesis 2.** The degree of sectoral economic stability decreases with insufficient level of investments in fixed capital energy organizations.

Since the volume of electricity production is largely determined by investments in fixed capital, the study of their trends and patterns will coordinate efforts on investment operations in this direction.

### 3. Method of research

#### 3.1. The scale of research

Analyzed data array on the Russian Federation, Privolzhsky Federal district, the Republic of Tatarstan.

Studied such indicators as: the volume of industrial production, electricity production, energy consumption, data from the energy balance, capital investments, and their structure.

#### 3.2. Method of research

An array of data has been investigated in recent years. When analyzing the dynamics of the dataset was analysed 1998 y. Dynamics of investments in fixed capital was studied 1946 y., the figures were in a comparable form using the index method. Trends were analyzed using the methods of multivariate statistics and application of the software package Statgraphics.

### 4. The results of the analysis

It should be noted that the volume of industrial production in the Russian Federation for the 2012 increased by 1.2 % compared with the corresponding period of the previous year. While in the Privolzhsky federal district there is a reduction of volumes of industrial production by 0.9 %. Positive dynamics in this period is observed in the republic of Tatarstan. The volume of industrial production increased by 0.8 %.

Positive dynamics confirms index business confidence<sup>2)</sup> in the Russian Federation in the sphere of production, distribution of electricity, gas and water, which, according to data of Federal state statistics service for the six months 2013 increases by 2 % to 8%.

The volume of electricity consumption in the Russian Federation for 2012 amounted to 1 063,4 billion kilowatt hours, or 2.1% more compared with the previous year. The volume of power consumption in this period in the Privolzhsky federal district was to 197.2 billion kWh, that is 2,4 % more compared

with the previous year. In the Republic of Tatarstan in the analyzed period the increase amounted to 3.04 %.

Electricity production in the Russian Federation for the six months 2013 amounted to 689 billion kilowatt hours and 837 million Gcal of heat energy, which is 0.5 % higher than the corresponding level 2012. The total volume of production distribution of electricity, gas and water for 2012 in the Russian Federation increased by 1.2 % compared with the corresponding period of the previous year. Evaluation of the energy balance in the Privolzhsky federal district and the republic of Tatarstan has an interesting structure (Table. 1). There is a significant transit energy flows in the district. The republic of Tatarstan has a high dependence on external energy sources in the Privolzhsky Federal district.

**<Table 1>** Evaluation of the energy balance of the republic of Tatarstan for 2012y

billion kilowatt hours

№	Indicator	Privolzhsky Federal district	republic of Tatarstan (RT)	the Share of RT, %
A	B	1	2	3
1.	Electricity production	192,8	24,6	12,76
2.	Received from outside the Russian Federation	84,2	14	16,63
	<i>The balance of the proceeds</i>	277	38,6	13,94
3.	Consumed power	197,2	27,1	13,74
4.	Released outside of the Russian Federation	79,7	11,6	14,55
	<i>The balance of implementation</i>	276,9	38,7	13,98
5.	<i>External balance (4-2)</i>	-4,5	-2,4	-

The volume of production, distribution of electricity, gas and water in the republic of Tatarstan for the six months 2013 amounted to 113.9 % against the preceding period last year. The volume of own production, works, services net categories of economic activity in this period was 63 256,3 million rubles, which is 107,4 % to the corresponding period of last year. The greatest specific weight is occupied by the production, transmission and distribution electricity - 50,72 %. In the analyzed period it amounted to 32 084,9 million rubles, or 104,1 % to the corresponding period of the previous year and production, transfer, distribution of steam and hot water - 20 070,6 million rubles, which amounts to 108.1 % to the corresponding period of the previous of the year. Investments in fixed capital in the

2) Integrated indicator, including assessment of a portfolio of orders, stocks of finished products, the volumes of activity and other indicators.

Russian Federation in 2012 were 12 568,8 billion rubles.

The manufacturing, distribution of electricity, gas and water accounts of 9.33 % of the total volume, that is 1173,2 billion rubles. Capital investment dynamics has mixed tendency (Fig.1). Transfer data in a comparable form was carried out on the basis of the analysis of the General consumer price index and price index in industry (Fig.2). The calculation was taken the average geometric indicator value for the year.

In a detailed analysis of the dynamics<sup>3)</sup> of investments in fixed capital in the Russian Federation, it should be noted that the dynamics is described by the exponential function (Fig.3).

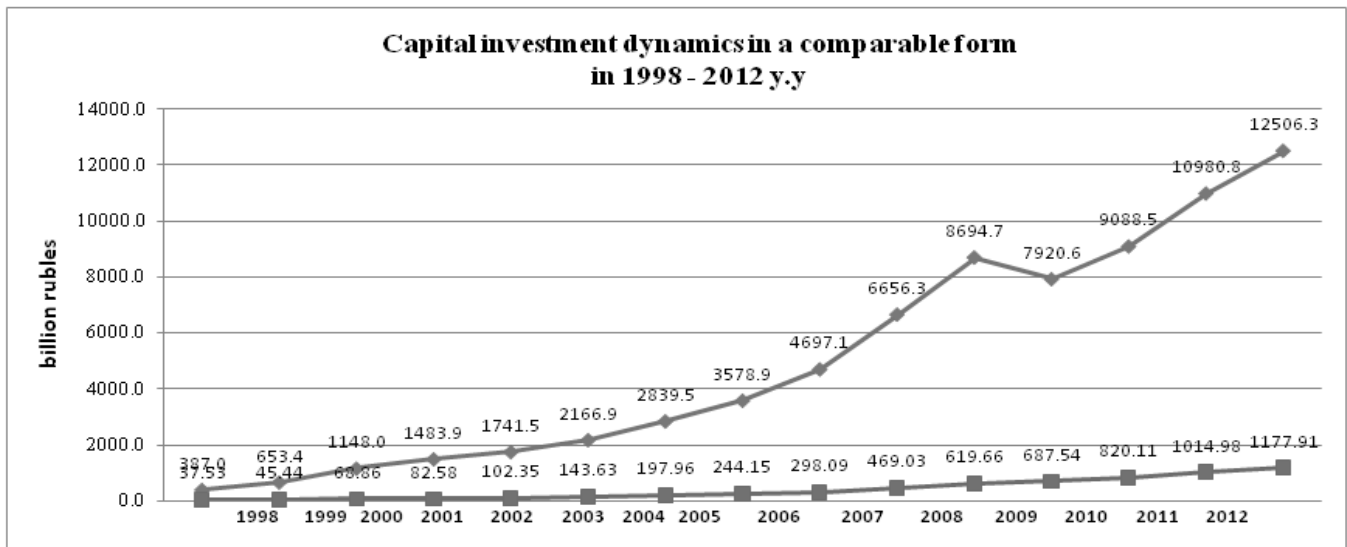
Evaluating the structure of investments in fixed capital in 2012, it should be noted that the largest share of investment in facilities, buildings and equipment, machinery and vehicles, respectively, is 5 352,4 billion rubles and 4 556,3 billion rubles (Fig.4).

Investments in fixed capital in the Republic of Tatarstan in the first half of 2013, were 175 826,5 million rubles, that is 114,5 % to the corresponding period 2012. The main sources of funding are equity, which in total make up by 51.4 %. Investing in the fixed capital in the Republic of Tatarstan occupies the greatest share in the analyzed period total volume of non-financial assets and 98,4 %.

High rates of growth in investments in fixed capital in The Privolzhsky Federal district in the first half of 2013, are observed in the Perm region is 122.6 % and the Samara region - up 120.4%.

Evaluating the structure of investments in fixed capital in the republic of Tatarstan in the first half of 2013, it should be noted that the largest share belongs to structures and building - to 37.54 %. Investments in machinery, equipment, vehicles during this period were in the amount of 61 336,6 million rubles, that is 34,88 % of the total investments in fixed capital. Occupy a significant proportion of investments in dwellings - 21 %.

Analyzing the dynamics of fixed assets in the sphere of production, distribution of electricity, gas and water in the Russian Federation at the beginning of 2012, it should be noted that rising by 5.2% compared to the same period of the previous year. The largest share of construction - 52,9 %, machinery and equipment - 31,6 %, building of 13,6 %. It should be noted that there is a significant deterioration of fixed assets in the industry, as evidenced by the coefficient of depreciation, which amounted in this period of 41.9 %. The process of renewal of fixed assets in the industry is constantly (refresh rate 5.4 at the beginning of 2012). In this period of time the volume of new, enacted fixed assets amounted to 878,8 billion rubles.

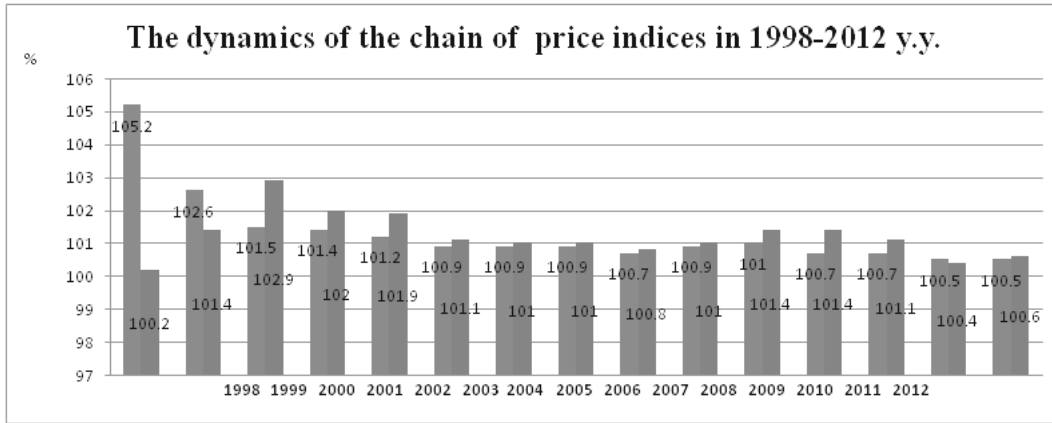


Number 1 (blue) - investments in fixed assets (total),

Number 2 (red) - investments in fixed capital in the sphere of production, distribution of electricity, gas, water.

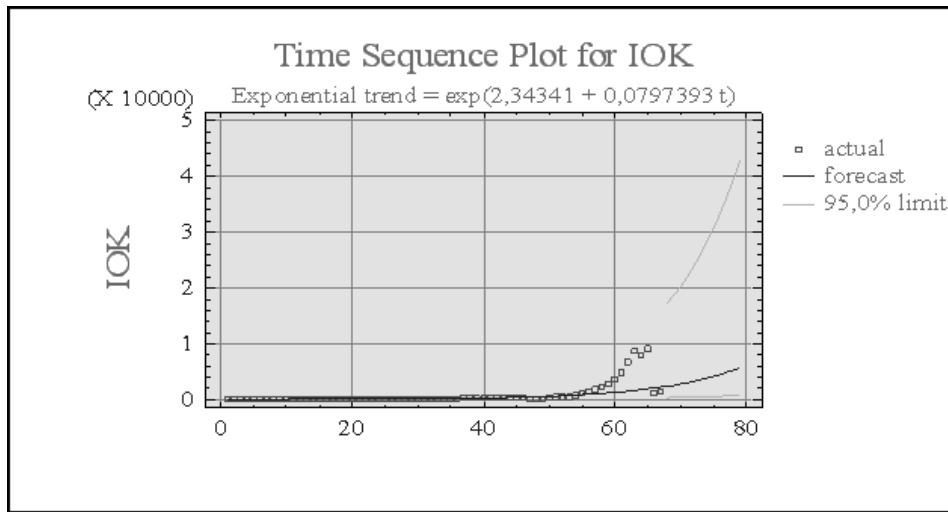
<Figure 1> Capital investment dynamics in the Russian Federation in a comparable form in 1998-2012 y.y.

3) An array of data considered in 1946 - 2012, with correction of the data on the processes of denomination in 1992-1997, and bringing it into consistency with respect to available data on consumer price index [9] with the use of software package Statgraphics.

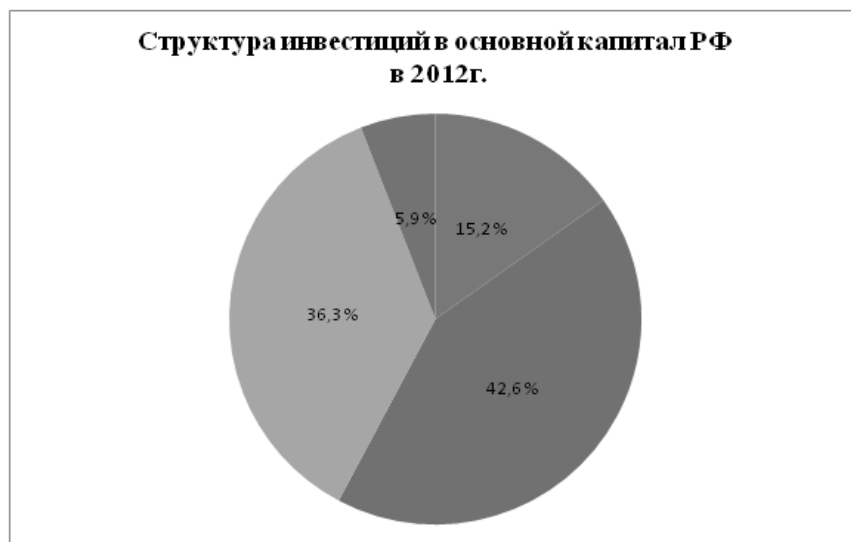


Number 1 (blue) - consumer price index,  
 Number 2 (red) - index of the prices for production, distribution of electricity, gas, water.

<Figure 2> The dynamics of the chain of monthly price indices in the Russian Federation in 1998 – 2012y.y.



<Figure 3> The dynamics of the investment in fixed capital in the Russian Federation in 1946 – 2012 y.y.



Number 1 (blue) – in dwelling, / Number 2 (red) – in buildings (except residential) and constructions,  
 Number 3 (green) – in machinery and equipment, / Number 4 (violet) – in other.

<Figure 4> Evaluation of the structure of investments in fixed capital in the Russian Federation in 2012 y.

## 5. Conclusions

Evaluation of the energy balance confirms the high transit energy flows in the country and the Volga Federal district. There is high energy dependence on external sources.

Despite substantial growth of investments in fixed capital in the last time, evaluating the investment activity of individual companies, it may be noted that on the background of high depreciation of fixed assets of the organization prefer to financial investment the real, which reduces the degree of sector of economic sustainability. On the basis of the presented models can predict promising indicators analyzed.

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